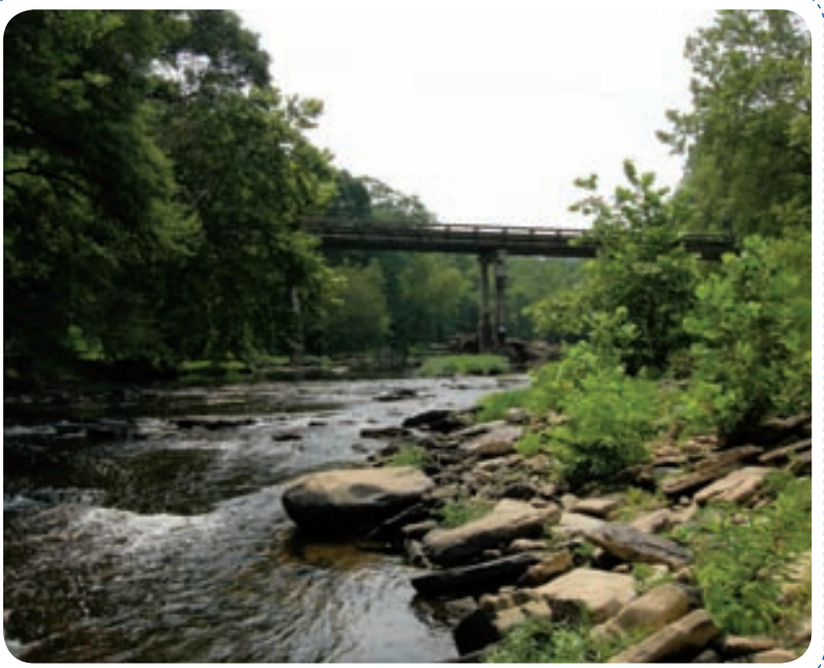
Seeing Storm Water Regulations in a New Light

ALDOT FINDS THAT COMMUNICATION IS KEY TO KEEPING COMPLIANT

By Barry Fagan, P.E., P.L.S.

Staged vegetation establishment and benching are used by Wright Brothers in a Talladega County project.

A Newell Roadbuilders Inc. project in Russell County makes good use of vegetation, earth berms, slope drains, silt fence and aggregate erosion control on the subgrade.



Alabama Bridge Builders constructed this new Blount County bridge over waters containing threatened and endangered species.

Phase II of the National Pollutant Discharge Elimination System (NPDES) went into effect in March 2003. Two years prior to its arrival, the Alabama Department of Environmental Management (ADEM) began preparing the Alabama Department of Transportation (ALDOT) for compliance.

Although ALDOT had specifications in place to protect water quality and control erosion and sediment on project sites, emphasis in these areas was not sufficient for meeting current requirements, not to mention those to come.

Partly due to this lack of emphasis, ALDOT received violation citations on 10 sites statewide under the NPDES and Alabama Water Pollution Control Act. The department incurred heavy penalties as a result of noncompliance and had to undertake costly mitigation efforts on the cited projects. A consent agreement addressing these violations was entered into in December 2002.

To avoid additional fines and penalties, ALDOT entered into a memorandum of agreement (MOA) with ADEM. This agreement addressed the need for compliance on all current and future ALDOT projects, and it required that department policies and practices undergo extensive changes.

Culture Change

While working to satisfy the terms of the MOA, ALDOT employees and those who deal with them on a daily basis experienced a true culture change. The following MOA requirements were particularly vital to the progress ALDOT has

experienced over the past few years:

Increased leadership involvement. The MOA forced ALDOT to realize that without leadership and priority coming directly from the state construction engineer's office, contractors and field personnel were less likely to alter traditional construction and inspection methods. In 2005, a new assistant to the state construction engineer assumed responsibility for focusing on all environmental issues related to road and bridge construction.

Qualified Credentialed Inspector (QCI) training. Training construction inspection personnel proved to be a critical change component. Beginning in 2003, all ALDOT personnel, from division engineers to inspectors, underwent inspection training to earn QCI certification under an ADEM-defined program.

