



BC Soil Information Finder Tool

Table of Contents

Table of Contents	1
Introduction	1
Using the Interactive Map	2
Getting Started.....	4
Questions & Answers.....	6
1 <i>What is the Soil Information Finder Tool?</i>	6
2 <i>What information appears in the popup box after clicking on a polygon?</i>	7
3 <i>How accurate is the information for a point on the map?</i>	9
4 <i>What is the relationship between soil management group, soil name, and soil symbol?</i>	10
5 <i>Does drainage class depend simply on soil texture?</i>	11
6 <i>What do the terms for types of root restricting layers mean?</i>	11
7 <i>What if my question is not answered here?</i>	12
Acknowledgements:	12

TIP: CLICK on a topic in the Table of Contents to jump to that topic.

Introduction

The BC Soil Information Finder Tool map application provides a user friendly interactive way to access historical soil survey data and agricultural capability data for BC. Farmers, consultants, nutrient management planners, and other agrologists can easily access this soil information to support decisions about acquisition of land, management and conservation of soil and water resources, and optimizing crop growth while minimizing environmental impacts.

This project is a collaborative effort between the British Columbia (BC) Ministry of Agriculture (AGRI) and the BC Ministry of Environment (MoE) with funding from *Growing Forward 2*, a federal-provincial-territorial initiative. The underlying soils maps and data were collected over past decades by the Government of Canada and the Province of British Columbia, and the data is being managed and updated by MoE as the BC soil data custodian.

The Governments of Canada and British Columbia, and their directors, agents, employees, or contractors will not be liable for any claims, damages, or losses of any kind whatsoever arising out of the use of, or reliance upon, this information.

Using the Interactive Map

Go to the [SIFT Home Page](#) and click on the map embedded in the page or click the 'Launch the BC Soil Information Finder Tool' link (this opens the map in a new browser window).

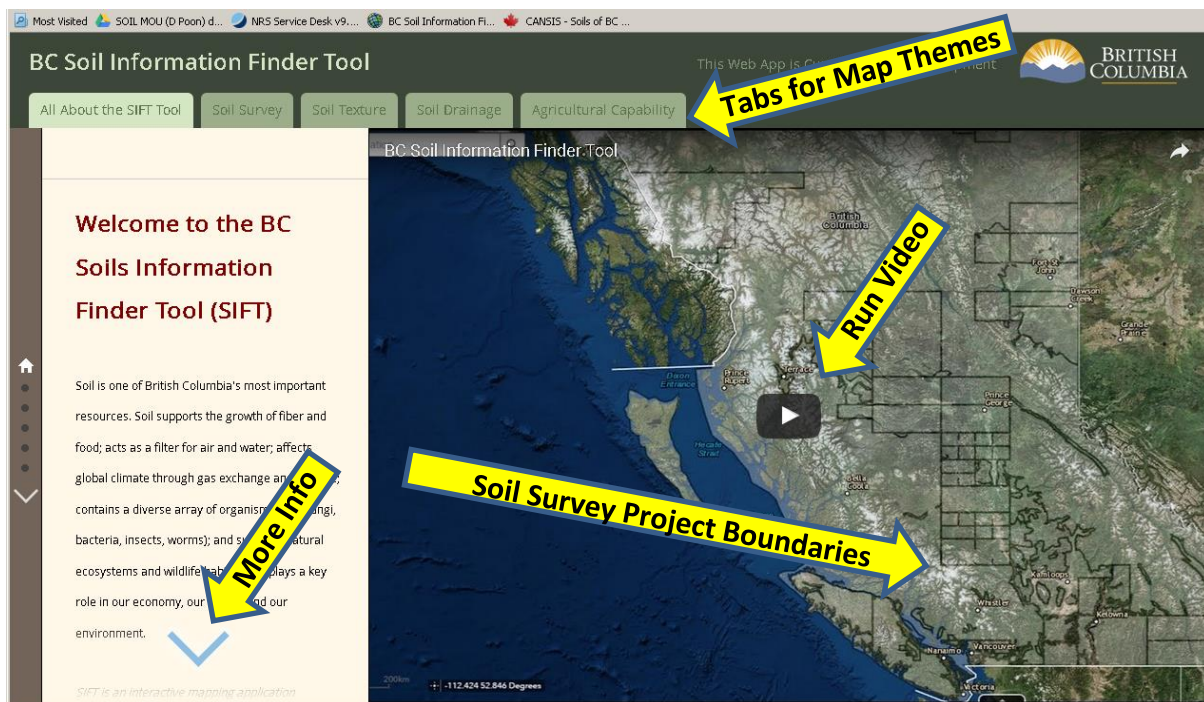


Figure 1

There are two scales of mapping (Soil Survey and other Tabs):

