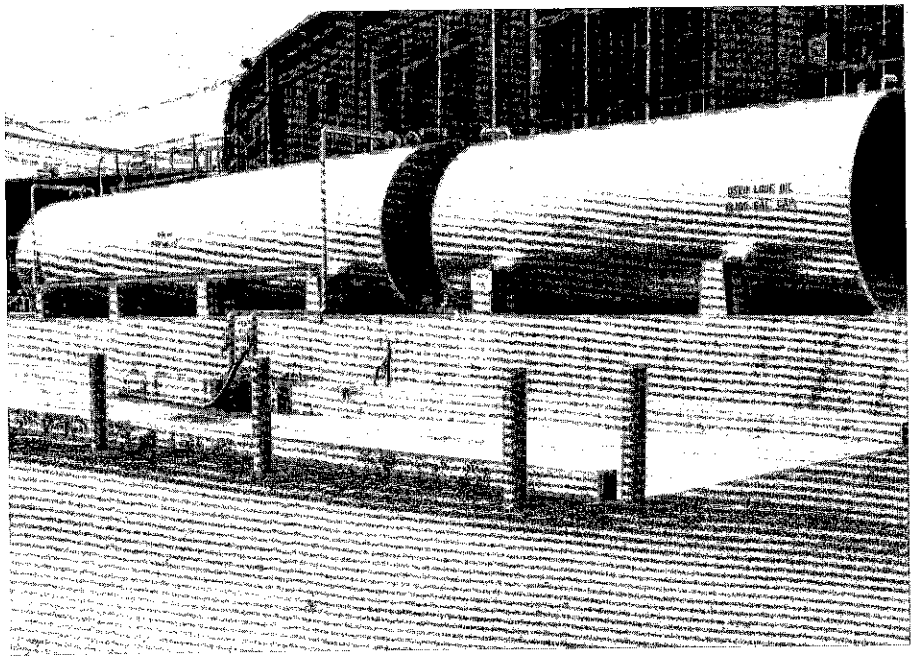

Storm water drainange from tank dikes and loading aprons will be regulated by EPA.

Treating storm water

New EPA regulations will affect how railroads, big and small, plan for stormy weather.

By C. Barkan, J. Waggener and E. Hockensmith

In the past, stormy weather made railroaders think mainly of track washouts, bridge, culvert, roadbed and subgrade problems, and the inevitable problems of maintaining traffic through it all. Soon, railroaders will have one more thing to worry about. They will have to adhere to new regulations concerning the discharge of storm water—regulations that will affect all U.S. railroads.

On Oct. 1, applications for storm water discharge permits must be on file with federal or state offices of the Environmental Protection Agency for all regulated storm water discharge points. That's also the date that environmental compliance will become a major concern when railroaders plan for stormy weather.

The application process is just the beginning. Following on its heels will come, the writing of Storm Water Pollution Prevention Plans for each regulated facility on every railroad; the assignment of a facility-specific Pollution Prevention Team; regular facility inspections and evaluations; changes in operating habits, along with physical changes to maintenance and servicing facilities; and significant penalties for non-compliance.

The Association of American Railroads and the American Short Line Railroad Association began planning for this more than a year and a half ago. In a substantial undertaking designed to cover the majority of regulated discharge points for participating railroads, AAR started the group application process for more than a thousand sites across the country. Each railroad must evaluate its own facilities, system wide, and determine which ones are regulated. Although most regulated railroad facilities are covered by group applications, some are not, due to characteristics particular to the site. Such facilities will be covered by individual applications or a General Permit. Operators of facilities not covered by the group applications must file individual applications, or notices of intent to be covered by a general permit, no later than Oct. 1.

Regulated facilities

Many types of rail transportation facilities (including transit properties) are covered by the new EPA storm water regulations. Most are facilities that service or repair locomotives or railcars. Also covered by the new regulations are lading or commodity transfer operations where maintenance (fueling, lubricating and repairs) of the transfer equipment (conveyors, cranes, tractors, forklifts, etc.) takes place. Landfills, contaminated sites and construction sites are also covered.

