



FLORIDA DEPARTMENT OF Environmental Protection

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Memorandum

TO: David Tyler

FROM: Jessica Patronis

**SUBJECT: Final Audit Report for Project APNUTR Field Records Audit – Conducted
September 20, 2023**

DATE: 05/21/2024

Auditees, Including Field Personnel Contacts:

David Tyler, Watershed Assessment Section

James Tomazinis, Northeast Aquatic Preserve

Julie Drevenkar, Rookery Bay National Estuarine Research Reserve

Nicholas Parr, Florida Keys National Marine Sanctuary

Sandra Chupinsky, Big Bend Seagrasses Aquatic Preserves

Auditor(s): (WQSP) Jessica Patronis, Jacqueline Krebs, Tiffany Simpson

Audit Date: 09/20/2023

Audit Type: Field Records Audit

Copies of Audit Report to:

Cheryl Clark, Office of Resilience and Coastal Protection

Julie Zimmerman, Watershed Services Program

Jessica Mostyn, Watershed Assessment Section

Kevin O'Donnell, Watershed Assessment Section

Sarah Noble, Water Quality Standards Program

Nia Wellendorf, Water Quality Standards Program

Dear Mr. Tyler:

Thank you for responding to the preliminary report and subsequently reviewing the draft final report for the field records audit of the DEP Watershed Assessment Section (WAS), Org ID 21FLWQA, consisting of four sampling agencies collecting water quality samples and field testing measurements for the Aquatic Preserve Nutrient Sampling (APNUTR) project. Sampling agencies included in the audit were Northeast Aquatic Preserve (NEAP), Rookery Bay National Estuarine Research Reserve (RB NERR), Florida Keys National Marine Sanctuary (FLKNMS), and Big Bend Seagrasses Aquatic Preserves (BBSAP). The Aquatic Ecology and Quality Assurance Section (AEQAS) has reviewed all responses and accepted the proposed corrective actions and implementation dates.

Attached is the final audit report detailing the audit procedure, audit findings, and the department's audit conclusions. This final audit report will also be posted on the department's website at <https://floridadep.gov/dear/florida-dep-laboratory/content/fdep-biological-and-audit->

[report-search](#). As noted in the report, the department concludes that that the sample collection and field-testing procedures used by the sampling teams generally met the data quality objectives for data used by the department according to Chapter 62-160, Florida Administrative Code, and DEP Standard Operating Procedures. DEP auditors found a few QC deficiencies, including some missing supporting documentation and insufficient bracketing of field measurements for instrument calibration/verification, as further described in the report. While some data qualifiers were applied to specific results, none of the findings in the audit were deemed critical to data usability for the Impaired Waters Rule, 62-303, F.A.C., and other DEAR uses.

Corrective actions for all findings in this report are acceptable. Each sampling group's implementation of corrective actions described in the report will lead to an improved quality system. DEP may verify the implementation of corrective actions with future requests for QC documentation.

Final Audit Report
Watershed Assessment Section
Org ID 21FLWQA
Project APNUTR
Field Records Audit
Conducted 9/20/2023

Florida Department of Environmental Protection
Division of Environmental Assessment and Restoration
March 18, 2024

Introduction

The Florida Department of Environmental Protection's (DEP or department) Division of Environmental Assessment and Restoration (DEAR) requested a field records audit of the DEP Watershed Assessment Section (WAS), Org ID 21FLWQA, consisting of four sampling agencies collecting water quality samples and field testing measurements for the Aquatic Preserve Nutrient Sampling (APNUTR) project. Sampling agencies included in the audit were Northeast Aquatic Preserve (NEAP), Rookery Bay National Estuarine Research Reserve (RB NERR), Florida Keys National Marine Sanctuary (FLKNMS), and Big Bend Seagrasses Aquatic Preserves (BBSAP). Data produced by these sampling agencies are used by WAS to monitor nutrients in aquatic preserves for assessment purposes. The Aquatic Ecology and Quality Assurance Section (AEQAS) conducted the audit in accordance with Rules 62-160.650 and 62-160.670, Florida Administrative Code (F.A.C.). The audit was conducted by the department to inform data users of the sampling agencies' conformance with the requirements of Chapter 62-160, F.A.C., including implementation of the DEP Standard Operating Procedures for Field Activities, DEP-SOP-001/01, January 2017 (DEP SOPs), which cover sample collection, field testing, and required field documentation. The results of the audit have been evaluated to provide the required corrective actions and recommendations in this report that should be implemented by the sampling agencies to conform with the DEP SOPs.

