CRWC
CLINTON RIVER WATERSHED COUNCIL

Hello Adopt-A-Stream Volunteers!

Thank you all for volunteering your efforts in 2021 to assist in the valuable and rewarding Adopt-A-Stream (AAS) program. To help us better understand the health of our waters within the Clinton River Watershed, here is a summary of our 2021 monitoring results. Overall, a total of 41 different sites were monitored this year.

Overall macroinvertebrate scores have remained fairly consistent over the past three years. Due to COVID-19, less data is available from 2020, so we will focus on comparing data between 2021 and 2019. In 2021 13 sites were found to be classified as "Good", while 28 sites were classified as "Poor". Mirroring 2019, 19 sites were classified as "Good", and 32 sites were classified as "Poor". As seen in the past, most of the sites that scored in the good and fair range are found in more rural, less developed, and forested regions of the watershed such as Stony Creek, Paint Creek, and the North Branch. Most sites that scored in the poor range are found in more populated areas of the watershed, such as the Red Run. Water bodies in more urbanized areas of the watershed have historically been channelized to a greater extent than those in less populated areas. This results in these water bodies having a less complex substrate composition containing mostly silt and sand that may not support macroinvertebrates as well as more diverse substrates found in less populated regions of the watershed. Additionally, highly developed areas tend to have very flashy water ways, meaning water levels will rise very quickly and fall just as fast, contributing to erosion, loss of habitat and wash out of organisms.

The highest macroinvertebrate score was collected from SP4 in spring of 2021, a site in Stony Creek. The lowest score was found at LSC4 , a site located in the Lake St. Clair direct drainage region. The four most abundant macroinvertebrates found by volunteers are listed below. Net-spinning caddisflies (Group 2 organisms) were the most commonly found macroinvertebrate. They were as common (11+) in 17 sites and as rare (<10) in 13 sites. Midge larvaes (Group 3 organisms) were the second most commonly found macroinvertebrate in the watershed. They appeared as common in 17 sites and as rare in 8 sites. The third most abundant macroinvertebrate found were mayflies (Group 1 organisms). They were as common in 11 sites and as rare in 20 sites. The last most abundant macroinvertebrate found were damselflies (Group 2 organisms). They were as common in 10 sites and as rare in 17 sites.

Four most abundant invertebrates collected throughout the watershed:

- Net-Spinning Caddisfly (*Trichoptera*)
- Midge (*Chironomidae)*
- Mayfly (*Ephemeroptera*)
- Damselfly *(Odonata)*




In partnership with the Izaak Walton league of America (IWLA), CRWC added the Winter Salt Watch program to Adopt-A-Stream in 2020. The Winter Salt Watch program incorporates chloride testing into AAS to further monitor the health of our watershed. Chloride forms when a salt dissolves in water, and although it occurs naturally, it can be harmful to native vegetation and wildlife populations in excessive quantities. The first wave of monitoring for chloride content was conducted by our volunteers during the fall AAS event in 2020. This year, preliminary results show the lowest values of chloride parts per million (PPM) in the Stony creek subwatershed and on the highest values in the Clinton River East and Red Run subwatersheds.

Land development and impervious surfaces can have dramatic impacts on water quality parameters like chloride. The more roads and sidewalks, the more salt is used in the winter, for example. Stony Creek subwatershed is approximately 22% developed, while Clinton River East subwatershed is 77% developed, and Red Run is 97% developed. It makes sense then that chloride would be higher in more developed areas of our watershed. We will continue to collect chloride data through the Salt Watch program into the future to monitor for changes over time.

To refresh your memories, after we collect the macroinvertebrates from the stream and identify them, we can then calculate a "Stream Quality Score" or "Macroinvertebrate Score" and rank the stream location (see Appendix A). The scores and classifications I refer to on the first page can be seen on the graph below (Figure 1.). Also found below are the stream quality graphs from our 2020 (Figure 2) and 2019 (Figure 3) spring and fall results. For site locations and ID, please refer to the next page (Table 1). CRWC staff is currently working on looking at long-term trends with our AAS data and analysis which will be shared with everyone and available on our website at a later date. In the meantime, for further historic data or questions, please contact me at any time or take a look at the data for the previous years on our website: https://www.crwc.org/programs/volunteer/adopt-a-stream

