Alabama Water Watch

A Program dedicated
to developing
Citizen Volunteer Monitoring
of Alabama's Lakes,
Streams and Coasts

ANNUAL REPORT

(October 1, 2008 - September 30, 2009)

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Cover photo: Magnificent **Saugahatchee Creek** as seen through the camera of Hunter Nichols, May 2009.

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1. EXECUTIVE SUMMARY

1. Alabama Water Watch (AWW) is a statewide program dedicated to developing citizen volunteer monitoring of Alabama's lakes, streams, and coasts. The AWW Program is funded, in part, by the Alabama Department of Environmental Management (ADEM) and the U.S. Environmental Protection Agency (EPA), Region 4, and is coordinated through the Department of Fisheries and Allied Aquacultures of Auburn University (AU). This report covers activities from October 1, 2008 through September 30, 2009.

2. During this report period, AWW conducted 104 training sessions attended by 459 people with a total of 608 certifications; 69% were conducted by or with a Citizen Trainer. Twenty-nine Water Chemistry Workshops (232 people), 22 Bacteriological Workshops (157 people), three Stream Biomonitoring Workshops (18 people), and 38 Recertification Sessions (Water Chemistry and Bacteriological, 121 people), were conducted during the report period. One Water Chemistry Training-of-Trainer and two Trainer Refreshers were attended by 17 citizens. Five Water Chemistry Trainer Internships were conducted during the report period. Three *Exploring Alabama's Living Streams* workshops certified 59 educators on the AWW-developed curricula for aquatic science.

3. During this report period, 61 citizen groups collected and submitted water chemistry data from nine of the ten major watersheds in the state, excluding only the Tombigbee. Data received during the report period originated mostly from AWW groups located in the Warrior, Tallapoosa, Tennessee and Coosa watersheds (14, 13, 12 and 11 groups respectively). Twenty-six groups submitted bacteriological monitoring data from seven watersheds. A combined total of 4,241 data records (3,385 chemistry and 856 bacteriological) were received. Overall, most monitoring activity was located in the Tallapoosa, Warrior, Coastal Plain, and Tennessee watersheds (20%, 20%, 18% and 17% of data respectively). Since 1993, AWW has received almost 48,000 water chemistry and almost 11,000 bacteriological data records. Over 2,000 sites have been monitored on more than 750 waterbodies.

4. Three Data Interpretation Sessions, two for Smith Lake and one for Lake Wedowee, were conducted, and numerous Outreach activities were held for citizen groups. AWW responded to several official requests for data from other organizations such as ADEM, EPA, North Carolina State University, AWW groups and individual monitors. AWW staff attended several AWW monitoring group meetings such as those of Wolf Bay Watershed Watch and Lake Watch of Lake Martin. AWW personnel attended several Conferences and Seminars including the 20th Annual ADEM Nonpoint Source Conference, the Alabama Rivers Alliance Watershed Leadership Conference, the Alabama Fisheries Association Annual Meeting, the AU Coastal Roundup and the Clean Water Partnership Annual Meeting.

5. Program Accomplishments and Initiatives for this report period included the revision of the Alabama Water Watch website, with the addition of an online blog newsletter and a new one-button option for certified monitors to access all data for their testing sites. AWW's website and the AWW Water Data Section have been visited over 115,000 times and 26,000 times respectively. Almost 93% of AWW data received during the report period was entered online, and over 700 people were subscribed to the AWW Listserve. The final version of the *Exploring Alabama's Living Streams* aquatic science curriculum was printed.

2. PROJECT MILESTONES

Project Milestones from October 1, 2008 through September 30, 2009

	Activities and Practices to Assure that Project Implementation is Timely and Reasonable
1	Activity: Conduct at least 20 Water Chemistry Workshops Twenty-nine Water Chemistry Monitoring workshops were conducted during this period.
2	Activity: Conduct at least 12 QA Recertification Workshops Thirty-eight Recertification workshops for Water Chemistry and Bacteriological monitors were conducted during this period.
3	Activity: Conduct at least eight Bacteriological Monitoring workshops Twenty-two Bacteriological Monitoring workshops and two Bacteriological Recertification sessions were conducted during this period.
4	Activity: Conduct at least three Stream Biomonitoring workshops Three Stream Biomonitoring workshops were conducted during this period.
5	Activity: Conduct at least one Training of Trainer workshop, if needed One Training of Trainer workshop was conducted during this period.
6	Activity: Conduct at least one Trainer Refresher workshop, if needed Two Trainer Refresher Sessions were conducted during this period.
7	Activity: Assist with coordination of the Annual Meeting The AWW Annual Meeting and Picnic was held May 30, 2009.
8	Activity: Produce and Distribute at least one volume of the Waterbody Report Series of Citizen Data (Reservoir, Stream and Coastal reports) One waterbody report was initiated during this report period for Lake Watch of Lake Martin. Nine published articles highlighted AWW group achievements.
9	Activity: Maintain the AWW Office and regularly communicate with citizen volunteers via telephone, email, listserve, website, personal contacts, etc. About 50 - 80 weekly communications were conducted by AWW personnel via telephone, email, regular mail and personal meetings. The AWW Listserve had more than 700 people subscribed during this report period.
10	Activity: Maintain the Water Quality and Citizen Monitor Database and Regularly Disseminate Data to Monitors Data charting on the AWW website was reviewed and the Homepage revamped. Visits to the AWW website have continually increased since October 2004.
11	Activity: Produce at least two AWW **AWW**ARENESS Newsletters, post on the website, mail or listserve to selected recipients. Many news items were posted to the "**AWW**ARENESS" section of the AWW website. One hardcopy issue of **AWW**ARENESS (Summer, 2009) was produced.
12	Activity: Produce a Semi-annual Report for ADEM/EPA Semi-annual report was sent to ADEM on April 30, 2009.
13	Activity: Produce an Annual Report and Final Report for ADEM/EPA The Annual Report for FY08 was sent to ADEM in October 2009.

3. CITIZEN TRAINING

One hundred and four training sessions for a total of 608 certifications attended by 459 citizens were conducted during the report period (Table 1); 66% were conducted by or with AWW citizen trainers. Training sessions were conducted in 32 locations by 24 trainers throughout Alabama (Tables 2-6). A current list of the 41 people certified as AWW Trainers by specialty and Quality Assurance Officers is provided in Table 7.

Twenty-nine Water Chemistry Monitoring Workshops certified a total of 232 citizens (Table 2). Twenty-two Bacteriological Monitoring Workshops were conducted during the report period in which 157 citizens were certified (Table 3). Three Stream Biomonitoring Workshops were conducted during the report period, certifying 18 citizens (Table 4). Thirty-eight Water Chemistry Monitoring Recertification Sessions were conducted to update 118 citizens and two Bacteriological Monitoring Recertification sessions were conducted to update three citizens in their status as active certified monitors (Table 5). Chemical reagent replacements were distributed during these sessions to replenish the water quality test kits.

One Training of Trainer and two Trainer Refreshers for Water Chemistry Monitoring sessions were conducted for 17 people during the reporting period. Four Internships were completed by three citizens to fulfill status of Water Chemistry Trainer (Table 6). Forty-one people are currently certified as AWW Trainers or QA Officers, and a list of Trainers by specialty and QA Officers is provided in Table 7. More than 800 citizens held current AWW certifications during the report period.

Table 1. Number of workshops and citizens certified from October 1, 2008 through September 30, 2009.

Type	No. Workshops	No. Certified Trainees
Water Chemistry Monitoring	29	232
Bacteriological Monitoring	22	157
Stream Biomonitoring	3	18
Water Chemistry Recertification	38	118
Bacteriological Recertification	2	3
Water Chemistry Training of Trainer	1	4
Water Chemistry Trainer Intern I	2	2
Water Chemistry Trainer Intern II	2	2
Trainer Refresher Water Chemistry	2	13
Exploring Alabama's Living Streams	3	59
Total	**104**	**608***

* Some of the 459 citizens attended more than one workshop.

A. Water Chemistry Workshops

Water Chemistry Workshops (6-hour sessions) train citizens in the Program's goals and how to monitor and evaluate physical and chemical features of water using a specially designed water test kit. All groups monitor the same six parameters: temperature, dissolved oxygen, total alkalinity, total hardness, pH and turbidity. The U.S. EPA first approved the AWW QA Plan for water chemistry in 1994 and a revised plan was approved in 2004 (Appendix A). Fifteen citizen trainers and four AWW staff members conducted 29 Water Chemistry Workshops during the report period; 69% were conducted by or with AWW citizen trainers, and 232 people were certified (Table 2).

Table 2. Water Chemistry workshops conducted with and without Citizen Trainers from October 1, 2008 through September 30, 2009.

	Date	Place	Trainer (s)*	Coordinator	Citizen Trainer	No Certified
1	04-Oct-08	Ft. Payne, AL	Blanton, Oates & Ruiz-Córdova	C. Blanton	Yes	14
2	10-Oct-08	Guntersville, AL	Carter & O'Donnell	R. O'Donnell	Yes	3
3	13-Oct-08	Columbiana, AL	Steele	T. Steele	Yes	11
4	01-Nov-08	Auburn, AL	Oates & Ruiz-Córdova	R. Grub	No	3
5	12-Nov-08	Birmingham, AL	Burwinkle	H. Burwinkle	Yes	16
6	14-Nov-08	Cullman, AL	Reutebuch & Ruiz-Córdova	D. Berry	No	8
7	13-Dec-08	Elberta, AL	Langston & Singleton	L. Langston	Yes	7
8	20-Jan-09	Foley, AL	Singleton	H. Singleton	Yes	2
9	21-Feb-09	Auburn, AL	Gonzales & Ruiz-Córdova	R. Grub	Yes	12
10	21-Feb-09	Mobile, AL	Fearn	M. Fearn	Yes	13
11	07-Mar-09	Elberta, AL	Langston & Singleton	L. Langston	Yes	3
12	03-Apr-09	Guntersville, AL	O'Donnell	R. O'Donnell	Yes	1
13	10-Apr-09	Foley, AL	Singleton	H. Singleton	Yes	1
14	11-Apr-09	Auburn, AL	Deutsch & Oates	R. Grub	No	9
15	18-Apr-09	Jasper, AL	Hurley	L. Prestridge	Yes	12
16	18-Apr-09	Springville, AL	Salter & Steele	D. Morrison	Yes	10
17	25-Apr-09	Cedar Bluff, AL	Ruiz-Córdova	C. Landrem	No	5
18	13-May-09	Elberta, AL	Singleton	H. Singleton	Yes	2
19	23-May-09	Blountsville, AL	Oates & Ruiz-Córdova	D. Gordon	No	6
20	18-Jun-09	Nauvoo, AL	Ruiz-Córdova	M. Johnston	No	1
21	24-Jun-09	Rainsville, AL	Blanton & Carter	C. Gant	Yes	15
22	26-Jun-09	Weeks Bay, AL	Shelton	M. Shelton	Yes	13
23	20-Jul-09	Mancelona, MI	Deutsch	NC	No	8
24	15-Aug-09	Auburn, AL	Reutebuch	R. Grub	No	12
25	20-Aug-09	Pinson, AL	Steele	T. Steele	Yes	2
26	22-Aug-09	Elberta, AL	Langston & Singleton	L. Langston	Yes	7
27	22-Aug-09	Pell City, AL	Cearley & Trussell	I. Trussell	Yes	6
28	29-Aug-09	Ozark, AL	Mullen	M. Mullen	Yes	4
29	22-Aug-09	Huntsville, AL	Oates & Ruiz-Córdova	S. Weber	No	26
				Total →	**69%**	**232**

* Full name of Trainer is provided in Table 7. NC = No Coordinator

B. Bacteriological Monitoring Workshops

Bacteriological monitoring was initiated through the AWW Program in May 1996, and the EPA approved the protocols of an AWW Bacteriological QA Plan in 1999 (Appendix A). Monitoring for bacteria added the dimension of human health to AWW protocols. The workshop usually takes 2-3 hours and the objectives include: 1) an introduction to bacteriological testing and water quality standards, 2) demonstration of plate techniques and bacterial counts and 3) developing a monitoring plan. Eight citizen trainers and three AWW staff members conducted 22 Bacteriological Workshops during the report period; 55% were conducted by or with AWW citizen trainers and 157 people were certified (Table 3).

Table 3. Bacteriological Monitoring workshops conducted with and without Citizen Trainers from October 1, 2008 through September 30, 2009.

	Date	Place	Trainer(s)*	Coordinator(s)	Citizen Trainer	Number Certified
1	3-Oct-08	Ft. Payne, AL	Blanton & Oates	C. Blanton	Yes	9
2	9-Oct-08	Underwood, IN	Deutsch	NC	No	10
3	1-Nov-08	Auburn, AL	Oates & Ruiz-Córdova	R. Grub	No	6
4	6-Nov-08	Wedowee, AL	Deutsch & Oates	R. Grub	No	5
5	14-Nov-08	Addison, AL	Deutsch	R. Grub	No	6
6	13-Dec-08	Elberta, AL	Langston & Singleton	L. Langston	Yes	7
7	1-Jan-09	Weeks Bay, AL	Shelton	M. Shelton	Yes	9
8	20-Jan-09	Foley, AL	Singleton	NC	Yes	2
9	21-Feb-09	Auburn, AL	Ruiz-Córdova	R. Grub	No	10
10	7-Mar-09	Elberta, AL	Langston & Singleton	H. Singleton	Yes	3
11	9-Apr-09	Foley, AL	Singleton	H. Singleton	Yes	1
12	11-Apr-09	Auburn, AL	Deutsch & Oates	R. Grub	No	7
13	18-Apr-09	Jasper, AL	Hurley	L. Prestridge	Yes	14
14	13-May-09	Elberta, AL	Singleton	H. Singleton	Yes	2
15	23-May-09	Blountsville, AL	Oates & Ruiz-Córdova	D. Gordon	No	6
16	20-Jun-09	Wilsonville, AL	D. & L. Cunningham	L. Cunningham	Yes	7
17	26-Ju-09	Weeks Bay, AL	Shelton	M. Shelton	Yes	10
18	3-Jul-09	Pinson, AL	Steele	T. Steele	Yes	3
19	20-Jul-09	Mancelona, MI	Deutsch	NC	No	8
20	15-Aug-09	Auburn, AL	Ruiz-Córdova	R. Grub	No	9
21	22-Aug-09	Elberta, AL	Langston & Singleton	L. Langston	Yes	7
22	29-Aug-09	Huntsville, AL	Oates & Ruiz-Córdova	S. Weber	No	16
				Total →	**55%**	**157**

* Full name of Trainer is provided in Table 7. NC = No Coordinator

C. Stream Biomonitoring Workshops

Stream Biomonitoring Workshops teach the principles and practice of using stream macroinvertebrates to evaluate water quality. This information was initially incorporated into the Water Chemistry Workshops, but is now a stand-alone workshop that lasts 3-4 hours. Three Stream Biomonitoring Workshops were conducted during the report period and 18 people were certified. Two Stream Biomonitoring Workshops were conducted by or with the assistance of a citizen trainer (Table 4).

Table 4. Stream Biomonitoring workshops conducted with and without Citizen Trainers from October 1, 2008 through September 30, 2009.

	Date	Place	Trainer(s)*	Coordinator(s)	Citizen Trainer	Number Certified
1	4-Oct-08	Ft. Payne, AL	Oates & Ruiz-Córdova	C. Blanton	No	6
2	20-Jul-09	Mancelona, MI	Deutsch	NC	No	8
3	29-Aug-09	Ozark, AL	Mullen	M. Mullen	Yes	4
				Total →	**33%**	**18**

* Full name of Trainer is provided in Table 7. NC = No Coordinator

D. Water Chemistry Recertification Sessions

Maintaining quality assurance protocols to maintain credible data is one of the highest priorities and challenges of AWW. As part of EPA-approved quality assurance protocols for citizen data (Appendix A), all monitors are periodically recertified and their test kits are replenished with fresh reagents. The basic approach for recertification involves careful observation of monitor techniques and inspection of the test kit by a QA Officer. Some QA Officers also choose to use chemical reagent standards, or to sample side-by-side with the monitor. In this way, monitor techniques and test kit quality are periodically checked in a non-intimidating, yet reliable, way. During the report period a total of 118 people were recertified (Table 5). Fifteen citizen Trainers/QA Officers and four AWW staff conducted 38 Recertification Sessions during the report period; 79% were conducted by or with citizen QA Officers.

Recertification Session for the AWW group Winston County Smith Lake Advocacy Inc. taking place near Duncan Bridge on Smith Lake April 2009

Table 5. Water Chemistry Recertification workshops conducted with and without Citizen Trainers from October 1, 2008 through September 30, 2009.

	Date	Place	Trainer(s)*	Coordinator(s)	Citizen Trainer	Number Certified
1	12-Oct-08	Mobile, AL	Fearn	NC	Yes	1
2	28-Oct-08	Nauvoo, AL	Oates	M. Johnston	No	3
3	14-Nov-08	Cullman, AL	Reutebuch & Ruiz-Córdova	D. Berry	No	5
4	15-Nov-08	Lake Mitchell, AL	Piccolo	NC	Yes	1
5	21-Nov-08	Grove Oak, AL	Carter & O'Donnell	R. O'Donnell	Yes	4
6	22-Nov-08	Guntersville, AL	O'Donnell	R. O'Donnell	Yes	6
7	1-Dec-08	Elberta, AL	Dukes	T. Dukes	Yes	2
8	11-Dec-08	Alexander City, AL	Pietrzykowski	NC	Yes	1
9	21-Feb-09	Mobile, AL	Fearn	M. Fearn	Yes	3
10	7-Mar-09	Elberta, AL	Langston & Singleton	L. Langston	Yes	3
11	14-Mar-09	Elberta, AL	Dukes & Singleton	T. Dukes	Yes	3
12	20-Mar-09	Guntersville, AL	Carter & O'Donnell	M. Carter	Yes	3
13	20-Mar-09	Wedowee, AL	Gonzales & Ruiz-Córdova	R. Grub	Yes	3
14	21-Mar-09	Guntersville, AL	Carter & O'Donnell	M. Carter	Yes	6
15	3-Apr-09	Arley, AL	Deutsch & Reutebuch	R. Grub	No	5
16	9-Apr-09	Guntersville, AL	O'Donnell	R. O'Donnell	Yes	3
17	11-Apr-09	Birmingham, AL	Burwinkle	NC	Yes	1
18	24-Apr-09	Guntersville, AL	Carter	NC	Yes	1
19	24-Apr-09	Pell City, AL	Trussell	I. Trussell	Yes	6
20	25-Apr-09	Pell City, AL	Trussell	I. Trussell	Yes	2
21	11-May-09	Auburn, AL	Oates	NC	No	1
22	15-May-09	Guntersville, AL	Carter	NC	Yes	1
23	16-May-09	Alexander City, AL	Pietrzykowski	V. Pietrzykowski	Yes	2
24	23-May-09	Blountsville, AL	Oates & Ruiz-Córdova	D. Gordon	No	3
25	18-Jun-09	Nauvoo, AL	Ruiz-Córdova	M. Johnston	No	2
26	20-Jun-09	Wilsonville, AL	D. & L. Cunningham	L. Cunningham	Yes	7
27	24-Jun-09	Rainsville, AL	Carter	C. Gant	Yes	9
28	30-Jun-09	Fairhope, AL	Shelton	NC	Yes	1
29	8-Aug-09	Pinson, AL	Steele	NC	Yes	1
30	10-Aug-09	Birmingham, AL	Burwinkle	NC	Yes	1
31	14-Aug-09	Elberta, AL	Singleton	H. Singleton	Yes	4
32	15-Aug-09	Auburn, AL	Ruiz-Córdova	R. Grub	No	2
33	15-Aug-09	Elberta, AL	Dukes	NC	Yes	1
34	22-Aug-09	Rockford, AL	Piccolo	S. Piccolo	Yes	5
35	29-Aug-09	Huntsville, AL	Ruiz-Córdova	R. Grub	No	13
36	30-Aug-09	Troy, AL	Mullen	NC	Yes	1
37	16-Sep-09	Rockford, AL	Piccolo	NC	Yes	1
38	23-Sep-09	Rockford, AL	Piccolo	NC	Yes	1
				Total →	**79%**	**118**

* Full name of Trainer is provided in Table 7. NC = No Coordinator

E. Training of Trainer / QA Officer Workshops

Training-of-Trainer (ToT) workshops are conducted so that experienced monitors may become AWW certified Trainers or QA Officers (4 types of certifications). Ideally, all large AWW groups will have local Trainers and QA Officers so that all monitors may be served.

During this report period, October 1, 2008 through September 30, 2009, 20 Trainers were certified at seven workshops: one Water Chemistry Training-of-Trainer (four trainees), two Water Chemistry Trainer Refresher (13 trainees), two Water Chemistry Trainer Internship I (two trainees) and two Water Chemistry Trainer Internship II (two trainees) (Table 6).

Table 6. Training-of-Trainer workshops conducted from October 1, 2008 through September 30, 2009.

	Date	Place	Trainer(s)*	Course Type	Trainees
1	4-Oct-08	Fort Payne, AL	Ruiz-Córdova	Water Chemistry Trainer Intern I	1
2	14-Nov-08	Cullman, AL	Ruiz-Córdova	Water Chemistry Trainer Intern II	1
3	18-Apr-08	Springville, AL	Steele	Water Chemistry Trainer Intern I	1
4	30-May-08	Auburn, AL	Deutsch	Water Chemistry Trainer Refresher	11
5	24-Jun-09	Rainsville, AL	Carter	Water Chemistry Trainer Intern II	1
6	12-Sep-09	Arley, AL	Deutsch	Water Chemistry Trainer-of-Trainer	4
7	12-Sep-09	Arley, AL	Deutsch	Water Chemistry Trainer Refresher	2
				Total →	**21**

* Full name of Trainer is provided in Table 7.