- The provincial view showing Soil Survey project boundaries.
 - The outlines on the map represent areas with available soil surveys.
 - Click on these polygons to find information about the soil surveys

[Return to Table of Contents](#)

- Attributes include title, scale, mapper, year, link to the soil survey reports
- This layer provides information about overlapping projects
- The detailed soil polygon view
 - When you have zoomed in sufficiently yellow polygons will turn on.
 - The yellow polygons are the detailed soil mapping polygons.
 - Attributes include Soil Name, texture, drainage and links for more details for up to three Soils (and their proportion) expected to be found in that polygon, as well as climate, elevation and slope attributes for the polygon. (For more information see Question 2 below)
 - Overlapping data has been removed
 - This dataset does not include polygons from the 1:1 Million scale Soil Landscapes of Canada (SLC v2.2 or v3.2) datasets. The SLC mapping is available for interactive viewing from: [SLC Viewer](#)

There are 5 **Map Themes** accessed from the Tabs (See Figure 1 above).

- **All About the SIFT Tool**
 - A Description of the tool (use down arrow to see more)
 - A video (click the big arrow in the middle of the map)
- **Soil Survey**
 - Soil survey project boundaries at the zoomed out level. (Click on an area to see available soil survey project information)
 - Detailed soil mapping polygons (yellow) when zoomed in. (Click on a polygon to see soil and polygon attributes)
- **Soil Texture**
 - Soil survey project boundaries at the zoomed out level.
 - Polygons colored by dominant soil texture (click on a polygon for attributes) (See image)
- **Soil Drainage**
 - Soil survey project boundaries at the zoomed out level.
 - Polygons colored by dominant soil drainage (click on a polygon for attributes)

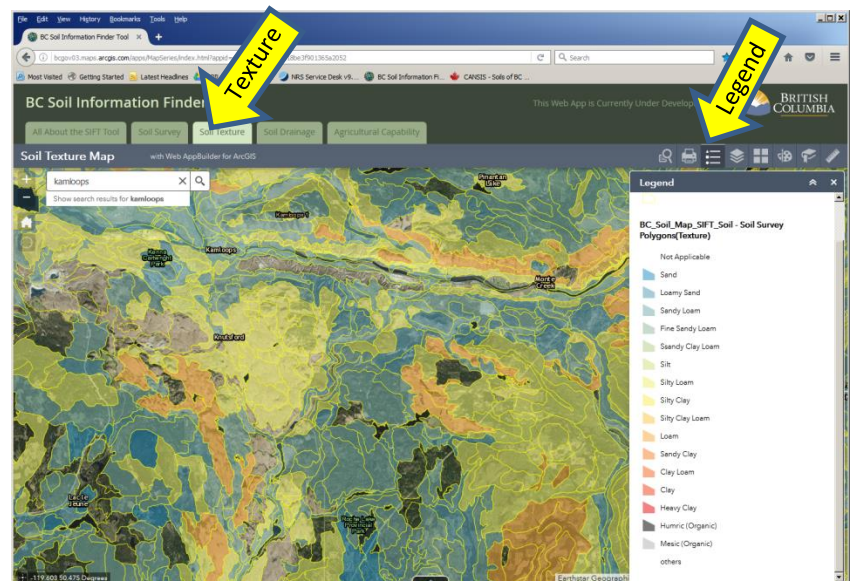


Figure 2

- **Agricultural Capability**
 - Soil survey project boundaries at the zoomed out level.
 - Polygons colored by dominant agricultural capability class, with polygons with Class 1, 2 or 3 highlighted with pink hatching (click on a polygon for attributes)

Getting Started

View the introductory video (See Figure 1)

- Click on the arrow

View the Soil Survey project information (if desired).

