

Lycoming County CBTS Glossary

Aggregator/Broker - An individual or entity that can collect and compile credits from individual sources. These credits can then either be sold on the credit marketplace, or sold directly to a point source, developer or third-party.

Anaerobic - Not containing oxygen, or not requiring oxygen.

Atmospheric Deposition - When pollutants in the air fall onto the land or water. Pollution that falls with rain or snow is called wet deposition, and pollution that falls without precipitation is called dry deposition.

Baseline- The numeric level of pollution coming from a source during a particular time period, which is used as a standard to measure future reduction goals and allowances against. In other words, a baseline is an existing, or past existing, condition of what is or was actually coming from a source and is used for comparison purposes.

Best Management Practices (BMPs) - The most effective and practical ways to control pollutants and meet environmental quality goals. BMPs exist for forestry, agriculture, stormwater, floodplains, and many other sectors. An example of a BMP is installing a riparian buffer between a cultivated agricultural field and stream.

Bioretention Site - Also called a rain garden; an innovative method of stormwater management that retains rainwater and uses plants and layers of soil, sand and mulch to reduce the amount of nutrients and other pollutants that enter local waterways.

Biochemical Oxygen Demand (BOD) - The quantity of oxygen, expressed in Parts Per Million, utilized in the biochemical oxidation of organic matter under standard laboratory procedure for five days at 20 degrees centigrade. A universal term describing the strength of wastewater.

Biological Nutrient Removal (BNR) - The biological nutrient removal (BNR) process uses naturally occurring microbes to remove nutrients from wastewater; BNR achieves nitrogen concentration at or below 8 mg/liter total nitrogen and 1.0 mg/liter total phosphorous.

Cap/Cap Load - The maximum amount of nutrients or sediments allowed to be discharged into a given water body. The cap is the baseline minus the pollutant load that needs to be reduced to meet a water quality or restoration goal. Caps are established by appropriate regulatory agencies.

Cap Load Allocations - Based on each tributary's nutrient and sediment input to the Bay, the total Chesapeake Bay pollution load is divided proportionally to each tributary and jurisdiction, and are thus set for individual wastewater treatment plants. Cap load

allocations show where the nutrient and sediment loads will most effectively be reduced to achieve restoration goals.

Combined Sewer System Overflow (CSO) – A combined sewer system is one whereby the sewer system has both storm water and sanitary sewer flow in the same pipe. An overflow is when the carrying capacity is exceeded and the pipe overflows through pre-determined discharge or relief interceptors/locations.

Credit – The unit of compliance that corresponds with a pound of reduction of nutrient or sediment as recognized by PA DEP which may be used in a trade.

Credit Reserve – Credits set aside by PA DEP to address nutrient and sediment reduction failures, uncertainty, and to provide liquidity in the market.

Delivery Ratio/Delivery Factor- The factor that compensates for the natural loss, or attenuation, of nutrients and sediments as they travel in water. The delivery ratio for every pound of nitrogen removed in Lycoming County actually has a value of 0.93 or 0.941 lbs removed from the Bay, due to our distance from the Bay. The delivery ratio for every pound of phosphorus removed in Lycoming County actually has a value of less than .5 lbs removed from the Bay.

Denitrification - The process by which nitrates in sewage are reduced to gaseous nitrogen and given off into the atmosphere.

Dischargers - The sources that emit, give off, or dispose of a gas or liquid.

Effluent - Discharge of liquid waste from a wastewater treatment facility, factory or industry to a local water body.

Enhanced Nutrient Removal (ENR) – The next step beyond secondary treatment. The Chesapeake Bay 2000 Agreement requires further reduction in nitrogen and phosphorus entering the Bay by about 20 million pounds and 1 million pounds per year, respectively. Through ENR technologies, some treatment plants are modified to reduce nitrogen and phosphorus in the wastewater down to 3 mg/l total nitrogen and 0.3 mg/l total phosphorus. Currently, PA DEP does not require ENR in Pennsylvania plants.

Eutrophication - The process of excess nutrients accelerating the growth of algae, ultimately depleting the water of dissolved oxygen.

GPD - Gallons per day.

Impaired Waters - Waterways that do not meet state water quality standards. Under the Clean Water Act Section 303(d), states, territories and authorized tribes are required to develop prioritized lists of impaired waters.

Impervious – Describes a surface or area that is hardened and does not allow water to pass through. All of the water runs off (in the form of stormwater) instead of naturally filtering into the ground. Roads, rooftops, driveways, sidewalks, pools, patios and parking lots are all typically impervious surfaces, although new technologies and building materials (such as pervious pavement) exist to allow many of these to infiltrate water.

Industrial User - Any industrial facility which generates, processes, pre-treats, or disposes a non-domestic (household) waste to sewer facilities.

