

## BC Soil Information Finder Tool

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# 1 What is the Soil Information Finder Tool?

The BC Soil Information Finder Tool (SIFT) was created to make mapped and interpretive soil information more accessible. Previously, this information was available as Geographic Information System (GIS) datasets (geodatabase, shape files), 'tiff' images of hardcopy maps, and reports. Particularly for non-GIS users, SIFT can save several steps and help find soils-related information, in much the same way that a maps 'app' works if the only alternative is to open a road atlas book:

Without SIFT or GIS access	With SIFT
1. Know the type of data you are looking for (e.g. Soil Survey, Agricultural Capability), <i>'Are you interested in wineries or campsites?'</i>	1. Find the location <ul style="list-style-type: none"> <li>- Type an address, or</li> <li>- Zoom into the area of interest</li> </ul>
2. Find out which mapsheet or mapsheets cover your areas of interest, <i>'Find out which page you want in the road atlas.'</i>	2. Click on the location to open a popup window <ul style="list-style-type: none"> <li>- Discover data of various types (e.g. soil survey, agricultural capability)</li> <li>- Get links to more detailed information</li> </ul>
3. Request or retrieve the map for the mapsheet(s) for the areas of interest, <i>'Flip to the page you want: campsites for your area of interest.'</i>	
4. Find the exact locations of interest on the map, <i>'Where exactly are you on the map?'</i>	
5. Interpret the map legend, <i>'Find out what campsite features are indicated by the symbols.'</i>	

Currently, SIFT includes information for the Lower Fraser Valley (the area from Delta to Hope) in the Lower Mainland of British Columbia. The mapped data were originally collected in the 1980's or earlier in detailed (1:25,000 or 1:50,000 scale) soil surveys (Table 1). SIFT also leads users to detailed information on the Canadian Soil Information Service (CanSIS) website: parent materials from which soils formed, soil texture, moisture characteristics, and other physical and chemical properties that affect soil management.

**Table 1. Information sources in the current version of the BC Soil Information Finder Tool.**

Source	Year
Mapped data	
Soil Survey of Chilliwack Map Area (1:24,000)	1960
Soil Survey of Agassiz Area (1:24,000)	1967
Soils of the Langley-Vancouver Map Area (Volume 1: 1:25,000, Volume 2: 1:50,000)	1980
Interpretive data <sup>a</sup>	
Soil Drainage	1987
Soil Erosion Potential	1987
Additional information	
Slope and Elevation (Derived from BC Digital Elevation Model data)	-

**a. Interpretive data refers to CAPAMP (Computer Assisted Planning, Assessment, and Map Production) data that are derived from other data, i.e. they were estimated from measurements.**

Additional areas and parameters are being added (See Section 9: What other areas of BC and what other data will be added?).

## **2 How accurate is the information for a point on the map?**

The Soil Information Finder Tool (SIFT) uses soil survey maps as its information source. These maps typically show up to three soils that are known or expected to occur in each polygon. Minor amounts of other soils may also be present but could not be specifically mapped at the scale of the survey. Polygon boundaries are also approximate. Therefore, at any point on the map, it is probable that one of the mapped soils will be present, but it is not guaranteed. The likelihood that the information is accurate at any given point on the ground depends on survey and mapping scale, as well as activities that have taken place on that point since the area was mapped (i.e., cultivation, drainage installation, erosion).

For example, the following pops up when clicking on a particular spot on the map in SIFT:

Polygon ID	Seamless2012_POLY_23638
Soil Percent 1	70
Soil Management Group 1	VEDDER
Soil Name 1	VEDDER
Soil Percent 2	30
Soil Management Group 2	FAIRFIELD
Soil Name 2	VYE

The same information about polygon “Seamless2012\_POLY\_23638” is presented no matter where the user clicks in the soil polygon. In this example, approximately 70% of the polygon contains the VEDDER soil (belonging to the Vedder group) and approximately 30% contains the WYE soil (belonging to the Fairfield group). Small areas containing other soils may also be present. Soil distribution within a polygon is often related to its position in the landscape (e.g. on a slope or in a depression). The detailed description of each soil may identify the landform conditions in which is expected to occur and the user can use this information to infer the distribution of the soils within the polygon or at any one point in the polygon. If the characteristics of the soil at a particular location are important, a field investigation including evaluation of one or more soil pits or soil samples to confirm soil characteristics and the Soil Name should be undertaken.