- Click on an area of interest on the provincial scale map.

Select the ‘Soil Survey’ Tab

Zoom in and navigate to see the **detailed soil mapping** in your area of interest:

- Use the large + (plus) symbol (top left), or
- Double click on a spot on the map, and repeat,
- Type in a location name or address in the “Find Location” search bar
 - The house symbol takes you back out to the original map)

Move the map or pan

- Click on the map, hold the button down and move the map left, right, up or down.

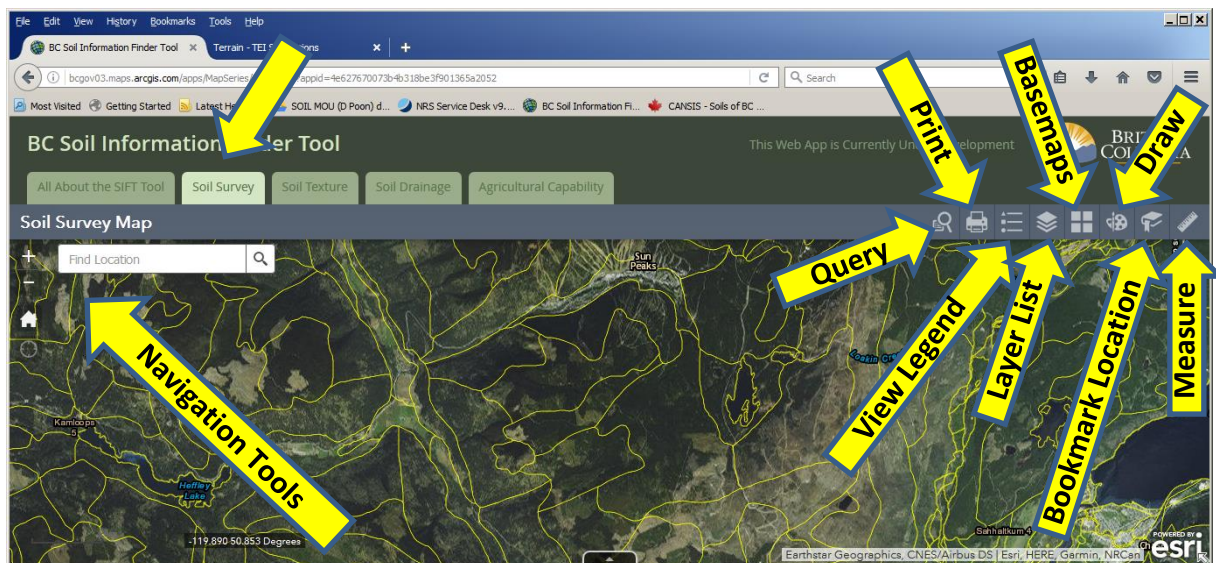


Figure 3

[Return to Table of Contents](#)

See details about a polygon

- Click (single click) on a polygon and a popup box will open containing information about the polygon
- See “What information appears in the popup box after clicking on a polygon?”

Query polygons in your map view area using the Query Tool (see Figure 3)

- Click on the Query Tool and select a Query
 - Choose the attributes you want from the drop down list or type in search criteria values (under ‘Tasks’)
 - (Note: Select a soil name or attribute known to occur in your map view area, as the drop down lists are for the whole province, and if the attribute is not present in your map view area, there will be 0 (zero) results found.)
 - View the Results in the scrollable window under ‘Results’ and see highlighted polygons on the map
 - Use the arrow (top left) to return to the Tasks view for another query
 - Note that the query with multiple attribute searches finds polygons with all of the matching criteria in the Dominant soil of the polygon. Please review the results in detail to ensure they are consistent with what you expected from the query criteria you applied.

