



MICROPLASTIC CONCENTRATIONS IN A CENTRAL ILLINOIS URBAN STREAM

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BACKGROUND

- Microplastics are a pervasive issue in many types of aquatic environments
- Continually accumulating in landfills and the environment
- Have a very long residence time
- Known to adsorb and leach toxic chemicals

KNOWLEDGE GAP

- Freshwater studies have tended to focus on larger, freshwater, urban rivers (Table 1)
- Studies have reached differing conclusions on the impact of seasonality and watershed characteristics on microplastic concentrations

Table 1: Microplastic Concentrations in urban rivers

Location	Avg. Discharge (m ³ /s)	Avg. Microplastic Concentration (MP/m ³)
Chicago River ¹	16.5	1.94 MP/m ³
Danube River ²	6499	0.32 MP/m ³
Seine River ³	500	30 MP/m ³

RESEARCH QUESTIONS

- 1) What are the microplastic types and concentrations in an urban stream system?
- 2) How do watershed characteristics and seasonality affect microplastic concentrations?

ACKNOWLEDGEMENTS

Thanks to A. Heath and E. Schukow for help in the field. L. McGinnis for help in the lab. Permission given by City of Bloomington and Millennium FC. This project was funded by the Illinois State University Graduate School and a Geological Society of America Graduate Student Research Grant.

STUDY AREA

- Sampled seven sites along Sugar Creek and its tributaries in Bloomington/Normal, Illinois (Fig. 1)
- Includes locations before and after a wastewater treatment plant (WWTP) (Sites 6 and 7)
- Average discharge: 2 m³/s