Before a new Trainer can officially conduct a workshop, he/she is required to "intern" with a certified citizen Trainer or AWW Trainer. New Water Chemistry and Bacteriological Trainers must complete two internships (first internship, Intern assists the Trainer with various aspects of training; second internship, Intern conducts entire workshop while a certified Trainer observes and evaluates performance). Currently Stream Biomonitoring Trainers are not required to intern before conducting workshops.

After the internships are completed, AWW personnel evaluate comments provided by certified Trainers to determine if the Intern needs additional practice. Every two years, all Trainers are required to attend a Trainer Refresher Course. The Trainer Refresher Course provides an avenue for discussion of updated protocols and procedures and enhances communication between AWW staff and Trainers.

To ease the search for AWW Trainers and meet the demand for certification workshops, a new interactive Google™ map of Trainers' location has been added to the AWW website (Figure 1). A current list of the AWW Trainers by specialty and Water Chemistry QA Officers is provided in Table 7.

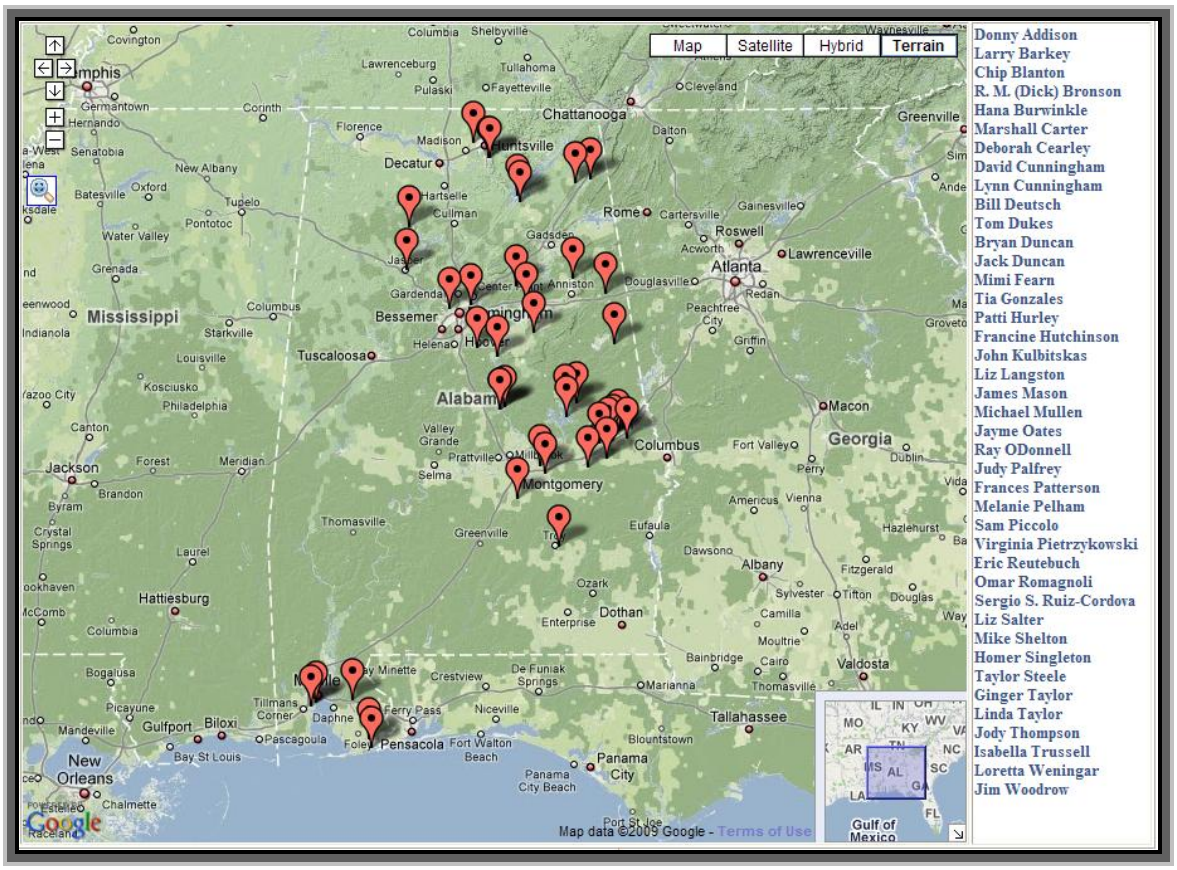

Figure 1. Location of AWW Trainers and QA Officers, 2008-09 (from the AWW website at https://fp.auburn.edu/icaae/tmap.htm).

Table 7. Active AWW Trainers from October 1, 2008 through September 30, 2009 (* = INTERN).					
	Trainer	Chemistry	Bacteriological	Biomonitoring	QA Officer
1	Donny Addison	X			X
2	Larry Barkey*				X
3	Chip Blanton	X			X
4	Dick Bronson	X	X	X	X
5	Hana Burwinkle	X			X
6	Marshall Carter	X	X		X
7	Deborah Cearley	X	X		X
8	David Cunningham	X	X		X
9	Lynn Cunningham	X	X		X
10	Bill Deutsch	X	X	X	X
11	Tom Dukes*	X	X		X
12	Bryan Duncan	X	X		X
13	Jack Duncan *	X	X		X
14	Mimi Fearn	X			X
15	Tia Gonzales	X	X		X
16	Patti Hurley	X	X	X	X
17	Francine Hutchinson	X	X	X	X
18	John Kulbitskas*	X			X
19	Liz Langston	X	X	X	X
20	James Mason*	X			X
21	Michael Mullen	X	X	X	X
22	Jayme Oates	X	X	X	X
23	Ray O'Donnell	X			X
24	Judy Palfrey	X	X		X
25	Frances Patterson	X			X
26	Melanie Pelham	X			X
27	Sam Piccolo	X			X
28	Virginia Pietrzykowski	X			X
29	Omar Romagnoli	X			X
30	Sergio Ruiz-Córdova	X	X	X	X
31	Eric Reutebuch	X			X
32	Elizabeth Salter*	X			X
33	Mike Shelton	X	X	X	X
34	Homer Singleton	X	X		X
35	Taylor Steele	X	X	X	X
36	Ginger Taylor	X			X
37	Linda Taylor	X	X	X	X
38	Jody Thompson				X
39	Isabella Trussell	X			X
40	Loretta Weningar*	X			X
41	Jim Woodrow	X	X		X
	Total →	**39**	**22**	**11**	**41**

4. CITIZEN GROUPS, DATA AND RESOURCE DISTRIBUTION

A. Citizen Groups and Data

Sixty-one groups participated in AWW and submitted water quality data from nine of ten major watersheds throughout the report period. Overall 4,241 combined water chemistry and bacteriological records from 437 monitoring sites were submitted to the AWW office during the report period (Table 8). There are now more than 2,000 cumulative sites on more than 750 waterbodies that have been monitored statewide. Each site has a unique code, which is explained in Appendix B. Data received during the report period originated mostly from groups located in the Warrior, Tallapoosa, Tennessee and Coosa watersheds (14, 13, 12 and 11 groups, respectively). However, when counting the total data submitted, the most active groups were in the Tallapoosa, Warrior, Coastal Plain and Tennessee, (20%, 20%, 18% and 17% of total of data received) watersheds. Nearly 75% of the total data comes from these four watersheds. No data were received from the Tombigbee watershed.

Table 8. Total Monitoring Groups from October 1, 2008 through September 30, 2009.

Major AWW Watershed	No. of Groups	%	No. sampling Sites	%	Total Records	%
Alabama	2	3%	11	3%	66	2%
Cahaba	3	5%	7	2%	44	1%
Chattahoochee	3	5%	5	1%	10	0%
Coastal Plain	3	5%	79	18%	778	18%
Coosa	11	17%	62	14%	498	12%
Mobile	4	6%	34	8%	456	11%
Tallapoosa	13	20%	88	20%	831	20%
Tennessee	12	18%	75	17%	702	17%
Warrior	14	22%	76	17%	856	20%
Totals	**65 ***		**437**		**4,241**	

* Some groups monitor in more than one watershed, what makes this number 65 instead of 61; see also Table 11.

Between October 1, 2008 and September 30, 2009, 334 monitors submitted 3,385 water chemistry records sampled from 437 sites, while 88 monitors submitted 856 bacteriological records from 148 sites. A total of 3,151 (93%) water chemistry records were submitted online and a total of 797 (93%) bacteriological records were submitted online. Combined, a total of 3,948 (93%) records were submitted online. Historically, 260 monitoring groups from across Alabama have at some point participated and submitted data to AWW. During the report period two new monitoring groups submitted six records from three monitoring sites (Table 9).

Table 9. New Monitoring Groups from October 1, 2008 through September 30, 2009.					
Group Name	Date Established	No. of Sites	Bacteria Records	Chemistry Records	Total Records
Chambers Co. Career Tech FFA	1-Apr-09	2	2	2	4
Harding Water Watch	5-Sep-09	1	1	1	2
Totals		**3**	**3**	**3**	**6**

Looking at the main activity of the group members that participated with AWW during the reporting period, 74% of the 61 citizen groups that submitted data during the report period were Community Groups (45), nine were Educational Groups (15%) and seven groups (11%) were composed mainly of Professionals (Table 10). Also, categorizing AWW Groups according to what type of water body they sample, Stream Groups made up most of the active groups (72%) during the report period, while Lake Groups made up 18% and Coastal Groups 10%.

Table 10. AWW data records by Group Type and Waterbody Type, from October 1, 2008 through September 30, 2009.								
Indicator	Groups		Chemistry		Bacteria		Total	
	No.	%	Records	%	Records	%	Records	%
Group Type								
Community	45	74%	2,708	80%	643	75%	3,351	79%
Educational	9	15%	158	5%	6	1%	164	4%
Professional	7	11%	519	15%	207	24%	726	17%
Waterbody Type								
Coastal	6	10%	618	18%	371	43%	989	23%
Lake	11	18%	1,138	34%	90	11%	1,228	29%
Stream	44	72%	1,629	48%	395	46%	2,024	48%
Total			**3,385**		**856**		**4,241**	

During this report period, October 1, 2008 to September 30, 2009, the AWW office received and processed an average of 353 data forms per month; 282 water chemistry and 71 bacteriological. Since 1993, AWW has received approximately a combined total of 59,000 water quality data forms (48,000 water chemistry and 11,000 bacteriological data forms) from citizen monitors in all of the major watersheds in Alabama. All data have been entered into the AWW statewide computer database and are available online. Samples of all data forms can be found in Appendix C.

A graphic summary of the number of active groups, and both water chemistry and bacteriological data forms submitted from 1993 to 2008 (calendar year), is presented in Figure 2. Summaries of the number of water chemistry and bacteria records received, sorted by watershed and citizen group, are presented in Appendix D and E, respectively. A list of active citizen groups and an example of a corresponding map of group locations by watershed is presented in Table 11 and Figure 3, respectively.

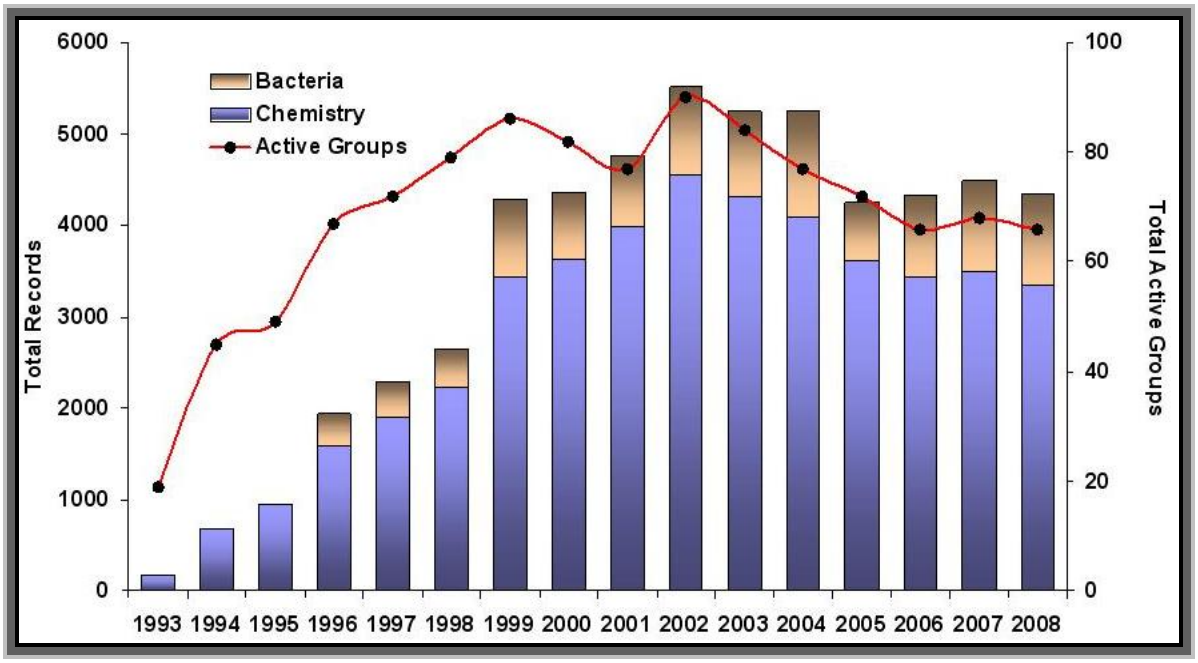

Figure 2. Total number of Chemistry and Bacteria Records received per year at the AWW office and number of Active Groups per year from 1993 through 2008 (calendar year).

The value of the time citizen volunteers have contributed in attending AWW training workshops and collecting water quality samples has been an important component of the AU cost share on the ADEM/EPA 319 grant for the Program. During the report period, citizens contributed 16,945 volunteer hours. This amount is more than nine-fold the maximum citizen time (1,728 hours) that may be used as cost share (Appendix F). As a result of the strong volunteer effort, almost $300,000 in excess cost share may be used by ADEM to match funding for other environmental projects.

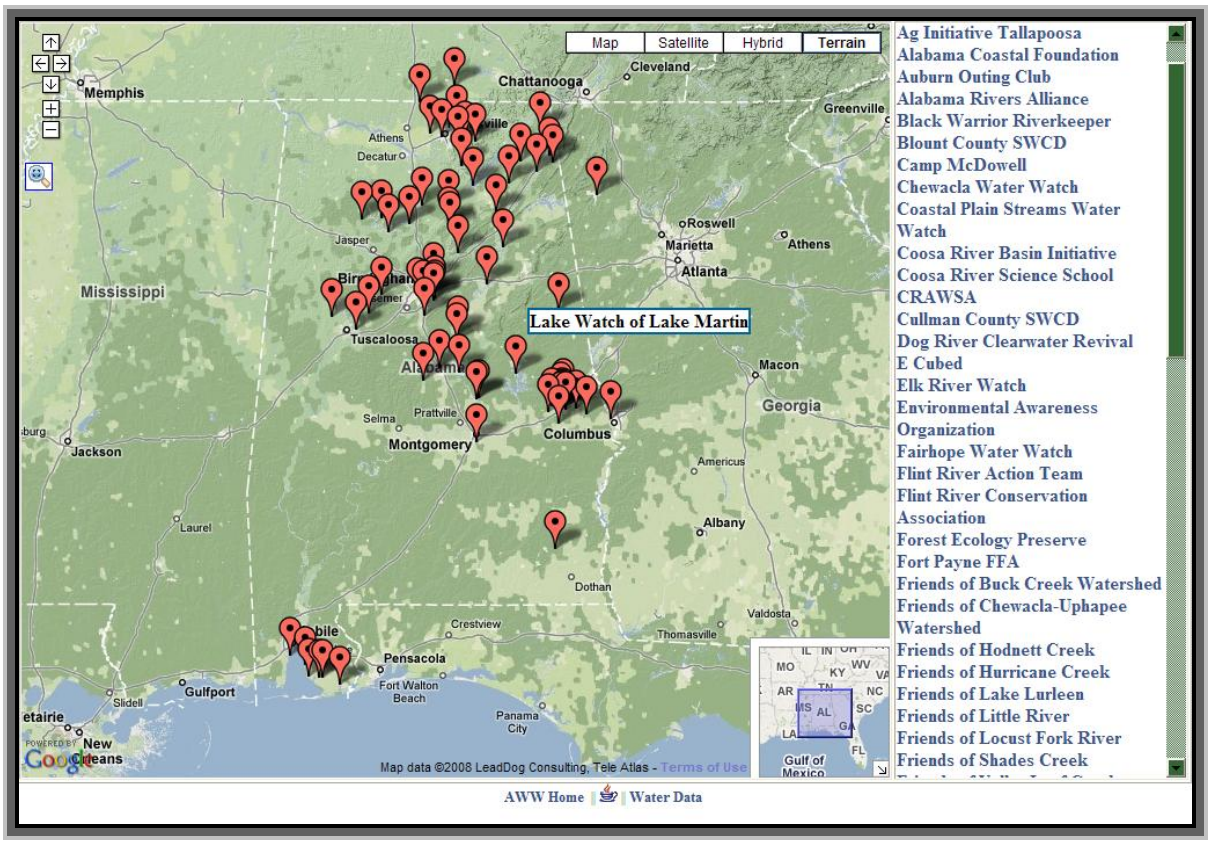

Figure 3. An example of a Google™ interactive map image from the AWW database showing locations of citizen groups that submitted water quality data from October 1, 2008 through September 30, 2009.

Table 11. Citizen groups that submitted data from October 1, 2008 through September 30, 2009 listed by major watershed.

	Cum # of Groups	Alabama [01]		Cum # of Groups	Tallapoosa [07]
1	(1)	Isabella Water Watchers	4	(29)	E Cubed
2	(2)	Tri-River Region Water Watch*	5	(30)	Environmental Awareness Organization
			6	(31)	Friends of Chewacla-Uphapee Watershed
		Cahaba [02]	7	(32)	Friends of Hodnett Creek
1	(3)	CRAWSA	8	(33)	Gran-Knights of the Waterhole
2	(4)	Friends of Shades Creek	9	(34)	Jake & Donny Water Watch
3	(5)	Gargis & Guin Cahaba Watch	10	(35)	Lake Watch of Lake Martin
			11	(36)	Lake Wedowee Property Owners Assoc.
		Chattahoochee [03]	12	(37)	Save Our Saugahatchee
1	(6)	Chambers County Career Tech Center FFA	13		Tri-River Region Water Watch*
2	(7)	Friends of Halawakee Creek			
3	(8)	Harding Water Watch			**Tennessee [08]**
			1	(38)	Flint River Action Team
		Coastal Plain [04]	2	(39)	Flint River Conservation Association
1	(9)	Alabama Coastal Foundation	3	(40)	Geraldine High School FFA
2	(10)	Coastal Plain Streams Water Watch	4	(41)	Huntsville Senior Environment Corps
3	(11)	Wolf Bay Watershed Watch	5	(42)	Marshall County RSVP *
			6	(43)	North Sand Mountain School
		Coosa [05]	7	(44)	Paint Rock Valley Water Logs
1	(12)	Coosa River Basin Initiative	8	(45)	Plainview High School FFA
2	(13)	Fort Payne FFA	9	(46)	Rocket City Water Watch
3	(14)	Lake Jordan HOBO	10	(47)	Sardis High School FFA
4	(15)	Lake Mitchell HOBO	11	(48)	Scott Branch Water Watch
5	(16)	Lay Lake HOBO	12		Valley Head School*
6	(17)	Logan Martin Lake Protection Association			
7	(18)	SOULS Water Watch			**Warrior [10]**
8	(19)	The Friends of Big Canoe Creek	1	(49)	Alabama River Alliance
9		Tri-River Region Water Watch*	2	(50)	Black Warrior Riverkeeper
10	(20)	Valley Head School*	3	(51)	Blount County SWCD
11	(21)	Weiss Lake Improvement Association	4	(52)	CAWACO
			5	(53)	Cullman County SWCD
		Mobile [06]	6	(54)	Friends of Hurricane Creek
1	(22)	Dog River Clearwater Revival	7	(55)	Friends of Locust Fork River
2	(23)	Fairhope Water Watch	8		Marshall County RSVP *
3	(24)	Town of Magnolia Springs	9	(56)	Smith Lake Civic Association
4	(25)	Weeks Bay Water Watch	10	(57)	Smith Lake Environ. Preservation Committee
			11	(58)	Strokers Paddle Club
		Tallapoosa [07]	12	(59)	Warroir Basin Water Warriors
1	(26)	Ag Initiative Tallapoosa	13	(60)	Watercress Darter Water Qual. Mon. Prog.
2	(27)	Auburn Outing Club	14	(61)	Winston County Smith Lake Advocacy Inc
3	(28)	Chewacla Water Watch			

* Groups active in more than one watershed. Cumulative number of groups is in parentheses.

B. Data Interpretation Sessions

Citizen Data Interpretation sessions are regional meetings where AWW personnel and citizen monitors present, discuss and interpret water quality data results. This serves as a tangible summary of years of monitoring effort and puts the group's work into a larger context. Citizens are able to share information about sites in their area and discuss future monitoring plans. Three Citizen Data Interpretation Sessions were presented during the reporting period. All sessions were interactive, with many questions asked and concerns expressed by attendees. The groups appeared enthusiastic about assisting the AWW office with pursuing data-to-action activities.

