Upper Cape Fear River Basin Association (UCFRBA)

UCFRBA 2015 Annual Report

Prepared for NC Division of Water Resources

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UCFRBA 2015 Annual Report

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Background

The Upper Cape Fear River Basin Association (UCFRBA) was created as a non-profit organization in February of 2000. It was the last basin association to be formed in the Cape Fear River Basin. The Upper Cape Fear River Basin includes more than 10 counties and 30 municipalities, and nearly 150 permitted wastewater discharge facilities. The permitted wastewater discharges total more than 140 million gallons per day (MGD). Long-term water resources planning, management and protection in this rapidly growing 3,100 square mile area are challenging and complex tasks. To meet these increasing challenges, 20 parties comprising local governments (with planning and zoning jurisdiction and wastewater treatment plants) and private companies joined together to establish the UCFRBA. The UCFRBA currently has 19 members representing public and private sector entities who rely upon the river for wastewater discharge.

In concert with the Middle and Lower Basin Programs, the Upper Basin has implemented a comprehensive water quality monitoring program in exchange for a waiver of the ambient monitoring requirements in the Association members' individual **National Pollutant Discharge Elimination System** (NPDES) permits. The Association signed a Memorandum of Agreement (MOA) with the North Carolina Division of Water Resources (NCDWR) binding its members to participate in the monitoring program. The monitoring program started in April 2000; the MOA was renewed in 2005 and 2010.

The UCFRBA provides an ongoing forum for interested parties to work together on water resources planning, management and protection issues of mutual concern in the Jordan Lake watershed (including the Haw River and New Hope Creek subwatersheds), the Deep River watershed and the Rocky River watershed in the uppermost part of the Cape Fear River Basin. Geographically, the headwaters of the Haw River and Deep River start west of Greensboro in Forsyth County and come together below Jordan Lake to form the Cape Fear River (Figure 1).

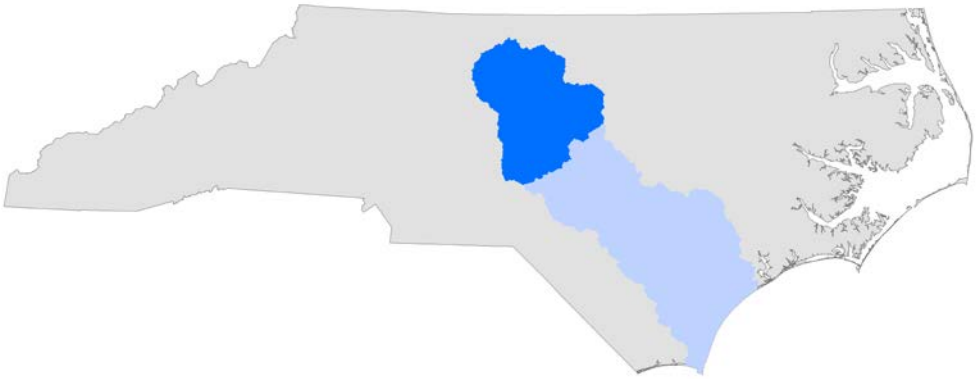
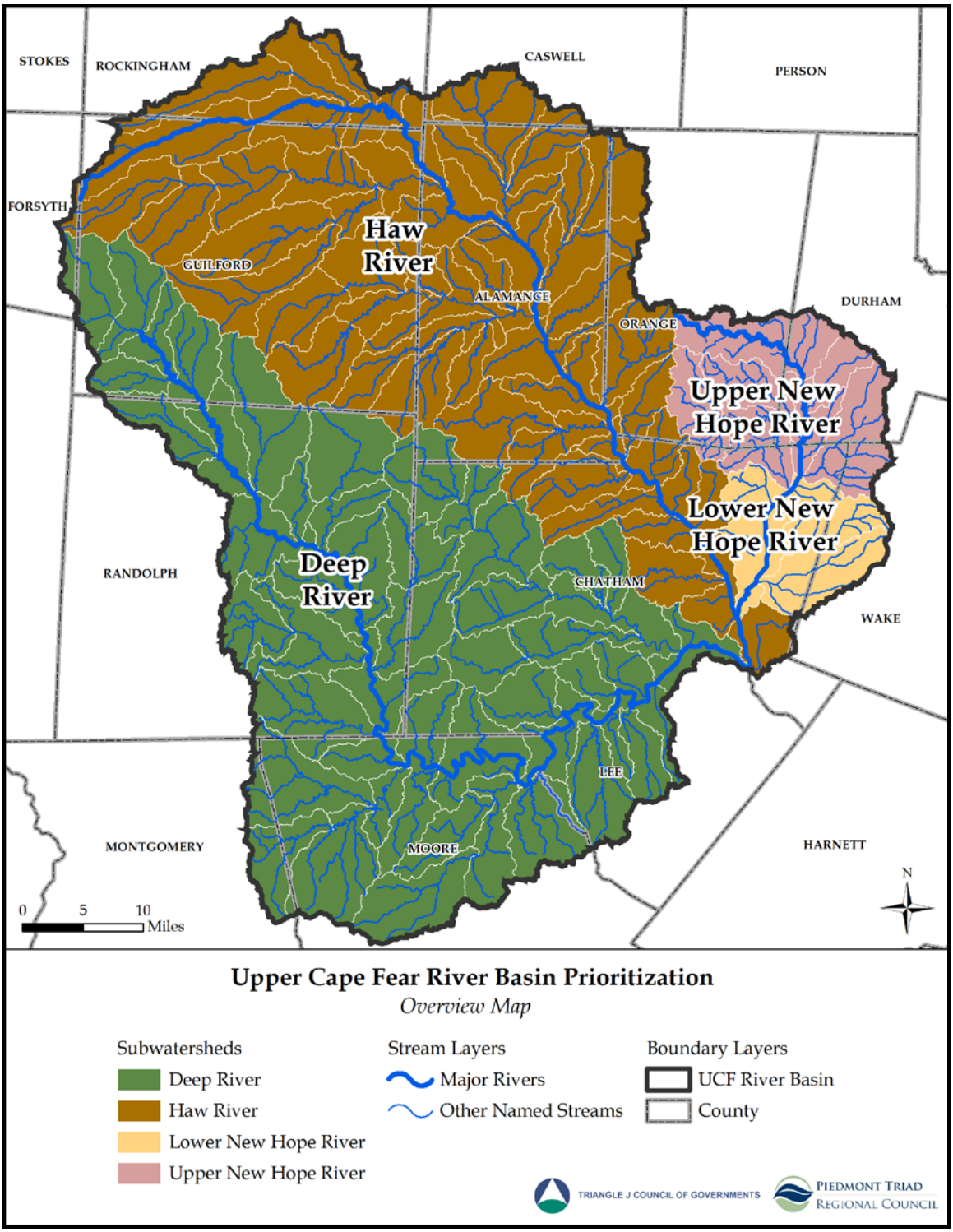


