

Glossary of Terms used in the Stormwater Industry

| Term | Code | Definition |
|-----------------------|------|--|
| S80 | Gen | A measure of statistical variation. Denotes the difference between the 10 per cent and 90 per cent exceedence values of a data set, divided by the median (50 per cent exceedence). The higher the S80, the more variable the value. |
| Safe | Eng | An operational condition where a system represents no measurable or anticipated risk of directly or indirectly causing harm, injury, or danger to humans and/or the greater environment. Unless otherwise stated, the conditions refer only to those risks attributable directly to humans. |
| Safety factor | Eng | 1. A factor or constant used during the design process to either increase a design parameter to a value above the value that would cause system failure, or to decrease a maximum allowable operational condition to a level below the condition that would normally cause failure. |
| | Eng | 2. The ratio of the value of a design parameter, such as flow rate, at the point of system failure, divided by the maximum expected operational value of that parameter. |
| Saint-Venant equation | Hyd | A one-dimensional unsteady flow routing equation. |
| Salinity | Sci | The concentration of salts in soil or water, usually sodium chloride. |
| Saltation | Sol | Particle movement in water or wind where particles skip or bounce along a stream bed or land surface. |
| Sand | Sol | <p>A soil separate consisting of particles between 0.02 and 2.0mm in equivalent diameter. Fine sand is defined as particles between 0.02 and 0.2mm, and coarse sand as those between 0.2 and 2.0mm.</p> <p>A bolus of sand formed in the hand will have very little or no coherence and cannot be rolled into a stable ball. Individual sand grains adhere to the fingers.</p> |
| Sand drain | Sto | A subsurface drainage system formed by a narrow, excavated trench filled with sand. |
| Sand filter | Sto | <p>A bed of sand or other media through which surface runoff passes. The filtered runoff is then collected by a subsurface drainage system and discharged.</p> <p>Sand filters usually operate in association with an upstream pre-treatment system to remove coarse sediment and to ensure an even inflow distribution across the filter.</p> <p>Sand filters differ from infiltration systems in that the bulk of the treated water drains to surface waters or a piped drainage system rather than rely on soil infiltration.</p> |
| Sand filter bed | Sto | A sand filter set into the ground as oppose to a filter confined within a container. An example of the former being a system used for stormwater treatment. An example of the latter being a commercial swimming pool filter. |

| | | |
|------------------------------------|-----|---|
| Sand-base stream | Wwy | <p>A watercourse that has a channel bed primarily consisting of sand. Typically the sand moves down the bed during flood events.</p> <p>The channel bed may contain significant quantities of vegetation, but the bed vegetation is usually smothered or partly buried by bed sediment during flood events and thus usually does not play a significant role in the long-term stability of the channel. If a low-flow channel exists, it can be highly mobile with a constantly changing bed/plan form.</p> |
| Sandy clay | Sol | A mixture, usually artificial, of sand and clayey soils suitable for pavement construction. |
| Sandy loam | Sol | <p>A loam containing enough sand or grit to make the material friable.</p> <p>A bolus formed in the hand will have some coherence and can be rolled into a stable ball, but not a thread. Sand grains can be felt during manipulation. Clay content is approximately 10–15 per cent.</p> |
| Saprobian system | Eco | A community of organisms that feed on decaying organic matter. |
| Saturated infiltration rate (soil) | Sol | The soil infiltration rate that occurs when the soil is saturated and infiltration and soil drainage are equal. |
| Saturated overland flow | Hyd | Overland flow that occurs when all or part of the surface horizon of the soil becomes saturated as a result of either the build-up of a saturated zone above a soil horizon of lower hydraulic conductivity, or due to the rise of a shallow water table to the surface. |
| Saturated zone | Sol | The zone in which voids in rocks are filled with water, e.g. in an aquifer. |
| Scale | Gen | A calcareous deposit in water tubes or steam boilers resulting from deposition of mineral compounds present in the water. |
| Scour | Gen | <p>The displacement or removal of material from a surface as a result of shear stress caused by wind or water.</p> <p>Commonly used to mean localised erosion of a soil surface as a result of excessive flow velocity.</p> |
| Scour velocity | Gen | The flow velocity or wind velocity that initiates scour. The scour velocity must be defined relative to either the distance the velocity is measured from the affected surface, or the depth of flow—in which case the scour velocity is defined as the average velocity over the depth of flow. |
| Scouring | Gen | 1. The act or action of scour erosion. |
| | Gen | 2. Material removed or displaced by the actions of scour. |
| Screening | Sto | The process of separating coarse pollutants from stormwater by passing the water through a coarse screen. |
| Screenings | Sol | An aggregate of small size, usually passing a 26.5mm sieve and retained on a 4.75mm sieve. |
| Second order stream | Wwy | A branch of a watercourse that receives only first-order streams (i.e. all upstream tributaries being first-order streams). |

| | | |
|----------------------------|-----|---|
| Secondary benefits | Sto | Stormwater treatment benefits, or other economic, hydrologic or environmental benefits provided by the management system that are incidental to the primary goal of removing the target pollutant. |
| Secondary contact | Wwy | Body contact with water that is less frequent than primary contact and not a main component of an activity, e.g. boating or fishing. |
| Secondary treatment | Sto | The removal of pollutants from water through the actions of adsorption, filtration, flocculation (finer particle settlement) and infiltration (adsorption and filtration). Typical retained contaminants include fine sediments, nutrients, pathogens, and metals. |
| Sediment | Esc | Material of varying size, both mineral and organic, moving or moved from its site or origin by the action of wind, water, gravity, or ice, that comes to rest on the Earth's surface. It includes mineral-based matter displaced by de-silting and de-watering operations, or mechanically displaced on the tyres or tracks of vehicles. It does not include mineral and organic matter formally displaced by the primary excavating or storage components of earthmoving equipment. |
| | Wwy | Any solid material carried in suspension by the flow or as bed load that would settle to the bottom in the absence of fluid motion. |
| Sediment barrier | Esc | A general term used to describe a sediment trap that either surrounds, or separates sediment-laden water from a stormwater inlet. |
| | Min | Structures placed in a drainage channel to promote settling out of sediment until a stable flow slope is achieved between each barrier. Usually used for erosion prevention. |
| Sediment basin | Esc | A dam and associated settling/stilling pond used to capture and retain sediment from the passing flow. The design component generally consist of an excavated or natural basin, stabilised flow entry points, de-watering system, and high-flow emergency spillway. |
| | Sto | A basin or tank designed for the temporary detention of stormwater flow to facilitate the settling of coarse suspended sediments and other heavy pollutants. |
| Sediment control | Esc | The process of trapping of sediment released from some up-slope or upstream erosion process. |
| Sediment control measure | Esc | A system, measure or device primarily used to trap and retain sediment that is either moving along the drainage surface (bed load), or contained within flowing water (suspended sediment). |
| Sediment control structure | Esc | A constructed device, whether permanent or temporary, primarily used to trap and retain sediment that is either moving along the drainage surface (bed load), or contained within flowing water (suspended sediment). |
| Sediment curtain | Esc | See SILT CURTAIN. |

