

Procedures for Infiltration Trenches and Basins Checklist

This checklist reflects most, but not necessarily all of the items that will be reviewed by the Development Review. It is intended to be used as an aid by us to provide a consistent review of development work in Thurston County. All items may not be applicable in the review of each project and all items of concern to this office may not be covered on this checklist.

Y	N	
		GENERAL PROCEDURES FOR INFILTRATION FACILITIES
		<i>Applies to Infiltration Basins and Trenches</i>
		Step 1: General Site Characterization
		<p>A general site characterization was performed to identify items such as:</p> <ul style="list-style-type: none"> • Topography within 500 feet of the proposed facility • Anticipated site use (street/highway, residential, commercial, high-use site) • Location of water supply wells within 500 feet of proposed facility • Location of groundwater protection areas and/or 1-, 5-, and 10-year time of travel zones for municipal well protection areas • Location of steep slope, erosion hazard, or landslide hazard areas • Location of septic systems in the vicinity of the proposed facility • A description of local site geology, including soil or rock units likely to be encountered, the groundwater regime, and geologic history of the site.
		Step 2: Minimum Requirements for Infiltration Facilities
		The proposed design meets the setbacks for infiltration facilities.
		The base of the proposed infiltration basin is a minimum of 3 feet above the seasonal high groundwater level, bedrock (or hardpan), or other low permeability layer.
		The proposed infiltration basin is not within a floodplain area.
		Infiltration facilities up gradient of drinking water supplies and within the 1-, 5-, and 10 year time of travel zones.
		If the infiltration facility is an injection well, the facility meets the requirements of the UIC Program, Chapter 173-218 WAC.
		The depth of the infiltration facility is no more than 20 feet below the surrounding finished ground elevation.
		Step 3: Determine Method of Analysis
		<p>Typically use the Simple Method for the following types of sites (subject to county approval):</p> <ul style="list-style-type: none"> • For small facilities serving short plats or commercial developments less than one acre of contributing area • High infiltration capacity soils (NRCS [SCS] soil types A or B) • Other infiltration facilities performing successfully at nearby locations • No septic systems, drinking water wells, steep slopes, or other sensitive features within 500 feet

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		<ul style="list-style-type: none"> • Low risk of flooding and property damage in the event of clogging or other failure of the infiltration system
		<p>Typically use the Detailed Method for the following types of sites (subject to county approval):</p> <ul style="list-style-type: none"> • Low infiltration capacity soils (NRCS [SCS] soil types C or D) • History of unsuccessful infiltration facility performance, or no history of successful infiltration performance at nearby locations • A large contributing drainage area • High groundwater levels • High risk of flooding in the event of clogging or other failure.
		Step 4: Simple Analysis for all Proposed Infiltration Projects
		Conduct Soils Testing
		A test hole or test pit exploration was conducted between December 1 and April 30.
		Representative samples were collected from each soil type and/or unit to a depth below the infiltration facility of 2.5 times the maximum design ponded water depth, but not less than 6 feet.
		<p>Detailed logs for each test pit or hole were prepared, along with a map showing the locations of the test pits or holes. Logs include:</p> <ul style="list-style-type: none"> • Depth of log • Soil description • Depth to groundwater • Evidence of seasonal high groundwater elevation • Existing ground surface elevation • Proposed basin bottom elevation • Presence of stratification that may impact the infiltration design.
		For infiltration basins, one test pit or test hole per 5,000 square feet of basin infiltrating surface (minimum of two per basin) was conducted.
		For infiltration trenches, one test pit or test hole per 200 feet of trench length (minimum of two per trench) was conducted.
		If using the soil grain size analysis method, conduct a minimum of one grain size analysis per soil stratum in each test hole to a depth of 6 feet below the proposed base of the infiltration facility.
		If using the soil grain size analysis method for estimating infiltration rates, lab test results are included.
		The design infiltration rate was determined using the acceptable methods in DDECM Volume III, Appendix III-A.
		Prepare Soils Report
		A soils report is prepared that is stamped by a professional engineer with geotechnical expertise, a licensed geologist, a hydrogeologist, or an engineering geologist registered in the State of Washington that summarizes site characteristics and demonstrates that sufficient permeable soil for infiltration exists at the proposed facility location.
		<p>Includes a figure showing:</p> <ul style="list-style-type: none"> • Topography within 500 feet of the proposed facility

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		<ul style="list-style-type: none"> • Locations of any water supply wells within 500 feet of the proposed facility • Location of groundwater protection areas, aquifer recharge areas, or 1-, 5-, and 10-year times of travel zones for wellhead protection areas • Locations of test pits or test holes.
		<p>Includes the following:</p> <ul style="list-style-type: none"> • Results of soils tests • Detailed soil logs • Visual grain size analysis • Grain-size distribution (required if using the grain size analysis method to estimate infiltration rates) • Percent clay content (include type of clay, if known) • Color/ mottling • Variations and nature of stratification.
		Includes a description of local site geology.
		Includes a detailed documentation of the design infiltration rate determination.
		States whether location is suitable for infiltration and recommends a design infiltration rate (design infiltration rate is less than 30 inches per hour).
		Estimate Volume of Stormwater
		The Western Washington Hydrologic Model (WWHM), MGSFlood, or other approved continuous runoff model was used to generate an influent file to size the infiltration facility.
		Step 5: Detailed Analysis – Additional Requirements (if required)
		Infiltration Receptor Characterization
		A minimum of three groundwater monitoring wells per infiltration facility were installed, unless the highest groundwater level is known to be at least 50 feet below the proposed base of the infiltration facility.
		Seasonal groundwater levels were monitored at the site during at least one wet season (December 1 through April 30).
		The single wet season observation was normalized to historic groundwater records in the region.
		Soils Report – Characterize Infiltration Receptors
		Addresses depth to groundwater and to bedrock/impermeable layers.
		Describes seasonal variation of the groundwater table based on well water levels and observed mottling of soils.
		Documents existing groundwater flow direction and gradient.
		Documents volumetric water holding capacity of the infiltration receptor soils.
		Documents horizontal hydraulic conductivity of the saturated zone.
		Documents approximation of the lateral extent of infiltration receptor.
		Describes impact of the infiltration rate and proposed added volume from the project site on local groundwater mounding, flow direction, and water table determined by hydrogeologic methods.
		Groundwater mounding analysis was conducted, if required.

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		States whether location is suitable for infiltration and recommends a design infiltration rate (design infiltration rate is less than 30 inches per hour).
		Construct the Facility and Conduct Performance Testing
		For infiltration basins, the project engineer performs a minimum of two falling head percolation tests.
		For trenches, the project engineer performs a minimum of two performance tests. The type of performance test depends on specific facility and site constraints, and is determined by the project engineer on a case-by-case basis and approved by the county prior to testing.
		The county was notified of the scheduled infiltration testing at least two working days in advance of the test.
		If the tests indicate the facility will not function as designed, this information was brought to the immediate attention of the county.