



Sediment Analytical Capabilities

Analytical support for sediment projects

ALS' Tucson, Arizona laboratory has extensive experience providing unique analytical support for major sediment projects. The laboratory has specialized sample preparation equipment and instrumentation to perform Total Carbon / Hydrogen / Nitrogen (CHN), Total Organic Carbon, Carbonate Carbon, and Black Carbon (soot and other refractory carbons by the Gustafsson method) in sediment. For water samples, we are able to perform Particulate Carbon and Nitrogen, and Particulate Organic Carbon. Other analyses include Total Sulfur, Total Low Level Mercury by combustion / gold amalgamation / AAS, Total Metals, and Total Halogens (Br, Cl, and F). Samples for Total Metals are digested using EPA method 3052 (total dissolution of the silica matrix using HNO₃, HCl, and HF acids with a high temperature and pressure microwave digestion system) or the standard 3050 HNO₃, H₂O₂, HCl digestion. Metal analyses are performed by ICP-OES. Other analytical capabilities include Particle Size, Bulk and Particle Density, TS / TVS / Fixed Solids and LOI and other physical tests. The Tucson laboratory has special sample handling capabilities, as well, such as performing sample preparation, extractions, and analyses under a nitrogen (anaerobic) atmosphere.

Projects supported by the Tucson laboratory of ALS include several thousand samples of water and sediment from the Gulf oil spill, and other large projects including the Passaic and Buffalo Rivers, San Francisco Estuary, Pearl Harbor, plus numerous smaller projects.

Analysis	Method
Carbon, Hydrogen, and/or Nitrogen, Total - sediment	EPA 440.0 - Combustion (950°C) / TC and IR detect
Carbon, Particulate Organic (POC) - water	EPA 440.0 - Combustion (950°C) / TC and IR detect
Carbon & Nitrogen, Particulate - water	EPA 440.0 - Combustion (950°C) / TC and IR detect
Carbon, Black / Soot - sediment	Gustafsson, 2001 - CTO Pretreatment / Combustion (950°C) / IR detect
Carbon, Total - sediment	ASTM E1915 - Combustion (1350°C) / IR detect
Carbon & Sulfur, Total - sediment	ASTM E1915 - Combustion (1350°C) / IR detect
Carbon, Total Organic - sediment	EPA SW9060 / Lloyd Kahn Modification
Carbon, Total Organic by LOI - sediment	ASTM D2974 / EPA 1684 - Gravimetric 440°C or 550°C
Density, Bulk	ASTM D2937 - Drive Tube Method
Density, Particle	ASTM D854 - Pycnometer
Halogens (Br, F, Cl) Total - sediment	EPA 5050 bomb combustion / 9056 Ion Chromatography
Carbon, Carbonate - sediment	D6316 - Acid Decomposition / IR detect
Mercury, Total	EPA 7473, Thermo decomposition, Au Amalgamation, AAS
Metals, Total Dissolution	EPA 3052 Microwave HF Digestion / 6010C ICP
Moisture, Total / Solids, Total	ASTM D2974 / EPA 1684 - Gravimetric 105°C
Particle Size Analyses	ASTM D422 - Dry and Wet Sieve and Hydrometer
Solids / Sediment, Total, and Total Volatile	ASTM D3977 / EPA 1684 - Gravimetric 105°C, 440°C, and 550°C
Sampling Preparation / Grinding to < 60 mesh	Sobek 3.1.2 or 3.1.3
Sulfur, Total - sediment	ASTM E1915 - Combustion (1350°C) / IR detect