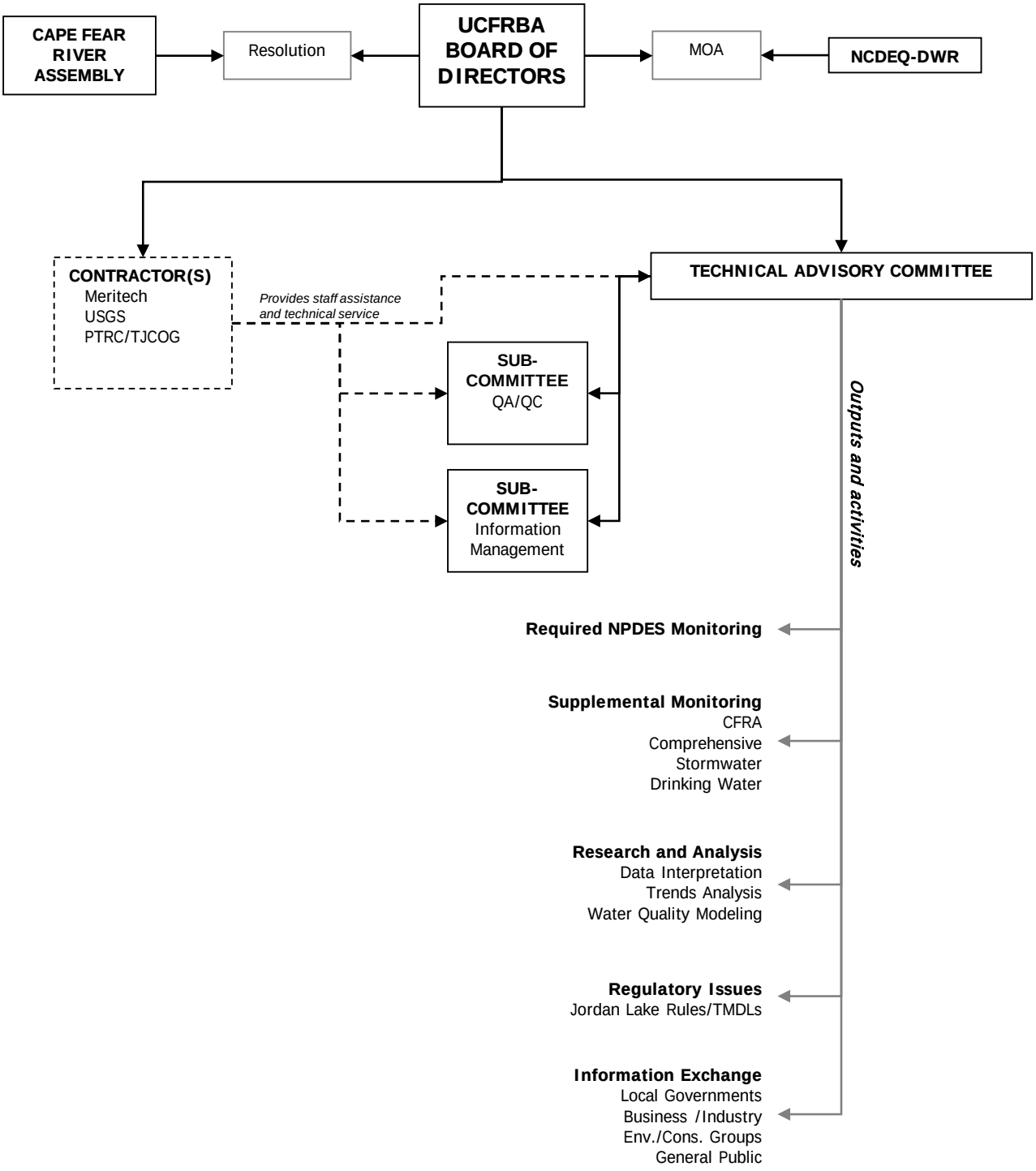
Figure 1: Upper Cape Fear River Basin

Laboratory services are currently provided by Meritech Inc., located in Reidsville, NC. Meritech, Inc., has provided these services since 2005. SimaLabs, Inc., was the Association's laboratory for conducting the stream monitoring and analyses until August 2004.

The Triangle J Council of Governments (TJCOG) and Piedmont Triad Regional Council (PTRC) provide administrative staff support for the UCFRBA. More information about the UCFRBA, including access to its water quality database can be found at their websites (www.tjcog.org; www.ptrc.org).


STOKES
ROCKINGHAM
CASWELL
PERSON
FORSYTH
GUILFORD
Haw River
ALAMANCE
ORANGE
DURHAM
Upper New Hope River
Lower New Hope River
Deep River
RANDOLPH
CHATHAM
WAKE
LEE
MONTGOMERY
MOORE
HARNETT
0 5 10 Miles
N
Upper Cape Fear River Basin Prioritization
Overview Map
Subwatersheds
Deep River
Haw River
Lower New Hope River
Upper New Hope River
Stream Layers
Major Rivers
Other Named Streams
Boundary Layers
UCF River Basin
County
TRIANGLE J COUNCIL OF GOVERNMENTS
PIEDMONT TRIAD REGIONAL COUNCIL

Organizational Structure



Board of Directors

The UCFRBA is governed by a Board of Directors composed of its corporate members. The corporate membership is comprised of 19 local governments and industries using the UCFRB for water supply or treating and discharging wastewater within the UCFRB. The Town of Cary have no permit responsibilities within the Basin, and, therefore, are affiliate members accorded voting rights but with lower dues. Each corporate member has the authority to appoint one Director and one Alternate Director to the Board of Directors.

Listed below are the Board of Directors member organizations, their designated representative, and their NPDES permit numbers. The full board list with addresses and contact information can be found in Appendix A.

Corporate Members	Discharger	Public Water System	Representative	NPDES Permit Number(s)
Arclin	Yes	No	Bowman Harvey	NC0000892
Asheboro	Yes	Yes	Michael Rhoney	NC0026123
Burlington	Yes	Yes	Bob Patterson	NC0023868, NC0023876
Cary	No	Yes	Leila Goodwin	None
City of Durham	Yes	Yes	Vicki Westbrook	NC0047597
Graham	Yes	Yes	Victor Quick	NC0021211
Greensboro	Yes	Yes	Steven Drew	NC0024325, NC0047384
High Point	Yes	Yes	Terry Houk	NC0024210
Mebane	Yes	Yes	Dennis Hodge	NC0021474
OWASA	Yes	Yes	Ed Kerwin	NC0025241
Performance Fibers	Yes	No	Donald Peterson	NC0001899
Pilgrim's Pride	Yes	No	Bruce Morgan	NC0072575, NC0083852
Pittsboro	Yes	Yes	William Terry	NC0020354
Ramseur	Yes	Yes	Jim McIntosh	NC0026565
Randleman	Yes	Yes	Nick Holcomb	NC0025445
Reidsville	Yes	Yes	Kevin Eason	NC0024881
Sanford	Yes	Yes	Scott Siletzky	NC0024147
Siler City	Yes	Yes	Bryan Thompson	NC0026441
Star	Yes	Yes	Wesley Brown	NC0058548

Officers

The Officers of the Board of Directors consists of a Chair, a Vice Chair, and a Secretary/Treasurer. Officers are elected biannually by the Board of Directors and each officer serves a term of two (2) years. The next election will occur at the 2016 Board of Directors' meeting.

Officers of the Board of Directors

Chairman:	*Charles Cocker, City of Durham*
Vice-Chairman:	*Dennis Hodge, City of Mebane*
Secretary/Treasurer:	*Michael Rhoney, City of Asheboro*

Technical Advisory Committee

The Technical Advisory Committee (TAC) is responsible for providing the Board of Directors with assistance and recommendations concerning the development of proposed annual work programs, specific project plans, and alternative funding sources and strategies. The TAC meets quarterly, usually on the fourth Tuesday of the month from 9:30-11:00 at the Mebane Arts and Community Center. TAC committee members are listed in Appendix B.

Technical Advisory Committee (TAC) Chair:	*Sydney Miller, Town of Cary*
TAC Vice-Chair:	*Dawn Molnar, City of High Point*

QA/QC Subcommittee

The Quality Assurance/Quality Control Subcommittee reviews monthly data and ensures the data are accurate and reliable. The following are members of the QA/QC Subcommittee:

Scott Pickard, QAQC Chair	*City of Graham*
Elaine Davis	*City of High Point*
Alicia Goots	*City of Greensboro*
Martie Groome	*City of Greensboro*
Chad Ham	*City of Fayetteville*
Glen McGirt	*City of Burlington*
Kris Pawlak	*Meritech, Inc.*
Cy Stober, Staff Support	*PTRC*
Dawn Molnar	*City of High Point*

Information Management Subcommittee

The Information Management Subcommittee (IMS) determines project and research focus, and reviews the Association's programs. The following are members of the IMS:

Michelle Woolfok, IMS Co-Chair	*City of Durham*
Sandra Bradshaw	*OWASA*
Mary Giorgino	*US Geological Survey*
Dennis Hodge	*City of Mebane*
Dr. Janet MacFall	*Elon University*
Mike Schlegel, Staff Support	*TJCOG*

Summary of Monitoring Program

The UCFRBA renewed its Memorandum of Agreement (MOA) and contract with NC DWR in May 2015 in order to comply with the federal NPDES program. The MOA applies to the five-year permit cycle of 2015 – 2020, and is available in full upon request or at the TJCOG and PTRC websites. The MOA was negotiated so that the UCFRBA currently monitors a network of thirty-nine (39) monitoring station in the Upper Cape Fear River Basin. One site in Durham County was eliminated from the UCFRBA's monitoring responsibilities on behalf of its members. Significant resources were dedicated to negotiation and drafting of a MOA for the 2015 – 2020 period during 2015.

Up through 2007, metals were collected quarterly using Clean Hands/Dirty Hands methodology (a modified version of EPA Method 1669, see Appendix C). Low-level mercury was analyzed using EPA Method 1631 at 7 sites. In April 2007, NC DWQ released a memo suspending the metals monitoring requirement in the Memorandums of Agreement with the NPDES discharger monitoring coalitions while DWQ re-evaluates new approaches regarding metals data and the use of water quality standards and criteria for metal. A memo from NC DWQ Director Chuck Wakild was issued to the Surface Water Protection Program on April 24, 2012. This letter was relayed to all monitoring coalitions. June 2007 was the last month metals testing – including mercury –conducted by the UCFRBA within the Upper Cape Fear River basin. Please see Appendix D for the 2012 NCDWQ memo regarding the suspension of metals monitoring, and the acknowledgement of the Association's permission to not monitor until this state-level suspension ends. Further developments regarding dissolved metals monitoring and potential responsibilities of the UCFRBA are detailed elsewhere in this report.

The UCFRBA contracts with UNC-Wilmington to maintain an online database of all of its approved water quality data. It is provided to UNC-W staff annually and is accessible to the public at this website: http://lcfrp.uncw.edu/riverproject/. All data collected by the UCFRBA under its MOA with NC DWR may be accessed, analyzed, and downloaded from this website.

