

UNRBA Monitoring
Program
PFC Meeting
January 6, 2015



Update on the Monitoring Program

September 2014 UNRBA Monitoring Data





Monitoring Program Updates

- September Monitoring Data at Lake Loading and Jurisdictional
 - Data Summaries (handouts)
 - QA/QC Review
- DWR monitoring of Falls Lake for the new parameters and additional Station
- UNRBA Database Updates Conducted in December
- Special Study Updates



Monitoring Program Update

- All Jurisdictional stations were monitored according to monitoring plan in December
- All Lake Loading stations were monitored according to new sample collection procedures in December
- All Falls Lake stations were monitored by DWR, but DWR did not provide the sample for one station for Env. 1 analysis
- Began implementing the new data collection procedures in mid-November
 - Using colored dye to estimate flow, taking samples even at low or no flow conditions
 - Additional documentation of flow conditions on field form
 - Completing the marking of reference points on bridges

September 2014 Results

Lake Loading and Jurisdictional Stations



No samples were collected in September due to lack of visible flow at the following sites:

- **Jurisdictional Sites**
 - Ledge Creek at Old Rt 75
 - Ledge Creek at W Lyon Station Road
 - Robertson Creek at Sam Moss Hayes Road
- All Lake Loading Sites were sampled in September



Stations with low DO or elevated chlorophyll a in September 2014

Table 1. August Sampling Results - Stations with dissolved oxygen or chlorophyll a values greater than State criteria

Dissolved oxygen less than 4.0 mg/l	Chlorophyll <i>a</i> above 40 ug/l
<p><u>Lake Loading Stations:</u> <u>Flat River, Panther Creek,</u> <u>Little Lick Creek, and</u> <u>Beaverdam Creek</u></p> <p><u>Jurisdictional Stations:</u> <u>Little Ledge Creek</u></p>	<p>None</p>



September 2014 -nitrogen concentrations

- No unusually high nitrogen concentrations were observed
- The highest concentrations were observed in Knap of Reeds Creek and in Upper and Lower Barton Creeks



September 2014- phosphorous concentrations

- No unusually high phosphorus concentrations were observed
- Highest TP concentrations observed in Knap of Reeds and Ellerbe Creeks



September 2014- Stations with highest concentrations of TOC

- Lake Loading Stations: Highest concentrations were observed in the Unnamed Tributary and in Roberson Creek
- Jurisdictional Stations: Highest concentration observed in Little Ledge Creek

September 2014 QAPP Compliance Review

Lake Loading and Jurisdictional Stations



September 2014 Data Review against QAPP

- Target holding times and frequency of equipment blanks and field duplicates were met for all parameters
- Field precision results looked reasonable for September. Field precision is estimated as the relative percent difference (RPD) between duplicate samples
- Most field and equipment blanks fall within the QAPP specified ranges
- Environment 1 has started using a filter from a different manufacturer for field filtration as one of their process changes to address the elevated TP in some blanks
- Preparing for a Laboratory audit of Environment 1

UNRBA Database

December Updates



Database Hosting Environment Security Update

- Made a number of software updates necessary to assure security of data and to deter hackers
 - Upgraded dedicated web server to Windows 2012 R2
 - Upgraded php software from 5.4 to 5.6
 - Upgraded PostgreSQL server and database from version 8.1 to 9.3.5
- These changes necessitated a number of code revisions and extensive testing of the web-interface
 - Troubleshooting of errors which were introduced with new version of the software
 - Programming updates needed to fix errors
 - Revisions are being evaluated in a test environment



Database Updates – New fields added

1. Sampling Time and Sample Type (Field and QC)
2. Depth and Depth Type
3. Upper and Lower Composite Depths
4. Cell Path Length for Absorbance Measures
5. Analysis Method
6. Upper (RL, PQL) and lower (MDL) detection limits
7. Receiving and Analyzing Labs
8. Receipt and Analysis Dates
9. Sample Delivery Group
10. COC ID
11. Monitoring Organization
12. QAPP ID





Database Updates – Web-Interface Updates

- Customizing user-access levels
- Customizing data displayed on map
- Customizing automated data reports



Database Updates – January Actions

- Complete final testing of php 5.6 changes
- Complete the Lake Loading and Jurisdictional Boundary groups
- Complete user role modifications
- Complete loading of data through October 2014
- Complete online training materials for distribution at February 3rd PFC
- Production site “Internal Go Live” date is February 2nd
- Production site “Public Go Live” date is tentatively scheduled for April based on input from UNRBA as discussed at last PFC meeting

Progress on Special Studies

December Updates



UNRBA Special Studies

- **Stormwater Monitoring**
 - Drafted stormwater monitoring QAPP which is in internal review
 - Conducting field visits, contacting property owners
 - Installing equipment this month
- **High Flow monitoring**
 - Developing an on-call staffing calendar that is coordinated with Environment 1 so that we can pull the trigger on high flow sample collection starting in January



UNRBA Special Studies

- Falls Lake Benthic Flux data collection
 - Met with Dr. Marc Alperin of UNC Chapel Hill's Marine Sciences Department in December and identified a sediment core sampling strategy for implementation in June
 - Exploring options for developing contract mechanism with UNC to save UNRBA on University overhead costs
 - Have identified a consulting firm that is collecting benthic flux data using benthic chambers
 - Jay Sauber has been communicating with EPA regarding their conducting benthic flux studies on behalf of UNRBA (using benthic chambers)





No Visible Flow – Monitoring Program Implications

- Proposed Changes to Monitoring Protocols:
 - Place drops of colored food dye or rhodamine dye in stream and watch for 2 minutes to determine if advective flow is present
 - Obtain samples even when no flow is observed – tag these samples as stagnant flow samples in UNRBA database
 - Review data after 3-5 months and determine whether to continue collecting samples when no advective flow is present
 - At each sampling event measure from a marked location on the bridge down to the top of the water column. Make this measurement at each location where stagnant flow has been observed.