

To:	Kelly Perrine Vermillion River Watershed Joint Powers Organization	From:	Anna Varian Minneapolis, MN
Project/File:	Vermillion 2024 Fish Monitoring 227707045	Date:	December 2 nd , 2024

Reference: Vermillion 2024 Fish Monitoring**Background**

The Vermillion River and the tributaries within its watershed contain a diverse mix of warmwater and coldwater streams. In 2008, the Vermillion River Watershed Joint Powers Organization (VRWJPO) developed a biological monitoring plan to assess the fish and macroinvertebrate communities from coldwater and warmwater streams within the watershed. The VRWJPO has been collecting annual biological data since 2009 to support various efforts within the watershed including the Watershed Restoration and Protection Strategy (WRAPS) and current Watershed Management Plan. Annual data was collected at most sites across the watershed from 2009 through 2015. Wenck Associates, now part of Stantec Consulting Services (Stantec), partnered with the VRWJPO to conduct the fish community monitoring over this time. This dataset established the baseline characteristics of the fish community within the watershed.

In 2016, Wenck (now Stantec) conducted an analysis of the fish community dataset for the VRWJPO with the intent of determining the appropriate sampling frequency for future biological monitoring efforts. The final monitoring recommendations included the development of sentinel sites throughout the watershed, which would be monitored once every two years, and the remaining sites in the watershed would be monitored approximately once every three years. These criteria were used to develop a monitoring rotation for a six-year period (Table 1). The first year of the monitoring rotation was 2016. After initial development of the monitoring rotation, the VRWJPO received input from both the Minnesota Department of Natural Resources (MnDNR) and the Minnesota Pollution Control Agency (MPCA) regarding the planned monitoring schedule of each agency within the watershed. Based on this input, the monitoring rotation was updated to include the monitoring efforts to be conducted by the VRWJPO along with the monitoring efforts by the MnDNR and the MPCA. This technical memo provides a summary and analysis of the fish community monitoring from this year, Year 9 of the data collection rotation (Table 1).

Reference: Vermillion 2024 Fish Monitoring

Table 1: Sampling rotation for all 18 monitoring sites in the watershed by year (year).

Site	Method	Yr 1: 2016	Yr 2: 2017	Yr 3: 2018	Yr 4: 2019	Yr 5: 2020	Yr 6: 2021	Yr 7: 2022	Yr 8: 2023	Yr 9: 2024	Yr 10: 2025
A2	Backpack		X			X			X		
A3	Backpack	X		X		X		X		X	
A4	Backpack			X			X			X	
A5	Backpack	X	*	X		X		X	*	X	
A6	Backpack		X			X			X		
A7	Backpack	X		X		X		X		X	
A8	Barge		X		+	*	X		X		X
A9	Barge	X	*	X		X			X		
A12	Backpack		X		X	*	X		X		X
A13	Backpack		*	X		*	X		*	X	
A14	Barge	X			+	X		X			X
A15	Backpack	X			X			X			X
13-1	Backpack		X		X			X			X
13-2	Backpack			X			X			X	
13-4	Backpack		X			X			X		
13-5	Barge			X			X			X	
14-1	Backpack		X		X		X		X		X
14-2	Backpack	X		X		X			X		

Note: Sentinel sites in bold. Orange cells indicate that Stantec conducted monitoring in 2024. The remaining 2024 sites were surveyed by the DNR.

X : Sites identified in planned rotation for the specific monitoring year

* : DNR monitoring sites as part of their stated monitoring every three years.

+ : Barge sites not accessible in 2019; added to 2020 Rotation

Reference: Vermillion 2024 Fish Monitoring

2024 Monitoring Sites

Five sites were monitored for the fish community in 2024 (Table 2; Figure 1). Four backpack sites (A3, A4, A7, 13-2) and one barge site (13-5) were surveyed by Stantec on September 5th, 6th, and 11th, 2024. The timing of these surveys coincided with the standard sampling period from previous fish community surveys in the Vermillion River Watershed. Stantec acquired the required special permit for fish surveys from the MnDNR (Attachment A) prior to conducting field surveys. Summary data from the 2024 field surveys performed by Stantec has been provided to the MnDNR as required under the terms of the permit.

Historically established site reach lengths were used for 2024 monitoring. All stream fish collections followed the methods outlined in the Minnesota Pollution Control Agency's (MPCA) Development of a Fish-Based Index of Biological Integrity for Minnesota's Rivers and Streams (2014) and the MPCA Standard Operating Procedures for electrofishing (Rev. Feb. 2009). Each site was fished from the downstream point to the upstream point of the reach. All fish collected were identified, sorted, counted, and released. The survey method and sample dates for each reach are presented in Table 2.

Table 2: Sample reach information for the five sites surveyed by Stantec in the 2024 Vermillion River Stream Fish Monitoring project.

