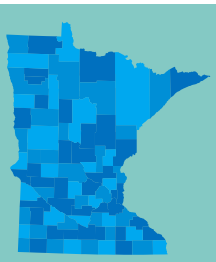
Grant

March 2024

Headwaters of Rice Lake – North Fork Crow River Watershed Nine Element Plan

Federal Clean Water Act Section 319 Small Watersheds Focus Grant Workplan

MINNESOTA POLLUTION CONTROL AGENCY



Authors

Colton Henjum, North Fork Crow Watershed District

Cindy Osborn, Minnesota Pollution Control Agency (MPCA)

Greg Johnson, MPCA

Chris Lundeen, MPCA

Contributors/acknowledgements

Cris Skonard, North Fork Crow Watershed+

Editing and graphic design

Communications staff
Graphic design staff
Administrative Staff

Minnesota Pollution Control Agency

520 Lafayette Road North | Saint Paul, MN 55155-4194 |

651-296-6300 | 800-657-3864 | Or use your preferred relay service. | Info.pca@state.mn.us

This report is available in alternative formats upon request, and online at www.pca.state.mn.us.

Document number: wq-cwp2-43

Contents

List of figures

List of tables

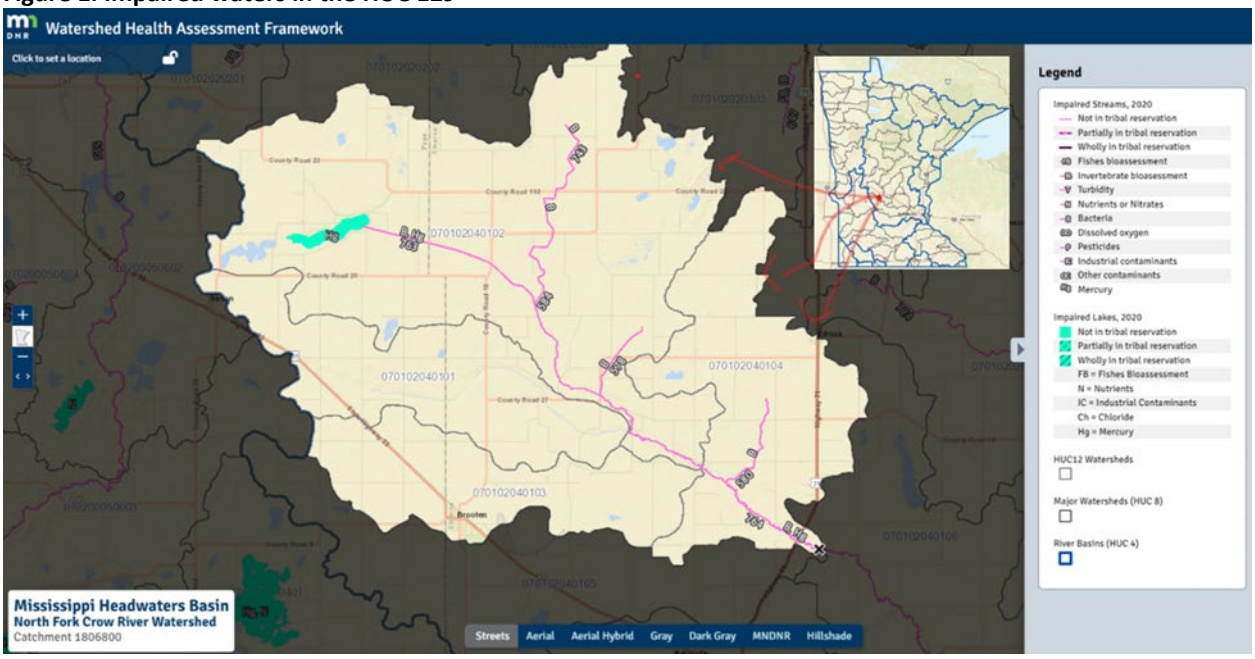
Executive summary

The North Fork Crow River Watershed (NFCRWD) has developed a nine-key element (NKE) plan for five hydrological unit code (HUC) 12 subwatersheds (Figure 1) in the Lake Koronis-North Fork Crow River HUC 10 (0701020401). The HUC 12 watersheds are listed in Table 1 and have a total drainage area of 101,530 acres. The goal of this plan is to address the water quality impairments in this area (primarily *E. coli*), as well as begin to address water quality issues downstream to Rice Lake (73-0196-00), which is impaired for aquatic recreation by nutrients (phosphorus) and aquatic consumption by mercury. This plan will be developed to reach water quality standards for impaired waters within these HUC 12s and decrease the nutrient loading to Rice Lake. For the purposes of this plan, these subwatersheds will be collectively referred to as the Headwaters of Rice Lake.

Table 1. Subwatersheds in the Headwaters of Rice Lake

Subwatershed	HUC 12	Acres
Sedan Brook	070102040101	13,060
Headwaters NFCR	070102040102	41,732
CD 7	070102040103	11,190
CD 7-NFCR	070102040104	16,172
Skunk River	070102040105	19,375
Headwaters of Rice Lake (total)		**101,530**

Figure 1. Impaired waters in the HUC 12s



Funding of projects proposed in this plan may be restricted to funding source. Only projects and practices that are allowable by the U.S. Environmental Protection Agency's (EPA's) 2014 program guidelines and Minnesota's Nonpoint Source Program Management Plan (NPSMPP) (except where noted in the MPCA's NPSMPP) will be funded by the Federal Clean Water Act Section 319 funds. Match funds and activities must also be eligible under the guidelines and plan.

Water quality conditions

The primary focus of this plan will be to meet the reductions estimated to meet water quality standards in the streams that are impaired by Escherichia coli *(E. coli)*. Other concerns are the nutrient loading for downstream waters, including a significant nutrient loading to Rice Lake. There are two impairments for aquatic consumption by mercury in fish tissue. These impairments remain out of the scope of this plan and are being addressed through state and national mercury reduction efforts.

Impairments

Water quality impairments in the five HUC 12 watersheds include five stream reaches for aquatic recreation (*E. coli*) and one stream reach and one lake for aquatic consumption (mercury in fish tissue) and are listed in Table 2 and shown in Figure 2. The watersheds also contribute to the aquatic recreation (nutrients) impairment in Rice Lake located downstream of the headwater's watershed area (Table 3). This NKE plan will address the *E. coli* impairments with a plan to reach the estimated reductions needed to attain water quality standards in 10 years. The plan will also address the nutrient reductions needed from the headwaters toward achieving the whole watershed reductions needed to achieve the Rice Lake nutrient total maximum daily load (TMDL) and improve the lake's water quality.

Table 2. Impairments in the Headwaters of Rice Lake (303(d) 2022 list)

Water body name	Water body description	Water body type	Year added to List	AUID	Affected designated use	Pollutant or stressor
County Ditch 32	Unnamed ditch to N Fk Crow R	Stream	2020	07010204-578	Aquatic Recreation	Escherichia coli (*E. coli*)
County Ditch 7	Unnamed ditch to N Fk Crow R	Stream	2020	07010204-580	Aquatic Recreation	Escherichia coli (*E. coli*)
Crow River, North Fork	Headwaters (Grove Lk 61-0023-00) to CD 32	Stream	2006 2020	07010204-763	Aquatic Consumption	Mercury in fish tissue
					Aquatic Recreation	Escherichia coli (*E. coli*)
Grove	Lake or Reservoir	Lake	1998	61-0023-00	Aquatic Consumption	Mercury in fish tissue
Judicial Ditch 1	Unnamed ditch to N Fk Crow R	Stream	2020	07010204-584	Aquatic Recreation	Escherichia coli (*E. coli*)
Judicial Ditch 1	Unnamed ditch to Unnamed ditch	Stream	2020	07010204-743	Aquatic Recreation	Escherichia coli (*E. coli*)

