



Environmental Analysis Program

Pomona College
Biogeochemistry Laboratory

SOP-F003

Field Notebook Protocols

Standard Operating Procedure

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1. Purpose

This SOP establishes the minimum standards for field documentation in the EA Program. Complete, legible, and contemporaneous field notes are the foundation of defensible environmental data (Kanare, 1985). Notes recorded in the field cannot be reconstructed later from memory; what is not written down at the time is effectively lost. This SOP ensures that every field visit produces a record sufficient for another trained researcher to understand what was done, where, when, by whom, and under what conditions.

For laboratory notebook requirements, see [SOP-L010 Laboratory Notebook Recording](#).

2. Scope

- **Applies to:** All EA Program field activities, including sampling, sensor deployment and retrieval, site reconnaissance, equipment installation, and monitoring visits.
- **Does not apply to:** Laboratory work or purely digital data collection on tablets and phones (though digital entries should follow the same content standards described here).
- **Location:** All EA Program field sites.

3. Responsibilities

Role	Responsibility
Lab PI	Set documentation standards; review notebooks periodically
Field Lead	Ensure all team members record required entries
All Field Personnel	Maintain a field notebook per this SOP
New Students	Read this SOP before their first field outing

4. Definitions

- **Chain of custody (COC):** A documented record of sample possession at every transfer point from collection to laboratory analysis; the COC form number must be cross-referenced in the field notebook entry for the corresponding samples.
- **Contemporaneous record:** An entry made at the time the observation or action occurs, not reconstructed from memory afterward; the defining characteristic of a legally defensible field or laboratory record (Kanare, 1985).
- **Deviation:** Any departure from a written SOP during field activities; must be recorded in the notebook with the reason for the deviation and an assessment of its potential effect on data quality.

- **Field notebook:** A bound, weather-resistant notebook with numbered pages used to record all field observations, measurements, and activities; the primary raw-data record for a field project (Kanare, 1985).
- **Good Documentation Practice (GDP):** A set of principles for creating accurate, legible, contemporaneous, original, and attributable records; the foundation of data integrity in regulated and research laboratories (Broman & Woo, 2018).
- **Header block:** A standardized set of fields (date, time, site, personnel, weather, purpose, SOPs in use) recorded at the top of each field visit entry before any observations or data are logged.
- **Rite in the Rain:** A brand of field notebook and paper products printed on water-resistant stock that can be written on with ballpoint or mechanical pencil even in rain; the preferred notebook format for EA Program field work.
- **Sample ID:** A unique alphanumeric code assigned to each sample at the moment of collection, cross-referencing the field notebook, sample label, COC form, and laboratory data file.
- **Tare mass:** Not applicable in field notebooks – see [SOP-L400 Soil Moisture](#).
- **Time stamp:** The date and time of a discrete field action, recorded in the notebook at the moment of the action; use ISO 8601 format (YYYY-MM-DD HH:MM) or a consistent AM/PM scheme throughout the notebook.

5. Notebook Selection and Preparation

5.1. Acceptable Notebooks

Use a bound, weather-resistant field notebook with numbered pages. Acceptable options include:

- Rite in the Rain (top-spiral or side-spiral, any size)
- Any hardbound notebook with numbered pages (if weather protection is not required for the site)

Do **not** use loose-leaf paper, spiral notebooks with perforated pages, or sticky notes for primary field records (Kanare, 1985).

5.2. Front Matter

On the inside front cover or first page of a new notebook, record:

- Your name, phone number, and email
- “If found, please return to: EA Program, Pomona College, SGM 133”
- Project name(s)
- Date the notebook was put into service

5.3. Page Numbering

If pages are not pre-numbered, number them in ink before going to the field. Never remove pages from a field notebook.

6. Required Entries for Every Field Visit

Every field visit entry must begin with the following header information. Write it before you do anything else on site.

6.1. Header Block

Record at the top of a new page or clearly separated section:

Field	Example
Date	2026-05-18 (ISO format: YYYY-MM-DD)
Time of arrival	08:15 PST
Site name / ID	Bernard Field Station, Plot BFS-03
GPS coordinates	34.0975 N, 117.7125 W (WGS84)
Personnel present	M. Los Huertos, J. Smith
Weather conditions	Clear, ~25 °C, light wind from W, no recent rain
Purpose of visit	Soil sampling for CN analysis; sensor download
SOPs in use	F400, F401, F510

6.2. Time Stamps

Record the time of every discrete action: sample collection, instrument reading, equipment start/stop, calibration check, photo taken. Use 24-hour format or AM/PM consistently throughout the notebook (Broman & Woo, 2018).

