



Watershed Assessment Section

2011 Annual Quality Assurance Report

December 2011

Executive Summary

The Department's Watershed Assessment Section (WAS), which is in BARS, is responsible for assessing the state's surface waters pursuant to the Identification of Impaired Surface Waters Rule (IWR, Chapter 62-303, F.A.C.), as part of the state's watershed management program. The assessments are conducted on an annual basis using a basin rotation approach such that one-fifth of the state is assessed each year. In addition to processing millions of data results, this work includes holding public meetings and responding to comments to confirm that accurate assessments of Florida's waterbodies are produced. This information is then submitted to EPA in support of section 303(d) of the Clean Water Act.

The 2011 calendar year included several QA activities and technical training events held throughout the year that were directed at ensuring QA objectives were attained and that the most current scientific knowledge, practice and public feedback were available to staff. One of the primary areas of focus for the WAS is on evaluating whether ambient monitoring data meets the Department's usability criteria for assessing surface waters and that data collected are representative of current conditions.

In addition to routine task assignments, several staff from the WAS participated in field sampling trips to numerous northwest Florida beaches as part of the Department's response to the Deepwater Horizon oil spill. The field sampling took place from January to August 2011 along the coastline from Walton to Wakulla County. Other field work included an audit of one data provider whose contract was up for renewal. The purpose of the audit was to evaluate whether or not sampling teams could demonstrate skill and proficiency in collecting water samples following Department SOPs.

The WAS identified numerous QA issues during the development of the Group 5, Cycle 2 basin assessment lists. This resulted in the exclusion of several water quality parameters from multiple basins that directly affected the Group 5 assessments. Each member of WAS contributed to the on-going review process of STORET sampling stations, waterbody identification units (WBIDs), and ambient monitoring data used in the IWR assessments. WAS staff also provided editorial comments, feedback, and technical guidance on several Department rules that were opened for rule development and revision as part of the Triennial Review of state surface water quality standards. This included draft revisions to the IWR Rule (Chapter 62-303, F.A.C.), Surface Water Quality Standards (Chapter 62-302, F.A.C.), Quality Assurance Rule (Chapter 62-160, F.A.C.), Standard Operating Procedures (SOPs) for the BioRecon, Stream Condition Index, Lake Vegetation Index, Habitat Assessments, development of numeric nutrient criteria, and revisions to the DO criteria.

As part of the WAS internal review process, WAS identified the documentation and tracking of changes to WBID and station lists as an area to improve. This issue was addressed by holding a series of meetings using the Rapid Process Improvement (RPI) method to streamline WBID and station metadata processing and to standardize technical revisions made by WAS staff. As a result a series of corrective actions were planned and the WAS created and implemented an "RPI WBID / Station Tracking Sheet" for the section.

The WAS is continuously making improvements to the IWR assessment database distributed by the section several times throughout the year. As the WAS begins the third cycle of the basin rotation schedule, the process of tracking water quality impairments from cycle to cycle is a high priority issue in the upcoming calendar year (2012).

A. Quality Assurance Activities and Training

The table below highlights the major quality assurance training activities that WAS staff participated in or led in the 2011 calendar year. A brief description of each training event is explained on the following pages.

<u>WAS STAFF</u>	<u>SCI and HA Training*</u> <u>4/14/2011 or</u> <u>11/9/2011</u>	<u>SMP Training^</u> <u>5/17/2011</u>	<u>QA Training#</u> <u>5/18-19/2011</u>	<u>HEM Tool Training\$</u> <u>9/28/2011</u> <u>(or any other dates)</u>	<u>HAZWOPER Training+</u> <u>6/24/2011</u>
Albright, James	X	X		X	
Espy, Julie		X	X	X	
Homann, Philip	X	X		X	
Kurisko, Paul	X	X	X	X	
Lewis, Nancy				X	
O'Donnell, Kevin	X	X	X	X	
Parmer, Keith	X	X	X	X	
Punshon, Alan		X	X	X	
Ralys, Benjamin	X			X	
Rich-Zeisler, Jessica	X	X	X	X	X
Sanders, Katrina	X	X	X	X	X
Tyler, David	X	X	X	X	
Wilcox, Erin		X	X	X	X

* This training was done at the Bear Creek Educational Center.

^ This training started out in BMC Rm A204 with Russ Frydenborg and Julie Espy giving a presentation on SMP guidance, and then a trip to sites within the Tallahassee area.

This training took place in BMC Rm 609 and was primarily for DEP QA officers and managers.

\$ This training took place in BMC Rm 603.

+ This training was held in the BMC Rm 609 and is for the Hazardous Waste Operations and Emergency Response.