Figure 2. Impaired waters in the HUC 12s

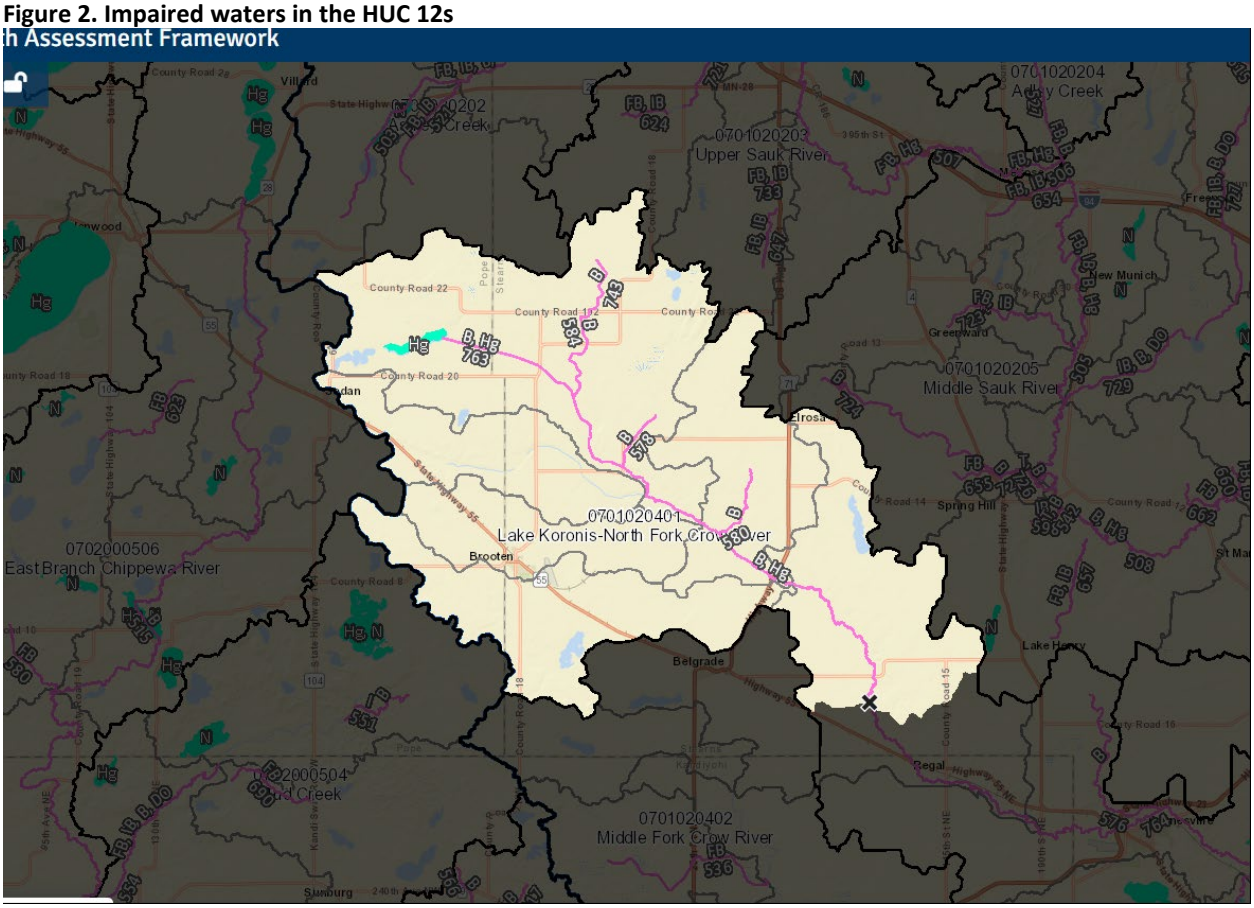


Table 3. Downstream impairments in Rice Lake

Water body name	Water body description	Water body type	Year added to List	AUID	Affected designated use	Pollutant or stressor
Rice	Lake or Reservoir	Lake	1998	73-0196-00	Aquatic Consumption	Mercury in fish tissue
Rice	Lake or Reservoir	Lake	2008	73-0196-00	Aquatic Recreation	Nutrients

Escherichia coli *(E. coli)*

The North Fork Crow River Watershed TMDL includes *E. coli* TMDLs for two impaired mainstem stream reaches in the headwaters basin. The four impaired reaches tributary to the North Fork Crow River are not included in the watershed TMDL and will be completed at a later date because they were listed too late in the process of developing the watershed TMDL. The TMDL load duration curves are illustrated in Figure 3 and Figure 4. The TMDLs for the two mainstem reaches of the North Fork Crow River in the Headwaters of Rice Lake Watershed are summarized in Table 4 and Table 5.

Figure 3. Crow River, North Fork, Headwaters (Grove Lk 61-0023-00) to CD 32 (WID 07010204-763) *E. coli* TMDL load duration curve (TMDL, 2023).

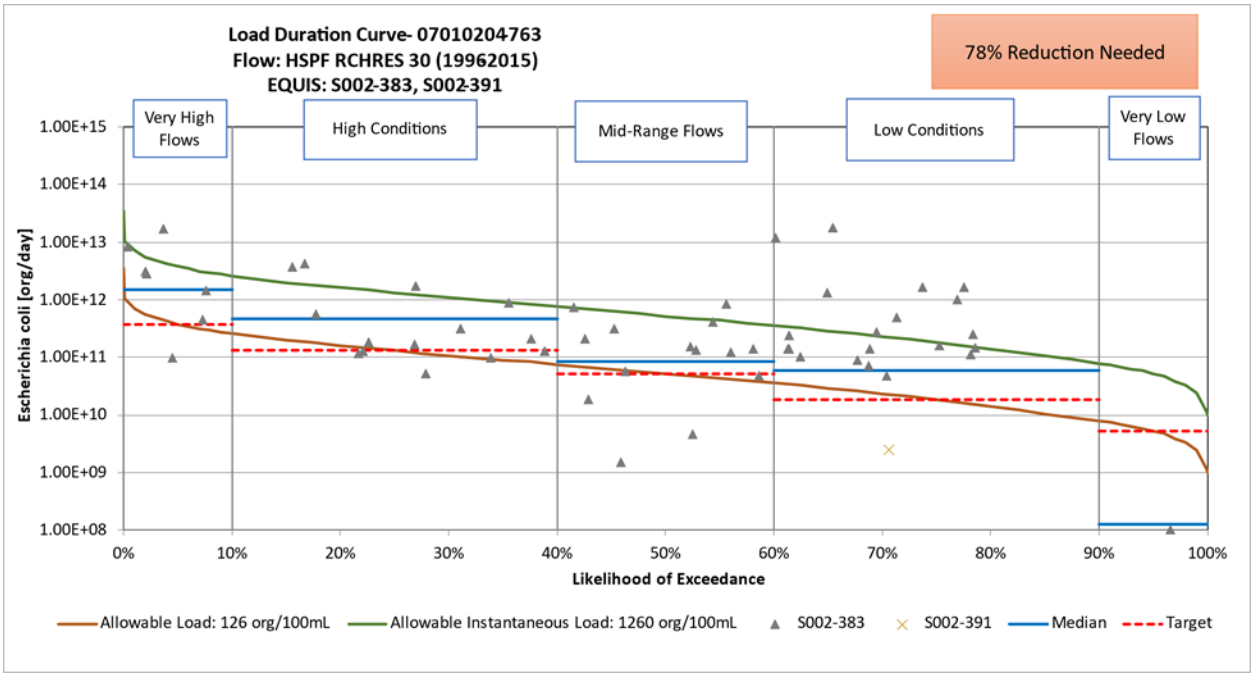


Figure 4. Crow River, North Fork, CD 32 to Rice Lk (WID 07010204-764) *E. coli* load duration curve (TMDL, 2023).

