

UNRBA Board Meeting February 20, 2013

Location: Butner Town
Hall

Agenda

Introductions and Announcements

Approval of the January 16, 2013 Meeting Summary

Existing Development Rule Implementation Initiative

Strategy Group Report:

Status Piedmont Triad/Jordan—TREBIC Initiatives

**UNRBA Approach: Implementation Delay—Nutrient Credit
Development**

DENR Contact

Administrative Options

Legislative Option

**Cardno ENTRIX Report on Cost/Timeline for Nutrient Credit
Toolbox**

Budget Considerations

**Future Monitoring Objectives—Path Forward Committee Activities and
Recommendations**

Agenda (Continued)

FY 2014 Funding Discussion

Base Dues and UNRBA Management: Personnel Committee
Existing Development/Nutrient Credit Toolbox: Strategy Group
Monitoring Program to Support Stage II Reexamination Process
Path Forward Committee

Consideration of Fund Balance and Revenue Needed to Support UNRBA Objectives

Treasurer's Report—Jimmy Clayton
Fund Balance
Revenue Requirements

Executive Director Report

Next Scheduled Board Meeting March 20, 2013

Closing Comments

Introductions and Announcements

Approval of January 16, 2013 Meeting Summary

- Review of Draft Summary
- Comments and Corrections
- Board Vote

Treasurer's Report

Jimmy Clayton

**Upper Neuse River Basin Association, Inc.
Treasurer's Report**

Date: 2/19/2013

Balance Forward: (per bank statement - 12/27/12)			
	Checking	\$	307,547.02
	Savings		113,054.77
Debits:			
McGill Associates (services thru December, 2012)		\$	9,997.90
Cardno (November & December invoices)		\$	35,169.69
Bank Charges (maintenance fees)			1.00
Total Debits		\$	45,168.59
Credits:			
Interest (checking)		\$	36.82
Interest (savings)		\$	24.78
Account Balance (per bank statement -1/28/13)			
	Checking	\$	262,415.25
	Savings		113,079.55
Total UNRBA Account Balance :		\$	375,494.80
 Outstanding invoices/deposits in process since the close of bank statement (1/28/13):			
Debits:			
Cardno (January 13 invoice)		\$	15,537.50
McGill Asso. (January, 13 invoice)			14,685.06
Current Account Balances:			
	Checking	\$	232,192.69
	Savings		113,079.55
Total UNRBA Account Balance :		\$	345,272.24

Anticipated UNRBA Expenditures for FY 2012 - 13

Date: 2/19/13

Cardno-Entrix Contract Amount -	\$	205,240.00	***	
Paid in FY 2011-12		\$ 36,578.75		
Paid in FY 2012-13		108,801.12		
		Balance on Contract:	\$	59,860.13
 McGill Asso. Contract Amount -	 \$	 120,000.00		
Paid in FY 2012-13		\$ 69,577.12		
		Balance on Contract:	\$	50,422.88
Reimbursables and other expenses:			\$	3,500.00
Total Projected Expenditures to 6/30/13:			\$	113,783.01
Current Account Balance as of 2/19/13:		Checking	\$	232,192.69
Less projected expenditures for FY 2012-13:				<u>113,783.01</u>
Projected Checking Account Balance on 6/30/13:			\$	118,409.68
Current Saving Account Balance:			\$	113,079.55

*** Cardno's contract increased by \$8,000 (Board approved for additional report)

Existing Development Rule Implementation Initiative

Strategy Group Report:

- Status Piedmont Triad/Jordan—TREBIC Initiatives
- UNRBA Approach: Implementation Delay—Nutrient Credit Development
- DENR Contact
- Administrative Options
- Legislative Option
- Cardno ENTRIX Report on Cost/Timeline for Nutrient Credit Toolbox
- Budget Considerations

Falls Lake Schedule Considerations

- Inventory of potential reduction opportunities within their jurisdictions, January 2013.
- DWQ Develop Jurisdictional Loads (JLs) for each affected local government within the Falls Lake Watershed for EMC approval, July 2013
- DWQ must develop a “Model Program” (MP) as a framework for meeting these JLs and submit the MP to the EMC for approval, July 2013.
- Governments are required submit to DWQ for review and **preliminary** approval nutrient reduction programs, January 2014 (six months following EMC approval of the MP—if the EMC acts in July 2013)
- Implementation of the programs must begin at the time of submittal and prior to preliminary or final approval.
- Implementation of the Existing Development requirements for Stage I is scheduled to occur over the period between 2014 and 2021.
- The “deadline” for meeting the Stage I Existing Development JLs is 2021, seven years following the implementation start date.

Technical Considerations

1. The ability of DWQ to develop acceptable JDs for the jurisdictions in the established timeframe,
2. The lack of a comprehensive list of nutrient reduction practices that would provide realistic and acceptable nutrient credits for the development of a flexible and effective MP for use by the local governments,
3. DWQ's limited resources (including the Nutrient Scientific Advisory Board) to provide a comprehensive package of nutrient reduction practices,
4. The lack of alternatives stemming from items 1 and 2 for the development of local programs required in January 2014, and
5. The inconsistent local program approval schedules.