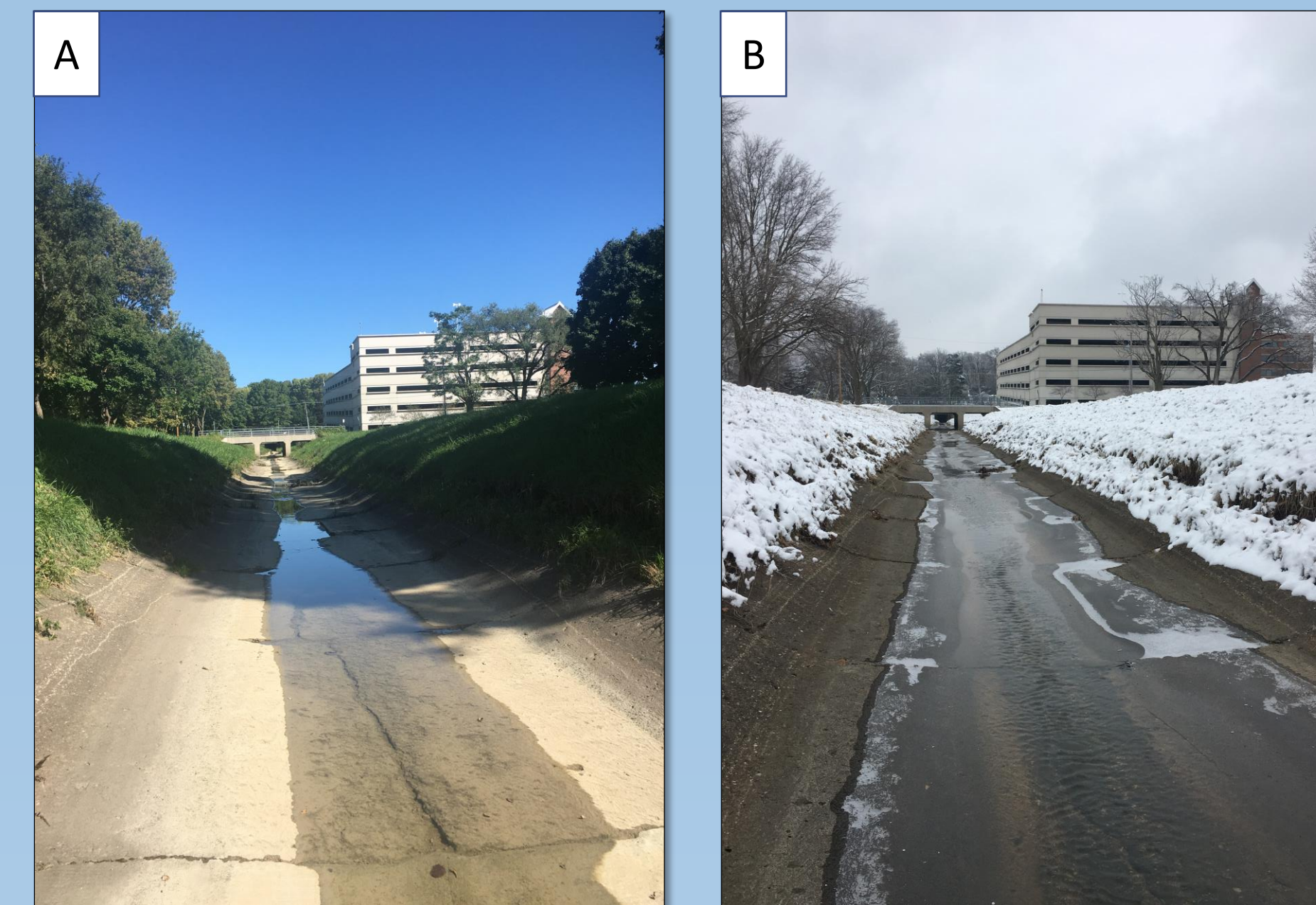
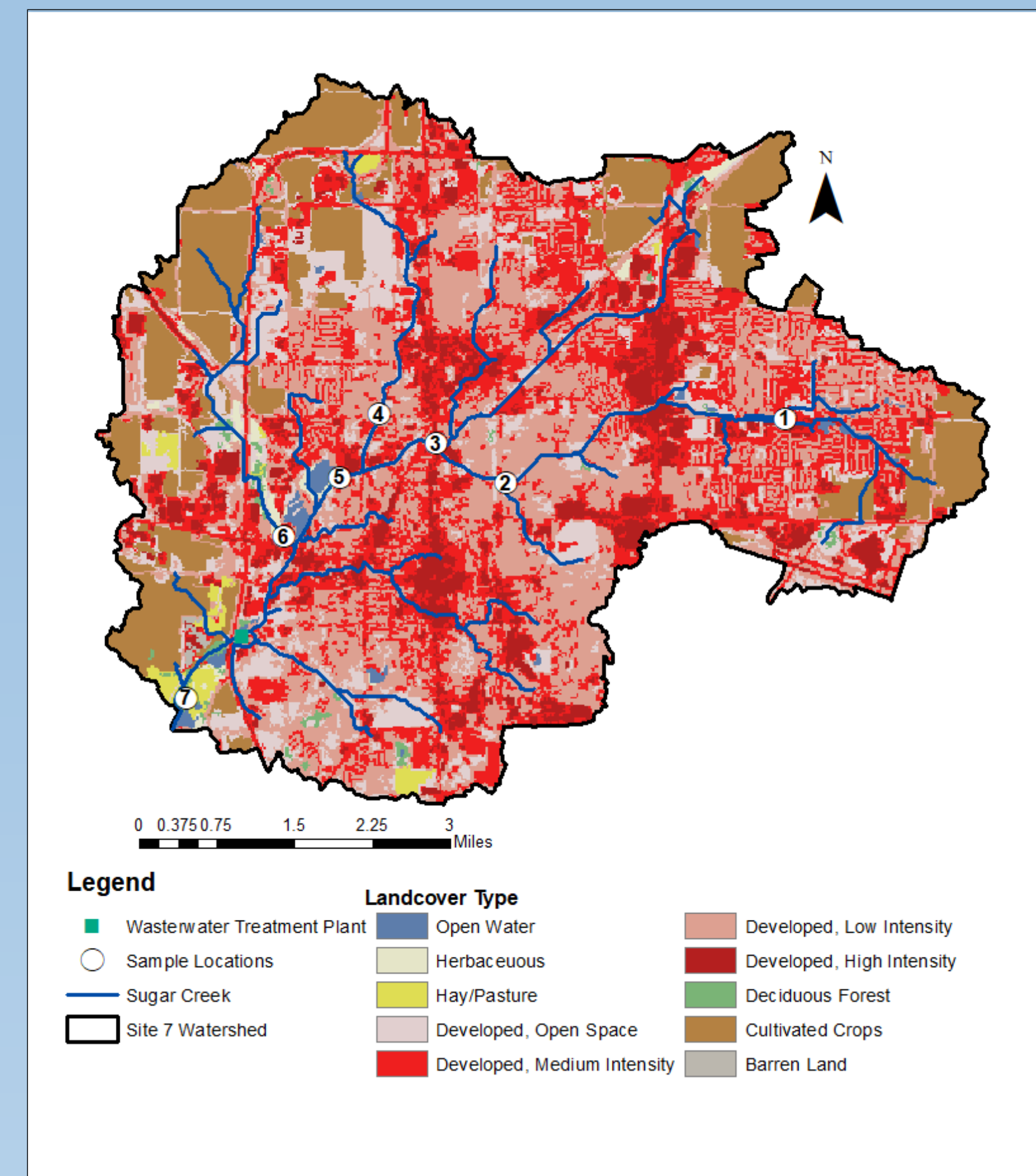