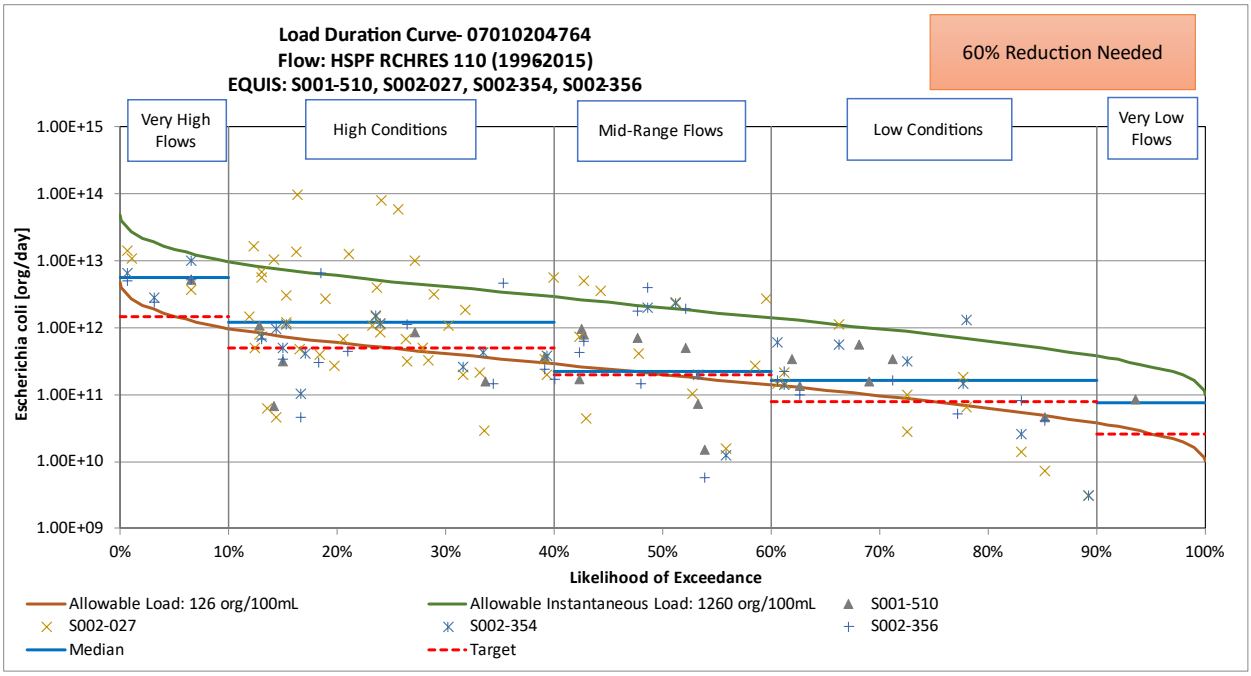


Table 4. *E. coli* allocations for the Crow River, North Fork, Headwaters (Grove Lk 61-0023-00) to CD 32 (WID 07010204-763).

Escherichia coli Listing year: 2020 Baseline year: 2012 Numeric WQ standard used: 126 org/100 mL	**Flow Condition**				
	Very High	**High**	**Mid-Range**	**Low**	**Very Low**
	[Billion organisms/day]				
Loading Capacity	376.49	131.82	52.02	18.31	5.20
Load Allocation (LA)	338.84	118.64	46.82	16.48	4.68
Margin of Safety (MOS)	37.65	13.18	5.20	1.83	0.52
Average existing monthly geometric mean	569.3 org/100mL				
Overall estimated percent reduction	78%				

Table 5. *E. coli* allocations for the North Fork Crow River, CD 32 to Rice Lake (07010204-764)

Escherichia coli Listing year: 2020 Baseline year: 2012 Numeric WQ standard used: 126 org/100 mL		**Flow Condition**				
		Very High	**High**	**Mid-Range**	**Low**	**Very Low**
		[Billion organisms/day]				
Loading Capacity		1,453.42	490.89	201.02	78.83	26.21
Wasteload Allocation	Brooten WWTP	5.06	5.06	5.06	5.06	5.06
	Total WLA	5.06	5.06	5.06	5.06	5.06
Load Allocation (LA)		1,303.02	436.74	175.86	65.89	18.53
Margin of Safety (MOS)		145.34	49.09	20.10	7.88	2.62
Average existing monthly geometric mean		318.4 org/100mL				
Overall estimated percent reduction		60%				

For the purposes of the NKE, the annual load reductions needed to achieve the *E. coli* standard in the headwaters and downstream reach of the North Fork Crow River are 78 and 60 percent, respectively (Table 6). These reductions represent a conservative approach to setting a reduction goal to meet the water quality standard in all flow categories of the load duration curves based on the observed average monthly geometric mean and the monthly geometric mean standard for *E. coli*. The estimated existing annual load and annual load reductions needed are also shown in the table. The loads represent estimates based on the load duration curve TMDL daily loads and duration of the flow categories.

The load duration curves for the two reaches indicate that elevated *E. coli* levels occur over the entire range of flow conditions suggesting that bacteria sources may include failing septic systems, near channel sources (i.e., cattle in or near streams), and watershed runoff. The higher loads shown for the monitoring site (S002-027, North Fork Crow River at County Road 19 about four miles east of Belgrade) in Figure 4 suggests that the greater sources of bacteria to the reach is occurring from the headwaters watersheds.

Table 6. Total *E. coli* reductions needed to meet TMDLS in the headwaters of the North Fork Crow River

Reach	**% Reduction**	**Estimated existing load (billion MPN/yr)**	**Load reduction (billion MPN/yr)**
North Fork Crow River, Headwaters, Grove Lk to CD 32 (07010204-763)	78	155,311	121,142
North Fork Crow River, CD 32 to Rice Lake (07010204-764)	60	327,663	196,598

Downstream nutrient impairments

The Rice Lake Nutrient TMDL estimated that the average annual total phosphorus (TP) load must be reduced by 44% to achieve the TP standard for the lake. The estimated annual TP load from the headwaters watersheds is estimated from the EPA's Pollutant Load Estimation Tool (PLET). For the purpose of this NKE plan, it is assumed that the existing load and load reduction needed are proportional to the watershed area. The annual TP load for the headwater's watersheds estimated using PLET is 80,320 pounds per year (lbs/yr). Based on this load, the TP load reduction goal for the headwater's watershed is 35,475 lbs/yr toward achieving the Rice Lake nutrient TMDL.

Implementation strategies

The implementation strategies, schedule, milestones, assessments, costs, and the estimated pollutant reductions by practice are described in Table 7. The plan is estimated to yield the reductions needed to reach water quality standards within 10 years. Estimated pollutant reductions by practice were calculated using the EPA's PLET for decision-making purposes. Reductions for this plan were calculated using the PLET combined efficiencies; therefore, the summation of individual practice estimates may not equal the reductions estimated for the entire plan.

Monitoring tasks are described in Element i. Monitoring, including costs, locations, milestones, and specifics (Table 19, Table 20, Table 21, and Table 22).

Eligibility for funding refers to current practice eligibility in 2023, as described in the EPA's 2014 Guidance and Minnesota's 2021 NSPMP. Practices are subject to a final verification at time of any financial award and must meet all current and necessary rules and guidelines for eligibility. Any stormwater activities that take place in an MS4 permitted conveyance system are not eligible for Section 319 grant funding, nor can they be used for match funding. Monitoring to determine the effectiveness of this plan and the BMPs implemented is eligible for Section 319 funding. General diagnostic and exploratory monitoring activities are not eligible for funding or match purposes.

Table 7. Implementation types, eligibility, activities, schedule, milestones, assessment criteria, costs, and estimated per practice pollutant reductions (PLET, 2022)

