**FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION**
BOB MARTINEZ CENTER
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

JONATHAN P. STEVERSON
SECRETARY

VIA EMAIL

October 27, 2015

Shanda McGraw
EcoAnalysts, Inc.
1420 S. Blaine St., Suite 14
Moscow, ID 83843
Email: smcgraw@ecoanalysts.com

**Re: Final Audit Report for Stream Condition Index Laboratory Audit of EcoAnalysts; OGC Case No. 15-0635.**

Dear Ms. McGraw:

Thank you for responding to the preliminary audit report for this Stream Condition Index (SCI) Laboratory Audit. The Florida Department of Environmental Protection (Department) has reviewed your response and determined that the proposed corrective actions are acceptable, and have been implemented. The indicated corrective actions will improve the quality assurance system for your freshwater invertebrate taxonomic identifications and SCI determinations.

Attached is the final audit report detailing the audit procedure and the Department's recommendation for usability of the data. The final audit report will also be posted on the Department's website at http://www.dep.state.fl.us/labs/cgi-bin/reports/search.asp. The details of the Department's review are provided in the audit findings tables. As noted in the report, the Department has determined that your invertebrate taxonomy analysis procedures meet the data quality objectives for SCI data, and the Department may use the data for refresher audit evaluation scoring for SCI sampler proficiency according to DEP SOP SCI 1300.

Under Chapter 120 of the Florida Statutes, you and any other person whose substantial interests are affected by the Department's agency action, may challenge the attached final audit report, including the corrective actions and the data usability analysis. The process to challenge any portion of this agency action is described below in the Notice of Rights section.

If you have any questions or concerns about this final audit report, please feel free to contact Nia Wellendorf at (850)245-8190 or Joy Jackson at (850)245-8074.

## Notice of Rights

This action is final and effective on the date mailed (via e-mail) unless a sufficient petition for an administrative hearing is timely filed under sections 120.569 and 120.57 of the Florida Statutes as provided below. If a sufficient petition for an administrative hearing is timely filed, this agency action becomes only proposed agency action, subject to the result of the administrative review process. Therefore, on the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because an administrative hearing may result in the reversal or substantial modification of this action, the petitioner is advised not to proceed until the deadlines noted below for filing a petition for an administrative hearing or request for an extension of time have expired. Mediation is not available.

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000. The petitioner shall also mail a copy of the petition to EcoAnalysts, Inc., at the address indicated above at the time of filing.

Under rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon. If a request is filed late, the Department may still grant it upon a motion by the requesting party showing that the failure to file a request for an extension of time before the deadline was the result of excusable neglect.

If a timely and sufficient petition for an administrative hearing is filed, other persons whose substantial interests will be affected by the outcome of the administrative process have the right to petition to intervene in the proceeding. Intervention will be permitted only at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-106.205, F.A.C.

In accordance with rules 28-106.111(2) and 62-110.106(3)(a), F.A.C., petitions for an administrative hearing by the petitioner must be filed within 21 days of receipt of this written notice. Petitions filed by any persons who were not entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 21 days of publication of the notice, if published, or within 21 days of receipt of the written notice, whichever occurs first. Under section 120.60(3) of the Florida Statutes, however, any person who has asked the Department for notice of agency action may file a petition within 21 days of receipt of such notice, regardless of the date of publication.

The failure of any person to file a petition for an administrative hearing within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 of the Florida Statutes.

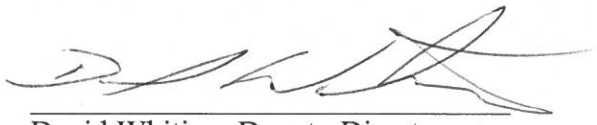
A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination; (c) A statement of when and how the petitioner received notice of the agency decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301, F.A.C.. Under paragraphs 120.569(2)(c) and (d) of the Florida Statutes, a petition for administrative hearing must be dismissed by the agency if the petition does not substantially comply with the above requirements or is untimely filed.