| | | |
|-----------------------------|-----|--|
| Sediment load | Wwy | 1. The amount of sediment carried by a stream. |
| | Wwy | 2. The sediment carried in flowing water, including sediment in suspension and bed load. |
| Sediment training wall | Sto | <p>A small wall raised above bed level at the entrance of selected 'dry' cells in a multi-cell culvert to concentrate low-flows into the nominated 'wet' cells, and to control the movement and deposition of sediment.</p> <p>Usually used to trap sediment upstream of a culvert to reduce sedimentation within the culvert.</p> |
| Sediment transport | Esc | The movement of sediment by wind, ice or water, including mineral-based matter displaced by de-silting and de-watering operations, or mechanically displaced on the tyres or tracks of vehicles. |
| Sediment transport capacity | Wwy | The measurement of the ability of a stream to carry a given volume of sediment material per unit time for given flow conditions. |
| Sediment trap | Esc | A structure designed to intercept and retain sediment transported by the flow. |
| Sediment yield | Esc | The total amount of sediment produced by a catchment and delivered by flowing water to a point under evaluation, usually the catchment outlet. It can be expressed in terms of a single rainfall event or in terms of a specified period of time, and includes bed-load and suspension. |
| Sedimentation | Gen | <p>The process of depositing or accumulating sediment.</p> <p>Also known as SILTATION.</p> |
| | Sto | The process of particles and adsorbed pollutants from the water column settling by force of gravity. The sedimentation efficiency is a function of eddy forces in the settling basin, and the period of detention of flow in the basin. Typical pollutants affected include sediment, hydrocarbons and metals. |
| Sedimentation basin | Gen | A tank or basin in which sediment collects primarily through the actions of gravitational settlement. |
| | Sto | <p>A sediment collection basin in the form of a tank or basin designed for low-velocity, low-turbulent flows suitable for settling coarse particles from stormwater.</p> <p>The term usually applies to permanent basins, but can also apply to the temporary basins used on construction sites.</p> |
| Seedbank | Bot | A population of viable dormant seed that accumulates in and on soil, and in sediments under water. |
| Seep | Gen | To pass gradually, as liquid, through a porous substance. |
| Seepage | Gen | 1. The process of seeping, e.g. liquid, through a porous substance. |
| | Gen | 2. A liquid that passes through a porous substance. |
| | Min | A common term for groundwater flow, encompassing the characteristic slow flow processes. |

| | | |
|--------------------|-----|--|
| | Sto | The interstitial movement of water through a porous substance to a location outside the substance. |
| Semi-arid | Gen | Relating to climates or regions that lack sufficient rainfall for regular crop production. Usually defined as a climate with annual average rainfall greater than 250mm but less than 375mm. |
| Senescence | Bot | The array of biological changes displayed by macrophytes in unfavourable environmental conditions, often halting growth and withdrawing nutrients from the leaves until favourable conditions return. |
| Separate system | Sto | A sewer and stormwater drainage system in which sewage and stormwater flow in separate conduits during normal operation conditions (i.e. excluding those periods of surcharge or flood conditions). |
| SEPT | Sto | The abbreviation for Side Entry Pit Trap, debris baskets placed within the collection pit of roadside gully inlets. The baskets are fitted below the invert of the gutter and are usually designed to allow 100 per cent bypass in case of full blockage. Basket mesh size is typically 5 to 20mm. |
| Sequent depth | Hyd | A theoretical flow depth that exists immediately upstream and downstream of a transition between supercritical and subcritical flow resulting from the solution of the momentum equation. |
| Settling pond | Esc | A small sediment retention basin where sediment is allowed to settle from the water through gravity as the water passes slowly through the pond. |
| Severe rainfall | Met | <p>Rainfall with:</p> <ul style="list-style-type: none"> (i) an intensity equal to, or greater than 50mm/hr; or (ii) a total rainfall depth equal to, or greater than, the equivalent of the one hour duration, 1 in 10 year ARI design storm rainfall depth over a 24-hour period. <p>For example, if the 1 hour duration, 1 in 10yr ARI average rainfall intensity at a given location is 70mm/hr, then severe rainfall would be a rainfall depth equal to or greater than 70mm within any 24-hour period, or a rainfall intensity equal to or greater than 50mm/hr at any given time.</p> |
| Sewage | Res | The refuse liquid or waste matter carried off by sewers. Can be a combination of water-carried wastes from residences and industries together with groundwater, surface water and storm water. |
| Sewer | Res | A subterranean conduit designed to carry wastewater, sewerage, or waste matter. |
| Sewer overflow | Res | The discharge of sewage to surface water or stormwater drainage as a result of sewage flow exceeding the sewer capacity (infiltration of rainwater), or sewer blockage. |
| Sharp-crested weir | Hyd | A thin plate mounted perpendicular to the flow with the top of the plate having a bevelled, sharp edge, which makes the nappe spring clear from the plate. |