Type	319 Eligibility	Activity	Milestones					Assessment	Cost	Reductions		
			2-year (2023)	4-year (2025)	6-year (2027)	8-year (2029)	10-year (2031)			N lbs/yr	P lbs/yr	TSS t/yr
Cropland	Y	Alternative Tile inlet - 450 outlets	Door knock and outreach for those interested in alternative inlets	35 Inlets installed	69 inlets installed	173 inlets installed	173 inlets installed	# alternative inlets installed	$534,375.00	89690.16	20252.05	308.38
	Y	Grassed waterways (70,240.4 feet)	Visit 10 targeted landowners	4,214.4 feet of grassed waterways	22,008.7 feet of grassed waterways	22,008.7 feet of grassed waterways	22,008.7 feet of grassed waterways	# feet of grassed waterways	$292,700.00	88982.86	20077.53	245.85
	Y	Implement 351 water and sediment control basins (WASCOBs)	Landowner outreach for WASCOB implementation	87 WASCOBs installed	88 WASCOBs installed	88 WASCOBs installed	88 WASCOBs installed	# WASCOBs installed	$1,645,000.00	88929.99	20064.39	241
	Y	Multipurpose drainage management detention and retention storage (7 systems at 100 acres/system treated) NOT FOOTPRINT	Initial project development and engineering	First Regional storage site complete	Second storage site complete	Third storage site complete	Fourth storage site complete	# acres converted to water storage	$278,000.00	141.12	30.72	10.77
	Y	Alternative ditches (35,120.2 feet of ditch OR 6 miles OR 7.24% of ditches in two stage/alt ditching)	Initial engineering for 2-stage ditch	Construction of 8,780.05 feet 2-stage ditch	Construction of 8,780.05 feet 2-stage ditch	Construction of 8,780.05 feet 2-stage ditch	Construction of 8,780.05 feet 2-stage ditch	# feet converted to 2-stage ditch	$878,000.00	86557.09	19526.01	0.47
	Y	Manure management plans implemented (2099.74 acres in Sedan Brook Subwatershed; 1795 acres in -0103 CD 7 Subwatershed) (3266.085 acres - 0104 CD 7 NFCR)	420 acres cropland managed under plan in Sedan Brook 653 acres cropland managed under plan in CD 7	Additional 420 acres cropland managed under plan in Sedan Brook and additional 653 acres cropland managed under plan in CD 7	Additional 420 acres cropland managed under plan in Sedan Brook and additional 653 acres cropland managed under plan in CD 7	Additional 420 acres cropland managed under plan in Sedan Brook and additional 653 acres cropland managed under plan in CD 7	Additional 420 acres cropland managed under plan in Sedan Brook and additional 653 acres cropland managed under plan in CD 7	# acres managing nutrients on fields	$15,000.00	1633.21	752.9	0.12
	Y	Grade Stabilization (38,632 ft, or a footprint of 38.63 acres OR 7.32 miles OR 8.8% of altered watercourses identified with the watershed health assessment framework [WHAF])	2,602.9 feet of grade stabilization	2,602.9 feet of grade stabilization	6,000 feet of grade stabilization	6,000 feet of grade stabilization	6,000 feet of grade stabilization	# feet of ditch that was stabilized	$241,400.00	17342.94	4252.2	1465.75
	Y	Wetland creation/restoration (40 acres) in -0104 CD 7 NFC	1 wetland restored/created	1 wetland restored/created	1 wetland restored/created	1 wetland restored/created	1 wetland restored/created	# wetlands restored/created	$55,000.00	11.02	1.08	0.22

Type	319 Eligibility	Activity	Milestones					Assessment	Cost	Reductions		
			2-year (2023)	4-year (2025)	6-year (2027)	8-year (2029)	10-year (2031)			N lbs/yr	P lbs/yr	TSS t/yr
	Y	Saturated buffer (39 buffers, approximately 650 ft each)	Install 3 saturated buffers	Install 5 saturated buffers	Install 10 saturated buffers	Install 10 saturated buffers	Install 11 saturated buffers	# saturated buffers installed	$15,000.00	1564.26	356.56	117.66
	Y	No till practices on 20,092 acres	Reach out to minimum of 5 targeted landowners in cover crop areas	875 acres of no till practiced	875 acres of no till practiced	875 acres of no till practiced	875 acres of no till practiced	# acres no till	$287,029.00	2790.27	1060.41	337.4
	Y	Cover crops implemented on 28,096 acres	Reach out to minimum of 5 targeted landowners in cover crop areas	500 acres of cover crops installed	1,000 acres of cover crops installed	2,000 acres of cover crops installed	2,000 acres of cover crops installed	# acres of cover crops enrolled	$255,420.00	3707.49	614.84	215.73
	Y	Buffers - 35,120.2 feet of buffers installed beyond requirements (NOTE: this is treating, not footprints of practice, only 1% of the cropland.)	Target private ditches in need of buffers	Install 2,000 feet of buffer	Install 6,000 feet of buffer	Install 6,000 feet of buffer	Install 6,000 feet of buffer	# feet of buffer implemented	$114,141.00			
Engineering	Y	Grade Stabilization engineering	Initial engineering on JD-1 Br 12 for grade stabilization	Engineering costs associated with grade stabilization	Engineering costs associated with grade stabilization	Engineering costs associated with grade stabilization	Engineering costs associated with grade stabilization	# engineering for streambanks	$20,000.00			
Feedlots	Y*	Feedlots and nutrients: Waste storage systems for feedlots (9 legacy feedlots that need to be closed)	Identify feedlots in need of upgrades/BMPs	Update 1 feedlot	Update 2 feedlots	Update 3 feedlots	Update 3 feedlots	# sq feet of feedlot updated	$85,000.00	86181.73	19387.72	0.47
Monitoring	Y	Effectiveness monitoring			Extra stream monitoring at practice sites to determine BMP effectiveness	Extra stream monitoring at practice sites to determine BMP effectiveness	Extra stream monitoring at practice sites to determine BMP effectiveness	# monitoring sites	$20,000.00			
Admin	Y	.5 FTE for technical work on NKE projects (technical, outreach, administrative, etc.)	1 FTE	1 FTE	1 FTE	1 FTE	1 FTE	# Hours	$918,000.00			
Outreach	Y	Field days for pasture management	Hold 1 field day for pasture management	Hold 1 field day for pasture management	Hold 1 field day for pasture management	Hold 1 field day for pasture management	Hold 1 field day for pasture management	# field days held # attendees	$5,000.00			
	Y	Pasture education (workshop, newsletter, door knocking, etc.)	Door knock 15 residents, 1 workshop	1 workshop	1 workshop	1 workshop	1 workshop	# workshops # attendees # newsletters	$3,000.00			

Type	319 Eligibility	Activity	Milestones					Assessment	Cost	Reductions		
			2-year (2023)	4-year (2025)	6-year (2027)	8-year (2029)	10-year (2031)			N lbs/yr	P lbs/yr	TSS t/yr
	Y	Survey of fencing - follow up monitoring			Windshield survey annually	Windshield survey annually	Windshield survey annually	# surveys % compliance	$2,500.00			
	Y	Outreach for alternative tile inlets	Door knock and outreach minimum of 5 for those interested in alternative inlets	Door knock and outreach minimum of 5 for those interested in alternative inlets	Door knock and outreach minimum of 5 for those interested in alternative inlets	Door knock and outreach minimum of 5 for those interested in alternative inlets	Door knock and outreach minimum of 5 for those interested in alternative inlets	# door knocks # agreements alternative inlets	$3,000.00			
	Y	Outreach for grassed waterways	Door knock and outreach for those interested in grassed waterways	Door knock and outreach for those interested in grassed waterways	Door knock and outreach for those interested in grassed waterways	Door knock and outreach for those interested in grassed waterways	Door knock and outreach for those interested in grassed waterways	# door knocks # agreements grassed waterways	$3,000.00			
	Y	Outreach for WASCOBs	Door knock and outreach for those interested in WASCOBs	Door knock and outreach for those interested in WASCOBs	Door knock and outreach for those interested in WASCOBs	Door knock and outreach for those interested in WASCOBs	Door knock and outreach for those interested in WASCOBs	# door knocks # agreements WASCOBs	$3,000.00			
	Y	Shoreline development outreach and education	Outreach and planning for shoreline restoration	Outreach and planning for shoreline restoration	Outreach and planning for shoreline restoration	Outreach and planning for shoreline restoration	Outreach and planning for shoreline restoration	# door knocks # agreements shoreline restoration	$3,000.00			
	Y	Wetland creation/restoration outreach	Reach out to minimum of 2 landowners with wetlands in need or restoration/ creation	Reach out to minimum of 2 landowners with wetlands in need or restoration/ creation	Reach out to minimum of 2 landowners with wetlands in need or restoration/ creation	Reach out to minimum of 2 landowners with wetlands in need or restoration/ creation	Reach out to minimum of 2 landowners with wetlands in need or restoration/ creation	# door knocks # agreements wetlands	$3,000.00			
	Y	Survey of multistage ditch			Annual ditch inspection	Annual ditch inspection	Annual ditch inspection	# surveys	$2,000.00			
	Y	Manure management education and outreach	Hold 1 Manure management workshop	Hold 1 Manure management workshop	Hold 1 Manure management workshop	Hold 1 Manure management workshop	Hold 1 Manure management workshop	# workshops held # attendees	$3,000.00			
	Y	Ditch inspection to check on grade stabilizations			Drive by survey annually	Drive by survey annually	Drive by survey annually	# surveys % ditch stabilized	$2,500.00			
	Y	Survey of streambank			Survey annually	Survey annually	Survey annually	# surveys	$5,000.00			
	Y	Outreach for saturated buffers	Door knock 10 targeted landowners	Door knock 10 targeted landowners	Door knock 10 targeted landowners	Door knock 10 targeted landowners	Door knock 10 targeted landowners	# door knocks # agreements saturated buffers	$2,500.00			
	Y	Outreach for tillage and cover crops	Reach out to minimum of 5 targeted landowners in cover crop areas	Reach out to minimum of 5 targeted landowners in cover crop areas	Reach out to minimum of 5 targeted landowners in cover crop areas	Reach out to minimum of 5 targeted landowners in cover crop areas	Reach out to minimum of 5 targeted landowners in cover crop areas	# door knocks # cover crop agreements	$3,000.00			