6.3. Site Observations

Before beginning work, note anything relevant:

- Visible changes since the last visit (new construction, vegetation removal, standing water, animal activity, vandalism, equipment condition)
- Odors or visual indicators of contamination
- Land use activities in progress nearby (mowing, irrigation, construction)

6.4. Sample and Measurement Records

For each sample collected or measurement taken, record at minimum:

- Sample ID (use the project's established naming convention)
- Time of collection or measurement
- Location (plot, transect position, depth, or other descriptor)
- Value or description (e.g., "pH = 7.2," "soil moist, dark brown, loamy texture")
- Preservation method applied (e.g., "filtered, acidified with HNO₃ to pH < 2")
- Container type and label verification

 Write More Than You Think You Need

Include observations that seem obvious at the time. “Soil was saturated and smelled of sulfide” or “sensor housing had a spider web across the inlet” may be critical for interpreting data months later (Kanare, 1985).

6.5. Equipment and Instrument Notes

Record for every instrument used:

- Instrument ID (serial number or lab asset tag)
- Calibration status (date of last calibration; field check performed?)
- Settings (logging interval, flow rate, method name)
- Any malfunctions, error messages, or anomalies

6.6. Deviations from SOPs

If you deviate from the standard procedure for any reason, record:

- What you did differently and why
- Whether the deviation may affect data quality
- Who authorized the deviation (if applicable)

6.7. Departure

Before leaving the site, record:

- Time of departure
- Summary of work completed and any work left undone
- Disposition of samples (e.g., “cooler with ice, to lab by 12:00”)
- Any follow-up actions needed

7. Sketches and Diagrams

A simple sketch is often more informative than a paragraph of text (Kanare, 1985). Include sketches of:

- Site layout showing sampling locations, landmarks, and compass orientation
- Equipment placement (sensor positions, transect layout, plot boundaries)
- Anything unusual (erosion features, spill boundaries, wildlife sightings relevant to the study)

Label all sketches with a north arrow, approximate scale, date, and your initials.

8. Photographs

8.1. When to Photograph

- At the start of every visit: a general site photo showing conditions
- Each sampling location before and after sampling
- Equipment installations and sensor positions
- Anything unusual or noteworthy (damage, contamination indicators, unexpected conditions)
- Calibration setups

8.2. Photo Naming and Logging

Record in the notebook the photo number or filename and a brief description for every photo taken:

“Photo IMG_4231: Plot BFS-03 looking NE, pre-sampling, 08:22”

Transfer photos to the project folder within 48 hours and rename using the convention:

YYYY-MM-DD_SiteID_Description_PhotoNumber.jpg

Back up photos to the project GitHub repository or shared drive (Broman & Woo, 2018).

9. Corrections and Errors

- Never erase, white-out, or obliterate an entry.
- To correct an error, draw a single line through the incorrect text so it remains legible. Write the correction nearby and initial and date the change.
- If you skip a page or leave blank space, draw a diagonal line through the unused area and initial it to prevent later additions (Kanare, 1985).

10. Chain of Custody

When samples will be submitted to an analytical laboratory (internal or external), complete a Chain of Custody (COC) form. The COC must accompany the samples and include:

- Project name and PI
- Sample IDs matching the field notebook entries
- Date and time of collection
- Number and type of containers
- Analyses requested
- Preservatives applied
- Signatures at each transfer (field to transport, transport to lab)

Record the COC form number in the field notebook entry for cross-reference. See [SOP-F008 Sample Labeling, COC, and Transport](#) for the full chain-of-custody procedure.

11. Notebook Archiving

- At the end of a field season or project, submit completed notebooks to the PI for archiving.
- Notebooks are stored in labeled binders in SGM 133 and must be retained for a minimum of 5 years after project completion.
- Transcribe key data from notebooks to digital spreadsheets within 48 hours of each field visit, following the tidy data principles in
 1. Flag any discrepancies between the notebook and the digital record and resolve them with the field lead.

12. References

- Kanare (1985)
- 1

Broman, K. W., & Woo, K. H. (2018). Data organization in spreadsheets. *The American Statistician*, 72(1), 2–10. <https://doi.org/10.1080/00031305.2017.1375989>

Kanare, H. M. (1985). *Writing the laboratory notebook*. American Chemical Society.

13. Related SOPs

SOP	Title	Relationship
F001	Field Safety	Required prerequisite
F006	GPS and Site Navigation	Recording GPS coordinates
F008	Sample Labeling and COC	COC cross-referenced in notebook
L010	Lab Notebook Recording	Lab counterpart to this SOP
L801	RStudio and GitHub	Digital data file version control

14. Training Record

Before conducting any field work independently, personnel must:

1. Read this SOP in full
2. Set up a field notebook with correct front matter
3. Complete a practice header block entry under supervision
4. Demonstrate correct error-correction technique (single-line strikethrough, initials, date)
5. Be signed off by the PI or field lead