### 3 What does Soil Erosion Potential mean?

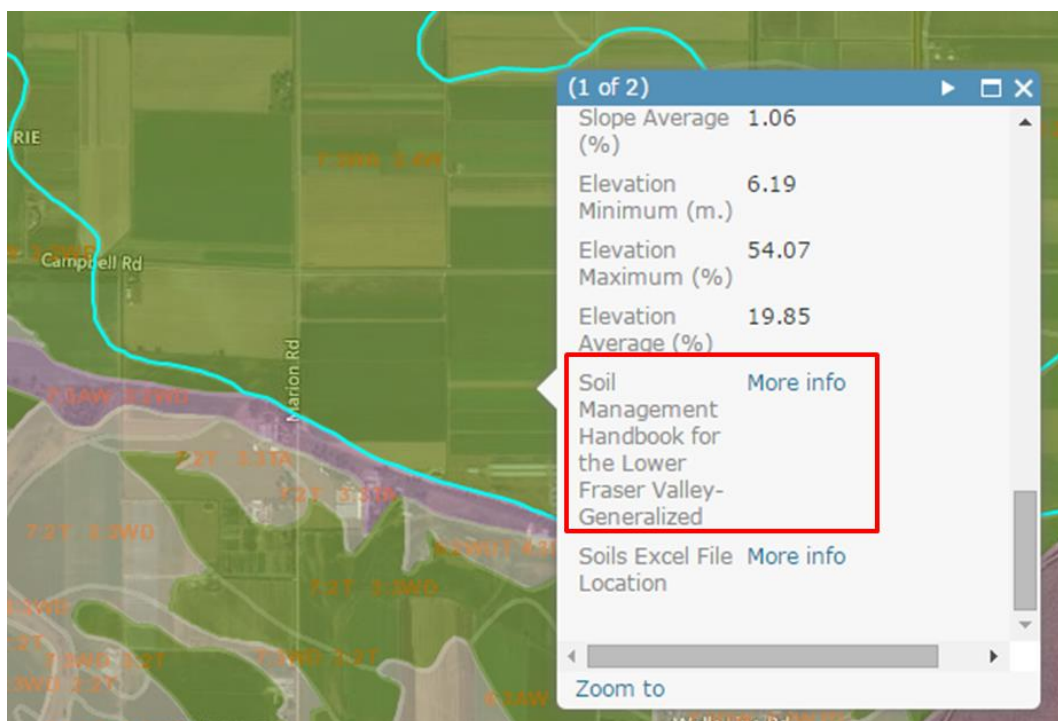
Currently, Soil Erosion Potential is provided for each soil polygon in the Lower Fraser Valley. The data come from ‘CAPAMP’ (Computer Assisted Planning, Assessment, and Map Production), meaning they were calculated using data from soil surveys (e.g. soil texture) and other inputs, to estimate the relative potential for water erosion from a bare soil. However, because the information was not mean to be used at the field scale, it is expected that this layer will be replaced with information about erodibility at the soil name level (instead of the soil polygon level). That is, a polygon may contain multiple soils. Eventually, an erodibility value will be provided for each soil in the polygon in a future version of the Soil Information Finder Tool.

#### **4 Why does the Agricultural Land Capability information differ from what I can find on the original maps?**

Disregard the current information about the land capability for agriculture. A new, corrected map layer for land capability is on its way that will give the information from the original maps.

#### **5 What is the relationship between soil management group, soil name, and soil symbol?**

A soil management group contains multiple soil names (Table 2). Soils in a soil management group have similar agriculturally important characteristics: soil parent material, drainage, texture, surface soil organic matter level, etc. These characteristics affect limitations for agriculture, suitability of crops, and management inputs required to grow various crops. More information about soil management groups can be found in one of two publications: Soil Management Handbook for the Lower Fraser Valley ([1991](#)) and Soil Management Handbook for the Okanagan and Similkameen Valleys ([1994](#)). Currently, the information from the handbook for the Lower Fraser Valley is summarized in a downloadable Excel spreadsheet when the user clicks on a soil polygon on the map (Fig. 1).



**Figure 1.** Information from the Soil Management Handbook for the Lower Fraser Valley (Bertrand, Hughes-Games, and Nikkel, 1991) is available as an Excel spreadsheet.

