

Evaluation of the Factors Relating Combined Sewer Overflows with Sediment Contamination of the Lower Passaic River

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The relationship between combined sewer overflows (CSOs) and sediment contamination of the lower Passaic River in New Jersey was evaluated to identify the nature of toxic chemical inputs to the river, estimate the magnitude of CSO inputs to other sources and assess the potential overall impact on sediment quality. Of the estimated 5000 facilities that discharge industrial effluent to the combined sewerage system along the Passaic River, approximately 400 facilities hold National Pollutant Discharge Elimination System (NPDES) permits. Seventy-eight permitted facilities, representing 14 major industrial classes with discharges exceeding 190 000 l day⁻¹, were identified within 33 CSO districts that are below the Second River and serviced by the Passaic Valley Sewerage Commission. A wide range of toxic chemicals, including heavy metals, pesticides, polychlorinated dibenzo-*p*-dioxins and dibenzofurans, polychlorinated biphenyls and polycyclic aromatic hydrocarbons were found to be associated with numerous industries located within the CSO districts. Many of these chemicals have been measured in CSO discharges to the river during wet weather flow events and have also been measured in river sediments. The magnitude of the CSO discharges (billions of litres per year) to the lower Passaic River, combined with the nature of the chemicals used and discharged to the system by industrial sources, indicates that CSOs represent an historic and ongoing source of toxic pollutants to the river. While the US Environmental Protection Agency (EPA) has recently developed an aggressive programme for reducing the impact of CSOs on the nation's waters, it will likely be many years before the benefits of this programme are realized, particularly in areas with antiquated sewer systems such as those within the Passaic River basin.