



# 2012 WATERSHED CONSERVATION DEVELOPMENT AWARDS

The Cahaba River Society believes that restoring the Cahaba and safeguarding our drinking water supplies can be achieved through transforming the way developments are designed and built. Our annual Watershed Conservation Development awards demonstrate the value of collaborative relationships with many partners to guide and promote development that protects and restores the Cahaba watershed.

This is the sixth year of awards recognizing projects in our region that conserve water resources through environmental site design, effective construction best management practices, LID (low impact development) post-construction stormwater practices, water harvesting and reuse, drinking water efficiency, and watershed restoration.

These awards highlight model projects and prove the feasibility, cost-effectiveness, and value of these practices to the triple bottom line – people, planet and prosperity. The awards also honor the stewardship commitment of firms that invest in these solutions and government leaders who support them, as well as the capability of project team members to deliver quality water-smart development. The awarded projects demonstrate all phases of water-protective development, to highlight the full range of efforts that need to be undertaken to restore and protect urban water resources.

THE RAILROAD RESERVATION PARK  
STORMWATER SYSTEM



BIRMINGHAM-SOUTHERN COLLEGE  
LAKEVIEW RESIDENCE HALL



SAMFORD UNIVERSITY  
SHADES CREEK RESTORATION



ALABAMA POWER COMPANY  
WATER EFFICIENCY RETROFIT





Cahaba  
River  
Society

# 2012 WATERSHED CONSERVATION DEVELOPMENT AWARDS

≈ RAILROAD RESERVATION PARK STORMWATER SYSTEM



**City of Birmingham:** William Bell, Mayor, Andre' Bittas, Director of Planning & Engineering; **Railroad Park Foundation:** Camille Spratling, Executive Director, Will French, President, Giles Perkins, Executive Vice President; **Tom Leader Studio:** Tom Leader, Principal; **Macknally Land Design:** Lee Ann Macknally, President; **Walter Schoel Engineering Co. Inc.:** Walter Schoel, III, Dick Chenowith, Civil Engineering and Hydrology;

**Community Foundation of Greater Birmingham:** Kate Nielson, President; **Coca Cola Bottling Company United:** Claude Nielsen, CEO, Walker Jones, Director of Community Relations; **Hugh Kaul Foundation:** Hillery Head and Beverly P. Head, III, Kaul Distribution Committee; Regions Bank, Trustee; **Brasfield & Gorrie:** Steve Manown, Construction Manager, John Soule, Construction Manager.

The Railroad Reservation Park project is very significant for water sustainability for many reasons. The project demonstrates how a water liability on underused urban land can be turned into an asset, handling storm flows without flooding, cleansing urban runoff, and replenishing groundwater supplies. The water efficient landscaping and irrigation system prove ways to reduce one of the peak uses of urban water while maintaining beauty.

The site is designed so that approximately 70% of stormwater that falls on-site is captured in a mechanically recirculated storm system designed to mimic natural conditions. All water in the system flows slowly through a created wetland planted with native wetland vegetation that promotes filtration and infiltration of the water. A one acre lake stores the water for irrigation and recreation purposes. Overflow from the lake system and a controlled release are emptied into a recreated stream system that runs the length of the park.

A series of check dams and rock stream beds promote aeration of the water. Native vegetation is planted along the sides and in "islands". These areas are designed to accept the stormwater overflow and allow it to infiltrate back into the ground. A sensor-controlled deep-water well keeps the lake filled to supplement irrigation in the driest summer months. A smart irrigation system is used to minimize watering. The irrigation system is controlled by a full weather station that monitors rain and wind levels and utilizes low-volume irrigation heads.

The Railroad Reservation Park sustainable water system has tremendous educational value as the aesthetic centerpiece of a great American urban park. This project proves that water can become a beautiful and healthful part of urban revitalization, helping to attract new people and investment into the city. In fact, we figure that after a hundred years of burying water under Birmingham, this is the first project (besides fountains) to bring natural flowing water back into the City center!





