

Checklist for calculating Sequestered Carbon (SOC) in Soil from Removed Greenhouse Gas Carbon Dioxide (CO2) Emissions

1	Project:	BCR-6-00023-AGR- Carbonate carbon farming project – South Bulgaria - CSRG-BG-5
2	Project code:	CSRG-BG-5
3	Project start date (dd/mm/yyyy):	17.1.2023
4	Project Monitoring period beginning (dd/mm/yyyy):	23.3.2024
5	Project Monitoring period end (dd/mm/yyyy):	15.5.2025
6	Farm beginning soil sampling date for reporting period (dd/mm/yyyy):	1.11.2023 BASE
7	Farm soil sampling end date for reporting period (dd/mm/yyyy):	24.4.2025 K1
8	Farm contract date (dd/mm/yyyy):	2.10.2023
9	Farm (Legal Entity):	AGRAIRKA 2022 EOOD
10	UIC:	206819706

1	Gross amount of removed GHG emissions carbon dioxide (CO ₂ , note 4)	53 466
2	Uncertainty deduction (**10,70 % of Gross amount of removed GHG emissions carbon dioxide (CO ₂ , note 4))	11 068
3	N ₂ O emissions from mineral fertilizers (t CO ₂ e)	0
4	Total fuel consumption CO ₂ equivalent (note 6)	127
5	Emissions from leakage (t CO ₂ e)	0
6	Adjustments to reduce removals from GHG (t CO ₂ e)	0
7	Net amount of GHG removed carbon dioxide (t CO ₂ e)	42 271
8	Buffer contribution amount (% of credits):	2 113
		5,00%