This agency action constitutes an order of the Department. Subject to the provisions of paragraph 120.68(7)(a) of the Florida Statutes, which may require a remand for an administrative hearing, the applicant has the right to seek judicial review of the order under section 120.68 of the Florida Statutes, by the filing of a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when the final order is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



David Whiting, Deputy Director
Division of Environmental Assessment and Restoration
2600 Blair Stone Road
Tallahassee, FL 32399
Tel No.: (850) 245-8191

Attachments:
Final Audit Report

Copies furnished to:

Stacey Cowley, DEP Office of General Counsel
File

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this agency action, including all copies, was e-mailed before the close of business on October 28th, 2015, to the above listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to 120.52(7)
Florida Statutes, with the designated Department Clerk,
receipt of which is hereby acknowledged.

Clerk 10/28/2015
Clerk Date

# Final Audit Report

# EcoAnalysts, Inc.

## SCI Laboratory Audit
## OGC Case No. 15-0635

**Aquatic Ecology and Quality Assurance Section**
**Water Quality Standards Program**
**Division of Environmental Assessment and Restoration**
**Florida Department of Environmental Protection**
**October 2015**

2600 Blair Stone Road, MS 6511
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

# STREAM CONDITION INDEX LAB AUDIT REPORT

**Scope of Audit**
Samplers or field organizations that submit Stream Condition Index (SCI) data to the Florida Department of Environmental Protection (department or DEP) must pass an initial field audit and then pass a refresher audit every five years, per DEP SOP SCI 1300. The refresher audit requires the sampler or field organization to collect an SCI sample at a designated DEP SCI Benchmark Site and submit the sample to a laboratory for processing, following DEP SOP SCI 2000, which includes lab sample sorting, lab taxonomic identification, and calculation and reporting of the SCI score resulting from the sample analysis. The sampler or field organization demonstrates continuing proficiency (and is designated with a "pass" status in the DEP Bioassessment Registry) if the reported SCI score is no more than 19 points lower than the median SCI score for the Benchmark Site. A SCI result that is within the acceptance criteria established for the respective benchmark site provides assurance to DEP that the sampler or field organization and the taxonomic lab are properly following the DEP SOP. DEP conducted a records audit of the required documentation associated with the refresher audit sample to better determine how closely the lab complies with the procedures in DEP SOP SCI 2000.

For this audit, a single SCI sample from Sweetwater Branch in Liberty County was examined. The sample was collected on July 18, 2014, by Brandon Tidwell and Russell Burge of Scheda Ecological Associates, Inc. The samples were processed by EcoAnalysts, Inc. Some of the audit findings are unique to the individual SCI sample while other findings and comments pertain to the overall laboratory protocols for the handling and processing of SCI samples.

**Summary of Findings/Acceptance of Corrective Actions**
A preliminary audit report was sent to EcoAnalysts on August 13, 2015, outlining the initial findings. EcoAnalysts responded to the preliminary report on August 21, 2015. The findings, EcoAnalysts' responses, and the Department's comments are provided in Table 1 below.

The Department found that EcoAnalysts' macroinvertebrate taxonomy lab procedures complied with DEP SOP SCI 2000 for sample sorting, taxonomic identification, and index calculation, with a few minor deficiencies, as noted below. EcoAnalysts has provided acceptable responses to all of the listed findings, and the Department accepts the corrective actions to the deficiencies indicated in Table 1. Based on the results of this audit, the department auditors have concluded that EcoAnalysts follows all appropriate department Standard Operating Procedures (SOPs) for SCI sample analysis.

**Data Usability Recommendation**
Based on the results of this audit, the Aquatic Ecology and Quality Assurance Section has determined that the SCI data produced by EcoAnalysts meet the department's data quality objectives, and recommends that the data may be used for refresher audit evaluation scoring for SCI sampling according to DEP SOP SCI 1300.

