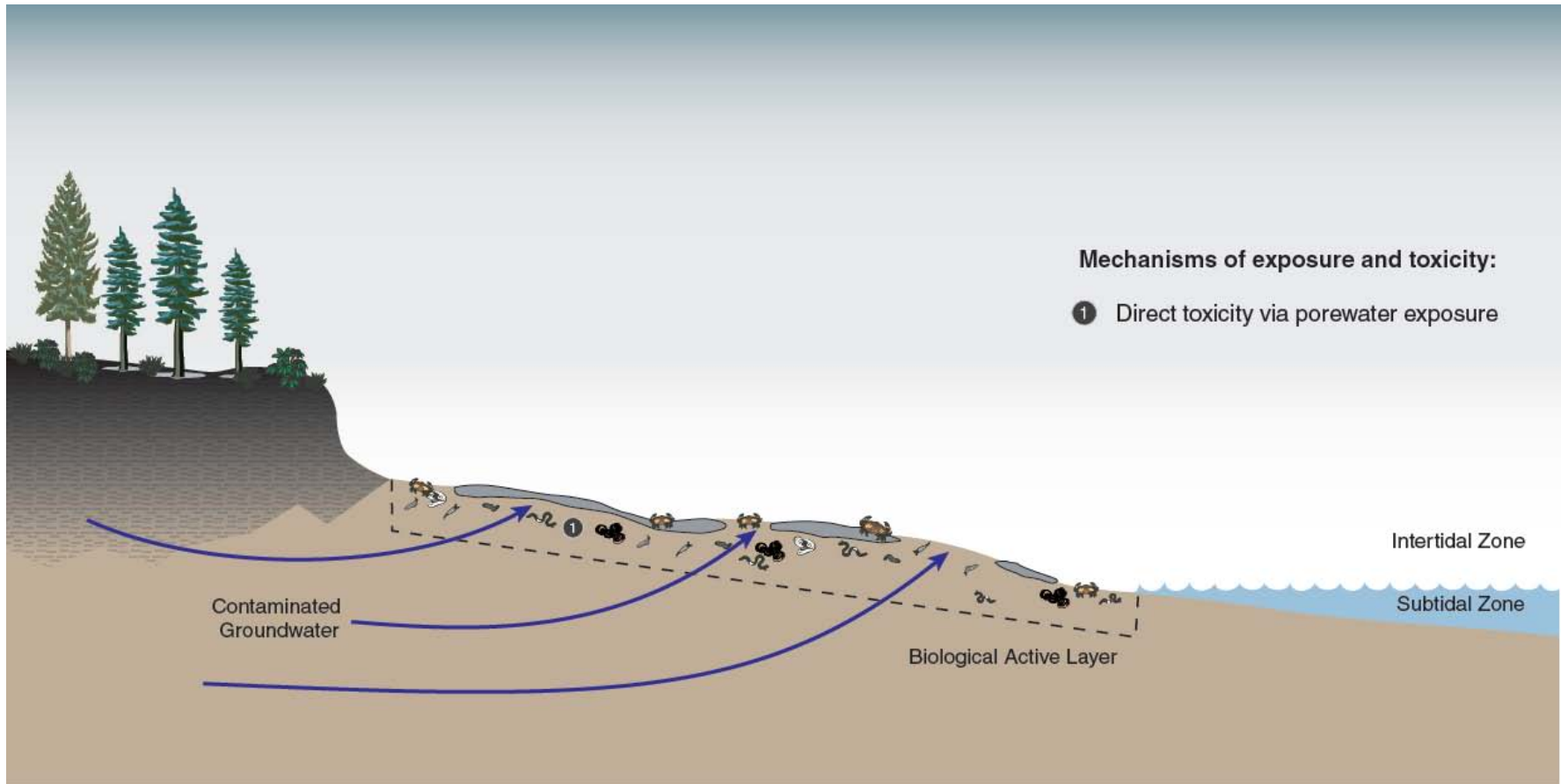


Rationale and Methods For Porewater Investigation

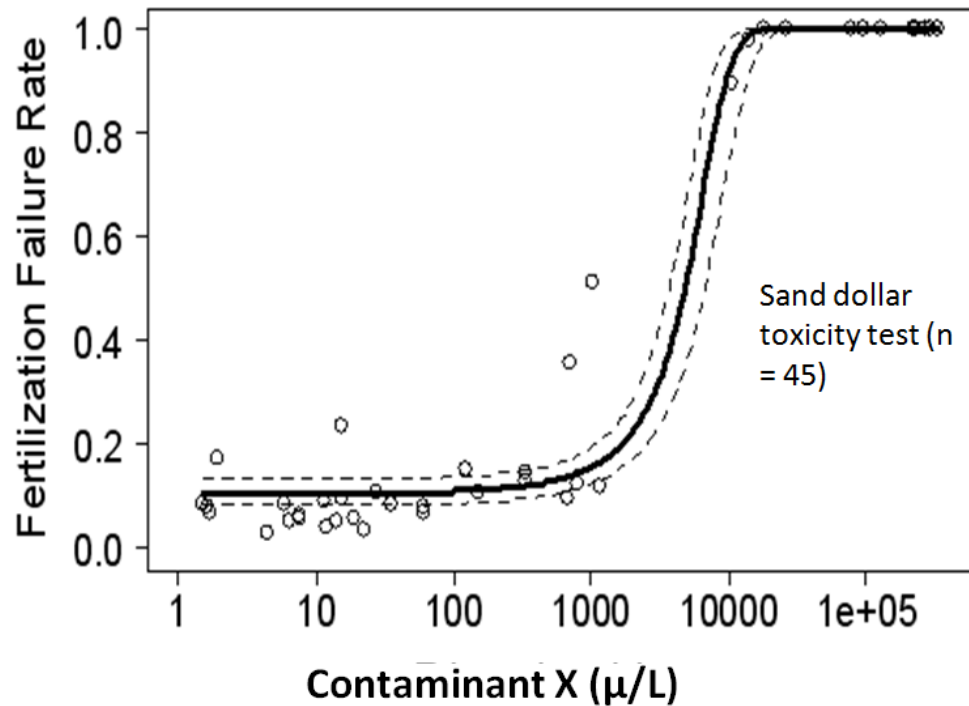
June 2 Risk Symposium, 2011

Alena Fikart & Ralph Turner

Conceptual Site Model



Porewater Chemistry/Toxicity Relationships



Squeezers, Peepers, Sippers and Probes (DGTF)

- Large assortment of PW collection tool kits available.
- Choice driven mostly by target sediment type/depth and objectives (tox assessment or flux estimates).