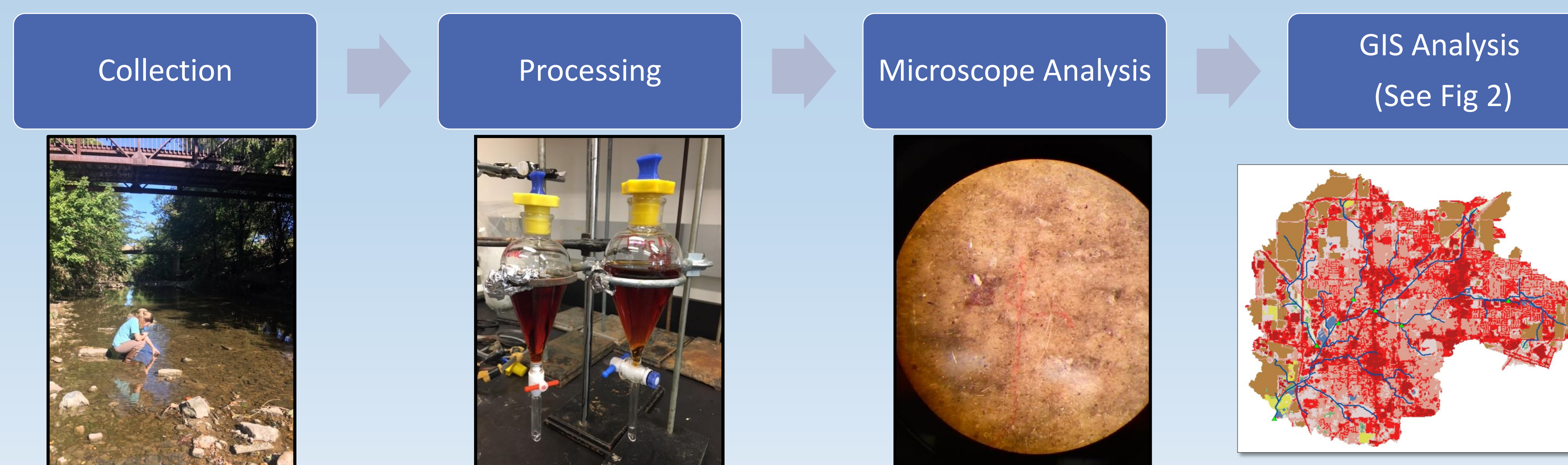


