FIELD AUDIT REPORT

Standards and Assessment Section
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Sampling Agency:	FDEP, SAS Sampling Team
Field Personnel:	Joy Jackson, Randy Snipes, and Jeremy Johnson
Auditor(s):	Nia Wellendorf and Michele Reliford
Audit Date:	March 29, 2011
Site:	Deep Creek, Pinhook Creek, East River Apalachee Bay sites Aucilla 1, Aucilla 2, Palmetto Island
Audit Type:	Performance Audit
Copies of Audit Report to:	Joy Jackson, Jeremy Johnson, Russell Frydenborg, Michael Blizzard, David Whiting, Cheryl Swanson
Overall Sampling Performance:	**Good**

Summary of Sampling Event

Auditors Nia Wellendorf and Michele Reliford accompanied samplers Joy Jackson, Randy Snipes, and Jeremy Johnson to their field sites from the FDEP Bob Martinez building on 03/29/2011. Samplers had performed continuing calibration verification of the field meters on the previous day. The three samplers comprised two sampling teams that were audited independently; Michele Reliford audited Joy Jackson on the tidal creek sites, while Nia Wellendorf audited Randy Snipes and Jeremy Johnson at the open water Apalachee Bay sites.

Creek Audit

The first sampling team, consisting of Joy Jackson, traveled to the first site of the audit, which was Deep Creek. All relevant data pertaining to each site such as location, map, pictures, and previous data was available for reference. The sampler demonstrated expertise in collection of the grab samples using the pole sampler to assure a representative sample in the natural flow of the creek. The sampler expeditiously collected the water quality samples (nutrients, chlorophyll a, TSS, turbidity, and color) and placed them in the cooler within the 15 minute grab sample window. The sampler acquired the field parameters by wading in the stream noting caution to prohibit any sediment dispersal. Adequate flushing of the YSI meter #8 was observed at each site and readings were taken after stabilization. The second site was Pinhook Creek in which the sampler not only collected the water quality samples and field parameters but the field blanks also. The last site was the East River in which samples and field parameters were taken without any problems. The pole sampler was used at all three sites.

Bay Audit

Nia Wellendorf accompanied Randy Snipes and Jeremy Johnson to seven Apalachee Bay sampling sites. She audited water chemistry sample collection at the first two sites, and light meter measurements at the fourth site. Jeremy conducted field measurements with YSI #7 while Randy collected and preserved water samples. They both followed the proper procedures of sample collection, preservation, and documentation, and the auditor only made minor suggestions for improved technique.

The samplers logged all relevant data on the relevant field sheets and the chain of custody forms. They delivered samples to the FDEP lab within each parameter's holding time. They verified field meters the day after the sampling event. Copies of the calibration log, equipment logs, field sheets, and chain of custody were later submitted for the audit.

Summary of Findings

There were no deficiencies in field sampling performance. There were several minor findings related to record-keeping, calibration, and verification of field meters.

Instrument Maintenance Logs: The instrument maintenance logbook for the YSI meters had not been updated since 2006. No log was available for the light meter.

Temperature Calibration Verifications: The YSI field meter temperature calibration records were incomplete for the last seven entries. Missing information included the calibration date and the initials of the person that is performing the calibration. Additionally, temperatures observed in the field were not sufficiently quantitatively bracketed by the use of tap water as the high value for verification.

pH Calibration: Initial calibrations for pH were conducted incorrectly for both meters used in the study. Calibration for pH should always be a 2-point calibration.

Light Measurements: The SOP pertaining to subsurface light measurements (FT 1700) specifies that readings should be taken as the unit as lowered to depth and as it is raised to the surface. Samplers only recorded measurements as it was lowered. The SOP also requires the samplers to document that they set the instrument to zero before taking readings, and this was not documented.

More detailed audit findings are below:

			SOP Reference
1	Expectation	Log all maintenance and repair performed for each instrument unit, including routine cleaning procedures, corrective actions performed during calibrations or verifications, and solution or parts replacement for instrument probes.	FD4000 section 2..2.1
	Observation	The maintenance log for the YSI meters was not up to date. No records were available for the light meter.	
2	Expectation	Certificates of assay, grade and other vendor specifications for all standards and reagents should be retained and recorded.	FD 4100 sections 1.2.2
	Observation	Records were current in binders for conductivity standards, but not for pH.	
3	Expectation	For each instrument unit used for the sampling project, full temperature verification information must be recorded when verifications are conducted.	FD 4100 sections 2.1 - 2.11, FT 1400 section 2.2.3.1
	Observation	Temperature verification records incomplete for YSIs. Missing information included date, time, name of analyst performing verification, positive indication of acceptable verification, and reference to DEP SOP followed.	
4	Expectation	All sample measurements were quantitatively bracketed with calibration verifications of the temperature measurement device at several temperatures using the NIST-traceable thermometer. Quantitative brackets are not	FT 1400 section 2.2.2

		required for all daily calibration checks; however, the organization must have records of having performed the quantitative check.	
	Observation	Tap water was used as the upper bracket, and its temperature not sufficiently high to bracket sample values.	
5	Expectation	2-point calibration should be conducted for pH	FT 1100, Section 2.3.2.1
	Observation	Initial calibrations of the YSI#7 pH probe on 3/8/11 and YSI#8 pH probe on 1/26/11 were only 1-point calibration rather than 2-point.	
6	Expectation	Manufacturer name, model number and identifying number linked from instrument to records.	FD 4100 Section 2.2.1
	Observation	The YSI model is not recorded on the calibration logbook and should be added to the logbook.	
7	Expectation	Light readings repeated at each depth as the quantum sensor was brought back to the surface. Instruments calibrated as necessary (zeroed for each use) and required calibration documentation recorded.	FT 1710
	Observation	Light measurements are only taken as the unit is lowered, and not as it is raised back to the surface. Samplers zero the meter before use, but do not record any positive indication that the meter was set to zero.	

Implementation of Corrective Actions

As of 6/13/2011, corrective actions have been implemented for all audit findings listed in this report. With the incorporation of the indicated corrective actions, field testing and field documentation procedures used by SAS staff are now in conformance with DEP SOP requirements.

Additional information about findings, responses, and corrective actions is contained in the checklists for this performance audit, and are available upon request.