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Glossary

Amplification: The modification of a sewage treatment plant to increase capacity so that more sewage can be treated per day.

ANZECC: Australian and New Zealand Environment and Conservation Council. Although no longer in existence, this organisation provided a forum for coordinated environmental management in Australia, New Zealand and Papua New Guinea until 2001.

Australian Height Datum (AHD): The datum to which all vertical control for mapping in Australia is to be referred, with mean sea level assigned the value of zero.

Bacteria: A diverse group of micro-organisms inhabiting nearly all terrestrial and aquatic habitats. Specific types are found living in conjunction with humans and animals – see Enterococci and Faecal coliforms (below).

Beach Suitability Grade (BSG): The grade is a long-term assessment of the suitability of a swimming location for swimming and is derived from a combination of Sanitary Inspection and water quality measurements gathered over previous years (see below). Swimming locations are graded Very Good, Good, Fair, Poor or Very Poor.

Beachwatch Partnership Program (BPP): The Beachwatch Partnership Program began as a pilot in 2002 before being established in 2004. The program provides quality assurance and reporting assistance to local councils undertaking beach monitoring programs.

Catchment: The area that drains surface runoff from precipitation into a stream, river and/or tributaries or urban stormwater drainage system.

Colony forming unit (cfu): A micro-organism propagule (spore or cell) from which a colony has grown. For purposes of analysis, one cfu represents one viable organism. Typically, bacteriological data are reported as the number of these colonies in 100 millilitres of sample water.

Contaminant: Any substance, chemical, or micro-organism that makes a medium (water) less suitable for a specific purpose.

Criteria: Standards that are based on the analysis of scientific data and provide guidelines for the appropriate use of water.

Density, e.g. enterococci or faecal coliform density: The amount of these indicator bacteria present in a standard volume of a water body. The higher the bacterial density the higher the number of cfus (see above) that will be found per 100 millilitres, and hence the greater the contamination.

Disinfection: This wastewater treatment process inactivates disease-causing micro-organisms such as bacteria, viruses and parasites.

Enterococci: Bacteria of the genus *Enterococcus* that may be used to determine the extent of faecal contamination of recreational waters. The *Enterococcus* group is a sub-group of faecal streptococci. It is differentiated from other faecal streptococci by growth at higher temperatures and salt concentrations in the laboratory, and the ability to survive in marine waters under conditions that are unfavourable for most other faecal micro-organisms.

Environment Protection Licence: Under the *Protection of the Environment Operations Act 1997*, environment protection licences are enforced to regulate the impacts of pollution to ensure that environmental impacts are minimised. For example, the activities of sewage treatment plants are governed by environment protection licences.

Estuary: A partly enclosed coastal water body open to the ocean, characterised by tidal effects and the mixing of fresh water and sea water.

Fresh water: Water with a low concentration of dissolved salts (salinity less than 0.5 parts per thousand).

Faecal coliforms: Mesophilic bacteria that inhabit the intestines of humans and other warm-blooded animals. Faecal coliforms are abundant in bird and animal faeces and are used as indicators of sewage pollution in marine and freshwaters. These organisms have a relatively short life-span in marine waters, and hence indicate the presence of relatively recent sewage contamination.

Gross pollutant trap (GPT): A type of stormwater quality improvement device (see below) that is a permanent installation in an urban watercourse and is designed to intercept and retain coarse sediment, litter and debris. Traps usually consist of a combination of floating booms, trash racks and ponds, with provision for access to maintain and clean the trap.

Lagoon: A body of water subject to intermittent openings, either naturally or manually.

Microbial Assessment Category (MAC): The category is determined from the 95th percentile of a dataset of at least 100 enterococci data points. The four categories (A to D) relate to levels of risk of illness determined from key epidemiological studies. The National Health and Medical Research Council recommends that MAC be calculated from a rolling five year dataset, with at least 20 samples collected each year during the swimming season.

NHMRC: The National Health and Medical Research Council is an independent federal organisation that oversees public health and medical issues on a national scale.

On-site sewage management systems (OSMS): These are systems that enable wastewater to be treated and disposed of on-site, usually in the absence of a reticulated sewerage network, for example, septic tanks.