The 1972 Amendments to the Federal Water Pollution Control Act, also known as the Clean Water Act, prohibited the discharge of any pollutant into U.S. waters unless the discharge was authorized by a National Pollutant Discharge Elimination System (NPDES) permit. The Act further required that all water pollution be addressed and reduced. Storm water regulations have been in development since the Clean Water Act in 1972. In 1973, EPA promulgated rules that exempted non-contaminated storm water from regulation. However, environmental groups filed and won lawsuits against EPA, arguing that the agency could not exempt point sources of storm water from regulation. The Water Quality Act of 1987 was then passed by Congress and this Act stated that storm water discharge, including that associated with industrial activity, would require a permit. Under the EPA's definition, industrial activity for railroads includes facilities that have vehicle-maintenance shops and equipment-cleaning operations. Only those portions of the facility that are involved in maintenance (including rehabilitation, mechanical repairs, painting, fueling and lubrication), equipment-cleaning operations or operations such as landfills, material-recycling yards and others need a permit for storm water.

EPA has historically used the NPDES permitting program to improve water quality by focusing on reducing pollutants in the end-of-pipe discharges, or "point sources," from industrial process waste water and from municipal sewage-treatment plants. While these efforts have vastly improved the quality of the nation's waters, recent studies by both EPA and environmental groups indicate that further improvements in water quality can only be accomplished by the prevention of pollution from "diffuse sources." These diffuse sources include agricultural, industrial and urban runoff and are generally referred to as non-point source runoff.

Due to the impacts of non-point source runoff on the nation's waters, the EPA is now including storm water in the regulatory program. Storm water was defined by the EPA as "storm water runoff, snow melt runoff, surface runoff and drainage." EPA is planning to address storm water when it occurs as a point source, which includes pipes, ditches, channels, tunnels, conduits, ravines and other conveyances under the EPA's definition.

Generally, railroads must be concerned with the following pollutants in their storm water: Oil and grease, pH, biochemical oxygen demand (five-day), chemical

oxygen demand, total suspended solids, total phosphorus, total kjeldahl nitrogen and nitrate plus nitrite nitrogen. However, site-specific concerns must also be addressed. For example, facilities with painting operations should consider analyses for volatile organics, while facilities handling iron ore might consider analysis for iron and manganese. In general, testing for other pollutants specific to a site may be appropriate.

Permit application options

Regulations promulgated by EPA in November 1990, and subsequently amended, afford railroads two types of permit applications, individual and group. Notice of intent to be covered under a general permit is a third option.

An individual application is a "one-part" submittal due by Oct. 1. This submittal is composed, however, of two to three EPA forms, along with numerous attachments. Which forms are required depends on whether or not the facilities' discharges are existing or new, and whether or not the discharge is storm water alone or storm water combined with non-storm water (i.e., process waste waters). Supplementary information is also required for an individual application, and for all outfalls. Quantitative analytical data must be obtained for all outfalls by sampling a representative storm event; there are special requirements for sampling and analyses. This results in a complex matrix which has to be evaluated for each outfall in planning and implementing the sampling and analytical program for the application.

A group application, Part 1 of which was due Sept. 30, 1991, was made for facilities in the same regulatory sub-category or sufficiently similar in characteristics as outlined in the storm water regulations. Part 1 included a narrative description of the group and explained why the participants were sufficiently similar to be part of the group. Part 1 also described the materials stored outside, the management practices the group participants use to prevent contamination of storm water, and the participants of the group that were to be sampled in Part 2 of the group application. Part 2 will include site maps and topographic maps for the sampled participants and analytical results for the sampled facilities. Since only about 10% of the members in a group have to submit analytical results, there is a considerable reduction in cost and paperwork achieved in large group filings.

A general permit is "attached to" by filing a Notice of Intent. It is the simplest, easiest, and least-costly form of application, but this option is not yet available in most states. Applying for general permit

Evaluation of state storm water permitting programs
(as of July 1992)

