

Appendix A

Glossary

Appendix A Glossary

A-weighted sound level – Frequency-weighted sound pressure level approximating the frequency response of the human ear. It is defined as the sound level, in decibels, measured with a sound level meter having the metering characteristics and a frequency weighting specified in the American National Standards Institute Specification for Sound Level Meters, ANSI S 1.4 - 1983. The A-weighting de-emphasizes lower frequency sounds below 1 kilohertz (kHz) and higher frequency sounds above 4 kHz. It emphasizes sounds between 1 kHz and 4 kHz. A-weighting is the most used measure for traffic and environmental noise throughout the world.

Aggregate – Sand and gravel used for construction backfill and as one of the primary ingredients in concrete. Sand and gravel are mined in gravel pits and hauled to the site for use.

Air emissions – Substances emitted into the air, such as carbon monoxide, nitrogen oxide, nitrogen dioxide, sulfur dioxide, and others.

Air pollutant – Any substance in air that could, in high enough concentration, harm people, animals, vegetation, or materials. They may be in the form of solid particles, liquid droplets, gases, or a combination thereof. Generally, they fall into two main groups: (1) those emitted directly from identifiable sources and (2) those produced in the air by interaction between two or more primary pollutants, or by reaction with normal atmospheric elements.

Air quality standards – The level of pollutants prescribed by regulations that may not be exceeded during a given time in a defined area.

Air toxics – Air toxics are air pollutants known or suspected to cause health problems. Potential health effects include cancer, birth defects, lung damage, immune system damage, and nerve damage.

Alluvium – Soils deposited by flowing water, as in a river bed or delta.

Aquifer – A saturated, permeable geologic unit that can transmit substantial quantities of water.

Area of potential effects (APE) – The geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist.

Attainment area – An area considered to have air quality as good as or better than the National Ambient Air Quality Standards (NAAQS) for the criteria pollutants designated in the Clean Air Act. An area may be an attainment area for one pollutant and a nonattainment area for others.

Background noise – The total of all noise in a system or situation, independent of the presence of the noise source of interest (i.e., without the noise of interest).

Best management practices (BMPs) – A schedule of activities, prohibition of practices, physical structures, maintenance procedures, and other management practices undertaken to reduce or prevent increases in run-off quantity and pollution or other adverse environment effects.

Biofiltration swales – Ditches that treat water quality as a biofilter. The combination of soil and vegetation creates a system for filtration, infiltration, adsorption, and biological uptake of pollutants when runoff flows through it.

Carbon monoxide (CO) – A colorless, odorless, toxic gas produced by incomplete combustion.

Cement-soil mixing – Mixing the soil in-place with concrete that causes the soil to become stronger and less permeable. Cement soil

mixing is often used to reduce the liquefaction potential for loose, saturated, granular soils.

Combined sewer system – A pipe system that carries both sanitary sewage and stormwater runoff.

Community cohesion – The ability of people to communicate and interact with each other in ways that lead to a sense of community, as reflected in the neighborhood’s ability to function and be recognized as a singular unit.

Contaminated soil – Soil that contains hazardous substances that does not occur naturally or occurs at greater than natural background levels.

Context-sensitive design – A collaborative, interdisciplinary approach to develop a transportation facility that fits its physical surroundings and is responsive to the community’s scenic, aesthetic, social, economic, historic, and environmental values and resources, while maintaining safety and mobility.

Criteria pollutants – The six pollutants for which the U.S. Environmental Protection Agency (USEPA) has identified and set standards to protect human health under the Clean Air Act: ozone, carbon monoxide, total suspended particulates, sulfur dioxide, lead, and nitrogen oxide.

Dangerous waste – In Washington State, dangerous wastes include federally-regulated hazardous wastes (40 CFR 261 Subparts C and D, as adopted in WAC 173-303-080 and -090) and other wastes that are considered dangerous or hazardous under Washington State regulations (WAC 173-303-100). The term “dangerous waste” includes both types of waste.

Day-night noise equivalent level (L_{dn}) – The equivalent average sound level (L_{eq}) over a 24-hour period with 10 dBA added to the hours 10 PM to 7 AM to account for the sensitivity of people to noise when they are sleeping.

Decibels – The decibel (dB) scale is a common measure of sound noise. A decibel is one-tenth of a Bel. The scale is logarithmic, so each unit increase in Bels (or 10 decibels)

equates to a tenfold increase in the magnitude of sound noise (i.e., 110 dB is 10 times more powerful than 100 dB).

Densification – To make soft or loose soils stronger by increasing the density of the soil. Various methods of densification can be used, including compaction, preloading, vibration, and dewatering.