**Lab Quality System**: EcoAnalysts maintains a reference collection, but in their initial document submission no extramural experts were listed as verifiers. In response to the preliminary report, EcoAnalysts clarified that they have consulted external experts on reference collection specimens and has since provided the appropriate documentation. EcoAnalysts should continue to add verified specimens of Florida taxa to their existing reference collection for greater representation of commonly encountered organisms.

**Sample Processing, Sorting and QC:** Overall, EcoAnalysts' sorting and identification procedures comply with DEP SOPs. There was no mention of slides or slide-mounted organisms in the original



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documentation, but organisms were taken to the lowest practical level suggesting proper procedures are being followed. In response to the preliminary audit, EcoAnalysts realized they inadvertently omitted the Oligochaete Mounting Benchsheet for sample 6941 and a copy of their SOPs describing their slide-mounting protocols. The information was submitted, and this documentation requirement is now fulfilled.

Two analysts had cumulative sorting efficiencies below 95% and another was below 90%. No precautionary measures were indicated when the QC check demonstrated a sorting efficiency between 90% and 95%. Documentation indicated that the entire aliquot would be re-sorted only if the efficiency fell below 90%. EcoAnalysts acknowledged a clerical error was responsible for erroneously setting the target sorting efficiency at 90% rather than 95%. It was discussed internally with the analysts, and procedures have been established to ensure the target is achieved for future SCI samples.

**Taxonomic Identification QC:** EcoAnalysts conducts quality control (QC) at the prescribed rate and with the required accuracy. However, it was not clear how taxonomic discrepancies were resolved. In response to the preliminary report, EcoAnalysts indicated that reconciliation narratives are available if the client requests them in advance of sample analysis. This request was not made by Sheda Ecological Associates and thus were not maintained for the audited sample. The DEP auditor emphasized that for future samples, reconciliation narratives and associated data must be retained and provided to DEP upon request, according to requirements in rule 62-160.340, F.A.C.

**SCI Index Calculation:** EcoAnalysts correctly classified taxa according to their attributes, assigned the correct SCI Bioregion, and used the SCI 2007 calculations that were in effect at the time of sample collection. The auditor advised EcoAnalysts to use the revised calculations (SCI 2012) for future samples. It should be noted, that there was no differences in the final scores between the two versions of the calculations for the audited sample. In response to the preliminary report, EcoAnalysts assured DEP it would use the SCI 2012 formulas for future SCI calculations.



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**Table 1.** Audit findings of deficiency and/or requests for additional information for the SCI Laboratory Audit of EcoAnalysts conducted by the Florida Department of Environmental Protection Aquatic Ecology and Quality Assurance Section.

| Finding number | SOP reference | Audit Finding | EcoAnalysts Response | Corrective Action Implementation Date | DEP Comments |
|---|---|---|---|---|---|
| 1.4., 1.5 | SCI 2200, 2. | No extramural experts were listed in the original reference list submitted by EcoAnalysts. | Use of extramural experts was not warranted for the specimens found in the SCI projects we've processed so far.<br>Our list of extramural experts consulted for freshwater and marine invertebrates, zooplankton, ichthyoplankton, phytoplankton, and periphyton is extensive.<br>EcoAnalysts' experts consulted periodically specifically for other freshwater benthic macroinvertebrate projects include:<br>John Epler – Chironomidae, Beetles, Hemiptera<br>Luke Jacobus – Mayflies<br>John Morse – Caddisflies<br>David Richards – General taxa<br>Brady Richards – General taxa, Beetles<br>Dave Ruiter – Caddisflies<br>John Sandberg – Stoneflies<br>Ken Tennessen – Odonates<br>Mark Wetzel – Oligochaeta<br>Bob Wiseman – Caddisflies | 8/21/2015 | Extramural experts have been used by EcoAnalysts to verify reference specimens, but documentation to this effect was not submitted with the initial response. EcoAnalysts subsequently submitted a list of specimens that have been externally verified.<br><br>This corrective action is acceptable and considered complete. |
| 2.5, 2.6, 2.9 | SCI 2100, 3.2, 3.3.2.7. | Original bench sheets were not submitted. No information about slide-mounted organisms was provided. | Only the sorting technicians use a paper bench sheet at their stations when processing samples. They then enter that data into our custom electronic Laboratory Information Management System (LIMS) before organisms are identified by the taxonomists. Taxonomists enter their data directly into our electronic LIMS at the bench when processing samples. Data checks and balances are part of our operational QA/QC standards for both processes. | 8/21/2015 | The use of electronic data forms is acceptable.<br><br>The Oligochaete Mounting Bench Sheet was inadvertently omitted from the initial documentation and was subsequently submitted to DEP.<br><br>This corrective action is acceptable and considered complete. |