Type	319 Eligibility	Activity	Milestones					Assessment	Cost	Reductions		
			2-year (2023)	4-year (2025)	6-year (2027)	8-year (2029)	10-year (2031)			N lbs/yr	P lbs/yr	TSS t/yr
	Y	Outreach for buffers on private ditches	Target minimum of 5 landowners on private ditches in need of buffers	Target minimum of 5 landowners on private ditches in need of buffers	Target minimum of 5 landowners on private ditches in need of buffers	Target minimum of 5 landowners on private ditches in need of buffers	Target minimum of 5 landowners on private ditches in need of buffers	# door knocks # agreements buffers	$3,000.00			
Pasture	Y	Cattle exclusion fencing from stream to create 16.5' buffer to the stream (33,496 feet of fencing to exclude cattle from stream)	Door knock 40 residents, pasture workshop	3,350 ft of fencing	10,049 ft of fencing	10,049 ft of fencing	10,049 ft of fencing	# feet fencing # door-knock conversations	$239,250.00	406.25	56.34	12.25
	Y	Control Grazing (10,293 acres of control grazing)	Work with targeted ranchers to implement controlled grazing	735.2 acres of controlled grazing	2,205.6 acres of controlled grazing	3,676.1 acres of controlled grazing	3,676.1 acres of controlled grazing	# acres enrolled in controlled grazing	$229,700.00	14351.0	735.1	124.0
	Y	Controlled access (472) stable stream crossing (578) (20 crossings/ accesses installed)	Work with targeted landowners to implement controlled cattle access in ditch buffers	5 crossings installed	5 crossings installed	5 crossings installed	5 crossings installed	# crossings installed	$200,000.00	21.82	2.12	0.41
	Y	Treat 1,239.34 acres of pastureland with grassed buffers, approximately 61,967 ft	Door knock 40 residents, pasture workshop	6,197 feet of grassed buffers	12,393 feet grassed buffers	21,688 feet grassed buffers	21,688 feet grassed buffers	# feet grassed buffers - pasture	$71,882.00	3227.79	241.97	27.78
Shoreline	Y	Shoreline protection (16,500 feet)	Initial site visits and development from 1W1P data	1,500 feet of shoreline restoration	5,000 feet of shoreline restoration	5,000 feet of shoreline restoration	5,000 feet of shoreline restoration	# feet of shoreline restored	$55,000.00	24.05	5.53	0.72
SSTS	N**	Replace/upgrade 201 SSTS systems. Work with counties to educate public with regard to importance of upgrading systems, maintenance, and inspections.	Replace/upgrade 41 SSTS systems. Work with counties to educate public with regard to importance of upgrading systems, maintenance, and inspections.	Replace/upgrade 41 SSTS systems. Work with counties to educate public with regard to importance of upgrading systems, maintenance, and inspections.	Replace/upgrade 41 SSTS systems. Work with counties to educate public with regard to importance of upgrading systems, maintenance, and inspections.	Replace/upgrade 41 SSTS systems. Work with counties to educate public with regard to importance of upgrading systems, maintenance, and inspections.	Replace/upgrade 41 SSTS systems. Work with counties to educate public with regard to importance of upgrading systems, maintenance, and inspections.	# SSTS	$225,000.00	331.68	129.91	
Streambank	Y	Three streambanks restoration restored (9,500.01 feet)	1,900 ft streambank restoration	1,900 ft streambank restoration	1,900 ft streambank restoration	1,900 ft streambank restoration	1,900 ft streambank restoration	# feet streambank restoration	$35,000.00	1155.2	444.75	722

* Section 319 funding eligibility for feedlot fixes is limited to feedlots without NPDES permits

** SSTS replacement can be used for matching funds per the MN Nonpoint Source Pollution Program Management Plan

Element a. Sources Identified

An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the load reductions estimated in this watershed-based plan (and to achieve any other watershed goals identified in the watershed-based plan), as discussed in item (b) immediately below. Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed (e.g., X numbers of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation).

EPA Handbook for Restoring and Protecting Our Waters

The sources of pollution in the Headwaters of Rice Lake Watershed are primarily nonpoint sources. Bacteria loading is mostly from failing rural residential subsurface sewage treatment systems (SSTS), runoff from livestock pastures and barns, and land application of manure to cropland. Nutrient loads occur from the same sources along with nutrient losses from cropland fertilization, upland soil erosion, and near channel and channel erosion. There are several permitted point sources in the watershed; however, their pollutant loads are equal to or less than the load capacities allowed in their permits when operating correctly.

Nonpoint Sources

Land use

Land use is an important component of the sources of nonpoint source pollutants. Land use in the Headwaters of Rice Lake watershed is summarized in Table 8 using the National Land Cover Dataset (NLCD, 2016). The NLCD land use categories were aggregated to match the categories used by PLET. The largest land use/cover categories are cropland followed by pastureland and wetlands.

Table 8. Land use summary in the Headwaters of Rice Lake Subwatershed (NLCD, 2016)

Subwatershed	HUC 12	Urban (21-24)	Cropland (82)	Pastureland (81,71,31)	Forest (41,42,43, 52)	User defined (Wetlands 90,95)	Open Water (11)	Total acres
Sedan Brook	070102040101	441	6,874	2,748	198	2,782	17	13,060
Headwaters NFCR	070102040102	1,326	28,954	4,722	1,100	4,735	895	41,732
CD 7	070102040103	720	6,521	1,555	240	2,148	6	11,190
CD 7-NFCR	070102040104	557	14,036	553	129	888	9	16,172
Skunk River	070102040105	635	13,068	1,854	161	3,351	306	19,375
Headwaters of Rice Lake		**3,678**	**69,453**	**11,432**	**1,829**	**13,904**	**1,233**	**101,530**

The crop land is primarily row crops of corn and soybeans with a smaller amount of hay and small amounts of other crops. The crop distribution is summarized in Table 9 (USDA, 2020).

Table 9. Summary of crops planted by acre in the Rice Lake Headwaters Subwatershed (USDA, 2020)

	Subwatershed					
Crop (acres)	Sedan Brook (70102040101)	Headwaters NFCR (70102040102)	CD 7 (70102040103)	CD 7-NFCR (70102040104)	Skunk River (70102040105)	Total
Corn	2,906	14,184	2,627	7,725	6,945	34,387
Soybeans	2,548	9,106	1,918	3,807	2,764	20,143
Small grains	161	1,099	85	473	397	2,215
Sugar beets	98	84	303	308	522	1,315
Potatoes	82	71	444	-	404	1,001
Hay forage	1,078	4,402	1,139	1,715	2,018	10,352
Idle/ fallow/ other	2	8	7	7	18	42
Total	6,875	28,954	6,523	14,035	13,068	69,455

The estimated pollutant loading from the land uses in the watershed are summarized in by land use in Table 10 and by subwatershed in Table 11.

