

Materials List for:

# Continuous Instream Monitoring of Nutrients and Sediment in Agricultural Watersheds

Niroj Aryal<sup>1,2</sup>, Michele L. Reba<sup>2</sup>

<sup>1</sup>Oak Ridge Institute of Science and Education (ORISE)

<sup>2</sup>Delta Water Management Research Unit, United States Department of Agriculture, Agriculture Research Unit USDA-ARS

Correspondence to: Michele L. Reba at [michele.reba@ars.usda.gov](mailto:michele.reba@ars.usda.gov)

URL: <https://www.jove.com/video/56036>

DOI: [doi:10.3791/56036](https://doi.org/10.3791/56036)

## Materials

Name	Company	Catalog Number	Comments
Multiparameter sonde	Hach Hydrolab	DS5X	measures temperature, pH, conductivity, dissolved oxygen, nitrate, ammonium, turbidity
Area velocity flow module and sensor	Teledyne Isco	2150	measures average stream velocity and flow depth, and calculates flow rate and total flow based on provided cross-section area of the ditch. Stored data can be downloaded directly to computer.
Automatic portable water sampler	Teledyne Isco	ISCO 6712	automatically samples water in the set interval or in conjunction with flow module and sensor
Pressure Transducer	In-situ	Rugged Troll 100	measures pressure, level and temperature in the water. Stored data can be directly downloaded to the computer
Portable flow meter	Flo-mate (Hach)	Marsh-McBirney 2000	For manual discharge measurement
Battery, 12 v, rechargeable	UPG	UB 1270	To power sonde
Battery, 12 v, rechargeable	Interstate Batteries	SRM 27	Lead acid battery to power autosampler
Solar panel	Alt E	ALT20-12P	To recharge battery at the site
C-8 batteries			
Calibration standards	Hach or Fisher Scientific	multiple	Standards of pH (4,7,10), conductivity (1412 uS/cm), nitrate (5 and 50 mg/L), ammonium (5 and 50 mg/L), and turbidity (50,100,200 NTU)
High nitrate standard	Hach	013810HY	50 mg/L
Low nitrate standard	Hach	013800HY	5 mg/L
High ammonium standard	Hach	002588HY	50 mg/L
Low ammonium standard	Hach	002587HY	5 mg/L
Turbidity standard	Fisher scientific	R8819050-500G	50 NTU
Turbidity standard	Fisher scientific	88-061-6	100 NTU
Turbidity standard	Fisher scientific	R8819200500 C	200 NTU
Potassium chloride salt pellets	Hach	005376HY	to maintain electrolyte for pH electrode
Potassium chloride standard	Fisher scientific	5890-16	1412 us/cm
Buffer solution, pH 4	Fisher scientific	SB99-1	for pH sensor calibration
Buffer solution, pH 7	Fisher scientific	SB108-1	for pH sensor calibration

Buffer solution, pH 10	Fisher scientific	SB116-1	for pH sensor calibration
Silicon sealant	Hach	00298HY	For sealing sensor battery cover water tight
All purpose cleaner	Sunshine Makers Inc	Simple green	
Wipes	Kimberly-Clark		
L-bracket			
Telsbar post	Unistrut Service Company		Secure sensors and sondes in the stream
Steel wire			supend sonde and PT sensor
Carabiner			supend sonde and PT sensor
Allen wrench			
Copper wire mesh	Bird B Gone		Rodent and bird control copper mesh roll
Adhesive Tape	Agri Drain Corporation		Tile tape, works in wet and cold weather