Infiltration and Inflow (I&I) - Stormwater, surface water, groundwater, roof runoff, subsurface drainage or other types of discharges, other than sanitary sewage, that enter the sanitary sewer system, either intentionally or unintentionally.

Municipal Separate Storm Sewer System (MS4) - A publicly-owned means of collecting or conveying stormwater runoff that does not connect with a wastewater collection system or treatment plant.

National Pollutant Discharge Elimination System (NPDES) - The permit program required under the federal Water Pollution Control Act (also known as the Clean Water Act), administered by the Department in Pennsylvania.

Nitrification - The process through which ammonia is oxidized into nitric acid or another type of nitrate or nitrite. Biological nitrification is a key step in nitrogen removal in wastewater treatment.

Nitrogen - A type of nutrient contributing to the Bay's poor water quality. While nitrogen is needed for plant growth, human activities—from driving cars to applying fertilizers—contribute more nitrogen than the Bay's waters can handle. Elevated nitrogen levels cause more algae to grow, blocking out sunlight and reducing oxygen for fish, crabs and other Bay life.

Non-Point Source (NPS) – Non-point source pollution, sometimes referred to as polluted runoff, is generally caused by stormwater runoff across the land and cannot be attributed to a clearly identifiable, specific physical location or a defined discharge channel (such as a pipe). Non-point source pollution includes nutrients that run off from farms, lawns, parking lots, streets and other land uses. It also includes nutrients that enter waterways via air pollution, groundwater or septic systems.

Nutrient – Chemicals that plants and animals need to grow and survive. However, excess amounts of nutrients can be harmful to aquatic environments. Elevated levels of nitrogen and phosphorus, two types of nutrients, are the main cause of the Bay's poor water quality and loss of aquatic habitats.

Nutrient Credit - See “Credit.”

Nutrient Reduction - The difference in nutrient discharge to surface waters achieved by implementing best management practices or performing technical upgrades to sewer facilities, compared to the applicable baseline and threshold.

Nutrient Removal Technology (NRT) - Technology that removes nitrogen and phosphorus during wastewater treatment. Also known as biological nutrient removal (BNR).

Nutrient Trading - The transfer of nutrient reduction credits, specifically for nitrogen and phosphorus. Transactions involve the exchange of quantifiable nutrient reduction credits, approved by PA DEP. Nutrient trading is a voluntary, market driven program that helps to identify and finance cost-effective solutions to reducing nutrient loadings into a watershed. The program allows one nutrient generating source to meet reduction goals by acquiring (buying) nutrient reduction credits from another source within the same watershed. Credits are generated when a source reduces nutrient loadings to a greater extent than is required. A non-point source must first ensure it is meeting baseline compliance, and then it is meeting minimum requirements referred to as "threshold requirements." The installation of Best Management Practices (BMPs), which are above these requirements, can generate credits for a non-point source.

PA DEP - The Department of Environmental Protection for the Commonwealth of Pennsylvania.

pH - Hydrogen Ion Content; indicates the degree of acidity or alkalinity of a substance.

Phosphorus - A type of nutrient contributing to the Bay's poor water quality. While phosphorus is vital to plant life, human activities—from applying fertilizers to using household cleaners—contribute more phosphorus than the Bay's waters can handle. Elevated phosphorus levels cause more algae to grow, blocking out sunlight and reducing oxygen for fish, crabs and other Bay life.

Point Source - A source of pollution that can be attributed to a specific physical location—an identifiable, end-of-pipe point. The vast majority of point source discharges of nutrients are from wastewater treatment plants, although some come from industries.

Pollutant - Any input of waste, including waste heat, that is discharged into water. For the Chesapeake Bay, the primary pollutants include sewage sludge, wastewater, and industrial, municipal and agricultural waste.

POTWs – Publicly Owned Treatment Works.

PPM - Parts Per Million.

Pretreatment - The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater to a less harmful state prior to introducing such pollutants into a sewer system. The reduction or alteration can

be obtained by physical, chemical or biological processes, or process changes by other means.

Primary/Physical Treatment – The earliest and most basic technology used by wastewater treatment plants, using preliminary process (screens and grit removal units) and primary settling tanks (primary clarifiers). Primary treatment achieves only 45-50% in reduction of pollutants by removing settleable and other easily removable materials.

Registry - A management system that tracks and records credits generated and traded between point sources, non-point sources and third parties.

Reserve Ratio - The proportion of the credits generated by a nutrient reduction that is set aside in the credit reserve; the reserved credits are an “insurance policy” to cover any unforeseen problems with credit generators.

Riparian Area - The area of land next to a body of water. Riparian areas form the transition between aquatic and land environments.

