DATA MANAGEMENT PLAN

Data Policy Compliance: The project investigators will comply with the data management and dissemination policies described in the NSF Award and Administration Guide (AAG, Chapter VI.D.4) and the NSF Engineering Division Data Policy.

Pre-Cruise Planning: Pre-cruise planning for the SEA cruise will be via teleconferencing and a planning workshop between PIs Stubbins, Law, Postdoctoral Researcher (PD) and the undergraduate Co-op student. Detailed plans for station locations, plastic sampling strategy, and plastic sample documentation and storage will be written up as a science implementation plan. Actual sampling events will be recorded on paper logs (scanned into PDF documents) and in a digital event log within Excel.

Description of Data Types: The project will produce several observational, experimental, and model datasets, described in the list below. In addition to the datasets described below, educational resources produced by the project, including data and images, will be made available for public use on the dedicated project website. Observational data will be collected on a SEA educational science cruise planned to take place during Year 2.

Data and Metadata Formats and Standards: Field observation data will be stored in flat ASCII files, which can be read easily by different software packages. Field data will include date, time, latitude, longitude, tow number, and depth, as appropriate. Quality flags will be assigned according to the ODS IODE Quality Flag scheme (IOC Manuals and Guides, 54, volume 3; http://www.iode.org/mg54_3). Metadata will be prepared in accordance with Oceanographic Conventions (e.g. using the NSF Oceanography/BCO-DMO metadata forms) and will include detailed descriptions of collection, experimental, analysis and modeling procedures.

Data Storage and Access During the Project: The investigators will store project data (including spreadsheets, ASCII files, images, videos, Matlab® files, model code, and PDFs of scanned logs) on laboratory computers that are backed up on a Northeastern University OneDrive account. Computers in all laboratories are backed up continuously to the cloud. Data will be compiled at Northeastern for consolidated archiving and quality assessment. Data will be shared between project PIs by email (small files) and file sharing (e.g. OneDrive, larger files).

Mechanisms and Policies for Access, Sharing, Re-Use, and Re-Distribution: Data will be submitted to Pangea or another appropriate open access data archive in Excel and metadata provided. Data produced by the project will be made available within two-years of quality assurance. PIs will work to make data available online as per NSF Engineering Policy. Data, samples, and other information from this project can be made publically available without restriction once at public repositories. Data produced may be of interest to environmental engineers, marine and freshwater scientists, and environmental scientists, as well as educators the general public. We will adhere to and promote standards, policies, and provisions for data and metadata submission, access, re-use, distribution, and ownership as prescribed by NSF.

Plans for Archiving: We will ensure project data are submitted to appropriate international data archive. PI will work with to ensure data are archived appropriately along with proper and complete documentation.

Roles and Responsibilities: Stubbins, as lead PI, will be ultimately responsible for all data management tasks, including being the primary person responsible for ultimately ensuring compliance with the Data Management Plan. Law will be responsible for data generated at SEA.

OBSERVATIONAL DATASETS:

Microplastics at sea: Data for the abundance, chemistry and size classes of plastics at sea will be collected as per SEA protocols. File types: Excel files. Repository: Pangea.

Event log: Cruise scientific sampling event log; will include event numbers, start/end dates, times & locations net tows. Will be recorded in Excel and on paper log sheets. File types: Excel file converted to .csv; scanned PDFs. Repository: Pangea.

EXPERIMENTAL DATASETS:

Microplastic photo-removal: Loss of plastic mass by weight and as carbon will be analyzed at Northeastern. Samples will be analyzed from time series photo-degradation studies. Samples analyzed, dates, and times will be recorded by hand on log sheets. Information from log will be transferred into an Excel spreadsheet. File types: PDF files of scanned log sheets; Excel files of experimental/sampling logs and plastic mass and carbon data. Repository: Pangea.

Photo-chemical production of dissolved organic carbon (DOC) – concentration and chemistry: DOC concentrations and chemistry will be analyzed at Northeastern. Samples analyzed, dates, and times of analysis will be recorded by hand on log sheets. Information from log will be transferred into an Excel spreadsheet. File types: PDF files of scanned log sheets; Excel files of sampling logs; Excel files of resultant DOC data, including analytical and sampling metadata. Repository: Pangea.

Photo-chemical oxidation of plastics: Plastics will be analyzed by FT-IR at Northeastern. Samples analyzed, dates, and times of analysis will be recorded by hand on log sheets. Information from log will be transferred into an Excel spreadsheet. File types: PDF files of scanned log sheets; Excel files of sampling logs; Excel files of resultant DOC data, including analytical and sampling metadata. Repository: Pangea.

Bio-availability of plastic-derived DOC: Bio-incubation experiments will be conducted at Northeastern. Samples will be analyzed for DOC concertation, DOC chemistry and microbial gorwth. Samples analyzed, dates, and times of analysis will be recorded by hand on log sheets. Information from log will be transferred into an Excel spreadsheet. File types: PDF files of scanned log sheets; Excel files of sampling logs; Excel files of resultant DOC data, including analytical and sampling metadata. Repository: Pangea.

MODEL AND MODEL GENERATED DATA:

Photochemical degradation model and output: Details of the photochemical model, regional/global plastic photochemical loss rate models, and resultant data will be generated at Northeastern. File types: Matlab® code; Matlab® matrices; Excel files. Repository: Pangea.