Provisions of a UNRBA Initiative

- 1. Through administrative action or legislative change seek modification to the implementation schedule that delays implementation of the Stage I Existing Development Rule by at least 18 months
- 2. Work with DENR/Legislature to achieve this schedule revision and to identify specific resources and funding to secure the development of a more complete list of approved nutrient reduction practices and credits for use in the development of local programs
- 3. Seek State funding for the credits development process but provide funding within the FY 2014 budget to support the development of an expanded nutrient reduction practices and credits framework

UNRBA Status Update February 2013

Alix Matos
Lauren Elmore





Agenda

- Project status update
- Discuss development of a nutrient credit accounting tool for the Falls Lake Watershed
 - Options
 - Costs



Task	Description	Percent Complete
1	Develop Framework for a Re-Examination of Stage II of the Falls Nutrient Strategy	70%
2	Review Existing Data and Reports to Summarize Knowledge of Falls Lake and the Falls Lake Watershed	100%
3	Review Methods for Delivered and Jurisdictional Nutrient Loads	100%
4	Recommendations for Future Monitoring and Modeling	98%
5	Compile Final Report	68%
New	Develop Approach for Development of Nutrient Accounting Tool	95%



Status Update

- **Task 1 - Stage II Re-examination Framework**
 - Spreadsheet tool links nutrient reduction with designated uses
 - Barnes and Thornburg Lawyer, Susan Bodine, is reviewing reports and drafting recommendations
 - Discuss with NCDWQ monitoring and modeling needs and Stage II re-examination options
 - TM1 annotated outline to PFC in February
 - Draft Task 1 TM in mid March
 - Final Task 1 TM in mid April
- **Task 2 - Summary of Existing Data and Reports**
 - Task 2 TM – Finalized



Status Update, Continued

- **Task 3 -Tributary and Jurisdictional Load Estimation Methods**
 - Task 3 TM – Finalized
- **Task 4 (Future Monitoring and Modeling)**
 - Submitted Final Draft Task 4 TM to PFC
 - PFC will submit a copy to NCDWQ
 - Cardno ENTRIX will finalize pending input from NCDWQ
- **Additional Task**
 - Submitted a report to the PFC regarding the potential to develop a nutrient credit accounting tool for the Falls Lake Watershed
 - Will finalize report after receiving PFC comments



Objectives for Developing Nutrient Credit Accounting Tool

- Develop nutrient credits for BMPs without accounting procedures
- Reduce implementation costs for the UNRBA
- Continue to improve water quality in Falls Lake
- Provide UNRBA with a more complete “tool box” for implementing Stage 1 (January 2014)



Issues Facing the Regulated Community

- **Falls Lake Nutrient Management Strategy**
 - Does not account for delivery factors in the watershed
 - Does not provide nutrient credit accounting for many potentially cost effective BMPs
 - Requires implementation of Stage I before credit accounting procedures are in place for many BMPs
- **Very high implementation costs for Stage I and Stage II**
 - Approximately \$30 million per year for local governments to reduce nutrient loading from existing development
 - Approximately \$20 million per year for WWTPs to upgrade facilities



Main Tasks for Developing a Nutrient Credit Accounting Tool

- Multiple options presented for each task
- Select one option from each task
 - Task 1 – Build a database of BMP nutrient removal effectiveness
 - 1A - Single Program
 - 1B - Extended Research
 - 1C - Account for Uncertainty in BMP Performance
 - Task 2 – Develop a spreadsheet based tool that includes costs
 - 2A - Assume Delivery Factors of 1
 - 2B - Account for Nutrient Retention in Large Watershed Impoundments
 - 2C - Account for Nutrient Trapping in Subwatersheds, Streams, and Impoundments
 - 2D - Build Tool in an Interactive GIS Interface



Task 1 – Build a BMP Database

- Compile comparable nitrogen and phosphorus removal efficiencies
- Compile costs (capital, operation and maintenance, convert to consistent cost basis)
- Focus on BMPs that do not have accounting procedures in place or are not included in the PTRC study
- Evaluate applicability for the Falls Lake Watershed
- Three options for developing Task 1
 - Vary by extent of the research effort and analysis of the data
 - Provide flexibility for the UNRBA in how the tool is developed
 - Costs ranges include meetings and negotiation with NCDWQ as well as project documentation



Task 1 – Build a BMP database

• Option 1A – Single Program

- Compile data from a single program (e.g., Chesapeake Bay)
- May limit number of BMPs available for consideration
- Would rely on single values for nitrogen and phosphorus removal efficiencies
- May raise questions as to applicability to local watershed
- Potential costs: \$20,000 to \$40,000
- Range in costs due to discussion and negotiation with NCDWQ



Task 1 – Build a BMP database

• Option 1B – Extended Research

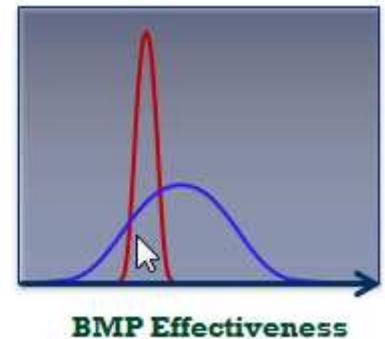
- Extend research effort to include several information sources
- Identify representative summary statistics to represent the nitrogen and phosphorus removal efficiencies (e.g., median, average)
- Improves on Option 1A with additional data
- Does not account for the variability in nutrient reductions often observed for a particular BMP
- Potential costs: \$75,000 to \$125,000



Task 1 – Build a BMP database

- Option 1C – Account for Uncertainty in BMP Performance
 - Builds upon database compiled for Option 1B
 - Analyze distribution of reported nutrient removal efficiencies
 - Incorporate information about uncertainty and variability into the assignment of nutrient credits
 - Allows the UNRBA to encourage use of BMPs with consistent performance
 - Potential costs: \$125,000 to \$175,000