Select the Soil Texture, Drainage or Agricultural Capability Theme Map Tabs

- Select one of the Map Theme Tabs
- **To go to the same map area** as on a previous tab, **click on the black box or stripe** that popped up when you opened the tab
- View the **map color scheme** using the Legend Tool (See Figure 3)
- To adjust the transparency of the colors Go to the Layers Tool (see Figure 3)
 - Click on the three dots to the right of the Layer name (see Figure 4)
 - Select ‘Transparency’ and adjust the slider bar.
- View the Attribute Table for the Soils in your map view by selecting ‘Open Attribute Table’ (See Figure 4)

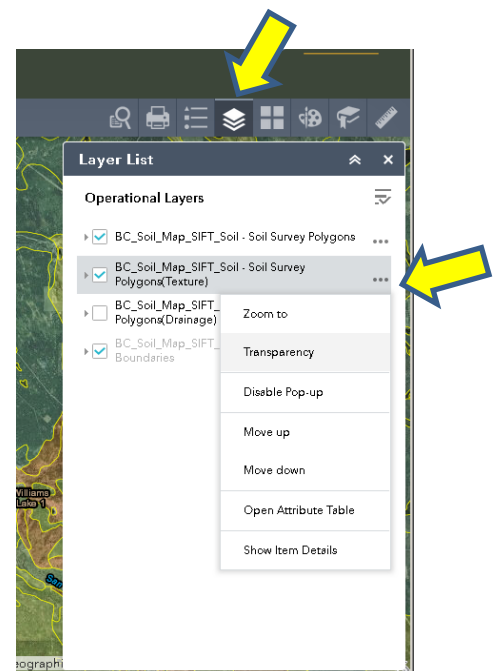


Figure 4

[Return to Table of Contents](#)

Questions & Answers

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 ([SIFT Home Page](#)). SIFT provides access to soil data in various formats:

- SIFT Map - an interactive mapping application
- GIS data
- Soil Survey Reports
- Scanned Maps
- KMZ files for using with Google Earth

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:

Table 1

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 Type an address, or Zoom into the area of interest
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 Discover data of various types (e.g. soil survey, agricultural capability)
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>	Get links to more detailed information, including 'parent materials' from which soils formed and other information on the Canadian Soil Information Service (CanSIS) website
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>	

[Return to Table of Contents](#)

2 What information appears in the *popup box* after clicking on a polygon?

Soil Survey / Soil Texture / Soil Drainage Themes:

Polygon General Information

- **Polygon ID** – this is a unique polygon identifier (for reference)
- **About SIFT** – link to this document
- **Project ID** - the unique Business Area Project Identifier number (can be used to request GIS data for this project)
- **Soil Survey Report** – the soil survey report title and link to the report

Within the Polygon

Each of the polygons has up to 3 mapped soils, each with its own soil name and properties, and listed in order by proportion (% area) of the polygon. These are identified with a 1, 2 and or 3 (as applicable) following the name of the attribute field (e.g. Soil Name 1). The 1st Soil and its attributes (i.e. soil with the largest proportion) is identified as ‘Dominant’. (Note that other un-identified soils may also occur in the polygon – see Question 4)

- **Soil Name** – the name assigned to a 3-dimensional soil entity that can be described based on its texture, drainage, horizons, parent material, landform, classification, degree of development and other factors.
- **Texture** - the soil texture class of the layer or ‘horizon’, based on the average value measured in soil pits, specific to a soil name
- **Percent** - the percentage of each soil in the polygon (by area), with the percentage(s) adding up to 100%
- **Drainage** - the drainage class specific to a soil name
- **Soil Symbol** - the symbol that links the soil name to the soil attribute database, to link tables when using the B.C. soils data in GIS format.
- **Data by Soil Layer** - the link to the Canadian Soil Information Service webpage for the specific soil
- **Soil Management Handbook** - the link to a page in the handbook with management information specific to a soil, if available

Polygon Additional Information

- **Frost free period** - number of days without frost on average per year
- **Degree days above 5** - a heat index, growing degree days with a base temperature of 5°C
- **Maximum slope** - the slope of the steepest portion of the polygon (in %)
- **Average slope** - the average slope of the polygon (in %)

[Return to Table of Contents](#)

- **Minimum slope** - the slope of the flattest portion of the polygon (in %)
- **Maximum elevation** - the elevation (above sea level) at the highest part of the polygon (in m)
- **Average elevation** - the average elevation of the polygon
- **Minimum elevation** - the elevation (above sea level) at the lowest part of the polygon (in m)
- **Hectares** – area of the polygon in hectares

Agricultural Capability Theme

The **polygon label text string** shows the agricultural capability class (1 to 7) with subclasses, for the (unimproved) capability class and an improved capability class, and the proportions each class in the polygon area. As some limitations can be overcome (e.g. drainage may be installed in a field to remove excess water), the ‘improved’ capability classes identify the expected capability after improvements.