1. Smith Lake Environmental Preservation Committee: November 15, 2008

Bill Deutsch, Eric Reutebuch and Sergio Ruiz-Córdova gave a PowerPoint presentation titled "Twelfth Annual State of the Lake Address – Lewis Smith Lake" at the Dodge City Restaurant in Cullman County. The session was very interactive, with many questions and constructive suggestions from about 50 people. Deutsch presented an update of AWW Program activities and identified the five monitor groups in the Smith Lake Watershed. Reutebuch continued with citizen data trends on three tributaries of the lake and three lake sites, concluding with a water quality assessment of the whole lake. In closing, the three local knowledge-to-action activities that Smith Lake groups have been engaged in and new activities they might consider, such as the consideration of developing a watershed management plan and the establishment of a watershed management authority, were discussed. Deb Berry, SLEPC president, thanked AWW for its continued support of citizen monitoring on Smith Lake, and presented Deutsch with a gift of $500 to AWW.

2. Lake Wedowee Property Owners Association: March 19, 2009

Deutsch, Reutebuch, Ruiz-Córdova and Rita Grub attended a meeting of the Lake Wedowee Property Owners Association (LWPOA) water monitors at the lakefront home of Water Testing Coordinator and group leader, Jack Duncan, on Lake Wedowee in Randolph County. Duncan asked each monitor to discuss their experiences with online data entry; most remarks were encouraging. Deutsch discussed AWW Program monitoring trends and how they correlate to the LWPOA program. Reutebuch finished the talk with graphical representations of site data for strategic areas of the lake, and what the data trends are showing about the lake's water quality. Monitoring site locations were verified on a map.

3. Winston County Smith Lake Advocacy, Inc.: April 3, 2009

Deutsch, Reutebuch, and Ruiz-Córdova attended a meeting of the Winston County Smith Lake Advocacy, Inc. (WCSLA) group. Reutebuch and Deutsch conducted a data interpretation session for the group, and discussed ways that the data could be used, including environmental education, restoration/protection and advocacy and planning.

Representatives from Alabama Power, SWCD, U.S. Forest Service, ADEM, and the Alabama Rivers Alliance were present. The meeting, coordinated by WCSLA president LaVerne Matheson, was lively, with many questions and constructive suggestions from about 50 people. Towards the end the group was encouraged to consider drafting a management plan for the Smith Lake Watershed, or certain tributary creeks in the watershed.

C. Requests for AWW Resources

AWW received requests for various materials and data. All requests for AWW data were accommodated in a timely manner.

- **Publications**

Requests for publications and brochures were received from citizens, environmental groups, policy makers, schools in Alabama and other states, universities and government agencies, such as ADEM and EPA. Items requested included copies of the *Bacteriological Monitoring* and *Water Chemistry Monitoring* manuals, volumes from the *Citizen Guide to Alabama Rivers* series, volumes from the AWW Waterbody Report series, QA plans, and brochures. Numerous AWW publications were distributed during conferences, group meetings, workshops and other events such as the Auburn CityFest and the Second River Revival, at Locust Fork. Additional publications were distributed to water quality professionals on the Auburn University campus and citizens throughout the region. The AWW Annual Report for October 1, 2007 through September 30, 2008 was submitted electronically to ADEM in October 2008, and printed copies were delivered to ADEM in November 2008.

- **AWW Water Quality Data**

Several requests for citizen water quality data were received and accommodated in a timely matter. All AWW data were submitted to ADEM and special data sets were submitted to several monitoring groups during the report period. In addition, data are available online and can be accessed via the Internet without formal AWW request. Using the new "Show All Data" feature on the AWW website, 163 monitors reviewed their water chemistry data and nineteen monitors reviewed their bacteriological data during the report period.

All Alabama Water Watch data for Lake Martin was requested by Joseph Roy of the Water Quality Branch of the Alabama Department of Environmental Management to assist in the task of reviewing Lake Martin's water use classification. Michael Jones, Environmental Scientist with the Alabama Department of Environmental Management, requested all Water Chemistry and Bacteriological data for sites in the Dry Creek Watershed for the purpose of developing TMDL's.

- **Monitoring Supplies**

One hundred and ninety-eight requests for chemical reagent replacements, valued at over $7,500.00, to replenish water quality test kits were received and filled during this report period. Six remote samplers were purchased by monitoring groups. Active monitors are provided with reagent refills at no cost. The online ordering system allowed again for greater

shipping efficiency, inventory tracking, and more resourceful use of valuable staff time. Coliscan® Easygel bacterial plates were also purchased for special projects and instruction.

5. CONFERENCES, SEMINARS AND OTHER OUTREACH MEETINGS

Numerous meetings and outreach events were held during this report period in which AWW staff represented the Program by expanding partnerships, promoting public relations, and supporting AWW groups. In December 2008, the AWW staff conducted an annual strategic planning meeting to review 2008 outcomes and set goals for 2009. The AWW staff continues to focus on providing better services to monitors and groups, increasing the number of active groups and the amount of data submitted, upgrading web and database options, posting web articles to enhance communication, strengthening the AWWA, and increasing AWW public relations capabilities (e.g.; promoting programs using audio-visual DVD's).

Several conferences, symposia and seminars, both within and outside Alabama, were attended during this report period in which the AWW staff represented the Program either by giving presentations or as attendees. Most conference presentations were financed by related projects, including the Tallapoosa Watershed Project, Saugahatchee Watershed Management Plan, Truman Pierce Institute and Global Water Watch. A list of the most relevant meetings and conferences attended by AWW is shown in Table 12.

Table 12. Outreach events, Group meetings, Conferences and other activities attended by AWW staff from October 1, 2008 through September 30, 2009.

A. ALABAMA WATER WATCH PROGRAM		
i. AWW Outreach Events		
Date / Place	**Event**	**AWW Attendees / Comments**
14-Oct-08 Dadeville, AL	Advanced Master Gardeners Workshop	Eric Reutebuch, Sergio Ruiz-Córdova and Jayme Oates demonstrated AWW monitoring techniques to Advanced Master Gardeners during the program titled "Water Smart."
17-Oct-08 Auburn, AL	Southern Institute of Appropriate Technology (SIFAT) Meeting	Bill Deutsch and Ruiz-Córdova met with 20 international visitors from six-eight countries. The group was attending a Water and Sanitation class at SIFAT in Lineville, AL. The talk "Community-Based Water Monitoring for Watershed Stewardship and Public Health" was presented, followed by discussions about setting up new Global Water Watch programs. Tom Corson, SIFAT Director, coordinated and attended the meeting.
20-Oct-08 Midway, AL	UEI Field Day	Oates conducted Enviroscape demonstrations for thirty fifth-graders from Bullock County School. The program was coordinated by Dennis Block and Kay Stone of the AU Environmental Institute.

Table 12. Outreach events, Group meetings, Conferences and other activities attended by AWW staff from October 1, 2008 through September 30, 2009.

i. AWW Outreach Events (continued)

Date / Place	Event	AWW Attendees / Comments
20-Oct-08 Loachapoka, AL	Loachapoka Syrup Sop Festival	AWW staff assisted local AWW groups in educational and outreach efforts during this yearly event with 15,000-20,000 attendees.
8-Nov-08 Auburn, AL	AU College of Agriculture Round-Up	Oates and Mike Kensler (NRMDI) used an Enviroscape to demonstrate (children and adults) effects of land use and maintenance on water quality.
10-Feb-09 Birmingham, AL	ARA-AWW Association Partnership	Oates and Ruiz-Córdova visited the Alabama River Alliance offices and met with Elizabeth Salter to discuss possible assistance of ARA to advise the AWWA board on how to increase membership and participation with AWW.
10-Feb-09 Pelham, AL	Coosa River Basin Clean Water Partnership	Oates and Ruiz-Córdova attended, seeking partnerships to expand AWW activities in the Coosa River Basin. The Tallapoosa SOWC was announced. Met with D. Promis and C. Landrem to schedule AWW workshops in April, 2009 for CRBI members.
27-Feb-09 Auburn, AL	AU E-Day	Oates and Mike Kensler managed the Ecological Engineering booth at the Student Day for Future Engineers. They demonstrated the NPS Enviroscape and promoted Environmental Stewardship.
9-Apr-09 Auburn, AL	EarthFest	Oates and Wendy Seesock instructed approximately 200 fourth-grade students about native and invasive aquatic plants.
15-Apr-09 Opelika, AL	Opelika Middle School (OMS) Field Day	Deutsch, Reutebuch, Ruiz-Córdova and Seesock taught four 40-minute sessions on stream ecology to fifth-grade students from OMS at Rocky Brook Creek. Water Chemistry and stream Biomonitoring were the focus of this event coordinated by C. Webber.
29-Apr-09 Auburn, AL	DC Wolfe Middle School Field Day	Oates demonstrated Enviroscape and played MacroMania with about 100 sixth-grade students from DC Wolfe Middle School.
22-May-09 Kings Bend, AL	Hayden Elementary School Field Day	Oates and Ruiz–Cordova demonstrated watershed education activities with about 200 fourth-grade students from Hayden Elementary School.
10-Jun-09 Auburn, AL	Forest Ecology Summer Camp	Oates demonstrated Enviroscape and played Food Chain Tag with numerous students from several schools during the two-day event.
14-Jul-09 Auburn, AL	AU Fisheries Summer Camp	Oates and Ruiz–Cordova conducted stream Biomonitoring on the Saugahatchee Creek for the2009 Camp coordinated by David Kline.
30-Jul-09 Auburn, AL	Fifth-Grade Leadership Camp	Reutebuch gave the presentation titled "Environmental Stewardship – What Can You Do?" to four groups of fifth-grade students. He explained AWW monitoring types, watersheds, types of water pollution and what the SWaMP Program is doing to reduce pollution in the Saugahatchee Creek.
25-Aug-09 Auburn, AL	Bacteriological Testing Blitz Day	AWW staff assisted members of the AWW groups, SOS and CHEWUP, in conducting bacteria tests at 30 sites in the Auburn area coordinated by C. Webber.
29-Sep-09 Auburn, AL	Art in Agriculture "Water: Three States"	Deutsch participated on a panel with three others (two representing the Arts and two the Sciences) at a campus-wide event to raise awareness about water and the environment. Panelists discussed how they viewed the role of art and science in their work, and if there are boundaries which hinder their integration.

Table 12. Outreach events, Group meetings, Conferences and other activities attended by AWW staff from October 1, 2008 through September 30, 2009.

i. AWW Outreach Events (continued)

Date / Place	Event	AWW Attendees / Comments
30-Sep-09 Montgomery, AL	Legislative Water Committee Meeting	Deutsch attended the meeting, moderated by AL Senator Kim Benefield, in the Alabama State House with about eight members of the Committee to discuss the development of a statewide water plan, and to hear presentations about Watershed Management Authorities in Alabama and an Economic Evaluation of Lake Martin.

ii. AWW Group Meetings and Events

Date / Place	Event	AWW Attendees / Comments
23-Oct-08 Auburn, AL	SOS and Friends of Chewacla and Uphapee Watershed Quarterly Meeting	Oates, Reutebuch and Ruiz-Córdova attended the meeting that included Enviroscape training for Save Our Saugahatchee and Friends of Chewacla and Uphapee Watershed members in preparation for local water festival.
26-Oct-08 Alexander City, AL	Lake Watch of Lake Martin (LWLM) Annual Meeting	Deutsch, Ruiz-Córdova and Oates attended the meeting coordinated by Dick Bronson, LWLM President. Deutsch gave a talk about LWLM accomplishments and recruiting of new members for continued monitoring, while veteran members concentrate on environmental education and water policy. The *Exploring Alabama's Living Streams* curriculum was premiered, and the Bronson were presented with a framed cover page of the curriculum as thanks from AWW for their work in adapting the AWW Biomonitoring protocols to youth programs.
20-Nov-08 Foley, AL	Wolf Bay Watershed Watch Annual Meeting	Deutsch, Ruiz-Córdova, Oates and Grub attended the Wolf Bay Watershed Watch Decade of Service Celebration. Deutsch was an invited speaker and spoke about AWW connections to WBWW's beginning, monitoring water quality, and achieving Outstanding Alabama Water status for much of Wolf Bay.
21-Nov-08 Magnolia Springs, AL	Meeting with AWW Coastal Groups	Deutsch, Grub, Oates and Ruiz-Córdova met with Cindy Lowry and Liz Salter of the Alabama Rivers Alliance and Mike Kensler of the AU Water Resources Center, discussed watershed issues with officers of the Magnolia River AWW group. This was followed by a visit with Stan and Jessy Mahoney of the Wolf Bay Watershed Watch group, to discuss AWW and WBWW collaboration.
19-Mar-09 Wedowee, AL	Lake Wedowee Property Owners Association Annual Meeting	Deutsch, Reutebuch, Ruiz-Córdova, Grub and Tia Gonzales attended the meeting of LWPOA where a data interpretation was conducted, monitoring site location revised and online data entry demonstrated.
7-May-09 Springville, AL	The Friends of Big Canoe Creek Meeting	Grub attended a monthly meeting of The Friends of Big Canoe Creek and presented an AWW Custom Test Kit to members of the group.
17-Aug-09 Baldwin Co, AL	AWW Coastal Groups Round Up	Oates attended meetings to discuss concerns and more involvement of AWW with members of the coastal groups: Dog River Clear Water Revival, Weeks Bay Water Watch, Wolf Bay Watershed Watch and Town of Magnolia Springs.

Table 12. Outreach events, Group meetings, Conferences and other activities attended by AWW staff from October 1, 2008 through September 30, 2009.

iii. AWW Miscellaneous Meetings		
Date / Place	**Event**	**AWW Attendees / Comments**
07-Oct-08 Auburn, AL	Watershed Center of Excellence	Deutsch attended a signing ceremony in the Board Room of AU President, Dr. Jay Gouge, of a Memorandum of Agreement between AU and the U.S. EPA, Region 4, designating AU as a Watershed Center of Excellence. The ceremony was attended by representatives from EPA Region 4 and from AU offices including NRMDI, WRC and ACES.
22-Oct-08 Decatur, AL	Permanent Joint Legislative Committee on Water Policy and Management	Deutsch gave a talk about AWW and citizen data to the Water Resource Assessments, Studies, Data Collection and Storage Subcommittee of the Permanent Joint Legislative Committee on Water Policy and Management. Senator Arthur Orr moderated the meeting attended by state and private agencies and groups.
02-Dec-08 Auburn, AL	ADEM and WRC Meeting	Deutsch met with Sam Fowler and Mike Kensler from the AU Water Resources Center, and with Scott Hughes and Missy Middlebrooks of ADEM, to discuss potential watershed projects and fulfillment of the EPA Center of Excellence in Watershed Science MOU criteria.
19-Dec-08 Loachapoka, AL	AWW Program Strategic Planning Meeting	AWW Staff met at the Deutsch home to review and evaluate 2008 activities and accomplishments and to set goals for 2009.
27-Jan-09 Montgomery, AL	Permanent Joint Legislative Committee on Water Policy and Management	Deutsch and Seesock attended the meeting of the Permanent Joint Legislative Committee on Water Policy and Management at the State House in Montgomery. The full committee heard from all sub-committee Chairs and received two resolutions that came from the sub-committee meetings around the state over the last several months.
05-May-09 Auburn, AL	Watershed Center of Excellence	Deutsch met with representatives from EPA Region 4, ADEM and the AU Water Resources Center to discuss activities that AU would begin as a newly designated Watershed Center of Excellence. AWW will take the lead in watershed management plans for Saugahatchee Creek (Lee Co.) and Rock Creek (Winston and Cullman Co.).
21-May-09 Atlanta, GA	AWW-Georgia Adopt-A-Stream Memorandum of Understanding (MOU)	Deutsch attended a meeting at the GA Environmental Protection Division offices to discuss the development of a MOU between the AWW and GA Adopt-A-Stream Programs. This MOU would accept training certifications of both programs in either state, and facilitate for citizen groups in shared river basins to participate in both programs. The meeting was hosted by Harold Harbert of GA EPD, and was attended by David Promis of CRBI and other EPD representatives.
17-Jun-09 Double Springs, AL	Winston County Smith Lake Advocacy, Inc Stakeholders Meeting	Five AWW staff members plus Dr. S. Fowler, director of the AU Water Resources Center, attended a stakeholder meeting organized by the WCSLA to discuss the possibility of developing a management plan for the Rock Creek Watershed. Representatives of ACES, ADEM, NRCS, Winston County Commission, and Alabama Power Company, attended.

Table 12. Outreach events, Group meetings, Conferences and other activities attended by AWW staff from October 1, 2008 through September 30, 2009.

iii. AWW Miscellaneous Meetings (continued)		
Date / Place	**Event**	**AWW Attendees / Comments**
09-Sep-09 Auburn, AL	ACES Extension Team Projects (ETPs)	Deutsch attended an ACES meeting, moderated by Dr. Paul Mask, for agents statewide and on-campus specialists assigned to the Forestry, Wildlife and Natural Resources Priority Program Area (PPA). The meeting was to plan for future implementation of the PPA, including possibilities for new ETPs within it. Deutsch addressed the group about the AWW-related ETP and possibility of expanding this to involve ACES agents in watershed planning and management.

B. ALABAMA WATER WATCH ASSOCIATION		
i. AWWA Board Meetings		
Date / Place	**Event**	**AWW Attendees / Comments**
06-Feb-09 Auburn, AL	Alabama Water Watch Association Board of Directors Meeting	Deutsch, Oates and Ruiz-Córdova attended the first 2009 AWWA Board of Directors meeting where new Board members were introduced and the AWWA database demonstrated. The AWW annual meeting was scheduled for May 30, 2009 in Auburn.
13-Mar-09 Montgomery, AL	Alabama Water Watch Association Board of Directors Meeting	Deutsch and Oates met with the AWWA Board of Directors at the ADEM Hearing Room to discuss Board membership, the Planning Retreat and Meeting, better use of the AWW database, and ways to increase membership for the AWWA.
29-May-09 Auburn, AL	Alabama Water Watch Association Board of Directors Meeting	Deutsch and Oates coordinated and attended the AWWA Board of Directors strategic planning meeting at Auburn University, previous to the AWW Annual Meeting and Picnic.
21-Aug-09 Walker Co., AL	Alabama Water Watch Association Board of Directors Meeting	Deutsch and Oates met with five other members of the AWWA Board to plan for the future of AWW. Discussion focused on how to strengthen the AWWA Board in ways to support statewide water monitoring and watershed stewardship, and become a lead organization for attracting funding and guiding the AWW Program.

ii. AWWA Strategic, Annual and Other Meetings		
13-Mar-09 Montgomery, AL	AWWA Citizen Advisory Committee Meeting	Deutsch and Oates met with several members of the AWWA Board of Directors, ADEM personnel from the Water Division and External Affairs/Nonpoint Source office, and community members in the ADEM Hearing Room. Deutsch gave an update on the AWW Program and personnel from ADEM gave updates about activities in their units. Mike Mullen gave a presentation about lack of BMPs and soil erosion and stream sedimentation in the Choctawhatchee River Basin.
30-May-09 Auburn, AL	AWWA Annual Meeting	AWW staff hosted the Annual Meeting and Picnic that started with a Technical Mini-Conference at Comer Hall and followed with an afternoon picnic at the AU Fisheries Pavilion. More than 60 monitors and friends from 13 AWW groups attended.

Table 12. Outreach events, Group meetings, Conferences and other activities attended by AWW staff from October 1, 2008 through September 30, 2009.

C. CONFERENCES AND SEMINARS		
Date / Place	**Event**	**AWW Attendees / Comments**
09-Oct-08 Underwood, IN	Edge Outreach Conference	Deutsch was an invited speaker at an International Water Training conference of EDGE Outreach (October 8-10), held at the Country Lake Christian Retreat. He presented the plenary talk "Giving the Cup of Cold Water with the Big Picture in Mind" and conducted an overview of the AWW/GWW methods for bacteriological monitoring.
22-Oct-08 Decatur, AL	Permanent Joint Legislative Committee on Water Policy and Management	Deutsch presented "AWW: Advantages of Citizen Volunteer Water Monitoring" to the Water Resources Assessments, Studies, Data Collections and Storage Subcommittee Meeting. Senator Arthur Orr moderated the meeting attended by people from various state and private agencies and groups.
11-Nov-08 Montgomery, AL	ACES Meeting	Deutsch, invited speaker at this meeting for ACES agents and administrators of the statewide Economic and Community Development Team, gave a presentation about community involvement in AWW with success stories and opportunities for ACES participation.
19-Nov-08 Tuscaloosa, AL	AMSTI Board of Directors Meeting	Oates gave the presentation "Exploring Alabama's Living Streams" about teacher workshops and curriculum to the Alabama Math, Science, and Technology Initiative (AMSTI) Board of Directors.
03-Dec-08 Clanton, AL	Alabama Clean Water Partnership Fourth Annual Conference Partnership Meeting	Oates, Reutebuch and Ruiz-Córdova attended the ACWPl conference "Watershed Management Lessons Learned" where basin facilitators gave updates of their 2008 activities and their plans for 2009. Results of Alabama Water Use were presented by Brian Atkins, director of the Office of Water Resources.
20-Jan-08 Montgomery, AL	The ADEM 20th Annual Nonpoint Source Conference	Deutsch, Grub, Oates, Reutebuch and Ruiz-Córdova, attended the Conference and exhibited posters abot AWW, SWaMP, GOMA and TWP. Deutsch gave the talk titled, "Alabama Water Watch...17 Years of Building, but What Next?"
22-Jan-09 Guntersville, AL	Upland Rainwater Banking Conference	Seesock presented "Rainwater Banking and the AWW Monitor".
08-Feb-09 St. Louis, MO	USDA/CSREES National Water Conference	Deutsch attended the conference, February 8-11, and gave the presentation "Trends and Adaptations of a Multi-Year Volunteer Water Monitoring Program", during the conference session titled "Human Dimensions of Water Management".
16-Feb-09 Birmingham, AL	2nd Annual Alabama Faith Council	Deutsch was an invited speaker for the session on environment, and gave a presentation titled "Faith Matters in Protecting Alabama's Environment" to about 20 attendees in the session. Oates also attended the conference.
23-Feb-09 Auburn, AL	25th Annual Alabama Fisheries Association	Deutsch and Seesock attended portions of the AFA Conference.
09-Mar-09 Auburn, AL	Auburn University Coastal Roundup	Deutsch and Ruiz-Córdova presented the talk "Gulf of Mexico Watershed Stewardship Activities with Fish and Cattle Producers, Classrooms and Community Monitors" about the 3-year project funded by the US EPA Gulf of Mexico Program.

