PHYSICAL EVIDENCE EXAMINATION

1.1 PURPOSE

1.1.1: To examine physical evidence for the presence of blood, semen, saliva, touch/wearer DNA, trace material and/or other body fluids.

1.1.2: To collect and preserve samples for further analysis.

1.2 RESPONSIBILITY

Forensic Science Examiners (however titled) from the Division of Scientific Services who have been trained in the discipline of physical evidence handling and examination according to FB SOP-26 (Training Manual and Checklist), GL-4 (LIMS/Justice Trax) and GL-13 (General Evidence Handling).

1.3 SAFETY

Use appropriate measures for the proper handling of biohazardous materials and hazardous chemicals according to GL-2 (Safety Manual).

1.4 DEFINITIONS

A. LIMS: Laboratory Information Management System
B. SEM: Scanning Electronic Microscope
C. PPE: Personal Protective Equipment
D. QRW(s): Quality Record Worksheet(s) (Appendix 1)

1.5 PROCEDURE

Physical evidence will be examined and serological tests will be performed based on the examiner's knowledge, training and experience according to the submitting agency requests, case information and the condition of the evidence.

1.5.1: Cleaning Utensils and Laboratory Area

A. Clean utensils and bench top supplies during use as needed and between each case and case submission. The appropriate disinfecting solution is described in FB SOP-21 (General Chemical and Reagent QC) and is followed by ethanol to ensure aseptic conditions. dH_2O may be used between the disinfecting solution and ethanol.

B. Containers used to clean/soak utensils in disinfecting solution, dH_2O and ethanol, are replaced weekly. The disinfecting solution, dH_2O and ethanol are replaced daily or more often, as necessary.

C. Clean camera and other electronic equipment during use as needed and between each case to ensure aseptic conditions. The appropriate disinfecting solution is described in FB SOP-21. Avoid the use of ethanol.

D. Clean bench top using the appropriate disinfecting solution described in FB SOP-21 and replace examination paper between each case or more often, as necessary, to ensure aseptic conditions.

1.5.2: Personal Protective Equipment

A. Examiners must wear lab coats, masks, gloves, disposable sleeves and hair nets while examining evidence.

B. When conducting microscope work for Sperm Hy-Liter the examiner must wear a lab coat and gloves.

C. Examiners will wear protective eyewear when it is indicated to do so.

1.5.3: Evidence Retrieval

A. Generally, examiners will be notified of case assignments by a Forensic Biology Lead, Case Management or through the LIMS computer system according to GL-4 (LIMS/JusticeTrax).

B. Examiners will retrieve evidence from a secure storage location or from other examiners through a secure transfer within the LIMS computer system according to GL-4 (LIMS/Justice Trax).

1.5.4: Evidence Examination

All examinations are conducted macroscopically. Other types of examinations (i.e. microscopical or stereoscopical) will be recorded, along with the microscope(s) used, on the appropriate QRW(s).

A. Document the label information on the submission packaging and the label information, if present, on the physical evidence. This may include written and/or photographic documentation. Record on the appropriate QRW(s). For evidence submitted as swabs, include the location that the swabs were collected from, if available.

B. When possible, leave the submitting agency seal intact when opening the package.

C. Record information on the appropriate QRW(s) using blue ink. When necessary, other colors of ink may be used.

1. Recorded information (i.e. documentation) should include but is not limited to:
   a. evidence description
   b. examination and test results
   c. sample description and disposition
   d. evidence disposition

2. All documentation will be dated. If completed on the same day, the date on each page of the worksheet is sufficient. If additional examination and/or testing is conducted on a subsequent day, then it will be dated and initialed on the worksheet accordingly. In general, pages with photographs are not dated.

3. Attach sketches, photocopies and/or photographs to the worksheet(s) as necessary.
   a. It should be noted that additional photographs may be taken but not be printed. These photographs will be made available for Discovery Requests.
   b. Record on the worksheet when photographs taken are not included in the case jacket.

4. Notes recorded on photographs of evidence should include:
   a. Screening test results for blood and semen (may include evidence swabs collected by the Submitting Agency).
   b. 'NT' (not tested), as necessary, when additional biological-type stains are observed but not tested.
   c. Location(s) on evidence from which samples are collected.

5. Notes that are not necessary to record on photographs but should be recorded elsewhere on the worksheet include:
   a. 'NFT' (No further testing)
   b. Swabbings collected by the analyst for touch/wearer DNA are generally not photographed. If a screening test for blood is conducted on these swabbings it is not necessary to record the result on the photograph of evidence depicting the location of the collection.