Audit Description

AEQAS staff requested field records for samples representing the APNUTR project's water quality analyte suite and field testing measurements. Samplers routinely collected the following field testing measurements: dissolved oxygen (DO), temperature, pH, specific conductance, and salinity. Water quality analytes consisted of chlorophylls (including chlorophyll *a* corrected for pheophytin, chlorophyll *a* - uncorrected, and pheophytin *a*), total Kjeldahl nitrogen (TKN), nitrate-nitrite (N), total phosphorus, and turbidity. One audited sampling event collected by Florida Keys National Marine Sanctuary (G5AP0012-10/25/22) included additional analytes for sunscreen compounds and flame retardants. The analytes were avobenzone, dechlorane plus, 2-ethylhexyl 2,3,4,5-tetrabromobenzoate (EHTBB), octinoxate, oxybenzone, PBDE-47, PBDE-99, and tri-*o*-cresyl phosphate. Samples were collected by the sampling agencies' field teams and transported to the DEP Laboratory (DOH ID E31780) for analysis. David Tyler of WAS uploaded the data to DEP's Watershed Information Network (WIN) database. AEQAS audited six sampling events from each of the four sampling agencies, for a total of 24 sampling events in the APNUTR project. Audited sampling events represented the most current three years of data, from February 2020 – May 2023, available in DEP's WIN database at the time of the audit (Table 1). Records were requested from 21FLWQA on September 11, 2023, and received on September 20, 2023. AEQAS auditors reviewed records pertaining to the selected samples, which included field sheets, sample chain of custody documents, laboratory login checklists, field meter calibration logs, and laboratory reports. Field testing instrument maintenance logs were not reviewed as a part of this records review. However, please note that sampling entities must keep records of instrument maintenance to comply with the requirements in DEP SOP FD 3000. The DEP SOPs and Chapter 62-160, F.A.C., provided the criteria for the audit and all findings. AEQAS staff involved in the audit were Jessica Patronis, Jacqueline Krebs and Tiffany Simpson. DEP staff Nia Wellendorf, Cheryl Clark and Julie Zimmerman were consulted about sampling agency name changes in WIN pertaining to finding 24. David Tyler was the main contact for WAS. The main contacts for the sampling agencies were as follows: James Tomazinis for NEAP, Julie Drevenkar for RB NERR, Nicholas Parr for FLKNMS, and Sandra Chupinsky and Trisha Green for BBSAP. The AEQAS auditing team coordinated the audit with David Tyler and corresponded with the various contacts over email and phone.

Preliminary Audit Report and Implementation of Corrective Actions

A preliminary audit report of findings and deficiencies was sent to David Tyler of WAS on December 15, 2023, and he distributed the report to the sampling agency contacts on December 20, 2023. Procedures or documentation that did not comply with audit criteria are identified in Table 2, along with the department's

recommended or required corrective actions. David Tyler and all sampling agency contacts responded to the preliminary audit report by January 26, 2024, with proposed corrective actions and implementation dates for the noted deficiencies, which are included in Table 2. AEQAS auditors met with WAS staff on January 24, 2024, to discuss the preliminary audit report and questions regarding findings and corrective actions for the audit. David Tyler and AEQAS auditor, Jessica Patronis, corresponded with the sampling agency contacts with specific questions about findings and proposed corrective actions. The auditors reviewed all responses and accepted the implementation dates and proposed corrective actions. The auditors' responses are found in the last column of Table 2. A draft of the final audit report was reviewed by WAS and all sampling agency contacts before the report was finalized.

Audit Conclusions

Based on the findings from this audit, DEP has determined that the corrective actions for WAS and the sampling agencies involved in the audit meet the department's minimum quality assurance standards. Implementation of corrective actions described in this report will lead to an improved quality system. Findings 1, 3, 14, 15, 16, and 17 involved documentation requirements that were not recorded. As an outcome of the 2023 field performance audit of Central Panhandle Aquatic Preserve (CPAP) and this field records audit, CPAP and DEAR staff created a supplemental field sheet that includes the missing documentation elements, and the auditors provided it to the sampling agencies collecting samples for the APNUTR project. Appendix A includes an example of the supplemental field sheet. While some data qualifiers were applied to specific results, none of the findings in the audit were deemed critical to data usability for the Impaired Waters Rule, 62-303, F.A.C., and other DEAR uses.