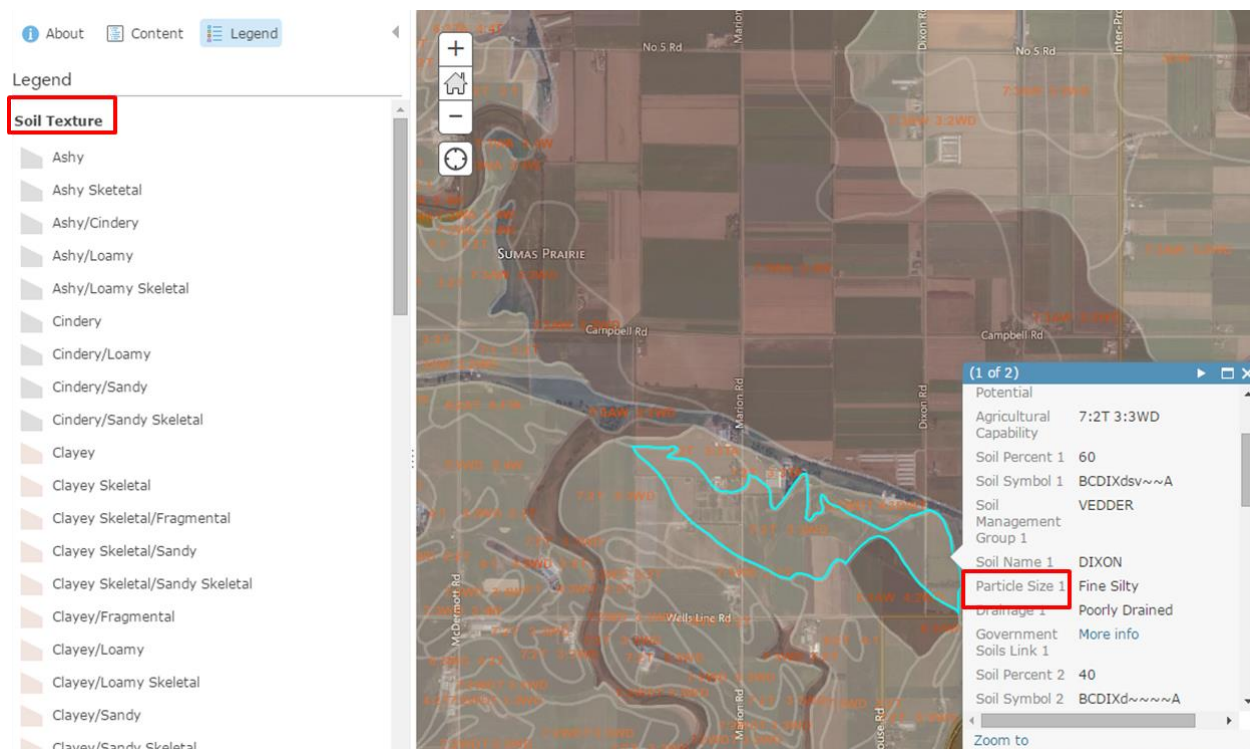
A soil name is the basic unit at which soils are presented in the Soil Information Finder Tool. A soil name is a unique, common name given to a particular mapped or described soil. A Soil Name may include multiple soil symbols or soil IDs (Table 2) as the soil name may reference several variants – e.g. the soil in an agricultural setting, in a natural setting, or perhaps in a wetter or drier site. Soil symbols or IDs are linked to the online ‘CanSIS’ (Canadian Soil Information System) database that contains details about the soil attributes. A common distinction between soil symbols (ID) of a soil name is ‘disturbed by agriculture’ (A) versus ‘native’ or ‘undisturbed by agriculture’ (N).