Table 10. Estimated pollutant loads by land use and source in the Headwaters of Rice Lake Watershed

Sources	N load (lbs/yr)	% N load	P load (lbs/yr)	% P load	Sediment load (t/yr)	% TSS load
Urban	17519	4.1%	2697	3.36%	403	3%
Cropland	194891	45.4%	39513	49.22%	12028	87%
Pastureland	52029	12.1%	4433	5.52%	548	4%
Forest	1096	0.3%	539	0.67%	25	0%
Feedlots	162488	37.8%	32498	40.48%	0	0%
Septic	332	0.1%	130	0.16%	0	0%
Streambank	1216	0.3%	468	0.58%	760	6%
TOTAL	429570	100.0%	80279	100.00%	13763	100%

Table 11. Estimated pollutant loads by subwatershed in the Headwaters of Rice Lake Watershed

Watershed	N lbs/yr	P lbs/yr	TSS t/yr
070102040101 - Sedan Brook	50244	9537	2022
070102040102 - Headwaters North Fork Crow River	175537	32833	5462
070102040103 - County Ditch No 7	48826	9185	1599
070102040104 - County Ditch No 7-North Fork Crow River	81836	14865	2340
070102040105 - Skunk River	73490	13908	2351
TOTAL	**429933**	**80329**	**13774**

Elevated pollutant loads from cropland are likely due to tillage practices, lack of ground cover, excess fertilizer and manure application, increased field slopes, proximity to concentrated flow paths, buffer conditions, and agricultural drainage. Animal husbandry generates manure that is usually stored and then applied to crop land as fertilizers. Correct application of fertilizer and proper storage can reduce or eliminate loading. These farms are considered a source of *E. coli*, as well as nutrient runoff.

Agricultural drainage ditch systems are important infrastructure needs for producing agricultural crops. However, drainage also presents a challenge because of the need to balance the need for drainage relative to possible downstream impacts. Agricultural public drainage systems can easily be overwhelmed with too much water, reflected by an increase in both the amount (i.e., volume) and rate (i.e., peak discharge) of water being conveyed. Within the public drainage system this can lead to an increase in bank failure. Climate change, and the more intense nature of rain events can further exacerbate these effects.

Livestock

Livestock can be sources of nutrient and bacteria pollution to waters. The sources may be from runoff from feedlot facilities (barns and lots), runoff from land applied manure, and pasture runoff. Feedlots are characterized largely by size through state and federal permitting requirements. Large feedlots (generally greater than 1,000 animal units (AUs) operate with federal National Pollutant Discharge Elimination System (NPDES) permits and State Disposal System (SDS) permits that require specific conditions to comply with state law and the federal Clean Water Act. NPDES/SDS-permitted feedlots are required to not discharge manure from their facilities and are, therefore, assumed to not be sources of animal waste to lakes, streams, and ditches. Six feedlots in the Headwaters of the Rice Lake watershed have NPDES permits (Table 16). NPDES/SDS permitted feedlots are considered point sources of pollution and are generally confined-feeding operations. Smaller feedlots without these permits are classified as nonpoint sources of pollution and often are not confined-feeding operations. As such, the risk of manure runoff from the barns, lots, and manure application can be greater. All feedlots with 50 AUs or 10 or more AUs in shoreland areas are required to register. Stearns County and Pope County are delegated counties for Minnesota's feedlot program.

Table 12. NPDES permitted feedlots in the Headwaters of Rice Lake

Permit	Subwatershed	Type animal	Number animals
MNG450089	Sedan Brook	Turkey	76,000
MNF442043	Headwaters NFCR	Swine	3,268
MNG440980	CD 7-NFCR	Swine	3,000
MNG440967	Skunk River	Swine	8,270
MNG440848	Skunk River	Turkey	75,000
MNG441097	Skunk River	Swine	4,500

Table 13 provides a summary of the number of animals registered by the county and state feedlot programs in each subwatershed.

Table 13. Number of animals by type and subwatershed in the Headwaters of Rice Lake (Tableau, Rounded)

Animal type	Sedan Brook	Headwaters NFCR	CD 7	CD 7-NFCR	Skunk River	Totals
Beef cattle	570	3,139	511	320	328	4,868
Chicken		402		80	42,010	42,492
Dairy	850	7,011	708	1,020	305	9,894
Swine		5,424	12	42	13,427	18,904
Turkey	76,000				75,000	151,000
Other		68	3	7	22	122

Feedlots that do not have NPDES/SDS permits and have open lots and pasture near waterbodies have a higher potential for nutrient and bacteria runoff to the waterbodies and are considered critical areas. The number of animals registered for feedlots identified as potential critical areas is shown in Table 14.

Table 14. Number of animals by type in critical loading areas by subwatershed in the Headwaters of Rice Lake

Animal type	Sedan Brook	Headwaters NFCR	CD 7	CD 7-NFCR	Skunk River	Totals
Beef cattle	570	3,139	511	3202	285	4,825
Chicken		402		80	10	492
Dairy	8501	6,426	780	1,0202	305	9,381
Swine		156	12	422	15	605
Turkey					0	0
Other		68	3	7	22	100

[1] 180 dairy cows are pastured, open lots, and in shoreland.

[2] 21 beef cattle, 28 dairy cows, and 37 swine are pastured, open lots, and in shoreland.

Feedlots that properly manage manure in their open lots, pasture, and land application of manure are not sources of excessive nutrients and bacteria. Feedlots where manure is not well managed are sources of excess nutrients and bacteria. Conditions typical of inadequate manure management in excess roof or uphill runoff through open lots, overgrazing of pasture and direct access of livestock to surface waters, and over application of manure to cropland.

Pastures

Animals in poorly managed pastures are a source of *E. coli* and other pollutants. Poor pasture management includes lands that are overgrazed or allow the direct access of livestock to surface waters (NFCR TMDL Report, 2023). Poorly maintained pasture can have significant overland surface flow during heavy precipitation events resulting in manure transport from the pasture. Livestock with direct access to streams and lakes can defecate directly into the water body resulting in direct contamination.

SSTS

Failing SSTS near waterways can be a source of bacteria to streams and lakes, especially during low flow periods when these sources continue to discharge, and runoff driven sources are not active. The rate of failing SSTS for the Headwaters of Rice Lake Subwatershed is estimated to be two failing SSTS per 1,000 acres of land by the MPCA using annual county reports (NFCR TMDL Report, 2023). The number of estimated failing in each subwatershed and the total number of estimating failing SSTS in the watershed is listed in Table 15.

Table 15. Estimated number of failing SSTS in Headwaters of Rice Lake Subwatershed (NFCR TMDL Report, 2023)

Watershed	Number estimated failing SSTS
070102040101 - Sedan Brook	26
070102040102 - Headwaters North Fork Crow River	82
070102040103 - County Ditch No 7	22
070102040104 - County Ditch No 7-North Fork Crow River	32
070102040105 - Skunk River	38
Total	201

Point sources

Wastewater and Industrial

There are two NPDES/SDS permitted dischargers in the Headwaters of Rice Lake summarized in Table 16. Permit requirements dictate that these are not considered sources of pollution when operating within permit limits.

Table 16. NPDES/SDS permits in Headwaters of Rice Lake

Permit number	Permittee	Type	Subwatershed	HUC 12
MNG585271	Brooten WWTP	Wastewater	Skunk River Watershed	070102040105
MN0062871	Lakeside Foods	Industrial	CD 7 Watershed	070102040103

NPDES/SDS Feedlots

NPDES/SDS permitted feedlots in the watershed are described in the Livestock section above. The permitted facilities' information is summarized in Table 12. Permitted facilities must control runoff and are not considered sources of excess nutrients or *E. coli* when operating within permit requirements.

Element b. Estimated reductions

An estimate of the load reductions expected for the management measures described under paragraph (c) below (recognizing the natural variability and the difficulty in precisely predicting the performance of management measures over time). Estimates should be provided at the same level as in item (a) above (e.g., the total load reduction expected for dairy cattle feedlots; row crops; or eroded stream banks).

EPA *Handbook for Restoring and Protecting Our Waters*

This plan, when fully implemented will achieve the estimated reductions needed to meet water quality standards in the Headwaters of Rice Lake Watershed. The activities are described in Table 7.

E. coli reductions

This plan will reduce *E. coli* loading by 48,750.8 billion most probable number per year (MPN/yr) to North Fork Crow River Headwaters, Grove Lake to CD 32 (07010204-763) and by 79,623.2 MPN/yr to North Fork Crow River Headwaters, CD 32 to Rice Lake (07010204-764). The primary reductions will be achieved through the implementation of manure management and the replacement/upgrades of failing SSTS. It is expected that both stream reaches will meet TMDL (NFCR TMDL Report, 2023) load reductions and meet water quality standards when this plan is fully implemented. The tributary reaches to the Headwaters North Fork Crow River listed as impaired are also assumed to achieve the *E. coli* water quality standards with the completion of this plan.