Thanks Again,

Eric Diesing
Watershed Ecologist

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Program Assistant

Table 1: Site ID and Locations for the 2021 Monitoring Locations

Water Body	Site ID	Location
North Branch	NB1	Wolcott Mill
Cottrell Drain	LSC4	Southwest corner of Jefferson and Donaldson
Gloede Drain	CREW10	21 Mile and Garfield Rd
Clinton River	CM11	Adams Rd- Quail Ridge
Clinton River	CM9	Behind CRWC Office
North Branch	NB16	Camp Rotary; Wolcott Mill Metropark
Clinton River	CREW12	Behind Partridge Creek Mall
Paint Creek	SP8	Upstream of Kings Cove Bridge off Tieken
Clinton River	CM6	Yates Park
Price Brook Drain	CREW8	26 Mile and Hayes
Stony Creek	SP4	31 Mile/ E. of Mt. Vernon
Plumbrook Drain	RR11	Fieldcrest Lane, Sterling Heights
Clinton River	CREW6	Clinton River Rd. at Dodge Park
Paint Creek	SP2	Children's Park Lake Orion
Kuku Creek	CREW11	18 and Garfield
East Coon Creek	NB3	Armada Middle school
Clinton River	UC2	Kimball Preserve
Stony Creek	SP5	West Branch, Oakland Township
Stony Creek	SP15	Van Hoosen Museum
Stony Creek	SP18	Lakeville; Rochester Rd and Milmine
Galloway Creek	CM4	Northwest Corner of Perry and Giddings
Clinton River	CM5	Southwest Corner of Avon and Livernois
Paint Creek	SP1	Stanton and Newman Rd
Clinton River	UC6	Deerhill Dr.
Clinton River	UC1	6815 Dixie Hwy
Chrissman Drain	RR6	18 1/2 Mile and Hillview Rd
Big Beaver Creek	RR4	James Nelson Park
Clinton River	CM3	Riverside Park Auburn Hills
Paint Creek	SP9	Rochester Public Library
Galloway Creek	CM10	Oakland University
Clinton River	CM12	Yates Cider Mill
McBride Drain	NB15	Macomb Rec. Center
Sashabaw Creek	UC3	Pine Knob Rd
Clinton River	UC5	Airport and Elizabeth Lake Rd
Clinton River	UC7	Townsend Lake
Big Beaver Creek	RR9	Ryan Rd
Stony Creek	SP6	Lake George Rd and Predmore Rd
Paint Creek	SP20	Roch. Municipal Park
Gallagher Creek	SP25	Gallagher Rd
Paint Creek	SP26	Dutton Rd
Clinton Middle Branch	CREW5	Waldenburg Park

Figure 1: Bar Graph of Macroinvertebrate Scores from Spring and Fall 2021.