**Table 2. Example of soil names and soil symbols (ID) within the Abbotsford soil management groups. At the end of the soil ID, an A denotes ‘agricultural’ and N denotes ‘native.’**

Soil Management Group	Soil Name	Soil Symbol (ID)
ABBOTSFORD	ABBOTSFORD	BCABF~~~~~A
		BCABF~~~~~N
		BCABFan~~~N
ABBOTSFORD	KEYSTONE	BCKYT~~~~~N
		BCLXT~~~~~A
ABBOTSFORD	LAXTON	BCLXT~~~~~N
		BCMBH~~~~~A
ABBOTSFORD	MARBLE HILL	BCMBH~~~~~N
		BCPDV~~~~~A
ABBOTSFORD	PEARDONVILLE	BCPDV~~~~~N
		BCPDVsv~~~N
ABBOTSFORD	STAVE	BCSTV~~~~~N

## **6 What is the relationship between Particle Size Classes and Soil Texture? (e.g. Fragmental/Loamy Skeletal). What do the terms mean?**

The Soil Information Finder Tool shows particle-size classes instead of soil texture classes. Currently, the label in the legend is a misnomer; it should be “particle size” instead of texture (Fig. 2).



**Figure 2.** The particle-size class of each soil is provided. The “soil texture” label in the legend should be “particle size class.”

Both particle size class and soil texture refer to the size distribution of particles, but the two are not directly comparable:

Particle Size	Soil Texture
- Represents coarse fragments ( $> 2\text{mm}$ ) and the fine earth fraction ( $\leq 2\text{ mm}$ in diameter)	- Represents the fine earth fraction ( $\leq 2\text{ mm}$ in diameter)
- Particle size refers to a composite of part of the soil profile that may include several layers	- Soil texture can differ by soil layer

In addition to the size distribution of particles, there are additional classes (e.g. cindery, ashy) that describe soils for which the particle-size class is less meaningful.

Some soils have two classes. For example, “fragmental/loamy skeletal” indicates a soil with 2 contrasting particle sizes:



- 1) Fragmental: Stones ( >250 mm), cobbles (75-250mm) and gravel ( >2-75mm), comprise 90% or more of the soil mass (by volume), with too little fine earth (<10% by volume) to fill interstices larger than 1 mm
- 2) Particles >2 mm occupy 35% or more but less than 90% (by volume), with enough fine earth to fill interstices larger than 1 mm; the fraction  $\leq 2$  mm is that defined for the loamy particle-size class.

More information about particle size classes and soil textures can be found in the 3<sup>rd</sup> edition of the Canadian System of Soil Classification (available online at [http://sis.agr.gc.ca/cansis/taxa/cssc3/chpt14\\_a.html#figure41](http://sis.agr.gc.ca/cansis/taxa/cssc3/chpt14_a.html#figure41))

## **7 Does drainage depend simply on soil structure and soil texture?**

No. The drainage category of a soil reflects not only the profile description but also the typical landscape that the soil was developed in. Thus, a deep and coarse permeable soil in a depression within the landscape, with a high water table, may be in the same drainage category as an imperfectly drained soil. An example is the LEHMAN soil: thin eolian (sand deposited by wind) over gravelly outwash with telluric seepage, perched water tables and thus, poor drainage.

## **8 What are other ways of accessing this information?**

Currently, there is a pilot version of the Soil Information Finder available via a free smartphone app.

1. On your mobile device search app store for "ESRI" app and download
2. Tap on app
3. Tap "Maps" and Tap search icon (Magnifying glass)
4. In the search window type these tags "soil, nutrient, environment, mobile" - The app should find a Nutrient Management Project Mobile app
5. Tap on the map icon.

The source data for the Soil Information Finder, as well as other information, can be found online by searching for Soil information in GIS format, as Scanned Maps at [http://www.env.gov.bc.ca/tei/access\\_tei.html](http://www.env.gov.bc.ca/tei/access_tei.html). Follow the instructions to find GIS data, images of hardcopy maps and geo-referenced files.

## **9 What other areas of BC and what other data will be added?**

Currently, the pilot tool exists only for the area of the Lower Mainland between Delta and Hope in British Columbia. Information for all areas of the provinces is being added. Some of the data we are working on include the following, which may be in the Soil Information Finder Tool or reside in datasets for Geographic Information Systems (GIS):

- Improved and unimproved capability classes for agriculture
- Frost-free period
- Growing degrees days above 5°C
- Soil erodibility
- Available water holding capacity (field capacity, permanent wilting point)

Continued development of the Soil Information Finder Tool depends on availability of funding and resources as well as your support.

## **10 What if my question is not answered here?**

This document is meant to answer your Frequently Asked Questions. Send us your questions, and we will do our best to answer them. Send your questions to [TEI\\_Mail@gov.bc.ca](mailto:TEI_Mail@gov.bc.ca)