Riparian Forest Buffers - Trees and/or other vegetation located along the edge of streams, rivers and other waterways that filter pollution, prevent erosion and provide wildlife habitat.

Sanitary Sewage, or Domestic Waste - The normal household and toilet wastes carried in water from residences, business buildings, institutions, industries and commercial establishments.

Sanitary Sewer Overflow (SSO) – When the carrying capacity of an existing sanitary line is exceeded and unplanned overflows occur for the sewer. These overflows are a violation of the Clean Water Act (Federal) and also State Clean Streams law.

Secondary Treatment - The degree of treatment that is required to conform with the secondary treatment parameters established by EPA and PA DEP, and other governmental agencies with jurisdiction. Secondary treatment introduced the biological process such as activated sludge, trickling filter, rotating biological contractor, and other biological treatment technologies. Biological treatment systems are living systems that rely on mixed biological cultures to break down waste that could not be removed by the physical treatment and allow it to settle in the final clarifier, achieving 85 to 90% reduction in pollutants. Secondary has been mandatory for all plants with the inception of the National Pollutant Discharge Elimination (NPDES) permit in 1972.

Sediment - Loose particles of clay, silt and sand. Excess suspended sediment from erosion is one of the largest contributors to the Bay's impaired water quality.

Sedimentation - When sediment settles in an area, covering bottom-dwelling organisms (such as oysters) and filling shipping channels. Also referred to as siltation.

Septage - Domestic (household) waste carried in water from septic tanks, holding tanks and recreational vehicles. Septage is differentiated from sanitary sewage, which is conveyed through a collection system to a treatment plant.

Sewer System - Facilities owned, operated, and/or maintained by the sewer authority, including collection lines, laterals, force mains, interceptors, pump stations and/or treatment plants.

Siltation - See “Sedimentation.”

Stormwater - Flow of water occurring during or following any form of natural precipitation, such as rain or snow.

Streambank Erosion - Loss of sediment along a stream bank as a result of increased runoff from nearby development. Streambank erosion degrades stream habitats for wildlife and increases suspended sediments in the water.

Suspended Sediments - Tiny particles of clay and silt that become suspended in the water, reducing water clarity and the amount of sunlight that can reach underwater bay grasses. Excess suspended sediment is one of the largest contributors to the Bay's impaired water quality.

Sustainability - Maintaining an ecological balance by avoiding depletion of natural resources.

Technology-Based Effluent Limits - The level of treatment required for point sources based on currently available treatment technologies, or as otherwise required by the federal Clean Water Act or the Pennsylvania Clean Streams Law.

Tertiary Treatment - Treatment required at a treatment plant in addition to that required for secondary treatment, typically consisting of additional nutrient or organic loading removal rate requirements imposed by the NPDES permit.

Total Maximum Daily Load (TMDL) - Defines the pollutant load that a water body can acquire without violating water quality standards, and allocates the pollutant loading between contributing point sources and non-point sources. TMDLs are set by state and federal regulatory agencies.

Total Suspended Solids (TSS) - The total amount of solids material present in wastewater in suspension, expressed in PPM.

Third Party - Any entity that does not discharge nutrients or sediments and that participates in the trading program. This entity could include, but is not limited to, environmental groups, watershed associations, aggregators/brokers, and nonprofit organizations.

Trading Ratios - Discount factors applied to nutrient and sediment reductions, to account for uncertainty, water quality, delivery or special need concerns.

Trading Threshold – Loading or level of nutrient and sediment reduction efforts to be achieved and maintained before credits can be generated for any additional reductions. Relates to “Baseline.”

Treatment Plant - A treatment facility as designed, constructed, owned and operated by the sewer authority, including any additions, improvements, enlargements and modifications made from time to time.

Tributary – A stream or river that eventually flows into a larger water body. For example, Lycoming Creek is a tributary of the West Branch Susquehanna River, and ultimately of the Chesapeake Bay.

Tributary Strategies - River-specific cleanup plans that detail the actions needed to achieve nutrient and sediment cap load allocations that are developed in cooperation with local watershed stakeholders.

Wastewater - Water that has been used in homes, industries and businesses that is not for reuse unless treated by a wastewater facility.

Wastewater Treatment—The reduction of contaminants that may be accomplished by various operations or processes.

WWTPs - Wastewater Treatment Plants.

Water Quality Standards - Standards that define the goals for a water body by designating its uses, setting criteria to protect those uses, and establishing provisions to protect water bodies from pollutants.

Watershed - An area of land that drains into a particular river, lake, bay or other body of water. We all live in a watershed: some are large (like the Chesapeake), while others are small (like Pine Creek).

Compiled December 2008 by Lycoming County PCD Staff, with the help of CBTS consultants (Delta Development, Brinjac Engineering, and LandStudies Inc.)