Interpret the polygon label and “CC_Label” and “IC_Label” in the pop-up for a polygon as:

Popup box	What it Means
CC_Label 7:4W~3:5W	Capability Class Label (CC_Label) 70% of the area is in Class 4; The subclass (limitation) is Excess Water (W) 30% of the area is in Class 5; The subclass (limitation) is Excess Water (W)
IC_Label 7:2~3:3WF	Improved Capability Class Label (IC_Label) 70% of the area would be in Class 2; (there is no limitation) 30% of the area would be in Class 3; The subclass (limitation) is Excess Water (W) and Fertility (F)

For more information about agricultural capability **classification, codes and definitions** of the subclasses, see: [Example Legend with codes and definitions \(printable .pdf\)](#) or [Agricultural Capability classification, codes and descriptions \(website\)](#)

(The other fields in the pop-up box include project level attributes (e.g. BAPID is the Project ID) and the Class and Improved Class Labels split into the parts of the labels.)

3 *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	Seamless_POLY_16847
Project Name	Soils of the Langley-Vancouver Map Area (1:50000) (more info)
Soil Name 1	HOPEDALE
Soil Percent 1	70
Soil Name 2	MCELVEE
Soil Percent 2	30

The same information about polygon “Seamless_POLY_16847” is presented no matter where the user clicks in the soil polygon. In this example, approximately 70% of the polygon contains the HOPEDALE soil and approximately 30% contains the MCELVEE. 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. These descriptions may be found by following the hyperlink to the soil survey report. If the characteristics of the soil at a particular location are important for the user’s decision making, 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 by a qualified professional.

4 What is the relationship between soil management group, soil name, and soil symbol?

A soil management group contains multiple soil names (see **Table 2** below). 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 three publications: [Soil Management Handbook for the Lower Fraser Valley \(1991\)](#), [Soil Management Handbook for the Okanagan and Similkameen Valleys \(1994\)](#), and [Soil Management Handbook for Vancouver Island \(draft\)](#).

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 (see **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. Soil names and soil symbols (ID) within the Abbotsford soil management group.

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

5 Does *drainage class* depend simply on soil texture?

No, the drainage class of a soil depends on more than just soil texture. 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 or poorly drained soil. An example is the LEHMAN soil: thin eolian (sand deposited by wind) over gravelly outwash with telluric seepage (lateral flow above an impervious layer), perched water tables and thus, poor drainage.

6 What do the terms for *types of root restricting layers* mean?

Here are definitions of the types of root restricting layers shown on the CANSIS website (<http://sis.agr.gc.ca/cansis/soils/bc/soils.html>) providing detailed descriptions of soil attributes by Soil Name.

Table 3

Code	Class	Root Restricting Layer Description
UN	Undifferentiated	The nature of the root restricting layer e has not been defined or differentiated.
BN	Solonetzic	This layer is a hardpan or dense horizon caused by the accumulation of sodium (Na) ions and clays in the B horizon. The horizon is very hard when dry and swells to a sticky, compact mass when wet.
SA	Salinity	This layer contains an excessive amount of salts which inhibit root growth. (The horizon has a electrical conductivity (a measure of salinity) > 4 dS/m)
CT	Compact Till	This layer is a compact (Basal) Till
OR	Ortstein	This hard, partly or entirely cemented horizon is formed due to the downward movement and accumulation of aluminum, iron, manganese, and humus compounds from overlying horizons, or from precipitation from groundwater..
FP	Fragipan	This is a dense layer in a medium textured soil that is firm and brittle when moist and hard to extremely hard when dry.
LI	Lithic	This layer is consolidated bedrock.
CR	Cryic	This layer is a frozen horizon.
DU	Duric	This layer is a silica cemented horizon
PL	Placic	This layer is a thin hardpan or dense horizon cemented by iron, organic matter and/or manganese .
-	n/a	Not Applicable (no root restricting horizon present)

7 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

Acknowledgements:

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