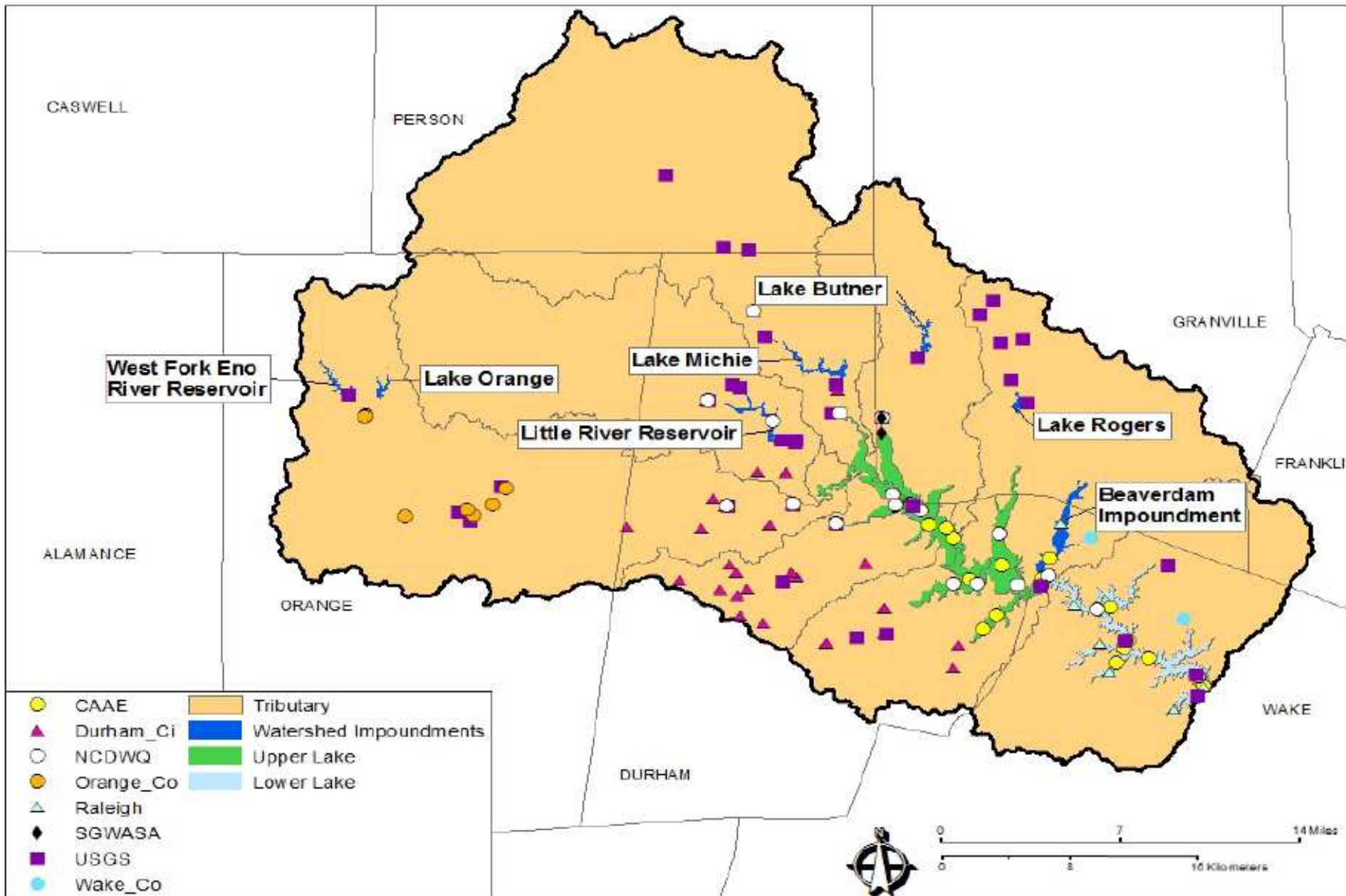
- BMP #1 is expected to be 60% effective \pm 30%
- BMP#2 is expected to be 50% effective \pm 5%.





Task 2 – Develop a Spreadsheet Based Accounting Tool

- Calculate baseline nutrient loads
- Calculate nutrient credits associated with BMPs included in Task 1 assessment
- Account for drainage area, land use, geology, and BMP type
- Three options for developing Task 2
 - Vary by how location in the watershed is considered
 - Provide flexibility for the UNRBA in how the tool is developed
 - Costs ranges include meetings and negotiation with NCDWQ as well as project documentation





Task 2 – Develop a Spreadsheet Based Accounting Tool

- Option 2A – Assume Delivery Factors of 1
 - Use field scale areal loading rates consistent with Rules
 - Apply scaling factor for geology based on NC Forest Service study
 - Create lookup tables in spreadsheet tool to generate baseline nutrient loads
 - Use BMP nutrient removal efficiencies from Task 1 to calculate credits
 - Baseline loads and credits would not depend on location in the watershed
 - Potential costs: \$20,000 to \$40,000



Task 2 – Develop a Spreadsheet Based Accounting Tool

- Option 2B – Account for Nutrient Retention in Large Watershed Impoundments

- Builds on Option 2A
- Account for nutrient trapping in seven watershed impoundments using empirical formulas
- Assign baseline loads and nutrient credits based on location relative to these impoundments (e.g., upstream or downstream of Lake Michie)
- Allows for a more efficient implementation strategy
- Potential costs: \$40,000 to \$80,000