State	Group Application			General Permits	
	Will accept	Will not accept	Conditional*	General permit authority granted†	Date planning to have storm water general permit in place
Alabama			X	06-26-91	
Alaska	X			EPA	
Arizona	X			EPA	
Arkansas	X			11-01-86	
California		X		03-04-83	Issued Nov. 19, 1991**
Colorado			X	03-04-83	mid-summer 1992
Connecticut	X			03-20-92	
Delaware	X			NPDES	summer 1992
District of Columbia	X			EPA	
Florida	X			EPA	
Georgia	X			01-28-91	Oct. 1, 1992
Hawaii	X			09-30-91	Oct. 1, 1992
Idaho	X			EPA	
Illinois	X			01-04-84	
Indiana	X			04-02-91	
Iowa	X			NPDES	
Kansas	X			NPDES	
Kentucky	X			09-30-83	
Louisiana			X	EPA	
Maine	X			EPA	
Maryland	X			09-30-91	
Massachusetts			X	EPA	
Michigan	X			NPDES	Sept. 30, 1992
Minnesota	X			12-15-87	
Mississippi	X			09-27-91	
Missouri		X		12-12-85	Some issued 2-2-92, but none yet for RRs
Montana			X	04-29-83	
Nebraska			X	07-20-89	
Nevada	X			NPDES	
New Hampshire	X			EPA	
New Jersey	X			04-13-82	
New Mexico	X			EPA	
New York	X			NPDES	
North Carolina			X	09-06-91	Issued July 1992**
North Dakota	X			01-22-90	
Ohio			X	NPDES	mid-July
Oklahoma	X			EPA	
Oregon		X		02-28-82	Issued Sept. 26, 1991**
Pennsylvania			X	08-02-91	July 50
Rhode Island			X	09-17-84	
South Carolina	X			NPDES	
South Dakota	X			EPA	
Tennessee	X			04-18-91	
Texas	X			EPA	
Utah	X			07-07-87	
Vermont	X			NPDES	
Virginia	X			05-20-91	late summer 1992
Washington	X			09-26-89	
West Virginia	X			05-10-82	
Wisconsin	X			12-19-86	
Wyoming	X			09-24-91	

* Conditional Acceptance = Special conditions apply; check with the particular state's permitting office.

† EPA = Permits in these states are written by the applicable EPA Region. Consequently, federal promulgation of the general permit is required. Federal promulgation is underway and may be completed by October 1, 1992.

NPDES = General permitting authority was granted as part of the original NPDES permitting authority.

** These are the only states actually having a general permit system in place as of July 8, 1992.

Table 1. Evaluation of state storm water permitting programs.

coverage immediately subjects the applicant, on the date of mailing the notice of intent, to all of the compliance requirements of the general permit. Some of these compliance requirements may be costly and burdensome. They include developing and implementing a pollution-prevention plan by an early date, and bringing the entire facility into complete compliance relatively soon. Facilities applying under group applications, and possibly under the individual permit routes, are likely to have more time to plan, develop and implement their pollution prevention plans, and have more time for compliance.

Impacts on the railroad industry will be significant. Prior to these regulations, most state environmental agencies and the EPA were only concerned with storm water runoff from fueling, servicing and repair operations which caused visible oil to be discharged in significant amounts. These areas were generally required to have some type of containment, and storm water treatment with the effluent from the storm-water-treatment facility needing to meet the requirements established in a NPDES permit or a local pre-treatment permit.

The new regulations go far beyond the previous requirements and state regulatory agencies, and EPA is now interested in many more sites and locations. These include maintenance-of-way equipment-repair shops, repair tracks, fueling locations, car-cleaning operations and servicing and maintenance locations. The latter generally includes sites with any of the following equipment: Bulk-commodity transfer and loading/unloading of automobiles, piggyback trucks, tractors, trailers or containers. Dumps and landfills on-site, and areas with significant contamination (i.e., spills of fuel, oils or other materials) are also among the areas regulated. These new regulations have significantly increased the environmental permitting requirements for railroads.

Storm water outfall samples must be tested for pollutants.

AAR group application

The AAR has prepared and submitted Part 1 applications for six different groups of participating railroads. The group applications provides a consistent representation of the industry's operations to the regulatory agencies and reduces the permit application cost. The group applications cover different types of railroad activities with similarities in the characteristics of their storm water discharges. The six groups, which represent nearly 1,000 railroad facilities across the U.S., are:

Group 1—Repair and maintenance without painting. Facilities in this group engage in the repair and maintenance of one or more of the following: Freight cars, passenger cars, locomotives, maintenance-of-way equipment, equipment used at facilities where automobiles are loaded and unloaded, and equipment used at facilities where intermodal freight is loaded and unloaded. Some of these facilities also engage in the fueling of railroad equipment and motor vehicles, and exterior cleaning of rail equipment.

Group 2—Freight car cleaning. Facilities in this group engage in the cleaning of the interior of railroad freight cars such as gondolas, hopper cars, flat cars and box cars. Typical commodities transported in these cars are bulk commodities such as wood, pulp wood, wood chips, paper, lime, alumina, solid urea, grains, clays, cement, bentonite, soda ash, stone, coal, coke, ores, slags and fertilizers. Not included are facilities which clean tank cars, which are largely owned by third parties.