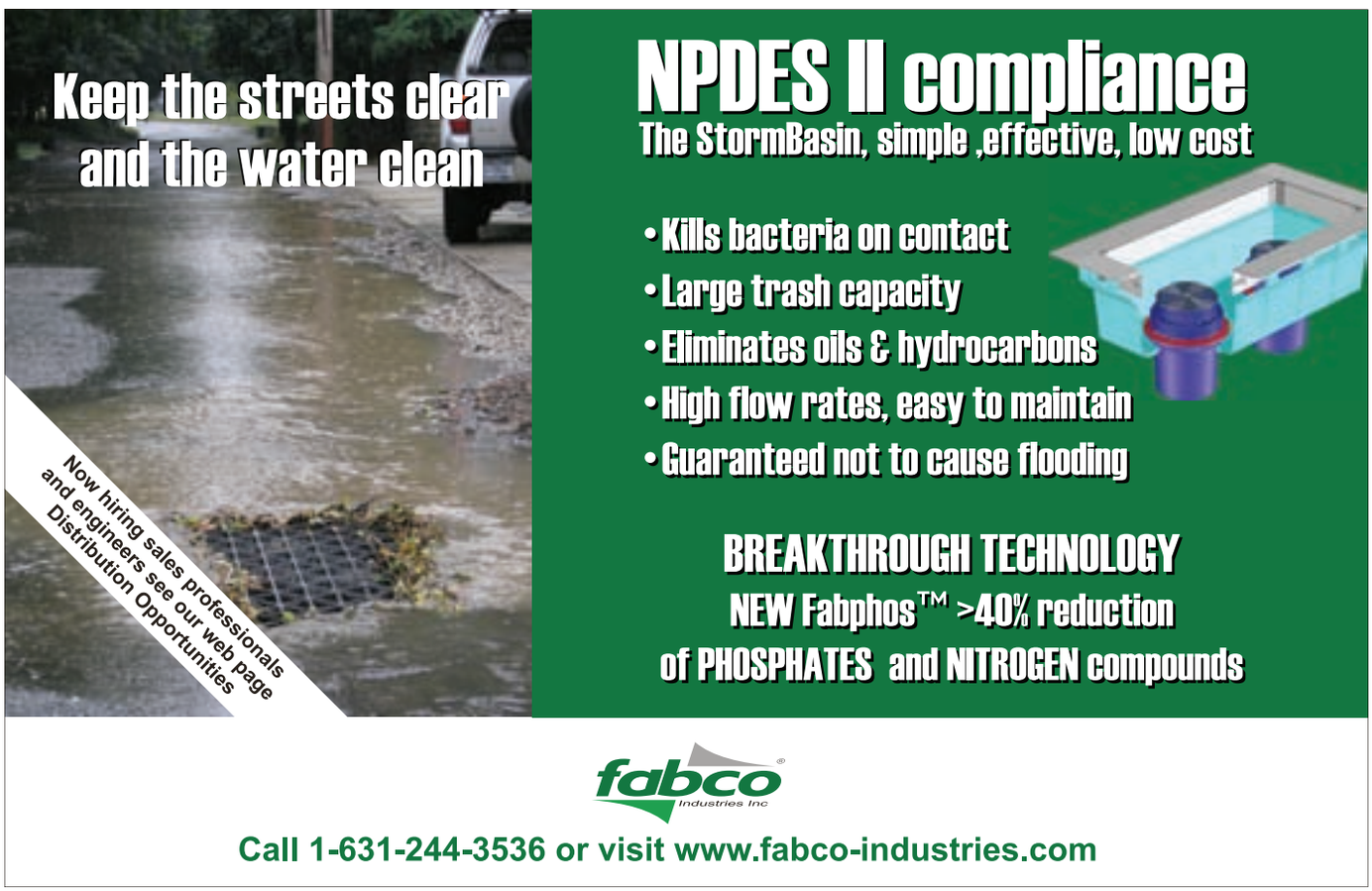
In 2005, ALDOT became an ADEM-approved training provider. The department started providing 4-hour annual continuing education training sessions for its construction and maintenance crews, county construction personnel and consultants. Main program focuses include environmental and regulatory awareness, technical methods and practices and reinforcement of ALDOT leadership priorities and expectations.