Design year – The year in the future for which a transportation facility is designed to operate, taking into consideration projected volumes of traffic. The design year for the SR 519 Intermodal Access Project – Phase 2 is 2030.

Detention – Release of surface and stormwater run-off from a site at a slower rate than it is collected by the drainage system, the difference being held in temporary storage.

Detention facility – A facility that collects water from developed areas and releases it at a slower rate than it enters the collection system. The excess of inflow over outflow is temporarily stored in a pond or a vault and is typically released over a few hours or a few days.

Drilled shafts – A type of foundation system used to support bridges. The shafts are constructed of concrete, are from a few feet to more than 10 feet in diameter, and can be 100 feet or more in length. To develop good bearing support, the shaft will extend through the upper soft soil into the dense till at 60 feet or more deep.

Emission – Pollution discharged into the atmosphere from smokestacks, other vents, surface, vehicles, and other sources.

Emission factor – A representative value that relates the quantity of a pollutant released to the atmosphere with the activity that is associated with the release.

Environmental justice - Environmental justice refers to the process of identifying and addressing, as appropriate, disproportionately high and adverse human health and/or environmental effects on minority and/or low-income populations.

Equivalent average sound level (L_{eq}) – This is the continuous dBA level with the same A-weighted sound energy during the duration of a noise measurement.

Existing noise levels – The noise resulting from the natural and mechanical sources and human activity considered to be usually present in a particular area.

Fault zone – A group of fractures in soil or rock where there has been displacement of the two sides relative to one another. The relative movement can be predominantly horizontal, vertical, or inclined.

Glaciomarine deposits – Soils deposited by glaciers in a marine environment.

Greenhouse gas – A gas that contributes to global warming.

Ground shaking – The oscillation or vibration of earth materials resulting from an earthquake. The level of ground shaking can range from being barely perceptible to large enough to damage structures supported on the ground.

Hazardous material – A generic term for any medium that contains organic or inorganic constituents considered toxic to humans or the environment. This term covers dangerous waste, problem waste, solid waste, and hazardous substances.

Hazardous substance – Hazardous substances designated in 40 CFR 116 pursuant to Section 311 of the Clean Water Act include any materials that pose a threat to public health or the environment. Typical hazardous substances have one or more of the following characteristics: toxicity, corrosivity, ignitability, explosivity, or chemical reactivity. Federal regulation of hazardous substances excludes petroleum, crude oil, natural gas, natural gas liquids, or synthetic gas usable for fuel. Washington State regulation of hazardous substances includes petroleum products, which are addressed by the Model Toxics Control Act (MTCA).

Hazardous waste – Solid wastes designated in 40 CFR Part 261 and regulated as hazardous and/or mixed waste by the U.S. Environmental Protection Agency. Mixed waste includes both

hazardous and radioactive components; waste that is solely radioactive is not regulated as hazardous waste. Hazardous waste includes specific listed waste that is generated from particular processes or activities or exhibits certain reactive, corrosive, toxic, or ignitable characteristics. Hazardous waste is also regulated by the Washington State Department of Ecology (Ecology) as Dangerous Waste.

Hourly equivalent average sound level ($L_{eq(h)}$) – The equivalent average sound level of noise over a one-hour period.

Impervious area – A surface that does not allow rainfall to infiltrate; typically roads, sidewalks, parking areas, and roofs.

Intactness – Measures the visual integrity of the natural and built landscape and its freedom from encroaching elements.

Interplate zone – Zone between the earth's crustal plates. This zone is the source of large earthquakes off the western coast of Washington.

Lateral spreading – Lateral movement of level or near level ground associated with liquefaction of soil during an earthquake. The amount of movement can range from a few inches to many feet depending on the size of the earthquake, the liquefaction potential of the soil, and the geometry of the location.

Level of service (LOS) – A measure of traffic congestions. Level of service is measured in terms of average delay per vehicle. LOS values range from LOS A, indicating good operating conditions with little or no delay, to LOS F, indicating extreme congestion and long vehicle delays at the intersection. For signalized intersections, LOS is reported for the intersection as a whole. For unsignalized intersections, it is reported in terms of average delay for the worst movement.

Liquefaction – A loss of strength in saturated, sand-like soils due to earthquake-induced ground shaking. This phenomenon usually occurs in loose sands and non-plastic silts located below the water table; however, in some less common cases loose gravels and sensitive clay-like soils can also liquefy. The loss in strength of liquefied soil can lead to slope instabilities and foundation bearing

failures. Liquefaction is usually accompanied by permanent settlement as a result of soil densification from the liquefaction process. The Washington Division of Geology and Earth Resources has developed maps showing potential liquefaction zones in Washington.