# 2012 WATERSHED CONSERVATION DEVELOPMENT AWARDS

## ≈ BIRMINGHAM-SOUTHERN COLLEGE LAKEVIEW RESIDENCE HALL



**Birmingham-Southern College:** General Charles Krulak, President, Lane Estes, VP of Administration; **ArchitectureWorks:** Jay Pigford, Marzette Fisher, Courtney Kelly, Andrew Hicks; **BBG&S Engineering Consultants, INC.:** Chris Golden; **Golden & Associates Construction, LLC.:** Geoff Golden.

This water-smart project combines water efficiency and low impact stormwater practices. Water efficiency invests in fixtures that stretch existing water supplies and meet needs of growing communities at least cost to ratepayers and the environment. Saving water has a triple impact to save money through lower water, sewer, and energy bills.

Reuse is a water-smart practice that both increases water efficiency and reduces stormwater impacts. "Reuse" is capturing either rain, or domestic drinking water already used for another purpose, and reusing it. Reuse lets people and businesses create their own supplemental water supply, under their control. This reduces their demand on expensive treated water, and reduces costs and risks, especially during dry weather.

The Lakeview Residence Halls were outfitted with Toto® high efficiency, dual-flush toilets, low-flow faucets and showerheads, and a hot water recirculating pump. Outside the building, a drip irrigation system will save significantly on water used for landscape irrigation. Nature's Tap installed a 15,000 gallon underground tank to harvest rainwater from half of the total roof area. This lowered the overall stormwater runoff from the site, which was previously an impermeable parking lot. Collected rainwater will supply most of the drip irrigation system sustaining the outside landscaping. This will allow BSC to save over 300,000 gallons of water a year, acquire LEED points, and reduce storm water runoff.



*The underground rainwater cistern collects roof runoff for landscape watering.*



# 2012 WATERSHED CONSERVATION DEVELOPMENT AWARDS

## ≈ SAMFORD UNIVERSITY SHADES CREEK RESTORATION

**Samford University:** Sarah Latham, VP for Operations and Planning, David Whitt, Director of Capital Planning and Improvement, Project Manager; **Jennings Environmental:** Dr. Greg Jennings, PE, Principal; **Auburn Extension Service:** Dr. Eve Brantley, Native Plant Specialist; **North State Environmental:** Sarah and Darrell Westmoreland, Stream Channel Restoration Specialists; **Forestry Environmental Services, Inc.:** Todd Lavender, Stream Bank Stabilization Specialist.

“Urban Stream Syndrome” describes the impacts on streams caused by increased imperviousness (paving and roofs) and increased volumes of stormwater runoff that result from urbanization of watersheds. Higher water volumes in streams erode them over a long period of time, threatening private property, infrastructure, and ecological functions. While astute environmental engineering can prevent further losses, this can be a more costly solution than preventing the problem by using Low Impact Development to reduce stormwater volumes in new and redeveloping areas.

This project repaired deteriorating streambanks along Shades Creek through property owned by Samford University. The University was planning improvements for the soccer fields and park complex near the creek. It became apparent that Shades Creek might be impacted even more if careful planning wasn't done before construction.

The park project also developed into the stream channel restoration project. Dr. Greg Jennings of North Carolina State University created a stream channel design to reduce future bank loss through placement of natural stone devices in the creek bed known as “j-hooks”, “cross veins”, and “weirs”. Stream flow velocity was redirected to mid channel and away from the banks to reduce scouring. Stumps and whole downed trees are used to maintain the natural aesthetics while directing high waters away from re-stabilized stream banks. Dr. Eve Brantley of Auburn University reintroduced native plant species for their beauty as well as that ability to stabilize the newly implemented flood plains along the creek.

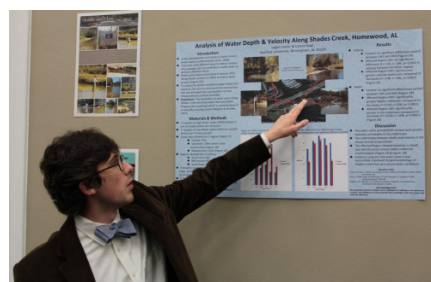
The project also has educational value. Samford environmental science students have been monitoring the physical, chemical, and biological recovery of Shades Creek since the project was completed.



