Spokane Regional Stormwater Manual

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SPOKANE REGIONAL STORMWATER MANUAL

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GLOSSARY

DEFINITIONS

All Weather Drivable Surface—Any roadway, driveway, alley or parking lot surface paved with crushed stone, asphalt, concrete or other pervious or impervious material in a manner that will support the weight of anticipated vehicular traffic in all weather conditions and minimize the potential for ruts, potholes or pooling of water.

Antecedent Runoff Condition—The degree of wetness of a watershed or within the soil at the beginning of a storm.

Aquifer—A geologic stratum containing groundwater that can be withdrawn and used for human purposes.

Arterial—A road or street primarily for through traffic. A major arterial connects an interstate highway to cities and counties. A minor arterial connects major arterials to collectors. A collector connects an arterial to a neighborhood or local access roads. A local access road connects individual homes to a collector.

Average Daily Traffic—The expected average number of vehicles using a roadway in a day.

Backwater—An unnaturally high stage in a stream caused by obstruction or confinement of flow, as by a dam, a bridge or a levee. Its measure is the excess of unnatural over natural stage, not the difference in stage upstream and downstream from its cause.

Bank—Lateral boundary of a stream; limits confining water flow.

Base Flood—The flood having a 1% chance of being equaled or exceeded in any one year.

Basic Requirement—Any of eight stormwater management measures that must be completed for new development and redevelopment projects that meet the regulatory threshold, unless exempted in this Manual.

Basin (Drainage Basin)—The portion of the earth's surface upon which falling precipitation runs off to a common point. Often referred to as a drainage basin.

Bedrock—The more or less solid rock in place on or beneath the surface of the earth. It may be soft, medium, or hard and have a smooth or irregular surface.

Berm—A constructed barrier of compacted earth, rock or gravel. In a stormwater facility, a berm may serve as a vertical divider, typically built up from the bottom.

Best Management Practices—The schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices approved by Ecology that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State.

Buffer (or Buffer Area or Buffer Zone)—The area adjacent to a critical or sensitive area established to ensure protection of the critical area by separating incompatible uses from the critical or sensitive area. Buffer locations and limits are described by federal, state or local governments.

Capacity—The effective carrying ability of a drainage structure. Generally measured in cubic feet per second.

Catch Basin—A drainage structure that collects water from the side or through a grating.

Cation Exchange Capacity—The amount of exchangeable cations that a soil can absorb at pH 7.0.

Channel—A depression in the earth's surface which conveys water from one location to another. This may be either a natural facility or man made.

Channel Protection—Erosion prevention and stabilization of velocity distribution in a channel using vegetation, jetties, drops, revetments, or biological community.

Check Dam—Small dam constructed in a gully or other small watercourse to decrease the stream flow velocity, minimize channel scour, and promote deposition of sediment.

Cleanout—An access opening to a storm drain system. Usually consists of a manhole shaft, a special chamber or an opening into a shallow culvert or drain.

Clear Zone—An unobstructed, relatively flat area provided beyond the edge of a traveled roadway for the recovery of errant vehicles.

Common Plan of Development or Sale- "A site where multiple separate and distinct construction activities may be taking place at different times on different schedules, but still under a single plan. Examples include phased projects and projects with multiple filing or lots, even if the separate phases or filing/lots will be constructed under separate contract or by separate owners (e.g. development where lots are sold to separate builders); a development that may be phased over multiple years, but is still under a consistent plan for long term development; and projects in a contiguous area that may be unrelated but still under the same contract, such as construction of a building extension and a new parking lot at the same facility. If the project is part of

a common plan of development or sale, the disturbed areas of the entire plan shall be used in determining permit requirements.

Concentrated Flow—Flowing water that has been accumulated into a single fairly narrow stream.

Concept Drainage Report—A preliminary drainage report to demonstrate that the proposed drainage facilities generally can meet the stormwater requirements for certain land use actions or land development permits. They are needed for sites that have limiting layers or shallow groundwater or are in a critical area.

Conveyance System—The drainage facilities, both natural and man-made, that collect, contain, and provide for the flow of surface and stormwater from the highest points on the land down to a receiving water. The natural elements of the conveyance system include swales and small drainage courses, streams, rivers, lakes and wetlands. The man-made elements of the conveyance system include gutters, ditches, pipes, channels, and most detention facilities.

Critical Area—Any of the following areas and ecosystems: wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas.