Table 12. Outreach events, Group meetings, Conferences and other activities attended by AWW staff from October 1, 2008 through September 30, 2009.		
C. CONFERENCES AND SEMINARS (continued)		
Date / Place	**Event**	**AWW Attendees / Comments**
19-Mar-09 Columbiana, AL	Environmental Educator's Association of Alabama (EEAA)	Oates attended and participated in the EEAA Roundtable Discussion with other Environmental Educators from around Alabama.
20-Mar-09 Nauvoo, AL	Alabama Rivers Alliance Watershed Leadership Conference	Deutsch, Ruiz-Córdova and Seesock, with Mexican visitors Miriam Ramos and Eduardo Delgado, attended the conference coordinated by ARA at Camp McDowell and conducted the session on "Diversifying the Environmental Movement" to about 25 participants. Information about the EPA-GOMA project was presented during this session.
21-Apr-09 Ames, IA	Sustainable Agriculture Colloquium Iowa State University	Deutsch gave a seminar about the EPA-GOMA project titled "Reducing Nutrients and Pathogens from Local Streams to the Gulf…Grassroots Action by Community Volunteers, Educators and Livestock Producers in the U.S. and Mexico"

6. ACCOMPLISHMENTS AND INITIATIVES

In October 2008, Bill Deutsch submitted the 2007-2008 AWW Annual Report to ADEM via email describing activities and summarizing the Alabama Water Watch Program outcomes during the period October 1, 2007 through September 30, 2008. Hard copies were delivered to ADEM in November 2008. The AWW FY08 Semi-Annual Report was electronically submitted on April 2009 to Patti Hurley at ADEM and the report receipt was confirmed.

The *Citizen Guide to Alabama Rivers volume 4, Tennessee* went to press on October 2008, and 1,500 copies were printed for distribution. The aquatic science curriculum *Exploring Alabama's Living Streams* was sent to press, with 150 copies printed to be used and distributed during teacher workshops planned for Summer 2009. The latest edition of *Community-Based Water Monitoring: A Practical Model for Global Watershed Stewardship* was printed for use in Environmental Education classes.

A 20-page waterbody report to highlight Lake Watch of Lake Martin activities and data was initiated during this report period. The following articles highlighting AWW group achievements were published and posted on websites throughout the year:

1. "Citizen Water Monitors Keep a Vigilant Watch Over Their Endangered Darters" http://www.usawaterquality.org/volunteer/pdf/VolunteerMonitoringPrograms/BreakingNews/AWWwatercressdarter.pdf
2. "Community Volunteers Mobilize to Monitor Watersheds for *E. coli* Bacteria" http://www.usawaterquality.org/volunteer/pdf/VolunteerMonitoringPrograms/BreakingNews/AWWBacteriaMonitoring.pdf

3. "Winston County Water Watchers Promote Water Protection" http://blog.auburn.edu/aww/?p=18
4. "Enthusiasm for Smith Lake Grows at Alabama Water Watch's 12th Annual State of the Lake Address" http://blog.auburn.edu/aww/?p=19
5. "Publication Features Citizen Water Monitoring Efforts From Around the Globe" http://www.usawaterquality.org/volunteer/pdf/BreakingNews/AWWDataCredibilityPub.pdf
6. "Winston County Water Monitors Get Refreshed by AWW" http://blog.auburn.edu/aww/?p=29
7. "Cullman County Water Watcher Excites Students About Local Waters" http://blog.auburn.edu/aww/?p=31
8. "Can Volunteer Water Monitors Make a Difference? A Case From Lake Wedowee" http://blog.auburn.edu/aww/?p=54
9. "Training in Arley Yields Four New Trainers for Alabama Water Watch" http://wcslai.blogspot.com/2009/09/water-testing-class.html

During this report period the following articles, among others, were published and posted on websites for Related Projects: "SWaMP Reaches All Ages at Syrup Sopping Day in Loachapoka", "Master Gardeners Get Wet Looking for Bugs with AWW", "SWaMP Featured in Tallapoosa Newspaper", and "SWaMP Teams Up with SOS and OMS to Monitor an Opelika Stream".

Three articles, "Community Volunteers Mobilize to Monitor Watersheds for *E. coli* Bacteria", "Publication Features Citizen Water Monitoring Efforts from Around the Globe" and "Citizen Water Monitors Keep a Vigilant Watch Over Their Endangered Darters", were submitted and posted to the USDA-CSREES website featuring Volunteer Water Monitoring Programs Achievements.

Three articles, "AU Fisheries Extends Water Monitoring and Watershed Stewardship Around the Gulf of Mexico", "Citizen Water Monitors Keep a Vigilant Watch Over Their Endangered Darters", and, "Community Volunteers Monitor Watershed for *E. coli* Bacteria Using AWW Technique", were submitted to *AFA News: Newsletter of the Alabama Fisheries Association* and published in its January 2009 edition. Two articles, "Come Join Us in the SWaMP", and "Collaboration Brings Exciting Work to Lake Martin", were submitted to the *AFA News: Newsletter of the Alabama Fisheries Association* and published in its Summer 2009 edition.

AWW Staff collaborated with the Alabama Clean Water Partnership on the development of material for a series of 16-page, color booklets that were inserted into Sunday newspapers across all Alabama basins. The inserts have proven to be a cost effective method of educating the general public regarding watersheds and water quality. Several phone calls to the AWW office were generated from concerned citizens after reading these inserts.

Deutsch represented AWW and the AU Fisheries Department in numerous meetings with leaders of the Water Resources Center of Auburn University's Natural Resource Management and Development Institute. AWW has become associated with the Center's outreach programs, enhancing the efforts to address water quality and availability issues in Alabama and the region. A committee has been created to discuss options for a water quality lab on campus and planning has been conducted to identify a niche for Center research.

In November 2008 Deutsch and Sergio Ruiz-Córdova met with Laura Lhotka of the University of Kentucky to discuss the outline for a publication about AWW Program Trends. This manuscript will be the result of a follow-up study to the AWW Group Dynamics paper that was published in the journal, *Society and Natural Resources*, and will address the factors that affect the sustainability of the AWW Program (Appendix H).

In April 2009 the AWW FY08 base grant was approved by ADEM for $140,000 as proposed, and a cooperative agreement was received for AU signatures.

The AWW website continues to be a resource for monitors, interested citizens and agencies. The AWW Homepage has been visited over 113,000 times and the Water Data section has received more than 25,000 visits since they were each posted on the World Wide Web in August 1998 and September 2002 respectively. Since its premiere, people from 84 countries and from every state in the U.S. have visited the Water Data section of the AWW Homepage. Almost 93% of AWW data received during the report period was entered online. New features and routinely updates for AWW monitors were performed during the report period such as the feature called "Show All Data." This feature allows a monitor to select any of their monitoring sites and display all data that has been submitted for that site, Water Chemistry or Bacteriological. If desired, the monitor can save the information to their computer in Excel format for additional review and/or use.

Since it was posted, the Water Data section of the AWW website has been a very useful tool for monitors and citizens throughout Alabama, other U.S. states and 70 other countries (https://fp.auburn.edu/icaae/index.aspx). Visitors to this section can view data from Groups, Sites, Watersheds and Waterbodies. Interactive Google™ maps show Active Sites by River Basin; other mapping options allow visitors to locate sites or view data within their areas of interest. Graphs, maps, and tables provide multiple ways to view data.

Deutsch, Jayme Oates and Wendy Seesock represented AWW and the AU Fisheries Department in several meetings with the recently created Permanent Joint Legislative Committee on Water Policy and Management. In October 2008 Deutsch gave an overview of the AWW Program and citizen data to the Water Resource Assessments, Studies, Data Collection and Storage Subcommittee of the Committee. These statewide meetings have been attended by people from various state and private agencies and stakeholder groups.

Deutsch and Ruiz-Córdova met on November 4, 2008, December 10, 2008 and January 23, 2009 with Dr. Tom Marshall of the AU School of Business to discuss a plan for transitioning the AWW database from the current Microsoft Access® system to Oracle®, as part of the AU Fisheries Aquatic Genomic and Biosecurity Research project. This project is intended to be implemented in several intervals over a three-year period. During the first phase, one of the objectives is to convert the existing Alabama Water Watch database into an Oracle-based database with the assistance of Dr. Tom Marshall and other Oracle specialists, including Jeff Hollomann with the Atlanta-based consulting company Cougar Technologies.

In order to leverage the base grant of AWW and expand activities, many proposals were submitted during this report period, including the following:

In November 2008, a proposal for $25,000 titled "Impacts of Installed BMPS and Current Lawn Care Practices on Nutrient Loading from Stormwater Runoff into Saugahatchee Creek" was submitted to the Alabama Water Resources Research Institute. [Not funded]

In January 2009 AWW was invited by the Alabama Department of Education to be a partner in a National Science Foundation grant proposal, "Girls Engaged in Math and Science University (GEMS-U)". The project would target 4,000 girls statewide to enhance math, science and technology skills and promote career development in these areas. Deutsch sent an endorsement letter to Dr. Shannon Parks and agreed to serve on an Expert Panel to advise the project. AWW also committed to at least three days of staff time to assist with implementing the project. [Pending]

Also in January 2009 Oates and Deutsch submitted a $300,000, three-year proposal for a NOAA B-WET Project in Environmental Education that would feature the AWW *Exploring Alabama's Living Streams* curriculum. The project would focus on working with teachers and students from three "hubs": Camp McDowell (Northern Region), Camp Beckwith and the Weeks Bay National Estuarine Research Reserve (Southern Region), and the Alabama 4-H Center (Central Region). [Not funded]

In February 2009 the AU Office of Sponsored Programs received from the USEPA the Cooperative Agreement for the funding of the project titled "Fostering Environmental Stewardship of the Gulf of Mexico: A Trans-Boundary Network of Water Education and Monitoring for Animal Producers, Classrooms and Community Volunteers (GWW-GOMA)". This Environmental Education project, coordinated from AWW, intends to work in the Mobile River Basin, La Antigua River Basin, Veracruz, Mexico and other watersheds of the Gulf of Mexico within the five U.S. states and six Mexican states.

In March 2009 Eric Reutebuch submitted a $20,000 proposal titled "Empowering Rural Communities to Ensure the Safety of Surface Waters and Private Wells" to the Auburn University Outreach Scholarship Office. Deutsch, Kathryn Flynn and Eve Brantley would collaborate on the project if funded. [Not funded]

Also in March 2009 a proposal for $16,750, co-led by Deutsch and David Rouse and titled "Documentation of Stakeholder Evaluations of Water Governance Models for the Tallapoosa River Basin, Alabama", was submitted for funding to the Auburn University Outreach Office. Funds would be used to conduct surveys of participants of the 5th Annual State of Our Watershed Conference and to analyze priorities for the creation of a watershed management authority in the Tallapoosa River Basin. [Not funded]

Seesock, Reutebuch and Deutsch submitted a $39,000 proposal in March 2009 to the Alabama Power Company titled "2009 Lake Martin Water Quality Study" to conduct water testing in Lake Martin to be compared to the results of the testing conducted under the scope of the TWP project few years ago. Seesock also submitted a proposal to the Alabama Invasive Plant Council to fund an exploration of the interest in developing plant identification capability among AWW monitors. [Funded]

In August 2009 Deutsch and Reutebuch submitted a proposal to ADEM requesting $22,773 for the development of a Rock Creek Watershed Management Plan. [Funded]

7. RELATED PROJECTS

AWW staff represented the Program at numerous meetings and activities held during this report period, which were funded by other projects. These activities developed partnerships, enhanced public relations, and supported different groups while promoting community-based watershed stewardship. Below is a brief description of some of these projects, and a number of their activities is listed in Table 13.

A. Global Water Watch (GWW)

Global Water Watch is a worldwide network of community-based water monitoring (CBWM) groups committed to expanding knowledge about water issues and improving both water quality and water policy. Inspired by AWW, the GWW Program is funded in part by Heifer Project International (HPI), the Tankersley Endowment and other organizations, and is coordinated through the AU Department of Fisheries and Allied Aquacultures. GWW provides training resources, technical backstopping and data management, helping communities train and establish teams of citizen volunteers. These volunteers monitor surface waters, measuring physical, chemical and biological indicators of watershed health. Citizen volunteers may then submit data to the GWW database via the Internet. GWW also assists in implementing environmental education and other watershed stewardship programs for the public. To learn more about the GWW Program visit http://www.globalwaterwatch.org/.

B. Tallapoosa Watershed Project (TWP)

The TWP began in 2003 as a USDA/CSREES-funded project which integrated a variety of research, education and extension activities to provide relevant, locally-generated watershed information. The three-year project resulted in a comprehensive assessment of pollution (nutrient and sediment) concentrations and loading in the Tallapoosa River Basin and was also used to compare the cost-efficiency of three levels of sampling technology: High-tech (GIS and remote sensing), Standard Methods (approved scientific methods used by universities and state agencies), and Low-tech (citizen volunteer monitoring).

In 2007, a second phase to the project was funded by the Auburn University Water Resources Center within the Natural Resources Management and Development Institute. The project is titled "Bridging the Gap Between Science, People and Policy for Sustainable Watershed Management in the Tallapoosa River Basin and Beyond". This two-year project will focus on hydrological, socio-economic and ecological issues of the Saugahatchee Creek Watershed, including an evaluation of the impacts of population, land use and climate change on water quality and quantity. For information on the TWP project visit http://www.twp.auburn.edu.

C. Saugahatchee Watershed Management Plan (SWaMP)

The Saugahatchee Watershed Management Plan was created by stakeholders, and involves the cooperative efforts of local government, business and community groups to address specific water quality issues related to impairments in stream segments in the Saugahatchee Creek Watershed. SWaMP is a USEPA funded project in which Auburn University is collaborating with a group of stakeholders in implementing the first three-year phase of a nine-year management plan for the 200-square mile Saugahatchee Watershed. The main goal of the nine-year plan is to clean up polluted segments in the watershed. The goal of Phase 1 implementation of SWaMP is to reduce phosphorus loads into the Saugahatchee Embayment by 15 percent through community outreach and the strategic placement of Best Management Practices. The goals of the SWaMP pertain to how ecological integrity, water resources management and quality of life can be best sustained considering the inevitable population growth and accompanying development. A key component to the success of the project will be educating landowners, developers, homeowners, municipal water resource managers, elected officials, teachers and the general public about SWaMP, and to educate citizens on how their actions impact waters of Saugahatchee Creek. To learn more about SWaMP visit http://www.swamp.auburn.edu.

D. GWW-GOMA

GOMA is a three-year Environmental Education project, funded by the USEPA in 2009, that will teach animal producers, middle/high school teachers and students, and volunteer water monitors about Gulf issues, water protection and monitoring. The GWW-GOMA project, officially named "Fostering Environmental Stewardship of the Gulf of Mexico: A

Trans-Boundary Network of Water Education and Monitoring for Animal Producers, Classrooms and Community Volunteers", will be initiated in Gulf of Mexico watersheds in Alabama USA and Veracruz, Mexico. A series of water monitoring workshops, meetings and study tours and an Environmental Education Directory will educate the target audiences and broader Gulf community. EPA-approved protocols will be used and all data will be stored, analyzed and shared online.

E. *Citizen Guide to Alabama Rivers* Reprinting

Alabama Water Watch was awarded by ADEM the project titled "Revise And Reprint *Citizen Guide To Alabama Rivers* Outreach Publications" to design and print a five-volume series of outreach publications featuring Alabama's rivers. The last volume, about the Escatawpa, Mobile and Tombigbee River Basins, was completed in 2004. Thousands of copies of the volumes have been distributed throughout Alabama and are being used in classrooms and among citizen groups. Three of the five volumes particularly have been in high demand and are in need of a reprint for continued distribution. The main goal was to standardize the layout of all volumes of the *Citizen Guide to Alabama Rivers* in order to make both hardcopy and digital forms available to educators and the general public.

Table 13. Events, meetings, conferences and other activities funded by Related Projects attended by AWW staff from October 1, 2008 through September 30, 2009.

	Global Water Watch	
Date / Place	**Event**	**AWW Attendees / Comments**
20-Feb-09 Auburn, AL	Heifer International (HPI) GWW Asia/South Pacific Project	Deutsch and Ruiz-Córdova submitted a final report to HPI, Little Rock, AR, for the 3-year, $150,000 project that HPI funded for GWW to expand activities in Asia. The report was received by Noel Mace in the HPI A/SP Office.
17-Apr-09 Auburn, AL	GWW Monitoring Manual and Website Translation	O. Romagnoli reported completion of the translation of five GWW monitoring manuals and a revision and translation of the module for Mexico on the GWW website.
1-Jun-09 Auburn, AL	Auburn University Department of Fisheries and EMBRAPA (Brazil) Collaboration	Deutsch met with Drs. David Rouse, Bill Daniels, Ron Phelps, and Karen Veverica in the AU Fisheries Department to discuss collaboration with EMBRAPA, a federal agricultural agency of Brazil. EMBRAPA has expressed interest in designating AU Fisheries as a key partner in collaborative research and training, including CBWM and watershed management.
2-Aug-09 Puno, Peru	GWW-CBWM Workshop Puno, Peru	Ruiz-Córdova and Miriam Ramos-Escobedo conducted Water Chemistry and Bacteriological workshops certifying 17 citizens from Lake Titicaca.
16-Sep-09 Monterrey, Mexico	GWW-CBWM Workshop Monterrey, Mexico	Deutsch and Ruiz-Córdova conducted Water Chemistry and Bacteriological workshops certifying 25 citizens from several communities near Monterrey, NL Mexico and personnel of the Cumbres de Monterrey National Park.

Table 13. Events, meetings, conferences and other activities funded by Related Projects attended by AWW staff from October 1, 2008 through September 30, 2009.

	Tallapoosa Watershed Project	
Date / Place	**Event**	**AWW Attendees / Comments**
19-Nov-08 Alexander City, AL	Fifth Annual State of Our Watershed Conference	Deutsch and Reutebuch met representatives of the Tallapoosa CWP, LWLM, ACES and the AU Water Resources Center to plan for the 2009 SOWC.
13-May-09 Alexander City, AL	Fifth Annual State of Our Watershed Conference	AWW facilitated the conference, "The Tallapoosa River Basin-Moving Toward More Effective Water Policy", at the Central Alabama Community College; topics included community participation in river basin management plans.
30-Sep-09 Auburn, AL	TWP 2009 Mini-Conference	Deutsch, Oates and Reutebuch met Eve Brantley and Mike Kensler to plan for a TWP mini-conference to be held at the AU Campus. The conference goals are to update on sub-project progress, promote integration among sub-projects, leveraging of funds and planning for Year Two and Year Three outcomes.

	Saugahatchee Watershed Management Plan	
Date / Place	**Event**	**AWW Attendees / Comments**
16-Dec-08 Auburn, AL	Certified Crop Advisors Training	Reutebuch and Seesock gave a presentation to county agents, AU faculty, NRCS employees, AL Dept. of Transportation employees, AL Dept. of Agriculture and Industries employees, private consultants, and individuals who own or work for agri-chemical operations and dealerships selling seed, feed, fertilizers, pesticides and other products.
25-Aug-09 Auburn, AL	EPA Visit-Tour of SWaMP Projects	Deutsch and Reutebuch met with representatives from EPA Region 4, Chris Plymale, Gary Davis, Tom Mcgill, and Becky Allenbach, and with Sam Fowler, Mike Kensler and Eve Brantley to review local 319-funded projects and discuss ongoing and future collaboration. Reutebuch gave a presentation on SWaMP-funded projects. The group toured the SWaMP project at Cary Woods Elementary School, led by Ms. Debby Brooks, the school Principal.
28-Sep-09 Auburn, AL	Auburn Community Channel Interview	Reutebuch was interviewed by Jason Miller about the AWW Program, SWaMP, and the SWaMP project at Cary Woods Elementary School for a video segment highlighting environmental stewardship activities at Cary Woods to be aired on the local TV Channel.

Table 13. Events, meetings, conferences and other activities funded by Related Projects attended by AWW staff from October 1, 2008 through September 30, 2009.

	GWW-GOMA	
Date / Place	**Event**	**AWW Attendees / Comments**
17-Feb-09 Auburn, AL	USEPA Cooperative Agreement	The AU Office of Sponsored Programs received from the USEPA the Cooperative Agreement for the GWW-GOMA Project. A press release about the project was sent by Troy Pierce of EPA, for release to Alabama newspapers.
18-28-Mar-09 Auburn, AL	GWW-GOMA Mexican Partners Visit	Eduardo Delgado and Miriam Ramos visited Alabama to begin implementation of the GWW-GOMA project. They met or conferenced with all US partners and visited Environmental Education Centers during their visit.
10-Apr-09 Auburn, AL	GWW-GOMA Associated Press Article	Deutsch was interviewed by Gary Mitchell, AP writer, to compose the article titled "Water Monitor Eyes Farm Runoff in Gulf of Mexico" about the GWW-GOMA Project that was published in hundreds of AP newspapers.
14-21-Jun-09 Auburn, AL	*Exploring Alabama's Living Streams* Workshop	AWW staff hosted Blanca Nava, Miriam Ramos and Julieta San Juan, environmental educators from Mexico who are partnering with the GWW-GOMA project. During their visit they attended the *EALS* workshop and several other meetings with educators from Alabama.
15-Sep-09 Auburn, AL	2010 Land Grant and Sea Grant National Water Conference	Deutsch submitted an abstract titled, "The GWW-GOMA Project, Gulf of Mexico Stewardship by Animal Producers, Classrooms and Community Volunteers", to the conference to be held in Hilton Head Island, SC February 21-25, 2010. The talk will report the first year of activities of the GWW-GOMA project in the area of Behavior Changes.
21-Sep-09 Auburn, AL	GWW-GOMA Project Manager Visit	Oates and Scruggs hosted and updated EPA Project Manager Troy Pierce on the progress of the project. During this Programmatic On-site review, Dr Frank Owsley also met and gave Dr Pierce a tour of the AU Beef Unit and the Cattle BMP Experiment sites.