| | | |
|-------------------------|-----|--|
| Sheet erosion | Sol | The removal of a fairly uniform layer of soil from the land surface by raindrop splash and/or runoff. No perceptible channels are formed. Can relate to wind erosion. |
| Sheet flow | Hyd | Flow that passes evenly over the ground as a thin sheet of water as opposed to concentrated flow. Normally occurs on plan surfaces (ground not heavily concaved), and on uniformly grassed areas when the depth of flow is not significantly greater than the blade length of the grass. |
| Sheet piling | Eng | A system of sheet-like piles driven into the ground with their edges in close contact or interlocking to provide a tight wall to prevent leakage of water and soft materials or driven to resist the lateral pressure of adjacent ground. |
| Shelter | Eco | A location or habitat in which wildlife can take shelter from predators, adverse weather conditions, or high velocity stream flows. |
| Short circuiting | Hyd | A process in which flow passing through a pond or wetland, follows a direct route to the outlet without fully mixing across the water body. |
| Shoulder drain | Sto | A drain through the shoulder to drain the sub-grade. |
| Shower | Hyd | <p>A brief fall of rain, hail, sleet or snow, associated with cumuloform clouds. Because of the isolated nature of these clouds there is, usually, at least a partial clearing of the sky between the cumuloform clouds so that a break is visible.</p> <p>Showers are characterised by rapid changes of intensity and the suddenness with which they start and stop. Showers are also associated with sudden short changes in wind speed (down draft) and direction. Showers seldom last more than 1-hour, most often less than 15 minutes. Showers may occur in combination with intermittent or continuous precipitation, in which case the showers are indicated by the sudden increases and decreases precipitation intensity.</p> <p>Isolated showers are generally insufficient to cause runoff from pervious surfaces.</p> |
| Shrink/swell | Sol | A characteristic of soils that tends to make the clays within them expand on contact with water and shrink (and crack) when they dry. |
| Shrink–swell potential | Sol | The capacity of soil material to change volume with changes of moisture content, frequently measured by a laboratory assessment of the soil's linear shrinkage, which is typically related to the soil's content of montmorillonite clay. |
| Side-channel spillway | Eng | A side-channel running along the foot of a spillway and carrying the flow away in a direction parallel to the spillway crest. |
| Side drain | Sto | A surface drain running approximately parallel and adjacent to a structure or property alignment, e.g a drain located between a road and the road boundary. |
| Side entry kerb opening | Sto | A stormwater inlet formed into the side of a raised kerb, usually on a roadway. |

| | | |
|--------------------------------|-----|---|
| Side entry pit traps (SEPT) | Sto | Debris baskets placed within the collection pit of roadside gully inlets. The baskets are fitted below the invert of the gutter and are usually designed to allow 100 per cent bypass in case of full blockage. Basket mesh size is typically 5 to 20mm. |
| Side inlet | Sto | A grated and/or side-flow weir drainage inlet located within the kerb of a road. Also known as a GULLY INLET or KERB INLET. |
| Side slope | Eng | A type of slope at a dam, embankment, spillway, and facility perimeter constructed through excavation or filling. Slope grade is normally defined in terms of X:1, or 1 in X (being a rise of 1 metre for a run of X metres) the equivalent of (100/X)% slope. |
| Sill | Eng | 1. A horizontal section at the outlet of a soil conservation or hydrologic structure that spreads water flowing from the structure, hence reducing the potential for it to re-concentrate and cause rill or gully erosion. |
| | Eng | 2. The raised outlet lip of a recessed energy dissipation pool of a drop structure or spillway energy dissipater. |
| | Esc | The outlet structure for a level spreader. |
| Silt | Sol | A soil separate consisting of particles between 0.002 and 0.02mm in equivalent diameter. |
| Siltation | Gen | The process of depositing or accumulating sediment. Also known as SEDIMENTATION. |
| Silt curtain | Esc | A large sheet of material, typically geotextile, attached to floats and weights that extends from the floor of a water body to the water surface. Used to isolate potentially contaminated water from the main water body. Also known as a SEDIMENT CURTAIN. |
| Sinuosity | Wwy | The repetitive, though variable, curvature of a watercourse channel measures as the channel length (thalweg distance) divided by valley length. The sinuosity of the low-flow channel (if any) can be totally different from the sinuosity of the main channel. |
| Siphon | Eng | A tube or conduit in the form of an inverted U through which liquid flows between two water bodies. Water pressure within the siphon usually becomes sub-atmospheric. An inverted-siphon (i.e. a U-shaped siphon) carries water between two reservoirs with a pressure greater than atmospheric. |
| Siphon spillway | Eng | A pipe for discharging water over a wall or embankment crest. |
| Site storage requirement (SSR) | Sto | A prescribed storage volume specified for on-site detention systems. |

| | | |
|-------------------------|-----|--|
| Slaking | Sol | <p>The process of natural collapse of a soil aggregate in water where its mechanical strength is insufficient to withstand the swelling of clay and the expulsion of air from pore spaces. It does not include the effects of soil dispersion.</p> <p>Slaking aggregates readily break down when immersed in water, but do not disperse. Clouding of the water, if any, is limited to just around individual aggregates.</p> <p>Slaking soils are highly erosive and structurally unstable, but readily settle in water.</p> |
| Slight rainfall | Met | See LIGHT RAINFALL |
| Slope | Eng | 1. The inclination of a surface with respect to the horizontal expressed as rise or fall over a certain longitudinal distance, such as X:1, or 1 in X (being a rise of 1 metre for a run of X metres) the equivalent of (100/X)% slope. |
| | Eng | 2. The inclined surface of a bank or embankment. |
| Slope drain | Esc | <p>A temporary drainage conduit (pipe) extending down the face of a newly formed or unstable slope. Typically used as a temporary drainage system to control soil erosion while the bank is being stabilised, or while the final drainage system is being constructed.</p> <p>Also known as a DROP PIPE.</p> |
| Slotted drain | Sto | A drainage conduit, usually recessed below the invert of a shallow open drain, which has an inlet consisting of slots cut into the obvert of the conduit. |
| Slotted drain inlet | Sto | The inlet of a drain consisting of slots cut along the longitudinal axis of the drainage conduit (usually a pipe). The conduit usually being recessed below the invert of a shallow open drain. |
| Slug (sand/sediment) | Wwy | <p>An isolated deposit of granular material, usually sand or coarse sediment, that appears to slowly migrate down a watercourse channel as a result of significant stream flows. Generally, little if any movement of the material occurs during normal dry weather (base) flows.</p> <p>Sand/sediment slugs generally have an elongated streamline shape resulting from the flow-induced scour and deposition process. The shape and general appearance of the deposition allows it to be clearly distinguished from other deposited material, including other sand/sediment slugs.</p> |
| Sluice gate | Eng | An underflow gate with a vertical sharp edge for stopping or regulating flow. |
| Slump | Sol | <p>An earth slide where the material in motion is not greatly deformed but has rotated backward on a more or less horizontal axis, i.e. displacement is primarily along a concave surface of separation.</p> <p>Ordinarily slumping results from the removal or death of specific vegetation, such as deep-rooted plants, or a rapid lowering of water level adjacent to the earth slope, e.g. at the end of some flood events.</p> |

