Hurricane Environmental Sampling Tools

This collection of curated environmental sampling tools was identified by one of the Environmental Disaster Data Management (EDDM) Working Groups for use in the post-hurricane setting. The goal of EDDM Working Groups is to provide information and data services that improve the quality and speed of decision-making in response to environmental disasters. The Working Groups, organized by the Coastal Response Research Center (CRRC, https://crrc.unh.edu), consist of scientists and researchers, industry, non-governmental organizations (NGOs), federal and state agencies, data managers, data collectors, and data retrieval personnel. CRRC is a partnership between the National Oceanic Atmospheric Administration, through the Office of Response and Restoration, and the University of New Hampshire.

Tool Name (links to actual tool)	**Agency**	**Sample Types/Guidance Included**
Standard Operating Procedure for Collection of Soil and Sediment Samples for the Sediment-bound Contaminant Resiliency and Response (SCoRR) Strategy Pilot Study	United States Geological Survey (USGS)	• Soil and Sediment o Pathogens o Inorganics o Organics o Chemistry
National Field Manual for the Collection of Water-Quality Data (NFM)	United States Geological Survey (USGS)	• Water, Sediment, and select microbiology o Dissolved oxygen, electrical conductance, pH, reduction-oxidation potential, alkalinity and acid neutralizing potential, and turbidity o Wastewater, pharmaceutical, and antibiotic compounds o Arsenic o Low-level mercury o Biochemical oxygen demand, fecal indicators, protozoan pathogens, algal biomass indicators, cyanobacteria o Indicator bacteria o General collection guidance for environmental (ground and surface) and supply water, suspended sediment, and bed sediment, including site selection, sampling protocol, field QA/QC (quality assurance/quality control), and sampler types for select methods.
Identifying and Preserving High-water Mark Data	United States Geological Survey (USGS)	• Physical measure of recent and historical flood events o High-water mark o Important for understanding level of inundation in an area and can be directly correlated with water and sediment chemistry data collected post-event o Document includes companion file: High-Water Mark Field Form

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Methods of Practice and Guidelines for Using Survey-Grade Global Navigation Satellite Systems (GNSS) to Establish Vertical Datum in the United States Geological Survey	United States Geological Survey (USGS)	• Elevation o Uses satellite and local receivers to get accurate surface elevations, should include trusted benchmarks but not required o Provides insights into surveying with this equipment and QA/QC (quality assurance/quality control)
NIOSH Manual of Analytical Methods	Centers for Disease Control and Prevention (CDC) and The National Institute for Occupational Safety and Health (NIOSH)	• Air, blood, urine o Multiple chemicals searchable by name or CAS (Chemical Abstracts Service) Number
Air Sensor Toolbox for Citizen Scientists, Researchers and Developers	United States Environmental Protection Agency (EPA)	• Air o Guidance on use of air sensors
Field Forms, Data Templates, and Guidelines	National Oceanic and Atmospheric Administration (NOAA)	• Field sampling forms and Chain of Custody o Matrices including sediment, tissue, water, oil o Coastal environments including marine and fresh water o Species and Habitats o Litigation Quality Data • Guidelines on field sampling and QAPPs (Quality Assurance Project Plans) for laboratory analysis • Data Validation procedures • DIVER Environmental Data Specification (data standards)
Selected Analytical Methods for Environmental Remediation and Recovery (SAM)	United States Environmental Protection Agency (EPA)	• Air, water, solid, aqueous liquid and wipe samples o Multiple methods for chemicals and biotoxins searchable by name
Hazardous Waste Test Methods/SW-846	United States Environmental Protection Agency (EPA)	• Air, water, aqueous liquids and soil o Methods for multiple chemical analytes
Association of Public Health Laboratories – Hurricane Response Resources	United States Environmental Protection Agency (EPA), Centers for Disease Control and Prevention (CDC), Texas Commission on Environmental Quality (TCEQ), and the Association of Public Health Laboratories (APHL)	• Public, private, and surface water sampling and testing guidelines o Coliforms, unknown contaminants, infectious diseases, and multiple chemical analytes