Table 1: UCFRBA Water Quality Monitoring Stations

AGENCY	DWQ Station Number	UCF STATION	LOCATION	Station Information	LATITUDE (dd.dddd)	LONGITUDE (dd.dddd)	COUNTY	STREAM CLASS	SUB-BASIN	Field Par. #/year	Fecal #/year	Turbidity #/year	TSS #/year	Nutrients #/year	Metals #/year (Jan-Aug)
UCFRBA	B0070010	1	Troublesome Crk at US 29 Bus nr Reidsville	major trib, nonpoint input	36.2768	-79.6499	ROCKINGHAM	C, NSW	03-06-01	M	M	M	M	M	
UCFRBA	B0050000	2	Haw Riv at US 29 Business nr Benaja	Ups Reidsville WWTP	36.2652	-79.6523	ROCKINGHAM	C, NSW	03-06-01	M + 2SM	M	M	M	M	Q
UCFRBA	B0170000	3	Haw Riv at SR 2620/2614 High Rock Rd nr Williamsburg	Dns Reidsville WWTP	36.2514	-79.5647	ROCKINGHAM	C, NSW	03-06-01	M + 2SM	M	M	M	M	Q
UCFRBA	B0400000	4	Reedy Fork at SR 2719 High Rock Rd nr Monticello	Model verification data	36.1778	-79.6177	GUILFORD	C, NSW	03-06-02	M	M	M	M	M	
UCFRBA	B0480050	5	N Buffalo Crk at N Buffalo Crk WWTP Influent Conduit Pier at Greensboro	Ups N. Buffalo WWTP	36.1074	-79.7502	GUILFORD	C, NSW	03-06-02	M +2SM	M	M	M	M	Q
UCFRBA	B0540050	6	N Buffalo Crk at sr 2770 Huffine Mill Rd nr McLeansville	Dns N. Buffalo WWTP	36.1299	-79.6626	GUILFORD	C, NSW	03-06-02	M +2SM	M	M	M	M	Q
UCFRBA	B0670000	7	S Buffalo Crk at SR 3000 McConnell Rd nr Greensboro	Ups TZ Osborne WWTP; USGS gage	36.0598	-79.7256	GUILFORD	C, NSW	03-06-02	M +2SM	M	M	M	M	Q
UCFRBA	B1020000	9	Haw River at SR 1700 (Lower Hopdale Road) nr Hopedale	above Burlington, below Reedy Fk	36.1531	-79.4894	ALAMANCE	C, NSW	03-06-02	M +2SM	M	M	M	M	Q + Hg
UCFRBA	B1350000	10	Moadams Crk at Corrigdor Rd ups of Discharge nr Mebane	Ups Mebane WWTP	36.0885	-79.2844	ALAMANCE	C, NSW	03-06-02	M +2SM	M	M	M		Q
UCFRBA	B1380000	11	Moadams Crk at SR 1940 Gibson Rd nr Florence Town	Dns Mebane WWTP	36.0891	-79.3074	ALAMANCE	C, NSW	03-06-02	M +2SM	M	M	M	M	Q
UCFRBA	B1440000	12	Haw Riv at SR 2158 Swepsonville Rd nr Swepsonville	Dns Graham WWTP	36.0256	-79.3682	ALAMANCE	C, NSW	03-06-02	M +2SM	M	M	M	M	Q
UCFRBA	B1200000	13	Haw Riv at NC 54 nr Graham	Between Burlington East & Graham	36.0481	-79.3667	ALAMANCE	C, NSW	03-06-02	M +2SM	M	M	M	M	Q
UCFRBA	B1940000	14	Big Alamance Crk at NC 87 nr Swepsonville	Ups Burlington S. WWTP	36.0242	-79.3943	ALAMANCE	C, NSW	03-06-02	M +2SM	M	M	M	M	Q
UCFRBA	B2000000	16	Haw Riv at SR 1005 Greensboro-Chapel Hill Rd nr Saxpahaw	Rural area; dns Cane Creek	35.8953	-79.2585	ALAMANCE	C, NSW	03-06-04	M	M	M	M	M	
UCFRBA	B2100000	17	Haw River at SR1713 NR Bynum	USGS gage; ups Jordan Lake	35.7716	-79.1449	CHATHAM	WS-IV, NSW	03-06-04	M	M	M	M	M	Q + Hg
UCFRBA	B3020000	19	New Hope Creek at NC54 nr Durham	Ups S. Durham WRF	35.9167	-78.9704	DURHAM	WS-IV, NSW	03-06-05	M +2SM	M	M	M	M	Q + Mn
UCFRBA	B3040000	20	New Hope Crk at SR 1107 Stagecoach Rd nr Blands	Jordan Lake TMDL site	35.8847	-78.9656	DURHAM	WS-IV, NSW	03-06-05	M +2SM	M	M	M	M	Q+Mn+Hg
UCFRBA	B3670000	22	Northeast Crk at SR 1731 O Kelly Church Road nr Durham	Dns Durham Co/RTP WWTP	35.8555	-78.9397	CHATHAM	WS-IV, NSW	03-06-05	M +2SM	M	M	M	M	Q+Mn+Hg
UCFRBA	B3025000	23	Third Fork Crk at NC 54 nr Durham	Drains Durham	35.9187	-78.9548	DURHAM	WS-IV, NSW	03-06-05	M	M	M	M	M	Q + Mn
UCFRBA	B3899180	24	Morgan Crk at Mason Farm WWTP Entrance at Chapel Hill	Ups OWASA	35.8987	-79.0263	ORANGE	WS-IV, NSW	03-06-06	M +2SM	M	M	M	M	Q + Mn
UCFRBA	B3900000	25	Morgan Crk at SR 1726 Old Farrington Rd nr Farrington	Dns OWASA, DO sag	35.8612	-79.0100	CHATHAM	WS-IV, NSW, CA	03-06-06	M +2SM	M	M	M	M	Q+Mn+Hg

UCFRBA	B4080000	26	Haw Riv at SR 1011 Old US 1 nr Haywood	Dns Preformance Fibers, ups Neste Resins, gage	35.6164	-79.0569	CHATHAM	WS-IV	03-06-04	M +2SM	M	M	M	M	Q + Mn
UCFRBA	B6040300	27	Deep Riv at SR 1011 Old US 1 nr Moncure	Ups confluence with Haw River	35.6176	-79.0912	CHATHAM	WS-IV	03-06-11	M	M	M	M	M	Q+Mn+Hg
UCFRBA	B4380000	28	Richland Crk at SR 1154 Kersey Valley Rd nr Highpoint	Ups High Point Eastside WWTP, Fecal Coliform TMDL	35.9410	-79.9322	GUILFORD	WS-IV, CA*	03-06-08	M +2SM	M	M	M	M	Q + Mn
UCFRBA	B4350000	29	Deep Riv at SR 1113 Kivett Dr nr Hayworth Spring	Ups of confluence with Richland Creek	35.9594	-79.9061	GUILFORD	WS-IV, CA*	03-06-08	M +2SM	M	M	M	M	Q + Mn
UCFRBA	B4621000	31	Muddy Creek at SR 1917 (Suits Road) nr Glenola	Fecal Coliform TMDL	35.8836	-79.8950	RANDOLPH	WS-IV, *	03-06-08	M	M	M	M	M	
UCFRBA	B4870000	32	Hasketts Crk at Asheboro WWTP Bridge nr Asheboro	ups Asheboro WWTP	35.7649	-79.7864	RANDOLPH	C	03-06-09	M	M	M	M	M	Q
UCFRBA	B4770500	33	Deep Riv at Bus 220 Main St at Randleman	Us Randleman WWTP, us Hasketts Creek	35.8233	-79.8033	RANDOLPH	C	03-06-08	M +2SM	M	M	M	M	
UCFRBA	B4800000	34	Deep Riv at SR 2122/2128 Worthville Rd at Worthville	dns Randleman WWTP & Worthville impoundments,above Asheboro	35.8021	-79.7771	RANDOLPH	C	03-06-09	M +2SM	M	M	M	M	Q
UCFRBA	B4920000	35	Deep Riv at SR 2261 Old Liberty Rd nr Central Falls	Dns Asheboro WWTP, below conf. Hasketts Creek	35.7642	-79.7734	RANDOLPH	C	03-06-09	M +2SM	M	M	M	M	Q + Hg
UCFRBA	B5070000	36	Deep Riv at SR 2615 Brooklyn Ave at Ramseur	Ups Ramseur WWTP	35.7302	-79.6558	RANDOLPH	C	03-06-09	M +2SM	M	M	M	M	Q
UCFRBA	B5100000	37	Deep Riv at SR 2628 Hinshaw Town Rd nr Parks Crossroads	Dns Ramseur WWTP	35.6724	-79.6274	RANDOLPH	C	03-06-09	M +2SM	M	M	M	M	Q
UCFRBA	B5390800	39	Cotton Crk at SR 1372 Auman Rd culvert	Dns Star WWTP	35.3782	-79.7551	MONTGOMERY	WS-III	03-06-10	M +2SM	M	M	M	M	Q + Mn
UCFRBA	B5685000	41	Deep Riv at Deep River Park Bridge nr Cumnock	Ups Golden Poultry	35.5704	-79.2411	CHATHAM	C	03-06-11	M +2SM	M	M	M	M	
UCFRBA	B5820000	42	Deep Riv at US 15 And 501 nr Sanford	Dns Sanford WWTP	35.5704	-79.1942	LEE	C	03-06-11	M +2SM	M	M	M	M	Q
UCFRBA	B5950000	43	Rocky Riv at US 64 nr Siler City	dns reservoir, ups Loves Cr, ups Siler City	35.7351	-79.4233	CHATHAM	C	03-06-12	M +2SM	M	M	M	M	
UCFRBA	B5980000	44	Rocky Riv at SR 2170 Rives Chapel Rd nr Siler City	Dns Loves Cr	35.6985	-79.3756	CHATHAM	C	03-06-12	M +2SM	M	M	M	M	Q
UCFRBA	B5890000	45	Loves Creek at Waste Treatment Plant Rd in Siler City	us Siler City WWTP	35.7298	-79.4289	CHATHAM	C	03-06-12	M +2SM	M	M		M	
UCFRBA	B5920000	46	Loves Creek at Progress Blvd at Siler City	ds Siler City WWTP	35.7322	-79.4246	CHATHAM	C	03-06-12	M +2SM	M	M		M	

