Appendix B. Multi-stage quality-assurance framework used to support the reliability of citizen-generated soil data

QA stage	Measures applied	Screening / validation criteria	Function
Upstream design	Standardized protocols, pilot testing, volunteer training, controlled vocabulary, and geolocation checks	Protocol clarity, standardized field procedures, and structured metadata capture	Reduce field and metadata errors at source
Midstream screening	Pre-analytical review of submitted samples and records	Physical integrity, adequate sample mass, labeling consistency, sampling-depth compliance, metadata completeness, and chain-of-custody documentation	Determine sample acceptance or exclusion before analysis
Downstream validation	Plausibility screening, peer and expert review, iterative correction, and laboratory QA/QC	Method blanks, ongoing calibration verification, instrument-performance checks, duplicate analysis, and standardized digestion/extraction procedures	Verify analytical adequacy of accepted samples