



# **Growing Sustainably in Athens-Clarke County II**

## ***Progress Report and Further Recommendations from Local Environmentally Concerned Citizens' Organizations***

**Athens Grow Green Coalition**

**Oconee River Land Trust**

**Athens Land Trust**

**Oconee Rivers Audubon Society**

**ACC Community Tree Council**

**Oconee Rivers Greenway Commission**

**Athens-Clarke Heritage Foundation**

**Sandy Creek Nature Center, Inc.**

**BikeAthens**

**S.E.E.D.S.**

**Upper Oconee Watershed Network**

***September 2004***

# **Growing Sustainably in Athens-Clarke County II: Progress Report and Further Recommendations**

## **INTRODUCTION**

In January, 2003, thirteen local environmentally concerned citizens' groups presented the Mayor and Commission with *Growing Sustainably in Athens-Clarke County*, a document that outlined the principal environmental issues facing the county and recommended priority actions for addressing these problems. In February, 2004, representatives of the groups reconvened to report on the status of those issues and actions and to discuss new environmental issues that have appeared over the course of the year. We are very pleased to report that the Mayor, Commission, and ACC professional staff have made remarkable progress in implementing the priority recommendations over the course of 2003, along with numerous other actions suggested in the report.

## **PROGRESS**

The *Growing Sustainably* document contained a list of seven priority actions the groups felt were most critical to the continued environmental and economic health of Athens-Clarke County. Of the seven priority issues, all have either been accomplished or are in process:

### ***Recommended Priority Actions Accomplished:***

**Create a new position to coordinate all ACC environmental activities.** The Mayor & Commission approved the ACC Environmental Coordinator position and Dick Field, former chair of the Oconee Rivers Greenway Commission, was hired and began work in January 2004.

### ***Recommended Priority Actions Now in Process:***

**Enforce all laws and ordinances.** The Mayor and Commission addressed this issue by reorganizing ACC enforcement personnel into the new Community Protection Division and by staffing the department with eleven personnel, including an administrator with experience in environmental issues. In its four months of operations, the CPD has issued four times the number of citations that were handed out over a similar period in 2003. In addition, the ACC Police Department has announced that it will begin to rigorously enforce the state law giving pedestrians in crosswalks the right of way. While that is a hopeful measure, improved traffic enforcement should be a continuing priority.

**Amend, update, or create ordinances to protect sensitive natural resources.** The Mayor and Commission appointed a citizen Stormwater Advisory Committee to update the Environmental Areas Map and associated Environmental Areas Ordinance, and voted to temporarily extend 75-foot riparian buffer protection to all streams within ACC while the Stormwater Advisory Committee completes its work. This committee is also working on updates to the stormwater management ordinance, to include provisions for water quality and stream channel protection, as well as updates to the Erosion and Sediment Control Ordinance to comply with state law. The Mayor and Commission recently adopted an ordinance put forward by the Water Conservation Committee to prevent the water wasting through a system of fines. The Water Conservation Committee continues

to work on further water conservation measures, including a revision of the ACC drought contingency ordinance, an irrigation ordinance, and a new water pricing system. The Community Tree Council is also working on tree protection ordinance language. In addition, new conservation subdivision regulations offer an improvement by mandating both the identification and the protection of environmental areas and significant natural resources.

**Establish dedicated funding mechanisms for effective stormwater management.** The Mayor and Commission voted to hire a consultant to develop a Stormwater Utility Program to provide a source of funding to support stormwater management programs. The Stormwater Advisory Committee has reviewed rate structure options for the utility, and is in process of reviewing other elements and is expected to bring forth a recommendation to the Mayor and Commission in the near future.

**Amend ACC Zoning and Development Standards.** The Mayor and Commission directed the Planning Department to work with stakeholders to develop new conservation subdivision regulations, which the Commission adopted in October. The new regulations: require permanent protection of open space and that only buildable land be included in density calculations; improve site design standards, especially regarding erosion control and tree canopy protection; and reduce densities in rural areas to reflect the Comprehensive Land Use Plan. The Planning Department has been directed to consider incorporating some of these design standards into other zones.

**Designate Downtown Athens as a Local Historic District.** The Mayor & Commission have appointed a committee which has been meeting regularly over past months to build a consensus on downtown designation.

**Adopt Transferable Development Rights (TDRs) as a part of ACC Zoning and Development Standards.** The Planning Department was awarded a grant from the Georgia Department of Community Affairs to work with the UGA Alliance for Quality Growth to conduct a TDR feasibility study for ACC; results of that study are expected in September.

### ***Other Accomplishments***

Other important accomplishments of the past year include actions affecting nearly all of the environmental issue areas identified in the *Growing Sustainably* document:

- Creation of a Water Conservation Committee
- Creation of Stormwater Advisory Committee
- Completion and adoption of Greenway Network Plan
- Adoption of open burning ban
- Adoption of bicycle lane standards
- Adoption of crosswalk standards
- Re-incorporation of Prince Avenue into Bicycle Master Plan
- Publication of Mayor & Commission meeting minutes on the ACC website
- Approval of innovative stormwater management design for Lumpkin Street
- Approval of rezoning request to allow construction of People of Hope mobile home community, a new model in affordable housing.

## SUMMARY OF PRINCIPAL ENVIRONMENTAL ISSUES

Despite the hard work of ACC elected officials and staff in these areas, environmental challenges persist.

1. **WATER QUALITY** is degraded by erosion and sedimentation from land disturbing activities, urban stormwater, run-off, stream erosion, illegal commercial, industrial and residential dumping, and leaks/failures in private septic and public wastewater treatment and distribution systems.
2. **WATER SUPPLY** is threatened by poor water quality, waste, and the lack of an effective and fair system for allocating limited water resources.
3. **AIR QUALITY** is degraded by increased auto emissions due to more cars traveling longer distances and idling in more traffic jams, by minimal standards for commercial and industrial emissions, and by open burning.
4. **NATURAL AREAS** are degraded or eliminated by development, with a resulting reduction of tree canopy, diminishment of wildlife habitat, loss of natural beauty, and endangerment of environmental resources such as riparian areas and rare or endangered plants. Increased noise and light pollution contribute to natural area degradation and create a more stressful environment.
5. **URBAN ENVIRONMENTS** in Athens-Clarke County are deteriorating, reducing the health and safety of residents and creating a desire to move to undeveloped rural areas. Infrastructure improvement plans encourage sprawl rather than urban redevelopment. The appealing character of the old urban area is threatened by poor design of new development, the loss of historic structures, and nuisance issues. Abandoned commercial and industrial buildings blight many urban areas.
6. **URBAN PARKS** and **OPEN SPACES** are insufficient.
7. **AFFORDABLE HOUSING** near employment areas is in decline and contributes to environmentally unsound sprawl development.
8. The **PUBLIC'S VISION** is not being articulated and enforced by public policy.
9. **PUBLIC PARTICIPATION** in the government process is hampered by a need for public education and a lack of ready access to public information.
10. **COORDINATED REGIONAL PLANNING** is lacking and allows the actions of neighboring jurisdictions to undesirably impact Athens-Clarke County.