Figure 1 (left): The headwaters and tributaries of Sugar Creek are within Normal and Bloomington, Illinois. Site 7's watershed encompasses the entirety of the study area. This figure also illustrates that the majority of the study area is developed.

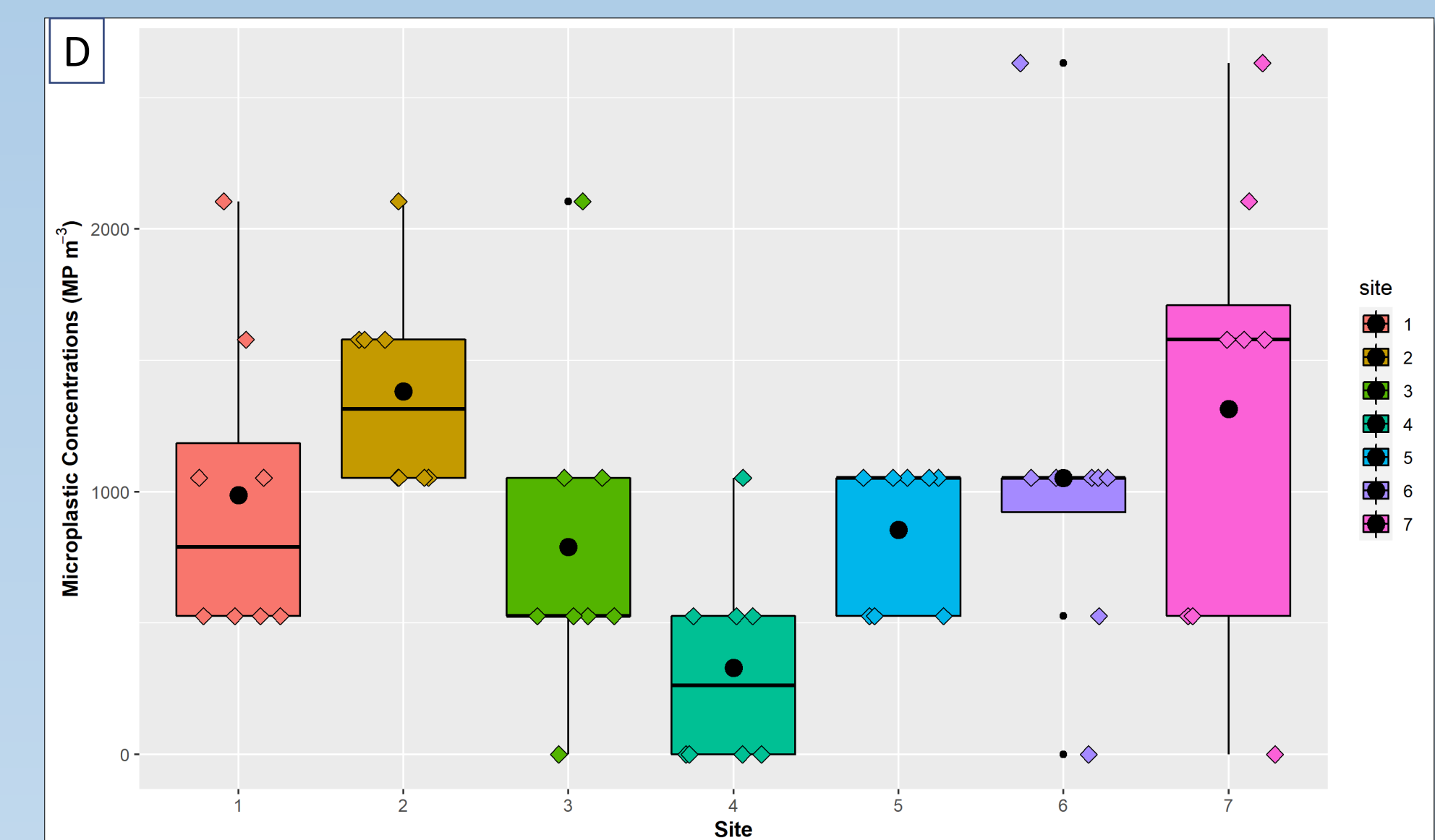
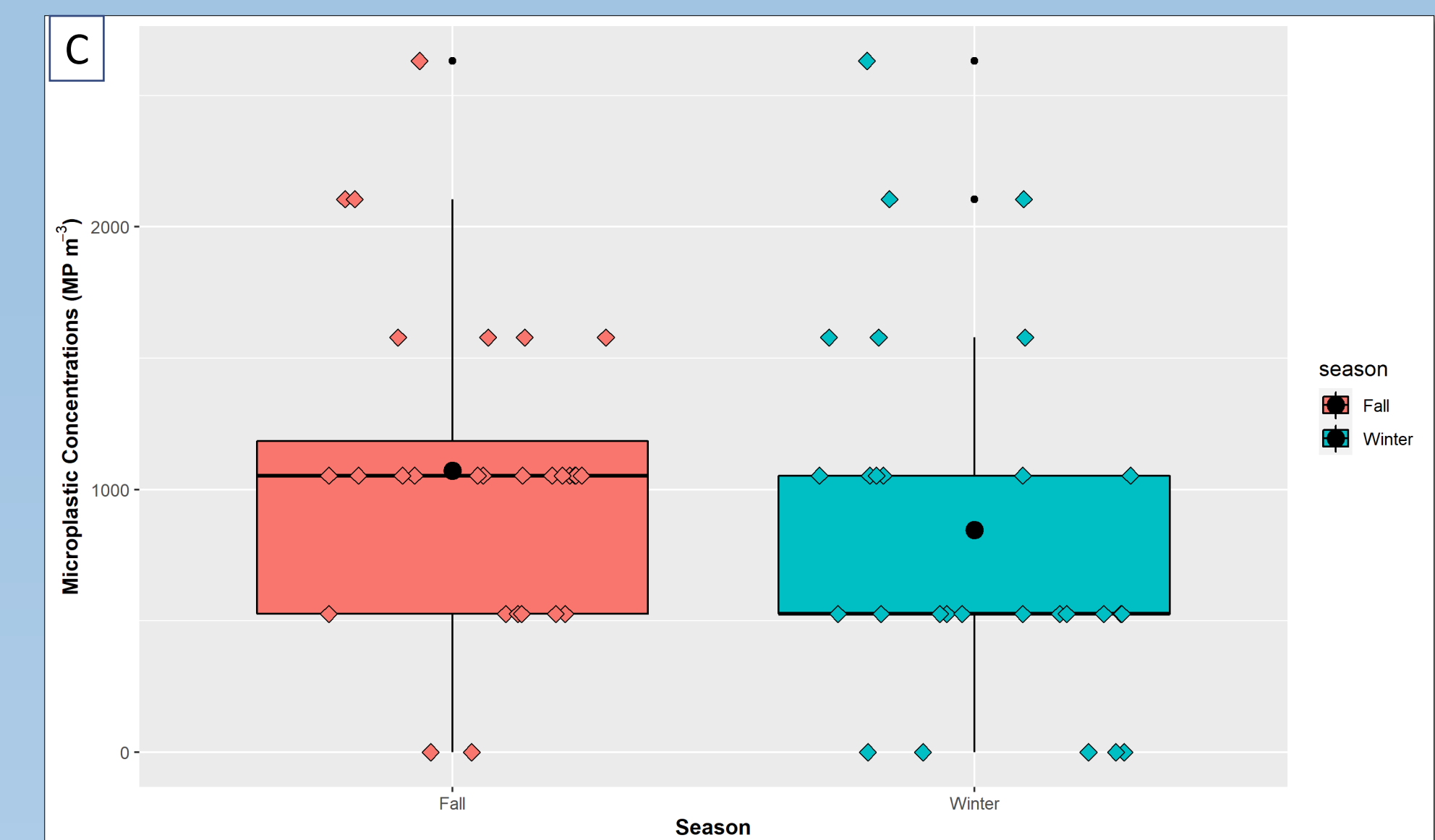
Figure 2 (above): Site 3 is a tributary of Sugar Creek. **(A)** Site 3 in the Fall. **(B)** Site 3 in the Winter.

METHODS



RESULTS AND DISCUSSION

- Microplastics in the urban stream were all fibers
- No seasonal difference was seen (Fig C)
- No significant difference between mean concentrations at sites (Fig D)
- No relationship between watershed characteristics and microplastic concentrations



- Urban streams are significant pathways for microplastics.
- Microplastic source in an urban area is likely from emission from drying machines