



# Glossary of Modeling Terms

**Average annual overflow volume (AAOV)** – a unit of measurement commonly used for overflow volumes discharged into waterways from wastewater treatment plant (WWTP) service areas, expressed in millions of gallons as an annual average, over a representative period of one or more calendar years.

**Baseline** – conditions for a pre-determined time period to measure and compare future improvements on an equivalent basis. For the Long Term Control Plan Program, baseline includes committed grey infrastructure projects as well as 10% citywide implementation of green infrastructure in combined sewer drainage areas.

**Combined sewer impervious area (CSIA)** – total impervious area within the combined sewer drainage area.

**Combined sewer overflow (CSO)** – combined sewage (both stormwater and sanitary wastewater components) that tips over a regulator in the combined sewer system during a wet weather event and is discharged via a combined sewer outfall into a receiving waterbody.

**Contaminant Assessment and Reduction Program (CARP)** – the New York State Department of Environmental Conservation's (NYSDEC) program to reduce toxic chemicals in New York Harbor. The overall goal of the initiative is to reduce the discharge of contaminants in the Port of New York/New Jersey.

**Cost-effective grey infrastructure (CEG)** – targeted grey infrastructure, or end-of-pipe projects to reduce CSO volumes. These projects are the most cost-effective among a number of alternatives considered and examples include CSO retention tanks, bending weirs and floatables controls.

**Design dry weather flow (DDWF)** – the amount of wastewater flow that a WWTP is designed to handle during dry weather. NYC's WWTPs have the capacity to treat twice the DDWF during wet weather conditions.

**Directly connected impervious area (DCIA)** – the fraction of the total impervious area directly connected to the sewer system, in either combined or storm drainage areas.

**Dry weather flow (DWF)** – the flow of wastewater in a combined sewer during dry weather conditions, consisting mainly of wastewater from residential, commercial and other land uses, and groundwater infiltration. No stormwater components are included in DWF.

**Geographic information system (GIS)** – a system designed to capture, store, manipulate, analyze, manage and present several types of geographical data at spatial or temporal scales.

**Hydrodynamic model** – a model that focuses on the circulation and transport of water within a waterbody, including freshwater flows, tides, air/water heat exchange, salinity and density variations in deep waters, and wind-induced surface mixing.

**Hydrologic and Hydraulic (H&H)** – the scientific study of properties, distribution and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere (hydrology); and the study of the movement and characteristics of water within sewer or open channel drainage systems (hydraulics).

**Imperviousness** – the sum total of non-porous surfaces such as rooftops, streets and sidewalks. Rather than being absorbed into the ground, much of the stormwater in New York City flows over impervious surfaces into roof drains or catch basins in the streets, and then into the sewer system. These impervious surfaces cover approximately 72% of New York City's 305 square miles.

**InfoWorks CS** – a commercial H&H model used by DEP for watershed modeling.

**RAINMAN** – a simplified hydrologic model that applies the "Rational Formula" to generate inflows to a sewer network consisting of a simple series of nominal-capacity regulators.

**Real time control (RTC)** – a set of control logics or rules used to represent the dynamic operation of sewer infrastructure elements such as WWTP headworks, sluice gates and pumps.

**Stormwater Management Model (SWMM)** – a dynamic rainfall-runoff simulation model used for single event or long-term (continuous) simulation of runoff quantity and quality from primarily urban areas, developed by the US Environmental Protection Agency. SWMM tracks the quantity and quality of runoff generated within each subcatchment, and the flow rate, flow depth, and quality of water in each pipe and channel during a simulation period. Model results are saved at user-defined time intervals.

**Supervisory Control and Data Acquisition (SCADA)** – a system that collects data from sensors at remote locations and sends information to a centralized data collection system.

**Wastewater Planning Users Group (WaPUG)** – a not-for-profit organization, based in the United Kingdom, that promotes best practices in the wastewater industry and developed guidance for calibration and validation of hydraulic models.

**Water quality model** – a model that predicts the fate and transport of various pollutants in waterways using mathematical simulation techniques. A typical water quality model consists of a collection of formulations representing physical mechanisms that determine position and momentum of pollutants in a waterbody. DEP utilizes several water quality models including: East River Tributaries Model (ERTM), Estuarine Coastal and Ocean Model (ECOM), System Wide Eutrophication Model (SWEM), Harbor Estuary Program Pathogens Model (PATH) and Jamaica Bay Eutrophication Model (JEM).

**Watershed model** – a hydraulic and hydrologic tool that calculates runoff volumes and pollutant loadings using various watershed data, sewer system characteristics, and meteorological data. Examples of these watershed models include InfoWorks CS, XP SWMM, USEPA SWMM and RAINMAN.

**Weight of evidence approach (WOE)** – a multipronged assessment methodology used by DEP to determine the adequacy of model calibration and validation efforts.

**Xpert SWMM (XP SWMM)** – a commercial version of SWMM.

For more information on DEP's CSO program, please visit our website at [www.nyc.gov/dep/ltcp](http://www.nyc.gov/dep/ltcp) or visit [www.Facebook.com/NYCWater](https://www.facebook.com/NYCWater).