Cell data										BASE Year data										1st CONTROL Year data										Calculations					Fuel emission footprint from production equipment					1st CONTROL YEAR () BASE Year (note 3)	new	new
No	Contract date (dd/mm/yyyy)	Contract No	ERP farm ID*	ESATTE on land	Longitude	Latitude	Plot name	ERP cell ID	Depth	Area (note 2)	Crop	Date of sampling	Date of acceptance in Laboratory	LAB No	Measured organic carbon (C)	Area (note 2)	Crop	Date of sampling	Date of acceptance in Laboratory	LAB No	Bulk density (note 2)	Soil quantity	Measured organic carbon (C)	Difference in organic carbon (C)	Content (C) in soil	Total content (C) in the soil	Gross amount of removed greenhouse gas emissions: Carbon dioxide CO ₂ (note 4)	Average fuel consumption (note 5)	Total fuel consumption per cell	Total fuel consumption CO ₂ equivalent	Removed emissions of greenhouse gas carbon dioxide CO ₂ after Fuel emission	ERP ID	Difference between sampling dates expressed in months (x 10 ⁴ m ² x m)									
									cm	ERP ha					mg/kg	ERP ha						g/cm3	ton	mg/kg	mg/kg	g/ton	ton	ton	ton/ha	ton/ha	ton	ton	ton	ton	ton	BASE*1						
1	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	10731	27,5841407	42,34438345	Опашеница 10731-86-1-1	002126543671	0-30	21,35	soft wheat	9.2.2024	21.02.2024	iso-56-1	17790	21,35	barley	27.3.2025	30.03.2025	iso-145-7	1,72	110 166,00	18483	0,001	76,35	834	3 059	0,0766	1,6354	5,5931				002126543671	13							
2	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	10731	27,5841407	42,34438345	Опашеница 10731-86-1-1	002126543671	30-60	21,35	soft wheat	9.2.2024	21.02.2024	iso-56-2	10310	21,35	barley	27.3.2025	30.03.2025	iso-145-8	1,73	110 806,50	14710	0,004	487,55										002126543671	13						
3	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	10731	27,5841407	42,34438345	Опашеница 10731-86-1-1	002126543671	60-90	21,35	soft wheat	9.2.2024	21.02.2024	iso-56-3	10440	21,35	barley	27.3.2025	30.03.2025	iso-145-9	1,63	104 403,50	13020	0,003	270,19											002126543671	13					
4	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	10731	27,63209467	42,32007377	Мест 480ааа. 10731-108-3-1	003126543671	0-30	21,31	soft wheat	9.2.2024	21.02.2024	iso-56-4	13740	21,31	grain maize	27.3.2025	30.03.2025	iso-145-4	1,72	109 959,60	17426	0,004	405,31											003126543671	13					
5	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	10731	27,63209467	42,32007377	Мест 480ааа. 10731-108-3-1	003126543671	30-60	21,31	soft wheat	9.2.2024	21.02.2024	iso-56-5	10480	21,31	grain maize	27.3.2025	30.03.2025	iso-145-5	1,73	110 598,90	11136	0,001	72,55	490	1 795	0,0766	1,6323	5,5826						003126543671	13					
6	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	10731	27,63209467	42,32007377	Мест 480ааа. 10731-108-3-1	003126543671	60-90	21,31	soft wheat	9.2.2024	21.02.2024	iso-56-6	7110	21,31	grain maize	27.3.2025	30.03.2025	iso-145-6	1,63	104 205,90	7222	0,000	11,67												003126543671	13				
7	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	10731	27,63209467	42,31377380	Мест 480ааа. 10731-108-3-1	004126543671	0-30	21,53	soft wheat	9.2.2024	21.02.2024	iso-56-7	12710	21,53	grain maize	27.3.2025	30.03.2025	iso-145-1	1,72	111 094,80	14279	0,002	174,31											004126543671	13					
8	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	10731	27,63209467	42,31377380	Мест 480ааа. 10731-108-3-1	004126543671	30-60	21,53	soft wheat	9.2.2024	21.02.2024	iso-56-8	8300	21,53	grain maize	27.3.2025	30.03.2025	iso-145-2	1,73	111 740,70	9516	0,001	135,88	336	1 232	0,0814	1,7525	5,9937							004126543671	13				
9	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	10731	27,63209467	42,31377380	Мест 480ааа. 10731-108-3-1	004126543671	60-90	21,53	soft wheat	9.2.2024	21.02.2024	iso-56-9	7330	21,53	grain maize	27.3.2025	30.03.2025	iso-145-3	1,63	105 281,70	7575	0,000	25,79												004126543671	13				
10	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,5380386	42,31003447	Рисовият брнат 52129-291-2-1	005126543671	0-30	18,41	grain maize	1.11.2023	17.11.2023	iso-42-19	15950	18,41	soft wheat - winter	26.9.2024	30.09.2024	iso-88-4	1,46	80 635,80	20577	0,005	573,10												005126543671	10				
11	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,5380386	42,31003447	Рисовият брнат 52129-291-2-1	005126543671	30-60	18,41	grain maize	1.11.2023	17.11.2023	iso-42-20	12100	18,41	soft wheat - winter	26.9.2024	30.09.2024	iso-88-5	1,39	76 790,70	15044	0,003	226,03	847	3 107	0,0814	1,4986	5,1251								005126543671	10			
12	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,5380386	42,31003447	Рисовият брнат 52129-291-2-1	005126543671	60-90	18,41	grain maize	1.11.2023	17.11.2023	iso-42-21	5720	18,41	soft wheat - winter	26.9.2024	30.09.2024	iso-88-6	1,46	80 635,80	8798	0,003	248,20													005126543671	10			
13	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,54319744	42,30848167	Рисовият брнат 52129-291-2-1	006126543671	0-30	23,55	grain maize	1.11.2023	17.11.2023	iso-42-16	12320	23,55	soft wheat - winter	26.9.2024	30.09.2024	iso-88-1	1,46	103 149,00	19514	0,007	721,42													006126543671	10			
14	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,54319744	42,30848167	Рисовият брнат 52129-291-2-1	006126543671	30-60	23,55	grain maize	1.11.2023	17.11.2023	iso-42-17	10140	23,55	soft wheat - winter	26.9.2024	30.09.2024	iso-88-2	1,39	98 203,50	11012	0,003	290,88	1 160	4 254	0,0766	1,8039	6,1694								006126543671	10			
15	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,54319744	42,30848167	Рисовият брнат 52129-291-2-1	006126543671	60-90	23,55	grain maize	1.11.2023	17.11.2023	iso-42-18	6200	23,55	soft wheat - winter	26.9.2024	30.09.2024	iso-88-3	1,46	103 149,00	7631	0,001	147,81													006126543671	10			
16	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	87655	27,63799787	42,28718317	Мест 87655-288-3-1(1)	009126543671	0-30	24,10	grain maize	10.2.2024	21.02.2024	iso-56-19	18720	24,10	soft wheat - winter	27.3.2025	30.03.2025	iso-145-16	1,45	104 835,00	20984	0,001	91,63													009126543671	13			
17	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	87655	27,63799787	42,28718317	Мест 87655-288-3-1(2)	009126543671	30-60	24,10	grain maize	10.2.2024	21.02.2024	iso-56-20	18660	24,10	soft wheat - winter	27.3.2025	30.03.2025	iso-145-17	1,43	103 389,00	17967	0,002	227,15	444	1 629	0,0814	1,9617	6,7082								009126543671	13			
18	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	87655	27,63799787	42,28718317	Мест 87655-288-3-1(3)	009126543671	60-90	24,10	grain maize	10.2.2024	21.02.2024	iso-56-21	8990	24,10	soft wheat - winter	27.3.2025	30.03.2025	iso-145-18	1,51	109 173,00	11079	0,001	125,44													009126543671	13			
19	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	87655	27,64009191	42,28617807	Мест 87655-288-3-1(4)	010126543671	0-30	10,92	grain maize	10.2.2024	21.02.2024	iso-56-16	16950	10,92	soft wheat - winter	27.3.2025	30.03.2025	iso-145-13	1,45	47 502,00	18242	0,001	61,37													010126543671	13			
20	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	87655	27,64009191	42,28617807	Мест 87655-288-3-1(5)	010126543671	30-60	10,92	grain maize	10.2.2024	21.02.2024	iso-56-17	11600	10,92	soft wheat - winter	27.3.2025	30.03.2025	iso-145-14	1,43	46 846,80	13284	0,002	78,89	118	431	0,0814	0,8889	3,0400								010126543671	13			
21	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	87655	27,64009191	42,28617807	Мест 87655-288-3-1(6)	010126543671	60-90	10,92	grain maize	10.2.2024	21.02.2024	iso-56-18	9460	10,92	soft wheat - winter	27.3.2025	30.03.2025	iso-145-15	1,51	49 467,60	9000	0,000	22,76													010126543671	13			
22	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,56808866	42,25903309	Мест 52129-351-1-1	012126543671	0-30	24,60	winter barley	1.11.2023	17.11.2023	iso-42-1	12000	24,60	soft wheat - winter	26.9.2024	30.09.2024	iso-88-16	1,46	107 748,00	14005	0,002	259,13													012126543671	10			
23	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,56808866	42,25903309	Мест 52129-351-1-1	012126543671	30-60	24,60	winter barley	1.11.2023	17.11.2023	iso-42-2	6090	24,60	soft wheat - winter	26.9.2024	30.09.2024	iso-88-17	1,39	102 382,00	6910	0,001	89,25	436	1 600	0,0766	1,8844	6,4445								012126543671	10			
24	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,56808866	42,25903309	Мест 52129-351-1-1	012126543671	60-90	24,60	winter barley	1.11.2023	17.11.2023	iso-42-3	3760	24,60	soft wheat - winter	26.9.2024	30.09.2024	iso-88-18	1,46	107 748,00	4575	0,001	87,81													012126543671	10			
25	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,5418679	42,26308712	Мест 52129-33-1-1	013126543671	0-30	23,24	winter barley	1.11.2023	17.11.2023	iso-42-4	10940	23,24	soft wheat - winter	26.9.2024	30.09.2024	iso-88-19	1,46	110 551,20	12746	0,002	199,66													013126543671	10			
26	2.10.2023	CSBG-3456-23/28-AGR-0001/02.10.23	0000000075	52129	27,5418679	42,26308712	Мест 52129-33-1-1	013126543671	30-60	23,24	winter barley	1.11.2023	17.11.2023																													