Critical Flow Depth—The depth of water in a conduit at which the maximum flow takes place, if the conduit is on the critical slope with the water flowing at its critical velocity and there is an adequate supply of water. The depth of water flowing in an open channel or a conduit partially filled for which the velocity head equals one-half the hydraulic mean depth.

Critical Slope—The slope at which the maximum flow will occur at the minimum velocity.

Critical Velocity—Mean velocity of flow in channel when flow is at critical depth.

Culvert—A conduit for allowing water to pass under a roadway. A culvert differs from a bridge in size.

Design Frequency—The recurrence interval for hydrologic events used for design.

Design Storm—That storm that generates the amount of runoff that drainage facilities are designed to handle. This storm is selected for design on the basis of its probable recurrence.

Detention—The release of stormwater runoff from a site at a slower rate than it is collected by the stormwater facility system, the difference being held in temporary storage.

Detention Facility—An above-ground or below-ground facility, such as a pond or tank, that temporarily stores stormwater runoff and subsequently releases it at a slower rate than it is collected by the drainage facility system. There is little or no infiltration of stored stormwater.

Design Deviation—An administrative approval of design elements that do not conform to or are not explicitly addressed by this Manual.

Development—Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials located within the area of special flood hazard.

Discharge—The volume of water flowing out of a drainage structure or facility.

Dispersion—Release of surface stormwater runoff from a drainage facility system such that the flow spreads over a wide area, located so as not to allow flow to concentrate anywhere upstream of a drainage channel with erodible underlying granular soils.

Ditch—A long narrow excavation dug in the earth for drainage with a top width of less than 10 feet at design flow.

Diversion—The change in character, location or direction of flow of a natural drainage course.

Down-Gradient—When used in this manual if may refer to either downstream (surface) or down-gradient (sub-surface) or both.

Drain—A buried pipe or other conduit (closed drain). A ditch (open drain) for carrying off surplus surface water or groundwater.

Drainage—(1) The process of removing surplus ground or surface water by artificial means. (2) The manner in which the waters of an area are removed. (3) The area from which waters are drained; a drainage basin.

Drainage Basin—The portion of the earth's surface upon which falling precipitation flows to a common point.

Drainage Submittal—The submittal of documentation including narrative, basin maps, plans, calculations and other supporting documentation to demonstrate that a proposed project will adequately treat and dispose of stormwater.

Drywell—A well installed above the water table so that its bottom and sides are typically dry except when receiving fluids. Drywells are designed to disperse water below the land surface.

Easement—A right to use the land of others. The right may be from the common law or may be acquired, usually by purchase or condemnation and occasionally by prescription or inverse condemnation. The right is not exclusive, but subject to rights of others in the same land, the lesser right being subservient to a prior right which is dominant. Easements for drainage may give rights to impound, divert, discharge or concentrate surface flow, extend pipelines, deposit silt, erode, scour, or any other necessary consequence of a development.

Energy Dissipation—Use of a structure to slow the flow of water and reduce the erosive forces present in a rapid-flowing body of water.

Engineer—Professional engineer, currently licensed in the State of Washington

Erosion—The wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep.

Erosion and Sediment Control Facility—A drainage facility designed to hold surface and stormwater runoff for a period of time to allow sediment contained in the runoff to settle out.

Erosion and Sedimentation Control—Any temporary or permanent measures taken to reduce erosion, control siltation and sedimentation, and ensure that sediment-laden water does not leave a site.

Existing Condition—The site condition prior to development; not necessarily the pre-developed condition.

Floodplain- An area determined by the Federal Emergency Management Agency (FEMA) to have a one percent chance of flooding in any given year.

Floodway—The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

Flow—The movement of water, silt, sand, etc; discharge; total quantity carried by a stream.

Freeboard—The distance between the normal operating level and the top of the sides of an open conduit, the crest of a dam, etc., left to allow for wave action, floating debris or any other condition or emergency, without overtopping the structure.

Freeways—Fully controlled and partially controlled limited access highways, located either inside or outside the urban growth area delineated by a local jurisdiction.

Geotechnical Engineer—Professional engineer, currently licensed in the State of Washington, specializing in geotechnical engineering.

Groundwater—Water in a saturated zone or stratum beneath the land surface.

Groundwater recharge—Inflow to a groundwater reservoir or aquifer.