Field Measurements include: Dissolved Oxygen, Temperature, Conductivity and pH
Nutrients include Ammonia as N, Nitrate/Nitrite as N, Total Kjeldahl Nitrogen as N, and Total Phosphorus as P
Low Level Metals sampling and analysis will be conducted as specified in the MOA document "Attachment 1: Sampling Plan for Low Level Metals" that is included as an attachment to this MOA.
Metals analysis will include the following metals: Aluminum (Al), Arsenic (As), Cadmium (Cd), Chromium (Cr)(total), Copper (Cu), Iron (Fe), Lead (Pb), Manganese (Mn), Mercury (Hg), Nickel (Ni), and Zinc (Zn)
Frequency: M=Monthly
Q=Quarterly
SM= Summer Months: May, June, July, August, September
M+2SM=Once a Month in January, February, March, April, October, November, and December and Twice a Month in May, June, July, August, and Septemberups=upstream dns=downstream stn=station

Sampling Methods

The following are the sampling methods used by Meritech for UCFRBA analysis:

pH ---------- SM 4500 HB
Temperature---------- SM 2550 B
Conductivity---------- EPA 120.1
DO_____ SM 4500 O G
Fecal Coliform---------- SM 9222D
TSS ---------- SM 2540 D
Turbidity ---------- EPA 180.1
Ammonia ---------- EPA 350.1
TKN---------- SM 4500 NH3B
NO2/NO3---------- EPA 353.2
Ptot ---------- EPA 200.7
Metals (except Hg)---------- EPA 200.7 (discontinued 08/2007)
Mercury ---------- EPA 1631 (discontinued 08/2007)

Certified Laboratories & Quality Assurance/Quality Control Issues

Meritech, Inc., performs Winkler titrations as a mid-point DO check and as a confirmation of unusually high or low DO values. These Winkler titration results were not included in the comment section of the monthly submittals. The Winkler results are useful for confirming DO readings, and per DWQ request are now reported in the comment column.

2015 UCFRBA Issues

The following are topics that occupied significant UCFRBA staff and members' time in 2015.

Preparation for Dissolved Metals Monitoring

NC DWR has suspended metals monitoring for all of its ambient monitoring programs – including those of the monitoring coalitions it has MOAs with – since 2007, largely in an attempt to best represent metals levels resulting from artificial sources and determine what concentrations pose significant risks to public and environmental health. The NC DWR has an agreement with the US EPA to resume monitoring for multiple metals species in 2015, with reporting beginning in 2016. The UCFRBA prepared for these monitoring and financial responsibilities through extensive discussions with NC DWR staff, focused conversations by the TAC, and a contract for a special study done by Meritech, Inc., to evaluate the costs and values of different sampling and analysis methods for dissolved metals.

The UCFRBA conducted a four-month pilot study on seven (7) metals at six (6) locations in the Upper Cape Fear River Basin. The metals were filtered using three different methodologies: one in-field filtration and two laboratory filtrations with different holding times. The three sampling methodologies used in the pilot study, which includes the recommended method by NC DEQ and USEPA, yielded few detectable metals results. There were not high background levels of any of the metals sampled except for zinc, which is present in the filters and must be pre-washed to get representative results. All data is provided for NC DEQ to assess internally. Meritech, Inc., now recommends using in-field filtration, as it is simpler than originally thought and laboratory filtration was more labor- and time-intensive than originally thought. A detailed letter and summary of findings is featured in Appendix E.

NC DWR/Meritech Field Visit

On December 8, 2015, NC DWR employees Carrie Ruhlman and Jennifer Schmitz accompanied Meritech, Inc., employee Wesley Yance to review his field sampling procedures and ensure compliance with the MOA signed by the UCFRBA with NC DWR. DWR stated that Mr. Yance collected and stored data "efficiently and consistently," and had no significant concerns with his methods or behaviors in the field. All data collection procedures were within compliance of the MOA (see Appendix F for a copy of the letter).

APPENDIX A: UCFRBA Board of Directors

UPPER CAPE FEAR RIVER BASIN ASSOCIATION

DIRECTORS AND ALTERNATE DIRECTORS
(Points of contact)

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APPENDIX B: UCFRBA Technical Advisory Committee

Organization	First Name	Last Name	Title	Stakeholder Type
Arclin	Bowman	Harvey	HSE Coordinator	Corporate
Asheboro	John	Ogburn III	City Manager	Corporate
Asheboro	Michael	Rhoney	Director of Water Resources	Corporate
Asheboro	Bernadine	Wardlaw	Water Quality Manager	
Burlington	Eric	Davis	Water and Sewer Operations Manager	Corporate
Burlington	Michael	Layne	Stormwater Manager	Corporate
Burlington	Glenn	McGirt	Laboratory Supervisor	Corporate
Burlington	Bob	Patterson	Water Resources Director	Corporate
Cary	Leila	Goodwin	Water Resources Manager	Corporate
Cary	Sydney	Miller	Water Resources Engineer	Corporate
Chatham County	Roy	Lowder	Utilities Director	Non-Corporate
Durham	Charles	Cocker	Superintendent South Durham WRF	Corporate
Durham	John	Cox	Engineer, Stormwater Quality	Corporate
Durham	Vicki	Westbrook	Deputy Director of Water Management	Corporate
Durham	Michelle	Woolfolk	Water Resources Engineer	Corporate
DWR – Ecosystems Unit	Steve	Kroeger		Non-Corporate
DWR – Ecosystems Unit	Carrie	Ruhlman	Monitoring Coalition Coordinator	Non-Corporate
DWR – Nonpoint Source Unit	Rich	Gannon		Non-Corporate
Elon University	Janet	MacFall		Non-Corporate
Friends of the Deep River. Blue Ridge Environmental Defense League	Tom	Duckwall	Coordinator	Non-Corporate
Graham	Cris	Routh	ORC & Wastewater Treatment Plant Supervisor	Corporate
Graham	Scott	Pickard	Pretreatment Program	Corporate
Graham	Victor	Quick	Utilities Director	Corporate
Greensboro	Steven	Drew	Water Resources Director	Corporate
Greensboro	Martie	Groome	Lab/Industrial Waste Supervisor	Corporate
Greensboro	David	Phlegar	Monitoring Coordinator – Stormwater	Corporate
Haw River Assembly	Elaine	Chiosso	Executive Director	Non-Corporate
High Point	Bill	Frazier	Lab Services Manager	Corporate
High Point	John	Hodges	Watewater Plants Manager, Eastside WWTP	Corporate
High Point	Carol	McDowell	Assistant Director of Public Services	Corporate
High Point	Randy	Smith	ORC, Eastside WWTP	Corporate
Mebane	Dennis	Hodge	Wastewater Director	Corporate
Mebane	David	Cheek	City Manager	Corporate
Meritech, Inc.	David	Merritt		Non-Corporate
Meritech, Inc.	Kris	Pawlak	Lab Manager	Non-Corporate
NC A&T	Godfrey	Uzochukwu	Director Management Institute	Non-Corporate
New Hope Audubon Society	John	Kent		Non-Corporate
Orange Water and Sewer Authority	Sandra	Bradshaw	Laboratory Manager	Corporate
Orange Water and Sewer Authority	John	Greene	General Manager of Operations	Corporate
Orange Water and Sewer Authority	Ed	Kerwin	Executive Director	Corporate

Organization	First Name	Last Name	Title	Stakeholder Type
Orange Water and Sewer Authority	John	Kiviniemi	Wastewater Treatment & Biosolids Recycling Manager	Corporate
Orange Water and Sewer Authority	Ruth	Rouse	Planning and Development Manager	Corporate
Performance Fibers, Inc.	Donald	Peterson	Director of Operations	Corporate
Piedmont Triad Regional Council	Cy	Stober	Water Resources Manager	Staff
Pilgrim's Pride	Bruce	Morgan		Corporate
Pilgrim's Pride	Tina	Pedley	Wastewater Lab Tech	Corporate
Pittsboro	Bryan	Gruesbeck	Town Manager	Corporate
Pittsboro	John	Poteat	Utility Director	Corporate
Pittsboro	William	Terry	Mayor	Corporate
Ramseur	Jim	McIntosh	Public Works Director	Corporate
Ramseur	Danny	Shaw	Mayor	Corporate
Randleman	Frank	Brewer	WWTP Superintendent	Corporate
Randleman	Nick	Holcomb	City Manager	Corporate
Reidsville	Kevin	Eason	Public Works Director	Corporate
Reidsville	Michael	Pearce	City Manager	Corporate
Sanford	Victor	Czar	Public Works Director	Corporate
Sanford	Scott	Siletzky	Wastewater Treatment Plant Superintendent	Corporate
Sanford	Scott	Siletzky	Superintendent – Big Buffalo Creek WWTP	Corporate
Siler City	Bryan	Thompson	Town Manager	Corporate
Siler City	Terry	Green	Director of Public Works	Corporate
Siler City	Chris	McCorquodale	Wastewater Treatment Plant Superintendent	Corporate
Spirogyra Diversified	Linda	Ehrlich		Non-Corporate
Star	Wesley	Brown	Sewage Treatment Plant Superintendent	Corporate
Star	Mary	O'Brien	Mayor	Corporate
Triangle J Council of Governments	Michael	Schlegel	Water Resources Program Manager	Staff
UNC-CH: School of Public Health	Phil	Singer	Professor	Non-Corporate
UNC-CH:Dept. Environ. Science & Eng.	Steve	Whalen	Associate Professor	Non-Corporate
UNC-Greensboro: Dept. Biology	Anne	Hershey	Distinguished Professor	Non-Corporate
UNC-Greensboro: Dept. Biology	Parke	Rublee	Professor	Non-Corporate
USGS	Jerad	Bales	Hydrologist	Non-Corporate
USGS	Mary	Giorgino	Water Quality Specialist	Non-Corporate
USGS	Philip	Jen	UCFRBA Project Chief	Non-Corporate
USGS	Ryan	Rasmussen	Triangle Area Water Supply Monitoring	Non-Corporate

