Region 4 U.S. Environmental Protection Agency Laboratory Services and Applied Science Division Athens, Georgia	
Operating Procedure	
Title: Logbooks	**ID: LSASDPROC-1002-R1**
Issuing Authority: LSASD Deputy Director	
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Purpose

This procedure is specific to the Region 4 Laboratory Services and Applied Science Division (LSASD) to maintain conformance to technical and quality system requirements. This procedure defines the process for documenting direct observations in logbooks or other record formats related to laboratory analyses, field investigations, or assessments of field sampling processes and laboratory operations of external entities, such as drinking water assessments and Technical Systems Audits.

Scope/Application

The requirements of this procedure apply to all personnel who perform work under LSASD's quality system. This procedure contains requirements for documenting activities related to laboratory analyses, field investigations, or assessments of field sampling processes and laboratory operations of external entities and serves as a supplement to the overarching requirements for LSASD records, outlined in the LSASD Operating Procedure for Control of Records. While this SOP may be informative, it is not intended for and may not be directly applicable to operations in other organizations. Mention of trade names or commercial products in this operating procedure does not constitute endorsement or recommendation for use.

Note: LSASD is migrating to a paperless organization and as a result, this SOP will allow original observations to be recorded in electronic format. Original observation to electronic format MUST be observation(s) recorded electronically with no intermediate use of pen to paper.

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Administrative Procedure

1.1. General Requirements

1.1.1. General requirements for LSASD logbook or other record format entries (e.g., electronic) related to laboratory analyses, field investigations, or assessments of field sampling processes and laboratory operations of external entities, such as drinking water assessments and Technical Systems Audits are presented in this SOP.

1.1.2. LSASD recognizes the following electronic formats to be used for recording original observations.

- Laptop computers,
- Tablets,
- Transfer software from balances to laptops/tablets,
- Element®,
- Use of thumb drives to transfer data from lab instruments to Element®,
- Excel Spreadsheets; and,
- Commercially available software specific for this purpose.

1.1.3. Recording of Original Observations

1.1.3.1. The following procedure should be used when recording original observation electronically or to paper logbooks.

- Observations, data collection, and calculations will be recorded at the time they are made or performed;
- Dedicated bound hardcopy logbooks can be used, however, migration towards electronic media is preferred;
- Entries in hardcopy logbooks will be legible, containing pertinent, accurate, and inclusive documentation of project activities, calibrations, audits, field measurements/observations, method/standards/reagent preparation and laboratory analysis, etc. For field and lab audit reports, entries must be free of personal feelings or other terminology which might prove inappropriate. Stick to the facts of the observation and provide a regulatory or SOP references as applicable;
- Write in the rain pens and notebooks should be used to record all observations when working outdoors. When environmental conditions do not make it feasible to use permanent ink, entries using a non-smear lead pencil (e.g., 2H or 3H) is permitted. Upon returning from the field, the project leader will photocopy the penciled section of the logbook and certify, in writing, that the photocopied record is a true copy of the original logbook entry. The photocopy will be included in the project file;
- Entries in logbooks shall be dated and signed or initialed by staff. Electronic files should contain an electronic signature and date stamp;

- For handwritten entries, data or other information that has been entered incorrectly shall only be corrected using a single strike-through, date and initials of the person making the correction. Under no circumstances should the incorrect material be erased, made illegible or obscured so that it cannot be read. For changes or corrections made to electronic files (e.g., spreadsheets, pdf documents, etc.) changes should be documented in a comment section documenting the change along with the initials of the person making the change and dated;
- To demonstrate continuity of the work and maintain the integrity of the data collection process, pages must not be removed from any bound logbook. Electronic data shall not be deleted unless documented;
- Blank pages or spaces should not be present in logbooks. Blank areas should be lined through and initialed and dated to prevent the opportunity for back-filling;
- Hardcopy and electronic logbook pages and field books shall be paginated. The numbering format shall be "page x of y", where "x" is the current page number and "y" is the total number of pages of the. However, if pre-paginated logbooks are used, page numbers are acceptable. The last page of any logbook should be identified as the final page before placement in the project file;
- To facilitate accurate and complete documentation of activities, LSASD-generated forms may be used. To be utilized, LSASD-generated forms must be bound prior to use and adhere to the requirements outlined in this procedure. In cases where unbound pages/forms are necessary due to project requirements or practicality, the appropriate Section Chief and Divisional Quality Control Coordinator (QAC) will determine the best course of action;
- If pre-printed adhesive labels are used in logbooks or bound forms to facilitate organization of information entry, the LSASD staff responsible for taking notes will sign the label with the signature beginning on the label and ending on the page of the logbook such that the label cannot be removed without detection;
- When direct observations are entered directly into Element, a witness or a second analyst should be present to verify all hand entries; and,
- Element® uses an audit trail for tracking modifications made to the database. The audit trail marks the data, time, and analyst's initials of all changes.