50	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	87655	27.62081614	42.28617685	Нравен 4 87655-283-1-1(4)	022126543671	30-60	20,78	sorghum	10.2.2024	21.02.2024	iso-56-11	11660	20,78	coriander	27.3.2025	30.03.2025	iso-145-11	1,43	89 146,20	16682	0,005	447,89	860	3 155	0,0814	1,6915	5,7849	3 149	022126543671	13
51	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	87655	27.62081614	42.28617685	Нравен 4 87655-283-1-1(4)	022126543671	60-90	20,78	sorghum	10.2.2024	21.02.2024	iso-56-12	6970	20,78	coriander	27.3.2025	30.03.2025	iso-145-12	1,51	94 133,40	9771	0,003	263,67						022126543671	13	
52	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	52129	27.55198606	42.2997311	Семена 52129-168-2-1(01)	023126543671	0-30	25,59	grain maize	1.11.2023	17.11.2023	iso-42-7	14310	25,59	soft wheat - winter	26.9.2024	30.09.2024	iso-88-7	1,46	112 084,20	17038	0,003	305,77						023126543671	10	
53	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	52129	27.55198606	42.2997311	Семена 52129-168-2-1(01)	023126543671	30-60	25,59	grain maize	1.11.2023	17.11.2023	iso-42-8	8370	25,59	soft wheat - winter	26.9.2024	30.09.2024	iso-88-8	1,39	106 710,30	9255	0,001	94,44	439	1 611	0,0814	2,0830	7,1239	1 604	023126543671	10
54	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	52129	27.55198606	42.2997311	Семена 52129-168-2-1(01)	023126543671	60-90	25,59	grain maize	1.11.2023	17.11.2023	iso-42-9	5180	25,59	soft wheat - winter	26.9.2024	30.09.2024	iso-88-9	1,46	112 084,20	9530	0,000	39,23						023126543671	10	
55	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	52129	27.55675437	42.29623255	Семена 52129-168-2-1(02)	024126543671	0-30	25,34	grain maize	1.11.2023	17.11.2023	iso-42-10	18610	25,34	soft wheat - winter	26.9.2024	30.09.2024	iso-88-10	1,46	110 989,20	15670	0,001	118,65						024126543671	10	
56	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	52129	27.55675437	42.29623255	Семена 52129-168-2-1(02)	024126543671	30-60	25,34	grain maize	1.11.2023	17.11.2023	iso-42-11	12180	25,34	soft wheat - winter	26.9.2024	30.09.2024	iso-88-11	1,39	105 667,80	14667	0,002	262,80	106	389	0,0814	2,0627	7,0544	382	024126543671	10
57	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	52129	27.55675437	42.29623255	Семена 52129-168-2-1(02)	024126543671	60-90	25,34	grain maize	1.11.2023	17.11.2023	iso-42-12	8110	25,34	soft wheat - winter	26.9.2024	30.09.2024	iso-88-12	1,46	110 989,20	5638	-0,002	-275,48						024126543671	10	
58	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	52129	27.56111377	42.29306497	Семена 52129-168-2-1(03)	025126543671	0-30	23,86	grain maize	1.11.2023	17.11.2023	iso-42-13	11860	23,86	soft wheat - winter	26.9.2024	30.09.2024	iso-88-13	1,46	104 506,80	18037	0,006	645,54						025126543671	10	
59	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	52129	27.56111377	42.29306497	Семена 52129-168-2-1(03)	025126543671	30-60	23,86	grain maize	1.11.2023	17.11.2023	iso-42-14	8180	23,86	soft wheat - winter	26.9.2024	30.09.2024	iso-88-14	1,39	99 496,20	12971	0,005	476,69	665	2 439	0,0766	1,8277	6,2507	2 432	025126543671	10
60	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	52129	27.56111377	42.29306497	Семена 52129-168-2-1(03)	025126543671	60-90	23,86	grain maize	1.11.2023	17.11.2023	iso-42-15	9080	23,86	soft wheat - winter	26.9.2024	30.09.2024	iso-88-15	1,46	104 506,80	4705	-0,004	-457,22						025126543671	10	