8. AWW PERSONNEL AT AUBURN UNIVERSITY

All personnel listed work for AWW on a part-time basis.

William Deutsch, Ph.D.

Program Manager (October 1992 - present) - Bill has been on the administrative /professional staff of the AU Department of Fisheries and Allied Aquacultures since 1990. In addition to AWW responsibilities, he works through the International Center for Aquaculture and Aquatic Environments conducting environmental studies and training with international projects in the Philippines, Ecuador, Brazil, China, Thailand and Mexico.

Eric Reutebuch, M.S.

Publications Coordinator (January 1996 - present) - Eric has a M.S. in Fisheries from Auburn University. He serves as the Coordinator for the Saugahatchee Watershed Management Plan, develops various waterbody publications in coordination with AWW groups, writes articles on AWW and group activities, conducts data interpretations with AWW groups, conducts statistical and GIS analyses as needed, and gives presentation to groups and at various conferences.

Sergio S. Ruiz-Córdova, M.S.

Data Quality Coordinator (April 2001 - present) - Sergio has a B.S. in Marine Biology and a M.S. in Aquatic Ecology from Auburn University. His work with AWW involves programming and maintaining the statewide database and creating data reports. In addition to AWW responsibilities, he works through the International Center for Aquaculture and Aquatic Environments conducting environmental studies and training with Global Water Watch projects in other countries.

Jayme Oates, M.S.

Volunteer Monitor Coordinator and AWWA Liaison (February 2007 – Present) – Jayme has a B.S. in Biology and Chemistry and a M.S. in Horticulture from Auburn University. She serves as the liaison between the AWW office in Auburn and the AWW Association. Jayme coordinates activities pertaining to finding and securing grants from different sources (from both government and private entities). She develops and maintains relationships with public funding sources and coordinates grant writing. In addition, she coordinates activities of AWW special projects.

Wendy Seesock, M.S.

Water Quality Lab Coordinator (July 2007 – Present) - Wendy has a M.S. in Fisheries from Auburn University and has worked in the Department of Fisheries and Allied Aquacultures for over 30 years in the area of water quality, algal identification, and eutrophication of southeastern reservoirs. She has worked closely with Alabama Water Watch in the evaluation of methods for use with citizen monitors. Additionally she has worked on evaluation of stream health in various watersheds using fish community structure and the Index of Biotic Integrity. Her work with AWW primarily involves managing the water quality and biological field and laboratory activities following standard methods.

Rita Grub, B.S.

AWW Office Manager (April 2008 – Present) - Rita has a degree in Business Administration from Auburn University. Her work with AWW primarily involves working with AWW monitors and trainers coordinating workshops and certifications. Rita also serves as office manager for AWW keeping up with monitoring supplies orders and inventory, communications and other office duties. She has been an active AWW monitor since 2001 with a local AWW group.

9. APPENDICES

A. AWW Quality Assurance Plans

B. AWW Site Code Format

C. AWW Data Reporting Forms

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APPENDIX A

AWW Quality Assurance Plans

AWW Water Chemistry Monitoring Quality Assurance Plan
Cover Page

WATER CHEMISTRY QUALITY ASSURANCE PLAN

(Revision of the Quality Assurance Plan Approved June, 1994)

For

Alabama Water Watch

A Program dedicated to developing Citizen Volunteer Monitoring of Alabama's Lakes, Streams and Coasts

Funded in part by a grant from the U.S. EPA, Region 4
Clean Water Act, Section 319
And the Alabama Department of Environmental Management

Prepared for
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 4

January 23, 2004

APPROVALS

Ronald E. Estridge — 1/23/04
Ronald E. Estridge, M.S., Data Quality Coordinator — Date

William G. Deutsch — 1/23/04
William G. Deutsch, Ph.D., AWW Program Manager — Date

Norman Blakey — 1/26/04
Norman Blakey, ADEM Project Director — Date

Marilyn Thornton — March 9, 2004
Marilyn Thornton, U.S. EPA Region 4, Quality Assurance Manager — Date

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AWW Bacteriological Monitoring Quality Assurance Plan
Cover Page

Revision No. _____
Date _____

QUALITY ASSURANCE PLAN FOR BACTERIOLOGICAL MONITORING

(Addendum to the Quality Assurance Plan approved on March, 1995)

for

Alabama Water Watch

A Program dedicated to developing Citizen Volunteer Monitoring of Alabama's Lakes, Streams and Wetlands

Funded in part by a grant from the U.S. EPA, Region 4
Clean Water Act, Section 319
and the Alabama Department of Environmental Management

prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 4, Section 319

November 10, 1999

APPROVALS:

Allison L. Busby, M.S., AWW QA/QC Officer — Date 11/16/99

William G. Deutsch, Ph.D., AWW Program Manager — Date 11/16/99

Norman Blakey, ADEM Project Director — Date 12/3/99

Gary Bennett, U.S. EPA Region 4, Quality Assurance Officer — Date 12-20-99

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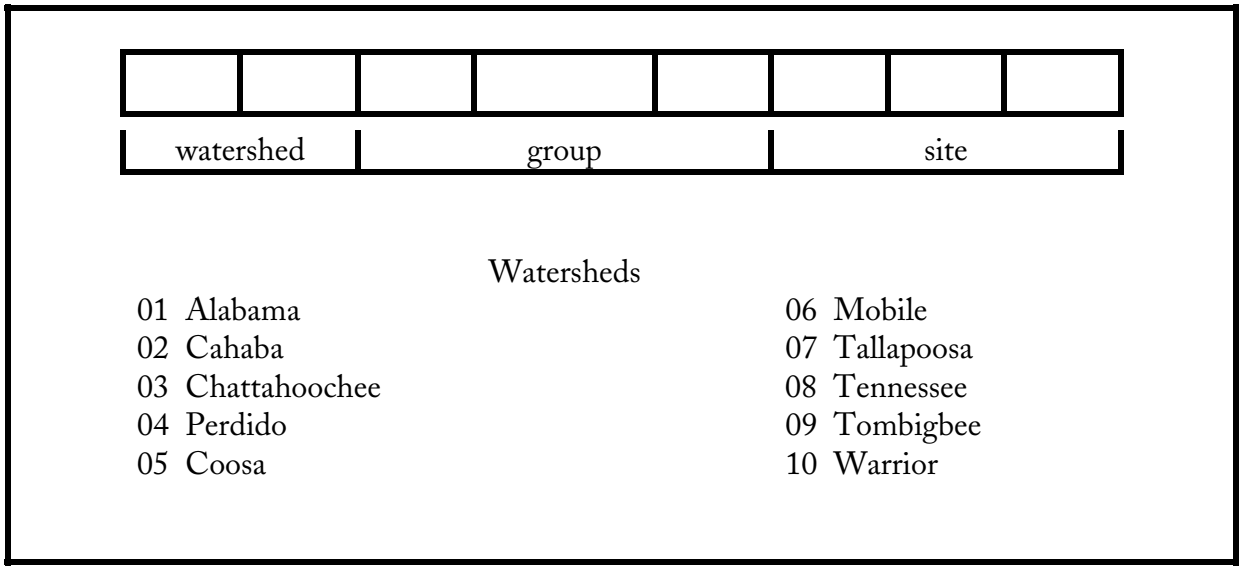
APPENDIX B

AWW Site Code Format

AWW Site Code format



The AWW Site Code is an eight-digit number, formatted to eight spaces. An example would be:

07016009

This Site Code is built on the relationship between natural boundaries (watersheds), groups and sites. The AWW (8-digit) Site Code is defined below.

The first two digits represent the major watershed in Alabama where the site is located e.g.

07: Tallapoosa

The next three digits represent a group monitoring in that watershed. In the example, the sixteenth group (since AWW was conceived) monitoring in the Tallapoosa watershed:

016: Friends of the Chewacla-Uphapee Watershed

Finally, the last three digits in the Site Code represent the number of the site at the exact and unique location where the water sampling is taking place. In the example is the ninth site sampled by the Friends of the Chewacla-Uphapee Watershed group.

009: Chewacla Creek at Lee County Road 159 at bridge

APPENDIX C

Data Reporting Forms

ALABAMA WATER WATCH
WATER CHEMISTRY MONITORING DATA FORM

☐ online

Group Name:_____

Collector(s): _____ Address:_____

City:_____ State:_____ Zip:_____ Phone N°:_____

Sample Date:_____ Sample Time:_____ AWW Site Code: _____

Watershed: _____ Waterbody:_____ County & State:_____

Sampling site location: _____

(Notify the AWW office about any changes in sampling site location.)

Waterbody condition: ☐ Adequate Depth ☐ Inadequate Depth ☐ Dry ☐ No Access

Tidally influenced streams and rivers: ☐ Rising Tide ☐ Falling Tide ☐ Uncertain

Parameter	Value	Comments
Air Temperature	_____ °C	Measure air temperature before water temperature.
Water Temperature	_____ °C	Avoid touching thermometer bulb.
pH	_____ Standard international units	Record to nearest 0.5 unit.
Dissolved Oxygen (DO)	Rep #1: _____ ppm Rep #2: _____ ppm	Make sure two readings are within 0.6 ppm.
Specific Gravity / Salinity	S. G. _____ Salinity: _____ ppt	If salinity is present do not test for hardness.
% Oxygen Saturation	_____ Avg DO _____ % DO Sat	Estimate from chart found in the AWW manual.
Total Alkalinity	_____ # drops x 5 = _____ mg/L	Add drops until no more color change. Record number of drops that produced final change.
Total Hardness	_____ # drops x 10 = _____ mg/L	
Turbidity	_____ # 0.5 mL x 5 (50mL) = _____ JTU _____ # 0.5 mL x 10 (25mL) = _____ JTU	Enter zero (0) mL and 2 JTU if less than one addition of reagent was needed.
Secchi Depth	_____ meters	Do not record depth if disk hits bottom while visible.
Other Chemistry Tests		Nitrates, Phosphate, etc.
Comments: Note evidence of rainfall, runoff within previous 24 hours, unusual smell, unusual color, cows or other animals in creek, etc.		AWW Office Use

I hereby declare that at the time of this water sampling my AWW Water Chemistry Certification was current and that I confirmed the freshness of each reagent used for these tests.

Signature: _____

Alabama Water Watch

Alabama Water Watch
250 Upchurch Hall
Auburn University, AL 36849-5419

Toll Free: 1-888-844-4785
Fax: 334-844-9208
Email: awwprog@auburn.edu
Website: www.alabamawaterwatch.org

Revised Feb-07

ALABAMA WATER WATCH
BACTERIOLOGICAL MONITORING DATA FORM

☐ online

Group Name:_____

Collector(s): _____ Address:_____

City:_____ State:_____ Zip:_____ Phone N°:_____

Sample Date:_____ Sample Time:_____ AWW Site Code: _____

Watershed: _____ Waterbody:_____ County & State:_____

Sampling site location: _____

(Notify the AWW office about any changes in sampling site location.)

Waterbody condition: ☐ Adequate Depth ☐ Inadequate Depth ☐ Dry ☐ No Access

Tidally influenced streams and rivers: ☐ Rising Tide ☐ Falling Tide ☐ Uncertain

Parameter	Value	Comments
Air Temperature	_____°C.	Measure air temperature before water temperature.
Water Temperature	_____°C.	Avoid touching thermometer bulb.
Sample Volume	_____ mL	Use same volume for all replicates.
Incubation Start Time	_____	Use 24 hour format e.g. 1:45 pm = 1345.
Incubation Temperature	_____°C.	Keep incubation temperature between 29 and 37°C.
Incubation Period	_____ hrs	Count bacteria within 30 - 48 hrs of incubation.
Media Expiration Date	_____ - _____	Use short date format e.g. May – 07.
Plated on Site	☐ Yes ☐ No	Plate off sampling site if possible.
Transported on Ice	☐ < 3 hrs ☐ No Ice < 30 minutes	Samples should be plated within 3 hours if in Ice and within 30 minutes if without Ice.

Replicate No.	No. of E. coli colonies in plate (blue green to dark blue-purple) *	Text Code for general coliform colonies in plate (pink to dark red) **	No. of general coliform colonies *
1			
2			
3			

* If colonies are too numerous to count report 250,
** Text Code for general coliform: None (0), Rare (1-9), Common (10-100), Abundant (101-200), Too Numerous To Count (>200).

Comments: Note evidence of rainfall, runoff within previous 24 hours, unusual smell, unusual color, cows or other animals in creek, etc.	AWW Office Use

I hereby declare that at the time of this water sampling my AWW Bacteriological Monitoring Certification was current and that I confirmed the freshness of the sample media used for these tests.

Signature: _____

Alabama Water Watch

Alabama Water Watch
250 Upchurch Hall
Auburn University, AL 36849-5419

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Revised Feb-07

ALABAMA WATER WATCH
STREAM BIOMONITORING DATA FORM

☐ online

Group Name:_____

Collector(s): _____ Address:_____

City:_____ State:_____ Zip:_____ Phone #: _____

Sample Date:_____ Sample Time:_____ AWW Site Code: _____

Watershed: _____ Waterbody:_____ County & State:_____

Sampling site location: _____
(Notify the AWW office about any changes in sampling site location.)

Waterbody condition: ☐ Adequate Depth ☐ Inadequate Depth ☐ Dry ☐ No Access

Tidally influenced streams and rivers: ☐ Rising Tide ☐ Falling Tide ☐ Uncertain

Group I Taxa	Letter Code *	Group II Taxa	Letter Code *	Group III Taxa	Letter Code *
Stonefly		Dragonfly		Midge	
Mayfly		Damselfly		Aquatic Worm	
Caddisfly		Cranefly		Leech	
Riffle Beetle		Blackfly		Pouch Snail***	
Water Penny Beetle		Filtering Caddisfly**			
Snail		Hellgramite			
		Scud			
		Sowbug			
		Crayfish			
		Asiatic Clam			
Number of Taxa= _____ Multiply by 3 = _____ (Index Value)		Number of Taxa= _____ Multiply by 2 = _____ (Index Value)		Number of Taxa= _____ Multiply by 1 = _____ (Index Value)	

*** Letter Code**: **R** = 0 to 3 (Rare); **C** = 4 to 9 (Common); **A** = 10 or more (Abundant)

** Filtering Caddisflies are in the Family Hydropsychidae (gills on abdomen; common caddisfly)

*** Pouch snails are in the Family Physidae (shell opens to the left; air-breathing snail)

STREAM BIOTIC INDICES		STREAM QUALITY ASSESSMENT (*Check box corresponding to Cumulative Index Value*)	
Total Number of Taxa (*Sum of Number of Taxa in each group*)		**POOR** <11	**FAIR** 11-16
Cumulative Index Value (*Sum of Index Values for each group*)		**GOOD** 17-22	**EXCELLENT** >22

Page 1 of 2

ALABAMA WATER WATCH
STREAM BIOMONITORING DATA FORM

Habitat Assessment

Canopy cover: ☐ open ☐ partly shaded ☐ shaded

Predominate streamside vegetation:

☐ trees ☐ shrubs ☐ grasses ☐ bare

Predominant surrounding land use:

☐ forest ☐ agriculture ☐ field/pasture
☐ residential ☐ commercial ☐ industrial
☐ other _____

Chemical Assessment (optional)	
Water depth (cm)	
Air Temperature (°C)	
Water Temperature (°C)	
pH	
Alkalinity (mg/L)	
Hardness (mg/L)	
Dissolved Oxygen 1 (mg/L)	
Dissolved Oxygen 2 (mg/L)	
Turbidity (JTU)	
Other	

Streambed Composition	
Width of riffle:	
Bed composition of riffle (%):	
Silt	
Sand	
Gravel (1/4"-2")	
Cobbles (2"-10")	
Boulders (>10")	
Describe water conditions:	
(color, odor, bedgrowths, surface scum, etc.)	

Sketch Site:

Comments: Note evidence of rainfall, runoff within previous 24 hours, cows or other animals in creek, etc.

AWW Office Use

☐ I have a current AWW certification in Stream Biomonitoring.

☐ I do not have a current AWW certification in Stream Biomonitoring, but I am entering data for educational purposes.

Signature:

Alabama Water Watch

Alabama Water Watch
250 Upchurch Hall
Auburn University, AL 36849-5419

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Revised May-07

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ALABAMA WATER WATCH
SAMPLING SITE DATA FORM

Sampling Sites: Remember the general factors to consider when selecting a water monitoring site: to be safe, convenient and accessible, to have legal access and to be strategic. Optimal water monitoring sites are those that provide the best information to satisfy objectives with the least amount of effort. Choose a site that is not too difficult or dangerous to access and is strategically located to be tested in an efficient manner. It is essential to know the precise location of a monitoring site for full use of the data. Please carefully describe your site information.

Monitor(s):_____

Contact Phone Number:_____

AWW Group Affiliation (e.g. Little River Watch) _____

Waterbody: _____

Watershed: _____

County and State Where Site Is Located: _____

Site Location Description: Be very detailed. Include information such as the name or number of the nearest road. Indicate if it is upstream or downstream of a bridge, etc. Please submit a map, a photo (optional) and a geo-reference. Call the AWW office for assistance.

_____

_____

_____

Latitude: _____ **Longitude** _____

**********Do not write below this line. AWW office use only. **********

AWW Site Code Number* _____

* An 8-digit number will be assigned by the Alabama Water Watch office when the above information is submitted along with the first water monitoring data form. This Site Code is based on the watershed, group and specific location of the site.

Alabama Water Watch

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250 Upchurch Hall
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Revised Feb-07

APPENDIX D

Monthly Water Chemistry Sampling Activity (October 1, 2008 - September 30, 2009), by Watershed and Citizen Groups

Abbreviation of the names of the citizen groups that submitted data from October 1, 2008 through September 30, 2009 listed by major watershed.			
Abbrev	**Alabama [01]**	**Abbrev**	**Tallapoosa [07]**
IWW	Isabella Water Watchers	E3	E Cubed
TRRWW	Tri-River Region Water Watch*	EAO	Environmental Awareness Organization
		CHEWUP	Friends of Chewacla-Uphapee Watershed
	Cahaba [02]	HODNETT	Friends of Hodnett Creek
CRAWSA	CRAWSA	GKW	Gran-Knights of the Waterhole
SHADES	Friends of Shades Creek	JDWW	Jake & Donny Water Watch
GGCW	Gargis & Guin Cahaba Watch	LWLM	Lake Watch of Lake Martin
		LWPOA	Lake Wedowee Property Owners Assoc.
	Chattahoochee [03]	SOS	Save Our Saugahatchee
CCCTCFFA	Chambers Co. Career Tech Center FFA	TRRWW	Tri-River Region Water Watch*
FHALC	Friends of Halawakee Creek		
HWW	Harding Water Watch		**Tennessee [08]**
		FRAT	Flint River Action Team
	Coastal Plain [04]	FRCA	Flint River Conservation Association
ACF	Alabama Coastal Foundation	GHSFFA	Geraldine High School FFA
CPSWW	Coastal Plain Streams Water Watch	HSEC	Huntsville Senior Environment Corps
WolfBWW	Wolf Bay Watershed Watch	RSVP	Marshall County RSVP *
		NSMS	North Sand Mountain School
	Coosa [05]	PRVWL	Paint Rock Valley Water Logs
CRBI	Coosa River Basin Initiative	PHWFFA	Plainview High School FFA
FPFFA	Fort Payne FFA	RCWW	Rocket City Water Watch
LJHOBO	Lake Jordan HOBO	SARDIS	Sardis High School FFA
LMHOBO	Lake Mitchell HOBO	SBWW	Scott Branch Water Watch
LLHOBO	Lay Lake HOBO	VHS	Valley Head School*
LMLPA	Logan Martin Lake Protection Assoc.		
SOULS	SOULS Water Watch		**Warrior [10]**
TFBCC	The Friends of Big Canoe Creek	ARA	Alabama River Alliance
TRRWW	Tri-River Region Water Watch*	BWR	Black Warrior Riverkeeper
VHS	Valley Head School*	BCSWCD	Blount County SWCD
WLIA	Weiss Lake Improvement Association	CAWACO	CAWACO
		CCSWCD	Cullman County SWCD
	Mobile [06]	HURRICANE	Friends of Hurricane Creek
DRCR	Dog River Clearwater Revival	FLFR	Friends of Locust Fork River
FWW	Fairhope Water Watch	RSVP	Marshall County RSVP *
TOMS	Town of Magnolia Springs	SLCA	Smith Lake Civic Association
WeeksBWW	Weeks Bay Water Watch	SLEPC	Smith Lake Environ. Preservation Committee
		SPC	Strokers Paddle Club
	Tallapoosa [07]	WarriorBWW	Warroir Basin Water Warriors
AIT	Ag Initiative Tallapoosa	WDWQMP	Watercress Darter Water Qual. Mon. Prog.
AOC	Auburn Outing Club	WCSLA	Winston Co. Smith Lake Advocacy Inc
CWW	Chewacla Water Watch		
* Groups active in more than one watershed.			