| | | |
|-------------------------|-----|---|
| Slumping | Sol | The process of slump erosion occurring within an earth bank or slope, or soil erosion in the form of a slump. |
| Slurry wall | Min | An underground wall designed to stop groundwater flow, usually constructed by digging a trench and backfilling with slurry rich in bentonite clay. |
| Small detention storage | Sto | A small stormwater detention or retention storage system e.g. that formed by a small car park or underground storage tank. |
| Snag | Wwy | Fallen tree, trees or branches held fast to the bed or bank of a watercourse channel that could potentially impede flow or navigation. |
| Snow | Met | Precipitation in the form of ice crystals. The crystals are usually branched to form six pointed stars and interlock to form snowflakes. |
| Soakage pit | Sto | An excavated pit filled with rubble or other open void material into which stormwater is drained for ultimate discharge (infiltration) into the surrounding ground. |
| Soakaway | Sto | A subsurface trench or pit into which surface water is conveyed for ultimate discharge (infiltration) into the surrounding ground. |
| Sod (turf) | Gen | A piece of earth containing plants with matted roots. Frequently used for the establishment of grassed surfaces. Grasses such as kikuyu and couch, which have stolons, are particularly suited to this method of revegetation. |
| Sodic soil | Sol | A soil containing sufficient exchangeable sodium to adversely affect soil stability, plant growth and/or land use. Such soils are dispersible and typically contain a horizon in which the exchangeable sodium percentage (ESP), expressed as a percentage of cation exchange capacity, is 6 per cent or more. Strongly sodic soils are considered to be those with an ESP of 15 per cent or more. |
| Soffit | Sto | The highest portion of the internal surface of a culvert, barrel or arch. Also known as the OBVERT. |
| Soil | Sol | The natural dynamic matrix of unconsolidated mineral and organic material at the Earth's surface that has been developed by physical, chemical and biological processes including the weathering of rock and the decay of vegetation. Soil materials include organic matter, clay, silt, sand and gravel mixed in such a way as to provide the natural medium for the growth of land plants. Soil comprises organised profiles of layers (horizons) more or less parallel to the Earth's surface and formed by the interaction of parent material, climate, organisms and topography over generally long period of time. |
| Soil amendment | Sol | The process of altering the properties of a soil by the addition of substances such as lime, gypsum and sawdust, for the purpose of making the soil more suitable for plant growth. |
| Soil dispersion | Sol | The process by which soil aggregates breakdown and disperse into individual particles (clay, silt and sand) in water. |

| | | |
|--------------------|-----|---|
| Soil erosion | Sol | The detachment and transportation of soil and its deposition at another site by wind, water or gravitational effects. Although a component of natural erosion, it becomes the dominant component of accelerated erosion as a result of human activities, and includes the removal of chemical materials. |
| Soil matrix | Sol | Skeletal structure of soil, within which honeycombs of pores exist. |
| Soil permeability | Sol | <p>The characteristic of a soil profile, soil horizon, or soil material that governs the rate at which water moves through it. When applied to a soil profile, the rate of water transmission is controlled by the least permeable layer in the soil profile.</p> <p>Soil permeability is a composite expression of soil properties and depends largely on soil texture, soil structure, the presence of compacted or dense soil horizons, and the size and distribution of pores in the soil.</p> <p>The qualitative categories of permeability for general use include; slow (less than 10 mm per day), moderate (10 to 1000 mm per day) and high (more than 1000 mm per day).</p> |
| Soil porosity | Sol | <p>Relating to the degree to which a soil is permeated with pores or cavities. Porosity can be generally expressed as a percentage of the whole volume of a soil horizon that is unoccupied by solid particles. In addition, the number, sizes, shapes, and distribution of the voids are important.</p> <p>Generally, the pore space of surface soil is less than one half of the soil mass by volume, but in some soils it is more than half. The part of the pore space that consists of small pores that hold water by capillary action is called capillary porosity. The part that consists of larger pores that do hold water by capillary action is called non-capillary porosity.</p> |
| Soil stabilisation | Sol | The process of stabilising a soil, soil profile, or soil surface against the erosive forces of wind, rain or flowing water, or increasing a soil's bearing capacity. |
| Soil stabiliser | Sol | A substance or material used to improve soil stability, strength or bearing capacity. |
| Soil structure | Sol | The combination in a spatial arrangement of primary soil particles (clay, silt, sand, gravel) into aggregates such as peds or clods and their stability to deformation. Structure may be described in terms of the grade, class and form of the soil aggregates. |
| Solar treatment | Sto | The act of destroying pathogens (e.g. bacteria) and the breakdown of hydrocarbons by ultra-violet light. |
| Sorption | Sci | A surface phenomenon that may be either absorption or adsorption, or a combination of the two. The term is often used when the specific mechanism is not known. |
| Source control | Sto | A pollution control measure used at the point of release of pollutants into stormwater runoff. |
| Spall drain | Sto | An excavated trench either filled or partially filled with selected rubble, broken stone, or gravel through which water can percolate either longitudinally along the trench and/or laterally into the adjacent soil. |