NOTE: The audit evaluated the indicated data for the use(s) described in this report. The usability of the audited data for other purposes or the usability of data produced by the audited organization for other analytes or other date ranges must be determined separately according to applicable requirements in Rule 62-160.670, F.A.C.

Table 1. List of audited samples for the field records audit of the WAS APNUTR project conducted by DEP, September 2023.

Monitoring Location ID	Collection Date, Time	RQ number	Sampling Agency Names¹
G5WA0004	5/27/2021 11:03	RQ-2021-05-24-03	FLKNMS
G5WA0004	9/27/2021 9:05	RQ-2021-09-27-02	FLKNMS
G5AP0011	8/31/2022 11:05	RQ-2022-08-29-03	FLKNMS
G5AP0012	10/25/2022 9:30	RQ-2022-10-24-01	FLKNMS
G5WA0003	1/24/2023 9:50	RQ-2023-01-23-08	FLKNMS
G5WA0004	5/22/2023 14:58	RQ-2023-05-22-01	FLKNMS
G1SD0001	2/18/2020 10:59	RQ-2020-02-17-01	RB NERR
G1SD0004	9/23/2020 9:40	RQ-2020-08-24-01	RB NERR
G1SD0008	4/27/2021 12:53	RQ-2021-04-26-03	RB NERR
G1SD0006	9/1/2021 9:17	RQ-2021-08-30-05	RB NERR
G1WA0100	5/3/2022 12:29	RQ-2022-05-02-15	RB NERR
G1SD0002	12/6/2022 9:46	RQ-2022-11-28-19	RB NERR
G1NED0024	5/3/2021 9:10	RQ-2021-05-03-11	BBSAP
37SEAS090	9/15/2021 11:06	RQ-2021-09-13-05	BBSAP
G1NED0022	9/20/2022 8:30	RQ-2022-09-19-09	BBSAP
G1NED0016	12/27/2022 10:34	RQ-2022-12-05-11	BBSAP
G1NED0013	2/1/2023 11:53	RQ-2023-01-30-06	BBSAP
G1NED0026	5/10/2023 9:36	RQ-2023-05-08-07	BBSAP
NEAPSMNUT	1/26/2021 9:04	RQ-2021-01-25-02	NEAP
NEAPNRNUT	5/10/2021 11:15	RQ-2021-05-10-21	NEAP
NEAPNRNUT	3/30/2022 11:07	RQ-2022-03-28-01	NEAP
NEAPSMNUT	7/27/2022 10:35	RQ-2022-07-11-11	NEAP
NEAPSMNUT	4/19/2023 10:45	RQ-2023-04-10-25	NEAP
NEAPPHNUT	5/9/2023 12:05	RQ-2023-05-08-16	NEAP

¹ Sampling agency names: Florida Keys National Marine Sanctuary (FLKNMS), Rookery Bay National Estuarine Research Reserve (RB NERR), Big Bend Seagrasses Aquatic Preserves (BBSAP), and Northeast Florida Aquatic Preserves (NEAP)