## RECOMMENDED PRIORITY ACTIONS FOR 2004

Our new list of priority actions reflects the need to continue work that has been well begun, and to start work on some issues that have not yet been addressed.

**Create a new position in the Planning Department** to increase the Planning Department's capacity for urban and/or environmental planning. As Athens continues to grow, conflicts will arise more frequently between the development community and neighborhood and conservation advocates. An urban or environmental planner would allow the Planning Department to work proactively with developers and citizens to coordinate designs that are compatible with ACC's long range plans and community vision.

**Use consistency with the Comprehensive Land Use Plan to guide all re-zoning and variance decisions and infrastructure planning.**

**Improve water resources protection.** Make sure that sewer repair and maintenance continues to be undertaken immediately when necessary. Provide support for proactive efforts to prevent sewer line failures, such as adopting an ordinance requiring proper maintenance of commercial grease traps. Adopt an ordinance prohibiting illicit direct discharges to streams. Adopt a dumpster placement and covering ordinance to prevent rainwater flowing through them directly into streams. Establish a public education program about proper septic system maintenance, and explore the possibility of setting up a septic utility. Strengthen development plan review standards to minimize erosion, specifically to minimize cut and fill by requiring a minimum clearcut size, and to establish limits for clearing on steep slopes; and strictly enforce erosion and sedimentation regulations. Create a position for post-construction Best Management Practices enforcement in the Transportation and Public Works department, and hire more enforcement officers for Erosion and Sedimentation (E&S) control. Improve coordination between building inspection and E&S control enforcement; link receipt of certificate of occupancy with E&S control compliance. Update the Environmental Areas map and ordinance to include all perennial streams. Amend stormwater ordinance to include provisions for water quality and channel protection. Amend Floodplain Protection Ordinance to include provisions for limiting development in natural floodplain areas. Adopt comprehensive water conservation measures.

**Encourage the efficient enforcement of existing laws and ordinances.** Traffic enforcement should be a top priority for ACC. The new Community Protection Division should expand work to aid the E&S permit compliance officer, the Environmental Coordinator, and other Transportation and Public Works and Planning staff responsible for E&S control. Enforcement of development regulations (*e.g.* tree protection, E&S control, stream buffer protection) would improve protection of natural resources, increase public safety, and promote the quality of life for ACC residents. Consistent enforcement would also provide certainty for the regulated community, thus decreasing the likelihood of challenges to existing regulations.

**Amend Zoning and Development Standards to protect natural resources and promote affordable housing.** This involves (1) incorporating tree protection policies into all applicable sections; (2) adapting and extending the environmental protection aspects of the new conservation subdivision regulations to the rest of the Zoning and Development Standards; (3) incorporating development standards to minimize erosion; and (4) adding an inclusionary zoning requirement to improve the supply of affordable housing.

**Establish dedicated funding mechanisms for effective stormwater management.** Establish a Stormwater Utility Program as recommended by the Stormwater Advisory Committee.

**Designate downtown Athens as a Local Historic District.** Develop design guidelines for new construction, historic rehabilitations, demolition, and possible other areas.

**Develop Transferable Development Rights (TDR) program.** Appoint a Citizen Stakeholder Committee to work with the results of the UGA Alliance for Quality Growth's TDR feasibility study to develop a TDR program tailored to ACC's needs and circumstances.

**Develop a policy to promote the remediation and redevelopment of brownfield sites.** Recent changes in state law make brownfields more attractive to developers, but more incentives are often necessary to encourage their redevelopment. The reuse of these sites would have many positive environmental, financial, historic preservation, and social impacts, including reducing development pressure on previously undeveloped open space, revitalizing currently blighted urban areas, and encouraging businesses to locate in areas already served by infrastructure.

**Provide improved access to public meetings and documents.** Accomplish by publishing documents (detailed agenda items, proposed plans, roadway designs, etc.) in PDF format on ACC website; videotaping Planning Commission meetings, Commission work sessions and public input sessions; and archiving videotapes (including all regular and special sessions of the Mayor and Commission which are already taped) at the ACC Library.

**Tap UGA and community resources and expertise to aid in development and implementation of environmental policies and ordinances.** Create a regular system of involving experts from UGA for service on standing technical committees or for specific projects. Partner with UGA social sciences departments to improve public involvement, particularly involvement by minority communities, and to empower stakeholders in more urbanized areas of the county.