*Carefully placed boulders direct flow to the stream's center, thus avoiding erosion impacts on stabilized banks.*



*Left to right: Darrell Westmoreland, Dr. Eve Brantley, and Dr. Jennings.*





# 2012 WATERSHED CONSERVATION DEVELOPMENT AWARDS

≈ ALABAMA POWER COMPANY HEADQUARTERS  
WATER AND ENERGY EFFICIENCY RETROFIT

**Alabama Power Company:** Charles D. McCrary, President and CEO, Stephen A. Jones, Corporate Relations Director; Groundwater & cooling tower ~ **Pinnacle Engineering:** James Hogland, Vice President; **RJ Mechanical:** Russell Sandlin, PE; Architecture and design ~ **SDR Studio:** Steve Reeves, President

The water-energy connection is a recent concept that is linking the two in sustainability design and management. It takes vast amounts of energy to treat, pump and heat water and wastewater for homes, businesses, and institutions - over 13% of total US electric energy use. Alabama Power embraced saving water as a way to save energy and keep costs down by reducing water consumption at their corporate headquarters. APCO started by turning a water problem into a resource. Groundwater that used to flood the basement now supplies the cooling tower, instead of using municipal water supply. Achieving both water efficiency and improved stormwater management, APCO installed a rainwater harvesting system to supply landscape irrigation, planted drought tolerant vegetation, and installed pervious pavement in a new employee park. Water-efficient fixtures were retrofitted in the building.

These combined strategies yielded annual savings of \$187,000, with a payback period for the groundwater reuse of two years. The facilities' total water use has been reduced by 70%. Annual water savings of 14.4 million gallons creates enough water to supply 100 homes. This demonstrates that, if we scale up investments in water efficiency, it could create new water supply to help meet future growth needs at an affordable cost to all water customers.



*Alabama Power Corporate Headquarters in downtown Birmingham*



*A cistern collects roof rainwater to irrigate the Employee Park.*



*The Employee Park uses pervious paving and drought-tolerant plants.*



*Groundwater is collected to supply the building's cooling system.*



# 2012 PUBLIC SERVICE AWARD

≈ BIRMINGHAM WATER WORKS BOARD  
ENERGY COST SAVINGS

**Birmingham Water Works Board:** A. Jackie Robinson, III, Chairman, Mac Underwood, General Manager, Darryl Jones, Assistant General Manager, Luther Austin, Manager SCADA System; **Ingenuity, Inc.:** Rick Hayes, President

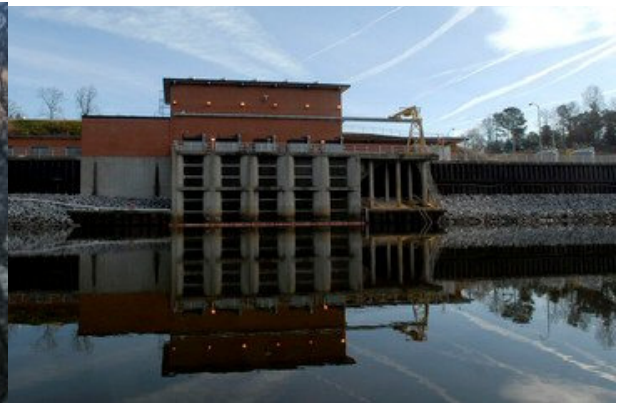
Urban water systems are large consumers of electrical power. Water is heavy, and pumping it requires energy. In our hilly region the electric costs to pump our water are a considerable part of the water utilities' operating expenses. The Birmingham Water Works Board worked with consulting firm Ingenuity, Inc. to find energy cost savings that would yield financial savings for years to come. The BWWB reduced its annual power budget from \$9.5 million, which was over 10% of its total operations budget, to \$8.45 million – a power cost savings of 11%.

BWWB shifted the operating schedule for their many pumping facilities to take advantage of lower-cost off-peak power rates. With an investment of about \$600,000 and considerable time to study and optimize their pumping facilities, in just 21 months the Birmingham Water Board saw over \$1 million in power cost savings. As reported in a Birmingham News story in October 2011, the BWWB was able to lower its proposed rate increase in part by lowering projected power costs. As an added benefit, BWWB has better control of water levels in the water tanks, providing fresher water to their customers.

