Australian Government
Clean Energy Regulator

Soil sampling pocket guide

for soil sampling technicians

C E R Australian Carbon Credit Unit Scheme

Contents

Introduction

This guide is for soil sampling technicians. It outlines how to conduct soil sampling as required by the Carbon Credits *(Carbon Farming Initiative—Estimation of Soil Organic Carbon Sequestration Using Measurement and Models) Methodology Determination 2021* (2021 soil carbon method) and its Supplement. It does not cover sampling design or analysis.

Use this guide, along with information provided by the proponent (the person in charge of the project), and the following guidance documents to conduct soil sampling:

- Understanding your soil carbon project – Simple method guide
- Sampling guidance for measurement-based soil carbon methods
- Supplement to the 2021 Soil Carbon Method.

Scan the QR code to access the guidance documents:

The pencil icon lets you know what documentation is required for each of the soil sampling steps.

The alert icon indicates important information.

Importance of good sampling

Make sure you follow the 2021 soil carbon method and its Supplement. This ensures an accurate and consistent estimation of sequestered carbon in the project area.

Sampling errors may make the sampling round invalid, and sampling may have to be re-done. This creates extra cost for the proponent and could also impact the issuance of Australian Carbon Credit Units (ACCUs).

Pre-sampling checklist

The proponent should provide you with as much of the listed information as possible. You should also make sure that you have the necessary equipment. This will make it easier for you to complete a compliant sampling round.

Proponent-provided information

Sampling plan that includes:

- sampling locations
  - » 5 decimal places for longitude and latitude
  - » 3 decimal places for eastings and northings
- a reserve list of sampling locations (unless you are relying on offsetting the sample location covered by the following point)
- instructions on how to determine a new sampling location when offsetting (for use only if you can't sample at a designated sampling location)
- nominated sampling depth (the sampling depth to use at all sampling locations in a given carbon estimation area).

Geospatial map that is to scale and quantifiable and includes locations of:

- carbon estimation areas
- strata boundaries
- emissions accounting areas
- exclusion areas
- obstacles on the property (for example, fences or trees).

Recorded information for each sample

For every sample, you should record the:

- sample identifier
- date
- sampling location
  - » 5 decimal places for longitude and latitude
  - » 3 decimals for eastings and northings
- nominated sampling depth
- actual sampling depth (even if it is the same as the nominated sampling depth)
- thickness of each layer (only for cores that are separated into sublayers)
- photographic or video evidence if sampling location has changed due to an above-ground obstacle or hazard
- photographic or video evidence if the nominated depth couldn't be reached because of an underground obstacle.

Equipment

- GNSS device with a minimum accuracy of ±4 meters
- Clean coring device with an inner cutting edge that has a diameter of at least 38mm
- Water for lubricating and cleaning the coring device
- Cool box or refrigerator for storage (suggested to store sample at ~3–5°C)
- Plastic bags for storage of each sample

- Ruler/tape measure to measure depth/thickness of sample layers (if the core is not transported as a single intact core)
- A way to document sampling information and label samples

You must document the diameter of the inner cutting edge of the coring device used for sampling.

You must only use water (no lubricants) to lubricate and clean the coring device.

Sampling

When collecting and documenting samples, you need to comply with the 2021 soil carbon method and its Supplement. This section explains the sampling requirements and what to do when you can't sample at an intended location.

You must only use water (no lubricants) to:

- clean coring devices
- assist with inserting and extracting the coring device.

Clearing sampling locations

Clear the sampling location of living plants, plant litter and surface rocks before you begin core extraction.
Use the same protocol for each sampling site and for every sampling round.

Finding locations

In each sampling round, you must take at least:

- 3 samples in each strata
- 9 samples for each carbon estimation area.

You must use a GNSS device with a minimum accuracy of ±4 meters to locate the intended sampling locations.

Refer to the sampling plan provided by the project proponent for sampling locations.

Changing locations because of obstacles or hazards

When you encounter an obstacle or hazard, you may have to change your sampling location.

If you don't follow requirements for changing locations and documenting this change, your samples might be non-compliant and will have to be re-done.