At the time of the audit, the fields in rows 61 to 72 were not sampled in control year 1 due to bad weather conditions. These fields will be reported with the next verification period.																				84,88													
61	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	87655	27.66084951	42.28567481	Семена 2 87655-40-1-3	007126543671	0-30	17,13	grain maize	11.3.2024	26.03.2024	iso-68-10	56310					1,45	0,00	ИИ/А	ИИ/А	ИИ/А	ИИ/А	ИИ/А					007126543671	ИИ/ИИ	
62	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	87655	27.66084951	42.28567481	Семена 2 87655-40-1-3	007126543671	30-60	17,13	grain maize	11.3.2024	26.03.2024	iso-68-11	14070					1,43	0,00	ИИ/А	ИИ/А	ИИ/А									
63	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	87655	27.66084951	42.28567481	Семена 2 87655-40-1-3	007126543671	60-90	17,13	grain maize	11.3.2024	26.03.2024	iso-68-12	11030					1,51	0,00	ИИ/А	ИИ/А	ИИ/А									
64	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	87655	27.65783114	42.28868276	Семена 2 87655-40-1-3	008126543671	0-30	19,65	grain maize	11.3.2024	26.03.2024	iso-68-7	14930					1,46	0,00	ИИ/А	ИИ/А	ИИ/А									
65	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	87655	27.65783114	42.28868276	Семена 2 87655-40-1-3	008126543671	30-60	19,65	grain maize	11.3.2024	26.03.2024	iso-68-8	13340					1,39	0,00	ИИ/А	ИИ/А	ИИ/А	ИИ/А	ИИ/А					008126543671	ИИ/ИИ	
66	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	87655	27.65783114	42.28868276	Семена 2 87655-40-1-3	008126543671	60-90	19,65	grain maize	11.3.2024	26.03.2024	iso-68-9	10140					1,46	0,00	ИИ/А	ИИ/А	ИИ/А									
67	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	88356	27.66672545	42.28392158	Семена 88356-315-5-1	011126543671	0-30	22,58	grain maize	11.3.2024	26.03.2024	iso-68-13	16420					1,45	0,00	ИИ/А	ИИ/А	ИИ/А									
68	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	88356	27.66672545	42.28392158	Семена 88356-315-5-1	011126543671	30-60	22,58	grain maize	11.3.2024	26.03.2024	iso-68-14	13930					1,43	0,00	ИИ/А	ИИ/А	ИИ/А	ИИ/А	ИИ/А					011126543671	ИИ/ИИ	
69	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	88356	27.66672545	42.28392158	Семена 88356-315-5-1	011126543671	60-90	22,58	grain maize	11.3.2024	26.03.2024	iso-68-15	8890					1,51	0,00	ИИ/А	ИИ/А	ИИ/А									
70	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	88356	27.6812467	42.28150215	Семена 88356-70-1-1	014126543671	0-30	25,52	winter barley	11.3.2024	26.03.2024	iso-68-16	19130					1,45	0,00	ИИ/А	ИИ/А	ИИ/А									
71	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	88356	27.6812467	42.28150215	Семена 88356-70-1-1	014126543671	30-60	25,52	winter barley	11.3.2024	26.03.2024	iso-68-17	15960					1,43	0,00	ИИ/А	ИИ/А	ИИ/А	ИИ/А	ИИ/А					014126543671	ИИ/ИИ	
72	2.10.2023	CBG-3456-23/28-AGRI-0001/02.10.23	0000000075	88356	27.6812467	42.28150215	Семена 88356-70-1-1	014126543671	60-90	25,52	winter barley	11.3.2024	26.03.2024	iso-68-18	10190					1,51	0,00	ИИ/А	ИИ/А	ИИ/А									

