

**Supporting information for “Microplastics in the Mississippi River System During Flash Drought
Conditions”**

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Table S1. Polymer classes identified and their abbreviations.

| Abbreviation | Polymer (Common Name) |
|---------------------|---|
| ABS | Acrylonitrile butadiene styrene |
| Acrylate | Acrylonitrile styrene acrylate (ASA) Acrylat hotmelt Styrene methymethacrylate (SMMA) Acrylate and ethylene copolymer (AEM) Ethylene-butyl acrylate (EBA) |
| Acrylic | Acrylic Polymethylmethacrylate (PMMA) |
| CA | Cellulose acetate |
| CM | Chlorinated polyethylene |
| CSM | Chlorosulfonated polyethylene |
| EAA | Ethylene acrylic acid |
| EFEP | Fluorinated ethylene propylene copolymer |
| ETFE | Ethylene tetrafluoroethylene |
| EVA | Ethylene vinyl acetate |
| EVOH | Ethylene vinyl alcohol |
| FEP | Tetrafluoroethylene hexafluoropropylene |
| MFA | Tetrafluoroethylene perfluoromethylvinylether |
| TFM | Modified polytetrafluoroethylene |
| PA | Polyamide (Nylon) |
| PA/ASA | Polyamide/acrylonitrile styrene acrylate copolymer |
| PA/PET | Polyamide/polyethylene terephthalate copolymer |
| PA/PTFE | Polyamide/polytetrafluoroethylene copolymer |
| PAN | Polyacrylonitrile |
| PARA | Polyarylamide |
| PBT | Polybutylene terephthalate |
| PBT/Acrylate | Polybutylene terephthalate/acrylonitrile styrene acrylate (PBT/ASA) |
| PBT/PET | Polybutylene terephthalate/polyethylene terephthalate copolymer |
| PBT/PTFE | Polybutylene terephthalate/polytetrafluoroethylene copolymer |
| PC | Polycarbonate |
| PC/ABS | Polycarbonate/acrylonitrile butadiene styrene |
| PC/PBT | Polycarbonate/polybutylene terephthalate |
| PE | Polyethylene |
| PE/EVA | Polyethylene/ethylene vinyl acetate copolymer |
| PEEK | Polyether ether ketone |
| PEG | Polyethylene glycol |
| PEI | Polyetherimide |
| PET | Polyethylene terephthalate (Polyester) |
| PLA | Polylactic acid |
| PO | Polyolefin hotmelt |
| POM | Polyoxymethylene (Acetal) |
| PP | Polypropylene |
| PP/EPR | Polypropylene/ethylene propylene rubber copolymer |

Table S1 cont. Polymer classes identified and their abbreviations.

| Abbreviation | Polymer (Common Name) |
|--------------|--|
| PP/EVA | Polypropylene/ethylene vinyl acetate copolymer |
| PP/TPO | Polypropylene/olefine based thermoplastic elastomer copolymer |
| PPA/PTFE | Polyphthalamide/polytetrafluoroethylene copolymer |
| PPSU | Polyphenyl sulfone |
| PS | Polystyrene |
| PSU | Polysulfone |
| PTFE | Polytetrafluoroethylene |
| PU | Polyurethane |
| PVA | Polyvinyl acetate |
| PVC | Polyvinyl chloride |
| PVOH | Polyvinyl alcohol |
| Resin | Epoxy resin (EP) |
| | Phenol formaldehyde resin (PF) |
| | Vinyl ester resin (VE) |
| Rubber | Carboxylated nitrile butadiene rubber (XNBR) |
| | Crumb rubber (CR) |
| | Ethylene propylene diene rubber (EPDM) |
| | Hydrated acrylonitrile butadiene rubber (HNBR) |
| S-RIM | Structural reaction-injection moulding |
| SAN | Styrene acrylonitrile |
| SEBS | Styrene ethylene/butylene styrene block copolymer |
| Silicone | Fluoro-silicone rubber with methylene and vinylene groups (FVMQ) |
| | Silicone rubber (SR) |
| SMA | Styrene maleic anhydride copolymer |
| TP | Thermoplastic polyester |
| TPC | Thermoplastic copolyester |
| TPE | Olefine based thermoplastic elastomer |
| TPS | Styrene based thermoplastic elastomer |
| TPV | Thermoplastic vulcanizate |