Groundwater table—The free surface of the groundwater, that surface subject to atmospheric pressure under the ground, generally rising and falling with the season, the rate of withdrawal, the rate of restoration, and other conditions. It is seldom static.

Head—An available force equivalent to a certain depth of water. This force is the motivating force in the movement of water. The height of water above any point or plan or reference. Used also in various compounds, such as energy head, entrance head, friction head, static head, pressure head, lost head, etc.

High-ADT Roadway—Any road with an average daily traffic (ADT) greater than 30,000 vehicles per day.

High-Use Site—Sites that generate high concentrations of oil due to high traffic turnover or the frequent transfer of oil and/or other petroleum products.

Hydraulic Grade Line—A line that represents the relative force available due to the potential energy available. This is a combination of energy due to the height of the water and the internal pressure. In any open channel, this line corresponds to the water surface. In a closed conduit, if several openings were placed along the top of the pipe and an open tube were inserted, a line connecting the water surface in each of these tubes would represent the hydraulic grade line.

Hydraulic Jump—Transition of flow from a rapid state to a tranquil state; rise in elevation of liquid surface. Sudden transition from supercritical flow to the complementary subcritical flow, conserving momentum and dissipating energy.

Hydraulic Radius—The right cross-sectional area of a stream of water divided by the length of that part of its periphery in contact with its containing conduit; the ratio of area (A) to wetted perimeter (P): $R = A/P$

Hydraulically Connected—Impervious areas from which stormwater flows directly onto another impervious area without traveling over a pervious area. May include driveway or sidewalk areas adjacent to curbs from which stormwater collects in the gutter.

Hydrograph—A graph showing stage, flow, velocity or other properties of water with respect to time.

Hydrologic Soil Groups—A soil classification system defined by the U.S. Soil Conservation Service in which a soil may be categorized into one of four groups (A, B, C, or D) based on infiltration rate and other properties.

Hydrology—The science dealing with the occurrence and movement of water upon and beneath land areas of the earth. Overlaps and includes portions of other sciences such as meteorology and geology. The particular branch of Hydrology that the engineer is generally interested in is surface runoff, which is the result of excessive precipitation.

Impervious Surface—A hard surface area that either prevents or retards the entry of water into the soil mantle. Common impervious surfaces include, but are not limited to, rooftops, walkways, patios, driveways, parking lots, storage areas, concrete or asphalt paving, gravel roads, packed earthen materials and oiled, macadam or other surfaces that impede the natural infiltration of stormwater.

Infiltration—The passage of water through the soil surface into the ground.

Initial Abstraction—The sum of all water losses before runoff begins, including retention in surface depressions, interception by vegetation, evaporation and infiltration.

Inlet—The portion of a drainage facility through which storm water enters a drainage system.

Intermittent Channel—A stream or portion of a stream that flows only in direct response to precipitation. Intermittent streams receive little or no water from springs, have long-continued supply from melting snow or other sources, and are dry for a large part of the year.

Invert—The bottom of a drainage facility along which the lowest flows pass.

Isopluvial Map—A map with lines representing constant depth of total precipitation for a given return frequency.

Land-Disturbing Activity—Any activity that results in movement of earth or a change in the existing soil cover (vegetative and non-vegetative) or topography. Land-disturbing activities include, but are not limited to clearing, grading, filling, and excavation. Compaction associated with stabilization of structures and road construction is also considered a land-disturbing activity. Vegetation maintenance practices are not considered land-disturbing activity.

Legally Non-Conforming—A project that was constructed, has been approved for construction prior to the adoption of these standards, or is being constructed under a valid permit authorizing the construction.

Level Pool Routing—The basic technique of storage routing used for sizing and analyzing detention storage and determining water levels for ponding water bodies. The level pool routing technique is based on the continuity equation: inflow minus outflow equals change in storage.

Local Jurisdiction—Any county, city, town or special purpose district having its own incorporated government for local affairs.

Maintenance—Activities conducted on structures, facilities, and equipment that involve no expansion or use beyond previously existing use, and result in no significant adverse hydrologic impact.

Manhole—An entrance to a drainage facility for the purpose of inspection and cleaning. This may consist of a circular manhole shaft, frame and round cover or an opening into a structure where the top of the structure is at the surface; in this case, the opening may be round or rectangular.

Manning's Number ("n" Value)—A number used in a mathematical formula to determine the theoretical flow velocity in a drainage facility. This number varies according to the roughness of the material through or over which the water is flowing. Often referred to as a roughness coefficient.