Site	Stream Classification	Reach Length (ft)	Survey Method	Sample Date	Total Species	Total Abundance
A3	Southern Coldwater	525	Backpack	9/11/2024	10	102
A4	Southern Headwater	500	Backpack	9/5/2024	6	233
A7	Southern Coldwater	500	Backpack	9/6/2024	14	121
13-2	Southern Coldwater	525	Backpack	9/6/2024	12	168
13-5	Southern Coldwater	1,450	Barge	9/5/2024	14	231

Monitoring Results

A total of 855 fish were collected across the five sites surveyed in 2024. Total catch abundance ranged from 102 fish at site A-3 to 233 fish at site A4 (Table 2). The total number of species caught at each site ranged from 6 to 14. The highest abundance of any species caught was creek chub (*Semotilus atromaculatus*), with 194 individuals (22.7% of total catch abundance for all sites). Other species with high survey abundance (% of total abundance in parentheses) included 98 Iowa darters (*Etheostoma exile*) (11.5%), 95 Green Sunfish (*Lepomis cyanellus*), and 86 bigmouth shiners (*Notropis dorsalis*). Largemouth bass (*Micropterus salmoides*), green sunfish, and white sucker (*Catostomus commersonii*) were captured at all five sites. Brook trout (*Salvelinus fontinalis*) were captured for the first time at two sites (A3 and 13-2); however, this is due to recent stocking conducted by the MnDNR.

Reference: Vermillion 2024 Fish Monitoring

Fish data were submitted to the MPCA for Index of Biological Integrity (IBI) score calculation. The MPCA has assisted the VRWJPO with IBI score calculation for the biological monitoring program since 2011. The stream sites in the Vermillion River Watershed are all within the southern region of the state based on the IBI protocol for Minnesota. The five sites monitored in 2024 are from two different stream IBI categories including Southern Coldwater Streams (A3, A7, 13-2, and 13-5), and Southern Headwater Streams (A4). The 2024 IBI scores are presented in Table 3. Detailed fish abundance and IBI metric scores are provided in Attachments B and C.

Table 3: IBI score summary for 2024 fish community monitoring sites.

Site	MPCA IBI Category	Sample Years ¹	Avg IBI	Min	Max	2024 IBI	IBI Threshold ²
A3	Southern Coldwater	13	49.8	31.2	66.6	59.60	50
A4	Southern Headwater	7	68	52.2	75.0	72.86	55
A7	Southern Coldwater	10	38.0	24.8	45.2	35.50	50
13-2	Southern Coldwater	6	51.0	33.2	71.5	40.66	50
13-5	Southern Coldwater	6	46.8	37.2	61.0	47.13	50

¹ Includes 2024 monitoring year

² IBI scores above the threshold meet water quality standards and IBI scores below the threshold do not meet water quality standards

Reference: Vermillion 2024 Fish Monitoring

Discussion

The discharge at the nearest gage station on the Vermillion River near Empire, MN (05345000) was between 62 and 79 cubic feet per second (cfs) during the surveys. These discharges are higher than the daily medians for this time of year which are between 40 and 44 cfs.

Southern Headwater Streams

One of the 2024 monitoring sites is classified as Southern Headwater Streams. Site A-4 is on an unnamed tributary to the Vermillion River. This site was established in 2009 and there are seven years of monitoring data. Site A-4 has had IBI scores range from 52.2 to 75; this year's score was 72.86 which is above the general use threshold of 55 and above the average score of 68 for this site (Figure 2). The lowest scoring metric was sensitive taxa richness (Sensitive), meaning a low number of species sensitive to anthropogenic disturbances were found. The highest scoring metrics were percent detritivores taxa and serial spawner individuals percent (DetNWQTxPct and SSpnPct). Total abundance in 2024 was 233 fish of 6 different species. Iowa darters were the most abundant fish caught. During the last survey in 2021 nine species of fish were caught. Brook stickleback (*Culaea inconstans*), hybrid sunfish, and central mudminnows were captured in 2021 but not in 2024.