## DETAILED ISSUES AND RECOMMENDED ACTIONS

1. <b>WATER QUALITY is degraded by erosion and sedimentation from land-disturbing activities, urban stormwater, run-off, stream erosion, illegal commercial, industrial and residential dumping, and leaks/failures in private septic and public wastewater treatment and distribution systems.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
1.1 Improve enforcement of erosion and sedimentation ordinance by: <ul style="list-style-type: none"> <li>• Direction of staff</li> <li>• Education of the judiciary</li> <li>• Hiring of more enforcement personnel</li> <li>• Increasing use of stop work orders orders when obvious and avoidable water quality violations have occurred</li> <li>• Improving inter-departmental coordination to avoid issuance of certificate of occupancy until sites are stabilized</li> <li>• Encouraging public involvement by implementing programs to train and involve volunteer groups in monitoring and violation reporting efforts</li> </ul>	Policy Budget	One additional E&S enforcement staff position filled; the new E&S ordinance facilitates the use of stop work orders.	Additional enforcement still needed.
1.2 Amend erosion and sedimentation ordinance to include provisions for more effective enforcement actions: <ul style="list-style-type: none"> <li>• Increase fines and bond forfeitures</li> <li>• Increase inspections and monitoring</li> </ul>	Policy Ordinance	Little change in new E&S ordinance adopted June 1 – state law limits the amount of fines and monitoring that can be required.	
1.3 Improve site design standards to prevent erosion and sedimentation by: <ul style="list-style-type: none"> <li>• Minimizing the allowable cut-and-fill by requiring that the natural contours of the site be maintained and by establishing a maximum slope that can be developed</li> <li>• Practice and support actions for improved stormwater management and increased stream buffer protection, particularly for smaller streams</li> <li>• Require minimization of site disturbance</li> </ul>	Ordinance	E&S Ordinance has provisions for phasing-in to reduce some site disturbance. Stormwater Ordinance has increased SW management and stream protection.	Accelerate process. Consider including cut-and-fill and slope protection to the Zoning and Development Standards (state's new E&S ordinance prevents stronger cut-and-fill and slope protection in local E&S ordinances.)

1. WATER QUALITY, cont.	Type of Action	Action Taken	Action Needed
1.4 Resurrect citizen review board at conceptual planning phase	Policy	Stormwater ordinance adopted June 1 requires a concept plan and meeting prior to preliminary plans review.	
1.5 Develop a Citizen Soil Watch Program with local environmental groups	Policy	Progress made in drawing up Memorandum of Understanding with UOWN.	Program still to be implemented
1.6 Support effective implementation of the new ACC Stormwater Management Plan, which deals with water quality issues as required by NPDES Phase II	Policy Ordinance Budget	Citizen Stormwater Advisory Committee appointed; additional stormwater management staff hired; new stormwater ordinance developed and adopted June 1.	More public education and outreach needed
1.7 Amend stormwater management ordinance to include provisions for improved water quality and channel protection	Ordinance	Included in stormwater ordinance adopted June 1.	
1.8 Amend stormwater management ordinance to include post-development stormwater management performance criteria and long-term maintenance and inspection provisions	Ordinance	Included in stormwater ordinance adopted June 1.	
1.9 Create a Stormwater Utility or equivalent dedicated funding source for the ACC Stormwater Management Program	Policy Ordinance Budget	In process; consultant hired to design Utility; methodology developed and approved by SAC; public education underway.	To be voted on in November 2004

<b>1. WATER QUALITY, cont.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
1.10 Follow the “Better Site Design” standards promulgated by the Center for Watershed Protection to improve stormwater management	Policy Ordinance	Included in stormwater ordinance adopted June 1.	Changes still needed to Zoning and Development Standards.
1.11 Encourage the use of permeable surfaces in site development	Policy Ordinance	Demonstration projects at SE Clarke Park and Athens Transit lot	Incentives for developers needed.
1.12 Curb improper use of storm drains by adopting an illicit discharge and illegal connection ordinance	Ordinance	Included in ACC Stormwater Management Plan; understand it will be developed at some point.	Develop and adopt illicit discharge and illegal connection ordinance.
1.13 Educate the public on the importance of keeping waste out of stormwater drains	Budget	ACC Stormwater Management staff are developing a stormdrain decal project	Need to implement educational efforts.
1.14 Encourage UGA to respect countywide 75 foot buffer and to seek review of designs which impinge upon the buffer. For example, stormwater management to compensate for building footprint within the buffer.	Policy	None yet (new recommendation)	Implement recommendation.
1.15 Implement a grease trap ordinance to protect against illegal dumping of grease into stormdrains and sewers.	Ordinance	New recommendation; Ordinance developed by Public Utilities	Adopt ordinance.
1.16 Amend Floodplain Protection Ordinance to include provisions for limiting development in natural floodplain areas.		None yet (new recommendation)	Assign Citizen Stormwater Advisory Committee to this task.

2.	<b>WATER SUPPLY is threatened by poor water quality, waste, and the lack of an effective and fair system for allocating limited water resources.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
2.1	Create a long-term comprehensive water management plan that includes: <ul style="list-style-type: none"> <li>• Regional water supply planning</li> <li>• A water billing structure that encourages conservation</li> <li>• Restrictions on commercial and residential water usage</li> <li>• Incentives to attract new businesses that provide quality jobs and have a low impact on natural resources</li> <li>• Public education for the conservation of water resources</li> </ul>	Policy Budget	Citizen water conservation committee appointed, water conservation ordinance adopted; ACC participated in the RDC regional water summit.	Implement conservation rate billing structure; conduct public education; continue regional planning efforts; improve enforcement of water use restrictions.

3.	<b>AIR QUALITY is degraded by increased auto emissions due to more cars traveling longer distances and idling in more traffic jams, by minimal standards for commercial and industrial emissions, and by open burning.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
3.1	Improve public safety by enforcing traffic laws and, where appropriate, reduce speed limits on main corridors and neighborhood thoroughfares	Policy Ordinance	ACC PD announced crack down on violators of crosswalk law.	Continuing priority; enforcement not living up to expectations.
3.2	Add red light cameras to major intersections	Ordinance	Demonstration project approved by Commission fall 2003.	

3. AIR QUALITY, cont.	Type of Action	Action Taken	Action Needed
<p>3.3</p> <p>Improve transit infrastructure by:</p> <ul style="list-style-type: none"> <li>• Supporting proposals to increase operating revenues for Athens Transit</li> <li>• Seeking implementation of a Metropolitan Transit Authority that would allow (with voter approval through referendum) a sales tax of one-quarter of one cent in order to eliminate fare box on buses</li> <li>• Forming a Transit Advisory Board made up of user group representatives</li> <li>• Continuing work with UGA to increase ridership, and work on similar agreements with large employers to allow free ridership.</li> </ul>	<p>Policy Ordinance Budget</p>	<ul style="list-style-type: none"> <li>• Athens Transit pursued MTA with state legislators</li> <li>• ACC received \$1.6 million for Multimodal Center enhancements through FY 04 Federal Transportation Appropriation Bill.</li> <li>• Bus Stop Improvement and Transit Vehicle Replacement projects on preliminary SPLOST 2005 list.</li> </ul>	<ul style="list-style-type: none"> <li>• Continuing efforts needed to increase Athens Transit operating budget, implement MTA legislation, form Transit Advisory Board, and increase ridership through institutional partnerships.</li> <li>• Approve transit proposals as part of SPLOST 2005.</li> </ul>
<p>3.4</p> <p>Improve pedestrian infrastructure by dedicating resources to:</p> <ul style="list-style-type: none"> <li>• Construct more crosswalks</li> <li>• Construct more sidewalks, particularly where they would network existing sidewalks and provide access to transit destinations, shopping, schools, etc</li> </ul>	<p>Ordinance Budget</p>	<ul style="list-style-type: none"> <li>• Sidewalk Improvement Project on preliminary SPLOST 2005 list</li> <li>• ACC crosswalk standards adopted Crosswalk standards adopted</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a sidewalk master plan</li> <li>• Direct more ACC capital fund resources for sidewalks and crosswalks</li> <li>• Approve sidewalk improvement proposals as part of SPLOST 2005.</li> </ul>