1.2. Laboratory Logbooks and Element®

1.2.1. The following are requirements for laboratory logbooks, in addition to those established above. Each sample preparation, analysis or equipment check is maintained using logbooks in the appropriate laboratory. Active logbooks are maintained within the laboratory where the instrument or equipment is located and should be maintained with the instrument throughout its useful life. At such time the instrument is removed from service, or the logbook is deemed full, the logbook is transferred with a completed Logbook Transfer form located on the LAN at: M:\LSB\Current Documents\Forms\Branch Forms\Log Book Forms given to the QAC. The QAC will transfer the logbook to the LSASD Records Room.

1.2.1.1. Instrument Maintenance Logbooks

1.2.1.1.1. Each laboratory instrument shall have a maintenance logbook. At a minimum the following information will be included:

- Manufacture's Name
- Instrument serial/model number
- Instrument's unique name
- Software version and firmware version
- In-service date (if known)

1.2.1.1.2. Maintenance, service, and repair records are maintained in these logbooks. Preventive maintenance schedules should be noted in the log if known. When service or maintenance is performed and completed by a vendor or analyst, the analyst should place a copy of the vendor's documentation or transcribe the details for the work that was performed on the instrument in the logbook. Each analyst that performs maintenance or repairs must record a description of the work performed to include the date, parts installed, and lot numbers. The original work order invoice should be provided to the Program Services Section for payment. Instrument maintenance logbooks are purchased as bound record books that contain pre-numbered pages.

1.2.1.2. Instrument Logbooks

1.2.1.2.1. Equipment Logbooks, such as balance logs, are maintained in the lab near the equipment. At a minimum the following information must be included:

- Instrument's unique name
- Date of analysis
- Analyst and samples/QC which have been analyzed
- A reference or a record of which options or analytical conditions were used for analysis
- Method reference
- Where appropriate, instrument acceptance criteria (e.g., tune criteria, sensitivity checks)
- Include the calibration date of the instrument and acceptance criteria for the calibration.

1.2.1.3. Preparation Logbooks

- Analyst's name.
- Weights.
- Volumes.
- Lot number of digestion tubes.
- ID of any preparation equipment used (pipettes, pipettors, balances, pH meters, thermometers, barometers).
- Certification dates of equipment, if applicable.
- Reagents/standards/lot# used.
- Preservation checks including Element ID of the pH paper used for the checks.
- Units.
- Cleanup procedures used and calibration of clean-up units (GPC).
- Project Number/Name and Workorder Number will be included on each page.
- Samples/QC which have been prepared.
- Electronic traceability via Element® is used for documenting standard preparation. Element® is subject to all the requirements of this section.

1.2.1.4. Analysis Logbooks

1.2.1.4.1. Electronic records, including spreadsheets which contain original measurements, may be used to create logbooks if all the required information can be captured by the instrumental software; however, a sequential analysis log must still be created and maintained. This is accomplished by printing a copy of the electronic record and including it in a notebook. These sequential logs must also include failed runs, or sequences which were abandoned prior to completion. When a pre- determined number of pages has been accumulated (e.g., 50 pages), the individual records are combined into a single bound logbook and retained as specified in the LSASD Operating Procedure for Records Management. Any electronic records must accurately reflect actual analytical information. For analyses with holding times < 72 hours, or when time-critical or method-specified times are included in the analysis, the time of analysis must also be recorded.

1.2.1.5. Field Operation Logbooks

1.2.1.5.1. The following are requirements for field logbooks, in addition to those established in the "Section General Information" required in all Field Operations Logbooks.

1.2.1.5.2. The following information shall be included either on the front cover or the first page of all field logbooks:

- Project name
- Project location
- Project identification number
- Project leader (full name)
- Sample team leader (full name) and initials
- Sample team member(s) (full names) and initials

1.2.1.5.3. In addition, the project's unique identifier (unique identification number(s)) will be included on each page.

1.2.1.5.4. Any deviations from the quality assurance project plan (QAPP) that occur while in the field shall be noted in the logbook(s). Field logbook entries that may be considered privileged or confidential information shall be handled in accordance with the relevant sections of LSASD Operating Procedure for Control of Records. The logbooks will be placed in the LSASD project file upon transmittal of the final report to the project requestor.

1.2.1.6. Information Required for Sample Collection

1.2.1.6.1. In addition to previously listed requirements, the following information will be included in all field logbooks when samples are collected:

- References to applicable LSASD Operating Procedures for field sampling.
- Date and time of collection.
- Station identification, including GPS coordinates (non-logging GPS units), if applicable.
- Sample identification.
- Method of collection.
- Number and type of containers (describe, as needed).
- Sample collection equipment.
- LSASD equipment identification number, if applicable.
- Matrix sampled.
- Physical description of each sample.
- Sample team member duties (calibration, collection, deployment, etc.).
- Sample preservation method (e.g., indirect contact with ice), if applicable.
- Environmental conditions such as rain, wind, smoke, dust, extreme temperature, etc.
- Location of electronic data file backups, if applicable.
- Monitoring of condition of ice in coolers or sampler, if applicable.
- Date and time of sample arrival to LSASD. Storage room for samples, even if it is for initial, temporary purposes.
- Overnight courier tracking information, if applicable.
- Other pertinent information.

