

# GLOSSARY

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This glossary has been prepared to aid those readers of the guidance manual who may not be familiar with some of the terms used. Many of these terms are considered standard usage, with definitions that are well known and accepted, while others are newly coined, based on recent developments in the field. It should be noted that the purpose of this glossary is not to standardize terminology, but to allow readers to understand any unfamiliar words that may be encountered in the guidance manual.

The glossary was compiled and edited from the following sources:

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### *Accuracy*

The closeness of a measured value to the true value. Accuracy is usually measured as the percent recovery of a matrix spike, which is then compared to the accuracy criteria specified in the data quality acceptance criteria or objectives (DQOs).

### *Aliquot*

Individual, discrete sample volumes taken at set intervals (flow, time, or precipitation) or otherwise composited together to form a representative sample of a monitoring period flow.

### *Antecedent Moisture Conditions*

The soil moisture conditions of the catchment or watershed at the beginning of a storm. These conditions affect the volume of runoff generated by a particular storm event.

### *Area-Velocity Flow Meter*

A flow meter that combines the use of a velocity sensor with a depth-measurement device. The velocity sensor uses Doppler technology to measure average velocity throughout the flow stream. The depth measurement is converted to cross-sectional area of flow, using user-input channel or pipe geometry. The flow is then calculated automatically from the cross-sectional flow area and the velocity.

### *Base Flow*

That part of the stream or surface water discharge that is not attributable to direct runoff from precipitation or snowmelt; it is usually sustained by water draining from natural storage in groundwater aquifers, lakes or wetlands.

### *Basin Plan*

A water quality control plan developed by a Regional Water Quality Control Board (RWQCB) for a specific geographic area. It identifies beneficial uses of waters and the water quality objectives needed to maintain these beneficial uses.

### *Beneficial Uses*

Uses of water that must be protected against water quality degradation. These uses, according to the California Porter-Cologne Water Quality Control Act, include domestic, municipal, agricultural and industrial supply; power generation; recreation; esthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

### *Best Available Technology Economically Achievable (BAT)*

The minimum technology-based treatment applicable to toxic chemicals and other non-conventional pollutants (e.g., trash, temperature, color). For storm water from construction activities, Caltrans defines BAT as available and effective pollution control techniques that are generally applicable to construction sites. Deployment of a BAT on a given site is subject to a site-specific determination of feasibility.

### *Best Conventional Pollutant Control Technology (BCT)*

The minimum technology-based treatment applicable to conventional constituents (total suspended solids, biochemical oxygen demand, etc.). For storm water from construction activities, Caltrans defines BCT as available and effective pollution control techniques that are generally applicable to construction sites. Deployment of a BCT on a given site is subject to a site-specific determination of feasibility.

### *Best Management Practice (BMP)*

As used in this document, the term BMP refers to operational activities or physical controls to minimize or eliminate pollutants in storm water and non-storm water discharges from the storm drain system. Accordingly, the term BMP refers to both structural and nonstructural controls that have direct effects on the release, transport, or discharge of pollutants.

### *Blank Samples*

Samples of contaminant-free blank water (see below) used to identify sample contamination during collection, handling, shipping, storage, laboratory handling and analysis. Blank samples can be collected at different points in the sampling/analysis process to identify sources of contamination.

### *Blank Water*

Water provided by a manufacturer or laboratory that is free of detectable concentrations of the constituent of interest. This water is used for blank samples to identify potential sources of environmental sample contamination during the sampling/analytical process.

### *Bubbler (for water depth measuring)*

A device in which depth of water flow is determined by measuring the pressure needed to force bubbles out of a line submerged in the flow stream.

*Catch Basin*

A storm drain inlet having a sump below the outlet to capture settled solids.

*Catchment*

A drainage basin from which surface runoff is channeled into a single outflow.

*Clean Water Act (CWA)*

The federal law that regulates the discharge of pollutants to waters of the U.S (most surface waters). The NPDES permit program implements the CWA. The CWA is also known as the Water Pollution Control Act Amendments. The California Water Code regulates discharges to groundwater (including discharges to the ground) and thus has wider jurisdiction.

*Code of Federal Regulations (CFR)*

Document that codifies all rules of the executive departments and agencies of the federal government. It is divided into fifty volumes, known as titles. Title 40 of the CFR (referenced as 40 CFR) lists all federal environmental regulations.