3. AIR QUALITY, cont.	Type of Action	Action Taken	Action Needed
<p>3.5 Improve biking infrastructure by:</p> <ul style="list-style-type: none"> <li>• Dedicating resources to the implementation of the ACC Bicycle Master Plan, including the setting aside of a portion of bike project funding to be dedicated to small projects involving restriping or minor construction</li> <li>• Re-integrating Prince Avenue into the Bicycle Master Plan</li> <li>• Encouraging the addition of bike parking facilities in commercial establishments</li> <li>• Attending to safety details such as positioning sewer grates perpendicular to traffic flow and lengthening the stripes that separate bike “areas” from the roadway</li> </ul>	<p>Policy Ordinance Budget</p>	<ul style="list-style-type: none"> <li>• High connectivity restriping and minor construction projects funded for FY 2004 and FY 2005</li> <li>• Prince Avenue put back into BMP</li> <li>• ACC Bicycle Lane standards adopted</li> <li>• Rail-Trail Project preliminary engineering and feasibility study funded and completed</li> <li>• ACC awarded TE funds of \$185 K for Rail-Trail Project</li> <li>• Multimodal Center enhancement funds directed toward acquisition of Rail-Trail ROW</li> </ul>	<ul style="list-style-type: none"> <li>• Direct more ACC capital fund resources for restriping and minor construction projects.</li> <li>• Re-direct some funds for locally funded projects in the MACORTS TIP toward bicycle/pedestrian uses.</li> <li>• Pursue Transportation Enhancement funding</li> </ul>

3. AIR QUALITY, cont.	Type of Action	Action Taken	Action Needed
3.6 Work with UGA to improve bike/pedestrian access to campus feeder streets including Lumpkin Street, Milledge Avenue, East Campus Road, College Station Road.	Policy Budget	<ul style="list-style-type: none"> <li>• ACC and UGA cooperation will result in bike lanes on Lumpkin Street and East Campus roads</li> <li>• FY 05 money designated for design of Milledge Avenue bike lanes</li> </ul>	Maintain regular contact with Office of the University Architects (for UGA Bicycle Master Plan) and the UGA Town-Gown Liaison
3.7 Develop public policies to apply stringent review to businesses that will contribute to air quality degradation.	Policy Ordinance		Implement recommendation.
3.8 Work with Economic Development Foundation and Chamber of Commerce to selectively attract businesses that provide quality jobs without depleting natural resources or reducing our quality of life	Policy		Implement recommendation.
3.9 Establish and enforce a permanent ban on open burning –	Ordinance	Open burning ban ordinance passed March 2003	
3.10 Participate in the Cities for Climate Protection program to help manage emissions	Policy		Implement recommendation.
3.11 Establish and enforce controls on demolition practices to protect the public from airborne particulate toxic materials as well as “fugitive” dust.	Ordinance Policy	New recommendation	Adopt ordinance to establish standards and practices for demolition, covering toxic materials and “fugitive” dust.

4. <b>NATURAL AREAS are degraded or eliminated by development, with a resulting reduction of tree canopy, diminishment of wildlife habitat, loss of natural beauty, and endangerment of environmental resources such as riparian areas and rare or endangered plants. Increased noise and light pollution contribute to natural area degradation and create a more stressful environment.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
4.1 Amend Site Design Standards to require identification <i>and</i> protection of all sensitive environmental areas (riparian buffers, springs, steep slopes, wetlands, etc.); include incentives for developers to protect to higher standards	Ordinance	Conservation Subdivision regulations revised to require protection of environmental areas in Conservation Subdivisions, passed October 2003; new stormwater ordinance also requires natural resources inventory.	Extend these protection requirements to all zones with specific changes as needed to make them applicable
4.2 Update Environmental Areas Map and Land Use Plan to include all perennial streams	Ordinance	75 foot buffer protection temporarily extended to all perennial streams; SAC working on permanent buffer regulations.	Make comprehensive 75-foot buffer protection permanent.
4.3 Deny rezonings and variances when significant environmental degradation would occur	Policy		Make sure that this information is included in plans review at all levels of decision-making (Hearings Board to Commission.)
4.4 Amend erosion and sedimentation ordinances to require best management practices for properties adjacent to floodplains or other sensitive environmental areas	Ordinance	E&SC ordinance amended, but doesn't specifically address these	Address through flood protection ordinance.