Percentile, 95th: The 95th percentile is the value below which 95 percent of the data lie. This statistic is useful for summarising the distribution of data, because it embodies elements of the location of the distribution (how high/low the enterococci counts are) and the scale of the distribution (how variable the enterococci counts are). The 95th percentile is used to determine the Microbial Assessment Category.

Pathogens: Micro-organisms, such as bacteria, viruses and fungi, that can cause diseases in plants and animals. Pathogens are abundant in sewage and may be present in industrial and other types of discharges.

Pollutants: Chemicals, biological substances, particles, or thermal changes that are discharged into bodies of water and are potentially detrimental to the environment.

Plume: A stream of water that enters a water body and contains an elevated concentration of suspended materials and/or pollutants (see above).

Primary contact recreation: Recreational use of waters that involves bodily immersion or submersion, facilitating direct contact with water; includes activities such as swimming, diving, waterskiing and surfing.

Primary sewage treatment: Physical treatment of sewage, designed to remove solids via settling (as sludge) and floatable solids such as oil, fats and grease by first screening and then ponding the effluent.

Quality assurance/quality control (QA/QC): Procedures and checks used to ensure that accurate and reliable results are obtained from environmental sampling and analysis.

Receiving water: The water body into which effluent flows. For example, STPs (see below) or stormwater systems release water into natural waterways such as rivers, estuaries and oceans.

Sanitary Inspection Category (SIC): The Sanitary Inspection Category is determined from a sanitary inspection of a swimming location. The sanitary inspection identifies potential pollution sources, assesses the risk posed by each and then determines the overall risk at the swimming site (the SIC) which is categorised as Very Low, Low, Moderate, High or Very High.

Secondary contact recreation: Recreational use of waters that involves some direct contact with water, but where the probability of inadvertent swallowing of water is low; includes activities such as paddling, wading, boating and fishing.

Secondary sewage treatment: Biological and/or chemical treatment of sewage, designed to remove the majority of organic matter and solids through several possible processes by using anaerobic bacteria, chemicals and settling ponds.

Sewage overflows: These occur when the capacity of the sewer is exceeded, usually in wet weather when stormwater enters the sewerage system through illegal connections and damaged pipes. To prevent the sewage backing up and overflowing into homes, the sewage is discharged at designed overflow points, which are mostly located close to the stormwater system. Sewage overflows can also occur during dry weather (when they are called sewer chokes) because of blockages in the sewer system from tree roots or debris.

Sewage treatment plant (STP): The site of convergence and treatment for household, commercial and industrial sewage via the sewerage system. Sewage is treated at an STP to either primary, secondary, or tertiary level before being discharged as effluent to receiving waters. STPs are also known as Wastewater Treatment Works.

SewerFix program: An ongoing program conducted by Sydney Water Corporation to reduce the frequency and severity of sewer overflows by identifying and rectifying damage and the ingress of stormwater to sewers.

Sewer chokes: Occur when the sewer pipes become blocked by tree roots, oil and grease or debris. Sewage builds up behind the blockage and discharges at inspection points and designed overflow structures.

Stormwater: Any surface water runoff resulting from rainfall can be termed stormwater. In undeveloped catchments, stormwater can be of high quality and captured for drinking water. In urban areas, stormwater is likely to contain a range of contaminants and be of lower quality.

Stormwater quality improvement devices (SQIDs): Structures intended to improve the quality of stormwater before it reaches receiving waters by removing solid material, litter and debris carried in the flow.

Tertiary sewage treatment: Physical and chemical treatment of sewage, designed to improve secondary treated sewage by removing fine suspended solids, nutrients and pathogens (by disinfection). Treatment to a tertiary level typically involves a combination of filtration methods, chemical additives and ponding.

Tidal flushing: The process by which water in an estuary is replaced with oceanic water owing to the flow of water caused by the tides.

Wastewater: Any liquid waste discharged from domestic, commercial, industrial and agriculture activities.

Wastewater re-use: The re-use of treated wastewater, such as for irrigation of playing fields or agricultural land.

Wastewater treatment works (WWTW): See Sewage treatment plant.

Water quality: The characteristics of water in regard to its physical, chemical and biological properties.

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