Group 3—Repair and maintenance, which includes painting. Facilities in this group all engage in the painting of railroad equipment, including locomotives, rail cars and self-propelled maintenance equipment. In addition to these activities, some of the facilities also engage in the same type of repair and maintenance activities listed in Group 1.

Group 4—Fueling. Facilities in this group engage in the fueling of railroad equipment and/or motor vehicles. In addition to actually fueling equipment and vehicles with diesel fuel or gasoline, the activities at these facilities can include oil changing and greasing, adding cooling water and lubricating oil, and, in the case of locomotives, adding traction sand. Fuel may be drawn from above-ground or underground storage tanks or from trucks. Substances used at these facilities include petroleum hydrocarbons such as diesel fuel, gasoline, greases, lubricating oils, water and sand.

Group 5—Bulk commodity transfer, non-marine. Facilities in this group engage in the bulk transfer of commodities between rail cars and trucks. While the commodities handled at these facilities can vary from time to time, typical commodities handled include plastic pellets, polyethylene, sodium borate, caustic potash, petroleum products, corrosive acids, plasticizers, cement, soda ash, food-grade products, clay, borax, alumina, sand, argon gas, carbon dioxide, stone, calcium stearate, lime, pulp wood, liquid detergents, fertilizers, asphalt and ammonium nitrate.

Group 6—Bulk commodity transfer, marine. Facilities in this group engage in the bulk transfer of commodities between rail cars and marine vessels. The following commodities are handled at these facilities: Coal, pelletized ash, limestone, manganese ore, chromium ore, aluminum sulphate, phosphate rock and fertilizers, paper, lumber, tapioca (starch), limestone and iron ore pellets.

There are other types of railroad-owned property that will be required to get a permit for storm water runoff. These types of facilities include landfills (both active and inactive) that received industrial waste, facilities involved in the recycling of materials, landfarms, steam electric-generating facilities (including coal piles) and construction activities that result in the disturbance of greater than five acres of land. These facilities will require individual applications or notices of intent to be covered by a general permit. Individual applications are required in those states that do not have general permitting authority from EPA and which have indicated they will not be issuing any general permits before the Oct. 1 filing deadline. Presently, general permitting is available in only a handful of states, including California, Oregon, and North Carolina. When the EPA issues their general permit, these will be available in states with EPA-run programs.

The NPDES permitting program has now been delegated to most states. These

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Storm water

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state regulatory programs are at least as stringent as EPA's, and in some cases are much more so. The table appearing on page 25 indicates which states will accept group applications and which have general permitting authority. The states that have general permits in place that may be applicable to discharges from railroad facilities, operations or properties are also identified.

Future requirements

The future of storm water regulations for railroads appears to be costly and time-consuming. Once permits for storm water for differing railroad operations are issued, various state agencies and EPA will be watching the sites for contaminated storm water. Storm water discharges may be sampled, analyzed and reported. Storm water pollution-prevention plans will have to be developed and implemented as part of the permit-compliance programs.

Storm water pollution-prevention plans will be very similar in nature to Spill Prevention Control and Countermeasure (SPCC) plans many facilities already have in place. These plans will probably include requirements for topographic maps of the facilities, site maps showing drainage, existing building and treatment facilities, descriptions of significant sources of pollutants in storm water discharges, listings of all chemicals that may come in contact with storm water and estimates of the concentrations of these chemicals in the storm water and an estimate of the pervious and impervious areas. Requirements will include descriptions of: material storage and handling methods that will avoid storm water contamination (and ways to handle storm water to keep it from becoming contaminated), treatment facilities, spill-prevention procedures, spill-response training and equipment. They will require the establishment of a storm water prevention committee, internal record-keeping and reporting procedures, and provisions for inspections of sufficient frequency to ensure continued compliance with this plan.

The new storm water regulations are complex and will have a long-term impact on the operation of railroad and transit facilities. Operators of these facilities should be sure they have thoroughly reviewed the requirements to be in compliance with all the regulations. ■

C. Barkan is manager of Environmental and Hazardous Materials-Research Division, Association of American Railroads; J. Waggener is executive vice president, and E. Hockensmith is principal, Resourse Consultants Inc.