Task 2 – Develop a Spreadsheet Based Accounting Tool

- Option 2C – Account for Nutrient Trapping in Subwatersheds, Streams, and Impoundments
 - Builds on work conducted for Option 2B
 - Develop a watershed model to generate delivery factors that account for nutrient trapping and uptake in subwatersheds, streams, and impoundments
 - Reduce overall costs of implementation
 - Potential costs: \$175,000 to \$300,000
 - Range in costs due to
 - Level of effort associated with selected watershed model
 - Spatial resolution of delivery factors



Task 2 – Develop a Spreadsheet Based Accounting Tool

• Option 2D – Build Tool in an Interactive GIS Interface

- Links nutrient credit accounting tool developed under Option 2C to a GIS user interface
- Allows user to
 - Highlight area of interest
 - Select from list of appropriate BMPs
 - Fill out a user input form (area draining to BMP, etc.)
- Predicts nutrient credits and cost ranges based on user input
- May be used to track implementation spatially and facilitate nutrient trading
- Potential costs: \$225,000 to \$350,000



Main Tasks for Developing a Nutrient Credit Accounting Tool

- Multiple options presented for each task
- Select one option from each task
 - Task 1 – Build a database of BMP nutrient removal effectiveness
 - 1A - Single Program
 - 1B - Extended Research
 - 1C - Account for Uncertainty in BMP Performance
 - Task 2 – Develop a spreadsheet based tool that includes costs
 - 2A - Assume Delivery Factors of 1
 - 2B - Account for Nutrient Retention in Large Watershed Impoundments
 - 2C - Account for Nutrient Trapping in Subwatersheds, Streams, and Impoundments
 - 2D - Build Tool in an Interactive GIS Interface



Summary of Options for Developing Nutrient Credit Tool

Tasks Options	2A	2B	2C	2D
1A	2 to 4 months \$40,000 - \$80,000	2 to 4 months \$60,000 - \$120,000	8 to 12 months \$195,000 - \$340,000	8 to 12 months \$245,000 - \$390,000
1B	5 to 8 months \$95,000 - \$165,000	5 to 8 months \$115,000 - \$205,000	8 to 12 months \$250,000 - \$425,000	8 to 12 months \$300,000 - \$475,000
1C	7 to 12 months \$145,000 - \$215,000	7 to 12 months \$165,000 - \$255,000	8 to 12 months \$300,000 - \$475,000 ¹	8 to 12 months \$350,000 - \$525,000

¹ Recommended Approach



Recommended Option 1C/2C package

- Accounts for spatial variability in delivered nutrient loads
- Allows local governments to optimize BMP placement in the watershed
- Supports nutrient trading
- Potential to significantly reduce implementation costs
- Watershed model also provides ability to:
 - Estimate jurisdictional loads
 - Simulates nutrient trapping in impoundments, streams, and subwatersheds



Future Monitoring Objectives—Path Forward Committee Activities and Recommendations