1. SCI and HA Training: Stream Condition Index and Habitat Assessment
 - a. This training was offered by staff from the Standards and Assessment Section (SAS) informing people on the different SOPs for performing the SCI and HA in streams. The training included classroom setting presentations, question and answer opportunities, and hands on experience in the field to learn about these assessment tools. A significant amount of time was spent on knowing how to interpret the data and assuring that it is representative of ambient conditions.
2. SMP Training: Strategic Monitoring Plan
 - a. This training was offered by staff from the SAS and WAS informing people on the strategic monitoring background, concepts, and implementation. The training included classroom setting presentations, question and answer opportunities, and experience in the field to learn about different sampling techniques and potential water quality parameters to collect from various stream types, including urban canals. An overview of the Class III-Limited waterbody classification purpose and intent was discussed, including a brief discussion on potential methods to identify and evaluate Class III-Limited waterbodies, their Designated Uses, Site Specific Alternative Criterion (SSAC), and Use Attainability Analyses (UAAs).
3. QA Training: Quality Assurance and Quality Control
 - a. This training was offered by the SAS to DEP staff providing a general overview of the management activities required as part of 403.0623 Florida Statutes, DEP QA Directive 972, and implemented through the Quality Assurance Rule, 62-160, F.A.C. This training informed people of the guidelines to follow for data usability for lab and field data, approved analytical methods, specific data quality objectives, lab and field audits. A second day of training was given specifically for DEP SOP sampling training and hands on experience performing actual field testing.
4. HEM Tool Training: Hydrography Event Management Tool
 - a. This training was offered by USGS to WAS staff in an effort to help merge the current WBID and station GIS coverage with the NHD

GIS datasets. The Hydrography Event Management (HEM) Tool provides full functionality for adding and editing events to the Florida NHD dataset. The training included question and answer opportunities and take away materials to assist in improving a user's skills and terminology with GIS.

5. HAZWOPER Training: Hazardous Waste Operations and Emergency Response

- a. This training was an 8-hour refresher course offered by DEP and Kenton Brown, a former DEP employee, to allow WAS and other DEP staff to participate in the Deepwater Horizon oil spill sampling which took place in northwest Florida. The training is required by OSHA for any employee working at sites where they may be exposed to or may potentially be exposed to hazardous substances, health hazards, or safety hazards (see 29 CFR 1910.120 (e)(1)(i)). Objectives of the class were to: develop a level of competency that would allow employees to recognize unsafe conditions at uncontrolled hazardous waste sites; develop the necessary tools to evaluate site conditions; develop decision matrix for establishment of safe work atmospheres through engineering controls, administrative controls, and/or personnel protective equipment (PPE); and to discuss emergency responses to HAZMAT incidents to determine whether or not response can be taken in a safe manner.

B. Field Sampling Activities

1. As part of the Department's response to the Deepwater Horizon Oil Spill several WAS staff collected water quality samples from within the intertidal zone of beaches and piers to determine whether dissolved petroleum chemicals were present in the water at levels that exceed DOH's human health screening levels. This included collecting samples for the presence of dispersants and PAHs in surface waters. The sampling protocol required samplers to pay significant attention to documenting the type of sample collected and the conditions under which it was sampled. Additional guidance provided to the samplers included collecting water samples in knee deep water offshore from bathing areas heavily impacted by tarballs or from sampling areas with high recreational use. Samples were intended to be collected free from actual tarballs.

C. Audits

1. In preparation of the contract renewal between DEAR and the Bream Fisherman's Association (BFA), the WAS Quality Assurance officer participated in a field sampling audit held on June 5, 2011 with BFA samplers. The purpose of the audit was to evaluate whether the field sampling techniques used by the BFA samplers followed the established DEP SOPs. Numerous major deficiencies were identified as a result of the audit and corrective action has been initiated for all of the deficiencies. The deficiencies are primarily related to proper equipment preparation as described in DEP SOP FS 1001, sections 2.3 and 3.4 and sample contamination prevention as described in DEP SOP FS 1002 section 1.1 and FS 1003, section 3.

D. Quality Assurance Issues

1. WAS completed an extensive review of water quality and biology sampling stations, WBIDs, and their associated water quality or biological data as part of a continuous internal QA process. Stations extracted from FL STORET that are applicable to the impaired waters assessment were reviewed in a series of IWR Runs. Stations were evaluated for their representativeness and accuracy based on the latitude - longitude coordinates, station descriptions, and proximity to NHD line work in the Department's GIS coverage. WBIDs were evaluated for accuracy of hydrologic connections to receiving waters, waterbody names, waterbody class (Class I, II, or III), waterbody types (for ex. springs, lakes, and streams), and the delineation of watershed boundaries. Water quality and biological data were reviewed and evaluated to confirm they are representative of current water quality conditions taking into account present land uses, seasonal and annual trends, and droughts. This review process is for all basin groups, but primarily focused on Group 5 waterbody information since 2011 is the assessment year for that basin.
2. Beginning in 2010 and during the 2011 year, WAS staff identified numerous QA issues for field data collected by the Florida Department of Agriculture and Consumer Services (FDACS), Shellfish Environmental Assessment Section (SEAS) through detailed communication with the Tallahassee staff and their Apalachicola Shellfish Laboratory. SEAS staff informed WAS that their field records did not have proper documentation and that pre- and post-calibrations of their field meters did not take place as required for data usability by DEP SOPs. In an effort to improve the