Table 2. Audit findings for the field records audit of the WAS APNUTR project conducted by DEP, September 2023.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
1.	FLKNMS, BBSAP, NEAP: All samples.	FD 2000 section 3.1; FD 5000 section 2.14 and FD 5100 section 1	Preservation information and verification was not recorded.	Required: Ensure field staff documents the type of preservation used for each sample, verifies pH of preserved samples in the field using narrow-range pH paper, documents verification that pH was <2, and records lot numbers and expiration dates of preservatives used. Indicate the use of ice to preserve samples. Indicate which staff member(s) performed pH preservation and pH check.	FLKNMS: “Field Sheet” to be included with Chain of Custody in the future. Implementation date: 1/11/2024. BBSAP: As of Aug. 2023, field staff documented preservation used for each sample including lot numbers and expiration dates of preservatives – see page 3/3 on the FDEP Central Laboratory Submittal Form. In 2024, a new supplemental field sheet will be implemented including verification of pH preserved samples using narrow-range pH paper, verification that pH was <2, and documentation of	FLKNMS: Acceptable. BBSAP: Acceptable. NEAP: Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
					which staff member performed pH preservation and pH check. Preservation with ice will be indicated on the field form. NEAP: Staff will request additional acid with future sample kits. Staff will also purchase pH paper for documenting samples are properly preserved in field. Staff members performing acidification and pH verification will be recorded on field sheet. Implementation date: 2/5/24.	
2.	BBSAP: RQ-2021-05-03-11	FS 1007 section 2.1; FD 4100, section 2.2.1	Instrument unique ID was not recorded on the field documentation.	Required: Assign each field testing instrument a unique ID and record the ID on the field data sheet. Include or link instrument manufacturer and model number for the field testing instrument to the associated instrument ID	BBSAP: As of Aug. 2022, the field testing instrument is documented on the calibration log under "Meter ID".	Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
				and sample documentation.		
3.	FLKNMS, BBSAP, NEAP: All samples.	FD 5000 section 2.3 and 2.4	Ambient field conditions and comments about samples were not recorded. No supplemental field form is used.	Required: Document ambient field conditions, comments about samples, sample sources, or other relevant field conditions for all samples. Recommended: Implement a supplemental field form including this information.	FLKNMS: “Field Sheet” to be included with Chain of Custody in the future. Implementation date: 1/11/2024. BBSAP: Starting in Jan. 2024, field staff will include field conditions on the data sheet and/or the supplemental field sheet. NEAP: We did not know this was required. A field form will be used in the future. Who should we submit the field form to? Implementation date: 1/11/24	FLKNMS: Acceptable. BBSAP: Acceptable. NEAP: Acceptable. The field form should be retained with the calibration logs and any other records pertaining to the sampling event (such as the chain of custody), reviewed, and provided to whomever uploads the data to WIN.
4.	FLKNMS: RQ-2021-05-24-03, RQ-2021-09-27-02;	FD 4100 section 2.3 and 2.4.	Dates and/or times of each initial calibration and calibration	Recommended: For each entry on the calibration log, record the specific time, date and instrument reading or result (display	FLKNMS: Lines will no longer be used for standards, or times on calibration	FLKNMS: Acceptable. BBSAP: Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
	BBSAP: RQ-2021-05-03-11		verifications were missing or not recorded accurately. FLKNMS: Lines were drawn down columns from the first entry. For RQ-2021-05-24-03 and RQ-2021-09-27-02, fields were left blank for dates and/or times resulting in incomplete documentation. BBSAP: RQ-2021-05-03-11, the same time was used for multiple entries.	value) for all calibrations and verifications. Ensure documentation is clear if short cuts are used.	logs. Implementation date: 1/11/2024. BBSAP: As of Aug. 2022, all dates and times of each calibration step are recorded on the calibration log.	
5.	FLKNMS: All samples.	FD 4100 sections 2.4; FT 1500, section 2.2 and Table FT 1000-1	DO calibration and verification do not follow the acceptance criteria in DEP SOP FT1000-1.	Required: Explain how the field instrument is calibrated and verified for DO. Determine the theoretical dissolved oxygen saturation value in	David Tyler: “J” qualified the DOSAT measurements relating to RQ’s 2021-05-24-03 and 2021-09-27-02.	David Tyler: Acceptable. FLKNMS: Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
			DO mg/L readings were not recorded for calibration entries but were recorded for verifications. It is unclear whether analysts evaluated verifications using the appropriate acceptance criteria, but auditor verified that the DO verifications passed where the data was recorded. For RQ-2021-05-24-03 and RQ-2021-09-27-02, no DO mg/L data were recorded on the calibration log, so auditors	mg/L at the observed temperature of the verification using Table FS2200-2. Evaluate DO acceptance criteria (± 0.3 mg/L) for the DO verification by comparing the instrument's reading to the theoretical value in mg/L. For RQ-2021-05-24-03 and RQ-2021-09-27-02, qualify DO result with a "J" qualifier and a comment.	FLKNMS: Calibration is now done including comparing DO in mg/L to the theoretical DO per DEP SOPs. Change was implemented in 2022 as the result of an internal audit. Implementation date: 7/1/2022.	