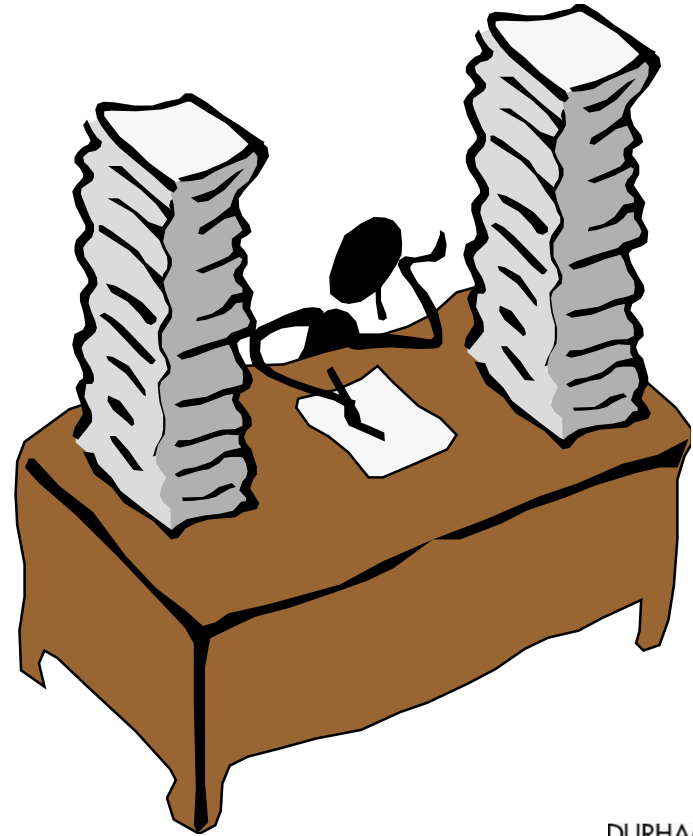
Path Forward Committee Update

Michelle Woolfolk
February 20, 2013

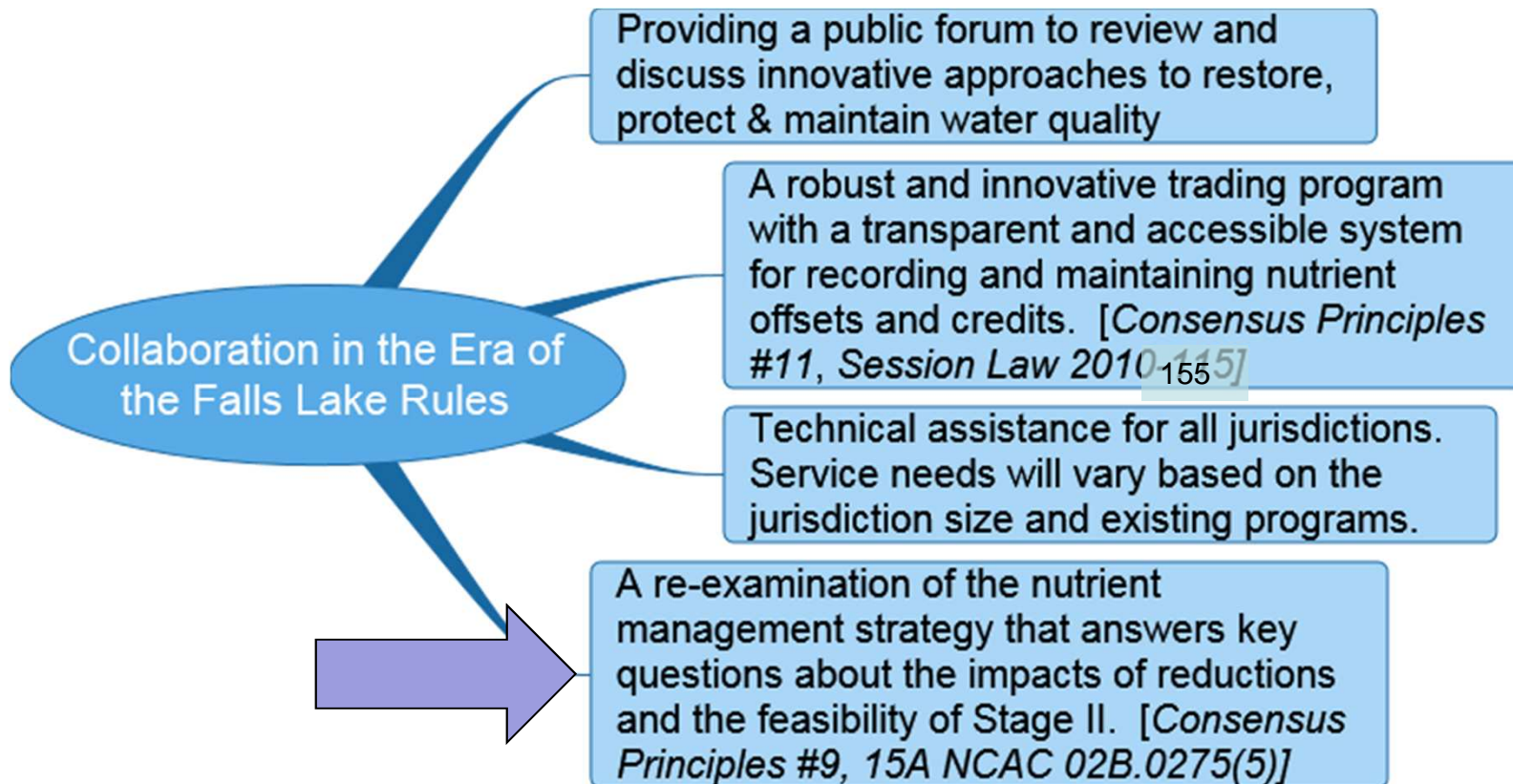


Very busy month...

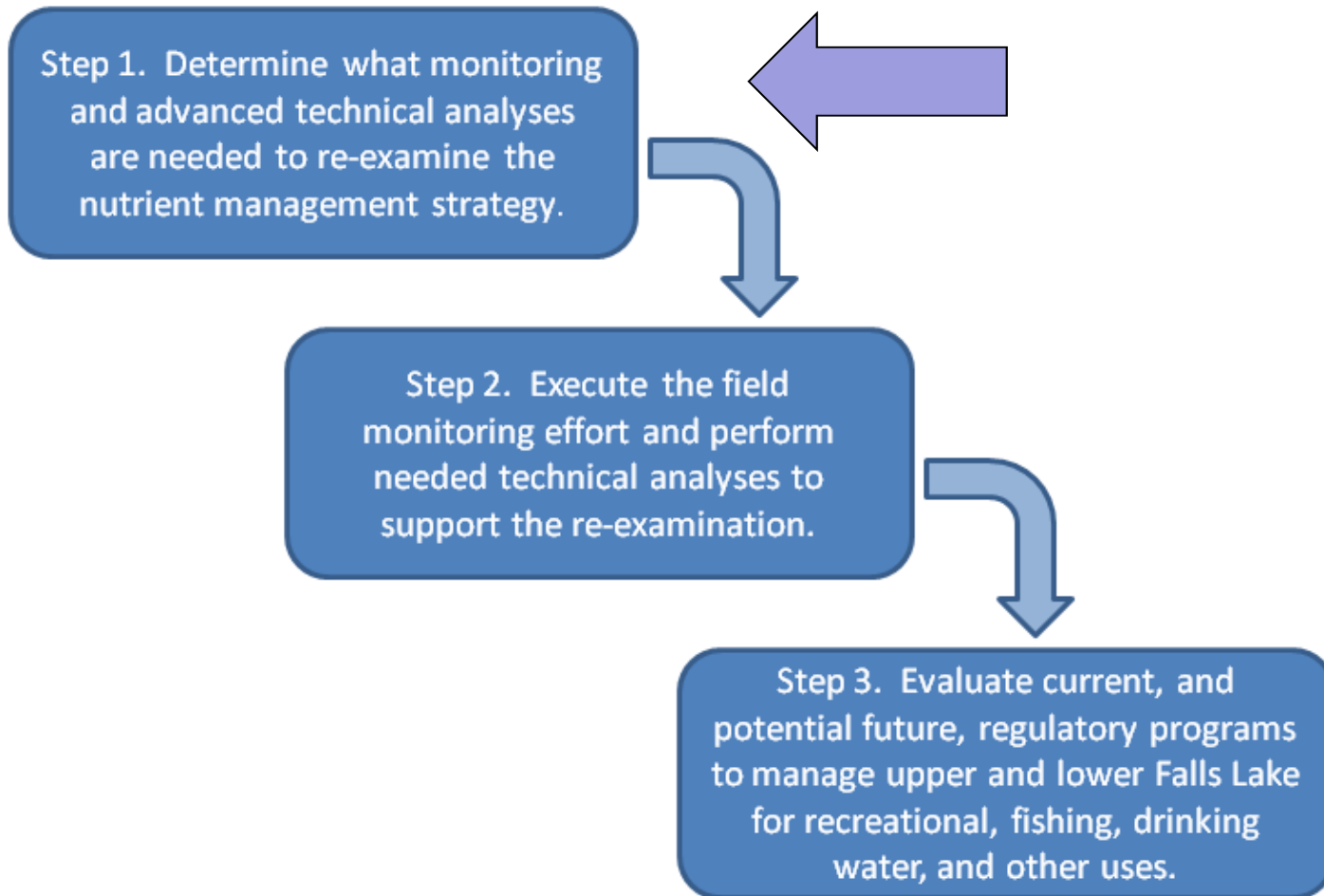
- Path Forward Conference Call, January 24th, to review the Task 4 Technical Memorandum
- RFQ Subcommittee Meeting, January 31
- Path Forward Meeting, February 4th, to discuss monitoring goals and costs
- Path Forward Meeting, February 18th, to discuss monitoring goals and costs