For any change of sampling location, you must provide the:

- geographic coordinates of the new sampling location
- time and location stamped photographs or videos of the obstacles or hazards.

This evidence must be collected at the time of sampling.

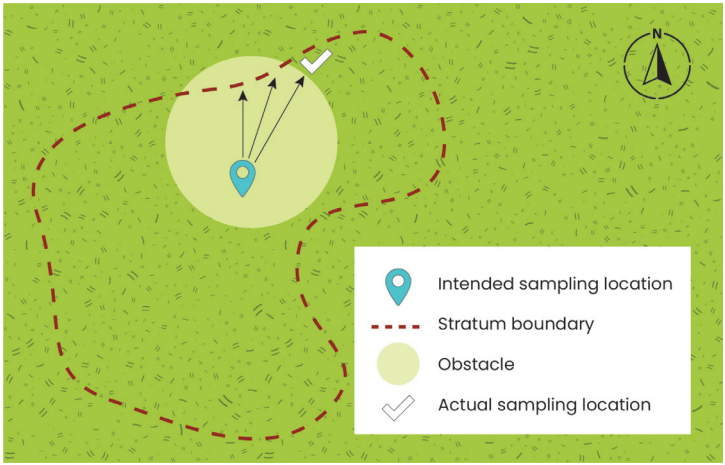
Above-ground obstacles and hazards

The following situations may prevent sampling at the intended location:

- a large, immoveable obstruction, such as a tree or boulder
- a hazard, such as overhanging limbs, powerlines or pipelines.

In these circumstances, use offsetting or reserve points to determine a new sampling location.

Refer to the sampling plan to see which method the proponent wants you to use.



Offsetting

1. Move north (0 degrees) until the obstacle is cleared.
2. If you hit the stratum boundary before the obstacle is cleared, keep moving away from the intended sampling location in 15-degree increments in the same direction until the obstacle is cleared.

Make sure you have been provided with stratum boundaries and that all sampling points are in the stratum boundary. Otherwise, the sample or sampling round could be non-compliant, and the proponent may need to re-do the sampling round.

Record the geographic coordinates of the new sampling location.

Include time and location stamped photos or videos as evidence that an obstacle changed the intended sampling location.
The evidence must be collected at the time of sampling.

Reserve points

1. Refer to the list of reserve points provided by the proponent.
2. Use the procedure provided by the proponent on what reserve points to use to ensure random allocation.

Record the location of the reserve point used.

Include time and location stamped photos or videos as evidence that obstacles changed the intended sampling location.
The evidence must be collected at the time of sampling.

Underground obstacles

The proponent must inform you of the nominated soil sampling depth.

An underground obstacle may prevent sampling at the nominated depth.

In these circumstances:

1. sample at a location close by to try and reach nominated depth
2. if you can't sample at the nominated depth after multiple attempts, accept the final sample taken and record the depth reached.

In this scenario, you must provide:

- geographic coordinates of the new sampling location
- evidence of each failed extraction attempt (can be photos, videos or equipment readings such as from a pressure gauge).

This evidence must be collected at the time of sampling.

Splitting the core

If sampling deeper than 30 cm, divide the soil core into a 0–30 cm layer and a 30–x cm layer (unless the core is being transported and/or analysed intact). These 2 layers can be further divided into smaller sublayers if indicated by the proponent (for example, 0–10cm, 10–20cm and 20–30cm sublayers).

Sublayers from the 0–30 cm core can't be mixed with sublayers from the 30–x cm core.

Sometimes the pressure of inserting or removing the coring device can cause soil compaction or movement.

You are not required to correct for this when splitting the core into sublayers or measuring the sample's thickness. However, if you use a technique to correct for this, we recommend you use the same procedure for every sampling round for the project's crediting period.

Storage and transportation

The proponent should inform you of their storage and transportation requirements. It is recommended that samples are laid out to be air dried on the same day they are extracted. If this isn't possible, they should be stored in a refrigerator or ice box.

Contact us

For more information or to order a replacement copy of this guide:

Visit: cer.gov.au
Call: 1300 553 542
Email: enquiries@cer.gov.au