Maintenance area – A region previously designated as nonattainment, and subsequently redesignated to attainment. It is an area that has met the NAAQS for the criteria pollutants designated in the Clean Air Act and is being managed to continue to meet the NAAQS.

Maximum sound level (L_{max}) – The maximum sound level is the root-mean-squared level that occurred during the measurement period.

Mobile source air toxics (MSATs) – Air toxics that are emitted from highway vehicles and non-road equipment.

National Ambient Air Quality Standards (NAAQS) – Standards established by the USEPA under the Clean Air Act for pollutant concentrations in outside air throughout the country. See also “criteria pollutants.”

Nitrogen oxides (NO_x) – A product of combustion from transportation and stationary sources resulting from nitric oxide combining with oxygen in the atmosphere; a contributor to the formation of ozone, which is a major component of photochemical smog. This includes NO and NO₂.

Noise abatement measures – These are methods to reduce noise effects, such as noise walls, relocating transportation facilities, reduction of allowable traffic speeds, or retrofitting insulation or improved windows in buildings.

Nonattainment area – An area that does not meet one or more of the NAAQS for the criteria pollutants designated in the Clean Air Act.

Outwash deposits – Glacial outwash is the deposit of sand, silt, and gravel formed below a glacier by meltwater streams and rivers.

Ozone (O₃) – Ozone is a natural form of oxygen that provides a protective layer shielding the earth from ultraviolet radiation. It also is a chemical oxidant and major component of photochemical smog. Ozone can seriously impair the respiratory system and is one of the most widespread of all the criteria pollutants regulated under the Clean Air Act. Ozone in the troposphere is produced through complex chemical reactions of nitrogen oxides, which are among the primary pollutants emitted by combustion sources: hydrocarbons released into the atmosphere through the combustion, handling, and processing of petroleum products, and sunlight.

Particulates – Sources of particulate matter include sea salt, pollen, smoke from forest fires and wood stoves, road dust, industrial emissions, and agricultural dust. Some particles may be small enough to be drawn deep into the respiratory system where they can contribute to infection and reduced resistance to disease.

Parts per million (ppm) – A measure of concentration based on weight or volume.

Perched water – Groundwater accumulated on top of a clay layer. Zones below the perched water will generally be unsaturated.

PM_{2.5} – Particulate matter less than 2.5 microns in diameter.

PM₁₀ – A standard for measuring the amount of solid or liquid matter suspended in the atmosphere, specifically, particulate matter less than 10 microns in diameter. Smaller PM₁₀ particles can penetrate to the deeper portions of the lung, affecting sensitive population groups such as individuals with respiratory ailments and children.

Pollutant load – The mass of a pollutant per unit time, typically expressed as pounds per year.

Pollution-generating surface (PGS) – A surface that is considered a substantial source of pollutants in stormwater runoff, including surfaces that receive: 1) direct rainfall and are

subject to vehicular use; 2) industrial activities; or 3) storage of erodible or leachable materials, wastes, or chemicals.

Section 4(f) – Section 4(f) of the Department of Transportation Act of 1966 (49 USC Section 303) prohibits the Federal Highway Administration (FHWA) from approving a project or program that uses land from a significant public park, recreation area, wildlife refuge, or historic site unless:

- There is no feasible and prudent alternative to the use of the land.
- The project includes all possible planning to minimize harm to the property.

Sector - A grouping of specific industries with common characteristics.

Seiche – The periodic oscillation of water within restricted basins such as lakes, bays, and reservoirs. The waves generated by these oscillations can attain heights of tens of feet (City of Seattle, 1992), though in most cases the oscillations are a few inches to a few feet.

Separated storm system – A pipe system that carries only stormwater runoff (see “combined sewer system”).

Significant cultural resource – A cultural resource is “significant” if it is found to meet criteria for eligibility to local, state, and national registers of landmarks, and if it possesses integrity of its original historical features and characteristics.

Sole-source aquifer – A groundwater aquifer formally designated by the EPA as supplying at least 50 percent of the drinking water to people in an area in which there is no feasible alternate source of drinking water

Solid waste – State regulations define solid waste as all putrescible and nonputrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, problem wastes as

defined above, and recyclable materials. Federal regulations define solid waste as any garbage, refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material, resulting from industrial, commercial, mining, and agricultural operations and from community activities. Solid waste includes hazardous and problem wastes.

State Implementation Plan (SIP) – Plan developed by state government to attain and maintain compliance with the NAAQS.

Subduction zone – The place where two lithospheric plates come together, one riding over the other.