Nutrient reductions

The reductions for the activities described in Table 7 were calculated using the EPA's Pollutant Load Estimation Tool (PLET). The activities were calculated as combined efficiencies and are described below. Estimated reductions for the entire plan are summarized in Table 17. The estimated reductions in phosphorus load from the watershed will achieve the load reduction goal for the Headwaters North Fork Crow River toward meeting the Rice Lake TMDL. The reduction of 51,106 lbs/yr exceeds the TMDL reduction of 41,771 lbs/yr.

For ease of readability, all numbers are rounded to the nearest whole number. These reductions are calculated using combined efficiencies in PLET model.

Table 17. Total estimated reductions for the implementation of this plan (PLET, 2022)

Watershed	N Reduction (lbs/yr)	P Reduction (lbs/yr)	Sediment Reduction (tons/year)
070102040101 - Sedan Brook	28206	5979	1337
070102040104 - County Ditch No 7-North Fork Crow River	44246	10172	1657
070102040105 - Skunk River	40041	8493	1472
070102040102 - Headwaters North Fork Crow River	99637	20779	3659
070102040103 - County Ditch No 7	25221	5683	1131
TOTAL	**237351**	**51106**	**9258**

Element c. Best management practices

A description of the BMPs (NPS management measures) that are expected to be implemented to achieve the load reductions estimated under paragraph (b) above (as well as to achieve other watershed goals identified in this watershed-based plan), and an identification (using a map or a description) of the critical areas (by pollutant or sector) in which those measures will be needed to implement this plan.

EPA *Handbook for Restoring and Protecting Our Waters*

The best management practices (BMPs) and associated implementation activities are described in Table 7. Core activities will include the management of feedlot runoff, pasture runoff, land application of manure and fertilizer, soil health practices including reduced tillage, nutrient management, cover crops, and permanent cover, and SSTS upgrades and replacements.

The BMPs to be implemented to address the *E. coli* impairments are described in Table 18. The BMPs encompass a combination of agricultural and SSTS practices.

Table 18. BMP descriptions for BOC

BMP	BMP Description	Critical Area
SSTS upgrades	Repairing or installing a new septic system to property treat wastewater.	SSTS upgrades are a requirement for all the lakes and stream within the study area. Imminent public health threats, known failing systems closets to riparian areas and systems with no information within the last 10 years.
Riparian buffers	An area of native vegetation along the water's edge.	The critical area for shoreland buffers is riparian lots with less than 75% native buffers/shoreline.
Exclusion fencing	Funds the installation of fencing to exclude livestock from sensitive areas.	Anywhere livestock has access to the stream.
Heavy use protection	Heavy Use Area Protection is a way to stabilize a ground surface that is frequently and intensively used by people, animals, or vehicles.	Animal Operations within 1,000 ft of shoreline areas. *
Access control	Access control includes temporary or permanent exclusion of animals, people, vehicles, and equipment from an area. Payments are made to the landowner for the land taken out of production.	Animal Operations within 1,000 ft of shoreline areas. *
Prescribed grazing	The controlled harvest of vegetation with grazing or browsing animals, managed with the intent to maintain or improve water quality and quantity.	Animal Operations within 1,000 ft of shoreline areas. *
Pit Closure	Removing manure from a closed operation.	Animal Operations within 1,000 ft of shoreline areas. *
Nutrient/manure Management	Manage rate, source, placement, and timing of plant nutrients and soil amendments while reducing environmental impacts.	Animal Operations within 1,000 ft of shoreline areas. *
Watering facility	A watering facility is a means of providing drinking water to livestock or wildlife and are needed when livestock are excluded from surface waters.	Animal Operations within 1,000 ft of shoreline areas. *

BMP	BMP Description	Critical Area
Well	Installation of a well as an alternate water source for livestock instead of fragile lakes, streams, and wetland areas.	Animal Operations within 1,000 ft of shoreline areas. *

* To preserve the privacy and confidentiality of the landowners, this is meant to describe the critical areas, without identifying individual sites. There are practices selected and targeting in each of the subwatersheds and the numbers of practices, costs, and reductions are included in Table 7.

Critical loading areas

Imminent Public Health Threats (IPHTs) and failing SSTS within the shoreland zone are the most critical loading for phosphorus and for *E. coli*. These systems will be targeted for upgrades and replacements. Pastures located along the creeks are the critical areas for implementation efforts. Areas with higher *E.coli* concentrations will be targeted or prioritized for implementation efforts, in particular the Sedan Brook (-0101) and CD 7-NFCR (-0104) Subwatersheds. Farms with animals, particularly cattle, in pastures and with access to the streams and riparian areas are critical loading points for bacteria.

Projects in these critical loading areas will be the primary focus of attention and these projects will be prioritized over projects with less impact.

Element d. Expected costs and technical assistance

An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon, to implement the entire plan (include administrative, Information and Education, and monitoring costs). Expected sources of funding, States to be used Section 319, State Revolving Funds, USDA's Environmental Quality Incentives Program and Conservation Reserve Program, and other relevant Federal, State, local and private funds to assist in implementing this plan.

It is expected that the full implementation of this plan will be approximately $6.9 million. The estimated individual activities' costs are listed in Table 7.

The North Fork Crow River Watershed District will coordinate and collaborate with individual landowners, agencies, and organizations through their programs to incentivize the protection, restoration, and management of the waterbodies in the Headwaters North Fork Crow River watershed. The activities and BMPs will be implemented through the programs of the watershed district, Natural Resources Conservation Service (NRCS), Pope and Stearns Soil and Water Conservation Districts (SWCDs), and counties and townships.

- Ditch Funds
- Lake Associations
- Clean Water Funds
- Private landowner contributions (cash/in kind)
- SWCD
- One Watershed One Plan (1W1P)
- Watershed District staff time (in kind)

Watershed coordination staff time will be needed to further the goals of this NKE plan. This time will likely come from parts of various positions. The watershed coordination staff time will go to support all aspects of the NKE plan for Headwaters of Rice Lake including technical support, education and outreach, design work, monitoring, and administrative work. The work described will be limited to the Headwaters of Rice Lake NKE planning area. This will be approximately 0.5 FTE per year or a total of 5 FTEs over the 10-year period of this plan.

Element e. Education and outreach

An information/education component that will be implemented to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, implementing and maintaining the NPS management measures that will be implemented.

Education and outreach activities are described in Table 7. The NFCRWD goals include improving stakeholder participation, cooperation, and coordination in implementation.

Element f. Reasonably expeditious schedule

A schedule for implementing the activities and NPS management measures identified in this plan that is reasonably expeditious.

Timelines for proposed implementation are shown Table 7.

Implementation activities described in Table 7 will yield estimated reductions greater than estimated reductions needed to reach water quality standards within 10 years.

Element g. Milestones

A description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented.

The milestones column in Table 7 provide interim, measurable milestones for determining successful implementation of practices.

Element h. Assessment criteria

A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining water quality standards.

The entries in the assessment column of Table 7 provide the measures that will be used to determine the degree that various practices have been implemented in the watershed. The table also provides load reductions and associated costs, which factor into prioritization of activities based on efficiency, both load reduction efficiency and cost effectiveness.

Element i. Monitoring

The monitoring & evaluation component to track progress and evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item (h) immediately above.

The NFCRWD monitoring program includes stream and lake monitoring. The stream monitoring program includes five sites that provide water quality data related to the Headwaters North Fork Crow River watershed. One mainstem and three tributary sites are located within the watershed and one mainstem site is located about two miles downstream of the Headwaters watershed described in this plan. Site information is listed in Table 19.

Table 19. NFCRWD stream monitoring sites for the Headwaters North Fork Crow River watershed.

NFCRWD site ID	EQuIS site ID	Cooperative Stream Gaging site ID	Site name/location	MPCA assessment unit	WQ period of record
GLO	S002-391	18085001	Grove Lake Outlet below dam	07010204-763	1985-2022
JD 1 Br 12	S008-972	18003001	Judicial Ditch 1 at 470th Ave	07010204-763	2005-2022
NFCR Hwy 27	S002-383	18071005	North Fork Crow River at County Road 27	07010204-763	2001-2022
NFCR Hwy 19	S002-027	18066001	North Fork Crow River at County Road 19	07010204-764	2001-2022
CD 32S*	S002-382		County Ditch 32 at 295th St	07010204-578	1986-2014
CD 32N*	S002-386	18072001	County Ditch 32 at County Road 27	07010204-578	2000-2022
CD 7S	S002-386	18070001	County Ditch 7 at 275th St	07010204-580	1986-2022

* The CD 32 site was discontinued at CD 32S and replaced by CD 32N.