APPENDIX C: UCFRBA Sampling Procedures

1669 Sampling Procedures

A. Supplies

1. Cooler (Hg Only) – Contains the following
    a. Gloves (2x): Large bag with one pair, inside of which is a small bag with two pairs.
    Lone pair is a backup set.
    b. Sample Bottles (2x): Large bag with bottle lot #, sampling site and date, inside of which is a small bag, also contains same information. The sampling bottle is in the small bag.
    c. Sampling Tubing (1x): Double bagged with the lot # written on the bag. Single use tubing.
    d. Backup Cooler: Items a. through d. will be kept in a separate cooler which will be used as a spare in the event that a problem is encountered with the original kit. Should this kit not be used; it may be used for a subsequent sampling event at the same site.
2. Sampling Supplies – Contains the following
    a. DI Carboy – Wrapped in plastic bag sealed with rubber band.
    b. Peristaltic pump (portable) – Battery operated pump for sampling.
    c. Waste Carboy – Collects waste during the sampling process
    d. Polypropylene Support and Clamp – Used to position the sample tubing for hands free operation.
    e. Sampling Wand – PVC pipe 1" diameter x 10' with T glued to end for better handling. Pipe is notched to accept sample tubing.
    f. Plastic Sheeting – Single use to cover the sampling table. Clamped to the bottom of table.
    g. Garbage Bag – Standard white kitchen garbage bag to collect refuse from sampling event
    h. Sampling Table – 2' x 4' used to setup sampling supplies.
    i. COC (Chain of Custody) – Records sampling information i.e. Client, Date/Time, Lot #'s, Sampling Team, Sampling Conditions, etc.
    j. Two Person Sampling Team (CH/DH) – Clean Hands and Dirty Hands Sampling Team; predetermined to help expedite sampling process.

B. Initial Arrival Set-up.

1 Do not park in close proximity to the sampling site, and whenever possible approach site from downwind.
2. Note sampling site conditions with regards to wind and wind direction; also noting potential sources of contamination from the surrounding area.
3. Setup table close to the sampling site according to the orientation required for sampling the effluent
    a. Clamp down a fresh sheet of plastic on the sampling table.
    b. Put on set of gloves – non-bagged.
    c. Place the DI Water Carboy, Peristaltic Pump, and Tubing Support Stand on the table.
    d. Open the access area to the pump head so that the tubing may be quickly connected to the pump when the samplers are ready.
    e. Place sampling wand on table
    f. Place waste carboy on ground in proximity to the sampling tables.
    g. Tie the garbage bag to the sampling table

h. Fill out paper work including the sampling conditions and lot #'s of sampling equipment and preservatives.

4. Make final check that the sampling area is accessible and logistically feasible from the table set-up area.
5. Remove any impedance from the sampling area.

C. Sampling – Clean Hands(CH)/Dirty Hands(DH).

1. Assign clean hands and dirty hands technicians.
2. Both CH and DH will now wait ten minutes for the sampling site to equilibrate from any destabilization resulting from the initial set-up.

D. Sampling Wand Collection

1. Field Blank
   a. DH will open the cooler containing the sampling accessories (gloves, tubing, and bottles).
   b. DH opens glove bag for CH to put on two sets of gloves.
   c. DH opens 2nd glove bag and puts on two sets of gloves.
   d. DH opens the bag for the DI carboy.
   e. DH removes the bag containing the sampling tubing, and opens the bag.
   f. CH removes the inner bag containing the tubing, and removes the tubing, but does not allow the ends to come in contact with anything. The ends of the tubing are facing down to avoid contamination.
   g. DH installs the tubing while CH maintains the tubing ends facing down.
   h. DH removes the cap from the carboy.
   i. CH places one end of the tubing into the carboy so that it remains in the carboy, and the other end is placed into the clamp on the support stand.
   j. DH positions the waste carboy under the exit tubing and starts the pump. Rinse tubing with 1L of DI water. DH stops the pump.
   k. DH removes the waste carboy
   l. DH removes the double bagged sample bottle (Field Blank) from the cooler and opens the outer bag. CH removes the bagged bottle, and removes the cap. All baggies should remain in the sampling cooler until the sample bottle is returned.
   m. CH position the bottle under the exit tubing.
   n. DH starts the pump; CH signals to turn off the pump once the bottle is full.
   o. CH replaces the cap, and puts the bottle back to the small bag.
   p. DH opens large bag and CH places bagged bottle into large bag.
   q. DH seals the baggie and puts the sample back into the cooler.
2. Sample – Sampling Wand
   a. DH removes the double bagged sample bottle (Sample) from the cooler and CH removes the single bagged bottle from the large bag placing it on the sampling table.
   b. DH positions the waste carboy with the sampling tubing in the support stand.
   c. DH secures the sampling wand across the sampling table, while CH removes the sampling tubing from the DI carboy.
   d. CH positions the sampling tubing in the sampling wand while DH holds the wand firm.
   e. DH starts the pump while holding the wand against the table.
   f. DH places the sampling wand in the sampling area positioning the end of the wand downstream from the tip of the sampling tubing.
   g. Once approximately 1L of sample is passed through the tubing (2 – 5 minutes) and collected in the waste carboy, CH removes the sample bottle from the small

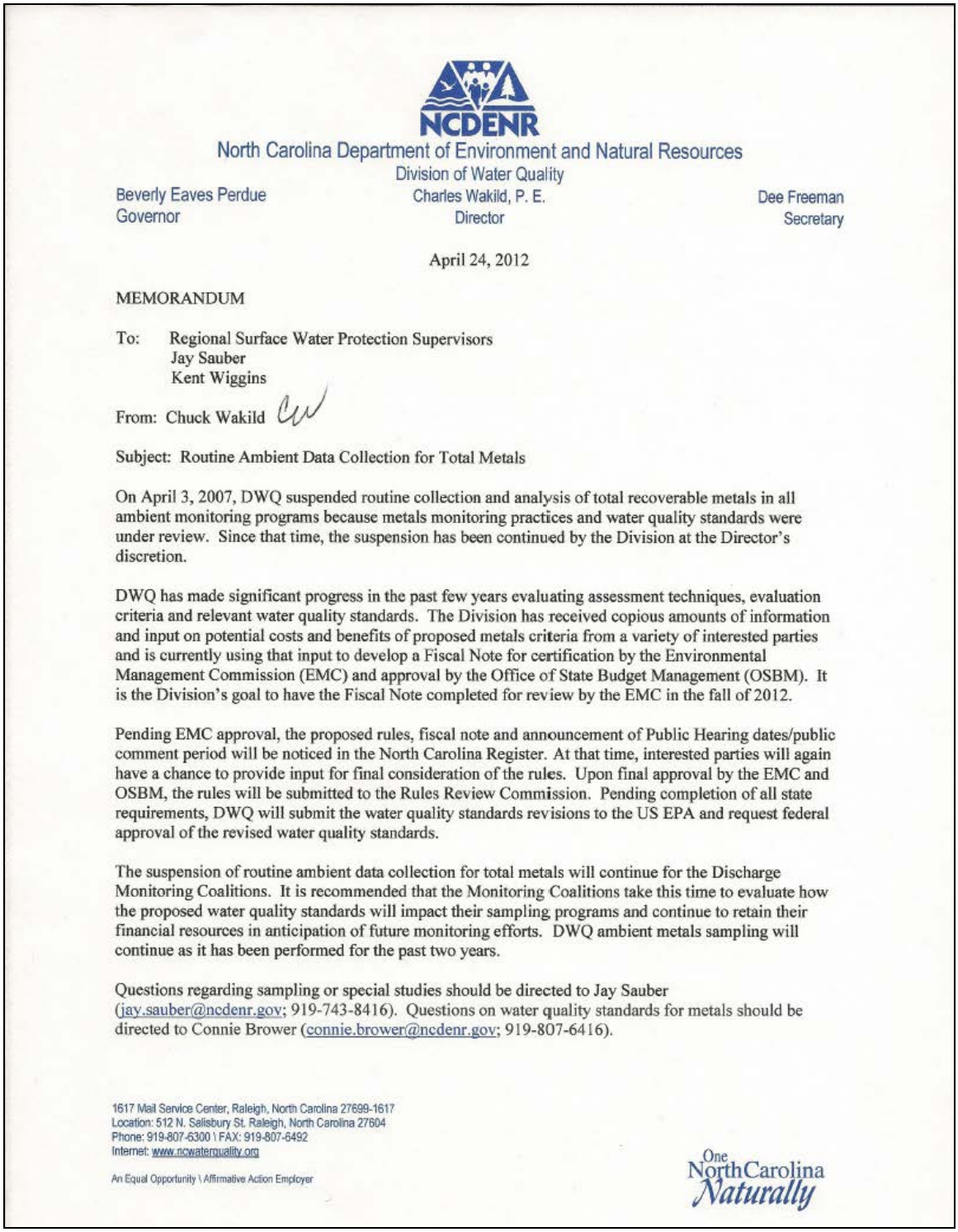
bag, removes the cap, and fills the bottle by placing the bottle above the waste carboy.

h. Once full, CH replaces the cap, and places the bottle back into the baggie.
i. DH removes the wand from the sampling area and turns off the pump.
j. DH puts down the sampling wand on the table, and opens the large baggie for CH to place the sample bottle into.
k. DH seals the large baggie and places the sample into the sample cooler.
l. DH and CH may now freely cleanup the sampling area disposing of the sampling tubing and gloves into a garbage bag attached to the sampling table.
m. CH will finish paper work noting times that the samples were taken and any potential problems with the sampling.