| | | |
|-----------------|-----|--|
| | | Also known as a RUBBLE DRAIN. |
| Species | Eco | A group of organisms that resemble each other to a greater degree than members of other groups and that form a reproductively isolated group that will not normally breed with members of another group. |
| Specific energy | Hyd | The total energy per unit weight of water at any section of a channel or part-full conduit measured with respect to the invert or bottom of the channel or conduit. |
| Spillway | Eng | <p>An open channel, weir, conduit, tunnel or other structure designed to allow discharges from a dam or similar storage, gully control or detention structure. Principally used to safely discharge flood flows, but may be used to release water for other purposes.</p> <p>The spillway may be termed 'controlled' or 'gated' if a gate is used to control the uppermost level of the reservoir, or 'uncontrolled' (a free-overflow spillway) if discharge occurs when the water level rises above a fixed crest.</p> <p>Spillways may be constructed to convey water away around the embankment (bywash spillway), over the embankment (overshot spillway), or through the embankment (pipe spillway).</p> <p>On larger structures, more than one spillway may be necessary. The first spillway to accept excess flows is termed the primary spillway and is constructed to accept the design discharge. Flows in excess of this discharge are carried by a secondary (emergency) spillway.</p> |
| | Esc | <p>An open channel, usually with a relatively steep gradient, used to convey overflow water from a basin, such as a sediment basin, during periods of high flow.</p> <p>Also known as an EMERGENCY SPILLWAY.</p> |
| Spillway crest | Eng | The uppermost portion of a spillway overflow section. |
| Splash erosion | Sol | <p>The spattering of soil particles caused by the impact of raindrops on the soil surface. The loosened particles might be subsequently removed by runoff. Splash erosion is a component of sheet erosion.</p> <p>Also known also as RAINDROP IMPACT EROSION.</p> |
| Splitter | Eng | An obstacle, such as a concrete block, installed on at the base of a chute or spillway to split the flow and increase the rate of energy dissipation. |
| Spoon drain | Sto | A drain with a semi-circular cross-section with no associated ridge embankment of soil. |
| Sprigging | Agr | The process of planting of pieces of rhizome or stolon over an area to encourage the establishment of the applied vegetation to a soil disturbance. The method typically uses such grasses as couch or kikuyu that can quickly spread over the disturbed soil. |
| Sprinkle | Hyd | A type of light rainfall represented by a scattering of raindrops, usually insufficient to cause stormwater runoff. |

| | | |
|--------------------------|-----|--|
| Spur drain | Sto | A drain that transports stormwater runoff from the shoulders of a road or table drain to a disposal area. Also known as a DIVERSION DRAIN, TURNOUT DRAIN or MITRE DRAIN. |
| SQUID | Sto | The abbreviation for stormwater quality improvement device, any physical device or component of a stormwater network used to improve stormwater quality. |
| SS | Wat | The abbreviation for suspended solids, any particulate matter suspended in a liquid, whether the liquid is in motion or stationary, or the concentration of such matter within the liquid. |
| SSR | Sto | The abbreviation for site storage requirement, a prescribed storage volume specified for on-site detention systems. |
| Stabilise | Gen | To make stable or to achieve a stabilised surface. |
| Stabilised soil | Sol | Any soil or soil profile that has been modified to improve or maintain its load carrying capacity. Modification may be by the addition of other materials such as sand, loam or clay, or of manufactured materials such as bitumen, lime, cement or other synthetic material. |
| Stabilised surface | Esc | Any surface, or region of a drainage catchment, that has sufficient resistance to erosion to limit the displacement of granular materials and other specified matter to an acceptable rate. The acceptable rate may be defined as an average annual erosion rate (typical units of t/ha/yr), or pollutant concentration (typical units of mg/L) based on a specified water quality objective. In cases where an acceptable rate has not been defined, a stabilised surface may be defined as a surface which erodes or otherwise allows the displacement of pollutants from its surface at a rate no greater than a similar surface in its natural (i.e. undisturbed) condition. |
| Stage | Hyd | The elevation of the water surface above an arbitrary horizontal datum plane. |
| Stage-discharge curve | Hyd | The numerical or graphical relationship between the water surface elevation and its associated discharge at a given location along an open channel or stream. Also known as the RATING CURVE. |
| Stakeholder | Gen | A person or organisation who may affect, be affected by, or perceive themselves to be affected by a decision, activity or risk. The term may also include interested persons. |
| Standard (water quality) | Gen | Water quality objectives that are recognised and supported by enforceable environmental control laws. |
| Standard-based design | Sto | The design of urban stormwater management facilities based on a specified set of regulatory standards or codes. |
| Standard compaction | Eng | The soil compaction (density) achieved in a standard compaction test. |
| Standard compaction test | Eng | A standard soil test used to determine dry soil density achieved when a soil is compacted under controlled conditions at a known |

| | | |
|-------------------------|-----|---|
| | | moisture content. The test is carried out by placing a layer of a given soil in a 101mm diameter by 152mm high cylinder and compacting by dropping a 2.49kg weight 25 times through a height of 305mm onto the soil. Two further layers are then placed in the same way. |
| Standard of service | Eng | The actual performance of a constructed or managed system. The term is replacing LEVEL OF SERVICE. |
| Standing water | Res | Water at rest. |
| Standing wave | Hyd | Water in the form of a wave (i.e. an obvious rise and/or fall in the water surface over a short distance) where the position of the wave does not move relative to the observer. In hydraulics, standing waves are most commonly associated with the leading edge of hydraulic jumps, and supercritical flow within irregular channels. |
| Static system | Eco | An exposure system of aquatic toxicity tests in which the test chambers contain solutions of the test material or control water that are not usually changed during the test. Depending upon conditions, a static system may or may not be in equilibrium. |
| Steady flow | Hyd | Flow in which conditions (depth, velocity, and so on) at a given location do not change with time. In many cases, flow conditions change so slowly that the changes occurring over reasonable periods of time are negligible and the flow may accordingly be considered steady. Also known as STEADY STATE FLOW. |
| Steady state | Eco | The state at which the competing rates of uptake and elimination of a chemical within an organism or tissue are equal. An apparent steady state is reached when the concentration of a chemical in tissue remains essentially constant during a continuous exposure. Also known as DYNAMIC EQUILIBRIUM. |
| Steady state conditions | Hyd | The state at which specific conditions, such as velocity, erosion or chemical uptake, do not change with time. |
| Steady state flow | Hyd | Flow in which conditions (depth, velocity, and so on) at a given location do not change with time. In many cases, flow conditions change so slowly that the changes occurring over reasonable periods of time are negligible and the flow may accordingly be considered steady. Also known as STEADY FLOW. |
| Stilling basin | Hyd | A pond formed at the outlet of a conduit, or the foot of a flume, spillway or similar structure as part of an energy dissipation system. Energy dissipation is achieved through the turbulence induced within the pond by the incoming flow. Stilling basins are usually associated with large hydraulic structures such as dam spillways and plunge pool dissipaters. |
| Stilling pond | Esc | A small sediment retention basin where suspended sediment is allowed to settle from the water under gravity as the water rests stationary within the pond. Sediment-laden water is normally |