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
			could not determine whether verifications passed.			
6.	FLKNMS: Dissolved Oxygen: RQ-2023-05-22-01; NEAP: Dissolved Oxygen: RQ-2023-04-10-25; pH and Specific Conductance: RQ-2023-05-08-16	FD 4100 sections 2.8 and 2.9	Missing indication in the record of whether initial calibration and all calibration verifications passed or failed. Pass/Fail was not circled for each entry in the calibration log.	Required: Indicate and record all passed or failed calibrations and verifications on the calibration log.	FLKNMS: Light pencil did not scan. Paper log includes circled P's. Implementation date: NA. NEAP: Staff will indicate passed and failed verifications on the calibration log. Implementation date: 1/11/24	FLKNMS: Acceptable. Please note that waterproof ink should be used for all paper documentation. However, pencil may be used on waterproof paper in wet conditions. NEAP: Acceptable.
7.	NEAP: pH: RQ-2021-05-10-21; Specific Conductance:	FT 1000, sections 2.1.4 and 2.2.1 and 4.3	Continuing calibration verification failed. Chronological bracket was not met and the "J" qualifier was	Required: Chronologically bracket all sample measurements with passing calibration verifications. For RQ-2021-05-10-21: Qualify all pH results	David Tyler: I qualified the requested results with a "J" and added a comment in WIN. Implementation Date: 12/21/2023	David Tyler: Acceptable. NEAP: Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
	RQ-2023-05-08-16		not applied to the affected result. The issue was correctly recorded in the calibration log, but the sample result was not qualified in WIN.	associated with the failure with a “J” and explanatory comment. Ensure the qualifier and comment are applied to sample results in WIN. For RQ-2023-05-08-16: Qualify all specific conductance and salinity results associated with the failure with a “J” and explanatory comment. Ensure the qualifier and comment are applied to sample results in WIN.	NEAP: Staff will chronologically bracket sample measurements and apply the “J” qualifier when necessary. Implementation date: 1/11/24	
8.	RB NERR: Specific Conductance: RQ-2020-02-17-01, RQ-2021-04-26-03, RQ-2021-08-30-05, RQ-2022-05-02-15, RQ-2022-11-28-19;	FT 1000, sections 2.1.5, 2.2.2 and 2.2.5.4; FT 1100 sections 2.3.2.2; FT 1200, Sections 3.2.2 and 3.2.5;	pH and specific conductance results were not quantitatively bracketed with appropriate concentrations of standard to bracket the range of environmental sample measurements.	Required: Quantitatively bracket sample measurements with concentrations of standards above and below the sample measurements. Qualify with a “J” and a comment for results that were not bracketed for the RQ numbers indicated.	David Tyler: I qualified the requested results with a “J” and added a comment in WIN. Implementation date: 12-27-2023 RB NERR: All pH samples were within the calibrated values of 7.00 and 10.00 SU for each RQ. SpCond calibration:	David Tyler: Acceptable. RB NERR: Acceptable. BBSAP: Auditors incorrectly included this sample in the finding. Analyst bracketed pH correctly. NEAP: Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
	BBSAP: pH: RQ-2021- 05-03-11; NEAP: Specific Conductan ce: RQ-2023- 04-10-25				Staff previously calibrated with a 50,000 umhos/cm and verified with 50,000 and 1,500 umhos/cm, but they will now increase the conductivity (likely 80,000 umhos/cm) for a more accurate standard range. This will be added to calibration log. To be implemented with the February 2024 samples. BBSAP: As of Aug 2022, pH and specific conductance are quantitatively bracketed, documented on the calibration log. As of Jan. 2024, a specific conductance field reading will be recorded on the datasheet.	

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
					NEAP: Staff will quantitatively bracket with correct concentrations of standards to bracket the range of environmental sample measurements. Implementation date: 1/11/24.	
9.	BBSAP: RQ-2021-05-03-11, RQ-2021-09-13-05	FT 1000, section 2.2.4.1	For DO, an initial calibration verification was not recorded.	Required: Perform an initial calibration verification in read mode immediately after an initial calibration to establish a chronological bracket.	BBSAP: As of Aug. 2022, an initial calibration verification value is recorded on the calibration log.	Acceptable.
10.	FLKNMS: RQ-2023-01-23-08	FD 1100, section 2.1	Sampler's name was spelled incorrectly in WIN.	Required: Correct sampler's name in WIN from Tana Bailey to Talia Bailey.	David Tyler: I updated the sampler's name in WIN. Implementation date: 12/21/2023	Acceptable.
11.	RB NERR: RQ-2022-11-28-19	FD 1000 section 3.1	Temperature value recorded on Central Laboratory Submittal Form (23.64°C) is inconsistent with the temperature	Required: Correct data entry in WIN and ensure staff transcribe data into WIN accurately to reflect the result on the field forms.	David Tyler: I corrected the data in WIN. Implementation date: 12/21/2023	Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
			result in WIN (23.645°C).			
12.	RB NERR: RQ-2022-11-28-19	FD 1000 section 3.1	Sampling time recorded in WIN (9:46) does not match the time written on the Central Laboratory Submittal Form (9:48).	Required: Correct data entry in WIN and ensure field staff write legibly to allow accurate data transcription into WIN.	David Tyler: I corrected the data in WIN. Implementation date: 12/27/2023	Acceptable.
13.	FLKNMS, RB NERR, BBSAP, NEAP: All samples.	FT 1720	Field documentation suggests that Secchi measurements may be taken in the field. Secchi results are not reported to WIN.	Recommended: Record Secchi measurement following DEP SOP FT 1720 and report this data to WIN. Implement a supplemental field form that includes this information.	FLKNMS: Excluding deep sites in the Dry Tortugas, Secchi disk readings are not appropriate in the Florida Keys. Bottom is always visible. Secchi is taken in Dry Tortugas. RB NERR: We already record Secchi depths on our DEP field sheets. WAS response: For the new Chain of Custody submissions, if Secchi	FLKNMS: Acceptable. RB NERR: Acceptable. BBSAP: Acceptable. BBSAP does not bring a Secchi into the field and chooses not to collect Secchi readings. NEAP: Acceptable. Secchi

