

In August 2023, the District of Saanich published a new Intensity-Duration-Frequency Curve (IDF) in the Saanich Engineering Specifications (Schedule H of the Subdivision Bylaw No. 7452) as standard drawing DES-10 in Section 3.9 Design Drawings. Revisions to Schedule 'F' of the same bylaw were also added to provide opportunities for on-site stormwater management and disposal for residential properties, where no storm sewer is present in the roadway fronting the property. Since this time, we have received feedback and questions on the application of these documents. To provide clarity, we have created this Frequently Asked Questions (FAQ) document.

### **What is an IDF Curve?**

An IDF curve illustrates the relationship between rainfall intensity, duration and the probability of occurrence of a rainfall event based on regional rainfall data gathered over several years. This information is applied in drainage system design calculations.

### **Does the Saanich IDF Curve (DES-10) include a climate change factor?**

The IDF curve represents historical rainfall data through the end of 2021, capturing significant rainfall events experienced throughout the region. Although no additional climate change multiplier has been applied, the new IDF curve is more conservative than the previous curve. At this time, no other climate change factor is required to be considered in infrastructure sizing under the Subdivision Bylaw.

### **How should the IDF be used in completing calculations?**

The Rationale Method is a common method for determining the peak flow of stormwater generated during a rain event, which in turn is used for calculating required the storm pipe size required to manage said flow. This method can be used where the contributing catchment area is less than 10 hectares in size. For larger or more complex areas, detailed hydrologic modelling may be required.

Saanich Engineering is in the process of updating the Engineering Specifications (Schedule H) including several parameters relevant to application of the Rationale Method for storm system design. The table below will be the new basis for these changes. It includes land use definitions have been updated within the Saanich Zoning Bylaw No. 8200. Runoff Coefficients and Times of Concentration for each land use type have been modified to correspond to the new IDF curve.

A Runoff Coefficient is a number that represents the fraction of rainfall that becomes surface runoff. It depends on factors like the type of surface (e.g., pavement, grass), slope, and soil type. For example, impervious surfaces like concrete have higher runoff coefficients, meaning more water runs off rather than soaking into the ground.

Time of Concentration is the time it takes for rainwater to flow from the furthest point of a drainage area to the outlet.

The parameters provided in this table are encouraged to be applied to Rational Method calculations in the interim while Schedule H is still under development. Runoff coefficients other than those noted in the table below, may be determined by a Qualified Professional, subject to approval by the District.

Land Use	Runoff Coefficient (C)*	Minimum Time of Concentration
Single Family Dwelling	0.4	15
Houseplex	0.6	15
Institutional, Mixed Use & Apartment	0.8	10
Industrial, Commercial, and Roadways	0.9	10
Parks/Fields	0.3	15
Rural/Agricultural	0.2	Calculated

\*Runoff Coefficient shall be a maximum value of 1.0

An adjustment factor (AF) shall also be applied to the Runoff Coefficients based on the type of soil found on site as shown in the table below.

Soil Type and Slope	Adjustment Factor (AF)
Sandy soil with flat slope (up to 5%)	0.9
Sandy soil with steep slope (over 5%)	1.0
Clayey soil with flat slope (up to 5%)	1.0
Clayey soil with steep slope (over 5%)	1.1
Rock	1.1

Note that the Saanich primarily consists of clayey soil with flat slope, which has an adjustment factor of 1.0. Field soil analysis may be required as determined by your project's Qualified Professional.

### Does Schedule F permit on-site stormwater disposal for all properties?

No. If you live on a residential zoned property (RS or RD) and there is a storm pipe, ditch, or other watercourse fronting your property, you are required to discharge your property's stormwater runoff into those systems through a storm service connection. Where no storm sewer infrastructure or ditch system exists, and you are obtaining a Building Permit or Plumbing Permit, you may be able to discharge stormwater runoff to ground on your property through on-site systems such as rock pits or French drain system. This servicing option does not apply if you are rezoning or subdividing a property.

Several conditions within Schedule F must be met for an on-site system to be considered. These include ensuring there is sufficient space on your property to maintain appropriate clearances from any building foundation or property line; verifying that the soil conditions can facilitate stormwater infiltration; confirming that the groundwater table is deep enough to receive the infiltrated runoff; and the infiltration process can be completed within the specified drawdown time. On-site testing of the soil conditions by a Qualified Professional is required for this type of servicing application.

**The specification asks for the on-site system to be designed to two different rainfall events. Can the system be designed for the bigger of the two events and meet the requirements?**

Yes. Schedule F requires an on-site stormwater management system to be sufficiently sized to capture and infiltrate the specified rainfall event, with a pathway to manage overflow from more significant events without causing an impact to adjacent lands. The on-site system can also be designed for the more stringent rainfall event, such that the overflow requirements are addressed through detention.

**Who can help me with this process?**

Stormwater management system design is an engineering undertaking and requires a Qualified Professional (usually a professional engineer) with expertise in these systems.

Questions regarding development applications and site servicing can be directed to the Engineering Development Services team at [development@saanich.ca](mailto:development@saanich.ca).

District of Saanich  
Engineering Department  
t. 250.475.5575  
e. [engineering@saanich.ca](mailto:engineering@saanich.ca)