

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM: DELDOT'S STORMWATER QUALITY PROGRAM IN NEW CASTLE COUNTY

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The focus of water quality management throughout the United States has shifted in recent decades from point source discharges to nonpoint source pollution issues, such as urban and agricultural runoff, erosion and sedimentation. These problems are major contributors to poor habitat conditions for aquatic life, beach closures and fish consumption advisories. Recent reports from the Delaware Department of Natural Resources and Environmental Control (DNREC) indicate that the quality of many of the surface waters in Delaware has been seriously impaired. Ninety-nine percent of Delaware rivers and streams and 87 percent of its ponds and lakes do not fully support their use for swimming; 64 percent of Delaware's rivers and streams and 21 percent of the ponds and lakes do not fully support fish and wildlife uses. The major causes of these water quality problems in the State are nutrient overenrichment, pathogenic bacteria, toxic chemicals, and physical degradation of stream habitats. Stormwater runoff delivers much of this contaminant load to our surface waters.

The National Pollutant Discharge Elimination System (NPDES) Program at the Delaware Department of Transportation (DelDOT) is a comprehensive and coordinated effort charged with improving the quality of stormwater runoff from DelDOT-owned properties and activities. In 1987 the Clean Water Act was amended to include requirements for stormwater discharges under the NPDES program. Before that time, stormwater from storm sewer systems was allowed to enter our nation's waterways untreated. Phase I of this legislation requires industries and large municipalities throughout the U.S. to obtain a stormwater discharge permit and to implement programs, practices and procedures that reduce the contribution of pollutants from the storm drain system to the maximum extent practicable. DelDOT, New Castle County, and twelve municipalities became co-permittees on a Phase I NPDES stormwater permit issued in May 2001.

The NPDES permit in New Castle County has specific requirements designed to control or eliminate runoff pollutants. DelDOT is responsible for putting into action a number of program elements, including:

- Operation and maintenance of public streets and storm drain systems to reduce pollution discharges;
- Inventory and inspection of all storm drains for type, condition and illicit discharges;
- Reduction of pollutant discharges from areas of new development and significant redevelopment;
- Reduction of pollutant discharges associated with pesticide, herbicide and fertilizer application;
- Spill prevention, containment and response;

- Public education and training;
- Stormwater quality monitoring;
- Retrofits of existing structures to improve water quality; and
- Pollution prevention plans for all maintenance yards.

Within New Castle County alone, DelDOT owns and operates a 5,000-mile storm drain network with an estimated 50,000 storm drain inlets. Currently DelDOT and the County are inventorying and inspecting the entire drainage system – a five-year process scheduled to be completed in 2006. Storm sewer outfalls are also being inspected and tested for the presence of illicit discharges to the storm drain system. All of this inventory and inspection information is collected into a database that is accessible to DelDOT engineers and maintenance crews via a geographical information system (GIS) to aid them in maintaining the storm drain system in proper working condition. As the inspections are completed, plastic markers are applied on the storm drain inlets, with the water quality message "ONLY RAIN DOWN THE STORM DRAIN". The marker was designed for DelDOT by the Partnership for the Delaware Estuary. These markers serve as a reminder to citizens that what we put on the land eventually ends up in our waterways and hopefully will discourage dumping of materials such as oil, household hazardous chemicals and yard wastes into the storm sewer inlets.

Although DelDOT is responsible for reducing contaminants that enter its storm drain system, much of the pollution originates from private properties. County residents must realize that what they do in their own yards and driveways directly impacts local water quality. Brochures, fair displays, tax bill inserts, transit system ads, bookmarks and activity booklets for children are part of our public outreach effort.

Another major component of DelDOT's NPDES activities is a best management practices (BMP) retrofit program in which new types of structural controls and water treatment technologies are incorporated into the existing storm sewer system to reduce runoff volume and remove pollutants from the stormwater that is discharged into local streams. New developments are required by law to include BMPs such as retention ponds and detention or separation technologies into their designs. Areas developed prior to 1991, however, were not subject to these regulations, and many of them have few controls on runoff water quality. Limited space and budgets make retrofits in these areas challenging. DelDOT is experimenting with different types of BMP retrofit technologies, and the performance of these are being closely monitored to determine their overall effectiveness, practicality and impact on the water quality in local streams.

Two areas in New Castle County have been targeted initially for these retrofits. One is the I-95 Service Plaza near Newark. This is a high-traffic facility that is comprised of a large food service building, two fueling stations, large paved parking lots for cars and trucks, and grass islands that are used regularly for walking pets. All of the stormwater runoff from the plaza is piped directly into Leatherman's Run, an impaired stream that

ESTUARY BASICS CONTINUED

runs beneath the service area through concrete culverts. Retrofit projects planned or underway at the I-95 Service Plaza include two bioretention cells to replace the existing concrete swales located between the highway lanes and the plaza, inlet protector devices installed in catch basins, and sand filter and StormFilter® BMPs installed near one of the gas stations. Water quality monitoring is providing data on total pollutant loads coming from the service plaza and will allow DeIDOT to assess both the effectiveness of the BMPs and the impact of discharges on Leatherman's Run, before and after retrofit installations.

The second area targeted for retrofits and monitoring is the Pike Creek Watershed in the Christina River Basin, which is dominated by residential development. Total maximum daily load (TMDL) regulations for Pike Creek will be in place for nutrients and bacteria by 2004. DNREC's Nonpoint Source Program recently has developed a Pike Creek Watershed Initiative to provide technical outreach, incentives and coordi-

nation to facilitate implementation of BMPs to reduce nutrient and sediment loads to Pike Creek, primarily through control of stormwater runoff. In addition, a monitoring plan is under development that will include biological, habitat and water chemistry evaluation to assess stream quality changes resulting from the implementations. DeIDOT has chosen to partner with DNREC in this initiative.

Already a number of catch basin filters to remove sediment and oils have been installed on some subdivision streets in the watershed. Beginning this fall, DeIDOT, the Partnership for the Delaware Estuary and DNREC will work with civic associations in the Pike Creek region to implement a pet waste management campaign. This effort will include installation of pet waste collection bag dispensers on streets and in parks frequented by dog walkers, citizen education to increase awareness and compliance, and microbial source tracking techniques to determine whether bacteria derived from pet waste in Pike Creek have been reduced by the campaign.

For more information about DeIDOT's and New Castle County's stormwater quality programs, visit <http://www.ncc-swnpdes.com/index2.htm>, or call 1-800-652-5600.



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BOWMAN'S HILL WILDFLOWER PRESERVE