NPDES permit-tracking system. Under the terms of the MOA, ALDOT needed to develop a data program to track NPDES permit compliance. The resulting system tracks all permits from installation initiation through termination, with the bulk of the system designed to aid in inspection documentation. It provides photographic storage, a rainfall journal, an automated inspection calendar and QCI information for all permits. The system provides accountability by sending e-mail notifications to select ALDOT personnel and the local ADEM office when unsatisfactory or noncompliant citations are noted.

Specification and drawing changes. ALDOT quickly saw that positive change would not come about by working under the same rules with the usual tools. Taking advantage of the great strides made in construction and storm water knowledge and innovation, the department realized it needed to be flexible and readily adapt to change. ALDOT has modified its specifications and drawings numerous times since 2003, and more changes are in store.

Pronto Grassing applies seed hydraulically before conducting a mulching operation on a busy Lee County project.

ALDOT looks back to the implementation of these four change components as a model for facing future



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challenges. The department aims to define leadership priorities and follow them without exception; convey priorities to personnel through training and action; provide employees the tools and backing they need to do their jobs, while instituting accountability from the bottom up; and modify policies and practices in accordance with newfound knowledge.

Working through the environmental culture change did involve setbacks and mistakes. ALDOT does not claim to have a perfect storm water construction program, but it is dedicated to the spirit of the now-expired MOA and has accepted its role as a state leader in environmental construction site protection. Progress is evident on ALDOT projects as well as in how Alabama counties, cities and private developers are approaching construction today.

Lessons Learned

Research, observation and field personnel feedback continue to help ALDOT learn about best management practice (BMP) implementation and application, contract administration and internal administrative approaches and practices.

While many of the technical lessons learned involve innovative methods and materials, ALDOT strives to rely on simple BMPs. Ground cover and the slowing and capturing of runoff have proven to be the most effective and economical methods for controlling erosion and sediment on construction sites.

After limiting or delaying disturbance, ALDOT places priority on the early establishment of permanent vegetation. If it cannot be established due to project staging or seasonal limitations, other cover options can significantly reduce erosion. The department is also establishing guidelines, based on slope characteristics, for the selection and specification of conventional seeding and mulch, hydraulic applications and rolled erosion control products.

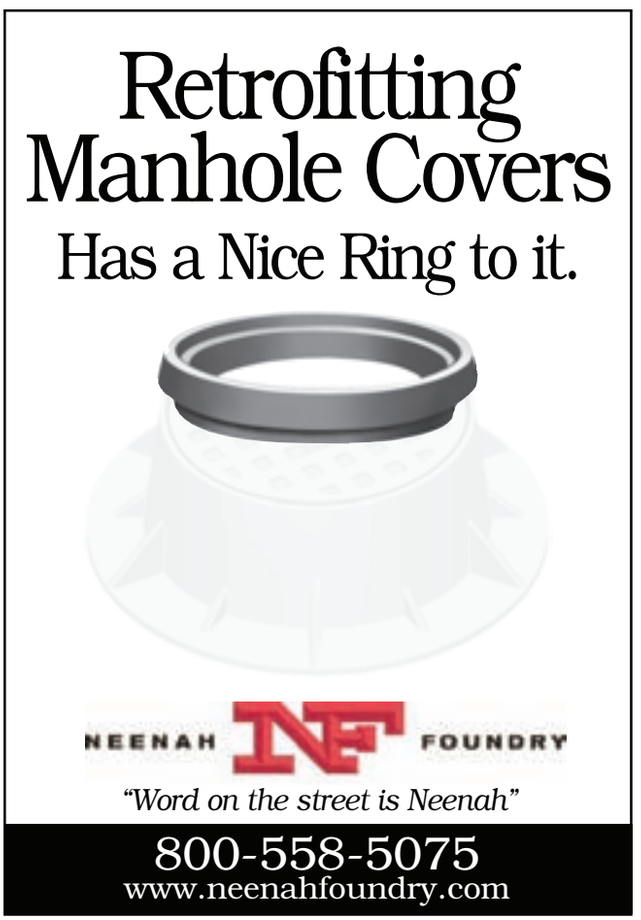
ALDOT has seen firsthand proof of the water facts stated in Figure 1. The only practice more effective than slowing water is capturing water. The thought of attempting to capture all water falling on a several-hundred-acre site had been dismissed historically. ALDOT now works to isolate smaller drainage areas and treat every raindrop that falls on a site. Runoff that cannot