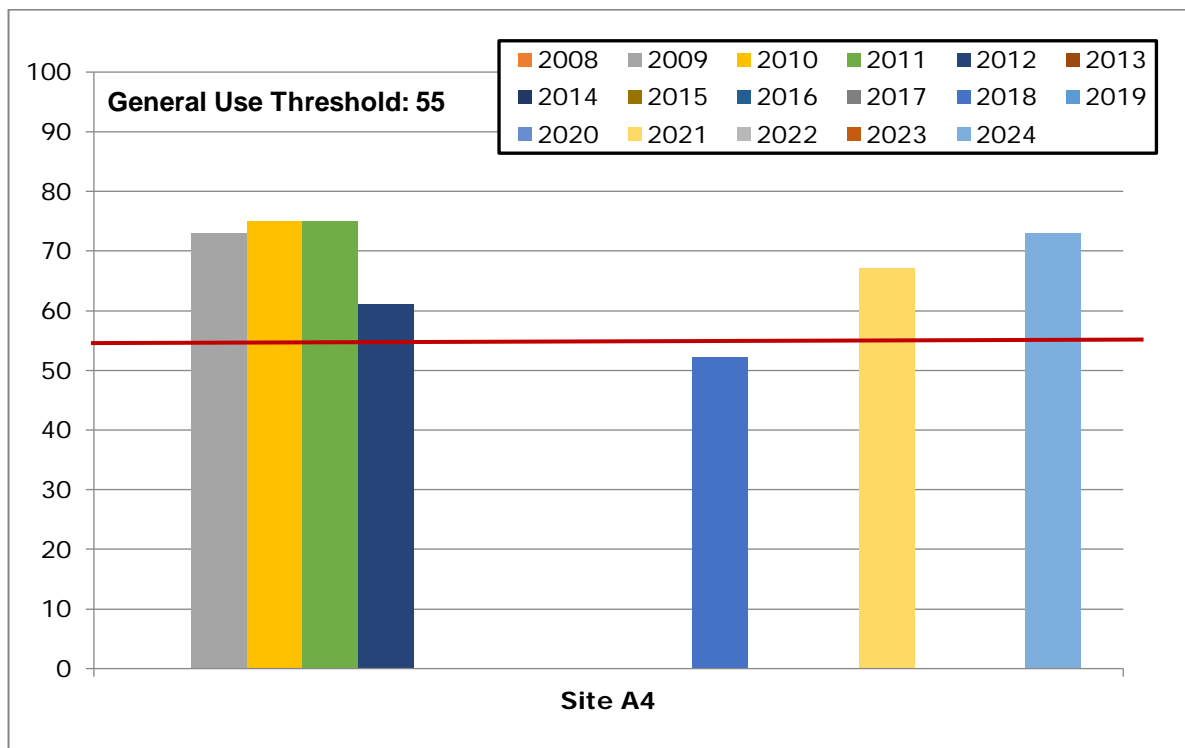


Figure 2: IBI Scores for Southern Headwater Streams.

Reference: Vermillion 2024 Fish Monitoring

Southern Coldwater Streams

Four of the 2024 monitoring sites (A3, A7, 13-2, 13-5) are classified as Southern Coldwater Streams by MPCA for IBI scoring. A comparison of IBI scores across monitoring sites and years for the Coldwater sites monitored in 2024 are provided in Figures 3 and 4.

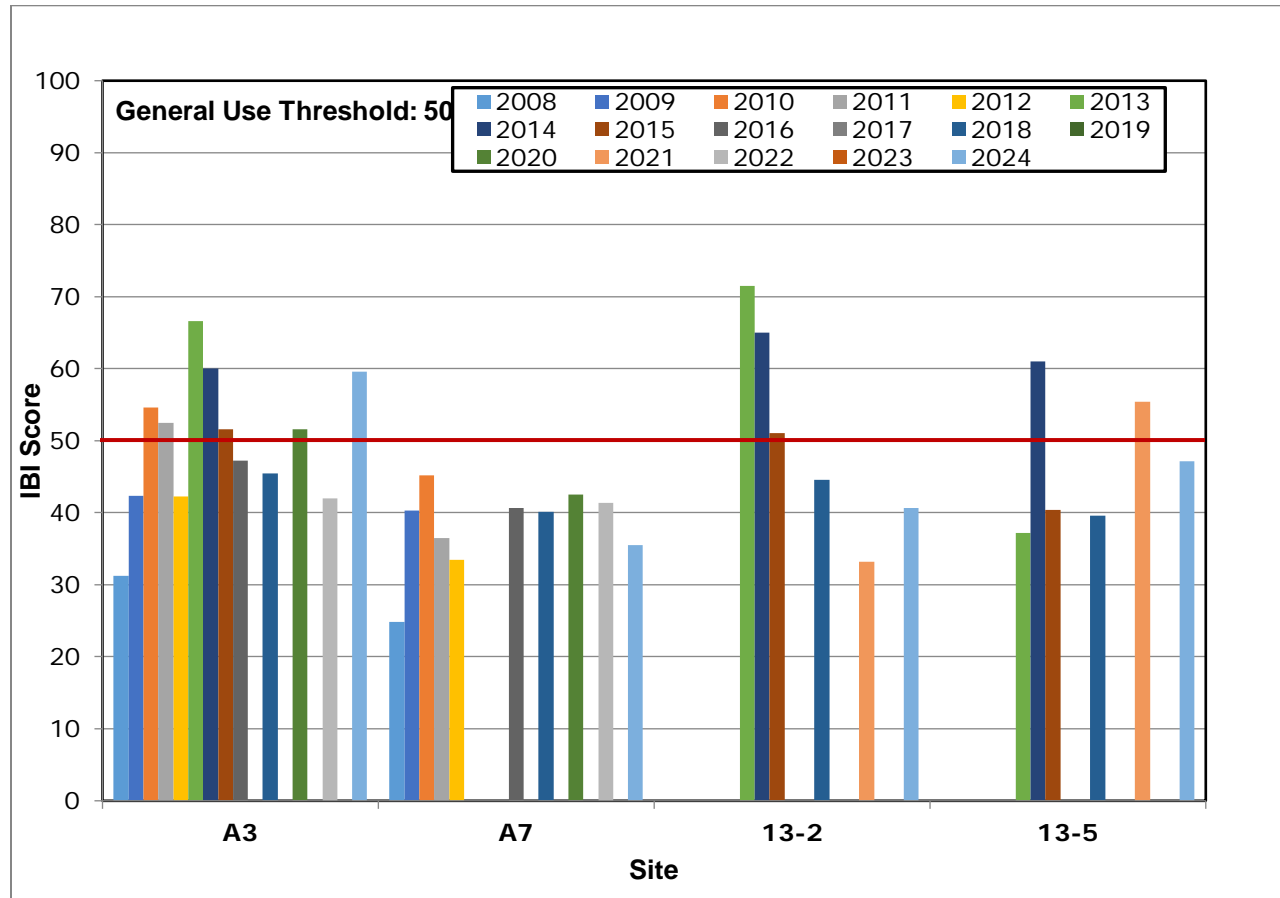


Figure 3: IBI Scores for Southern Coldwater Streams by Site.