| | | |
|----------------------------|-----|--|
| | | pumped into the pond from de-watering operations, allowed to settle, then decanted to a lawful point of discharge. |
| Stochastic | Gen | A random process that can be described using certain statistical patterns. |
| Stock dam | Rur | A dam that stores water for use by livestock, usually does not exceed 5ML. |
| Stoichiometric weight | Sci | The relative quantities of elements in a chemical compound according to their combined weights. |
| Stokes' law | Hyd | A scientific law that states that the drag force exerted on a sphere moving through a viscous fluid is proportional to its speed, radius and the viscosity of the fluid. |
| Stone | Eng | A piece of rock of small or moderate size. |
| Stone pitching | Eng | Large stones laid by hand to a regular slope of surface shape on a road, cutting, embankment, or on the bed and banks of a channel. |
| Stop board | Sto | <p>Panels used to temporarily shut-off through flow within an outlet chamber. The panels usually consist of heavy timber boards that slot into recessed groves formed within the sidewalls of an outlet chamber, or a single solid panel that slides along rubber-lined groves to form a watertight gate.</p> <p>Typically used to manually control discharge from a basin or pollution containment system.</p> |
| Storage | Gen | The act of storage, or the capacity of a storage system. |
| Storage capacity | Gen | The volume or retention capacity of a storage system, e.g. the volume of a water reservoir. |
| Storage delay time | Hyd | The time shift of a flood hydrograph as it passes through a water reservoir. |
| Storage-discharge relation | Hyd | The numerical or graphical relationship between a water storage (sometimes represented by water surface elevation) and its associated discharge from the reservoir. |
| Storm | Hyd | A heavy rainfall event associated with winds of unusual force, often accompanied by thunder and lightning. |
| | Met | A rainfall event associated with a wind of Beaufort scale force 10, i.e. average wind speed of 48 to 55 knots (89 to 102 km/h). |
| Storm damage | Sto | <p>Damage to property, services or land resulting from:</p> <ul style="list-style-type: none"> • the direct contact of wind or rainfall associated with a rainfall event, whether or not such an event is classified as a storm; • the actions of stormwater runoff during its passage to a receiving water body, such as a creek, lake, wetland, river or bay; • the erosion caused by stormwater passing down a drain, channel or watercourse. <p>Storm damage does not include damage to property, services or land directly resulting from floodwaters that back-up from a watercourse or spread across a floodplain.</p> |

| | | |
|----------------------------------|-----|---|
| Storm drain | Sto | A buried pipe, conduit or constructed open channel that conveys stormwater runoff. It may include components of open channels such as culverts, and inlet and outlet structures. |
| Storm drainage system | Sto | The physical facilities that collect, store, convey, and treat stormwater runoff, including detention and retention facilities, streets, storm drains, overland flow paths, access and junction pits, and the inlets and outlets to these facilities. |
| Storm sewer | Sto | An alternative name of a storm drain commonly used in those regions where the sewer and drainage systems are combined. |
| Storm surge | Coa | An atmospherically driven rise in sea level caused by extreme surface winds and low atmospheric pressure associated with severe weather conditions, usually cyclones. Also known as a METEOROLOGICAL TIDE. |
| Stormwater | Gen | The runoff of water as a direct consequence of rainfall, whether surface flow, or flow within conduits, including any contaminants collected by the water during its passage. |
| Stormwater channel | Sto | A constructed channel with well-defined bed and banks, used to convey stormwater or floodwater. |
| Stormwater damage | Sto | Damage to property, services or land resulting from: <ul style="list-style-type: none"> • the direct contact of rainfall associated with a rainfall event; • the actions of stormwater runoff during its passage to a receiving water body, such as a creek, lake, wetland, river or bay; • the erosion caused by stormwater passing down a constructed drain, or channel. |
| Stormwater filter | Sto | A stormwater treatment system that incorporates a confined or unconfined filter, such as a sand filter. |
| Stormwater harvesting | Sto | The process of capturing and storing rainfall or stormwater runoff from ground surfaces for later usage, but not rainfall which is captured and released as part of a detention/retention system where the water performs no other function or usage. |
| Stormwater improvement | Sto | Any physical or chemical change in stormwater whereby its water quality is improved with respect to the desired water quality objectives. |
| Stormwater inlet | Sto | Any inlet to a stormwater pipe, conduit or open channel, including kerb inlets, grated inlets and field inlets. |
| Stormwater inundation | Sto | The inundation of land, properties or structures by rainwater or stormwater runoff during its passage to a receiving water body, such as a creek, lake, wetland, river or bay. |
| Stormwater management | Sto | The act of managing, handling, directing, controlling or treating stormwater. |
| Stormwater Management Plan (SMP) | Sto | A plan or policy developed for the management of stormwater within a specified region or catchment. |