Moderate-Use Sites—Sites that are expected to generate sufficient concentrations of metals that additional runoff treatment is needed to protect water quality in non-exempt water bodies.

National Pollutant Discharge Elimination System—A provision of the Clean Water Act that prohibits point-source discharges of pollutants into waters of the United States unless a special permit is issued; administered by the Washington Department of Ecology as the delegated authority in Washington State.

Native Growth Protection Easement—An easement granted for the protection of native vegetation within a sensitive area or its associated buffer.

New Development—The conversion of undeveloped or pervious surfaces to impervious surfaces. New development occurs on either vacant land or through expansion of partially developed sites.

Non-Flooded Road Width—The portion of a road that is not used to carry water during a storm.

Non-Pollutant Generating Impervious Surfaces (NPGIS)—Impervious surfaces that are insignificant sources of pollutants in stormwater runoff. Roofs that are subject only to atmospheric deposition or normal heating, ventilation and air conditioning vents are considered NPGIS. The following may also be considered NPGIS: paved bicycle pathways and pedestrian sidewalks that are separated from and not subject to drainage from roads for motor vehicles, fenced fire lanes, and infrequently used maintenance access roads.

NRCS Method—The Natural Resources Conservation Service Urban Hydrograph Method; a single-event hydrologic analysis technique for estimating runoff based on the curve number method.

Off-Site Drainage—Runoff that originates outside the site of a development.

Oil/Water Separator—A vault, usually underground, designed to provide a quiescent environment to separate oil from water.

Open Channel—A drainage course with no restrictive top. It is open to the atmosphere and may or may not permit surface flow to pass over its edge and into the channel in an unrestricted manner. In many cases where dikes or berms are constructed to increase the channel capacity, entrance of surface waters is necessarily controlled.

Ordinary High Water Mark—The line on the shore marking the normal highest level achieved during fluctuations in water levels; indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil destruction on terrestrial vegetation, or the presence of litter and debris; or other means that consider the characteristics of the surrounding area.

Orifice—An opening with a closed perimeter and of regular form through which water flows.

Outlet—The portion of a drainage system through which storm waters exit.

Overflow—Flow exceeding the capacity of a drainage system; or the device or pathway through which this flow passes in exiting the drainage system.

Overland Flow—Flow of surface waters before reaching a natural water course.

Peak Flow—Maximum momentary stage or discharge of a stream or flood. Design discharge.

Percolation—The movement of water through soil.

Perennial Stream—A stream reach that does not go dry during a year of normal precipitation. The elevation of the water table is always above the bottom of the stream channel during a year of normal precipitation.

Permeable Soils—Soil materials with a sufficiently rapid infiltration rate to greatly reduce or eliminate surface and stormwater runoff. These soils are generally classified as hydrologic soil types A and B.

Plat—A map or representation of a subdivision showing the division of a tract or parcel of land into lots, blocks, streets, or other divisions and dedications.

Point Discharge—The release of collected or concentrated surface and stormwater runoff from a pipe, culvert, or channel.

Pollutant Generating Impervious Surface (PGIS)—Impervious surfaces that are significant sources of pollutants in stormwater runoff. Such surfaces include those

that are subject to vehicular use, industrial activities, or storage of erodible or leachable materials that receive direct rainfall, or run-on or blow-in of rainfall. Metal roofs are considered to be PGIS unless coated with an inert, non-leachable material. Roofs that are subject to venting of manufacturing, commercial, or other indoor pollutants are also considered PGIS. A surface, whether paved or not, shall be considered PGIS if it is regularly used by motor vehicles. The following are considered regularly-used surfaces: roads, unvegetated road shoulders, bike lanes within the traveled lane of a roadway, driveways, parking lots, unfenced fire lanes, vehicular equipment storage yards, and airport runways.

Precipitation—Rainfall, snow, sleet, fog, hail, dew and frost.

Pre-Developed Condition—The native vegetation and soils that existed at a site prior to the influence of Euro-American settlement.

Project—Any proposed action to alter or develop a site; or the proposed action of a permit application or an approval that requires drainage review.

Project Proponent—The person or entity responsible for oversight of a project; may include the property owner or his sponsor, agent, project manager or engineer.

Rational Method—A means of estimating the amount of stormwater arriving at a given point. Determined by the equation Q = CIA; where Q = flow in cubic feet per second, C = runoff coefficient which is a factor based on the imperviousness of the area upon which the water is falling; I = rainfall intensity (inches per hour) based on the time of concentration for the given drainage area; A = the drainage area in acres.