*Composite Sample*

A mixture of sample aliquots that forms one larger sample volume representative of a monitored flow.

*Confidence Interval*

The range of values that a statistical estimate is within for a specified probability

*Confined Spaces*

Storm sewers are classified as “confined spaces” under OSHA regulations. Regulations for entry into confined spaces are contained in 29 CFR 1910.146 and California Code of Regulation (CCR)-Title 8,-Article 108, confined spaces. The regulations require that no person shall enter a confined space without proper training and equipment. The risks associated with confined spaces include dangerous atmospheres, engulfment, falls, falling objects, and bodily harm due to explosion.

*Constituent*

A substance found in dissolved, colloidal, or particulate form in water that can be measured as a concentration.

*Contaminant*

A term often used interchangeably with “pollutant.” A constituent that can cause harmful or objectionable conditions in water at certain concentrations.

### *Contamination (Sample)*

A category of Quality Assurance/Quality Control (QA/QC) that is assessed by performing analyses on blank samples to identify sources of contamination that can occur during collection, handling, shipment, storage, laboratory handling and analysis.

### *Co-permittee*

A permittee to a NPDES permit that is only responsible for permit conditions relating to the discharges from its area of jurisdiction.

### *Data Quality Objectives (DQOs)*

Specify the quality of data required to support the specified objectives of the monitoring program. DQOs generally are used to determine the level of error considered to be acceptable in the data produced by the monitoring program; in large measure they are used to specify acceptable ranges of laboratory performance.

### *Detection Levels*

#### **Level of Quantitation (LOQ)**

The constituent concentration that is sufficiently greater than a blank that it can be detected within specified levels by good laboratories during routine operating conditions.

#### **Method Detection Limit (MDL)**

The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. Concentrations reported by a laboratory that are between the MDL and RL (see below) are usually flagged by the laboratory as estimated “J,” indicating the constituent is present but its concentration cannot be accurately quantified.

#### **Minimum Level (ML)**

The concentration of the lowest initial calibration standard that gives an acceptable calibration point.

#### **Practical Quantitation Level (PQL)**

The constituent concentration that can be determined within  $\pm 20$  percent of the true concentration by 75 percent of the analytical laboratories tested in a performance evaluation study. Alternatively, if performance data are not available, the PQL is 5 x MDL for carcinogens and 10 x MDL for non-carcinogens.

### **Reporting Limit (RL)**

The lowest concentration of a constituent that can be reliably quantified within specified limits of precision and accuracy during routine laboratory operating conditions.

### *Drainage Swale*

A storm drainage conveyance structure, usually grassed or paved, designed to intercept, divert, and convey surface runoff.

### *Duplicate Samples*

Two samples taken at the same time from one location in order to assess precision.

### *Equipment Blanks*

Blank samples that are collected by passing blank water (contaminant free) through clean equipment and analyzing for the desired constituents in order to assess source contamination from equipment.

### *Event Mean Concentration (EMC)*

A parameter that describes the average concentration of a given constituent at a specific location during a storm event. The EMC should be representative of the complete runoff hydrograph, and is defined as the total constituent mass transported in the runoff, divided by the total runoff volume. The EMC is normally derived by analytical measurement of the constituent concentration in one or more representative composite samples.

### *Facility Pollution Prevention Plan (FPPP)*

A plan which identifies the functional activities specific to the maintenance facility and the applicable BMPs and other procedures utilized by maintenance personnel to reduce the discharge of pollutants in storm water.

### *Field Blanks*

Blank samples that are collected in the field using blank water (contaminant free) and the same methodologies used for sample collection. Field blanks are used to assess sample contamination due to sampling and sample processing activities.

### *First Flush*

Typically referred to as the first 30 to 60 minutes or runoff from a rainfall event.

### *Flow-Proportional Composite Sample*

A composite of multiple sample aliquots, each of which represents a predetermined flow volume. The sample aliquots is collected at flow volume intervals and combined in a manner that creates a larger volume sample representative of the entire monitored flow period. The principal advantages of flow-proportional composites (over time-proportional composites or grab samples) are that flow-proportional composites are not biased by over- or under-sampling any part of the hydrograph, and they allow direct estimation of Event Mean Concentration (EMC) and Event Mass Load (EML), without making assumptions about the shape of the hydrograph or the relationship between pollutant concentrations and flow rates.