Reference: Vermillion 2024 Fish Monitoring

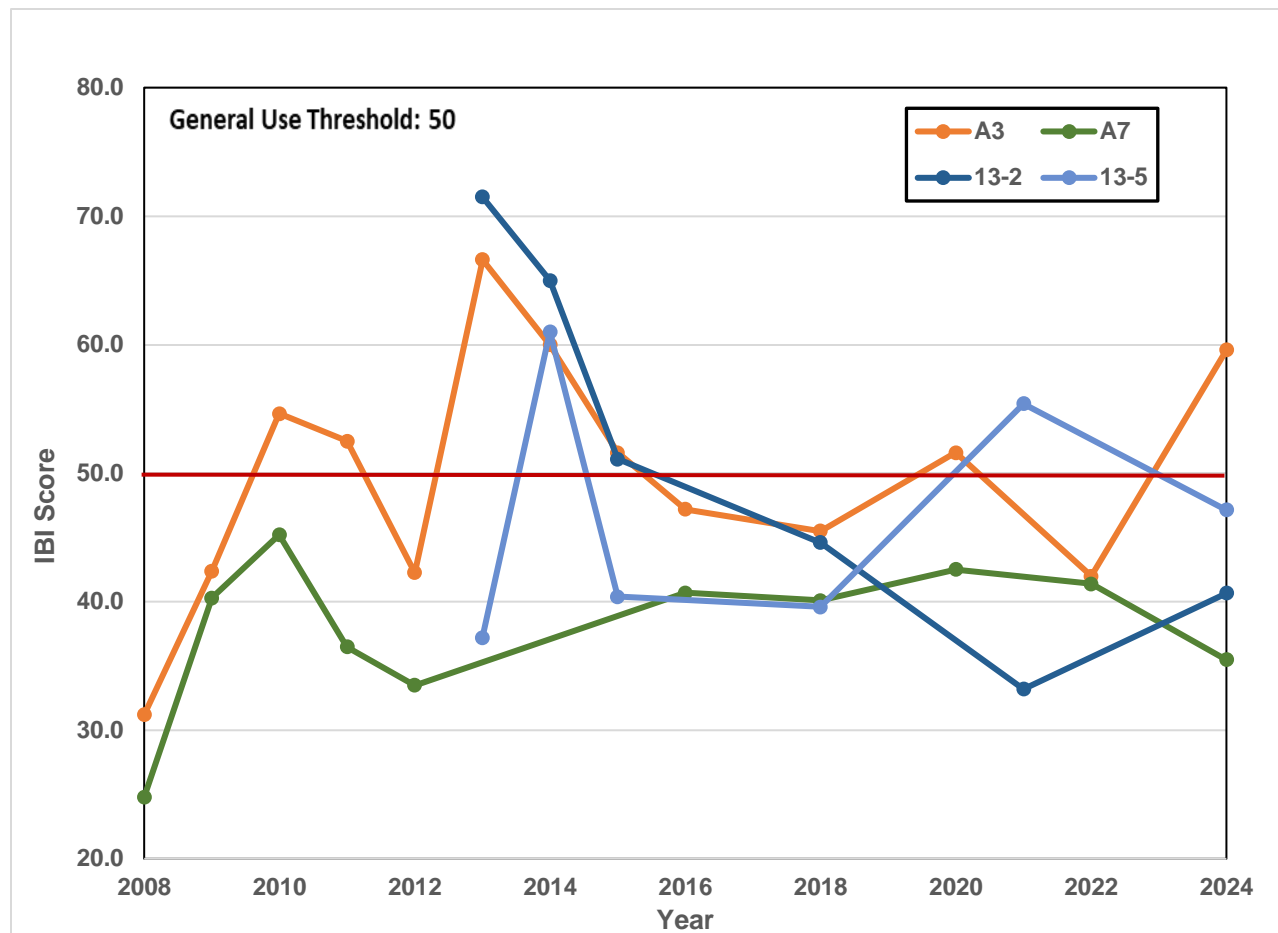


Figure 4: IBI Scores for Southern Coldwater Streams by Year.

Site A3 is located on South Creek east of Flagstaff Avenue and has been surveyed 13 times since 2008. IBI scores for site A3 have been variable throughout the years, the scores for 2024 are higher than average and above the general use threshold (Figures 2 and 3). The higher than average score for 2024 is primarily due to the presence of several recently stocked brook trout. Forty brook trout were sampled at this site in 2024, while brook trout have never been sampled at this location in our previous twelve surveys. Brook trout are a native coldwater species and the Southern Coldwater Streams IBI includes a metric for the percentage of native coldwater taxa. Additionally, the presence of brook trout increased the percent of coldwater sensitive individuals and taxa found in the site which are two other IBI metrics. Removing the brook trout from the IBI calculations will produce a lower score but still not comparable to previous scores because the stocked brook trout are occupying habitat that would have been occupied by other species, thus altering other metrics within the IBI calculation. This site has cold water and habitat suitable for brook trout, but time will tell if the stocked fish reproduce successfully and develop into a healthy population.