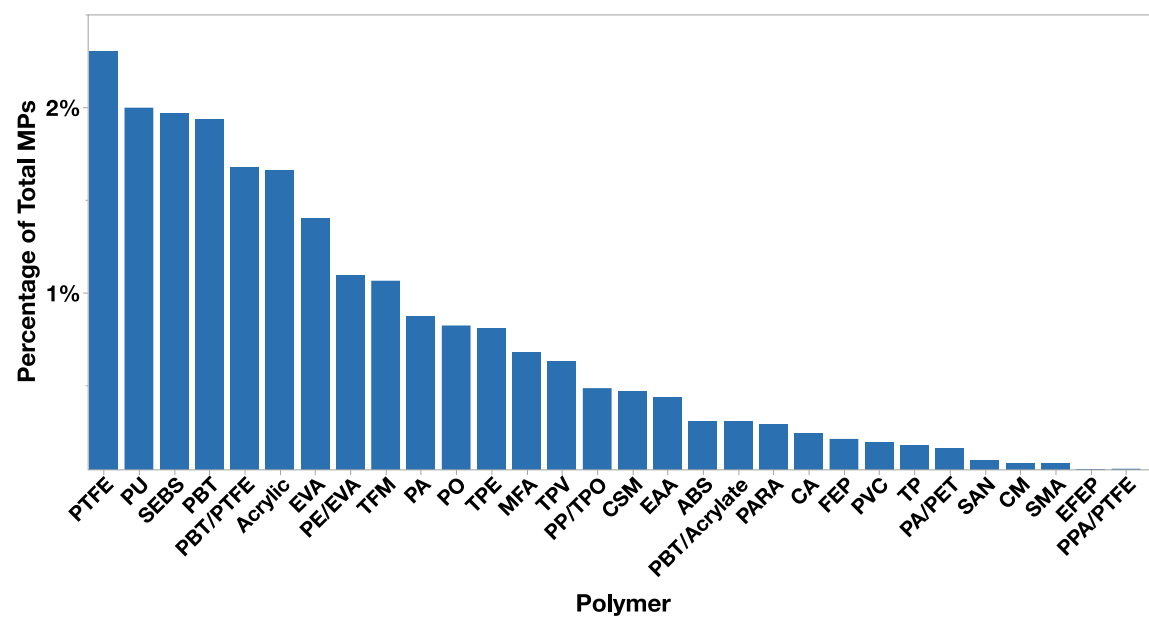


Figure S1. Total polymer composition of all samples, excluding the top 10 polymers shown in Figure 3.

Table S2. Distance-based Redundancy Analysis (dbRDA) results for all identified polymers correlated with each condition. Group centroid scores are 0.751 and -0.751 for flash drought and normal conditions respectively.

| Polymer | dbRDA score | Polymer | dbRDA score |
|----------|-------------|--------------|-------------|
| PA/PTFE | 1.2082576 | FEP | -0.2390062 |
| PPA/PTFE | 1.1843744 | Rubber | -0.2838959 |
| POM | 0.9095472 | SEBS | -0.3487512 |
| MFA | 0.7263139 | PU | -0.4277232 |
| EFEP | 0.7121721 | TP | -0.4510087 |
| PC | 0.711589 | EVA | -0.4573137 |
| ETFE | 0.7001507 | ABS | -0.6080947 |
| Acrylate | 0.6427018 | PS | -0.6109603 |
| CSM | 0.6351848 | PE/EVA | -0.6585148 |
| PE | 0.5835187 | Acrylic | -0.7376559 |
| PC/ABS | 0.5800851 | SAN | -0.7791889 |
| EVOH | 0.5736897 | SMA | -0.780959 |
| PP | 0.5539588 | Resin | -0.8282717 |
| EAA | 0.5059964 | PBT/PET | -0.8381405 |
| PP/EPR | 0.4974957 | TPC | -0.8661235 |
| TFM | 0.4805632 | PBT/PTFE | -0.8665411 |
| CA | 0.4559351 | PET | -0.9012768 |
| PTFE | 0.4343885 | PBT | -0.9213213 |
| PO | 0.4277385 | TPS | -0.9482255 |
| CM | 0.3897191 | PA/PET | -0.9964137 |
| PP/TPO | 0.3178937 | TPE | -1.1396329 |
| PA | 0.1600349 | PC/PBT | -1.1613204 |
| TPV | 0.1532993 | PBT/Acrylate | -1.1966228 |
| PVC | 0.1389518 | PEI | -1.42082 |
| PARA | -0.0435508 | | |

Table S3. Distance-based Redundancy Analysis (dbRDA) results for all identified polymers correlated with each condition at Memphis, TN (Site 7). Group centroid scores are shown in Table 4.