While this reduces revenues to the energy utility in the short term, it can also help Alabama Power, its customers, and the environment over the long term. APCO must operate its power-generating facilities and plan future expansion of generating capacity to meet peak power demands. Greater energy efficiency, such as shifting power demands to off-peak, helps APCO meet energy needs with their most efficient, modern facilities, and it can delay the day the power company must build costly new capacity. When the water company saves energy, it also saves their customers and those of the power company money and conserves water resources – a triple win for people, planet and prosperity.



*Cahaba Heights Pump Station on the Cahaba River.*



*Mulberry Intake Pump Station on the Black Warrior River .*



# 2012 PUBLIC SERVICE AWARD

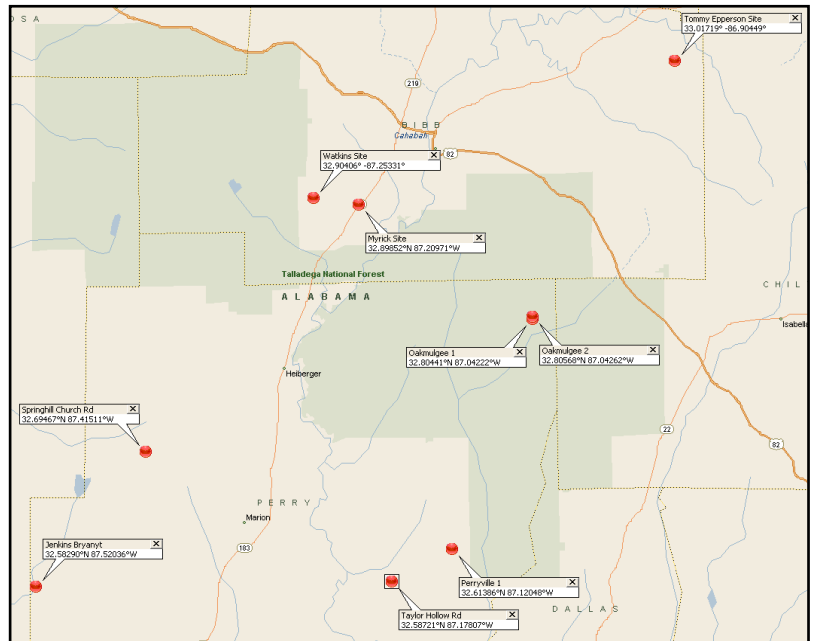
## ≈ ADEM'S CLEAN-UP OF UNAUTHORIZED DUMPS IN BIBB AND PERRY COUNTIES

**Alabama Department of Environmental Management:** Brent Watson, Chief of Enforcement and Remediation, Solid Waste Branch; **Perry County Commission:** Fairest F. Cureton, Chairman, DeAndrea Kimbrough, Perry County Engineer; **TCB Extreme Enterprises:** Sharon George, Principal; **Southern Environmental Management & Specialties:** Greg Danielson, Office Manager.

This project involved the removal of over 5 million pounds of garbage and waste from nine unauthorized dumps located within the Cahaba River Watershed. Three of the unauthorized dumps were in Bibb County while the remaining six unauthorized dumps were located in Perry County. As noted on the adjacent map, many of these unauthorized dumps were located near tributaries flowing directly into the Cahaba River.

Approximately \$250,000 in funding was provided by the Alabama Department of Environmental Management to support the cleanup of these unauthorized dumps. Cleanup of the six sites in Perry County was completed by the Perry County Commission and achieved the removal of almost 5 million pounds waste and garbage from the Cahaba River Watershed. In Bibb County, the cleanup of the three unauthorized dumps was completed by TCB Extreme Enterprises and Southern Environmental Management & Specialties and resulted in the removal of almost 220,000 pounds of waste and garbage from the Cahaba River Watershed.

The stormwater impacts from these dumps had the potential to contribute a large and diverse pollutant load into the Cahaba and its tributaries. This area of Alabama averages around 55 inches of rainfall each year, and the movement of that rainwater through the 5 million pounds of waste and garbage in these dumps created an environmental threat that has now been alleviated.



*Dramatic "before"...*



*...and "after" photos.*