Reference: Vermillion 2024 Fish Monitoring

Site A7 is located on North Creek west of Chippendale Ave (State Highway 3) and has been surveyed ten times since 2008. The 2024 IBI score was below average and lower than the last four surveys. This site, along with 13-5, had the most diversity of the 2024 coldwater sites with fourteen species captured. The higher level of diversity does not translate into higher IBI scores due to the presence of tolerant species and historically this tributary has warmer water temperatures than the other coldwater sites usually resulting in lower scores for metrics specifically related to coldwater species. The metric with the largest reduced score between the last survey (2022) and the 2024 survey was tolerant taxa richness (specific to coldwater streams) (CWTol_10DrgArea), this metric has a negative response relationship, meaning that a higher number of tolerant species collected at a site results in a lower metric score. Tolerant species captured in 2024 included black bullhead (*Ameiurus melas*), central mudminnow (*Umbra limi*), common carp (*Cyprinus carpio*), green sunfish, and hybrid sunfish.

Site 13-2 is on South Creek just upstream of the confluence with the Vermillion River and has been surveyed six times since 2013. The 2024 IBI score was below average and below the general use threshold but higher than the last survey in 2021. IBI scores at this site have been some of the most variable with a difference of 38 points between the lowest and highest scores. This site is directly downstream of Site A-2 and stocked brook trout were also sampled at this site, although not in as great a density as those at Site A-2. Four brook trout were sampled as well as two brown trout. The stocked brook trout contributed to higher scores in some metrics as the percentage of native coldwater individuals however other metrics still scored low. Percent of pioneer species (PioneerPct), percent of coldwater sensitive species (CWSensitivePct_10DrgArea) and percent native coldwater individuals (NativeColdPct) all scored low. This site also has cold water and habitat suitable for brook trout.

Site 13-5 is on the Vermillion River and has been surveyed six times since 2013. This is a barge survey site, and due to a wetter than usual summer, water levels were above average resulting in some areas of the site being too deep to sample effectively. The 2024 IBI score was above average but still below the general use threshold. One brown trout was sampled at this site, while bigmouth shiner and white sucker were the most common species sampled. Low scores in percent native coldwater individuals (NativeColdPct), percent of coldwater sensitive species (CWSensitivePct_10DrgArea), and tolerant taxa richness (specific to coldwater streams) (CWTol_10DrgArea) contributed to the overall low score at this site.

The coldwater sites within the Vermillion River watershed have usually received IBI scores below the general use threshold of 50. Only one of the four sites sampled this year reached the general use threshold. As with IBI scores in the past at these Southern Coldwater Stream sites, an absence of native coldwater fish species is the primary factor limiting the potential for higher IBI scores. This year, recently stocked brook trout likely helped Site A-3 reach a score above the general use threshold, although it has had scores above the threshold in the past without brook trout present. The lack of native brook trout and sculpin (*Cottus sps*) will always limit the IBI scores at other sites.

