



Carter H. Strickland, Jr.
Commissioner

Angela Licata
Deputy Commissioner
angelal@dep.nyc.gov

59-17 Junction Boulevard
Flushing, NY 11373
T: (718) 595-4398
F: (718) 595-4479

November 28, 2011

Marc S. Greenberg, Ph.D.
Environmental Toxicologist
U.S. EPA - Environmental Response Team
OSWER/OSRTI/TIFSD/ERT

Re: Gowanus Canal Superfund Site: Estimation of PAH Concentrations on Solids from CSO Water Column Data

Dear Dr. Greenberg:

This memorandum summarizes some of the technical issues associated with the data collected and the analyses discussed by EPA at the CSTAG meeting, as they relate to contaminant loads associated with New York City (City) Combined Sewer Outfalls (CSOs). The City is hopeful that this analysis will be helpful to the CSTAG panel in their review process. The City's assessment of EPA's analysis is summarized in the following sections. The City would also like to restate its concerns regarding data gaps in the Draft RI Report and the current Conceptual Site Model ("CSM") for the Gowanus Canal, as presented in the RI. These concerns were previously presented by the City to EPA. These concerns are also summarized in the following sections.

The City has used the data presented in the RI Report for sediments collected in CSOs to conduct an independent evaluation of the potential impact of CSOs on the canal, and to develop a Conceptual Site Model (CSM) for the canal. These results were presented to CSTAG and demonstrate that PAH concentrations in CSO sediments, as presented in the RI Report, are equivalent to background concentrations, and are less than human health risk-based values. The EPA has discussed an alternative analysis in which they characterized PAH loads in CSOs as significantly

greater than the City's analysis. The City has not seen the EPA analysis, as it was not presented in the RI Report. It appears that USEPA is using the whole water data presented in the RI to estimate particulate matter concentrations for PAHs for risk assessment purposes.

This memo presents an analysis of the problems associated with estimating the PAH concentrations in CSO solids using the whole water data presented in the RI. There are several concerns with the methodology used in sampling whole water data and in the laboratory results reported for these data. These include:

- high and variable detection limits were reported for chemical and TSS data;
- poor agreement was observed for field duplicates;
- assumptions made regarding PAH partitioning in estimating particulate concentrations may not be valid: and
- discrete surface water samples used for CSOs are not representative of CSOs.

These uncertainties in the data can result in estimated particulate concentrations that may be more than an order of magnitude greater than actual values. These results have significant implications for load calculations, risk assessment, and remedial action decisions for the Site. Given the concerns with EPA's whole water sample data collection methodology, analysis, and the approach used to derive PAH concentration on the solids, the City believes that EPA's usage of these derived concentrations is problematic. In general, EPA's calculation methods are overly conservative for PAH compounds and the data are very poor for estimating concentrations of the more particle reactive PAH compounds. While the whole water data collected by EPA could be used to develop a preliminary assessment of the risk due to CSO water, it should not be used to derive conclusions on particulate matter. Further, using data presented in the RI for background samples and CSO whole water samples, the City has determined that, using EPA's methodology, the estimated B(a)P concentration on particulates for CSO samples with B(a)P detections are within or below the range of reference area results. This analysis would indicate that CSO and background area solids have essentially the same B(a)P levels. These analyses are discussed in more detail in the following sections.

1. Concerns with Data Collected by EPA for Remedial Investigation (RI) and its Use to Derive Remedial Decisions:

As reported in the RI Report, EPA collected sediment and surface water samples from the 1) reference site (Gowanus Bay and Upper NY Bay), 2) CSOs, and 3) Gowanus Canal. Ten locations in Gowanus Bay were selected by EPA to characterize the reference site. At the reference locations surface water samples were collected during dry weather and one wet weather event. Water samples were collected from ten CSOs during a single dry weather event and three wet weather events in an attempt to characterize CSO water and solids that may enter the Canal during CSO discharge events. Note that not all ten CSOs were sampled during all three wet weather events; however, each of the ten sampled CSOs has at least one wet weather sample.

Sediment samples were collected from the 10 locations representing the reference or background locations. In order to characterize the sediment from the CSOs, EPA sampled seven CSO locations from within sewer pipes and interceptors. An attempt was made to sample 10 CSO locations, but sediment was not found at 3 of the proposed locations.

Twenty-five locations were sampled for sediment and surface water samples from the canal in order to characterize the canal itself. Sediment and surface water samples were analyzed for TAL metals and TCL organics.

The City has used the data collected by EPA in the RI Report to conduct an independent evaluation of the CSOs and develop an initial framework for a conceptual site model for the Canal. However, there are many concerns regarding the data collected by EPA. Concerns are as follows:

- a) Whole Water Data Sampling Method for CSOs: To characterize the general level of contamination in the discharge water from a CSO, composite sampling is required. The EPA collected almost exclusively discrete (grab) water samples. A grab sample represents the instantaneous conditions at the time of collection and does not represent or integrate the contaminant concentration variations over the period of discharge during a rainfall event. A single 12-hour composite sample was collected from only one CSO (RH-034) during one wet