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
					is recorded David will upload it to WIN. BBSAP: BBSAP will continue to perform grab samples at a depth of 0.1 m and verify accurate collection depth via a piece of tape on the multimeter located at 0.1 m. NEAP: We did not know that Secchi measurements were required. This will be included on the field form. Implementation date: 1/11/24.	measurements are only recommended, but if they are already or easily collected then DEP would like to upload the data to WIN.
14.	FLKNMS, NEAP: All samples.	FD 5000, section 2.1	Only one sampler's name was listed for the sampling event. No supplemental field form is used.	Required: Record names of all sampling team personnel on site during sampling and their duties. Recommended: Implement a supplemental field form that includes this information.	FLKNMS: “Field Sheet” to be included with Chain of Custody in the future. Implementation date: 1/11/24. NEAP: Staff will include the names and duties of all sampling team personnel on the	FLKNMS: Acceptable. NEAP: Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
					field form. Implementation date: 1/11/24	
15.	FLKNMS: RQ-2022- 08-29-03; RQ-2022- 10-24-01	FD 5000 section 2.15 and 2.19	Sample Depth on the Chain of Custody is recorded as 1.0 m. There is not enough documentation to determine if equipment was used for sample collection or if samples were collected by direct grab into the sample container and how sample collection was associated with meter readings.	Required: Explain how sample depth was determined for the RQs indicated and how sample collection was associated with meter readings. If sampling equipment is used to collect samples, this must be documented in the field records.	FLKNMS: “Field Sheet” to be included with Chain of Custody in the future. Before 2/2022, we collected 1m samples by getting into the water and still doing a direct collection. Starting in 2/2022, we have a Vernier Water Depth Sampler that we confirmed meets all DEP standards (we had to replace the OEM tubing). YSI field samples are still collected directly. Implementation date: 1/11/24.	Acceptable.
16.	FLKNMS, BBSAP, NEAP: All samples.	FD 5000 section 2.11	The method of sample access was not documented.	Required: Document the method of sample access (e.g. wading, from shore, from a bridge, from a motorized or non- motorized boat, intermediate device).	FLKNMS: “Field Sheet” to be included with Chain of Custody in the future. Implementation date: 1/11/2024	FLKNMS: Acceptable. BBSAP: Acceptable. NEAP: Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
				Recommended: Implement a supplemental field form that includes this information.	BBSAP: As of Jan. 2024, documentation of sampling method will be noted on the supplemental field form. NEAP: Staff will use field form to include method of sample access. Implementation date: 1/11/24	
17.	FLKNMS: RQ-2021-05-24-03, RQ-2021-09-27-02, RQ-2022-10-24-01, RQ-2023-01-23-08, RQ-2023-05-22-01	FD 5000 section 2.7 and 3	Sampler did not document the number of containers collected on the back of the chain of custody form.	Required: Document on the chain of custody the number of containers collected for each unique field identification code.	FLKNMS: “Field Sheet” to be included with Chain of Custody in the future to allow for redundancy in case this is not noted. Implementation date: 1/11/24	Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
18.	FLKNMS: All samples.	FD 4100 section 2 and 3; FD 1100 section 2.8	Meter ID is recorded on the calibration log, but since the sampler did not record the RQ number on the calibration log, linkage to the chain of custody is weak by date/time alone.	Recommended: Record the RQ number on the calibration log form in order to link this record to the chain of custody for the samples or include meter ID on a supplemental field form.	FLKNMS: RQ will be logged on calibration logs moving forward. Implementation date: 1/11/24	Acceptable.
19.	FLKNMS: All samples.	FD 4100 section 1 and 2.6	Lot numbers, standard type and standard value of standards used to calibrate or verify the field testing instrument were documented, but lines were drawn down so that an assumption must be made as to which lot numbers go with which data	Required: Document the specific standards used to calibrate or verify the instrument with the type of standard or standard name, value of standard and units, the lot numbers and expiration dates. This information should be linked to the reagent log containing required documentation in FD 4100 section 1.	FLKNMS: Lines will no longer be used to indicate the same standard were used for multiple calibrations. Information will be entered on each line.	Acceptable.