Reach—A length of channel that is uniform with respect to discharge, depth, area and slope.

Redevelopment—The replacement of impervious surfaces on a developed site. Redevelopment occurs when existing facilities are demolished and rebuilt or substantially improved through reconstruction.

Regulatory Threshold— The "trigger" for compliance with the Basic Requirements of this Manual. In Spokane County and the City of Spokane Valley, it is defined as "the addition or replacement of 5,000 square feet or more of impervious surfaces or the disturbance of one acre or more." In the City of Spokane, the threshold is defined as "the addition or replacement of any impervious surfaces." The regulatory threshold applies to the total impervious added or replaced at full build-out. Refer to the definition of common plan of development to determine whether a project will trigger the regulatory threshold". All projects proposing underground injection control facilities must comply with the Basic Requirements, regardless of whether they trigger the regulatory threshold.

Retention—The process of collecting and holding surface and stormwater runoff with no surface outflow.

Riprap—Broken concrete, sacked concrete or rock used for protection against erosion.

Runoff—The portion of precipitation that contributes to flow in streams or drainage systems.

Rural Road—A road outside Urban Growth Areas delineated by local jurisdictions.

Scour—Wearing of the bed of a stream by entrainment of alluvium and corrosion of native rock. Also caused by excessive velocities at the outlet of a concentrated stream of water onto unstable material.

Seasonal Stream—A stream or segment of a stream that normally goes dry during a year of normal rainfall. Seasonal streams often receive water from springs or long-continued water supply from melting snow or other sources.

Sedimentation—Gravitational deposit of transported material in flowing or standing water.

Sheet Flow—Any flow spread out and not confined (e.g. flow across a flat open field).

Silt—(1) Waterborne sediment carried in suspension or deposited by flowing water, ranging in diameter from 0.0002 to 0.002 inches. The term is generally confined to fine earth, sand, or mud, but is sometimes broadened to include all material carried, including both suspended and bed load. (2) Deposits of waterborne material as in a reservoir, on a delta, or on floodplains.

Sorption—The physical or chemical binding of pollutants to sediment or organic particles as a means of pollutant removal.

Special Drainage Areas—Areas that typically have shallow soils, bedrock near the surface of the land and soils or geological features that may make long-term infiltration of stormwater difficult or pose potential problems for adjacent properties. These areas may also contain steep slopes where infiltration of stormwater may be difficult and the potential for erosion is high.

Special Drainage Districts—Special Drainage Areas within the City of Spokane.

Special Flood Hazard Areas (SFHA)- the land covered by the floodwaters of the base flood in the SFHA on the NFIP maps. The SFHA is the area where the NFIP's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.

Spillway—A passage for spilling water.

Spring—An issue of water from the earth.

Stabilization—Measures to inhibit soil erosion, including the use of concrete or asphalt paving, quarry spalls at access points, ditch lining, pre-manufactured erosion products, or vegetative cover.

Storage—Detention or retention of water for future flow. Natural storage occurs in channels and marginal soils; Artificial storage occurs in reservoirs.

Storm—A disturbance of the ordinary, average conditions of the atmosphere which, unless specifically qualified, may include any or all meteorological disturbances, such as wind, rain, snow, hail, or thunder.

Storm Drain—Any conveyor of stormwater.

Storm Sewer—A sewer that carries stormwater and surface water, street wash and other wash waters or drainage, but excludes sewage and industrial wastes. Also called a storm drain.

Stormwater—That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows, via overland flow, interflow, pipes and other features of a stormwater drainage system, into a defined surface water body or constructed infiltration facility.

Stormwater Management—An all-encompassing process that includes stormwater volume and rate control and water quality treatment.

Subcritical Flow—Stream flow with velocity below the critical velocity.

Sump—Any low spot that does not permit the escape of water.

Supercritical flow—Flow at velocities higher than the critical velocity..

Surface Runoff—Any movement of water on the earth's surface, whether over the surface of the ground or through channels.

Surveyor—A professional surveyor currently licensed in the State of Washington

Swale—A shallow drainage conveyance with relatively gentle side slopes, generally with flow depths less than 1 foot.

Target Soil—The soil deposit or layer into which stormwater is designed to infiltrate. For example, the soil layer that occurs at the active barrel section of a drywell.