APPENDIX D. WATER CHEMISTRY RECORDS COLLECTED AND RECEIVED FROM OCTOBER 1, 2008 TO SEPTEMBER 30, 2009

Watershed Group Name	O	N	D	J	F	M	A	M	J	J	A	S	Total
Alabama													
IWW	2	1		1	1								**5**
TRRWW	7	6	7	8	1	4	6	2	5	2	4	1	**53**
Sub Total	**9**	**7**	**7**	**9**	**2**	**4**	**6**	**2**	**5**	**2**	**4**	**1**	**58**
Cahaba													
CRAWSA	3			3									**6**
SHADES	2	2	3	2	2	2	1		2	2	2	1	**21**
GGCH				1	1	1	1	1					**5**
Sub Total	**5**	**2**	**3**	**6**	**3**	**3**	**2**	**1**	**2**	**2**	**2**	**1**	**32**
Chattahoochee													
CCCTC FFA							**2**						**2**
FHALC											**1**	**2**	**3**
HWW												**1**	**1**
Sub Total							**2**				**1**	**3**	**6**
Coastal Plain													
ACF	1												**1**
CPSWW	9	45	10	33	2	26	15	8	2	44	4	43	**241**
Wolf BWW	23	18	19	25	23	24	25	28	32	27	26	16	**286**
Sub Total	**33**	**63**	**29**	**58**	**25**	**50**	**40**	**36**	**34**	**71**	**30**	**59**	**528**
Coosa													
CRBI	1	1	1	1			**2**	**2**	**2**	**2**	**2**	**2**	**16**
FPFFA	6	5	4	5	5	4	2	1	1	1			**34**
LJHOBO	1	3	1	1		1	1	1	1	3	3	4	**20**
LMHOBO	7	5	4	4	5	5	6	5	5	6	7	3	**62**
LLHOBO	12	12	11	11	10	9	11	9	8	8	8	5	**114**
LMLPA	11	11	11	10	8	10	8	11	12	10	11	11	**124**
SOULS	1	2	1				1						**5**
TFBCC				1	1	1	1		1	2	2	1	**10**
TRRWW	1	1	1	1	1	2	2	1	1	1	1	1	**14**
VHS	1	1			1		1					1	**5**
WLIA							1	1	1		1	1	**5**
Sub Total	41	41	34	34	31	32	36	31	32	33	35	29	**409**

APPENDIX D. WATER CHEMISTRY RECORDS COLLECTED AND RECEIVED FROM OCTOBER 1, 2008 TO SEPTEMBER 30, 2009(cont)

Watershed Group Name	O	N	D	J	F	M	A	M	J	J	A	S	Total
Mobile													
DRCR	5	7	4	9	9	11	9	6	6	7	3	4	**80**
FWW	2	2	2	2	2	3	3	3	3	3	3	2	**30**
TOMS	9	7	2	4	5	4	7	3	2	5	4	2	**54**
WeeksBWW	13	16	13	11	12	13	14	8	14	12	13	11	**150**
Sub Total	**29**	**32**	**21**	**26**	**28**	**31**	**33**	**20**	**25**	**27**	**23**	**19**	**314**
Tallapoosa													
AOC	2	2		2								1	**7**
CWW	3	4	2	3	2	3	3	3	2	2	1		**28**
E3				1		1		1		1	1		**5**
EAO	1	1	1	1	1	1	**1**	**1**	**1**				**9**
CHEWUP	**6**	**11**	**12**	**12**	**12**	**13**	**13**	**14**	**12**	**10**	**12**	**1**	**128**
HODNETT	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**12**
GKW	**1**						**1**	**1**	**2**	**2**	**2**		**9**
JDWW	**5**	**4**	**7**	**6**	**3**	**5**	**5**	**3**	**4**	**1**	**3**	**1**	**47**
LWLM	**6**	**4**	**5**	**5**	**5**	**4**	**5**	**5**	**4**	**5**	**5**	**4**	**57**
LWPOA	**9**	**8**	**8**	**6**	**6**	**10**	**12**	**10**	**15**	**10**	**12**	**6**	**112**
SOS	**17**	**12**	**16**	**14**	**14**	**10**	**13**	**13**	**11**	**10**	**12**	**5**	**147**
TRRWW	**4**	**2**	**4**	**5**	**4**	**5**	**5**	**4**	**5**	**4**	**5**	**1**	**48**
Sub Total	55	49	56	56	48	53	**59**	**56**	**57**	**46**	**54**	**20**	**609**
Tennessee													
FRAT	1	1	1	1	1	1	1	1	1	1	1	1	**12**
FRCA	3		4	4	4	4		3	3		3		**28**
GHSFFA	6	5	3	6	4	4	2				1	1	**32**
HSEC	2	2		2		2	2	1	2	1	2	1	**17**
NSMS	5	5	2	4	4	2							**22**
PRVWL		1		1	1	1		1	1	1	1	1	**9**
PHWFFA				1		1							**2**
RCWW	1	1	4			4	2	2	4	1	4	1	**24**
RSVP	46	43	44	42	40	41	40	36	36	41	39	24	**472**
SARDIS	2			2	2		2				2	2	**12**
SBWW	2	2	2	2	2	2	2	2	2	2	2	1	**23**
VHS	1	1			1	1		1				1	**6**
Sub Total	**69**	**61**	**60**	**65**	**59**	**63**	**51**	**47**	**49**	**47**	**55**	**33**	**659**

APPENDIX D. WATER CHEMISTRY RECORDS COLLECTED AND RECEIVED FROM OCTOBER 1, 2008 TO SEPTEMBER 30, 2009(cont)

Watershed Group Name	O	N	D	J	F	M	A	M	J	J	A	S	Total
Warrior													
ARA	2	2	2	2	**2**	**2**	**2**	**2**		**2**	**2**	**2**	**22**
BWR	1												**1**
BCSWCD	3	2	3	3	3	3	3	3	3	3	3	3	**35**
CAWACO									23	20	15		**58**
CCSWCD	12	12	18	9	16	19	12	11	17	13	18	19	**176**
HURRICANE	3	5	2	4	5	4	4	3	5	1	5	3	**44**
FLFR	1	2	2	3	3	3	1				1		**16**
RSVP	1	1	1	1	1	1	1	1	1	1	1	1	**12**
SLCA	2	2	2	2	2	5	5	5	4	5	5	3	**42**
SLEPC	1	3	3	5	5	6	3	6	6	5	6	2	**51**
SPC	1	1	1	1	1	1	1	1	1	1	1	1	**12**
WarriorBWW	1												**1**
WDWQMP	4	4	4	4	4	4	4	4	4	4			**40**
WCSLA	7	7	6	6	10	10	12	14	12	11	12	9	**116**
Sub Total	**39**	**41**	**44**	**40**	**52**	**58**	**48**	**50**	**76**	**66**	**69**	**43**	**626**
Gran Total	**280**	**296**	**254**	**294**	**248**	**294**	**277**	**243**	**280**	**294**	**273**	**208**	**3,241**

NOTE: 144 water chemistry records, which were collected before the reporting dates and not included in previous reports, were received in the AWW office during this report period for a combined total of 3,385.

APPENDIX E

Monthly Bacteriological Sampling Activity (October 1, 2008 - September 30, 2009), by Watershed and Citizen Groups

APPENDIX E. BACTERIOLOGICAL RECORDS COLLECTED AND RECEIVED FROM OCTOBER 1, 2008 TO SEPTEMBER 30, 2009

Watershed Group Name	O	N	D	J	F	M	A	M	J	J	A	S	Total
Alabama													
TRRWW			4	4									**8**
Sub Total			**4**	**4**									**8**
Chattahoochee													
CCCTC FFA							**2**						**2**
FHALC												**1**	**1**
HWW												**1**	**1**
Sub Total							**2**					**3**	**4**
Coastal Plain													
ACF	1												**1**
CPSWW												2	**2**
Wolf BWW	18	13	18	17	19	19	23	22	27	24	20	13	**233**
Sub Total	**19**	**13**	**18**	**17**	**19**	**19**	**23**	**22**	**27**	**24**	**20**	**15**	**236**
Coosa													
FPFFA			1										**1**
LLHOBO	2					1			2	6	6	3	**20**
LMLPA	2	3	3	3	3	3	2	3	2	3	3	3	**33**
Sub Total	**4**	**3**	**4**	**3**	**3**	**4**	**2**	**3**	**4**	**9**	**9**	**6**	**54**
Mobile													
FWW	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**2**	**27**
TOMS	**4**	**2**		**3**	**3**	**2**	**3**	**3**	**3**	**3**	**3**	**2**	**31**
WeeksBWW	**6**	**8**	**4**	**5**	**6**	**1**	**5**	**9**	**8**	**6**	**8**	**5**	**71**
Sub Total	**12**	**12**	**6**	**10**	**11**	**5**	**10**	**14**	**14**	**12**	**14**	**9**	**129**

APPENDIX E. BACTERIOLOGICAL RECORDS COLLECTED AND RECEIVED FROM OCTOBER 1, 2008 TO SEPTEMBER 30, 2009 (cont)

Watershed Group Name	O	N	D	J	F	M	A	M	J	J	A	S	Total
Tallapoosa													
AIT	9												**9**
CWW					2						2	3	**7**
E3					1		1				1		**3**
EAO					3						3	1	**7**
CHEWUP					6						6	1	**13**
JDWW	3				3						3		**9**
LWLM											1		**1**
LWPOA	1	1	1		1	1	1	1	1	1	1	1	**11**
SOS	5		5	8	18	4	4	5	3	3	15	1	**71**
TRRWW	2		2	2	2	2	2	2	2	2	2		**20**
Sub Total	**20**	**1**	**8**	**10**	**36**	**7**	**8**	**8**	**6**	**6**	**34**	**7**	**151**
Tennessee													
RSVP Marshall	1												**1**
Sub Total	**1**												**1**
Warrior													
BCSWCD	3	3	3	3	3	3	3	3	3	3	3	3	**36**
CCSWCD	8	13	19	7	13	19	9	9	18	12	17	11	**155**
WCSLA								**2**					**2**
Sub Total	**11**	**16**	**22**	**10**	**16**	**22**	**12**	**14**	**21**	**15**	**20**	**14**	**193**
Gran Total	**67**	**45**	**62**	**54**	**85**	**57**	**57**	**61**	**72**	**66**	**97**	**53**	**776**

NOTE: 80 bacteriological records, which were collected before the reporting dates and not included in previous reports, were received in the AWW office during this report period for a combined total of 856 data records.

APPENDIX F

AWW Cost Share and Citizen Time

APPENDIX F. COST SHARE AND CITIZEN TIME

AWW Citizen Volunteer Participation at Workshops and Meetings with Value of Time (October 2008 - September 2009)

Workshops	No. Participants	Hours/ Meeting	Citizen Hours	Time Value *
29 Water Chemistry Monitoring	232	8	1,856	$37,584
22 Bacteriological Monitoring	157	4	628	$12,717
3 Stream Biomonitoring	18	4	72	$1,458
38 Water Monitoring Recertification	121	4	484	$9,801
7 Training-of-Trainer	21	4	84	$1,701
3 Exploring Alabama's Living Streams	59	12	708	$14,337
Total	608	36	3,832	$77,598
AWW Meetings				
AWW/AWWA Annual Meeting - June 2008	65	6	390	$7,898
Total	65	6	390	$7,898

AWW Citizen Volunteer Samples and Value of Time (October 2008 - September 2009)
(Based on an average of 3 hrs/sample, including time for preparation, travel, sampling, record keeping, etc.)

Sample Type	No. Samples Collected	Citizen Hours	Value of Time*
Bacteria Data	856	2,568	$50,102
Water Chemistry Data	3,385	10,155	$198,124
Total	4,241	12,723	$248,226

C90593028, (October 2008 - September 2009)	
Total Project Budget	**$233,333**
AWW Budget (60%)	**$140,000**
Committed Match (40%)	**$93,333**
Auburn University	$58,333
AWWA contribution for printing water body reports**	$250
Volunteer Time @ $20.25/hr (15% of total project cost)	$35,000
Citizen Hours Required	1,728
Citizen Time/Value Contributed (October 2008 - September 2009)	
Total Hours Contributed	16,945
Total Value of Citizen Time* Contributed	$333,721
Citizen Time and Value that Exceeded Requirements	
Value of Citizen Time* not used for Match	$298,721
Citizen Hours not used for Match	15,217
% of Total Hours Contributed over Required	**980%**

* NOTE: Based on $20.25 per hour rate. The value of citizen time was applied as cost share to C90593028. (http://www.independentsector.org/programs/research/volunteer_time.html)

** No Waterbody Reports were printed during the report period. The $250 committed by the AWWA for reports was not used, and all AWWA match came from Volunteer Time committed for workshops and monitoring.

APPENDIX G

AWW Publications

Society and Natural Resources, 2009 (cover of a 13 page article)

Society and Natural Resources, 22:637–649

ISSN: 0894-1920 print/1521-0723 online
DOI: 10.1080/08941920802078216

Routledge
Taylor & Francis Group

Group Dynamics and Resource Availability of a Long-Term Volunteer Water-Monitoring Program

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SERGIO RUIZ-CÓRDOVA

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Alabama Water Watch is a statewide, citizen volunteer water quality monitoring program with participation of 235 groups over a 14-year period (1993–2006). A variety of social and geographical resources strongly influenced the distribution, characteristics, and longevity of groups. Group location and sampling effort in each of 67 counties had significant correlation with population, income, and education. Water-monitoring groups were concentrated in the northeast quadrant of the state (where 60% of lake acreage occurs) and in the coastal southwest region, with virtually no groups in areas of persistent poverty. Though it has been demonstrated that volunteer water-monitoring programs can collect scientifically valid data that make significant contributions to natural resource management, such programs favor well-organized and educated groups with discretionary time and wealth. Different approaches are needed to make inroads into resource-limited areas, such as alternative environmental awareness programs, and partnerships with organizations that focus on community development and livelihoods.

Keywords Alabama, community groups, resource availability, volunteer water monitoring

Received 8 June 2007; accepted 5 December 2007.

The Alabama Water Watch program is coordinated from the Auburn University Department of Fisheries and Allied Aquacultures, and is funded in part by grants from the Alabama Department of Environmental Management and U.S. Environmental Protection Agency, Region 4. Additional support comes from the Alabama Agricultural Experiment Station and Alabama Cooperative Extension System. Preliminary data for this study were organized by Shelley England. Eric Reutebuch assisted with statistical analyses and maps. The authors thank the thousands of AWW water monitors for their dedication and commitment to clean water.

Address correspondence to Dr. William Deutsch, Fisheries and Allied Aquacultures, Auburn University, Auburn, AL 36849, USA. E-mail: deutswg@auburn.edu

AFA NEWS

Newsletter of the Alabama Fisheries Association

January, 2009

AUBURN UNIVERSITY
Department of Fisheries and Allied Aquacultures

AU Fisheries extends Water Monitoring and Watershed Stewardship around the Gulf of Mexico

By Eric Reutebuch, Sergio Ruiz-Cordova and Bill Deutsch

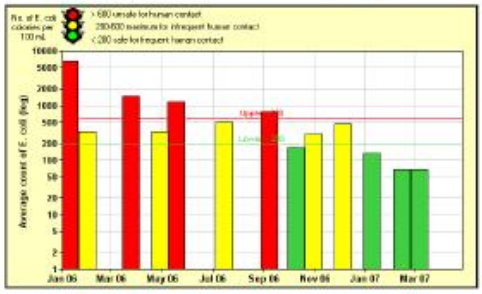
The US EPA has approved a three-year, $300,000 grant titled *Fostering Environmental Stewardship of the Gulf of Mexico: A Trans-Boundary Network of Water Education and Monitoring for Animal Producers, Classrooms and Community Volunteers* to Dr. Bill Deutsch, Project Director of Alabama Water Watch (AWW) and Global Water Watch (GWW) in the Auburn University Fisheries Department. This Environmental Education project, expected to begin this spring, will teach animal producers, middle and high school teachers and students, and volunteer water monitors about Gulf issues, water protection and monitoring. The project will be implemented throughout Gulf watersheds in Alabama and Veracruz, Mexico. A series of water quality monitoring workshops, study tours, an online Environmental Education Directory and two conferences will educate the target audiences and broader Gulf community about nonpoint source impacts to Gulf waters and land management strategies to minimize these impacts. EPA-approved protocols developed by AWW will be used in water quality monitoring workshops to train animal producers, students, teachers and land managers, and all volunteer citizen-generated water data will be stored, analyzed and shared online.

Nonpoint source pollution impacts to the Gulf of Mexico come from numerous sources, but are ultimately linked to landscape management of basins that drain to the Gulf. This project targets the U.S. and Mexican Gulf states, and takes advantage of the strong community-based watershed management programs developed by AWW and GWW and an established relationship with the burgeoning GWW-Veracruz group. The Mobile River Basin drains about 70% of Alabama, and portions of Georgia, Tennessee and Mississippi. Though Alabama has a relatively small coastal area, the Mobile Basin is the fourth largest basin by flow in the U.S., contributing an average of about 1 million gallons per day to the Gulf. In 2007, Alabama (population: 4.3 million people) had 1.3 million head of cattle with a value in excess of $1 billion. Veracruz, Mexico (population: 6 million people) is primarily an agricultural state, and has almost 500 miles of Gulf coast (25% of the total Gulf coast of Mexico). Veracruz has the largest inventory of cattle (5 million head), swine (1.2 million) and goats (600,000) in Mexico. Animal waste management in both Alabama and Veracruz is, therefore, important for protecting the Gulf coastal environment.

Bill Deutsch, AWW Program manager, and Sergio Ruiz-Córdova, AWW Database Specialist, discuss results of a watershed-level assessment of *E. coli* that they conducted with GWW-Veracruz monitors in 2006.

After receiving training and certification as water quality trainers, GWW-Veracruz has conducted 24 trainings in water quality monitoring and trained more than 100 citizen monitors (March 2007 training pictured).

Project objectives include: 1) conducting environmental education activities for under-served populations including animal producers (trout and cattle), middle and high school teachers and students, and volunteer water monitors in pilot projects that will teach about the Gulf of Mexico and water quality and quantity issues; 2) merging formal and non-formal educational activities that teach water science and environmental monitoring and protection; 3) developing an Environmental Education Directory for six Mexican and five U.S. States to link education centers and promote information exchange; and 4) training middle school and high school students to monitor water quality.



Fifteen month trend in E. coli levels measured by GWW citizen monitors in the Rio Pixquiac near Xalapa, in the state of Veracruz, Mexico

E. coli levels have dropped dramatically since monitoring began in January 2006, when *E. coli* levels were 6,467 colonies/100 mL of water. Recent readings (67 colonies *E. coli*/100 mL of water) were well below the 200 colonies/100 mL of water, which is considered the maximum level safe for frequent human contact. GWW-Veracruz have greatly expanded their water quality sampling efforts, and now sample at 31 sites in several watersheds throughout Veracruz.

The site is monitored by a local rainbow trout farmer, Raphael Hernandez, who diverts water from the river into raceways to rear his trout.

Project partners include Alabama Water Watch, the Alabama Cattlemen's Association, Auburn University, the Dauphin Island Sea Lab, Secretaria de Educacion Publica (Mexico), Senderos y Encuentros para un Desarrollo Sustentable, A.C. (SENDAS) - Veracruz, Sistema Arrecifal Veracruzano, the Veracruz Aquarium, the Veracruz Cattle Producers Association and the Veracruz Trout Farmers Association. Dick Bragg, an AU Fisheries graduate, former Director of the U.S. Trout Farmers Association and current trout producer in North Carolina who has extensive experience in Latin America and the Caribbean, will participate in the project by conducting workshops promoting more environmentally friendly and sustainable trout production in Mexico. For more information on the project, contact the AWW office at 1-888-844-4785.

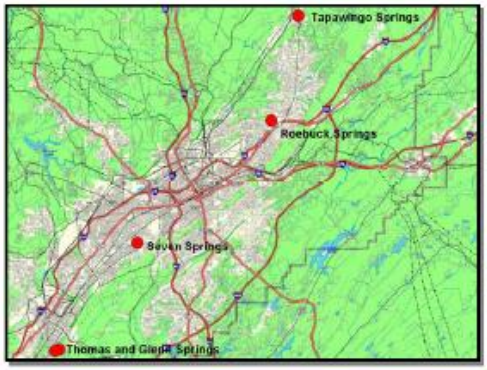
Citizen Water Monitors Keep a Vigilant Watch over Their Endangered Darters

by Eric Reutebuch and Bill Deutsch

Since the discovery of a beautiful little two-inch long fish named the Watercress Darter in the 1960's, many Birmingham-area groups have partnered to protect this endangered species, a member of the Percidae family of fishes (perches, from *Fishes of Alabama* by H. T. Boschung, R. L. Mayden and J. R. Tomelleri). These tiny darters thrive in the very unique aquatic environments associated with the limestone springs – slow-moving, cool backwaters, where they seek refuge from the heat in the summer months and love to "perch" in dense aquatic vegetation, particularly watercress and common water moss.

Watercress Darter (*Etheostoma nuchale*)

The only places where this rainbow-colored creature can be found are in five limestone springs in Jefferson County, Alabama – Glenn and Thomas springs (tributaries of Halls Creek, a tributary of Valley Creek in Bessemer), Seven Springs (a tributary of Valley Creek in Powderly), Roebuck Springs (a tributary of Village Creek in Roebuck), and Tapawingo Springs (also called Penny Springs, a tributary of Turkey Creek in Pinson). All five springs are in and around the Greater Birmingham Metropolitan Area (see map below).



Five springs in the Birmingham area where the Watercress Darter can be found.

Partners in Watercress Darter protection efforts include scientists from Samford University and Birmingham-Southern College, the Freshwater Land Trust, the U. S. Fish and Wildlife Service, the Faith Apostolic Church in Powderly, AL, the Sierra Club Water Sentinels, the Alabama Department of Conservation and the Birmingham Audubon Society. Achievements have included 1) getting the rare darter listed as endangered under the Endangered Species Act, the first fish in Alabama to receive this special protected status, 2) creation of the Watercress Darter National Wildlife Refuge for the protection of 23 acres of the darter's habitat in Jefferson County, and 3) the development of the Seven Springs Ecoscape, a park at the Faith Apostolic Church in Powderly that will serve to protect the darter and educate the public about this rare and precious fish. Preservation efforts of the Faith Apostolic

congregation are featured in Sierra Club's 2008 national report, Faith in Action: Communities of Faith Bring Hope to the Planet. See www.sierraclub.org/partnerships/faith/report2008.

