

Sonic-Assisted Sediment Sampling

Sonic-assisted sediment sampling is a fast, clean, low-impact technology yielding high quality sediment cores. Sonic can sample clay, silt, sand, and gravel, with high productivity, high core recoveries and enhanced safety, making sonic-assisted sampling the technology of choice for superior results.

Capabilities

- Shallow draft, barge-mounted sonic drill that is easily transported and deployed (30 ft x 8 ft)
- Hydraulically advanced high frequency sonic core sampler
- Produces undisturbed sample cores to depths of 60 ft. (diameter up to 4 inch) in water depths ranging from 1 ft to 20 ft
- Sample cores preserved in tube liners for inspection, physical profiling, and sample processing
- Unmatched reliability in sediment core collection across a wide range of materials (i.e., fine grain organic silts, sands, gravels, and clays)



Suitable Site Conditions and Environmental Settings

- Streams, rivers, ponds, lakes, reservoirs, estuarial settings
- Cohesive to non-cohesive, fine grain to coarse grained, soft to consolidated silt, sand, and clay materials
- Buried wood and wood debris, paper pulp, saw dust, and industrial wastes

Applicability

- Remedial Investigation
- Remediation Support
- Geomorphologic Studies
- Environmental Forensics
- Litigation Support

Results

Core Depth	Lower Fox River		Tittabawassee River	
	No. Cores	Avg. Recovery	No. Cores	Avg. Recovery
0-5 ft	284	89%	1134	90%
5-10 ft	109	96%	549	94%
10-15 ft	48	96%	313	96%
15-20 ft	27	94%	192	97%
20-25 ft	13	99%	85	98%
25-30 ft	0	-	25	100%
>30 ft	0	-	11	96%



Consultants in Chemistry & Environmental Science

Ann Arbor, Michigan • Green Bay, Wisconsin

Tel. 734/995-0995 • Fax. 734/995-3731 • Email. Info@AnnArborTechnicalServices.com



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At initial look, a Sonic-assisted drill resembles a conventional drill rig. The biggest difference is in the drill head itself, which is slightly larger than a standard rotary drill head. The sonic head is driven by a hydraulic motor which generates high sinusoidal forces that are transmitted downward to the drill string. The vibratory action causes the surrounding overburden to fluidize, thereby overcoming wall friction and allowing effortless penetration. The sonic drill vibrates at high frequency and when down pressure is applied allows rapid drilling to proceed with unmatched reliability through most geological formations. In many instances the frequency can be adjusted to suit site conditions so drilling and coring can be accomplished without the use of drilling fluid whatsoever...an important requirement for many environmental drilling projects. Sample cores are collected and preserved in ridged tube liners for inspection, physical profiling and sample processing and analysis.

Suitable site and environmental settings include: terrestrial and floodplain, streams, rivers, ponds, lakes, reservoirs, and estuarial settings where a wide variety of cohesive to non-cohesive, fine grain to coarse grained sand, soft to consolidated silt and clay materials are encountered. Undisturbed cores are typical through most geological formations (depths of 100 ft or more) and subsurface obstacles including; wood, wood debris, paper pulp, saw dust, and industrial wastes.

Example Sonic-Assisted Sampling Platform Deployments

Shallow Draft Sonic Barge



Sonic Pontoon



Hover Probe



Sonic Barge



Roto Sonic Tractor/Barge



Deep Water Sonic Barge



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