E. Sample – Direct Collection

1. Field Blank
   a. DH will open the cooler containing the sampling accessories (gloves, and bottles).
   b. DH opens glove bag for CH to put on two sets of gloves.
   c. DH opens 2nd glove bag and puts on two sets of gloves.
   d. DH gets double bagged field blank bottle from cooler, opens outer bag and CH removes inner bag setting it on the sampling table.
   e. DH gets double bagged sample bottle, which is full of DI water from the lab, and opens the outer bag.
   f. CH removes the inner bag and removes the bottle and takes off the cap.
   g. CH then removes the field blank bottle from the inner baggie and transfers the DI water from the sample bottle to the field blank bottle.
   h. CH caps the field blank bottle places it back into the baggie, which is placed back into the outer baggie being held open by DH.
   i. DH then seals the baggie and places the bottle into the cooler.
2. Sample
   a. CH takes the emptied sample bottle and fills it it with the waste stream from the sampling site.
   b. CH replaces the cap and places the bottle back in the inner baggie.
   c. DH opens the outer baggie and CH places the bagged sample into the outer baggie.
   d. DH seals the outer baggie and places the bottle into the cooler.
   e. CH and DH can now clean the sampling site and complete all necessary paperwork prior to leaving the site.

APPENDIX D: NC DWR 2012 Metals Monitoring Suspension Letter



NCDENR

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Charles Wakild, P. E.
Director

Dee Freeman
Secretary

April 24, 2012

MEMORANDUM

To: Regional Surface Water Protection Supervisors
Jay Sauber
Kent Wiggins

From: Chuck Wakild

Subject: Routine Ambient Data Collection for Total Metals

On April 3, 2007, DWQ suspended routine collection and analysis of total recoverable metals in all ambient monitoring programs because metals monitoring practices and water quality standards were under review. Since that time, the suspension has been continued by the Division at the Director's discretion.

DWQ has made significant progress in the past few years evaluating assessment techniques, evaluation criteria and relevant water quality standards. The Division has received copious amounts of information and input on potential costs and benefits of proposed metals criteria from a variety of interested parties and is currently using that input to develop a Fiscal Note for certification by the Environmental Management Commission (EMC) and approval by the Office of State Budget Management (OSBM). It is the Division's goal to have the Fiscal Note completed for review by the EMC in the fall of 2012.

Pending EMC approval, the proposed rules, fiscal note and announcement of Public Hearing dates/public comment period will be noticed in the North Carolina Register. At that time, interested parties will again have a chance to provide input for final consideration of the rules. Upon final approval by the EMC and OSBM, the rules will be submitted to the Rules Review Commission. Pending completion of all state requirements, DWQ will submit the water quality standards revisions to the US EPA and request federal approval of the revised water quality standards.

The suspension of routine ambient data collection for total metals will continue for the Discharge Monitoring Coalitions. It is recommended that the Monitoring Coalitions take this time to evaluate how the proposed water quality standards will impact their sampling programs and continue to retain their financial resources in anticipation of future monitoring efforts. DWQ ambient metals sampling will continue as it has been performed for the past two years.

Questions regarding sampling or special studies should be directed to Jay Sauber (jay.sauber@ncdenr.gov; 919-743-8416). Questions on water quality standards for metals should be directed to Connie Brower (connie.brower@ncdenr.gov; 919-807-6416).

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APPENDIX E: UCFRBA Dissolved Metals Special Study Letter to NC DWR

UPPER CAPE FEAR RIVER BASIN ASSOCIATION, INC.
1398 Carrollton Crossing Drive
KERNERSVILLE, NC 27284

October 6, 2015

Mr. Steven Kroeger
NC Division of Water Resources
4401 Reedy Creek Road
Raleigh, NC 27607

Mr. Kroeger,

Since 2007, the State of North Carolina Department of Environment and Natural Resources (now the Department of Environmental Quality (DEQ)) has been engaged in a conversation with the US Environmental Protection Agency (US EPA) about how to best measure and regulate the presence of metals from artificial sources in the State's freshwaters. In 2015, these conversations have appeared to be approaching some resolution, indicating that all holders of National Pollution Discharge Elimination System (NPDES) permits will need to be aware of the concentration(s) of dissolved metals in their receiving streams, as well as accounting for their respective contributions to the concentration(s). This includes all monitoring coalitions in the State, which are permitted, via Memoranda of Agreement with the NC DEQ, to perform the monitoring and reporting requirements of multiple NPDES permittees as one group with a single administrative body.

In order to best account for its contributions to receiving waters, as well as to perform its monitoring and analysis responsibilities as effectively as possible, the Upper Cape Fear River Basin (UCFRBA) conducted a four-month pilot study on seven (7) metals at six (6) locations in the Upper Cape Fear River Basin. The metals were filtered using three different methodologies: one in-field filtration and two laboratory filtrations with different holding times. The details of the monitoring study are provided in Attachment A, which is a copy of the monitoring services contract between the UCFRBA and Meritech, Inc.

The four-month study yielded interesting results, some of which were unexpected by the UCFRBA Technical Advisory Committee and the Meritech, Inc., laboratory staff. Meritech, Inc., included barium and manganese in the project as positive controls that were expected to show recordable levels at all monitoring locations. The three sampling methodologies used in the pilot study, which includes the recommended method by NC DEQ and USEPA, yielded few detectable metals results. There were not high background levels of any of the metals sampled except for zinc, which is present in the filters and must be pre-washed to get representative results. All data is provided for NC DEQ to assess internally.

Lastly, the methodologies used had surprising results for the UCFRBA. Meritech, Inc., now recommends using in-field filtration, as it is simpler than originally thought and laboratory filtration was more labor- and time-intensive than originally thought. However, Meritech, Inc., found that much more deionized water was needed than originally estimated – about one gallon per site. This is necessary to prewash filters and is especially valuable in cleaning zinc from the filters. The study used a Clean Hands Dirty Hands sampling methodology, as detailed by the USEPA, but NC DEQ has stated publicly that a one-person sampling protocol should be sufficient for dissolved metals sampling in the future, which would conserve costs. Meritech, Inc., Laboratory Manager Kris Pawlak estimates that, with the savings in time and labor, there is no significant difference in the costs of filtration of dissolved metals in the field versus either laboratory filtration method.

The UCFRBA is satisfied that the data collected will permit us to progress with dissolved metals monitoring in a cost-effective manner that will protect North Carolina's waters and mitigate and resolve issues identified in current and past Total Maximum Daily Load assessments for our residents waters. We are pleased to share this data with

NC DEQ, in the hopes that it may be able to apply this data toward similar ends. We all share the goal of protecting the State's waters for current and future populations, and look forward to working closely with NC DEQ and our colleagues throughout North Carolina toward this goal.

Please do not hesitate to contact the UCFRBA with any questions or concerns regarding this study. We are also happy to discuss any matters relating to our NPDES permits and our MOA with NC DEQ.

Thank you for your interest and time in this matter.

Sincerely,

Charles Cocker, Chairman

CC: Sydney Miller, Technical Advisory Committee Chair
Scott Pickard, Quality Assurance/Quality Control Chair
Kris Pawlak, Meritech, Inc., Laboratory Manager
Cy Stober, UCFRBA administrative staff

UPPER CAPE FEAR RIVER BASIN ASSOCIATION MONITORING SERVICES

BETWEEN UPPER CAPE FEAR RIVER BASIN ASSOCIATION, INC.,
AND MERITECH, INC

This CONTRACT effective March 1, 2015, between the UPPER CAPE FEAR RIVER BASIN ASSOCIATION, INC., hereinafter called the ASSOCIATION, and MERITECH, INC., hereinafter called the CONTRACTOR.