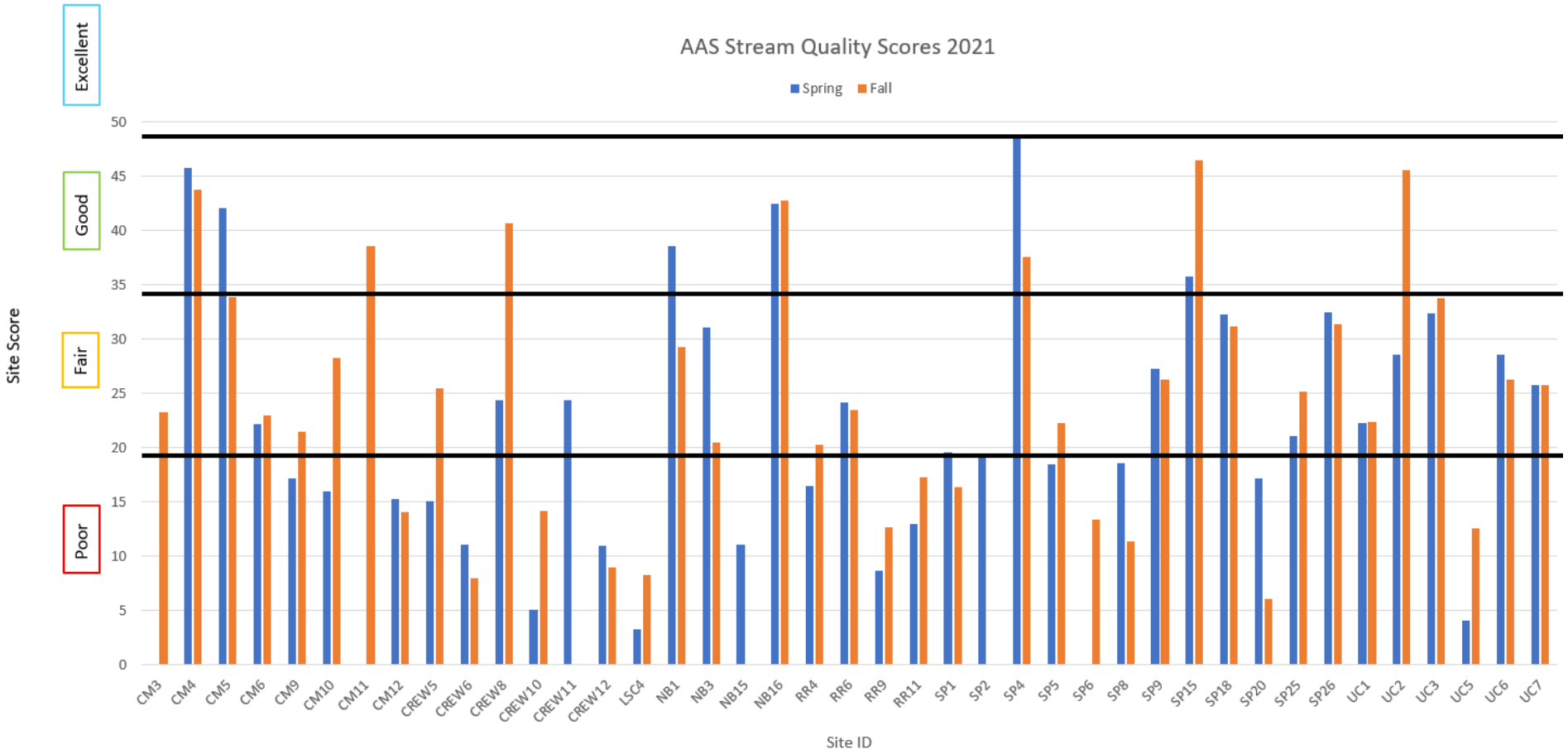


Figure 2: Bar Graphs of Macroinvertebrate Scores from Fall 2020.

