



Nonpoint Pointers

Understanding and managing nonpoint source pollution in your community

Pointer
No.

7

Managing Urban Runoff

The most recent *National Water Quality Inventory* reports that runoff from urban areas is the leading source of impairments to surveyed estuaries and the third largest source of water quality impairments to surveyed lakes. In addition, population and development trends indicate that by 2010 more than half of the Nation will live in coastal towns and cities, some of which will have tripled in population. Runoff from these areas will continue to degrade coastal waters.

To protect surface water and ground water quality, urban development and household activities must be guided by plans that limit runoff and reduce pollutant loadings. Communities can address urban water quality problems on both a local and watershed level and garner the institutional support to help address urban runoff problems.

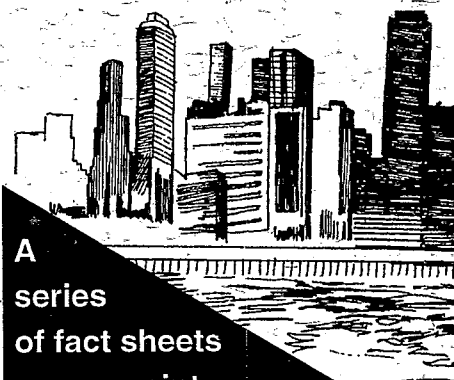
Nonporous urban landscapes like roads, bridges, parking lots, and buildings don't let runoff slowly percolate into the ground.

How Urban Areas Affect Runoff

Increased Runoff. The porous and varied terrain of natural landscapes like forests, wetlands, and grasslands trap rainwater and snowmelt and allow it to filter slowly into the ground. Runoff reaches receiving waters gradu-

ally. In contrast, nonporous urban landscapes like roads, bridges, parking lots, and buildings don't let runoff slowly percolate into the ground. Water remains at the surface, accumulates, and runs off in large amounts. When leaving the system and emptying into a stream, it erodes streambanks, damages streamside vegetation, and widens stream channels. This will result in lower water depths during non-storm periods, higher than normal water levels during wet weather periods, increased sediment loads, and higher water temperatures. Native fish and other aquatic life cannot survive in urban streams severely impacted by urban runoff.

Increased Pollutant Loads. Urbanization also increases the variety and amount of pollutants transported to receiving waters: sediment from development and new construction; oil, grease, and toxic chemicals from vehicles;



A series of fact sheets on nonpoint source (NPS) pollution

Did you know that because of impervious surfaces such as pavement and rooftops, a typical city block generates 9 times more runoff than a woodland area of the same size?

NPS pollution occurs when water runs over land or through the ground, picks up pollutants, and deposits them in surface waters or introduces them into ground water.

RELATED PUBLICATIONS

- Additional fact sheets in the Nonpoint Pointers series (EPA-841-F-96-004)
- Controlling Nonpoint Source Runoff From Roads, Highways, and Bridges (EPA-841-F-95-008a)
- Developing Successful Runoff Control Programs for Urbanized Areas (EPA-841-K-94-003)
- Economic Benefits of Runoff Controls (EPA-S-95-002)
- Fundamentals of Urban Runoff, Terrene Institute, Washington, DC, 1994
- Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Chapter 4 (EPA-840-B-92-002)
- Storm Water Fact Sheet (EPA-933-F-94-006)
- The Quality of Our Nation's Water: 1994 (EPA-841-S-95-004)

To order any of the above EPA documents call or fax the National Center for Environmental Publications and Information.

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FOR MORE INFORMATION

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nutrients and pesticides from turf management and gardening; viruses and bacteria from failing septic systems; road salts; and heavy metals. Sediments and solids constitute the largest volume of pollutant loads to receiving waters in urban areas.

When runoff enters storm drains, it carries many of these pollutants with it. In older cities, this polluted runoff is often released directly into the water without any treatment. Increased pollutant loads can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe.

Point and Nonpoint Distinctions

Two types of laws help control urban runoff: one focusing on urban point sources and the other on urban nonpoint sources. Point sources are addressed by the National Pollution Discharge Elimination System permit program of the Clean Water Act, which regulates stormwater discharges. Urban nonpoint sources are covered by nonpoint source management programs developed by states, territories, and tribes under the Clean Water Act. In states and territories with coastal zones, programs to protect coastal waters from nonpoint source pollution also are required by section 6217 of the Coastal Zone Act Reauthorization Amendments.

Measures to Manage Urban Runoff

Plans for New Development. New developments should attempt to maintain the volume of runoff at predevelopment levels by using structural controls and pollution prevention strategies. Plans for the management of runoff, sediment, toxics, and nutrients can establish guidelines to help achieve both goals. Management plans are designed to protect sensitive ecological areas, minimize land disturbances, and retain natural drainage and vegetation.

Plans for Existing Development. Controlling runoff from existing urban areas tends to be expensive compared to managing runoff from new developments. However, existing urban areas can target their urban runoff control projects to make them more economical. Runoff management plans for existing areas can first identify priority pollutant reduction opportunities, then protect natural areas that help control runoff, and finally begin ecological restoration and retrofit activities to clean up degraded water bodies. Citizens can help prioritize clean-up strategies, volunteer for restoration efforts, and help protect ecologically valuable areas.

Plans for On-site Disposal Systems. The control of nutrient and pathogen loadings to surface waters can begin with the proper design, installation, and operation of on-site disposal systems (OSDSs). These septic systems should be situated away from open waters and sensitive resources such as wetlands and floodplains. They should also be inspected, pumped out, and repaired at regular time intervals. Household maintenance of septic systems can play a large role in preventing excessive system discharges.

Public Education. Schools can conduct education projects that teach students how to prevent pollution and keep water clean. Education and public outreach can target specific enterprises, such as service stations, that have opportunities to control runoff on site. Many communities have implemented storm-drain stenciling programs that discourage people from dumping trash directly into storm sewer systems.