Citizen water monitors have joined in the partnership for protection and preservation of the darter and its habitat. The Watercress Darter Water Quality Monitoring Program (WDWMP) was initiated by the U.S. Fish and Wildlife Service in April 2007, under the direction of Dr. R. Scot Duncan, a professor at Birmingham-Southern College. Goals of the WDWMP are to collect consistent water quality data, which are currently lacking, following Alabama Water Watch (AWW) protocols, in the springs where the Watercress Darter thrives. Water test kits were provided through a grant from the U.S. Fish and Wildlife Service administered by Mr. Daniel Drennen in Jackson Mississippi. This data will provide a baseline of water quality required to sustain the darters as well as indicate any changes that may adversely affect them.

Members of the Faith Apostolic Church in Powderly, AL, became certified AWW water monitors by completing training in water chemistry monitoring under AWW trainers Hanna Burwinkle and Taylor Steele in September 2007. They now monitor Seven Springs (center photo) on the church grounds.

After receiving training and certification in Water Chemistry Monitoring from AWW, several citizen monitors have established water quality monitoring sites in the springs where the darters thrive (except in Glenn Springs, which is privately owned). Monitors visit their sites monthly and measure six water chemistry parameters with their portable test kits: water temperature, dissolved oxygen, pH, alkalinity, hardness and turbidity. Water data is sent to the AWW statewide database, where it can be queried, graphed and viewed by anyone with an internet connection.

Emerging data trends show that the limestone springs maintain a narrow range in water temperature year-round, from about 16-19 degrees Celsius, and oftentimes have relatively low dissolved oxygen, characteristic of spring water that emerges from the ground (see AWW graphs below). The spring waters also exhibit high alkalinity and hardness values (relative to the Piedmont and Coastal Plain waters of southern Alabama) in the range of 150-250 mg/L, owing to the local limestone-rich geology. The 'hard' water may be an important habitat characteristic, along with the cool water temperatures, which allows the darters to thrive.

These growing citizen monitor data sets are valuable in not only characterizing the water quality of the Watercress Darter's rare habitat, but act as an ongoing gauge of the health of these waters to sustain this rare and endangered fish. For many of the 75,000 miles of Alabama streams, citizen water data has become the major source of water quality information on local waterbodies. Go to www.alabamawaterwatch.org to check on a stream, lake or river near you, and consider joining community-based watershed management by becoming an AWW water monitor.

Community Volunteers Monitor Watershed for *E. coli* Bacteria using AWW Technique

by Eric Reutebuch and Bill Deutsch

Citizen groups in communities across Alabama are getting actively involved in local watershed management issues. With technical assistance from the Alabama Water Watch (AWW) Program, individuals are being trained to test the water quality of their local streams, rivers and lakes.

AWW is a citizen volunteer, water quality monitoring program that is coordinated from the Auburn University Fisheries Department, with support from the Alabama Department of Environmental Management (ADEM), U.S. EPA (Region 4) and the Alabama Cooperative Extension System. The mission of AWW is to improve both water quality and policy through citizen monitoring and action. The AWW vision is to have a citizen monitor on every stream, lake, and bay in Alabama. Since the Program began in 1992, 250 citizen groups have participated, cumulatively sampling more than 1,900 sites on about 750 waterbodies and submitting more than 55,000 water quality data records to the AWW statewide database. Several groups have submitted water data for more than 10 years. For many waterbodies in Alabama, citizen data are the primary or only source of water quality information.

Bill Deutsch, AWW Program Director, training residents of the Auburn-Opelika area (above-left) in the US EPA-approved AWW bacteriological monitoring method.

Two citizen monitoring groups in the Auburn area, Save Our Saugahatchee (SOS) and Friends of Chewacla Creek and the Uphapee Watershed (CHEWUP) have organized a seasonal bacteria 'blitz' to monitor the Saugahatchee and Chewacla watersheds encompassing the Auburn area. Earlier in 2006, interest in bacteria monitoring greatly increased after a pair of trained monitors reported high *E. coli* levels in a couple of streams in the watershed. Several additional citizen monitors got trained and certified by AWW in bacteria monitoring using the Coliscan Easygel® technique. The two citizen groups then teamed up to monitor 25-30 sites in the Chewacla and Saugahatchee watersheds in the Auburn area.

Save Our Saugahatchee citizen monitor testing local stream for *E. coli*.

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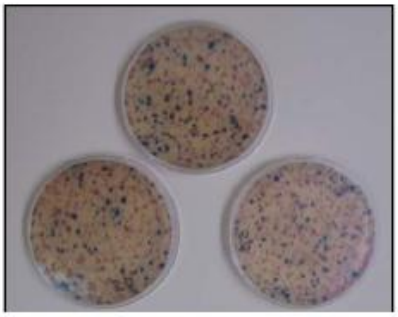

E. coli count = 8,300 per 100 milliliter of water; above-right) showing extensive *E. coli* contamination (blue colonies; pink-red colonies are other coliforms).

The groups have conducted watershed 'blitz' sampling four times since early 2007. See a summary of results at

http://saveoursaugahatchee.googlepages.com/activities%3A.

They have identified five stream sites with high levels of *E. coli* contamination (greater than 600 *E. coli* per 100 milliliters of water, which is considered unsafe for human contact by U.S. EPA). Data are provided to local municipal officials, who work with SOS and CHEWUP in tracking and resolving contamination sources. Some sources have been tracked down and resolved, such as the sewage leaking into the small stream flowing by Hickory Dickory Park, thanks to the efforts of Clara Clothiaux (see article in the September 2007 issue of *Water Resources Impact* magazine at

https://aww.auburn.edu/Docs/Impact07.pdf).

Others are more elusive and require further vigilance and monitoring.

Results (colonies per100 mL of water sampled in June 2008) of watershed-level *E. coli* sampling from citizen volunteer monitors trained and certified by AWW in bacteriological monitoring using the Easygel Coliscan Method.

Dr. Cliff Webber (past AFA president) tallies bacteriological monitoring results.

Several other citizen monitoring groups around the state, from the Tennessee River to the Gulf Coast, employ the AWW bacteriological monitoring method to monitor *E. coli* contamination in their watersheds. To explore the growing body of citizen water quality data, go to www.alabamawaterwatch.org and click "Water Data."

AFA NEWS

Newsletter of the Alabama Fisheries Association

August, 2009

FROM THE PRESIDENT

Ken Weathers (Alabama Wildlife and Freshwater Fisheries)

Thursday, February 26, 2009

It is the day after our 25th Annual AFA Meeting in Auburn. I can procrastinate with the best of them, but this time I just had to sit down and type this message while it was still fresh on my mind, even if it would not be published for another 6 months. I attended my first AFA meeting in Guntersville in 1987 as an undergrad in fisheries. Most of the talking I did was with the other

Collaboration brings exciting work to Lake Martin

Researchers involved in an ongoing multi-year study of the Tallapoosa River Basin, known as the Tallapoosa Watershed Project (or TWP), seized this opportunity to do some additional dollar-stretching and proposed to conduct an add-on remote sensing study of Lake Martin and its embayments. Through a series of additional meetings, discussions and ultimate collaboration, the remote sensing study came to fruition. The study involves remote sensing measurements concurrent with the Alabama Power water quality study.

ABOUT THE AFA

The Alabama Fisheries Association (AFA) is an organization of professionals dedicated to the development, conservation, management, and wise utilization of commercial and recreational fisheries in Alabama. The AFA promotes all branches of fishery science and related technology, with emphasis on the exchange and dissemination of knowledge about fish and other aquatic life. Annual membership fees are $5.00; three-year memberships are $15.00. Members are encouraged to purchase three-year memberships. This helps our financial stability and you will avoid any increases in dues that may occur during that time. Dues may be sent to Hugh Hammer, AFA Treasurer, Gadsen State Community College PO Box 227 Gadsden, AL 35903.

AFA web page – for information about AFA (and recent newsletters) point your web browser to: http://www.alabamafisheriesassociation.org/

This effort was the brainchild of Lake Watch of Lake Martin water monitor, John Glasier, who had collaborated in an earlier water quality study of the lake back in 2004-05 funded by USDA-CSREES (the original Tallapoosa Watershed Project, TWP-1). Along with ongoing water quality sampling, measurements of light reflecting off the water are taken with a hand-held radiometer, digital photos of the water are taken through an Aqua-View viewing scope, and a visual measurements of water color are taken using a Forel-Ule color scale. Dr. Luke Marzen of the AU Geography Department and his graduate student, Chandler White, assist with the radiometric measurements, which are taken out on the lake, and back in the lab from filter pads that collect and concentrate lake phytoplankton from a known volume of filtered lake water. Dr. Marzen also obtains same-day Landsat satellite images.

Lake Watch of Lake Martin members John Glasier (far left) and Dick Bronson (left, LWLM President) discuss collaboration with Alabama Power, Kleinschmidt and Auburn University Fisheries representatives to extract additional information through remote-sensing sampling concurrent with the ongoing APCo Lake Martin water quality study. The meeting was held at the Central Alabama Community College in Alexander City in June 2009.

Come Join Us in the SWaMP

Eric Reutebuch and Wendy Seesock, SWaMP Co-coordinators

The 'Loveliest Village on the Plains' has been tarnished in recent years by being home to polluted streams. Three local streams are on the Alabama Department of Environmental Management's (ADEM's) 303(d) list of impaired streams – the Pepperell Branch in Opelika, the Saugahatchee Embayment (where Saugahatchee Creek joins Yates Lake in Tallapoosa County), and Moores Mill Creek in Auburn. Impairment of the first two is caused by too many nutrients (primarily phosphorus), and for the third, from too much sediment (dirt) entering the stream from the surrounding lands in their respective watersheds. Although a majority of these watersheds remain forested, the land around Auburn-Opelika is undergoing rapid transition to urban and suburban developments

An effort to clean up Saugahatchee Creek (which includes the Pepperell Branch as one of its tributaries) was formalized with the formation of the Saugahatchee Watershed Management Plan, or SWaMP. The SWaMP effort began in 2004 with a coalition of community groups, business/industry, local government and resource managers, who drafted a watershed management plan for the Saugahatchee Watershed. The main goal of the plan was to clean up the creek so that it will support its use classifications (including Swimming, Public Water Supply, and Fish and Wildlife) and be removed from ADEM's 303(d) list.

The Phase 1 Implementation of SWaMP began in 2007 under a 3-year grant awarded to the Department of Fisheries and Allied Aquacultures at Auburn University. The project is directed by Bill Deutsch, Alabama Water Watch Program Manager, and partially funded by ADEM through a Clean Water Act Section 319(h) nonpoint source grant provided by the U.S. Environmental Protection Agency-Region 4.

Analysis of historical water quality data of the Saugahatchee Watershed indicates that urban nonpoint source pollution should be a priority of SWaMP, since runoff from urban sub-watersheds was about three times higher in phosphorus than rural (primarily forested) sub-watersheds (see NUTRIENT AND SEDIMENT LOADING IN SOUGAHATCHEE CREEK AND THE IMPACTS ON AQUATIC BIOTA, Bayne et al. 2004).

SWaMP efforts have included both community outreach and strategic installation of Best Management Practices (BMPs) to minimize pollution runoff and reduce phosphorus loading into Saugahatchee Creek. SWaMP coordinators have met with dozens of businesses, community groups and schools to discuss the multi-faceted value of our local water resources, the impacts that are compromising these resources, and what SWaMP and willing partners can do to mitigate pollution sources. Outreach efforts have included informal meetings, community presentations, outreach booths at civic events, presentations at professional conferences, and workshops on Low Impact Development, Lawn Care, Forest Best Management Practices, and Water Conservation & Rainwater Harvest.

Installation of on-the-ground BMPs was preceded by analysis of historic water quality data, which indicated that a disproportionately large amount of pollution was coming from the upper watershed in the form of nutrients (nitrogen and phosphorus) flushing from urban and suburban lawns. Completed BMP projects include stream riparian zone restorations, stream bank and channel restorations, runoff management through installation of wetlands and rain gardens, and water conservation and rainwater harvest projects.

Eric Reutebuch
REUTEEM@auburn.edu

ALABAMA DIVISION OF WILDLIFE AND FRESHWATER FISHERIES

Aquatic Resources Program

Stream Assessment Project

The Alabama Division of Wildlife and Freshwater Fisheries recently hired Andrew Henderson in January 2009 into the newly created Stream Fish Biologist position. Andrew completed his M.S. degree under Dr. Carol Johnston at Auburn University while working with the endangered Cape Fear shiner (*Notropis mekistocholas*) examining its early life habitat requirements, spawning behavior, and movement. Andrew also worked on surveys for the threatened slackwater darter (*Etheostoma boschungi*) assessing factors contributing to the species decline. He is responsible for implementation of the statewide stream sampling program for the Division and assisting District personnel with stream sampling.

Alabama Sturgeon Collection Efforts and Tracking

After nearly 2 years tracking the sonic tagged Alabama sturgeon (*Scaphirhynchus suttkusi*) collected in April 2007, the tag battery has died. However, we were able together a wealth of information on movement and habitat, including additional areas to target for sampling. Due to high spring flows, little sampling was conducted in the Alabama and Cahaba rivers this past spring. However, there is some good news. While sampling for Alabama shad below the Robert F. Henry Lock and Dam on April 23, 2009, we electrofished an Alabama sturgeon, but were unable to net the fish. The USFWS was criticized for including the upper Alabama River in the critical habitat designation because it was argued Alabama sturgeon were extirpated from the upper reaches, nevertheless, our sighting confirms the USFWS was correct in its assessment.

Southern Walleye Recovery Efforts

Since 2005 we have been assessing the status of the southern walleye (*Sander* sp. cf. *vitreus*) and attempting to develop a broodstock for recovery efforts in Alabama. We have sampled all historic sites expending over 170 hours of electrofishing, 276 hours of gillnetting and 1,575 net/nights searching for southern walleye. Of the 52 specimens collected, only 39 have been southern walleye, the remaining specimens have either been northern x southern hybrids, northern walleye, or saugeye.

Alabama Water Watch

AWWARENESS

Newsletter of Alabama Water Watch

Summer 2009

AWW Annual Picnic Held at Auburn University

Jayme Oates, AWW Monitor Coordinator

We had a good turnout at the AWW Annual meeting and picnic held May 30th. Forty one folks attended the mini-conference, where Mike Kensler (AU Water Resources Office and AWWA Board Member) shed light on national watershed issues, as well as visioning for the future of Alabama's waters; Stan Mahoney (Wolf Bay Water Watch) gave an update on how Outstanding Alabama Water status is affecting Wolf Bay and surrounding communities, as Wolf Bay Water Watch's use of meters to collect data in addition to the AWW test kit. Wendy Seesock informed the audience about opportunities for additional monitoring efforts, including invasive species monitoring and the use of meters to monitor chemical parameters of water. Afterwards, sixty folks, representing thirteen monitoring groups and seven agencies, joined us for catfish and shrimp under the pavilion by the ponds on AU campus. After lunch, the 2008 AWW Monitoring group awards were given to Wolf Bay Water Watch for most Bacteria Records, Marshall County RSVP for most cumulative records and the Town of Magnolia Springs for New Group of the Year. Thirty five donated items were auctioned, including a guided canoe trip on the Chattahootchee River, home-made organic rose petal wine, signed artwork and artisan wares, and vintage watershed related collectibles. Afterwards folks were free to relax and fish around the ponds with the frogs and the turtles! Thanks to all that attended, and if you could not make it this year, we hope to see you next year!

State of the Association

Jim Woodrow AWWA President

If you missed it, you missed a great time. On Saturday May 30, 2009 Alabama Water Watch and the Alabama Water Watch Association had a day in Auburn. It started with a Mini Conference hosted by the Alabama Water Watch Program Group and ended with a Picnic (Catfish and Shrimp – wow what a meal). The two events allowed participants to renew old friendships, learn about the latest activities of Alabama Groups and AWW, and plan activities for the coming year.

The Alabama Water Watch Association established the following as goals for the 2009-2010 year:

Continue to seek funding sources to provide money to purchase chemicals for active monitors.

Increase membership in the Alabama Water Watch Association.

Better utilize the AWW database of monitors to educate monitors through more newsletters and emails.

Bring the AWWA Board of Directors up to full staff by adding members to represent unfilled watershed positions.

Continue to partner with other organizations with similar interest in order to educate citizens and develop volunteers to monitor Alabama Water Quality.

Develop a plan where the AWWA Board Members will have more direct interaction with local Monitoring Groups.

Continue to work with The Alabama Water Watch Program to develop Watershed and Water Monitor Group Reports and continue the Water Watch Conference activities.

New Board Members were added for 2009-2010. They are James Lowery (Cahaba Watershed), Homer Singleton (Wolf's Bay Watershed), Mike Kensler and Jayme Oates (Members at Large).

Officers for the 2009-2010 year are Jim Woodrow, President; Brian Brown, Vice President; Kellie Johnston, Secretary; and Judy Palfrey, Treasurer. Also the AWWA directors would like to thank Marshall Carter (2007-2008 Vice President; 2002-2008 Board Member) for his dedicated service to AWWA. Marshall is retiring from the Board.

The Officers and Directors of The Alabama Water Watch Association for 2009-2010 are looking forward to the coming year in order to strengthen the organization and implement practices to benefit the volunteer water quality monitoring program in the State.

Fact: Seventeen major streams flow through Alabama; 10 of these have their headwaters inside the state, and the other 7 originate in other states. *Source: Alabama USGS*

APPENDIX H

AWW Media Relations

Cullman Times News November 15, 2008

CULLMANTIMES.COM
SERVING ALL OF CULLMAN COUNTY

Water monitoring enthusiasts meet for 'State of the Lake'

The Cullman Times

November 15, 2008 06:56 pm

— By Trent Moore
Staff Writer
DODGE CITY — Once he retired and moved to Smith Lake, local resident John Kulbitskas said he wanted to do whatever he could to ensure the lake continued to be a great place to live.
"I've always been interested in water quality, so after I retired and moved to the lake I wanted to stay involved," he said.
Kulbitskas is among a few dozen local clean water enthusiasts who volunteer their time through various local groups to keep tabs on the lake's water quality and make-up.
"This is part of my continued involvement," Kulbitskas said. "This way we can keep an eye on the lake and raise flags if something isn't right."
Many of the local monitoring groups came together Saturday morning for the 12th annual State of the Lake meeting, where experts from the Alabama Water Watch present findings gathered from the group's data.
"It's amazing these people care enough about their water to come out early on a Saturday morning and work together," Director of the Alabama Water Watch Program Bill Deutsch said. "These Smith Lake groups are some of the only ones that have us come out every year."
Deutsch said participation from the general public in water monitoring has increased quite a bit in the past few years, noting part of the reason is simple.
"Groups are training a lot of new monitors and there is a lot of new blood getting involved," he said. "The drought has really gotten a lot of people interested ... because when water's low, we really notice how precious it is."
In and around the Smith Lake area alone, there are approximately 36 volunteer water monitors.
Eric Reutebuch, also with Alabama Water Watch, gave an update and overview of the quality and issues affecting Smith Lake.
"These groups gather together large amounts of data," he said. "When put together, we're able to find decade long trends."
From all of the compiled data, Reutebuch said information about tributaries feeding into the lake is extremely important.
"Stream water quality is very important to monitor, because we will see pollutants entering a lake much sooner there," he said.
Reutebuch said some streams feeding into Smith Lake have shown an increase in E. coli recently, which can become dangerous if high levels continue.
"We've noted some high E. coli in places, which is often caused by heavy rain and things washing into the stream," he said. "It is something that should continue to be monitored."
Though there are some minor concerns, Reutebuch said the overall quality of the lake is actually quite good.
"The clarity level is increasing at the (Smith Lake) dam," he said. "That is indicative of a very clean lake ... and pretty darn good water."
More information about Alabama Water Watch can be found online at https://aww.auburn.edu.

‰ Trent Moore can be reached by e-mail at trentm@cullmantimes.com, or by telephone at 734-2131, ext. 225.

Cullman Times News November 16, 2008

Cullman Times Front Page 11-16-08

SMITH LAKE

Water monitoring enthusiasts meet for 'State of the Lake'

By Trent Moore
Staff Writer

DODGE CITY — Once he retired and moved to Smith Lake, local resident John Kulbitskas said he wanted to do whatever he could to ensure the lake continued to be a great place to live.

"I've always been interested in water quality, so after I retired and moved to the lake I wanted to stay involved," he said.

Kulbitskas is among a few dozen local clean water enthusiasts who volunteer their time through various local groups to keep tabs on the lake's water quality and makeup.

"This is part of my continued involvement," Kulbitskas said. "This way we can keep an eye on the lake and raise flags if something isn't right."

Many of the local monitoring groups came together Saturday morning for the 12th annual State of the Lake meeting, where experts from the Alabama Water Watch present findings gathered from the group's data.

"It's amazing these people care enough about their water to come out early on a Saturday morning and work together," Director of the Alabama Water Watch Program Bill Deutsch said. "These Smith Lake groups are some of the only ones that have us come out every year."

Deutsch said participation from the general public in water monitoring has increased quite a bit in the past few years, noting part of the reason is simple.

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LAKE

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"Groups are training a lot of new monitors and there is a lot of new blood getting involved," he said. "The drought has really gotten a lot of people interested ... because when water's low, we really notice how precious it is."

In and around the Smith Lake area alone, there are approximately 36 volunteer water monitors.