Finding #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
			entries and also that the same lot of standard was used for each entry. For RQ-2022-10-24-01 the lot number and expiration date were not recorded for the 50,000 µmhos/cm standard.			

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
20.	FLKNMS: RQ-2021-05-24-03, RQ-2021-09-27-02; BBSAP: RQ-2021-05-03-11, RQ-2021-09-13-05, RQ-2022-09-19-09; NEAP: RQ-2021-01-25-02, RQ-2021-05-10-21, RQ-2022-03-28-01, RQ-2022-07-11-11, RQ-2023-04-10-25	FT 1400 section 4.2 and 4.3	Temperature verification logs are missing or unavailable. Auditors cannot verify bracketing for the field testing instrument's temperature probe. FLKNMS Samples: Logs are missing for the date range of 4/26/2021 through 7/1/2022. The temperature was verified on 4/26/21 but failed the warm bath verification. There is not a record of corrective action activities for the failed verification.	Required: Provide missing temperature verification logs for the timeframes covering the sampling events for the RQs indicated. Conduct temperature verifications of the YSI temperature probe per DEP SOP FT 1400. Determine maximum time between continuing calibration verifications based on instrument stability. Document temperature verifications and any probe corrective actions in a log and link the calibration log to the temperature verification log. For FLKNMS, determine whether maintenance was performed to correct the failed temperature verification on 4/26/21 and whether results should be qualified.	FLKNMS: NIST traceable thermometer was discovered to be faulty. Thermometer has been replaced. Upon receiving the new NIST thermometer and every verification since, both YSIs have passed temperature verification and we have never had to replace or correct a probe due to a temperature issue. BBSAP: As of Aug. 2022, temperature verification is documented in the comments section of the calibration log. NEAP: We may not have temperature verifications prior to 5/8/23. We conduct temperature verifications now and record them on our	FLKNMS: Acceptable. BBSAP: Acceptable. NEAP: Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
			The 7/1/2022 verification passed. BBSAP: Temperature verification logs are missing prior to 11/1/2022. NEAP: Temperature verifications are missing prior to 5/8/2023.		calibration logs. Implementation date: 1/11/24.	
21.	FLKNMS: RQ-2023-01-23-08	FD 1000 section 3.1	Dates written in for pH meter verification were a year off from the sampling that occurred on 1/24/2023. The date recorded in	Required: Perform a second-level review of data entry and correct errors in documentation.	FLKNMS: That was a clerical error. Calibration did occur in January.	Acceptable.

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
			the calibration log was 12/23-25/2023.			
22.	RB NERR: RQ-2020-02-17-01, RQ-2020-08-24-01, RQ-2021-04-26-03; BBSAP: All samples. NEAP: RQ-2021-01-25-02, RQ-2021-05-10-21, RQ-2022-03-28-01, RQ-2022-07-11-11	FT 1000, section 2.2.2, and FT 1200, section 3.2.5	The sampler conducted calibration and verification activities for specific conductance, but only recorded field data for salinity. Therefore, it is difficult to determine whether the quantitative bracket was met for the range of environmental salinity measurements.	Required: Either convert values of conductivity standards to salinity or record field conductivity results to evaluate if the quantitative bracket is achieved for salinity each sampling day. If the bracket is not achieved, qualify data with a “J” and a comment.	David Tyler: I added “J” qualifier to requested values with a comment in WIN. Implementation date: 12-27-2023. RB NERR: We have recorded field SpCon readings in both the DEP field sheets and the DEP Lab COCs BBSAP: As of Jan. 2024, we have started recording specific conductivity on our datasheet to evaluate bracketing for conductivity and salinity. NEAP: Staff will record field conductivity values.	David Tyler: Acceptable. J qualifiers were only applied to results where the quantitative bracket was not met. RB NERR: Auditors incorrectly included these three RQs in the finding. The results were bracketed correctly by this sampling agency. BBSAP: Acceptable. Auditor converted field salinity measurement to specific conductance and evaluated

