

October 26, 2015

**ELIMINATING THE BURDEN OF FALSE-POSITIVE NTUs: PUTNAM COUNTY LANDFILL –TENNESSEE
USING PROACTIVE ENVIRONMENTAL PRODUCTS® 12 VOLT LOW FLOW DEDICATED SAMPLE CHAMP® PUMP SYSTEM**

Since the promulgation of the Subtitle D Regulations in the early 1990's, the U.S. Environmental Protection Agency (USEPA) has issued groundwater sampling protocols relative to the collection of samples with Nephelometric Turbidity Units (NTUs) to be less than 10. Commenters prior to the final promulgation of the Subtitle D Regulations argued that it was not practical to obtain groundwater samples in geologic settings with highly plastic soils and large percentages of colloidal sized clay particles. Commenters further requested that the EPA allow filtering of groundwater samples. However, the EPA did not modify the Subtitle D Regulations to allow filtering of groundwater samples except in the event the groundwater sample could damage the laboratory testing apparatus.

Sampling methods in the early years of the Subtitle D Landfill Regulations was limited in Tennessee, primarily to the use of bailers. The main reason for using bailers was attributable in part to the high cost of dedicated pumps. Even if pumps were permanently installed in the wells, the pumps available on the market at that time were unable to operate at flows low enough to avoid volatilization of organic compounds and had potential to heat samples.

As a result, the limited capabilities and options of groundwater sample collection equipment left numerous county-owned municipal waste landfill sites (many which have closed after the promulgation of the Subtitle D Landfill Regulations) with the burden of false positive detections of inorganic compounds in the groundwater, primarily attributable to high turbidity readings.

Fortunately, the development of innovative and economical low flow pumps such as the Sample Champ® successfully provides continuous, steady low flow rates reflecting much more accurate turbidity readings. More specifically, accurate turbidity level readings eliminated false positive detections. As a result, the number of inorganic compounds detected above the practical quantitation level (PQL) is significantly reduced.

Using the stationed Sample Champ® pumps, we collect samples from groundwater monitor wells at three specific landfills in Tennessee. All but one groundwater well at Putnam County Landfill (well MW-4, see Appendix 1 below) have the most accurate NTU readings in the landfill's history. All NTU levels that have dedicated Sample Champ® pumps stationed in the wells are now below 10 NTUs. Currently a Sample Champ® pump is being customized to be dedicated in well MW-4.

Additional benefits of the Sample Champ® are that it runs on a 12 volt battery and is simple to operate. Being that the pumps are stationed in the wells, set up takes roughly 5-7 minutes per well. Due to the convenient Proactive® well pump holders, quick connection to the tubing and controller connector is seated at the top of well riser. The small variable speed controller (roughly 9" in length and about 6 pounds) has a voltage LCD display that helps to record the voltage output for the suitable flow rate per well for streamlining the groundwater sampling field records. Further, the groundwater technician can control flow rates under 100 mls per minute.

The Sample Champ® pump line is of great value to the groundwater sample technician.

Appendix 1:

COUNTY SOLID WASTE	GROUNDWATER MONITOR NETWORK			
Well	MW-1	MW-3	MW-4	MW-2
Date	04/24/14	04/24/14	04/24/14	04/24/14
Purge Method	Non- Dedicated Pump	Non- Dedicated Pump	Bailer	Non- Dedicated Pump
Turbidity (field reading) (NTU)	8	400	40	11
Date	12/27/15	12/27/15	12/27/15	12/22/14
Purge Method	Dedicated Sample Champ® Pump	Dedicated Sample Champ® Pump	Bailer	Dedicated Sample Champ® Pump
Turbidity (field reading) (NTU)	0	2	489	0.7