4. NATURAL AREAS, cont.	Type of Action	Action Taken	Action Needed
4.5 Improve site design standards to minimize site impact by: <ul style="list-style-type: none"> <li>• Minimizing allowable cut and fill (<i>see water quality issues, 1.a. above</i>)</li> <li>• Require tree conservation and protection.</li> <li>• Require strict phasing of project development</li> </ul>	Ordinance	Conservation Subdivision regulations allow clearing only within a 30-foot building envelope; new E&S ordinance adopted June 1 includes phasing stabilization requirement	Improve site design standards for all development.
4.6 Amend conservation subdivision regulations to: <ul style="list-style-type: none"> <li>• Require <i>permanent</i> protection of open space</li> <li>• Require site visit by staff and commission members before approval of subdivision</li> <li>• Require environmental assessment plan to determine areas to be permanently protected as open space <i>before</i> the buildable area of site is determined</li> <li>• Remove unbuildable areas (wetlands, steep slopes, etc.) from calculation of allowable density of the parcel</li> <li>• Require that most protected areas are kept intact in a contiguous parcel (establish edge/area ratio)</li> <li>• Require that protected open space connect to protected open space of adjacent parcels</li> <li>• Limit uses of protected areas to those that are not environmentally harmful (no swimming pools, ball fields, etc.)</li> <li>• Allow flexibility to encourage: pervious surfaces, no road curbs, narrower road widths, no streetlights</li> <li>• Require (or encourage) clear-spanning of streams and prohibit (or discourage) use of culverts</li> <li>• Require undisturbed buffers between existing neighborhoods and the subdivision</li> <li>• Require use of native plants within 100 feet of protected areas and forbid use of certain exotic species throughout the site</li> <li>• Determine where conservation subdivisions should be permitted</li> </ul>	Ordinance	Conservation Subdivision regulations changed to accomplish most of these (except for flexibility in stormwater management; road crossing requirements; buffers between neighborhoods may be disturbed;) new regulations adopted October 2003.  ALSO ACHIEVED rezoning of AR from density of 1 unit per acre to 1 unit per 10 acres, or 1 unit per 5 acres with conservation subdivision; strong definition of qualified land trust.	Adopt changes to make conservation subdivisions an attractive option for zones other than AR.

4. NATURAL AREAS, cont.	Type of Action	Action Taken	Action Needed
4.7 Purchase environmentally sensitive areas for the purpose of maintaining them as natural habitat through greenspace program and other grants	Policy Budget	Five-Acre Woods tract purchased with Greenspace funds SPLOST proposal submitted to fund purchase of conservation easements for green infrastructure	Allocate more funding for conservation, including SPLOST funds.
4.8 Amend riparian buffer ordinance to provide better habitat protection by: <ul style="list-style-type: none"> <li>• Including all perennial streams on the Environmental Areas Map</li> <li>• Developing clear and strict criteria for approving buffer variance requests</li> </ul>	Ordinance	75 foot buffer protection temporarily extended to all perennial streams; SAC working on permanent buffer regulations.	Make comprehensive 75 foot buffer protection permanent.
4.9 Amend noise ordinance to: <ul style="list-style-type: none"> <li>• Include ambient industrial noise (which negatively affects wildlife environments)</li> <li>• Include noise as factor in decisions about siting of industry</li> </ul>	Ordinance		Implement recommendation.
4.10 Amend and enforce lighting ordinance	Ordinance Policy		Implement recommendation.
4.11 Enforce dumping prohibition in riparian areas	Policy Ordinance Budget	Required as a BMP in ACC Stormwater Management Program	Improve enforcement via Community Protection Division.
4.12 Adopt TDR program as a part of ACC Zoning and Development Standards	Policy Ordinance	ACC received a grant from DCA to perform a feasibility study, first step in creating TDR program	Appoint citizen TDR committee; follow up on findings of study
4.13 Encourage use of conservation easements	Policy	SPLOST proposal to fund purchase of conservation easements for green infrastructure	Include proposal in final SPLOST package.

4. NATURAL AREAS, cont.	Type of Action	Action Taken	Action Needed
4.14 Amend erosion and sedimentation control ordinance ( <i>see Water Quality issues, above</i> )	Ordinance	New E&S ordinance adopted June 1.	
4.15 Adopt stronger tree protection policies to the Zoning and Development Standards in 2004	Ordinance	Community Tree Council sent recommendations to Mayor for staff work on new Tree Ordinance.	Adopt and enforce Tree Ordinance.
4.16 Strengthen existing ordinances' tree protection provisions (residential & commercial)	Ordinance	Community Tree Council sent recommendations to Mayor for staff work on new Tree Ordinance.	Adopt and enforce Tree Ordinance.
4.17 Provide the A-CC Community Tree Council with funds to educate the public regarding the need to protect tree canopy	Policy Budget	Community Tree Council working on public education	Provide Community Tree Council with operating budget.
4.18 Hire a full-time arborist/inspector (preferably bilingual) to monitor and enforce development regulations related to trees.	Policy Budget	None yet; new recommendation	Implement recommendation.
4.19 Fund a community forest tree cover canopy study every 5 years to provide information specific to A-CC for land use planning.	Policy Budget	None yet; new recommendation	Implement recommendation.
4.20 Amend flood protection ordinance to require best management practices for properties adjacent to floodplains, and restrict construction within floodplains	Ordinance	None yet; new recommendation	Implement recommendation.

5. <b>URBAN ENVIRONMENTS in Athens-Clarke County are deteriorating, reducing the health and safety of residents and creating a desire to move to undeveloped rural areas. Infrastructure improvement plans encourage sprawl rather than urban redevelopment. The appealing character of the old urban area is threatened by poor design of new development and the loss of historic structures, and abandoned commercial and industrial buildings blight many urban areas.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
5.1 Create primary corridor revitalization plans by working with stakeholders, Planning Department, etc.	Policy Budget	Baxter Street streetscape project recently completed.	Support citizen efforts to create a vision for the Prince Avenue corridor (CAPPA;) hire Urban Planner to coordinate corridor planning.
5.2 Strengthen enforcement of “quality of life” ordinances (e.g. noise, single family, lighting, etc.)	Policy Budget	Community Protection Division established	Review effectiveness of CPD and make necessary adjustments
5.3 Promote appropriate infill development.	Policy		Implement recommendation.
5.4 Promote re-use of abandoned commercial areas and offer incentives for their development	Policy Ordinance	New stormwater ordinance adopted June 1 contains provisions and incentives for redevelopment.	Review Zoning and Development Standards for barriers to redevelopment; research incentive options.
5.5 Designate downtown Athens as a Local Historic District and develop design guidelines for new construction, historic rehabilitations, demolition, and possible other areas.	Policy Ordinance	Citizen committee appointed, working on these recommendations.	
5.6 Develop a mechanism to give residents a more formal role in government decisions that affect their neighborhoods	Policy	Proposed Urban Planner position could facilitate NPUs.	Implement recommendation.
5.7 Require that permit requests involving alterations to buildings older than 50 years include an historic preservation consultation with qualified planning staff	Policy Ordinance		Implement recommendation.