### *Flume*

A specially built reach of a channel (sometimes a prefabricated insert) that has a converging entrance, a throat section, and a diverging exit section. The throat area or slope (or both) of the flume is designed to differ from that of the channel, inducing a depth of flow which is proportional to flow rate. For each type of flume there is a functional relationship (mathematical equation) between depth and flow rate.

### *Grab Sample*

An individual sample collected at one specific site at one point in time. Analysis of a grab sample provides a snapshot of stormwater quality at a point in time.

### *Hydrograph*

A graph of flow versus time for a given point.

### *Hyetograph*

A graph of rainfall to a catchment versus time.

### *Hydrologic Unit*

A subunit of a basin as defined by a Regional Water Quality Control Board (RWQCB).

### *Illicit Discharge*

Any discharge to a municipal storm sewer that is not composed entirely of stormwater. Discharges pursuant to a NPDES permit and those resulting from firefighting activities are exempted.

### *Infiltration*

A complex process that allows runoff to penetrate the ground surface and flow through the upper soil surface.

### *Laboratory Control Sample*

A clean matrix spiked with known concentrations of target analytes that is used to evaluate laboratory accuracy, independent of matrix effects.

### *Litter*

Any man-made object that can be captured in a ¼-inch mesh. The definition does not include materials of natural origin such as soils, gravel and vegetative debris. Examples of litter items include cartons, wrappers, paper or plastic cups, cans napkins and cigarette butts.

### *Matrix Spike/Matrix Spike Duplicate*

The laboratory process of splitting a stormwater sample into three aliquots, two of which are then “spiked” by adding known amounts of target constituents. The results of the analysis of the unspiked aliquot are compared to the spiked aliquots, and percent recovery of each spike is calculated in order to determine the accuracy of the analysis. The results of the two spiked aliquots are also compared to determine the precision of the analysis; this is accomplished by calculating the relative percent difference (RPD) between the spikes.

### *Method Blank*

Contaminant free water that is taken through the entire analytical procedure and used to evaluate contamination from laboratory procedures or conditions.

### *Monitoring*

Refers to a variety of activities and processes through which Caltrans will obtain information relevant to its implementation of the stormwater quality management program and to identify the need for and/or opportunities for revising or refining its program.

### *National Pollutant Discharge Elimination System (NPDES)*

The national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits under the Clean Water Act.

### *Nonpoint Source Discharge*

A discharge from a diffuse source that cannot be attributed to any particular discharge point (i.e., without a single point of origin or not introduced into a receiving stream from a specific outlet).

### *Non-Storm Water Discharge*

Any discharge to a storm drain system or receiving water that is not comprised entirely of stormwater. Examples include process wastewaters, cooling water, and domestic wastewater discharges.

### *Oil and Grease*

An analytical methodology that determines the concentration of groups of organic substances, primarily biological lipids and petroleum products, on the basis of their common solubility in an organic extracting solvent.

### *Oil Waste*

Oil of any kind or in any form, including but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged soil.

### *Outfall*

The point source where a municipal storm sewer discharges to receiving waters.

### *Overland Flow*

The flow of water over the ground before it enters a defined channel.

### *Pathogen*

A specific species of microorganism (a virus, bacteria, or protozoa) that can cause a communicable disease in the host organism.

### *Peak Flow*

The maximum rate of flow passing a given point during or after a rainfall event or snowmelt.

### *Perennial Stream or Spring*

A stream that flows continuously throughout the year in dry as well as wet years.

### *Permit*

Refers to the National Pollutant Discharge Elimination System (NPDES) General Permit and is an authorization, license, or equivalent control document, issued by the U.S. Environmental Protection Agency (EPA) or an approved state agency, to implement the requirements of the NPDES.

### *Point Source*

Any discernible, confined, and discrete conveyance or collection system, by which pollutants are or may be discharged. The term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

### *Pollutant*

Any substance introduced into the environment that adversely affects the usefulness of a resource.

### *Pollutant Loading*

The quantity of a pollutant found in runoff expressed in mass per unit of time. Pollutant loadings are commonly expressed in units of tons/year or pounds/year.