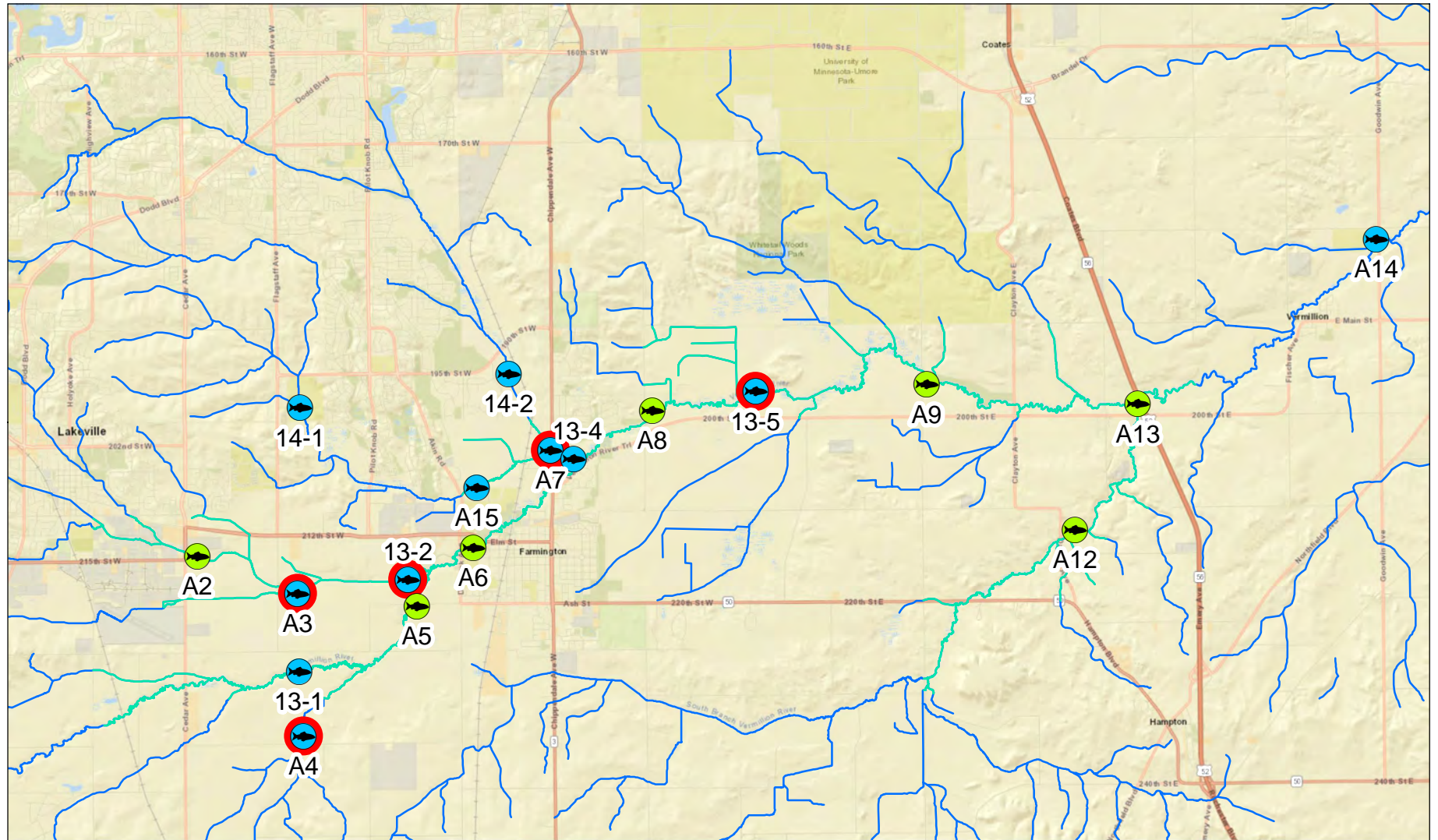
Conclusion

Site A-4, classified as a Southern Headwater Stream, scored above both the IBI general use threshold and its historical average. The site had a low number of sensitive species but high scores for detritivores and serial spawners. Four Southern Coldwater Stream sites were also monitored. Site A3 had a higher than average IBI score due to the presence of recently stocked brook trout. Site A7 had a below-average score despite high species diversity. Site 13-2 showed improvement from the last survey but remained below






Reference: Vermillion 2024 Fish Monitoring

average, with variability in scores influenced by the presence of stocked brook trout. Site 13-5 had an above-average score but still fell below the general use threshold, with low scores in native coldwater species metrics. Overall, coldwater sites generally scored below the general use threshold. The introduction of brook trout at some sites helped improve scores but overall the absence of native coldwater fish species is a limiting factor.

Attachments: Figure 1. 2024 Fish Monitoring Stations
Attachment A. DNR Special Survey Permit
Attachment B. Southern Headwater Stream Sites – Fish Abundance Data and IBI Metric Scores
Attachment C. Southern Coldwater Stream Sites – Fish Abundance Data and IBI Metric Scores



Legend

-  Stantec Monitoring Sites
-  DNR Monitoring Sites
-  2024 Stantec Survey Sites
-  Designated Trout Streams
-  Streams



0 0.85 1.7
Miles
(At original document size of 8.5x11)
1:102,826

Notes

1. Coordinate System: NAD 1983 2011 StatePlane Minnesota South FIPS 2203 Ft US
2. Data Sources: Stantec
3. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors,



Prepared by AV on 2024-06-27

Client: Vermillion River Watershed Joint Powers Organization
Project: Vermillion River Fish Sampling

Figure No.

1

Title

2024 Fish Monitoring Sites

Issuance of this permit does not exempt you from compliance with all applicable federal, state, and local laws when conducting the work authorized by this permit.



STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife – Section of Fisheries
500 Lafayette Road
St. Paul, MN 55155-4020
PH: (651) 259-5236
e-mail: fisheries.permits@state.mn.us

SPECIAL PERMIT NO. 36249
(Fisheries Research)
Date: 2 July 2024

TO WHOM IT MAY CONCERN:

Permission is hereby granted to:

Anna Varian or designee
Stantec Consulting Services, Inc.
2080 Wooddale Dr. Suite 100
Woodbury, MN 55125

to collect fish by backpack and barge electrofishing from the Vermillion River and its tributaries in Dakota County, particularly near Farmington, MN, **August – September 2024** for the purpose of fish community monitoring. See attached map for specific site locations. Work performed under this permit will be coordinated with the area fisheries office.

All equipment should be thoroughly decontaminated before and after being used in other waterbodies.

Fish may be held temporarily in aerated holding tanks, identified, weighed, and measured prior to release at the site of collection. A minimal number of fish may be preserved on site, transported, and possessed as voucher specimens. Any dead or moribund fish shall be removed from the water and disposed of properly.

Fish may not be sold, bartered, or converted to private use. No endangered or threatened species may be collected without a separate permit from the DNR's Endangered Species Coordinator ([List of Endangered and Threatened Species](https://www.dnr.state.mn.us/ets/index.html) <https://www.dnr.state.mn.us/ets/index.html>).

A copy of this permit shall be carried while sampling.