| Polymer | dbRDA score | Polymer | dbRDA score |
|------------------------|-------------|------------------------|-------------|
| SMA | 1.19634567 | TPE | 0.66502932 |
| SAN | 1.19634567 | FEP | 0.60947213 |
| PA.PET | 1.19634567 | PTFE | 0.6076773 |
| PS | 1.16152955 | PET | 0.59954033 |
| Rubber | 1.0754465 | Acrylic | 0.59528509 |
| Ethylene.Acrylic.Acids | 1.06157757 | TPC | 0.57447573 |
| ABS | 1.0579747 | PBT | 0.54989723 |
| Cellulose.acetate | 1.04082373 | PA | 0.46989862 |
| PU | 1.02137326 | SEBS | 0.46724256 |
| PE.EVA | 0.98608913 | Ethylene.Vinyl.Alcohol | 0.43228352 |
| TPV | 0.9605392 | EFEP | 0.39341634 |
| Acrylate | 0.89721229 | ETFE | 0.39341634 |
| CSM | 0.89554684 | Polyarylamide | 0.38106865 |
| TP | 0.89485615 | CM | 0.37489481 |
| Ethylene.Vinyl.Acetate | 0.88920032 | PA.PTFE | 0.37489481 |
| PBT.PET | 0.88235806 | PO | 0.33517472 |
| PE | 0.85446473 | Modified.PTFE | 0.14299289 |
| TPS | 0.84055535 | MFA | -0.02761683 |
| Resin | 0.83829427 | PC | -0.91061204 |
| PP.TPO | 0.81209664 | PC.ABS | -0.92891974 |
| PBT.PTFE | 0.74999505 | POM | -1.21557052 |
| PP | 0.73607891 | | |

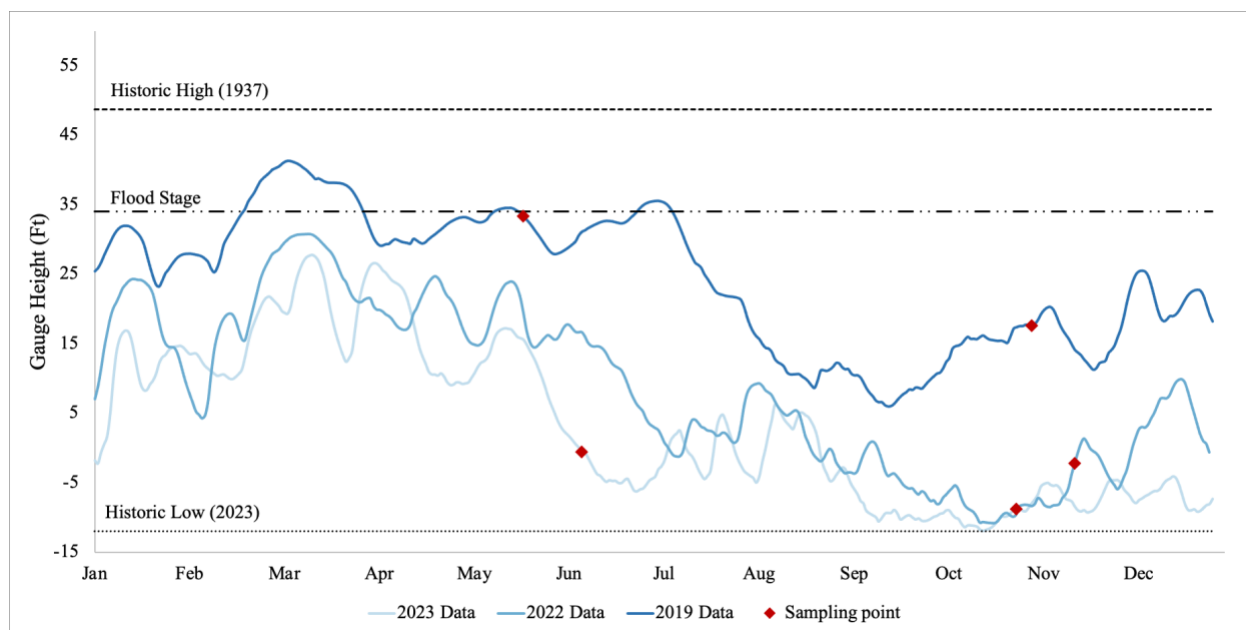


Figure S2. River stage data for the Memphis, TN sampling site covering the years during which sampling occurred.