### *Precision*

A measure of the degree of agreement among replicate analyses of a sample. Precision is usually assessed by calculating the relative percent difference (RPD) in duplicate samples and comparing it to RPD criteria specified in the data quality acceptance criteria or objectives (DQOs).

### *Pressure Transducer (for water depth measuring)*

A device that measures the pressure of the liquid above a pressure sensor to determine the depth of the stream flow.

### *Quality Assurance (QA)*

A definitive plan for sample collection and analysis that specifies the measures to be used to produce data of known quality.

### *Quality Control (QC)*

A set of measures within sample collection and analysis methodology to assure that the methodology is in control to satisfy QA objectives.

### *Roughness Coefficient ( $n$ in Manning's equation)*

A coefficient that is a measure of the physical characteristics influencing the flow of water across a surface.

### *Rainy Season*

The Caltrans rainy season corresponds to the following dates:

- Northwestern California is defined as all of Caltrans District 1. Rainy season: October 1 through May 1.

- Northern California is defined as all of Caltrans Districts 2, 3, 4, 10 (except for those areas defined as Desert areas), and the Big Basin Hydrologic Unit in Caltrans District 5. Rainy season: October 15 through April 15.
- Southern California is defined as all of Caltrans Districts 5 (except for the Big Basin Hydrologic Unit), 6, 7, 8, 9, 11, and 12 except for those areas defined as Desert areas. Rainy season: November 1 through March 15.
- Desert areas are defined as the Colorado River Basin Regional Water Quality Control Board jurisdiction and the North and South Lahontan Regional Water Quality Control Board jurisdictions (excluding Mono and Antelope areas, East and West Walker River, East and West Carson River, Truckee and Little Truckee River hydrologic units). No rainy season is designated.

### *Receiving Waters*

All surface waters (natural watercourse, lake, estuary or ocean) into which stormwater runoff is discharged.

### *Receiving Water Limitations*

Permit limitations applied to dischargers to prevent violations of water quality standards.

### *Regional Water Quality Control Board (RWQCB)*

The local agency responsible for the regulation of surface and ground water in California. The State Water Resources Control Board (SWRCB) sets overall policy that is implemented by the nine Regional Boards.

### *Runoff Volume*

The volume of storm water that runs over the surface of the ground and into a storm drainage system and receiving water.

### *Site Runoff Coefficient (C)*

A unitless coefficient used in the rational method that is ratio of the maximum rate of runoff to the uniform rate of rainfall times the watershed area.

### *Site Imperviousness*

The fraction of land surface that does not allow infiltration of rainfall at the start of a rainfall event.

### *Split Samples*

Samples that are split into two samples by the laboratory and each analyzed in order to assess laboratory precision. Also called laboratory duplicates, which is a misnomer.

### *State Water Resources Control Board (SWRCB)*

As delegated by EPA, California agency that implements and enforces Clean Water Act Section 401(p) NPDES permit requirements, and is issuer and administrator of Caltrans NPDES Storm Water Permit. The State Water Resources Control Board (SWRCB) sets overall policy that is implemented by the nine Regional Water Quality Control Boards.

### *Statewide Storm Water Management Plan (SWMP)*

The SWMP describes a program that is being implemented to reduce the discharge of pollutants associated with storm water drainage systems that serve highways and highway-related properties, facilities and activities. It describes how Caltrans will comply with the provisions of National Pollutant Discharge Elimination System (NPDES) permit (Order No. 99-06-DWQ) (Permit) issued by the SWRCB on 15 July 1999.

### *Storm Drain Inlet*

A drainage structure that collects surface runoff and conveys it to an underground storm drain system.

### *Stormwater Runoff*

Runoff from rainfall or snowmelt that excludes infiltration and runoff from agricultural land.

### *Storm Water Advisory Teams (SWAT)*

Caltrans teams with responsibility for evaluating new or modified storm water BMPs (Maintenance SWAT, Project Development SWAT, and Environmental Engineering SWAT).

### *Storm Water Management Practice*

Any activities, prohibitions or modifications of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce stormwater pollution of receiving waters.

### *Storm Water Drainage System*

Streets, gutters, inlets, conduits, natural or artificial drains, channels and watercourses, or other facilities that are used for the purpose of collecting, storing, transporting, or disposing of storm water.