Eric Reutebuch, also with Alabama Water Watch, gave an update and overview of the quality and issues affecting Smith Lake.

"These groups gather together large amounts of data," he said. "When put together, we're able to find decade long trends."

From all of the compiled data, Reutebuch said information about tributaries feeding into the lake is extremely important.

"Stream water quality is very important to monitor, because we will see pollutants entering a lake much sooner there," he said.

Reutebuch said some streams feeding into Smith Lake have shown an increase in E. coli recently, which can become dangerous if high levels continue.

"We've noted some high E. coli in places, which is often caused by heavy rain and things washing into the stream," he said. "It is something that should continue to be monitored."

Though there are some minor concerns, Reutebuch said the overall quality of the lake is actually quite good.

"The clarity level is increasing at the (Smith Lake) dam," he said. "That is indicative of a very clean lake ... and pretty darn good water."

More information about Alabama Water Watch can be found online at https://aww.auburn.edu.

TRENT MOORE/THE CULLMAN TIMES

Director of the Alabama Water Watch Program Bill Deutsch speaks with a group of local water monitoring enthusiasts at the Dodge House Restaurant Saturday for the 12th annual State of the Lake meeting.

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The Blount Countian Newspaper December 3, 2008

ABOUT PEOPLE

Life in the real world good teaching tool

special to The Blount Countian

Face it: book learning isn't very exciting, but expanding it to life in the real world imbues it with value. Educators pictured here joined others from Mobile to Huntsville to take advantage of a free, three-day environmental course at Camp McDowell called "Living Streams" to bring meaningful, hands-on enriching education opportunities to Blount County students. Not only were room and board free to the educators; provision was made for their substitutes' pay.

Besides learning new curricula that promote learning through exploration and discovery, attendees also learned from experts about such topics as Alabama salamanders, Alabama's physical diversity and aquatic biodiversity, and biological monitoring of our streams. They hunted for salamanders, made kick seines, and got into the stream to collect and identify macroinvertebrates to determine stream health. At least as important as the information gathered and experiences to replicate with classes was the opportunity to share with other educators.

"I feel like we're on the Oprah Winfrey show!" exclaimed Deb Hicks after everyone received the complete Discovering Alabama DVD Series, Project Wet course book, Living Streams course book with accompanying educational DVDs with Macro Mania game, the acclaimed national bestseller, *Last Child in the Woods – Saving our Children From Nature-Deficit Disorder*, and more educational goodies – all for free.

Pictured at the 1100-acre outdoor classroom at McDowell Environmental Center near Jasper where they attended a three-day course are (from left) Darren White, science teacher from Hayden Middle School; Deb Hicks, teacher of the gifted at Oneonta Elementary; Brandon Maniscalco, science teacher, Hayden Middle; and Debra Gordon-Hellman, Friends of the Locust Fork River's education committee.

Other free courses on fossils and geology as well as a repeat of this course for elementary school teachers through high school will possibly be offered this summer. Contact McDowell Environmental Center at *maggie@campmcdowell.com* for more information.

Other sponsors helping to make this exciting, informative workshop possible were Alabama Water Watch, Legacy, Discovering Alabama, Sierra Water Sentinels, and the World Wildlife Fund.

Mobile Press Register March, 2009

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Device could help local water testing

Four water watch volunteer groups to use new meter to check streams

Monday, March 30, 2009

By GUY BUSBY

Staff Reporter

MIFLIN — Homer Singleton leaned over the rail of the Baldwin County 20 bridge lowering a black cylinder into the water of Sandy Creek south of Elberta.

Within seconds, numbers flashed on a handheld monitor's small screen, indicating the water's temperature, salinity, oxygen levels and other information.

"That would have taken 30 or 40 minutes before and there are some things you just about couldn't do," he said, and fed out more cable, dropping the probe deeper into the water. "Now look," he said.

The salt content of the water jumped from one part per thousand to 12, almost the level that would be found in nearby Perdido Bay. The oxygen reading dropped from 7 parts per million to 2.8.

The readings indicated that a wedge of salt water had pushed up from Perdido Bay, Singleton said. The salt water, heavier than the fresh in the creek, sank to the bottom. Standard test kits used by volunteers around Alabama for the most part can only check samples at the surface, said Singleton, a volunteer with the Wolf Bay Watershed Watch for four years.

The new meter, officially designated a YSI 556 multiparameter instrument, is not only faster, but also more versatile, Stan Mahoney, Wolf Bay executive director, said.

The current testing method approved by the Alabama Water Watch requires water samples to be taken from the streams or lakes. Using chemicals and instruments in the test kits, different samples are checked for features such as acidity, alkalinity and other factors, Mahoney said.

"It's kind of a quantum leap forward," Mahoney said of the meters. "It gives us a 3-D capability that we didn't have before."

Mahoney said a volunteer using the new device can also test more areas more rapidly, a capability that would be useful if the group was trying to track changes as the water flowed downstream.

Four grassroots organizations in Baldwin and Mobile counties have the monitors through a grant with the Mobile Bay National Estuary Program, said Tom Herder, MBNEP director. The Dog River Clearwater Revival, Little Lagoon Preservation Society, Weeks Bay Foundation and Wolf Bay Watershed Watch bought the devices with funds provided by the Environmental Protection Agency.

Four water watch volunteer groups to use new meter to check streams

The units usually cost about $3,000 each, but YSI officials gave the groups a 25 percent discount, bringing the cost to slightly more than $10,000 for four, Herder said.

"We had a chance to get these and these four (groups) stepped up," he said. "These four are all go-getters."

Members of the four groups met this month with YSI representatives for a training session on the new instruments at the Weeks Bay Estuarine Research Reserve.

Volunteers were shown how to use the devices and had a chance to practice in the waters of Fish River, said Monica Kieffer of the Dog River Clearwater Revival.

"I'm very excited," Kieffer said.

"The sites that I test are fresh water, so I don't need the salinity test, but some of our people could use that when we train more people to use it and it's good that it allows us to do more, like test deeper down in the water."

While the YSI meter is useful, tests will still also have to be done with the older system to make sure that information recorded is consistent with statewide data from the last 17 years, Bill Deutsch, director of the Alabama Water Watch, said.

The EPA approved the current system after determining that the tests met strict federal requirements, Deutsch said. He said officials will have to see how the meter readings compare over a period of time before allowing the data to be included.

"We have 55,000 records taken around the state using those strict protocols," Deutsch said. "To have other data mixed in could lead to confusion."

Since the program began, tests of 750 bodies of water have been conducted at 2,000 sites around Alabama. The information forms a data base to show which streams are becoming more polluted, which are improving and which have not changed, he said. If residents or officials become concerned that a waterway might have been polluted, the past information gives them a standard to which new information can be compared.

Deutsch said the meters are faster and more useful in checking changes in temperatures, oxygen levels and salinity changes in different depths. The electronic devices, however, must be care fully calibrated to ensure accuracy. He said one solution could be to allow metered data to be entered in a separate category, under comments in the reports. After a year, officials could check results of the two testing methods to see if the systems are compatible, he said.

Dothan Eagle, September 2009

dothaneagle.com
DOTHAN EAGLE Dothan, Alabama

Choctawhatchee River bugs show quality of water

Photo

Amanda Saad, left, and Jerry Lurie, right, test water samples Saturday afternoon on the bank of the Choctawhatchee River. The two were part of a group being trained to monitor the river.

Max Oden / moden@dothaneagle.com

By MATT ELOFSON

Published: August 29, 2009

Saad learned the bug life in the river water could show the quality of the water at a workshop coordinated through the Alabama Water Watch Association or Choctawhatchee Riverkeeper Inc. The training was split up into several hours in a classroom setting at the Ozark Dale County Library on Saturday morning and was topped off with a hands-on experience in the Choctawhatchee River.

"I'm trying to do my part, just learning, educating myself on what's in the water," said Saad, a student at Wallace Community College. "What part I can do to help."

Michael Mullen, the class instructor, said the local water quality training has helped solve some water problems, including one man who discovered a high level of bacteria in the creek on his Klondyke property.

The group of five, including Mullen, found a variety of water life in the river, including dragon flies, small clams, may flies and riffle beetle.

"I violated the rule. If you get too much debris, then it's hard to find the bugs," Mullen described as he used a net to swipe up water life. "I found a good number of may flies. That's a sign you have fairly good water quality."

Mullen called the bank of the Choctawhatchee River, where the group held their water bug examination underneath Highway 27 in Dale County, a less than ideal place for testing water quality because it's heavily used for swimming and fishing along with other various activities.

"The primary goal is to collect valid water quality data," Mullen said. "We always think of Alabama has being behind, but Alabama is the first state to use citizen data in it's report to congress."

Linda Westphal of Newton said she was also interested in river preservation, including keeping trash off the banks of the river.

Both Westphal and Helen-Sue Kemp attended Saturday as part of an advanced water smart master gardner course.
"I just wanted to learn more about it (the river)," Westphal said. "There's a little water fall right down there that's just beautiful. There are all kinds of hidden treasures around here."

Alabama School Journal, April 2009

Legacy announces summer workshops

Living Streams and Growing Roots Workshops offered again this summer through Legacy

Have you ever longed for an opportunity to connect your students with nature? Wanted a way to teach them in a hands-on way about the waters around us and the creatures that make the streams their home? Even more importantly, have you wished you knew how to connect your own child with nature?

Today, we hear so much about "Nature Deficient Disorder" in children, but in actuality, most of us are suffering from this in one way or another. We rarely take long walks in the woods or linger by a stream to watch for wildlife. Few teachers today are comfortable enough in the woods to even consider taking their class of students on a nature adventure. Come learn how to make this happen for you and the students you teach!

Teachers get on-site explanations (above top) and wade in (above bottom) for hands-on experience at Legacy summer workshops in 2008.

Legacy, Partners in Environmental Education, the McDowell Environmental Center, and Alabama Water Watch are partnering to bring two great workshops to teachers again this summer – Amazing Living Streams Teacher Workshop and Growing Roots Workshop.

The Living Streams Workshop will be held June 17-19, 2009, at Camp McDowell near the Bankhead National Forest. All expenses, including two nights lodging and meals, will be covered for participants.

The workshop will certify educators in the Living Streams curriculum created by the scientists of Alabama Water Watch at Auburn University. Participants will wade in beautiful Clear Creek where they will learn lessons on the invertebrates and fish that live in local Alabama waters. They will explore the sandstone canyon walls searching for salamanders. Teachers will also be introduced to the beauty of Alabama's waterways and some of the issues that are affecting them in today's society.

The Growing Roots: Connecting Educators and their Children to Nature Workshop will be held June 8-10, 2009, at Camp McDowell near the Bankhead National Forest. All expenses, including two nights lodging and meals, will be covered for participants.

The workshop will allow a limited number of educators to bring their own child or grandchild on a once in a lifetime journey that will include hikes to learn edible and medicinal plants, geology lessons, and fossil digs at the Minkin Paleozoic Trackway. Participants will combine nature and art through pottery. Trips to wade and swim in beautiful Clear Creek will include lessons on the invertebrates and fish that live in our local Alabama waters.

All of this adventure and learning is set against the backdrop of the beauty of Camp McDowell's 1,100 acres of forests, sandstone canyons, streams, and waterfalls. Come join the fun and get reconnected to nature.

McDowell Environmental Center (MEC) is an AMSTI affiliate. Third-year AMSTI teachers can receive credit for attending one of the MEC teacher workshops. For more information or to register for the workshop, e-mail Maggie Wade Johnston, director of McDowell Environmental Center, at maggie@campmcdowell.com or call 205-387-1806.

The Birmingham News, June 2009

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al.com LOCAL NEWS
Tuesday, June 9, 2009 [SECTION B]
COMMUNITY NEWS 3B | STATE BRIEFS 4B | WEATHER 4B

NEWS STAFF/EMMA TANNENBAUM

Marty Schulman with Alabama Water Watch gathers water samples at Roebuck-Hawkins Park, one of the few homes of the highly endangered watercress darter.

Endangered darters struggling to rebound

By KATHERINE BOUMA
News staff writer

Endangered fish that survived the September destruction of their pool in Roebuck-Hawkins Park are not spawning normally this spring, scientists say, although the pond structure has been fully restored.

Scientists from the University of Alabama found half as many darters this spring as in past years in the pond, which was drained last fall after a Birmingham recreation center supervisor ordered the destruction of a dam.

The low population was not a surprise, said Bernie Kuhajda, research biologist at the University of Alabama and one of the state's top fish experts. About half the fish died last September and their grassy underwater habitat dried out

See DARTER | Page 2B

Schulman holds up a tank containing a watercress darter. The fish are 1 to 1.8 inches long, and brilliantly blue, bright red and orange.

DARTER: Population down by half

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and died.

But scientists are alarmed, he said, by seeing only half as many juveniles as in a normal year. The problem, he believes, is at the bottom of the food chain.

"Aquatic insects or small snails that are their food base live in the vegetation that was destroyed," he said. "They just haven't been able to produce the eggs."

The watercress darter is one of the most endangered fish in the nation, known to survive naturally in only four spots, all of them in the Birmingham area. It is 1 to 1.8 inches long, colored brilliantly blue, bright red and orange.

The city is testing water regularly, as is a nonprofit group that already had a water quality program in place. A nearly tamper-proof dam was specially designed for the rehabilitated pond, said Eric Spadgenske, biologist for the U.S. Fish and Wildlife Service in Birmingham. "Right now the water is at a very stable, controlled level," Spadgenske said.

Mayor Larry Langford has said the city was wrong to tear down the dam and drain the pond last September. The day the destruction was discovered by federal scientists, the city worker said she did the work on her own authority because the pond had been flooding nearby tennis courts.

She said she knew about the fish, which are noted by signs around the park warning against pesticide use near the water. But she said she did not know she needed federal permission to alter or destroy their habitat. The work left a small pool and muddy flats covered in dead vegetation and animals.

The U.S. Fish and Wildlife Service and the city of Birmingham's lawyers and officials have declined to discuss their private talks or if there will be repercussions for the deaths of the estimated 12,000 fish. However, federal biologists and city workers immediately began quietly cooperating to restore the darter habitat.

Kuhajda said the pond is a fine restoration of its September structure. The pond had already been altered sometime before the protections of the 1973 U.S. Endangered Species Act.

He said the rehabilitated pool falls short of his hopes that the city would make extensive alterations to the pond and park to restore the natural order, so the fish could mingle with fish in the lower springs through a free-flowing stream or series of outlets from the pond.

If the populations could again mingle, they could restore some of the genetic diversity that helps protect animals against changes in temperature, food supply and other small life variations.

The population will probably get bigger as the fish reproduce, but any genes lost are gone forever, he said.

Scientists say that at one time all the Jefferson County populations of the darters were connected, but now they are linked only by waterways too polluted and altered for them to meet each other and mingle.

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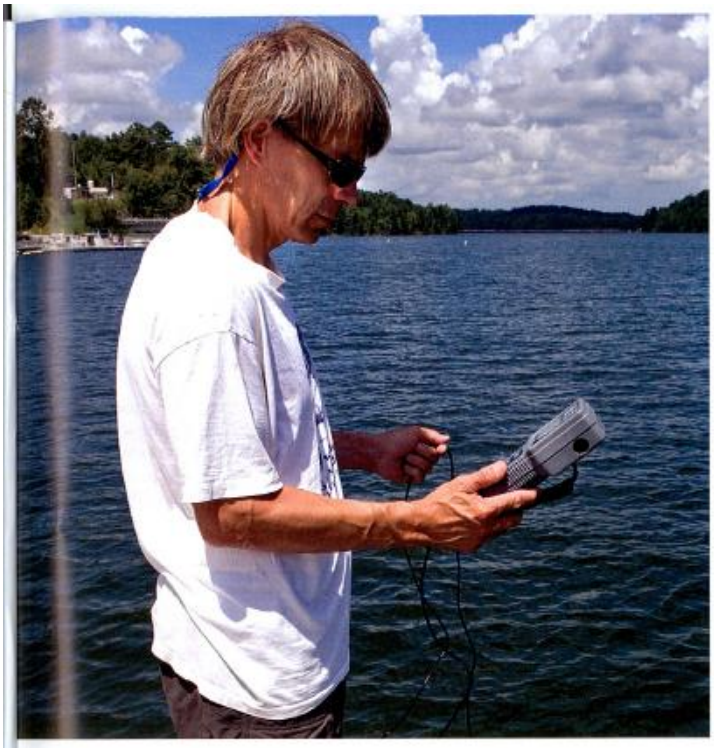
LAKE (Lake Martin), September 2009



Left: Biologist Shawn Jacobsen volunteers his time to test for oxygen levels in Lake Martin.

Relicensing Update

Many groups working together for lake's future

STORY BY KATIE COLE
& PHOTOS BY KENNETH BOONE

With the current Martin Dam license set to expire in four short years, Alabama Power Company has become a greater than usual presence on Lake Martin – conducting research and holding public meetings about the lake.

APC must request a new operating license from the Federal Energy Regulatory Committee (FERC) by June 2011, two years before the current license expires. The company has been meeting with stakeholders – groups and individuals concerned about the lake – creating study plans and collecting data to determine what changes need to be made to the current license and the consequences of those changes.

"The operating license contains numerous requirements, not only about the generation of the plant but also for other stakeholders and recreation," said Jim Crew, APC's relicensing project manager.

The new license will be in effect for up to 40 years, which is why the process is so thorough.

"The official process starts three years prior to the license expiring," Crew said. "(Those) three years are really not long enough, so we took it upon ourselves to start in January 2007."

Alabama Power must balance its own interests with Lake Martin stakeholders on a local, state and national level. In addition to FERC, APC has worked with the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the Alabama Department of Conservation and Natural Resources, the Alabama Department of Environmental Management, the Auburn Fisheries Department and the Alabama Historical Commission.

APC has addressed local concerns by periodically meeting with stakeholders at Martin Interest Groups (MIGs) meetings in Alexander City. There are six divisions of MIGs – Fish and Wildlife, Water Quality and Quantity, Project Operations, Shoreline Management, Recreation, Cultural Resources – and all of the meetings are open to the public. Local stakeholders include businesses, individuals or organizations affected by the new license. Anyone who has an interest in Lake Martin is a stakeholder, including people who own land around the lake or use the lake for activities like boating or fishing. Some of the most involved stakeholder organizations include Russell Lands, Lake Watch, Lake Martin Resource Association (LMRA) and Lake Martin Home Owners and Boat Owners Association (HOBOs).

The study plans vary as widely as the groups that requested them. Water quality, additional boat ramps, endangered species, wildlife management, shoreline erosion, operational issues, reservoir levels and land use are just some of the issues the power company is examining.

How to get involved

For more information about the Martin Dam and the relicensing process, visit http://www.alabamapower.com/hydro/martin.asp. Alabama Power has a general email list that sends updates about the project and separate lists for each of the MIGs. To receive information about MIGs or other public meetings, contact Viki Pate at vjpate@southernco.com and request to be put on an email list.

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Relicensing Update

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"Obviously when you don't do this but once every 30, 40, 50 years there's a lot to address," Crew said. "The first hurdle was finding out how many and which study plans to do. The second hurdle was to get (the plans) approved by FERC. Now we're implementing them."

For most local stakeholders the biggest concerns are lake quality and quantity, and they have partnered with APC to conduct several studies that assess the quality of water and the impact a higher winter pool or an extended summer pool would have on the economy and the environment.

Currently APC begins lowering the lake level around Sept. 2 and it reaches its winter level of 480 feet by Jan. 1. The lake begins rising again in mid-February and returns to 490 feet by the end of April.

"If we are able to get the winter level raised (to 486 feet), that would increase the utilization of the lake and help the economy of the lake," HOBOs president Jesse Cunningham said. "Right now, it's a lake people use from the beginning of May to the end of September, so raising the pool level would make it more economically viable."

LMRA, while interested in a raised winter pool, would also like to see the spring shoulder season moved up and the fall shoulder season delayed each by a month.

"If the power company agrees, that would give us 62 percent more full pool days," LMRA president Charles Borden said. "The fall is beautiful up here and people enjoy getting their boats out on the water."

For Lake Watch, the main concern is water quality. APC is performing a study that will update a previous study done by the Auburn Fisheries Department five years ago.

"We thought it would be a good time under the relicensing to revisit the same sites and see what's changed in the last five years," said Lake Watch president Dick Bronson. "I think it will show a clean lake, almost a pristine lake, but with future threats from erosion, septic tanks, waste."

Of course, the studies must examine all sides of a proposed change in the license. How will a higher winter pool affect the fish populations in Lake Martin? Should additional bridges or causeways be built if they restrict boat access?

Making a decision about any of these issues is a daunting task, especially when the new license will last for up to 40 years. For that reason, an adaptive management plan may be built into some of the parts of the license.

"What we do is we look at a particular issue and we build into the process the opportunity to come back and revisit some areas and see if anything needs to be changed," Crew said.

Right now, APC is collecting data for about 22 different study plans, and preliminary results should be available for some of these plans before the year's end. Most of the reports should be complete by April 2010, and APC will then present the data and its interpretation of the data to all interested stakeholders. The stakeholders will have a chance to make their own suggestions about what the findings mean and how the reports should affect the license.

"When we start getting all of the data in after the first season, we immediately notify all of our shareholders," Crew said. "It's a negotiation at that point. It's an interpretation of data."

The FERC licensing process includes a second round of studies in case more information is needed after the 2009 round, an option APC would like to avoid, if possible, because the FERC timeline is so exact.

The new license application must be filed by June 8, 2011. Until then, APC will continue to work with Lake Martin stakeholders to ensure it stays clean, profitable and accessible.

"There is a very active group on Lake Martin and that really leads to success," Crew said.

Eric Reutebuch research associate with Alabama Dept. of Fisheries uses a secchi disk to determine visibility in Lake Martin. He slowly lowers the black and white disk into the water and measures how deep it goes before it disappears from view