<b>5. URBAN ENVIRONMENTS, cont.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
5.8 Create a Master Plan for downtown Athens to balance development with historic preservation	Policy		Implement recommendation.
5.9 Review existing zoning regulations for the downtown area, particularly height restrictions and parking requirements, to ensure their compatibility with historic preservation goals	Policy Ordinance		Implement recommendation.
5.10 Hire an Urban /Community Planner to facilitate proactive neighborhood and corridor planning	Policy Budget	Proposed by Mayor Davison for FY05.	Direct reallocation of corridor study funds to cover this position, depending on results of Planning Department audit.
5.11 Develop a policy to promote the remediation and redevelopment of brownfield sites. Recent changes in state law make brownfields more attractive to developers, but more local incentives, such as tax credits, tax freezes, fee waivers or other financial incentives are often necessary to encourage their redevelopment	Policy Budget	New recommendation; EPD/UGA Brownfields Workshop scheduled for July 29 to be co-hosted by ACC.	Research and implement incentives; remove barriers from Zoning and Development Standards.

<b>6. URBAN PARKS and OPEN SPACES are insufficient.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
6.1 Encourage interdepartmental coordination to complete Greenway network	Policy Budget		Implement recommendation.
6.2 Require new or re-developments to dedicate and construct greenway trails	Policy Ordinance		Implement recommendation.
6.3 Require all new right of way acquisitions to include public access to trails (unless exempted by Leisure Services.)	Policy		Implement recommendation.

6. URBAN PARKS and OPEN SPACES, cont.	Type of Action	Action Taken	Action Needed
6.4 Leverage greenspace funds by seeking grants and other funding sources.	Policy Budget	One SPLOST 2005 proposal considered to fund Greenway projects.	Include Greenway project in SPLOST measure; seek local funding for priority Greenway projects not funded by SPLOST 2005.
6.5 Acquire development rights for some properties rather than relying solely on fee simple acquisition.	Policy Budget	SPLOST proposal submitted for purchase of conservation easements.	Include purchase of conservation easement project in SPLOST measure.

7. AFFORDABLE HOUSING near employment areas is in decline and contributes to environmentally unsound sprawl development. This should be priority issue for 2004.	Type of Action	Action Taken	Action Needed
7.1 Create inclusionary zoning that requires a percentage of new residential construction to include homes affordable to those having low to moderate incomes	Ordinance		Implement recommendation.
7.2 Consider effect on existing affordable housing when making decisions on rezonings	Policy		Should be an ongoing high priority.
7.3 Extend transit to existing affordable housing, including mobile home parks	Policy Budget	Athens Transit has proposed new Link service to some of these areas.	Approve Athens Transit plan; seek further subsidies to keep transit affordable to all.
7.4 Create partnership with large employers, housing providers, county, NGOs to bring all sectors to work on this problem.	Policy	None yet; new recommendation.	Implement recommendation.
7.5 Streamline HED procedures for nonprofit affordable housing providers	Policy	None yet; new recommendation.	Implement recommendation.
7.6 Devote more CDBG funding to innovative housing projects	Policy Budget	None yet; new recommendation.	Implement recommendation.
7.7 Apply successful models for promoting affordable housing in communities similar to Athens (e.g. Raleigh-Durham, Chapel Hill)	Policy Budget	None yet; new recommendation.	Implement recommendation.

8.	<b>The PUBLIC’S VISION is not being articulated and enforced by public policy.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
8.1	Follow Guiding Principles of Land Use Plan in all land use decisions	Policy		Should be an ongoing high priority.
8.2	Make all planning decisions regarding infrastructure (utilities, roadways, solid waste facilities, etc.) consistent with the Land Use Plan	Policy	An example of where we’ve fallen short	Should be an ongoing high priority.
8.3	Create position of ACC Environmental Coordinator, with responsibility throughout all departments, with advisory, planning, and enforcement roles (could be funded by grants and be revenue-generating)	Policy Budget	Accomplished!	
8.4	Maintain high priority for existing ACC environmental services and natural resources and protect from budget cuts	Policy Budget		Should be an ongoing high priority.
8.5	Re-design enforcement processes to be less bureaucratic, more effective	Ordinance	Community Protection Division established.	
8.6	Conduct environmental audit of all ACC departments	Policy Budget	Required BMP under ACC’s Stormwater Management Program.	Direct staff to conduct environmental audit.
8.7	Require environmental Best Management Practices of all departments	Policy Budget	Required as part of ACC’s Stormwater Management Program.	
8.8	Coordinate ACC/ UGA/ community in all areas/ all levels to improve efficiency and reduce negative impact on the environment; make better use of resources at UGA –	Policy		Making better use of UGA resources, especially experts, should be a priority in 2004.
8.9	Require ACC projects to meet Leadership in Energy and Environmental Design (LEED™) standards for sustainable design by incorporating into all capital and SPLOST construction projects	Policy Budget	LEED Certification program for all future ACC-funded building construction adopted June 1.	

9. <b>PUBLIC PARTICIPATION in the government process is hampered by a need for public education and a lack of ready access to public information.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
9.1 Provide better access to public meetings and documents by: <ul style="list-style-type: none"> <li>• Videotaping Planning Commission meetings, Commission work sessions and public input sessions; archive tapes at ACC Library</li> <li>• Publishing documents in PDF format (detailed agenda items, proposed plans, roadway designs, etc.) on ACC website</li> <li>• Requiring public input forms to be published on the ACC website, and enable submission of input forms electronically</li> </ul>	Policy Budget	<ul style="list-style-type: none"> <li>• Planning and TPW now allow input by email and through website.</li> <li>• Mayor proposed funding paperless agenda and document imaging initiatives for FY05</li> </ul>	All agenda items, plans, roadway and bike project designs should be on the ACC website.
9.2 Educate public on important environmental issues and the benefits of conserving valuable natural resources.	Policy Budget	Public education required as part of new Stormwater ordinance.	Expand public education.
9.3 Increase effort to inform and involve traditionally under-represented groups, <i>i.e.</i> African-American and Hispanic communities.	Policy Budget	None yet; new recommendation.	Implement recommendation.

10. <b>COORDINATED REGIONAL PLANNING is lacking and allows the actions of neighboring jurisdictions to undesirably impact Athens-Clarke County.</b>	<b>Type of Action</b>	<b>Action Taken</b>	<b>Action Needed</b>
10.1 Form citizen/government group to work with regional planning counterparts in neighboring counties.	Policy		Implement recommendation.
10.2 Participate more actively with Northeast Georgia Regional Development Center.	Policy	<ul style="list-style-type: none"> <li>• ACC participated in RDC Regional Water Summit and Comprehensive Plan review.</li> <li>• ACC citizens working with NE GA RDC to develop State Bicycle-Pedestrian Network.</li> </ul>	Continue and increase participation.