Note:
¹⁰ In case of area reduction, calculations are made on the basis of current hectares.
¹¹ The volumetric density is examined once, during the first control year, and is used for calculation until the end of the monitoring period.
¹² Clarification:
1.4. CONTROL YEAR () BASE YEAR apply to all cell
¹³ 1 t sequestered organic carbon (OC) in the soil (+) 3.667 t removed carbon dioxide (CO2) from the atmosphere in the soil (+) 3.667 carbon credits. (See Methodology).
¹⁴ Average fuel consumption (liters) has been calculated according to the "METHODS FOR THE MONITORING OF THE MONITORING".
¹⁵ 1 (of diesel) is equal to 36 MJ (Ordinance No. H 58 of August 8, 2016). 1MJ is equivalent to 95.1 g CO2 (Methodology for determining the intensity of greenhouse gas emissions from the entire life cycle of fuels and energy of non-biological origin in transport). Therefore 36 * 95.1 / 1000 = 3.42 (See Methodology).
¹⁶ 1 t removed carbon dioxide (CO2) from the atmosphere (+) 0.7748 t sequestered organic carbon (OC) in the soil (+) 1 carbon credit. (See Methodology).
* equal to SACCO ID 12480
¹⁸ Sources of uncertainty = 20.7 %
1. Sampling (5 % Sampling uncertainty is estimated using the RANOVA 3 approach based on Analysis of Variance (ANOVA). The total variability is partitioned into between sample and within sample variance components. The between sample variance represents the sampling effect, which is then used to quantify the
2. Organic carbon analysis 8.4 % and 3. Bulk density analysis 10.3 %
Uncertainty for organic carbon and bulk density is estimated by combining precision, recovery, and bias components. The mean (average) and standard deviation are first calculated to describe repeatability. Relative standard uncertainty, u%(%), is derived from the standard deviation. Recovery (yield, %) is used to assess method performance, and bias (%) is calculated as the deviation from the reference value. The standard uncertainty of bias (b bias) is determined from replicate measurements. The combined bias uncertainty is then calculated as:
U_bias = √(b_bias^2 + U_ccm^2 + u(b)^2)
where U_ccm represents the uncertainty of the reference or certified material.
Finally, the combined standard uncertainty (U) is expanded using a coverage factor k = 2 to obtain the expanded uncertainty, corresponding to approximately 95% confidence.

4. Software (Google Earth) 5 % Google Earth does not provide a formally specified measurement uncertainty. Published studies indicate positional accuracy on the order of tens of meters (e.g., ~50 m RMSE globally). Therefore, uncertainty associated with spatial measurements is estimated based on literature values and the scale of the measured features.

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