### *Storm Water Pollution Prevention Plan (SWPPP)*

A plan to identify water quality management practices to be implemented on all construction projects where construction activities result in disturbances of two

hectares or more of land. This does not include (1) activities to maintain original line and grade, hydraulic capacity, or the original purpose of a facility, and (2) emergency construction activities to protect public health and safety are not covered under the Permit and do not require a SWPPP.

#### *Storm Water Quality Task Force (SWQTF)*

An ad hoc group, including staff from regulatory agencies, municipalities, industries, consultants and others, which meets bimonthly for information sharing and makes recommendations to the SWRCB regarding storm water management.

#### *Subsamples*

Volumes poured from a larger volume composite sample into individual constituent bottles.

#### *Sump*

In drainage, any low area that does not permit the escape of water by gravity flow.

#### *Temporary Construction Site BMPs*

BMPs temporarily used to address a short-term stormwater contamination threat.

#### *Time of Concentration*

The time required for water to flow from the most hydraulically remote point of the drainage area to the location being sampled, assuming uniform distribution of rainfall intensity throughout the area.

#### *Total Maximum Daily Load (TMDL)*

The maximum amount of a pollutant that a water body can assimilate and still meet ambient water quality standards. TMDLs are established for water quality-limited segments, which are defined as “any segment where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after the application of technology-based effluent limitations...” (40 CFR 130.20). TMDLs are implemented through waste load allocations (WLA) applied to point sources and load allocation (LA) applied to non-point sources.

#### *Total Petroleum Hydrocarbons (TPH)*

Petroleum products of varying chain lengths of hydrocarbons that are classified in the following fractions (in increasing order of hydrocarbon chain length): BTEX (benzene, ethylbenzene, toluene, and xylene); kerosene; diesel; jet fuel; fuel oil; and lubricating oil. In order to quantify TPH concentrations in water samples, the

different fractions must be analyzed for separately (eg., TPH-BTEX; TPH-Diesel; etc.).

#### *Toxic Pollutants*

Those pollutants defined in the federal regulations at 40 CFR 401.15 (pursuant to Section 307(a)(1) of the Clean Water Act). These pollutants include copper, lead, zinc, many chlorinated organic compounds including pesticides, and other constituents sometimes found in wastewater.

#### *Transported Solids*

Any object that can pass through a ¼-inch mesh and can fit into the sampler intake strainer at the end of the Teflon tubing.

#### *Ultrasonic (for water depth measuring)*

A device that measures depth by transmitting an ultra sound pulse from a sensor mounted above the stream and measuring the time for the echo to return from the flow stream surface. This measuring device must be placed in a secure location, where it will not be affected by wind, temperature flux, etc.

#### *Uniform Flow*

Flow in which the velocities are the same in both magnitude and direction from point to point along a conveyance; this can only occur in a channel of constant cross section, roughness, and slope in the direction of flow. The conditions for uniform flow must prevail in order to use Manning's equation for flow measurement.

#### *Waste Load Allocation (WLA)*

The maximum load of a given constituent each discharger is allowed to release into a particular waterway. A WLA is required for each specific constituent being regulated; the portion of a stream's total assimilation capacity assigned to an individual discharge.

#### *Water Quality Objectives (WQO)*

Numerical or narrative limits on constituents or characteristics of water designed to protect designated beneficial uses of the water. California's WQOs are established by the State and Regional Boards in the Water Quality Control Plans or Basin Plans.

#### *Water Quality Parameter*

A physical, chemical, or biological characteristic, property, or representation of the quality of water. The parameter may be stated in qualitative terms (for example, an

aesthetic property such as the presence or absence of trash) or in quantitative terms (for example, the concentration of a constituent in water in mass per unit volume).

#### *Water Quality Standards*

A combination of the designated beneficial uses of water and water quality objectives (criteria) to protect those uses. Water quality standards are enforceable limits for the bodies of surface or ground waters for which they are established; they are promulgated by the State and Regional Boards in California.

#### *Watershed*

The drainage basin from which surface runoff is channeled into a single outflow (See catchment).

#### *Water Pollution Control Program (WPCP)*

A plan that must be prepared for all construction projects that do not require preparation of a SWPPP.

#### *Weir*

A device that has a crest and some side containment of known geometric shape, such as a V, trapezoid, or rectangle, and is used to measure flow rate in an open channel.