## **PARTICIPATING ORGANIZATIONS: MISSION & POINTS of CONTACT**

### *Athens Grow Green Coalition*

The mission of the Athens Grow Green Coalition is to promote responsible community development and growth management policies and practices that protect natural resources, prevent sprawl, maintain a healthy economy, and preserve a high quality of life for all in the Athens region. Specific objectives are to:

1. Protect environmental quality for all by maintaining clean air, clean water, and protected green space and green infrastructure.
2. Reduce sprawl and automobile dependence by encouraging: communities that are multi-use, walkable, bikeable and connected; and improved public transportation.
3. Promote a diverse and affordable housing supply for all income levels.
4. Promote efficient development patterns that keep taxes low.
5. Attract responsible businesses and industries by maintaining a beautiful, functional, diverse community with a high quality of life.
6. Ensure that policies balance the rights and needs of the community with the rights and needs of individual property owners.

*More Information:* [www.AthensGrowGreen.com](http://www.AthensGrowGreen.com)

#### *Contacts:*

Beth Gavrilles, 583-0463 (w), 227-0422 (h), [beth@wuplet.com](mailto:beth@wuplet.com)  
Seth Wenger, 207-0440, [seth@trout.ecology.uga.edu](mailto:seth@trout.ecology.uga.edu)

*Areas of Expertise:* Zoning and Development Standards, Land Use Policy, Open Space Protection Techniques (conservation easements, conservation subdivisions, purchase of development rights, Transferable Development Rights, land use law)

### *Athens Land Trust*

The Athens Land Trust's mission is to promote quality of life through integration of community and the natural environment by preserving land, creating energy-efficient and affordable housing, and revitalizing neighborhoods.

ALT is a private, non-profit 501(c)(3) corporation established in 1994 with the dual goals of land preservation and affordable, energy efficient housing. ALT believes in a holistic approach to sustainable development which combines environmental, economic and community needs.

*More Information:* [www.AthensLandTrust.org](http://www.AthensLandTrust.org)

#### *Contacts:*

Nancy Stangle, Development Director, 613-0122, [nancy@athenslandtrust.org](mailto:nancy@athenslandtrust.org)  
Jeffrey Boring, Conservation Director, 613-0122, [jeffrey@athenslandtrust.org](mailto:jeffrey@athenslandtrust.org)  
Heather Benham, Housing Project Director, 613-0122, [heather@athenslandtrust.org](mailto:heather@athenslandtrust.org)  
Nanette Nelson, President, 542-4329, [nanette@uga.edu](mailto:nanette@uga.edu)

*Areas of Expertise:* Open Space Protection, Conservation Easements, Affordable Housing

### *Athens-Clarke County Community Tree Council*

The Community Tree Council was established by ordinance on October 3, 2000. Its purpose is to “provide a vehicle for broad base community representation to interact with local Government, the private sector, and citizen groups; providing information, outreach, and education that promotes the responsible stewardship of trees and sustainability of community forest resources...” It is composed of 14 appointed citizens who volunteer their time, with support from the A-CC Community Forester and the Manager of the Landscape Division of A-CC Central Services.

#### *Contacts:*

Jere Bowden, 549-8687, [jereb6@juno.com](mailto:jereb6@juno.com)

David Kidd, 543-5195, [davidakidd@aol.com](mailto:davidakidd@aol.com)

Maureen O’Brien, 543-0594, [obnwrt@yahoo.com](mailto:obnwrt@yahoo.com)

*Areas of Expertise:* Tree canopy protection

### *Athens-Clarke Heritage Foundation, Inc.*

The Athens-Clarke Heritage Foundation is celebrating its 35<sup>th</sup> anniversary this year as the leading advocate for the importance of historic preservation to the future of the Athens community. ACHF is a 700+ member organization served by a staff of three full-time employees and a twenty-five member Board of Trustees. The Foundation administers the Athens Welcome Center and also is responsible for the furnishings of the Ware-Lyndon House Museum and shares programming responsibilities with the staff of the Lyndon House Arts Center.

The Mission of the Foundation is to be a proactive force in developing community-wide understanding of the value of historic buildings, neighborhoods and heritage. The following four goals were adopted in July 2001 by the Foundation as part of its five-year plan.

- **Goal I.** Serve as the Athens area clearinghouse for historic preservation issues.
- **Goal II.** Effectively communicate the historic preservation message.
- **Goal III.** Maintain & involve existing members while actively recruiting new members in order to develop & maintain a diverse membership-based organization.
- **Goal IV.** Act as responsible stewards for private preservation resources.

*More Information:* <http://www.achfonline.org/>

#### *Contact:*

Amy Kissane, 353-1801, [achf@achfonline.org](mailto:achf@achfonline.org)

*Areas of Expertise:* Historic Preservation

## ***BikeAthens***

BikeAthens is a local non-profit advocacy group promoting transportation and land use policies that improve accessibility to alternative modes of transport, including pedestrian, cycling and public transit options. The primary mission of the organization is to make alternative transportation a practical, convenient, and safe option for all citizens of Athens-Clarke County. That goal is particularly important for the large portion of our population that cannot afford to drive, that choose not to drive, or who are - for reasons of youth, age, physical disability, or by law – unable to drive.

BikeAthens seeks to address the inevitable future growth of Athens in a sensible, balanced, and practical way. Efficient, effective, and environmentally sound transportation policies must include multi-modal choices that offer the potential to mitigate the ecological damage to air and water quality and the detriment to our landscapes, built environments, and sense of community that are the result of decades of unbridled dependency on automobiles for transportation needs.

*More Information:* [www.BikeAthens.com](http://www.BikeAthens.com)

### *Contacts:*

Paul Quick, President: 543-6507, [ps807@bellsouth.net](mailto:ps807@bellsouth.net)

Dorothy O’Niell: 208-8636, [doniell@bellsouth.net](mailto:doniell@bellsouth.net)

*Areas of Expertise:* Transportation Policy, transit policy, bike and pedestrian facilities design

## ***Keep Athens-Clarke County Beautiful***

The Keep Athens-Clarke County Beautiful Commission works toward a cleaner, more beautiful community by improving attitudes and behaviors regarding the environment.