| | | |
|--|-----|--|
| Stormwater management program | Sto | An action-based plan developed for the management of stormwater within a specified region or catchment. |
| Stormwater management strategy | Sto | A general policy developed for the management of stormwater, or used as the basis for the development of stormwater management plans, including stormwater quality management plans. |
| Stormwater quality improvement device (SQID) | Sto | Any physical device or component of a stormwater network used to improve stormwater quality. The term includes such devices as trash racks, GPTs, filtration and infiltration systems, and constructed wetlands. Also known as a STORMWATER QUALITY INTERCEPTION DEVICE. |
| Stormwater quality interception device | — | See STORMWATER QUALITY IMPROVEMENT DEVICE |
| Stormwater Quality Management Plan (SQMP) | Sto | A plan or policy developed for the management of stormwater quality within a specified region or catchment. |
| Stormwater quality management program | Sto | An action-based plan developed for the management of stormwater quality. |
| Stormwater treatment | Sto | Any physical or chemical change in stormwater whereby its water quality is improved with respect to the desired water quality objectives. |
| Stratification | Res | Layers of water in a dam, lake or pond that do not readily mix with each other, usually due to variations in density resulting from differences in temperature and/or salinity. |
| Stream | Wwy | A small watercourse such as a creek or brook with a sustained base flow that may or may not be permanent. Creeks stemming from well-established springs or seasonal snowmelts are often referred to as streams. When used in relation to streambed, stream bank and stream flow, the term may refer to any type of watercourse, whether or not there is a sustained base flow. |
| Stream bank | Wwy | A bank of a watercourse channel, not including those banks along the outer edge of a floodplain. |
| Stream bank erosion | Wwy | The removal of soil from a stream bank by the direct action of stream flow, wind or wave action, or the displacement of soil from a stream bank caused by the natural felling of vegetation. |
| Stream bank protection | Wwy | Any measure used to protect stream banks from eroding, including revegetation and rock beaching, but not including measures such as reducing flow velocities through non-structural means. |
| Stream bed | Wwy | The part of a watercourse channel located between the lower banks, including the surface material and the underlying material. |
| Streamlines | Hyd | Lines drawn through a fluid field so that the velocity vectors of the fluid at all points on the streamline are tangent to the streamline at any instant in time. |
| Street sweeping | Sto | The process of removing particulates and litter from street surfaces by sweeping and/or vacuuming. |

| | | |
|---------------------|-----|--|
| Strickler's formula | Hyd | <p>An empirical formula that relates the effective surface roughness (i.e. Manning's roughness) of deep-water alluvial channels with the grain size. It does not account for form roughness resulting from such things as channel irregularities or meanders.</p> <p>The formula is considered most appropriate when the hydraulic radius of the flow at any given cross section is significantly larger than the d_{90} grain size (ie. the grain or rock size of which 90 per cent of the exposed material is smaller).</p> |
| Structural controls | Sto | Stormwater quality treatment measures that incorporate structural components such as screens, filters, pollutant retention baskets or ponds. |
| | Wwy | A method of controlling flooding through the use of engineering works, such as levees, flood-relief channels, detention storages. |
| Structural soil | Sol | <p>A soil profile formed by integrating either synthetic or natural materials with the soil to improve its bearing strength, wear characteristics or trafficability.</p> <p>Ordinarily the soil is vegetated with grasses to control surface erosion and reduce the displacement of any loose materials such as gravel.</p> |
| Structure | Eng | Any built or constructed item, including, but not limited to, a building, bridge, dam, framework or retaining wall. |
| Structure (soil) | Sol | The combination of spatial arrangement of primary soil particles (clay, silt, sand, gravel) into aggregates such as peds or clods and their stability to deformation. Structure may be described in terms of the grade, class and form of the soil aggregates. |
| Sub-area | Hyd | A portion of a drainage catchment defined by common hydrologic parameters. Usually used in hydrologic numerical modelling to define a portion of a catchment that can be represented by uniform model parameters. |
| Sub-armour | Wwy | The layer of armour rock and/or gravel below the primary exposed armour layer. |
| Sub-catchment | Hyd | An area of land determined by topographical features, which drains a tributary, or branch drain of a primary stream, to a particular point along the stream. |
| Sub-channel | Wwy | <p>1. A branch of a watercourse which leaves and later re-enters the watercourse. The channel takes the form of a secondary channel in both size and flow.</p> <p>Also known as an ANABRANCH.</p> |
| | Wwy | 2. One of the various channels that make up a braided channel. |
| Subcritical flow | Hyd | <p>A free-surface flow condition which has a Froude number less than one (1), a depth greater than the critical depth, and a velocity less than the critical velocity.</p> <p>During subcritical flow, flow conditions at a given location are primarily controlled by flow conditions immediately downstream of that location.</p> |

| | | |
|--------------------------|-----|---|
| Sub-drain | Sto | A subsurface drain that aims to remove free ground water, usually for the purpose of lowering the water table sufficiently to prevent loss of stability of pavement sub-grades and turfed areas. |
| Sub-grade | Eng | The trimmed or prepared portion of the formation on which the road pavement is constructed. |
| Sub-grade drain | Eng | A sub-soil drain to remove water from the sub-grade of a road foundation. |
| Sub-lethal | Eco | Relating to a stimulus below the level that causes death. |
| Sub-littoral | Wwy | The shore zone from the lowest water level to the lower boundary of plant growth. |
| Submerged weir | Hyd | A type of weir flow where the nappe is discharging underwater, and the upstream water level is affected by the downstream water level. Also known as a DROWNED WEIR. |
| Subsoil | Sol | Sub-surface soil material comprising the B-horizons of soils with distinct profiles. In soils with weak profile development, the subsoil can be defined as the soil below the topsoil. |
| Subsoil drain | Sto | A sub-surface drain, with all or part of the backfilling being formed from porous material that facilitates the collection and drainage of water along its length. It may include pipes that collect this water through apertures, open joints, or porous walls. |
| Substrate | Wwy | The material, whether organic and inorganic, found on the bed of the watercourse. |
| Sub-surface drain | Sto | A drain designed to intercept sub-surface water and thus reduce the soil-water content, lower the water table, or generally improve site drainage conditions. |
| Sub-surface flow | Sol | Saturated flow through the ground. |
| Sub-surface flow wetland | Sto | A wetland where water flow primarily moves through a sub-surface matrix, usually soil or gravel, that is typically planted with macrophytes. |
| Subterranean stream | Wwy | The sub-surface flow of water (groundwater) parallel to and adjoining a stream, and usually determined to be an integral part of the visible stream. |
| Succession | Eco | The natural replacement of one kind of community by another, such as the progressive changes in vegetation following changes to climatic conditions or maintenance activities (e.g. mowing frequency or grazing activities). |
| Sump | Sto | A hole or depression into which water is drained to facilitate its removal, generally by pumping. |
| Supercritical flow | Hyd | A free-surface flow condition which has a Froude number greater than one (1), a depth less than the critical depth, and a velocity greater than the critical velocity. During supercritical flow, flow conditions at a given location are primarily controlled by flow conditions immediately upstream of that location. |