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| Finding number | SOP reference | Audit Finding | EcoAnalysts Response | Corrective Action Implementation Date | DEP Comments |
|---|---|---|---|---|---|
| 3.4, 3.5, 3.6 | SCI 2210, 2.1.1., 2.1.2 | Two analysts had sorting efficiencies below 95% and another was below 90%. The documentation indicated that action was taken only when the efficiency was below 90%. | The corrective measures executed in response to the unacceptable cumulative percent efficiencies are, first and foremost, to ensure that if those technicians individual scores fall below 95% efficacy to have a senior QC technician train the sorting technician as to why and how to correct any sorting deficiencies on future samples. Second, the QC technicians will re-check all sorted material for those samples to ensure at least 95% of the specimens are recovered from the sorted material. QC efficacy statistics are being maintained and monitored specifically to SCI samples. | 8/21/2015 | This corrective action is acceptable and considered complete. |
| 3.6 | SCI 2210 1.4 | The sorting QC records indicate that four organism were found in two of the eight aliquots. There is no indication that a QC check was performed on the remaining aliquots This would have resulted in a sorting efficiency of 90%. Item 8 indicates percent recovery was 92.86%. | On an individual sample (150-count aliquot) basis, the target minimum percent sorting efficacy was instructed to be 95% except for EcoAnalysts project number 6941 where a clerical error communicated the target minimum percent efficacy was 90%. The oversight in catching the sorting efficacy protocol error for 6941 was discussed with the protocol reviewers and, thus, is accentuated as an SCI protocol that has to be double checked prior to starting processing of future samples. If a percent efficacy is calculated to fall below acceptable limits, the sorted material is either returned to the original sorter to be sorted through again or completely re-sorted by the QC technician to recover the missed specimens until the minimum percentage of specimens is deemed to be recovered from the sorted aliquot. | 8/21/2015 | This corrective action is acceptable and considered complete. |



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| Finding number | SOP reference | Audit Finding | EcoAnalysts Response | Corrective Action Implementation Date | DEP Comments |
|---|---|---|---|---|---|
| 4.3, 4.6 | SCI 2221, 1.10. | It was unclear how taxonomic discrepancies were resolved. | EcoAnalysts maintains records of QC activity and can provide Taxonomy QA/QC reconciliation narratives upon request if requests are made by the client in advance of sample processing. The narratives are provided in Microsoft Word documents to accompany the Re-Identification Results and explain what discrepancies were found, how they were reconciled, and if the final reconciliations affect the taxonomy results for the specific sample QC'd or also other samples in the project. EcoAnalysts will maintain such records for DEP samples in the future. | 8/21/2015 | DEP emphasized that taxonomic reconciliation records must be maintained for all DEP samples in the future, per rule 62-160.340, F.A.C.<br><br>This corrective action is acceptable and considered complete. |
| 5.5 | SCI 2100, Table SCI 2100-1 | The SCI_2007 calculations were used for metric calculations, which were in effect at the time of sample collection, but DEP cautioned EcoAnalysts that the SCI 2012 formulas should be used for all future samples. | Any upcoming SCI calculations will be done using the SCI_2012 version for future samples as requested. | 9/7/2015 | This action is acceptable and considered complete. |



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