Doubling the velocity of water increases

… its erosive energy by four times,

… the size of the particle that can be carried by 64 times and

… the mass of soil that can be transported by 32 times. **Figure 1*



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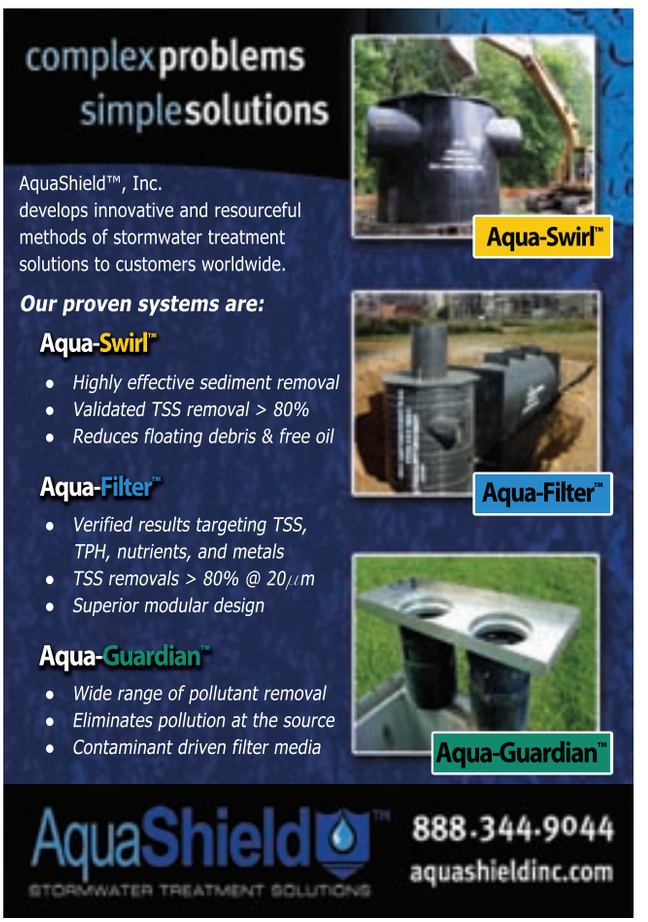

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be completely captured and treated is at least impeded.

This approach becomes ineffective if runoff from beyond the right-of-way is not diverted or otherwise kept separate from project runoff. While slow to adopt the use of large basins due to right-of-way constraints and maintenance concerns, ALDOT is beginning to look at true basins, or basins created by the use of sediment barriers, as another safeguard against sediment deposition, increased flows and related postconstruction lawsuits and complaints.

Under the sponsorship of ALDOT, Auburn University is developing a test facility where sediment control BMPs can be evaluated. ALDOT intends to establish a database of effective sediment control BMPs, as it already has for inlet protection, from which contractors can choose.

Prior to any ground disturbance, ALDOT contractors must submit a storm water management plan and participate in an onsite storm water meeting. All stakeholders attend the meeting to promote adequate forethought. As for offsite sediment deposition mitigation efforts, ALDOT requires contractors to participate in the investigation and correction planning and actions. Costs for this work are reimbursed proportionally to the extent that the contractor was not responsible for the violation. This policy of forced partnership appears to be making a difference in how contractors approach and pursue projects through completion.

Perhaps the most important lesson ALDOT learned is that directed, effective communication can make many problems manageable or nonexistent. Problems—whether underfunded transportation infrastructure improvements or the prevalent idea that environmental protection in highway construction is a passing fad—often can be traced back to ineffective communication.

Many requirements dismissed in the past as unreasonable are being discussed up front now, with concessions being made on both sides. Simple face-to-face meetings between ALDOT engineers and regulatory biologists are yielding surprisingly reasonable construction limitations while meeting the intent of legislation geared toward work done around sensitive species and habitats. Effective communication has produced a greater understanding between ALDOT officials and contractors, local environmental protection groups, the general public and other transportation work stakeholders.

