

The Management of Storm Water Runoff Associated with
Industrial Activity

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Section 405 of the Water Quality Act of 1987 mandates that municipal and industrial storm water discharges are point sources of water pollution and are subject to regulation under the National Pollutant Discharge Elimination System (NPDES) permit program. In response to Section 405, the EPA promulgated the Final Rule governing storm water discharges on November 16, 1990. The notice describes a two part permit application process for large and medium sized municipal separate storm sewer systems (MSSSS). A separate NPDES discharge permit application is required for storm water discharges associated with industrial activity.

Compliance by all dischargers to the MSSSS will require the development and implementation of a municipal storm water management program. The management program will be incorporated as permit conditions of the municipality's NPDES discharge permit. It will identify priorities and procedures for inspection, and it will establish and implement measures to reduce the discharge of pollutants in runoff.

INTRODUCTION

Municipalities are required to prohibit unpermitted non-storm water discharges through the municipal drainage system. NPDES permitted non-storm water discharges are allowed by the regulations to use the

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MSSSS. However, these NPDES permits only govern discharges to the "waters of the United States". The right to grant permission for the conveyance through the MSSSS of processed water to the waters of the United States resides with the owner of the storm drainage system.

Creating a formal approval process for the connection of permitted discharges to storm water conveyance facilities will enhance the development of municipal management strategies. These strategies include connection fees and disconnection powers if industrial and municipal permit conditions are not met. This approval process could also be used as a tracking system by the municipality.

FINAL RULE PERMIT APPLICATION REQUIREMENTS

The Final Rule establishes two storm water application processes. One permit application process governs the MSSSS, and the other describes the multi-tiered permit application approach proposed for storm water runoff associated with industrial activity. The latter permitting process requires the development of "general" industry permits by the EPA. The general permit application and eligibility requirements will be promulgated by the EPA in early 1991. Exempted from the "associated with industrial activity" definition are wholesale, retail, service, or commercial activities.

Part 1 of the municipal permit application requires characterizing the existing drainage system by source identification and discharge analysis during dry weather conditions. An additional requirement to part 1 is a description of the municipality's existing management program for detecting improper industrial or sanitary connections into the storm water drainage system. A wet weather sampling plan is also required.

Part 2 of the municipal permit application process requires the creation of a comprehensive storm water management program. This management program will implement and monitor the effectiveness of the control strategies for detecting and removing pollutants discharging through the MSSSS. Key components include structural and source control measures governing planning, operations and maintenance activities and a screening program to detect and remove illicit discharge connections. Part 2 application requirements also include wet weather sampling and a monitoring program for data collection. The two part municipal discharge application is designed to facilitate development of

site specific permit conditions (EPA, 1990). The terms of the permit issued govern a municipality's responsibility for industrial storm water discharges.

INDUSTRIAL ACTIVITY MANAGEMENT

As the permit holder, the municipality will be responsible for ensuring that NPDES storm water permit conditions are met at all outfall discharge points into the receiving stream. Eliminating unpermitted industrial and organic waste stream discharges will also be required. New diagnostic tools for detecting improperly connected waste streams into the MSSSS need to be developed.

Intermittent industrial waste discharges into a municipal separate storm sewer system are difficult to detect. The multiplicity of storm sewer outfalls serving major metropolitan areas complicates the search for the source location and pathway of contaminants. The development of a diagnostic protocol for detecting the presence and locating the source of improperly connected waste streams into urban drainage systems is necessary for compliance with Part Two of the NPDES storm water discharge permit application.

A comprehensive methodology for assessing this intermittent waste discharge could include:

- 1) Using automated flow measuring equipment located within the sewer pipe to record the times and quantities discharged;
- 2) Using automated water quality sampling equipment to collect water samples during discharge events;
- 3) Field inspection and video logging along the total length of the outfall pipe to identify undocumented connections;
- 4) Manual sampling and field screening analysis during periodic discharge events and routine equipment servicing;
- 5) Field screening results and laboratory results will be analyzed to establish correlations that determine the necessity of laboratory analysis in future studies;
- 6) Using water quality models to analyze the relationships between waste load inputs and water quality;
- 7) Modeling results using field screening data and laboratory data will be compared to verify the assessment methods and evaluate the performance and applicability of the models;

- 8) Using a geographic information system (GIS) to track and map the progress of the assessment study.

A municipality's illicit discharge detection program must include a thorough surveillance and inspection program. The required Part 2 inventory of principal products and services by each industrial facility discharging storm water associated with industrial activity to the MSSSS may further augment the control of illicit discharges.

CONCLUSIONS

The control of unpermitted non-storm water discharges to the municipal separate storm sewer system is an integral component of the storm water management program. Because industrial dischargers must obtain permission from the MSSSS owner, a tremendous opportunity exists for instituting a permit tracking and compliance system, which could be funded through fee assessment.

A comprehensive protocol for detecting improperly connected waste streams to the MSSSS needs to be developed. Combining this protocol with surveillance, inspection, and an inventory of local industrial dischargers will reduce pollutant loadings discharging from municipal storm drainage systems. The source identification of industrial discharges will initiate the restoration of recreational, aesthetic, and cultural qualities of urban waterways.

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REFERENCES

- EPA. NPDES Permit Application Regulations for Storm Water Discharges; Final Rule. Federal Register. November 16, 1990.