Condition #1 - Applies to All Permits for Work in Any State Water

- Always use caution so you do not introduce aquatic invasive species into any water body. A list of known Infested Waters with species present is available at [MN Infested Waters List](http://www.dnr.state.mn.us/invasives/ais/infested.html) (<http://www.dnr.state.mn.us/invasives/ais/infested.html>).
- **Before starting** work under this permit, you should decontaminate all equipment that has been used in any other waters in Minnesota or other locations (see Decontamination Protocols described in Condition # 4 below for equipment used in infested waters).
- **Before leaving** the water access, you must:
 - **Clean** off all aquatic plants and animals
 - **Drain** water from equipment, including watercraft and livewells, and transport equipment with drain plugs open or removed.

Condition #2 - Applies to All Permits for Live Transport

- Live specimens may be transported only if your permit allows and only in tap, bottled, or ground water that you bring to the collection site. Do not use surface water.
- If it is critical to transport small amounts of surface water, then you must obtain a separate [Water Transport Permit](https://www.dnr.state.mn.us/invasives/ais_watersampling.html) (https://www.dnr.state.mn.us/invasives/ais_watersampling.html). This is a self-issue permit.

Condition #3 - Applies to Collection or Possession of Prohibited Invasive Species

- State laws and rules prohibit the possession and transportation of prohibited invasive species without an additional permit. Lists of prohibited and regulated invasive species, and permit application information can be found at: Prohibited and Regulated Invasive Species (https://www.dnr.state.mn.us/permits/invasive_species/prohibited_regulated.html).
- **If you find a new infestation** of an aquatic invasive species, note the location and take a photo or keep the specimen in a sealed container, and call the DNR Aquatic Invasive Species Specialist for your region (https://www.dnr.state.mn.us/permits/invasive_species/prohibited_regulated.html).

Condition #4 - Applies to Cleaning Equipment When Working in Infested Waters

- Waders, hip boots, other footwear, hook and line (angling), trot lines, hand-held dip nets, backpack electrofishing, and scuba equipment used in infested waters must be cleaned and decontaminated before they are used in any other water body. Tags are not required on this equipment.
- All other traps, nets, and gear used in infested waters **must be tagged** with *Infested Waters Only* tags supplied by DNR and not used in uninfested waters. Tags must be attached to equipment in a manner that prohibits their removal without cutting the tag.
- Watercraft do not need to be tagged, but must be fully decontaminated after work is completed in infested waters, and must not be left in infested waters overnight.
- You must decontaminate tagged equipment using methods specific to the aquatic invasive species present in the water body. Always use caution so you do not introduce additional aquatic invasive species into any water body. The following procedures are required before the tagged equipment may be used in uninfested waters or other types of infested waters:
 - **zebra mussel** – rinse with 140 degree F water at the point of contact for at least 10 seconds, or 120 degrees F for at least 2 minutes, or freeze for at least 48 hours;
 - **faucet snail** – rinse with 140 degree F hot water for at least one minute;
 - **spiny waterflea** – equipment must be thoroughly dry for at least 24 hours;
 - **New Zealand mudsnail** - rinse with 120 degree F hot water for at least one minute; and
 - **Eurasian watermilfoil, flowering rush, starry stonewort, brittle naiad** – remove all plant parts.
- All tagged gear must also be decontaminated after completion of each field season.

Condition #5 - Applies to Work in Both Infested and Uninfested Waters

Option 1

- The permittee may use one set of gear provided:
 - Gear used under this permit shall be used first in uninfested waters, then tagged and used in infested waters; and
 - Gear is decontaminated before moving from one type of infested water to another; and
 - Gear is decontaminated upon final use in infested waters.

Option 2

- The permittee working alternately in infested and uninfested waters shall have two sets of gear – one for infested waters that must be tagged as described above in Condition #4 and one for uninfested waters. Gear that is not required to be tagged for use in infested waters (such as waders and scuba equipment) must be decontaminated completely before being used in an uninfested water body.
- Gear tagged for use in infested waters and gear used in infested waters that has not yet been completely decontaminated must be transported or stored in a way that ensures physical separation from gear for use in uninfested waters. If infested and uninfested gear are carried in the same compartment of a vehicle, then at least one of the types of gear should be contained in such a way that prohibits physical contact between the sets of gear (for example, using a plastic drum or tub). Permittees should take care to wipe up any excess water that drips off infested waters gear. When working at the access of an uninfested water body, equipment used in infested waters must remain secured in the vehicle. Note that this does not permit tags to be removed and the previously tagged gear used in any uninfested waters.

Condition #6 - Intellectual Property Rights

- Samples collected under this permit and any portions or derivatives thereof shall not be sold, assigned, transferred, or otherwise distributed from the custody of the permittee (i.e., shall not be shared with any other person or entity) without prior approval from the MNDNR, unless it is for the purposes of laboratory analyses specified in the study design and the laboratory collaborator does not retain any samples or portions or derivatives thereof after completing the analyses.
- Permittee shall not file any patent application directly covering any samples.
- Permittee may retain the entire right, title, and interest throughout the world to any invention derived or otherwise originating from the samples. With respect to any subject invention in which the permittee retains title, MNDNR will have a nonexclusive, nontransferable, perpetual, irrevocable, royalty free license to practice or have practiced the invention for its governmental purposes. MNDNR shall also have the right to claim royalties resulting from any such invention.