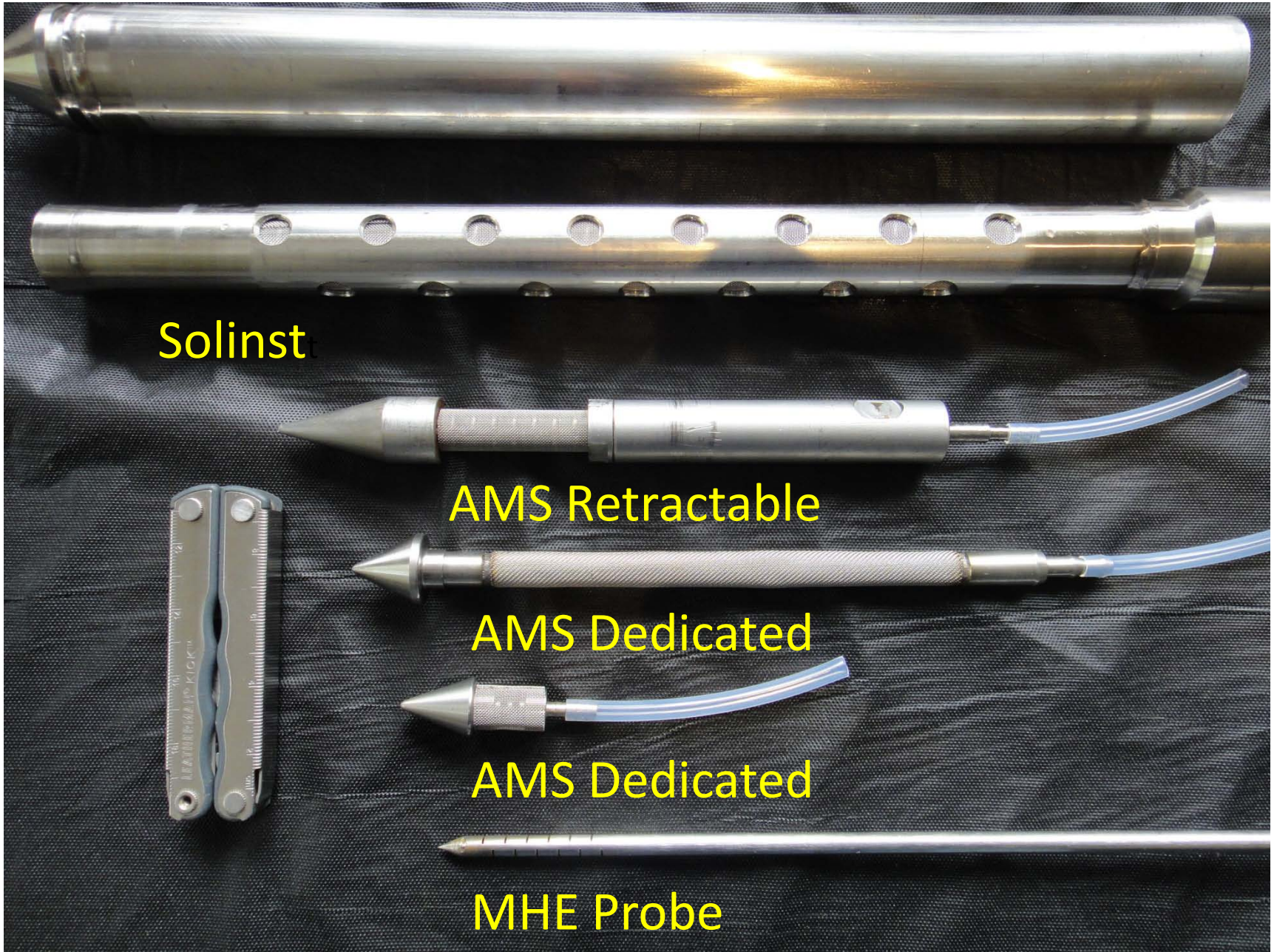
PW Collection Tool Box

Device	Inert Atmos ?	Sample Volume (mL)	Resolution (cm)	Ease/Speed of Use	Sed Size	MultiElem Analysis?	Solid Phase Obtained?
<i>Ex Situ</i>							
Whole Core Squeezers	No	25 to 50	~1	Tedious/time consuming	Silt-Clay	Yes	Yes
Core Section Squeezers*	Yes	<50 mL	1	Tedious/time consuming	Silt-Cly	Yes	Yes
<i>In Situ</i>							
Peepers	No	1 to 25	1	Moderately easy	Sand to Clay	Yes	No
Sippers	No	Unlimited	~1-15	Very easy	Cobble to Coarse Silt	Yes	No
DGTF**	No	N/A	≥ 0.01	Moderately easy	Sand to Clay	In some cases	No