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
					Response via phone conversation and email 2/5/2024: The specific conductance result will be used to verify calibration bracketing for conductivity and salinity. Implementation date: 2/5/24.	quantitative bracketing. J qualifiers were applied to the salinity results that failed quantitative bracketing. BBSAP should acquire a 10 mS/cm standard and >50 mS/cm conductivity standard to meet bracketing requirements for expected range of environmental results. NEAP: Acceptable. Auditor converted field salinity measurement to specific conductance and evaluated quantitative bracketing. J qualifiers were applied to the salinity results that

Find ing #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
						failed quantitative bracketing. NEAP should acquire an additional conductivity standard >50,000 umhos/cm to meet bracketing requirements for expected range of environmental results.
23.	RB NERR: RQ-2022-05-02-15	FD 1000 section 3.1	The RQ associated with this sampling event was incorrectly transcribed on the supplemental field form as “RQ-2022-05-02-16.”	Required CA: Correct the RQ number on the supplemental field form to match the appropriate RQ number for the sampling event.	RB NERR: The RQ was corrected, initialed, and dated on the supplemental field form to “RQ-2022-05-02-16.” Implementation Date: 01/02/2024	Acceptable.
24.	FLKNMS, BBSAP, NEAP: All samples.		The “Sampling Agency” in WIN was incorrectly assigned to the wrong sampling agency. Samples in	Required: Correct all misidentified samples in WIN with the correct Sampling Agency that is collecting samples.	Per email chains (1/16/2024 and 1/26/2024) between DEP staff including Nia Wellendorf, Cheryl Clark, and Julie Zimmerman: The following	Acceptable.

Finding #	Sampling Agency and Samples Affected	Requirement Reference	Finding	Recommended or Required Corrective Action	Auditee Response	AEQAS Response
			WIN assigned to Guana Tolomato Matanzas National Estuarine Research Reserve (GTM NERR) should be Northeast Aquatic Preserve (NEAP), Coupon Bight Aquatic Preserve (CBAP) should be Florida Keys National Marine Sanctuary (FLKNMS) and St. Martin's Marsh Aquatic Preserve (SMMAP) should be Big Bend Seagrasses Aquatic Preserves (BBSAP).		corrections will be made to the WIN database: FDEP Guana Tolomato Matanzas National Estuarine Research Reserve will change to FDEP Northeast Aquatic Preserves only for certain Samplers and Mon Loc IDs. FDEP Coupon Bight Aquatic Preserve will change to FDEP Florida Keys National Marine Sanctuary for all activities. FDEP St. Martin's Marsh Aquatic Preserve will change to FDEP Big Bend Seagrasses Aquatic Preserves for all activities. These changes apply to corrections to previously loaded data and data going forward. Implementation Date: April 2, 2024.	

Appendix A: Supplemental Field Form Example

DEAR Field Sheet

Date: _____ RQ: _____

Bay System (s): _____

Collecting Office: _____

Sampler #1: _____ Task: YSI/Data Recorder

Sampler #2: _____ Task: Sample Collector/Preservation

Samples Collect via: Boat Method: Direct grab into bottle

Site name:	Preservation	(Circle One)	
_____	<u>Acid Added for Nutrient Preservation:</u>	Yes	No
	<u>pH Verified < 2 SU:</u>	Yes	No
	<u>Ice:</u>	Yes	No
_____	<u>Acid Added for Nutrient Preservation:</u>	Yes	No
	<u>pH Verified < 2 SU:</u>	Yes	No
	<u>Ice:</u>	Yes	No
_____	<u>Acid Added for Nutrient Preservation:</u>	Yes	No
	<u>pH Verified < 2 SU:</u>	Yes	No
	<u>Ice:</u>	Yes	No
_____	<u>Acid Added for Nutrient Preservation:</u>	Yes	No
	<u>pH Verified < 2 SU:</u>	Yes	No
	<u>Ice:</u>	Yes	No
_____	<u>Acid Added for Nutrient Preservation:</u>	Yes	No
	<u>pH Verified < 2 SU:</u>	Yes	No
	<u>Ice:</u>	Yes	No
_____	<u>Acid Added for Nutrient Preservation:</u>	Yes	No
	<u>pH Verified < 2 SU:</u>	Yes	No
	<u>Ice:</u>	Yes	No

*Acid preservative added =1 mL H₂SO₄ unless otherwise noted.

Preservative info or adhere
sticker:

Lot No: _____

Exp _____

date: _____

Comments (Field Conditions, Sample Comments, etc.): _____