The Path Forward: Increasing the Effectiveness of the UNRBA in the era of the Falls Lake Rules



The Path Forward: Increasing the Effectiveness of the UNRBA in the era of the Falls Lake Rules

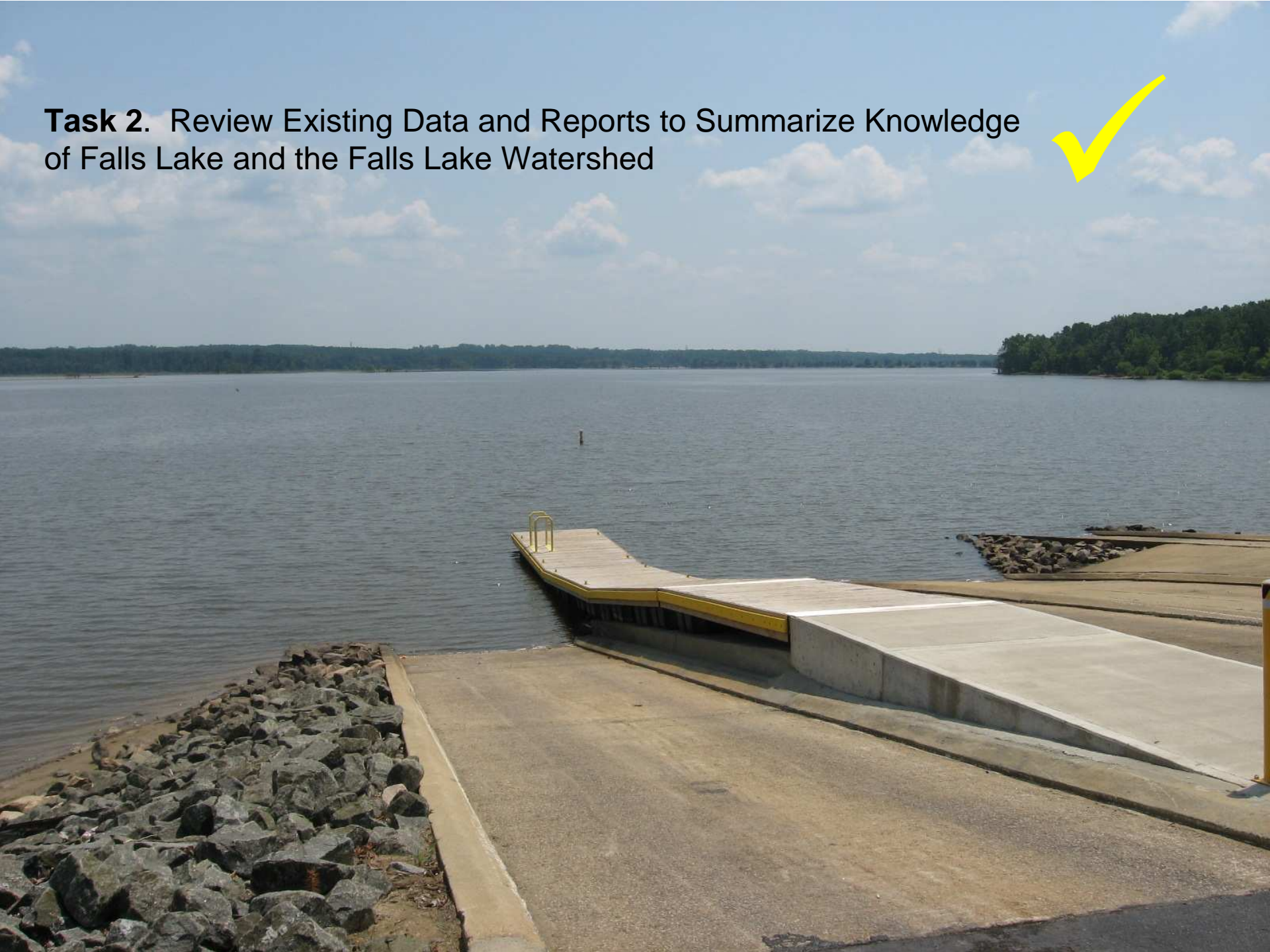


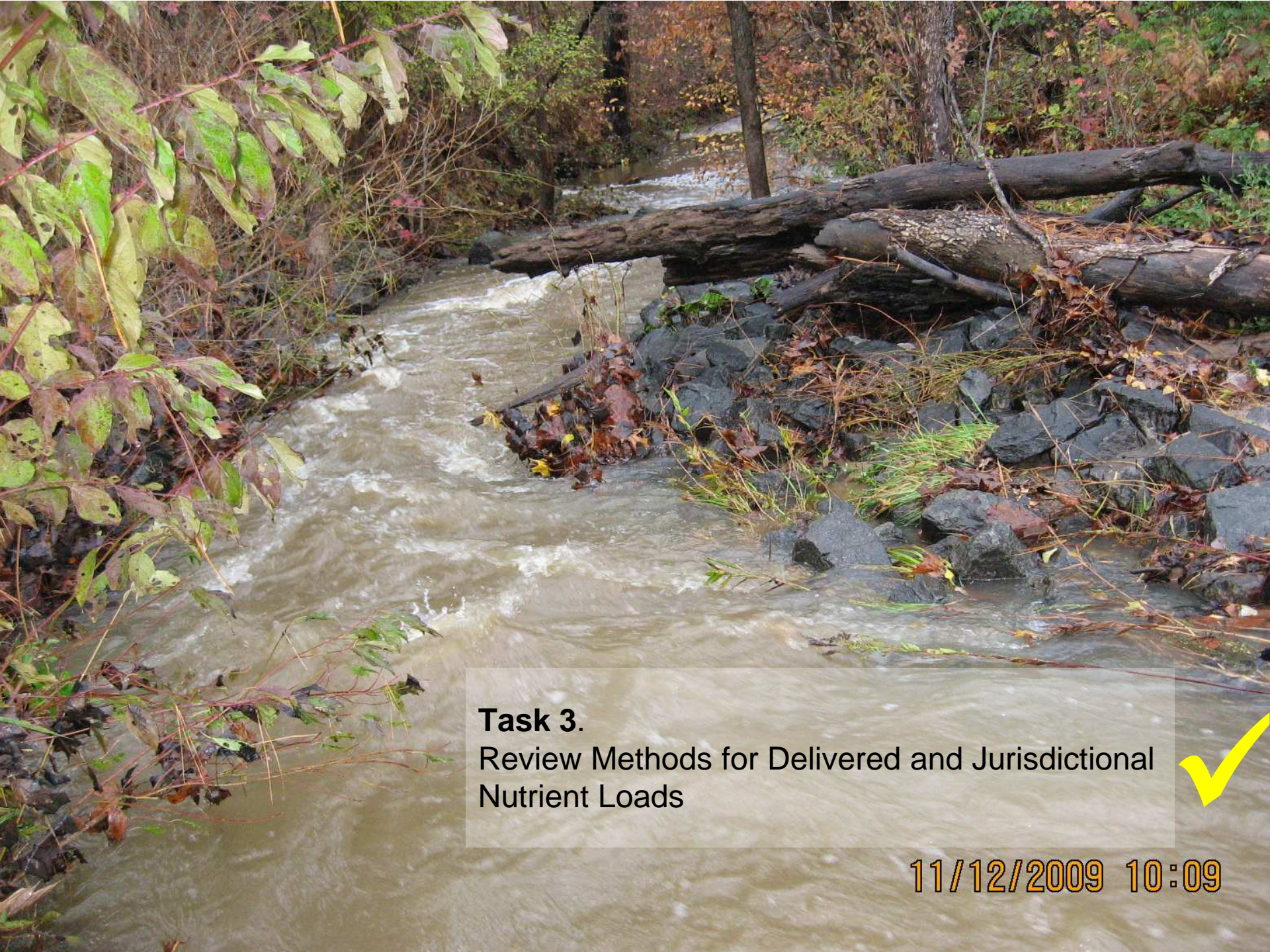
Task 1. Develop a framework that addresses the technical, legal/regulatory and political needs to successfully accomplish a re-examination of Stage II

*How do we get there, from here?
What are the UNRBA's options?*

11/16/2009 10:20

Task 2. Review Existing Data and Reports to Summarize Knowledge of Falls Lake and the Falls Lake Watershed





Task 3.