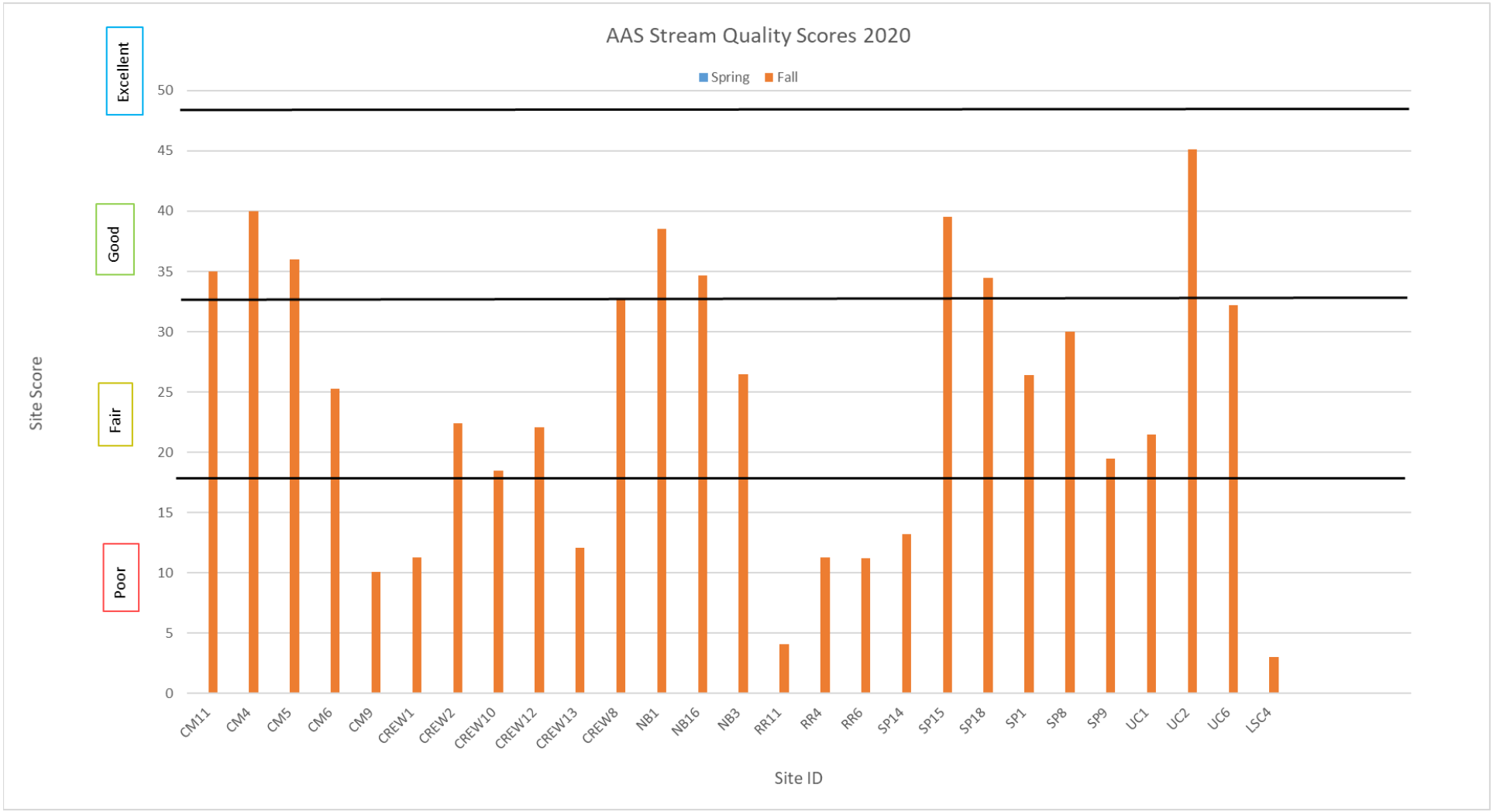
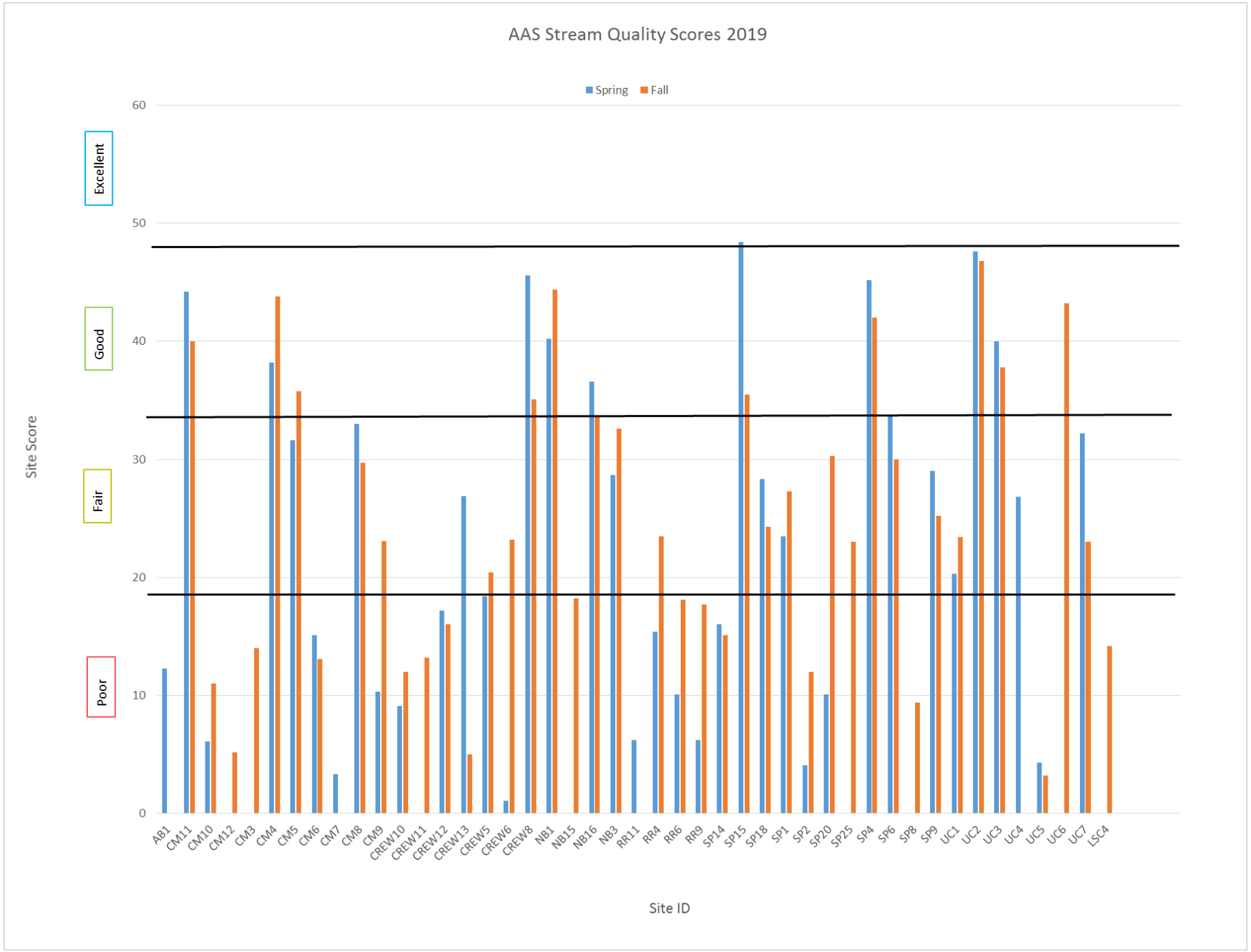