*Including centrifugation

** Diffusive Gradients in Thin Films

Hand-driven Probes (Sippers) Useful for PW Sampling

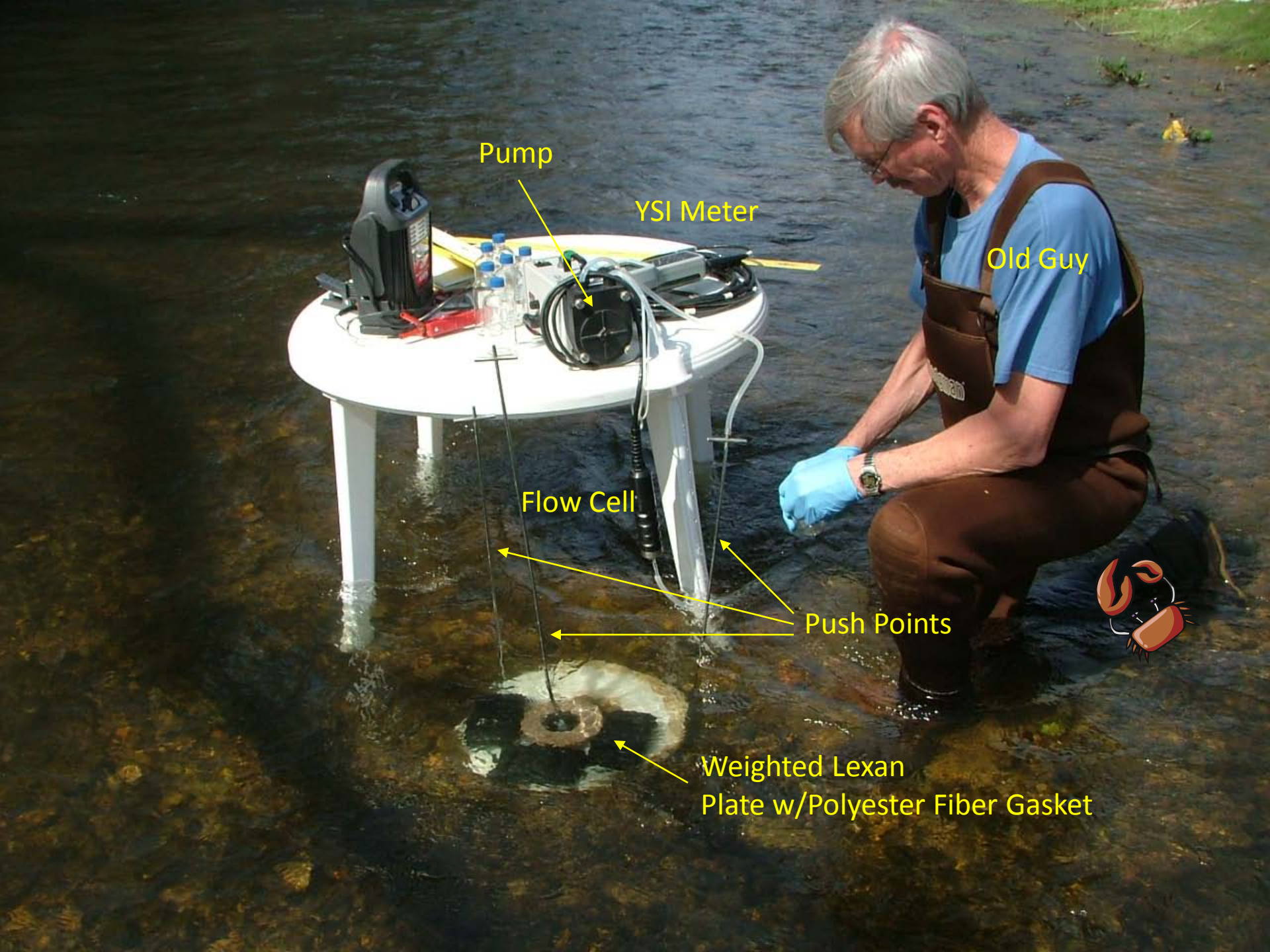


AMS Soil Gas and MHE Sippers



Sampling with MHE Sipper





Pump

YSI Meter

Old Guy

Flow Cell

Push Points

Weighted Lexan
Plate w/Polyester Fiber Gasket



Selected Useful References/Links

- Diffusive Gradients in Thin Films (DGTF) – A Technique for Determining Bioavailable Metal Concentrations. INAP
[www.inap.com.au/public/Diffusive_Gradients_in_Thin_Films.pdf]
- Lorax Environmental [www.lorax.ca/peepers.htm,
www.lorax.ca/diffusive_gradients_in_thin_films.htm]
- Manual of Aquatic Sediment Sampling, Murdoch et al (1995), Lewis Publishers.
- Methods of Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual. EPA-823-B-01-002, October 2001, USEPA, Office of Science and Technology, Washington, DC (see Chapter 6).
- Summary of SETAC Technical Workshop Porewater Toxicity Testing: Biological, Chemical, and Ecological Considerations with a Review of Methods and Applications, and Recommendations for Future Areas of Research. Carr et al (Eds), 2001
- AMS Sampling Equipment [www.ams-samplers.com]
- M.H.E. Products [www.mheproducts.com]
- Aquatic Research Instruments [www.aquaticresearch.com]

Circa 1997 Extracting PW in Glove Box