Review Methods for Delivered and Jurisdictional
Nutrient Loads



11/12/2009 10:09

Task 4.
Provide Recommendations for
Future Monitoring and Modeling



07/27/2009 08:47

Objectives (Table 1-1, Handout)

- A. Source/Jurisdictional Loading
- B. Lake Response Modeling
- C. Compliance Monitoring
- D. Linkage of Water Quality to Designated Uses
- E. Credit Estimation for non-Conventional BMPs
- F. Support of Regulatory Options

Table 1-1 Objectives for Potential Monitoring and Modeling Studies for the Falls Lake Watershed

Study	Source/ Jurisdictional Loading	Lake Response Modeling	Compliance Monitoring	Linkage of Water Quality to Designated Uses	Credit Estimation for non-Conventional BMPs	Support of Regulatory Options
Jurisdictional monitoring	X		X			
Areal loading rates	X					
Internal Lake Loading	X	X				X
Nutrient Fate and Transport	X					X
Lake bathymetry and flow data		X				X
Tributary monitoring		X	X			
Storm event sampling		X				
In-lake processes		X				X
Lag time			X			X
BMP implementation tracking	X		X			
Diurnal pH and DO monitoring with water quality sampling				X		X
Fish monitoring with water quality sampling				X		X

Table 1-2 Summaries of Potential Monitoring and Modeling Studies for the Falls Lake Watershed

Study	Number of Locations	Sampling Duration	Sampling Frequency	Estimated Costs	Period
Streambank erosion and nutrient loading – scoping level assessment	10	One event	One event	\$20,000	0-5
Lake bathymetry	Multiple transects	One event	One event	\$25,000	0-5
Inlake processes	12	One study	One study	\$25,000 ^b	0-5
Areal loading rates (literature review)	Literature review	One study	One study	\$25,000	0-5
Terrestrial and avian species monitoring	Variable	One study	One study	\$25,000	0-5
Recreational data and water quality sampling	6	Three years	Quarterly	\$60,000 per year	0-5
Event based water quality sampling	10	Three years	Assume twice per year	\$65,000 per year	0-5
Diurnal pH and DO monitoring with water quality sampling	7	Three years	Quarterly	\$70,000 per year	0-5
Aquatic species monitoring with water quality sampling	10	Three years	Quarterly	\$90,000 per year	0-5
Storm event monitoring	10	Three years	Once per season	\$120,000 per year	0-5
Estimation of loading from onsite wastewater treatment systems	20	Three years	Monthly	\$120,000 per year	0-5
Internal Lake Loading	12	One study	One study	\$180,000 ^b	0-5
Lake flow and water quality	2	Three years	Monthly	\$35,000 per year	0-5,

First Recommendation

Monitoring should occur for a minimum of 48 months (i.e., 4 years). A 12 month contingency should be considered in case of poor weather conditions.



Dam elevation: 243.98 ft

10/08/2007 10:45



Dam elevation: 243.22 ft




11/21/2005

Second Recommendation

Prioritize objectives in the following order:

1. Lake Response Modeling
2. Support of Regulatory Options
3. Source/Jurisdictional Loading

Table 1-1 Objectives for Potential Monitoring and Modeling Studies for the Falls Lake Watershed

Study	Source/ Jurisdictional Loading 3	Lake Response Modeling 1	Compliance Monitoring 	Linkage of Water Quality to Designated Uses 	Credit Allocation for non-Compliance BMPs 	Support of Regulatory Options 2
Jurisdictional monitoring	X		X			
Areal loading rates	X					
Internal Lake Loading	X	X				X
Nutrient Fate and Transport	X					X
Lake bathymetry and flow data		X				X
Tributary monitoring		X	X			
Storm event sampling		X				
In-lake processes		X				X
Lag time			X			X
BMP implementation tracking	X		X			
Diurnal pH and DO monitoring with water quality sampling				X		X
Fish monitoring with water quality sampling				X		X

Third Recommendation

Budget for all studies listed under the top two priorities, Lake Response Modeling and Support of Regulatory Options

*Assuming 4 years of monitoring,
\$4.2 to 4.4 million estimated costs*

FY 2014 Funding Discussion

- Base Dues and UNRBA Management:
Personnel Committee
- Existing Development/Nutrient Credit
Toolbox: Strategy Group
- Monitoring Program to Support Stage II
Reexamination Process: Path
Forward Committee

UNRBA Revenue Summary FY 2013 - 14

Date: 2/19/13

Member	Membership Dues FY 2013-14	Monitoring Assessment FY 2013-14	Total Amount Due FY 2013-14	FY 2012-13 Membership Dues Paid
Town of Butner	\$ 2,054.55	\$ 7,158.72	\$ 9,213.27	\$ 3,838.00
City of Creedmoor	1,387.01	4,832.80	6,219.81	2,614.00
City of Durham	33,392.50	116,350.17	149,742.67	59,616.00
Durham County	12,776.99	44,519.12	57,296.11	23,091.00
Franklin County	1,641.66	5,720.07	7,361.73	3,096.00
Granville County	9,429.83	32,856.55	42,286.38	17,105.00
Town of Hillsborough	2,558.02	8,912.96	11,470.98	4,670.00
Orange County	15,240.00	53,101.06	68,341.06	27,578.00
Person County	10,496.73	36,573.97	47,070.70	18,996.00
City of Raleigh	39,976.49	139,290.92	179,267.41	72,550.00
SGWASA	4,068.28	14,175.18	18,243.46	7,811.00
Town of Stem	1,084.05	3,777.19	4,861.24	2,095.00
Wake County	8,278.44	28,844.74	37,123.18	14,170.00
Town of Wake Forest	1,115.44	3,886.57	5,002.01	2,151.00
Total	\$ 143,499.99	\$ 500,000.02	\$ 643,500.01	\$ 259,381.00

Executive Director Report

Meeting Schedule

Next Scheduled Meeting, March 20, 2013

Closing Comments