Figure 3: Bar Graphs of Macroinvertebrate Scores from Spring and Fall 2019.



APPENDIX A: Macroinvertebrate Data Form

Site ID or Location: _____

Date: _____

Identification and Enumeration

Use the codes "R" (rare) = 1-10, or "C" (common) = 11 or more when recording the number of individuals in each taxonomic group.

Group 1: Sensitive

____ Caddisfly larvae (Trichoptera) *EXCEPT Net-spinning caddisflies
____ Hellgrammites (Megaloptera)
____ Mayfly nymphs (Ephemeroptera)
____ Gilled (right-handed) snails (Gastropoda)
____ Stonefly nymphs (Plecoptera)
____ Water penny's (Coleoptera)
____ Water snipe fly (Diptera)

Group 2: Somewhat-Sensitive

____ Alderfly larvae (Megaloptera)
____ Beetle adults (Coleoptera)
____ Beetle larvae (Coleoptera)
____ Black fly larvae (Diptera)
____ Clams (Pelecypoda)
____ Crane fly larvae (Diptera)
____ Crayfish
____ Damselfly nymphs (Odonata)
____ Dragonfly nymphs (Odonata)
____ Net-spinning caddisfly larvae (Trichoptera)
____ Scuds (Amphipoda)
____ Sowbugs (Isopoda)

Group 3: Tolerant

____ Aquatic Worms (Oligochaeta)
____ Leeches (Hirudinea)
____ Midge larvae (Chironomidae)
____ Pouch snails (Gastropoda)
____ True bugs (Hemiptera)
____Other true flies (Diptera)

STREAM QUALITY SCORE

(metric created by MiCorps, www.micorps.net)

Group 1
____ # of R's * 5.0 = ____
____ # of C's * 5.3 = ____
Group 1 Total = ____

Group 2
____ # of R's * 3.0 = ____
____ # of C's * 3.2 = ____
Group 2 Total = ____

Group 3
____ # of R's * 1.1 = ____
____ # of C's * 1.0 = ____
Group 3 Total = ____

Total Stream Quality Score = _____
(Sum of totals for groups 1-3; round to nearest whole number)

Excellent (>48)
Good (34-48)
Fair (19-33)
Poor (<19)

Identifications made by: _____

Identifications verified by:_____