WITNESSETH:

WHEREAS, the ASSOCIATION has and established professional relationship with the CONTRACTOR, contracting with them for water quality monitoring services, including sampling and laboratory analytical services, since 2004; and

WHEREAS, the State of North Carolina's Department of Environment and Natural Resources (NC DENR) has stated an intent to begin monitoring for and regulating dissolved metals in North Carolina's waters in July 2015; and

WHEREAS, the ASSOCIATION has a vested interest in what its waters' metals concentrations are; and

WHEREAS, the ASSOCIATION has a vested interest in determining the significance of any differences among samples collected and filtered in the field, as detailed in the US EPA's 200.7 methodology, and samples collected and filtered in the laboratory, as detailed in the US EPA's 200.8 methodology; and

WHEREAS, many of these dissolved metals' toxicity to human and environmental health is affected by the hardness of ambient water conditions, and that this hardness will be reflected in the calculations of new NC DENR regulations on dissolved metals; and

WHEREAS, the CONTRACTOR attests that it is a fully certified laboratory approved by the Division of Water Resources, NC DENR and that it shall maintain continuous laboratory certification with DWQ in accordance with 15 NCAC 2H.0800; and

WHEREAS, the ASSOCIATION requires supplemental information related to sampling and analytical services to improve quality assurance and quality control in the testing and analysis process, such supplemental information detailed in EXHIBIT 2 of this CONTRACT;

NOW, THEREFORE, in consideration of the premises and the mutual covenants contained herein, the parties do hereby contract and agree as follows:

SECTION I. SCOPE OF WORK

The CONTRACTOR does hereby covenant and agree with the ASSOCIATION that the CONTRACTOR will well and faithfully perform and execute such work and furnish such labor,

materials, equipment, apparatus and supplies, in accordance with each and every one of the conditions, covenants, stipulations, terms and provisions contained in this CONTRACT and as generally described below, and will well and faithfully comply with and perform each and every obligation imposed upon the CONTRACTOR under this CONTRACT.

The CONTRACTOR shall promptly make payments to all persons supplying materials in the prosecution of the work, and to all laborers and others employed thereon.

A. Type of Work

The work to be done and fully performed by the CONTRACTOR pursuant to this CONTRACT shall consist of the following:

1. Dissolved Metals Monitoring Services: Dissolved Metals Monitoring Services shall be those intended for NC DENR monitoring and regulation, as specified in EXHIBIT 1. The Dissolved Metals Monitoring Services are summarized in general as the following items, defined as explained in the narrative following each item:

    a. Water sampling: The sampling sites listed in Exhibit 2 shall be visited on a frequency of six (6) sites per month for the next four (4) months by a qualified monitoring technician employed by CONTRACTOR. Water samples shall be field tested, collected, split into four parallel samples, preserved, stored and transported by CONTRACTOR from each sampling site for analysis for the parameters required in Appendix 1. Also, CONTRACTOR will take field notes at each site using the field site sheet, example is found in EXHIBIT 3.

    b. Water sample analysis: CONTRACTOR shall collect and analyze water samples by the US EPA method 200.8. The samples shall be collected at one event and split for parallel analysis of four samples. These samples shall be assessed using three filtration methods: one in-field filtration with a high capacity, disposable cartridge filter with 0.45µm pores for hand vacuum or peristaltic pump; and two filtered in the lab with a 47mm filter. The two lab-filtered samples shall be filtered within an 8-hour holding time and a 24-hour holding time, respectively, but otherwise shall be handled and assessed identically. Concurrently, a sample blank must be used for each filter for each sampling event for a total of three (3) blanks per month; and hardness must be sampled at each site for one (1) sample per site. The analysis must be performed using the protocols included in NCDENR' s "Standard Operating Procedures Manual, Physical and Chemical Monitoring", 40 CFR Part 136 and 15 NCAC 2B.0505(e)(4), Standard Methods.

    c. Water sample analysis reporting to the ASSOCIATION: The results of all of the water sample analyses from all of the sampling sites shall be reported to the ASSOCIATION'S members by means of emailing spreadsheets electronically to the ASSOCIATION. These reports shall be distributed by email as soon as the analysis results are available (unless otherwise specified by the ASSOCIATION, not less frequently than monthly). CONTRACTOR will provide paper copies of field note sheets for every sampling site, monthly. The water quality monitoring results and

data for each month shall be reported by the CONTRACTOR to the ASSOCIATION by the end of the following month.

d. Data collection or analysis errors: CONTRACTOR agrees to promptly notify the specified representatives of the ASSOCIATION in the event any samples are not collected or analyzed as required in this contract, and to give a general reason and description of follow-up action, not later than 21 days after the scheduled sample collection date.

e. Instream monitoring: Samples shall be collected at as close to mid-stream as possible.

f. Same day monitoring: Sample stations in each sub-basin (as identified in Appendix 2) shall be monitored on the same day.

g. Annual certification report: CONTRACTOR shall prepare and submit to the ASSOCIATION'S members and NCDWQ an annual (calendar year) certification report that confirms the amount of the prescribed work completed by CONTRACTOR. The narrative report must be submitted by May 30th, 2015. The report must identify the number of water samples collected, analyzed and/or reported, and all data that was qualified.

2. Additional Monitoring Services

Upon mutual agreement of the ASSOCIATION and CONTRACTOR, this CONTRACT may be amended to include additional monitoring services that are determined desirable by the ASSOCIATION. MERITECH shall have sixty (60) days to respond to any changes in monitoring services before the CONTRACT is amended.

SECTION II. TERM OF AGREEMENT

The term of this CONTRACT is for one (1) year from March 1, 2015, through February 29, 2016.

SECTION III. COMPENSATION

1. Amount due: The ASSOCIATION hereby covenants and agrees that the ASSOCIATION shall pay the CONTRACTOR, when due and payable under the following terms for the performance of the services described in Section I as follows:

Cost Breakdown per Event (6 site /day)

Transportation	200 miles X .56/ mile	$112.00
Labor -2 Technicians	18 Hours X $45.00/ hr	$810.00
Equipment (filters, tubing, etc.)		$200.00
Analysis: (126 Metals per Event)		$2,268.00
Hardness (6 Samples)		$120.00
Filter Blanks (3 per event with 7 metals each/)		$378.00
Total per monthly event		**$3,888.00**

"Event", consists of 2 field technicians sampling 6 sites on a monthly basis. Filtering samples 2 ways in the field and bringing 2 samples back for lab filtration; and also collection and analysis of Hardness samples.

All costs can be modified as the project develops and is dependent upon the ability to sample 6 sites in one day.

- *Field sampling events will include pH, Temperature, DO and Conductivity at the surface of sampling site.*

Analytical Costs per event (6 sites)

Test	Reporting Limit *(mg/L)*	Method	Quantity Per Site	Cost Per Test	Totals
Arsenic, Dissolved in lab-8 hr	0.002	US EPA 200.8	6	$18.00	$108.00
Arsenic, Dissolved in lab-24 hr	0.002	US EPA 200.8	6	$18.00	$108.00
Arsenic, Dissolved (in-field filtration; large filter)	0.002	US EPA 200.8	6	$18.00	$108.00
Cadmium, Dissolved in lab-8 hr	0.00015	US EPA 200.8	6	$18.00	$108.00
Cadmium, Dissolved in lab-24 hr	0.00015	US EPA 200.8	6	$18.00	$108.00
Cadmium, Dissolved (in-field filtration; large filter)	0.00015	US EPA 200.8	6	$18.00	$108.00
Chromium, Dissolved in lab-8 hr	0.002	US EPA 200.8	6	$18.00	$108.00
Chromium, Dissolved in lab-24 hr	0.002	US EPA 200.8	6	$18.00	$108.00
Chromium, Dissolved (in-field filtration; large filter)	0.002	US EPA 200.8	6	$18.00	$108.00
Copper, Dissolved in lab-8 hr	0.002	US EPA 200.8	6	$18.00	$108.00
Copper, Dissolved in lab-24 hr	0.002	US EPA 200.8	6	$18.00	$108.00
Copper, Dissolved (in-field filtration; large filter)	0.002	US EPA 200.8	6	$18.00	$108.00
Lead, Dissolved in lab - 8 hr	0.0005	US EPA 200.8	6	$18.00	$108.00
Lead, Dissolved in lab - 24 hr	0.0005	US EPA 200.8	6	$18.00	$108.00
Lead, Dissolved (in-field filtration; large filter)	0.0005	US EPA 200.8	6	$18.00	$108.00

Nickel, Dissolved in lab- 8 hr	0.002	US EPA 200.8	6	$18.00	$108.00
Nickel, Dissolved in lab- 8 hr	0.002	US EPA 200.8	6	$18.00	$108.00
Nickel, Dissolved (in-field filtration; large filter)	0.002	US EPA 200.8	6	$18.00	$108.00
Zinc, Dissolved in lab- 8 hr	0.005	US EPA 200.8	6	$18.00	$108.00
Zinc, Dissolved in lab- 24 hr	0.005	US EPA 200.8	6	$18.00	$108.00
Zinc, Dissolved (in-field filtration; large filter)	0.005	US EPA 200.8	6	$18.00	$108.00
Hardness	1.0	SM-2340C	6	$20.00	$120.00
TOTAL	-	-			**$ 2,388.00**

2. Payment requests: CONTRACTOR shall be eligible to submit monthly payment requests for a portion of the lump sum CONTRACT amount, provided for in the CONTRACT award notice. Payment requests shall not be submitted more frequently than monthly.

3. Payment by ASSOCIATION: ASSOCIATION shall pay CONTRACTOR'S invoice within thirty (30) days of receipt of invoice by the ASSOCIATION.

4. Reimbursement by CONTRACTOR: The ASSOCIATION shall not be required to pay CONTRACTOR for any unreportable or invalid data that does not meet the requirements of this CONTRACT. In the event of a disputed or contested billing, only that portion so contested will be withheld from payment, and the undisputed portion will be paid. In the event the ASSOCIATION has paid for monitoring services and data that are later determined to be invalid, the CONTRACTOR shall promptly reimburse the ASSOCIATION for the cost of said monitoring. In such an event, the party discovering such invalid data shall promptly notify the other party of such invalid data, and the CONTRACTOR shall reimburse the ASSOCIATION within 30 days of such notification.