data quality with SEAS, WAS initiated an effort to contract with FDACS to assist the DEP in the collection of nutrient water quality data from estuarine and coastal waters. The contract includes requirements that SEAS follow the appropriate field SOPs established by the Department. This data has great potential to aid in the assessment of nutrients in estuarine and coastal waters.

3. Water quality data collected by Pinellas County was excluded from the Group 5, Cycle 2 Springs Coast assessment for biochemical oxygen demand (BOD) due to high MDL and PQL values for numerous stations. WAS completed a detailed review of the existing BOD values in IWR Run 44 for Springs Coast impairments and determined that several Pinellas County samples collected during the assessment period (January 1, 2004 – June 30, 2011) were suspect. Results were reported with varying MDLs and PQLs that skewed results above the threshold DEP uses to evaluate the potential for BOD to be a causative pollutant for dissolved oxygen (DO) impairment. Based on this review, WAS concluded that due to the uncertainty of the BOD data provided by the county, the data should not be used to support DEP's assessment of impairment for DO. The exclusion of the BOD data resulted in several WBIDs not being placed on the verified list of impaired waters for DO and the assessment category changing from category 5 (impaired) to category 4d (no causative pollutant) in the Springs Coast Basin.
4. Water quality data collected by the St. John's River Water Management District was excluded from the Group 5, Cycle 2 assessment for metals due to dilution issues. Data collected from 2003 to 2009 were removed because they were diluted before analysis due to high salinity which skewed results. The exclusion of this data did not result in any changes to the Group 5, Cycle 2 assessments for the Indian River Lagoon or Upper East Coast Basins.
5. Water quality data collected by the DEP Southeast District Laboratory was excluded from the Group 5, Cycle 2 assessment for several water quality parameters due to an audit conducted by SAS in 2006. The lab audit established the data did not include sufficiently adequate calibration and quality control procedures to allow use of the audited results for the assessment of water quality standards attainment. The exclusion of this data resulted in several changes to the Group 5, Cycle 2 assessments for the Everglades Basin. Water quality parameters excluded include:

chlorophyll-a, fecal coliform, ammonium, nitrate/nitrite, orthophosphate, TKN, TP, turbidity, pH, specific conductance, and dissolved oxygen.

6. WAS staff provided edits and comments to the on-going revisions to the IWR Rule 62-303, F.A.C., Surface Water Quality Standards 62-302, F.A.C., QA Rule 62-160, F.A.C., several DEP SOPs, numeric nutrient criteria, and the dissolved oxygen criteria.

E. Corrective Actions

1. As a result of the BFA field sampling audit, water quality data collected by this data provider have been excluded from use in impaired waters assessments for the verified period. At the current time, all water quality parameters collected are excluded, this includes: BOD, chlorophyll-a, color, fecal coliform, nutrients (NO₃, NO₂, TKN, TN and TP), pH, specific conductance, salinity, temperature, TSS, and Turbidity. Corrective action has been initiated for all of the deficiencies with assistance provided by the DEP Northwest District, including annual QA training.
2. As a result of extensive communication and coordination with SEAS, numerous water quality parameters are excluded from the impaired waters assessment for the verified period. Water quality parameters collected by SEAS that are excluded include: dissolved oxygen, pH, specific conductance, turbidity, temperature and salinity. At the current time, fecal coliform samples continue to be used for verified period assessment.
3. Beginning in July 2009, WAS initiated a technical work group, as part of a Rapid Process Improvement (RPI) method, to evaluate the work flow and data management efficiency of the WBID and station metadata process used to support the IWR assessment database. One major work product of the RPI work group is the creation of a WBID and station attribute tracking sheet or the "RPI WBID / Station Tracking Sheet". This tracking sheet allowed the WAS to minimize the number of spreadsheets sent to database managers, streamlined WBID and station metadata processing, and standardized the methods used by WAS staff to make technical revisions. The most recent meeting held in March 2011 by the work group discussed progress on assigned tasks from the previous meeting and made some changes and refinements to the process. More work is still needed to fully implement a few of the items identified in the RPI plan.