### *Our Goals are:*

- To promote beautification efforts in the community
- To promote the proper handling of solid waste
- To maintain sustained litter reduction
- To enhance environmental awareness through education

### *Our Objectives are:*

1. Identify and improve areas of general community concern for beautification projects.
2. Educate citizens about the proper handling of solid waste.
3. Increase community awareness of each individual’s role in sustaining litter reduction by focusing on the seven sources of litter.
4. Promote adequate maintenance of public and private property.
5. Expand citizen involvement in Keep Athens Beautiful sub-committees.

*More Information:* <http://www.KeepAthensBeautiful.org/>

### *Contact:*

Stacey Farrell, 613-3501 ext. 312, [SFarrell@co.clarke.ga.us](mailto:SFarrell@co.clarke.ga.us)

*Areas of Expertise:* Community education

### ***Oconee River Land Trust***

The mission of the Oconee River Land Trust is to preserve open space in the Oconee River Watershed. We are committed to preserving many different types of land, including woods, stream corridors, wetlands, wildlife habitat, productive farms and forests, historic sites and scenic vistas. ORLT is a private, nonprofit organization, incorporated in 1993. We work in many different ways to preserve land; our most important method is protection through conservation easements.

*More Information:* [www.orlt.com](http://www.orlt.com)

*Contact:*

Steffney Thompson, Conservation Director: 552-3138, [steffney@orlt.com](mailto:steffney@orlt.com)  
Dan Hope, Chair, 546-9889

*Areas of Expertise:* Conservation easements, open space protection

### ***Oconee Rivers Audubon Society***

Founded in 1991, the mission of the Oconee Rivers Audubon Society (ORAS) is to promote the preservation and restoration of wildlife habitat through environmental activism and community education. ORAS publishes a newsletter nine times per year and holds monthly meetings that are open to the public. Educational efforts include outdoor activities such as bird walks and field trips.

*More Information:* <http://alpha.rmy.emory.edu/~ORAS/>

*Contacts:*

Mary Case, President: 548-3848, [mecase@uga.edu](mailto:mecase@uga.edu)  
Elizabeth Little, Conservation Chair: 795-5017, [elittle@uga.edu](mailto:elittle@uga.edu)  
Gary Crider, Program Chair: [gcrider@charter.net](mailto:gcrider@charter.net)

*Areas of Expertise:* Wildlife habitat protection

### ***The Oconee Rivers Greenway Commission***

The Oconee Rivers Greenway Commission is a secondary agency of the Athens-Clarke County Unified Government (ACC), established by county ordinance in 1992. The Commission is advisory in nature. Since its inception it has guided the development of the Heritage Trail and North Oconee River Greenway as pilot projects in the creation of a countywide greenway plan. It successfully procured funding (mostly outside the ACC budget) for these projects and convinced ACC to establish the staff and programs to manage and maintain them. It continues to provide oversight for project construction, program management and the development of the countywide greenway network plan. It regularly makes recommendations and comments on proposed actions that affect the rivers and other environmental resources of the community. For example, it successfully lobbied for the 100-foot river and 75-foot perennial stream buffers in the county's environmental ordinance and the county adoption of a community greenspace program.

*Contacts:*

David Porter, Chair: 542-1782, [porter@dogwood.botany.uga.edu](mailto:porter@dogwood.botany.uga.edu)

*Areas of Expertise:* Greenway planning and maintenance, trail design, riparian and water quality issues

### ***Sandy Creek Nature Center, Inc.***

The Sandy Creek Nature Center is a private, non-profit 501(c)(3) organization that works in partnership with the Athens-Clarke County Department of Leisure Services to protect, promote and improve Sandy Creek Nature Center. Our goal is to help Sandy Creek Nature Center continue to be an exceptional facility for learning about the natural ecosystems of Piedmont Georgia and beyond, as well as our responsibility to be good stewards of our earth.

*More Information:* [www.sandycreeknaturecenter.com/scnc/index.shtml](http://www.sandycreeknaturecenter.com/scnc/index.shtml)

*Contact:*

Larry Dendy: 613-3615, [ldendy@uga.edu](mailto:ldendy@uga.edu)

*Areas of Expertise:* Community education, wildlife habitat protection, local ecosystems

### ***Students and Educators for Ecological Design and Sustainability (S.E.E.D.S.)***

S.E.E.D.S. is a non-profit University of Georgia organization made up of students, faculty and other members of the campus community who are interested in applying principles of ecological design and sustainability to our campus and the surrounding community. S.E.E.D.S. was founded in February 2000 as a means for collaboration among future members of the new College of Environment and Design (students and faculty from the School of Environmental Design and the Institute of Ecology). The organization meets bimonthly to work on current projects as well as discuss important sustainability issues in the Athens area.

*More Information:* [www.uga.edu/seeds](http://www.uga.edu/seeds)

*Contacts:*

Susan Murray, President: [ssmurray@uga.edu](mailto:ssmurray@uga.edu)

Julia Reed: [jreed@uga.edu](mailto:jreed@uga.edu)

Hank Methvin (faculty): [hankm@uga.edu](mailto:hankm@uga.edu)

*Areas of Expertise:* ecologically-based environmental design

### ***Upper Oconee Watershed Network***

The Upper Oconee Watershed Network (UOWN) is a non-profit organization dedicated to protecting and improving water quality in our watershed through community-based advocacy, monitoring, and education. UOWN provides a means of bringing together a diverse citizenry with a common interest in the protection of streams and rivers in the Upper Oconee Watershed, which drains all or part of eighteen counties in northeast Georgia. UOWN strives to achieve a greater level of public awareness about local water issues and to formulate interactive community solutions for long-term watershed protection.

*More Information:* [www.uown.org](http://www.uown.org)

*Contacts:*

Jenny Culler, President: [envirolawjenny@yahoo.com](mailto:envirolawjenny@yahoo.com)

Jeffrey Boring: 583-0463, [jeffreyuga@yahoo.com](mailto:jeffreyuga@yahoo.com)

*Areas of Expertise:* water quality monitoring; water quality and conservation education.