| | | |
|-----------------------|-----|--|
| Superelevation | Hyd | The elevation of a water surface above the mean water level at a given cross section. The phenomenon is commonly observed on the outside of a channel bend during normal channel flow. The superelevation of the outer water surface increases with increasing flow velocity and decreasing bend radius. |
| Surcharge | Eng | The increase in water level above the outlet crest of a water storage, such as the spillway crest of a reservoir. |
| | Hyd | The flow condition within a conduit where the water level at a junction pit or chamber is allowed to rise above the crest of the pit causing water to spill from the chamber. Surcharge normally occurs when the flow rate entering a junction pit exceeds the downstream conduit capacity. |
| Surcharge outflow | Hyd | The surface discharge from a junction pit, inlet chamber or surcharge chamber during surcharge conditions. The term may be interchanged with SURCHARGE OVERFLOW. |
| Surcharge overflow | Eng | The discharge of water over a spillway or bywash. The term may be interchanged with SURCHARGE OUTFLOW. |
| Surcharge volume | Eng | The volume of water contained within a reservoir above the spillway crest elevation during surcharge conditions. |
| Surface condition | Hyd | The characteristic appearance of the catchment surface with regard to those parameters that affect runoff conditions such as surface storage capacity, infiltration capacity, vegetation type, land slope and surface roughness. |
| | Sol | The characteristic appearance of the soil surface when dry. Conditions including cracking, firm, loose and soft. |
| Surface roughness | Hyd | The hydraulic roughness associated with the texture of the surface rather than the shape of the surface or the irregularity of the channel cross section. Also known as GRAIN ROUGHNESS or TEXTURE ROUGHNESS. |
| Surface storage | Hyd | The volume of stormwater retained on the surface of the catchment and within minor surface depressions causing the water to be removed from the stormwater runoff hydrograph. |
| Surface water | Hyd | Water on the surface of the land, for example, in rivers, creeks, lakes and dams. |
| Surge | Coa | A large swelling or abrupt wave. |
| | Hyd | A sudden change of flow depth, whether an increase or decrease in depth. An abrupt increase in flow depth is known as a positive surge (e.g. a bore); while a sudden decrease is termed a negative surge. |
| Survival time | Eco | The time interval between initial exposure of an aquatic organism to a harmful parameter and its death. |
| Suspended constituent | Wat | The constituents in a water sample that are retained on a specific filter medium. |

| | | |
|--------------------------------|-----|---|
| | | Also known as the RESIDUE. |
| Suspended load | Wwy | Transported sediment material maintained in suspension. |
| Suspended sediment | Wat | Particulate matter, both organic and inorganic, held in suspension at the time of sampling, whether the water is in motion or stationary. Suspended sediment concentrations are generally high when a water is in motion rather than when stationary. |
| Suspended solid | Wat | Any particulate matter suspended in a liquid, whether the liquid is in motion or stationary, or the concentration of such matter within the liquid. |
| Suspended solids concentration | Wat | The concentration of particulate matter suspended in a liquid, whether the liquid is in motion or stationary, usually measured in units of mg/L. |
| Suspension | Wat | A system in which very small particles (solid, semi-solid, or liquid) are more or less uniformly dispersed in a liquid or gaseous medium. If the particles are small enough to pass through filter membranes, the system is termed a colloidal suspension. If the particles are larger than colloidal dimensions they will tend to precipitate if heavier than the suspending medium, or agglomerate and rise to the surface if lighter than the suspending medium, or stay in suspension if dispersive. |
| Sustainable water use | Hyd | The use of water that supports the ability of human society to endure and flourish into the indefinite future without undermining the integrity of the hydrologic cycle or the ecological systems that depend on it. |
| Swale | Gen | A low place in a tract of land, usually moister and often having ranker vegetation than the adjacent higher land. |
| | Lfm | A linear level-flooded open depression excavated by wind or formed by the build-up of two adjacent ridges. Typically associated with the depression between two adjacent sand dunes and shallow, constructed, grassed drainage channels; or a low or hollow place, especially a marshy depression between ridges. |
| | Sto | A shallow, low-gradient, vegetated drainage channel designed to convey and treat shallow, concentrated stormwater runoff. Vegetation may consist of grasses (grass swale) or herbaceous plants and shrubs (vegetated swale). Swales are generally characterised by a broad top width to depth ratio and gentle grades. |
| Swale drain | Sto | An alternative name for a stormwater treatment swale. |
| Swirl separator | Sto | A device that uses the flow energy to create a vortex, enhancing the separation by gravity of particulate matter from a liquid. |
| Synergism | Eco | A phenomenon in which the toxicity of a mixture of chemicals is greater than that to be expected from a simple summation of the toxicities of the individual chemicals present in the mixture. |

| | | |
|----------------------------|-----|--|
| Synthetic storm | Hyd | An artificial rainfall hydrograph that does not necessarily represent an actual rainfall event. Synthetic storms are usually generated using parameters developed from observed catchment responses to past storm events. |
| Synthetic storm hyetograph | Hyd | An artificial rainfall hyetograph that does not necessarily represent an actual rainfall event. |
| Synthetic unit hydrograph | Hyd | An artificial unit hydrograph generated using parameters developed from observed catchment characteristics. |