This permit is only for sampling on State property and waters, unless the permittee has explicit permission from the land owners; including the National Park Service, U.S. Fish and Wildlife Service, or County. A separate permit is needed from the Division of Parks and Trails to collect within a State Park. On Minnesota border waters, this permit applies only to the territorial waters of the State of Minnesota. A copy of this permit shall be carried while sampling.

The Area Fisheries Supervisor and Regional Enforcement Manager must be notified by e-mail, preferably 7-10 days in advance of sampling (see e-mail addresses in red below). A hard copy of the notifications shall be attached to the year-end activity report. Your letter of application does not constitute advance notification of your intent to sample.

A report detailing collection activities (species, numbers, and collection sites) will be submitted to MN DNR - Fisheries by **31 January of each year**. A copy of any report or publication resulting from this research will be provided to the Division of Fish and Wildlife upon its completion.

This permit is valid from date of issuance through **31 December 2024**, but may be revoked at any time.

JOHN HOXMEIER
Fisheries Research Supervisor
**John
Hoxmeier**
Digitally signed by John
Hoxmeier
Date: 2024.07.11
13:44:07 -05'00'

I hereby certify that I have read and understand the provisions of this permit and understand that this permit is not valid unless it is signed by me.

Permittee Signature	Title	Date
Varian, Anna Digitally signed by Varian, Anna Date: 2024.07.11 15:33:17 -05'00'	Senior Environmental Scientist	7/11/24

cc: **Division of Fish and Wildlife**
TJ DeBates, East Metro Area Fisheries Supervisor, St. Paul
(e-mail timothy.debates@state.mn.us; phone 651-259-5770)

Brian Nerbonne, Regional Fisheries Manager, St. Paul
(e-mail brian.nerbonne@state.mn.us; phone 651-259-5789)

Division of Enforcement
Capt. Jason Peterson, Regional Enforcement Manager, St. Paul
(e-mail jason.r.peterson@state.mn.us; phone 651-259-5838)

Attachment B: Southern Headwater Stream Site – Fish Abundance Data and IBI Metric Scores

Species	Abundance
	A4
Creek Chub	58
Green Sunfish	50
Iowa Darter	81
Johnny Darter	31
Largemouth Bass	4
White Sucker	9
Total Catch	233
Species Total	6

Metric Name	Metric Description	Score
		A4
DetNWQTxPct	Relative Abundance of Detritivorous Species	16.70
GeneralTxPct	Relative Abundance of Trophic Generalist Species	13.68
SLvdPct	Relative Abundance of Short-lived Individuals	10.60
VtolTxPct	Relative Abundance of Very Tolerant Species	11.01
SSpnPct	Relative Abundance of Serial Spawning Individuals	16.70
Sensitive	Taxa Richness of Sensitive Species	4.18
Total IBI Score		72.86
General Use IBI Threshold		55

Attachment C: Southern Coldwater Stream Sites – Fish Abundance Data and IBI Metric Scores

Species	Abundance			
	A3	A7	13-2	13-5
Bigmouth Shiner			1	85
Black Bullhead		15		1
Blacknose Dace		3		1
Bluegill Sunfish	4	18	7	9
Bluntnose Minnow	1			
Brook Stickleback	1	1	2	
Brook Trout	40		4	
Brown Trout	3	1	2	1
Central Mudminnow	8	17	2	19
Common Carp		1		
Creek Chub	30	14	88	4
Green Sunfish	2	11	7	25
Hybrid Sunfish		3		1
Iowa Darter		6	9	2
Johnny Darter		12	7	17
Largemouth Bass	3	12	24	4
Northern Pike				18
White Sucker	10	7	15	44
Total Catch	102	121	168	231
Species Total	10	14	12	14

Metric Name	Metric Description	Score					
		A3 With Brook Trout	A3 Without Brook Trout	A7	13-2 With Brook Trout	13-2 Without Brook Trout	13-5
CWSensitivePct_10DrgArea ¹	Percent Sensitive Individuals (specific to coldwater streams)	6.88	0.63	0.68	0.42	0.02	2.83
CWTol_10DrgArea	Tolerant Taxa Richness (specific to coldwater streams)	5.05	5.05	0.20	5.10	5.10	1.76
NativeColdTXPct_10DrgArea ¹	Percent Native Coldwater Taxa	14.30	2.53	3.62	14.30	2.63	6.62
NativeColdPct ²	Percent Native Coldwater Individuals	12.02	0.00	0.00	4.07	0.00	0.00
HerbvPct ³	Percent Herbivorous Individuals	5.14	14.30	14.30	4.76	14.30	14.30
SdetTxPct_10DrgArea	Percent Detritivore Taxa	4.98	10.76	10.84	0.00	11.70	13.72
PioneerPct	Percent Pioneer Individuals	11.23	0.00	5.86	12.01	0.00	7.91
Total IBI Score		59.60	33.27	35.50	40.66	33.75	47.13
General Use IBI Threshold		50					

¹ Metric scoring adjusted for watershed area

² Metric value transformed ($\log_{10}+1$)

³ Metric scored discretely