Time of Concentration—Time required for discharge from the most distant point in a drainage area to reach the point where all flow in the drainage area is concentrated.

Travel time—The estimated time for surface water to flow between two points of interest.

Treatment Train—A pollutant treatment scenario in which two stormwater best management practices (BMPs) are constructed in series in order to capture pollutants more efficiently. This concept is typically seen when there are very high concentrations of pollutants, such as oil or phosphorus, for which no one treatment BMP can adequately remove the pollutant on its own while meeting the remaining treatment goals of this Manual.

Treatment Zone—The layer of soil in a bio-infiltration swale where water quality treatment occurs. It consists of sod installed over medium- to well-draining soil at least 6 inches thick underlain by a subgrade infiltration layer at least 48 inches thick.

Trip End—The expected number of vehicles using a parking area for the proposed land use. Trip end counts are estimated by using the *Trip Generation Manual* published by the Institute of Transportation Engineers

Type A NLDS—Natural drainage systems that may be considered for use as regional facilities and serve important functions in existing management of stormwater runoff.

Type B NLDS—Natural drainage systems that are generally less prominent, yet are deemed necessary for managing stormwater in its existing location.

Urban Road—A road located within the urban growth area delineated by local jurisdictions.

Water Budget—An analysis used in the design of an evaporation pond that uses average monthly precipitation and pan evaporation values to estimate the net stormwater runoff volume increase over a 2-year cycle.

Water Surface—The top of water in a lake, channel, reservoir or river

Water Table—The upper surface or top of the saturated portion of the soil or bedrock layer, indicating the uppermost extent of groundwater.

Weir—A low overflow dam or sill for measuring, diverting or checking flow.

Wetland—An area characterized by saturated or nearly saturated soils most of the year that forms an interface between terrestrial (land-based) and aquatic environments. Wetlands include marshes around lakes or ponds and along river or stream channels.

ABBREVIATIONS AND ACRONYMS

- **AASHTO—**American Association of State Highway and Transportation Officials
- **ADT—**Average Daily Traffic
- **APWA—**American Public Works Association

- **ARC—**Antecedent Runoff Condition
- **ASA—**Aquifer Sensitive Area
- **ASTM—**American Society for Testing and Materials
- **BFE—**Base Flood Elevation
- **BMP—**Best Management Practice
- **BST—**Bituminous Surface Treatment
- **CARA—**Critical Aquifer Recharge Area
- **CC&R—**Conditions, Covenants and Restrictions
- **CEC—**Cation Exchange Capacity
- **cfs—**Cubic Feet per Second
- **CMP**—Corrugated Metal Pipe
- **CN—**Curve Number
- **DOH—**Department of Health
- **EPA—**Environmental Protection Agency
- **ESC—**Erosion & Sediment Control
- **ETE—**Equivalent Trip End
- **FEMA—**Federal Emergency Management Agency
- **FHWA—**Federal Highway Administration
- **FIRM—**Flood Insurance Rate Map
- **FS—**Factor of Safety
- **GPA—**Grassed Percolation Area
- **GW—**Grate Width
- **GSC—**Geotechnical Site Characterization
- **HDPE**—High-Density Polyethylene
- **HGL—**Hydraulic Grade Line
- **HOA—**Homeowner's Association
- **IBC—**International Building Code
- **IRC—**International Residential Code
- **NLDS—**Natural Location of Drainage Systems
- **NOAA—**National Oceanic and Atmospheric Administration
- **NPDES—**National Pollutant Discharge Elimination System

- **NPGIS—**Non-Pollutant Generating Impervious Surface
- **NRCS —**Natural Resources Conservation Service
- **O&M—**Operation and Maintenance
- **PAM—**Polyacrylamide
- **PGIS—**Pollutant Generating Impervious Surface
- **POA—**Property Owners Association
- **RCW—**Revised Code of Washington
- **SDA—**Special Drainage Areas
- **SDD—**Special Drainage District
- **sf**—Square Feet
- **TMDL—**Total Maximum Daily Load
- **TPH—**Total Petroleum Hydrocarbons
- **TSS—**Total Suspended Solids
- **UIC—**Underground Injection Control
- **USBR—**United States Bureau of Reclamation
- **USGS—**United States Geological Survey
- **WAC—**Washington Administrative Code
- **WRCC—**Western Region Climate Center
- **WSDOT—**Washington State Department of Transportation

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