SECTION IV. LIABILITY AND INDEMNIFICATION

1. Indemnification by CONTRACTOR: CONTRACTOR agrees to indemnify ASSOCIATION from any claims, damages, losses, and costs, including, but not limited to, reasonable attorney's fees and litigation costs, arising out of claims by third parties for property damage and bodily injury, including death, caused by the negligence or willful misconduct of the CONTRACTOR, CONTRACTOR's employees, affiliated corporations, officers, agents and subcontractors in connection with the CONTRACT.

2. Indemnification by ASSOCIATION: ASSOCIATION agrees to indemnify CONTRACTOR from any claims, damages, losses, and costs, including, but not limited to, reasonable attorney's fees and litigation costs, arising out of claims by third parties for property damage and bodily injury, including death to the proportionate extent, caused by the negligence or willful misconduct of the ASSOCIATION, the ASSOCIATION'S employees, or agents in connection with the CONTRACT.

3. Proportionate Indemnification: If the negligence or willful misconduct of both ASSOCIATION and CONTRACTOR (or a person identified above for whom each is liable) is a cause of such damage or injury, the loss, cost, or expense shall be shared between the ASSOCIATION and CONTRACTOR in proportion to their relative degrees of negligence or willful misconduct and the right of indemnity shall apply for such proportion.

SECTION V. COMPLIANCE WITH LAWS

CONTRACTOR agrees that in performing the required services, CONTRACTOR will comply with applicable regulatory requirements including federal, state and local laws, rules, regulations, orders, codes, criteria and standards.

SECTION VI. CONTRACTOR'S INSURANCE

During the performance of this CONTRACT, the CONTRACTOR shall maintain the following insurance:

a. Comprehensive General Liability Insurance with bodily injury limits of not less than $1,000,000 for each occurrence and not less than $1,000,000 in the aggregate, and with property damage limits of not less than $100,000 for each occurrence and not less than $1,000,000 in the aggregate.

b. Automobile Liability Insurance with a combined single limit of not less than $1,000,000 for each accident.

c. Worker's Compensation Insurance in accordance with statutory requirements and Employers' Liability Insurance with limits of not less than $100,000 for each accident.

d. Professional Liability Insurance with limits of not less than $1,000,000 annual aggregate.

e. The CONTRACTOR shall name the ASSOCIATION as an additional insured on the policy.

SECTION VII. ASSOCIATION'S RESPONSIBILITIES

The ASSOCIATION shall be responsible for the following:

a. Approve all procedures established to govern the relationship among the ASSOCIATION, CONTRACTOR, and third parties.

b. Provide designated personnel to represent the ASSOCIATION in matters involving the CONTRACTOR.

c. Payment of invoices for services in accordance with Section III.

SECTION VIII. TERMINATION OF CONTRACT FOR CAUSE

In the event of failure by the CONTRACTOR to perform in accordance with the terms of this CONTRACT, ASSOCIATION shall have the right to terminate the CONTRACT upon *14* days written notice to the CONTRACTOR, in which event CONTRACTOR shall have neither the obligation nor the right to perform further services under this CONTRACT.

SECTION IX. UNCONTROLLABLE FORCES

Neither CONTRACTOR nor the ASSOCIATION shall be considered to be in default of the provisions of this CONTRACT if delays in or failure of performance shall be due to uncontrollable forces. The term "uncontrollable forces" shall mean any event that results in the prevention or delay of performance by a party, and that is beyond the control of the non-performing party. The term "uncontrollable forces" includes, but is not limited to, fire, acts of God, flood, earthquakes, major storms, lightning, epidemic, war, riot, and civil disturbance.

SECTION X. GOVERNING LAW

The laws of the State of North Carolina shall govern this CONTRACT.

SECTION XI. ASSIGNMENT

The CONTRACTOR shall not assign, sublet or transfer any rights under or interest in this CONTRACT, including monies that are or may become due. Provided, however, for a period of 90 days from the initial date of this CONTRACT and upon written notice to the ASSOCIATION, CONTRACTOR may assign and transfer any rights under or interest in this Contract, including monies that are or may become due, to a purchaser of substantially all of the assets of CONTRACTOR without the prior consent, written or oral, of the OWNER. Nothing contained in this paragraph shall prevent the CONTRACTOR from employing such independent

consultants, associates or subcontractors, as it may deem appropriate to assist the CONTRACTOR in the performance of the services rendered.

Upper Cape Fear River Basin Association

By: _____
Charles Cocker, Chairman UCFRBA

Date: APRIL 15, 2015

ATTEST

_____
Secretary

Meritech, Inc

By: _____
David Merritt, Vice President Meritech, Inc.

Date: _____

ATTEST

_____

APPENDIX F: NC DWR 2014 Field Visit

Water Resources
ENVIRONMENTAL QUALITY

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

S. JAY ZIMMERMAN
Director

December 17, 2015

To: Syd Miller, Upper Cape Fear River Basin Association TAC Chair

Through: Cyndi Karoly, Water Sciences Section Chief CK
Steve Kroeger, Ecosystems Branch Supervisor SK
Jennifer Schmitz, Quality Assurance Coordinator JS

From: Carrie Ruhlman, Monitoring Coalition Coordinator CR

RE: 2015 Upper Cape Fear River Basin Association End-of-Year Report

2014 Annual Report

The Upper Cape Fear River Basin Association (UCFRBA) 2014 annual report and data was received by the Division and satisfy the requirements outlined in the Memorandum of Agreement.

2015 Field Visit

On December 8, 2015, Jennifer Schmitz and I accompanied Wesley Yance of Meritech, as he monitored the following six stations in the Upper Cape Fear River basin:

- B5390800 – Cotton Creek near Star
- B5100000 – Deep River near Parks Crossroads
- B5070000 – Deep River at Ramseur
- B4870000 – Haskett Creek at the Asheboro WWTP
- B4920000 – Deep River near Central Falls
- B4800000 – Haw River near Haywood

Overall, monitoring was conducted efficiently and consistently. It is my opinion that the field work conducted for the UCFRBA is done in a professional and reliable manner.

Mr. Yance used a Hanna H19828 multi-parameter meter to measure field parameters (DO, pH, temperature and conductivity). He also had a back-up meter of the same make and model. Meters were stored in a clean environment and were in working condition. Additionally, Mr. Yance carries extra DO membranes and solution for small repairs in the field.

The meter was calibrated at the first station prior to sampling. Mr. Yance had an adequate supply of standards and buffers in preferred values. Bottles were labeled with lot numbers and expiration dates. Dates received and opened are documented in log books and on containers in the lab.

State of North Carolina | Environmental Quality | Water Resources
1611 Mail service Center | Raleigh, North Carolina 27699-1611
919 707 9000

A 3-point pH calibration was conducted with 4.00, 7.00, and 10.00 buffers. pH was checked in the 7.00 buffer after calibration. Conductivity was calibrated using a 1402 µS/cm NaCl standard and checked with 710 µS/cm and 46.7 µS/cm NaCl standards. DO was calibrated in water-saturated air. Additionally, a Winkler titration was performed at the first site sampled, which corroborated the meter reading.

According to Mr. Yance, meter maintenance is performed routinely and on an as-needed basis. This information was confirmed by records in the meter maintence log.

All field parameters were measured *in-situ*, in flowing channels of the waterbodies. Mr. Yance was very knowledgable of the sites and was able to indicate whether or not the field measurements and flow conditions were consistent with what he typically sees at the stations. He completed detailed field sheets at each site and checked GPS coordinates. All coordinates matched those specified in the MOA.

Sample containers were pre-packaged by site, in ziploc bags from the lab. Bottles were labeled and grouped to avoid confusion during sampling. Nutrient and fecal bottles were pre-preserved. Mr. Yance used new, sterilized transfer containers to collect the water at each site. Lids were kept on the sampling bottles until they were ready to be filled, thus reducing the risk of contamination. After sampling, bottles were immediately placed back into the ziploc bags and put on ice. A temperature blank was present in the cooler containing samples.

DO was checked prior to sampling at each site. A mid-day calibration check was performed after sampling was completed at the third site and a post-sampling calibration check was performed in the field prior to returning to the lab. For each calibration check, Mr. Yance checked DO against the theoretical value, conductivity at 0 and 721 µS/cm and pH at 7.0 SU. All information was recorded on the calibration sheet and all values were within range.

Mr. Yance followed proper safety precautions throughout the day. He used his hazard lights and flashing beacon as required and wore a safety vest.

Given Mr. Yance's diligence and experience, I am confident that the samples and field data collected for the UCFRBA are of high quality. I appreciate the cooperation of Meritech on the day of the field visit and look forward to working with them on the continued success of the UCFRBA sampling program. If you have any questions or comments, please feel free to contact me at (919)743-8411 or via email at carrie.ruhlman@ncdenr.gov.

cc: Scott Pickard, QA/QC Committee (spickard@cityofgraham.com)
Mike Schlegel, TJCOG (mschlegel@tjcog.org)
Cy Stober, PTRC (cstober@ptrc.org)
Kris Pawlak, Meritech (kpmrtech@bellsouth.net)