1.2.1.7. Information Required for Field Measurements

1.2.1.7.1. In addition to previously listed requirements, the following information will be included in all logbooks when field measurements are conducted:

- References to applicable LSASD Operating Procedures for field measurement.
- Date and time of measurement or instrument/equipment deployment.
- Sample identification, if appropriate.
- Station identification, including GPS coordinates (non-logging GPS units), if applicable.
- Sample measurement equipment.
- LSASD sample measurement equipment identification number.
- Manufacturer name, lot number and expiration date of all pH buffers and chemical standards.
- Calibration information, including before and after calibration readings.
- Meter and check information.
- Equipment deployment depth and total depth, if applicable.
- Pinger identification number and frequency for deployed equipment, if applicable.
- Date and time of retrieval for deployed equipment, if applicable.
- Matrix measured.
- Physical description of matrix.
- Measurement values for non-logging equipment.
- Ambient air temperature, where applicable.
- Environmental conditions that may adversely impact quality of measurement (e.g., rain, wind, smoke, dust, extreme temperatures), if applicable.
- Equipment or instrument maintenance performed, if applicable.
- Meter malfunctions, troubleshooting efforts and final status, if applicable.
- Location of electronic data file backups, if applicable.
- Measurement team member duties (e.g., calibration, equipment deployment, measurement, maintenance, troubleshooting, etc.).
- Other pertinent information.

1.2.1.7.2. Entry of calibration information in logbooks is only required for calibrations conducted in the field. All calibrations conducted at the LSASD Field Equipment Center or laboratory will be recorded in the appropriate equipment tracking logbook.

1.2.1.7.3. The following visual information may be included in field logbooks, as appropriate:

- Maps/sketches.
- Photographic or video-graphic log.
- Process diagrams

1.2.1.8. Quality Assurance Field/Lab Audit Documentation

1.2.1.8.1. The following are requirements for Quality Assurance (QA) field documentation, in addition to those established in Section 1.1. The following information shall be included either on the front cover or the first page of all QA field documentation:

- Audit/facility name
- Audit/facility location
- Audit leader
- Audit team members
- Audit dates
- Audit/Project Identification Number
- Program/Authority

1.2.1.8.2. In addition to previously listed requirements, the following information will be included in all audit logbooks when field/lab assessments are conducted:

- Analytical method or field procedure reference.
- Lab Analyst/Field Sampler(s) being assessed.
- Document findings with reference, opportunities for improvement, and commendations for good work.
- Other pertinent information.

1.2.2. In addition to logbooks, QA uses checklists to document audits of methods and procedures during the onsite evaluation of laboratories and facilities. These checklists are printed and/or used electronically to document field observations. These electronic checklists are located on the LSASD LAN and updated periodically as changes are needed.

1.2.2.1. Other Logbooks and Documentation

1.2.2.1.1. Some methods and measurements do not use instrumentation to generate a result. For these methods LSASD relies on spreadsheets or other calculating software for recording/documenting original observations made (e.g., weights). All spreadsheets or other calculating software used as logbooks or used in support of data generation will be validated and controlled. All cells, except informational input cells, will be locked to prevent alteration of a formula or essential static information, such as the unique identifier. All calculations in electronic spreadsheets and calculating software files will be hand-validated by the responsible party and submitted through the Section Chief to the appropriate System Manager for approval and posting. The entire spreadsheet or software-generated electronic file will be password protected, which will be assigned by the System Manager at the time of posting on the LAN.

1.3. Definitions

None

1.4. References

U.S. EPA, Region 4, LSASD, Analytical Services Branch, Logbook Transfer Form.

U.S. EPA, Region 4, LSASD, LSASD Field Branches Quality Management Plan, LSASDPLAN-001, most recent version.

U.S. EPA, Region 4, LSASD, ASB, Laboratory Operations and Quality Assurance Manual, most recent version.

U.S. EPA, Region 4, LSASD, Records Management Standard Operating Procedures, most recent version.

U.S. EPA, Region 4, LSASD, Quality Management Plan, most recent version.

U.S. EPA, Region 4, LSASD, LSASD Operating Procedure for Control of Records, LSASDPROC-002, most recent version.

ISO/IEC 17025: General Testing for the Competence of Testing and Calibration Laboratories, 2nd Ed., 2005, 05/15/2015, Switzerland.

ANAB, ISO/IEC 17025: Accreditation Requirements for Forensic Testing Laboratories, pp. 49, Document Number MA 3011, Effective Date: 02/02/2015.

Revision History

This table shows changes to this controlled document over time. The most recent version is presented in the top row of the table. Previous versions of the document are maintained by the LSASD Document Control Coordinator.

History	Effective Date
LSASDPROC-1002-R0, Logbooks, Original Issue	October 1, 2017
Document put in the new SOP format. Since LSASD is instituting electronic files, this SOP has been modified to include using electronic devices and Element in place of hardcopy logbooks, files, etc.	5/19/21