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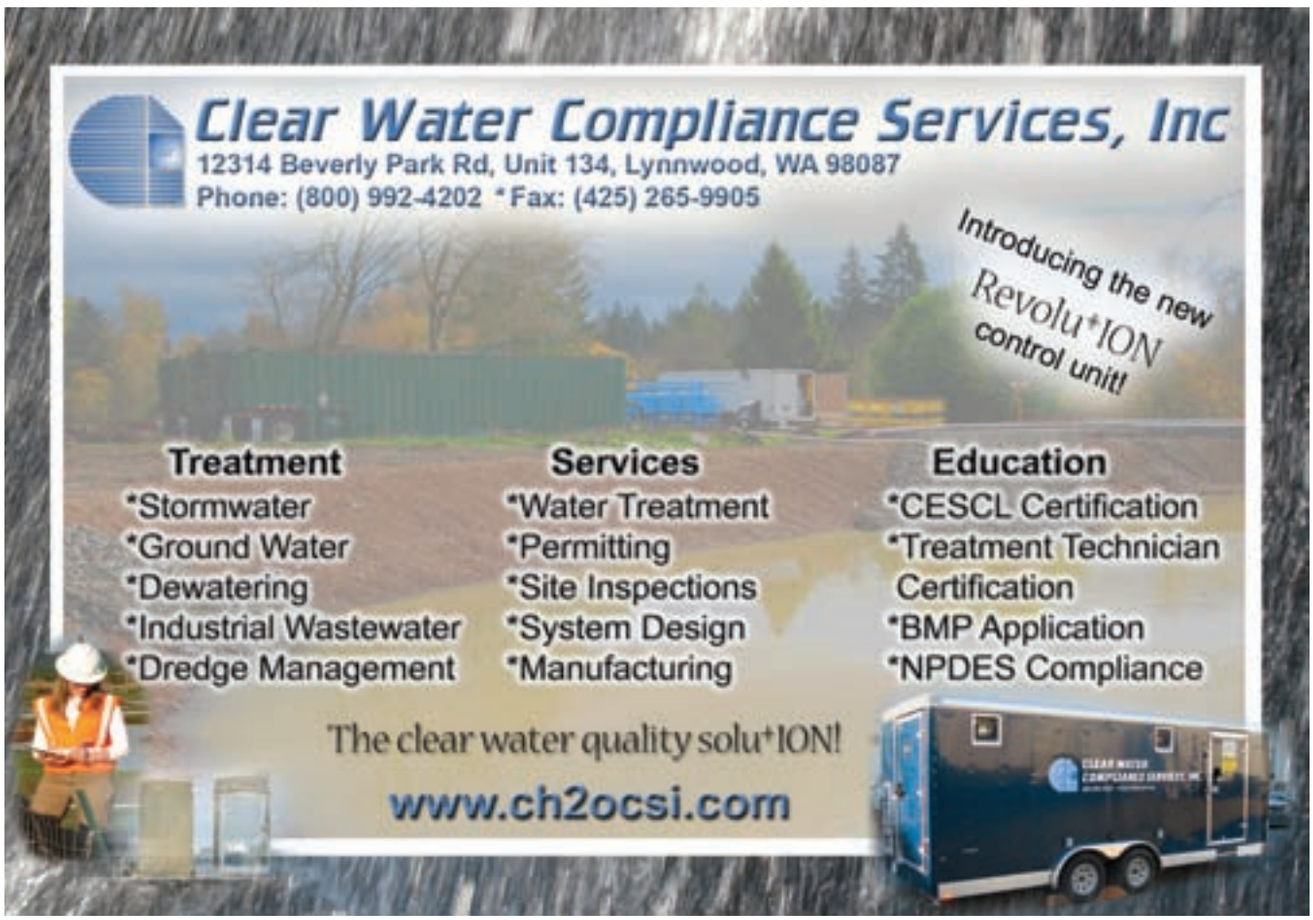

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