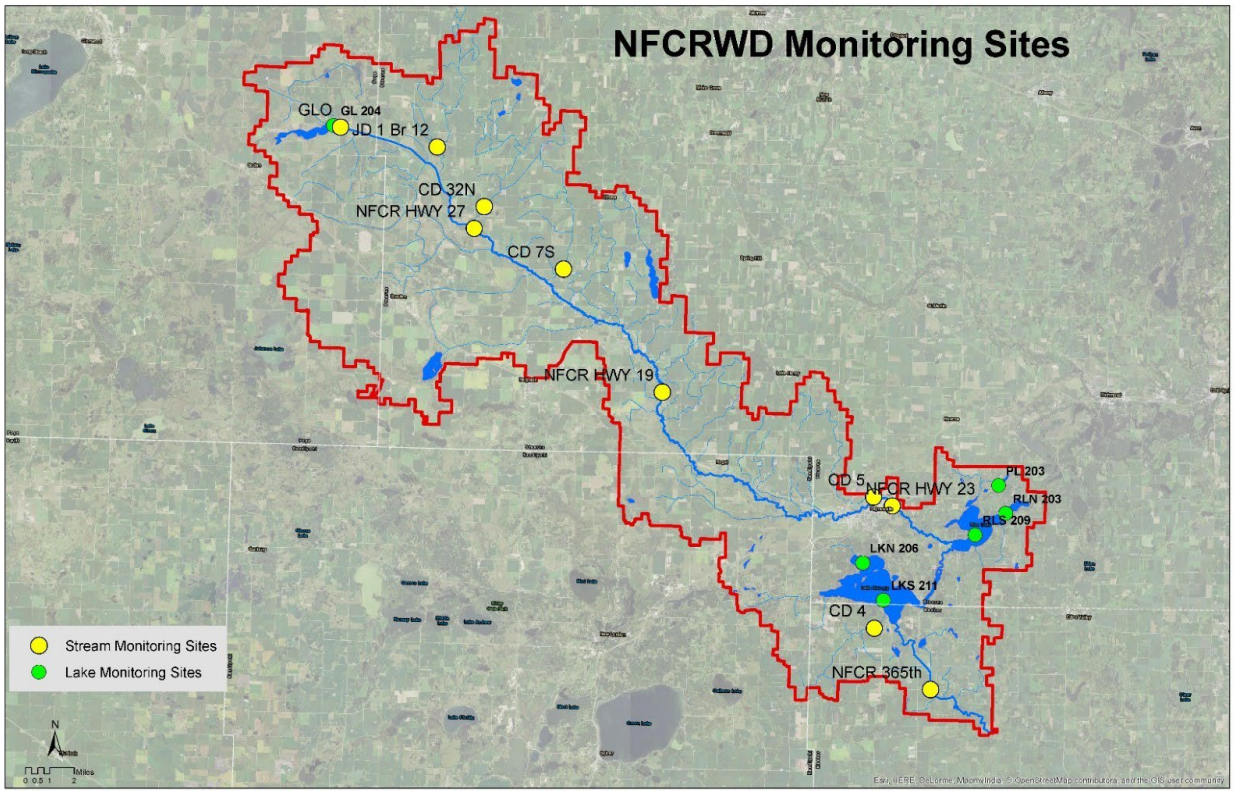
Brief descriptions of the stream monitoring sites are:

- GLO – Located downstream of the Grove Lake dam, on County Road (CR) 39, near 215th Street. Site used for baseline readings for NFCR sites downstream. Staff gauge located on upstream side of dam, located in DNR boat landing. The MPCA/DNR has level logger installed. Samples are collected May through September and tested for TP and total suspended solids (TSS).
- JD 1 Br 12 – Located downstream of 470th Avenue, near CR 18, second culvert on 470th Avenue. Level logger installed 2016. Last culvert on JD 1 branch 12. Samples are tested for TP, TSS, total Kjeldahl nitrogen (TKN), and *E. coli*. Site used for long term BMP change in water quality and agricultural baseline data. Samples collected from ice out through October. Loads calculated for site yearly using FLUX32.
- NFCR HWY 27 – Located near Big Grove Church on CR 27, near Johnfield Road. Located downstream of JD 1 and Branch 1 of CD 32. Samples are tested for TP, TSS, and *E. coli*. Samples are collected May through September.

- NFCR HWY 19 – Located on HWY 19 near Crow River Road. Located downstream of JD 1, CD 32, CD 7, CD 21, CD 29 & CD 37. Level logger installed 2014. Samples are tested for TP, OP, TSS, TKN and *E. Coli*. Samples collected from ice out through October. Loads calculated for site yearly using FLUX32.
- CD 32N – Located on CR 27, near 453rd Avenue. Samples are tested for *E. coli* two times per month from June - August.
- CD 7S – Located on 275th Street, near 413th Avenue. Samples are tested for *E. coli* two times per month from June - August.

The sites are shown in Figure 5.

Figure 5. Monitoring sites in the Headwaters of Rice Lake Watershed (UPDATED MAP COMING)



The MPCA has a Watershed Pollutant Load Monitoring Network site located further downstream on the North Fork Crow River and upstream of Rice Lake. The site information is EQuIS ID S002-356 and CGS ID 18043003. The DNR has level logger installed. Located on Hoffman Street, near Minnie Street (on business Hwy 23, not on Hwy 23 bypass). Loads calculated for site yearly using FLUX32.

The NFCRWD also monitors two lakes related to this NKE. Grove Lake is in the upper part of the Headwaters of Rice Lake Watershed and Rice Lake is downstream of the NKE watershed (Table 20). Rice Lake is the focus of the nutrient reduction goal for the Headwaters of Rice Lake Watershed NKE plan. The lake sites are sampled monthly from May through September for total phosphorus and chlorophyll *a*. Water clarity is also measured with a Secchi disk. The monitoring is done through a cooperative effort between lake association volunteers and NFCRWD staff.

Table 20. NFCRWD lake monitoring sites for the Headwaters North Fork Crow River watershed.

NFCRWD site ID	EQuIS site ID	Site name/location	WQ period of record
GL-204	61-0023-00-204	Grove Lake, northeast end of lake	1985-2022
RLN-203	73-0196-00-203	Rice Lake, northeast end of lake	1980-2022
RLS-209	73-0196-00-209	Rice Lake, southern basin of lake	1980-2022

Table 21 summarizes the total 10-year costs associated with the stream monitoring.

Table 21. Summary of stream monitoring costs for the Headwaters of Rice Lake Watershed.

Tasks	10-year costs
Total Cost for Chemical Sampling (Lab Costs)	$28,300.00
Total Staff Time for Sampling	$16,000.00
Total Mileage	$2,400.00
Shipping	$2,500.00
Data Entry	$24,000.00
Extra Flows	$11,000.00
Total	**$84,200.00**

Table 22 summarizes the total 10-year costs associated with the lake monitoring.

Table 22. Summary of lake monitoring costs for the Headwaters of Rice Lake Watershed.

Tasks	10-year costs
Total Cost for Chemical Sampling *(Lab Costs)*	$4,900.00
Total Staff Time for Sampling	$4,400.00
Total Mileage	$1,700.00
Shipping	$750.00
Total	**$11,750.00**

References

Minnesota Pollution Control Agency (MPCA). (2023). *North Fork Crow River Watershed Total Maximum Daily Load Report*. Retrieved from https://www.pca.state.mn.us/sites/default/files/wq-iw8-62e.pdf

Minnesota Pollution Control Agency (MPCA). (2023). *North Fork Crow River Watershed Restoration and Protection Strategy Report.* Retrieved from https://www.pca.state.mn.us/sites/default/files/wq-ws4-92a.pdf

U.S. Department of Agriculture (USDA) National Agricultural Statistics Service. 2020. CropScape cropland data layer. Retrieved from https://nassgeodata.gmu.edu/CropScape/.