Threshold vibration level – The level of vibration felt by people or that is damaging to equipment or a structure.

Total suspended solids (TSS) – A water quality measurement. Suspended solids are solids that are not in true solution and that can be removed by filtration. Such suspended solids usually contribute directly to turbidity.

Traditional cultural property – A place eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that are (a) rooted in that community's history, and (b) important in maintaining the cultural identity of the community.

Transportation demand management (TDM) – A broad range of strategies that reduce or shift use of the roadway, thereby increasing the efficiency and life of the overall transportation system. TDM programs influence travel behavior by using strategies that accommodate more person-trips in fewer vehicles, shift the location or time of day at which trips are made, or reduce the need for vehicle trips.

Tsunami – A sea wave of local or distant origin that results from large-scale seafloor displacements associated with large earthquakes, major submarine landslides, or exploding volcanic islands. The sea wave can range in height from a few inches to

many tens of feet where it reaches landfall. The consequence of a tsunami can be flooding of a shoreline as the wave travels onshore. In addition to flooding, the sea wave can produce large wave forces on structures located within the path of the wave.

Tsunami inundation zone – An area of land that is predicted to be covered with water if a tsunami were to occur in the area. The Washington Division of Geology and Earth Resources has developed maps showing potential inundation zones in Washington.

Unconsolidated soil – A loose sediment lacking cohesion or cement.

View – Aspects of the environment that a viewer can see from the study area and what the viewer can see of the project from nearby surroundings.

Viewer – Person who has views of or from the project. We usually discuss viewers in terms of general categories of activities, such as resident, motorist, or pedestrian, and we often refer to them as “viewer groups.”

Viewpoint – An identified location and position of a viewer.

Viewshed – The area that a viewer can see from the project and surrounding area.

Visual or landscape character – Impartially describes what exists within the landscape. Both natural and built landscape features and their relationships make up the character of an area or view. The perception of visual character can vary greatly between seasons and can even vary between hours as weather, light, shadow, and the elements that compose the viewshed change. The basic components used to describe visual character for most visual assessments are the elements of form, line, color, and texture of the landscape features. To further define visual character, the appearance of the landscape is described in terms of its dominant features, scale, diversity, and continuity. The types of land uses that can be seen in a landscape also greatly influence visual character. Examples include landscapes located in farmland that can be said to have

a rural character or landscapes set in downtown business districts that have an urban character.

Visual quality – An assessment of the visual character of a viewed landscape which identifies the character-defining features for selected views. This assessment asks: Is this particular view common or dramatic? Is it a pleasing composition (with a mix of elements that seem to belong together) or not (with a mix of elements that either do not belong together or are eyesores and contrast with the other elements in the surroundings)? Three attributes are used to determine visual quality. They are; vividness, intactness, and unity. The visual quality of a viewed landscape is evaluated and given a numeric rating based on the relative degree of its vividness, intactness, and unity. The visual quality rating is devised by adding the ratings of vividness, intactness, and unity and dividing their sum by three. Visual quality is ranked on a scale of 1 to 7, with 7 indicating a high (desirable) degree of visual quality. Vividness, intactness, and unity are described below:

Vividness: Describes how the elements of landform, water, vegetation, and human development combine to form a memorable composition. Vividness is ranked on a scale of 1 to 7, with a rating of 7 indicating a high degree of vividness.

Intactness: Measures the visual integrity of the natural and built landscape and its freedom from encroaching elements that are visually inconsistent with the viewed landscape. Well-kept urban and rural landscapes can have a high degree of intactness. Encroachment is ranked on a scale of 1 to 7, with a rating of 7 indicating no encroachment and 1 indicating a high degree of encroachment.

Unity: Measures the compositional harmony of the landscape or the degree of visual coherence when considered as a whole. High unity frequently reflects an intact natural landscape or in a human altered landscape, the careful design of individual components

and their relationship in the landscape. Unity is rated on a scale of 1 to 7, with 7 representing a landscape with a coherent, harmonious (desirable) visual pattern.

Water quality treatment flow and volume – The amount of runoff that a water quality facility must be designed to treat. It may be a specified rainfall depth or a cumulative percentage of total runoff. In the Puget Sound Region, this is generally the runoff associated with the 6-month storm with approximately 92 percent of total runoff receiving treatment.

Wellhead protection area – An area managed by a community to protect groundwater drinking water supplies.

Wetponds and wet vaults – Drainage facilities for water quality treatment that contain permanent pools of water that are filled during the initial runoff from a storm. They are designed to optimize water quality by providing retention time in order to settle out particles of fine sediment and to allow biologic activity to occur that metabolizes nutrients and organic pollutants.