6. If needed, more information can be found in the metadata of the digital image of each photograph.

D. All reagents used during examination and the lot #'s are recorded on the appropriate QRW(s) and/or the General Reagent Sheet (FBQR-09). An electronic reference will be maintained for tracking these reagents.

E. If the submission contains more than one (1) piece of evidence, sequential item numbers shall be designated for each item, as necessary (see examples listed under section1.5.5).

F. Evidence that is received wet should be removed from the package and air dried (in a hood whenever possible). Once dry, the evidence may be examined or re-packaged and sealed until future examination.

G. When examining evidence with a controlled substance request and a potential controlled substance is known to be present in a quantity greater than a residue:

1. A second examiner must witness the package being opened, verify the contents and date and initial the appropriate QRW(s).

2. The contents must again be verified by a second examiner when it is re-packaged and sealed. The second examiner must initial the seal and again date and initial the appropriate QRW(s).

3. If a potential controlled substance of any quantity is unexpectedly observed during the examination of any evidence, at any time, the Controlled Substance Unit must be notified immediately.

H. Sample selection is conducted considering the substrate and the type/amount of sample present. Sample selection details will be included on the appropriate QRW(s). These details will not be included with the results stated in the report.

I. Samples for touch/wearer DNA analysis may be collected based on the submitting agency requests, case information and type of evidence, according to FB SOP-03 (Guidelines for Collecting and Forwarding Samples for DNA Analysis).

Document the number of swabs used to collect each sample on the appropriate QRW(s).

J. Collect SEM disks from the evidence, when necessary, according to FLIN SOP-07 (SEM sample collection on clothing for GSR analysis) located under Chemistry/Instrumentation-GSR.

K. Use an alternate light source to locate stains, if necessary, and mark the location on the evidence. Record the alternate light source used on the appropriate QRW(s).

L. Perform serological tests according to the applicable FB SOP-08 through FB SOP-18 (Forensic Biology Serological Tests) and flow charts in section 1.7 below.

For rush cases as requested, samples may be forwarded for DNA analysis prior to serological testing. FB will simultaneously conduct serological testing on a remaining portion of the sample for the presence of body fluids.

M. Collect blood and/or body fluid samples from the evidence based on the submitting agency requests, case information, type of evidence/stain(s) and number, size and quantity of stain(s), according to FB SOP-03 (Guidelines for Collecting and Forwarding Samples for DNA Analysis).

Document the following on the appropriate QRW(s):

1. Document whether the collected sample is a swabbing or cutting.
2. If a swabbing was collected:
    a. Document the number of swabs used to collect each sample.
    b. Document the number of swabs retained and forwarded for DNA analysis.
3. If a cutting was collected, see step N below for additional information.

N. Mark the evidence, sketches, photocopies and/or photographs with the location where the samples were collected.

1. When necessary, indicate the size of the stain/sample collected and forwarded on the appropriate QRW(s) and/or the sketches, photocopies, or photographs.

2. Stain(s) or sample(s) may be photographed with a ruler to indicate the size collected and forwarded.

3. If there is a Latent Print request, the evidence may not be marked until after the Latent Print examination has been completed. It is not necessary to mark the evidence for collected touch or wearer sample locations.

O. Designate or sub-itemize the samples collected using the letter 'S' for the Forensic Biology Unit with the corresponding sample number (see examples listed under section 1.5.4).

P. When examination is complete, examiners will account for all samples collected from each evidentiary item prior to returning the item to its packaging and prior to discarding the bench paper used during examination. Document that the samples have been accounted for on the appropriate QRW(s).

Once accounted for, these samples will immediately be placed into a secure location. This may include, but is not limited to, being placed under the hood for drying or being transferred into the appropriate storage location once verified. See verification step U below.

Q. Forward the appropriate samples to the DNA Unit according to FB SOP-03 (Guidelines for Collecting and Forwarding Samples for DNA Analysis).

R. Mark the package and evidence with the examiner's initials when possible. If there is a Latent Print request, the evidence and/or package may not be initialed until after the Latent Print examination has been completed.

S. Place the evidence back in the original packaging, seal and initial the seal. If the original packaging is not suitable for re-packaging, do not discard. Place with evidence in new packaging, seal and initial the seal. Store evidence in the designated storage area.

T. Create the samples collected from the evidence in the LIMS computer system according to GL-4 (LIMS/Justice Trax) using the designated sub-items.

1. For evidence submitted as swabs, include the location from which the swabs were collected.

2. Note if the collected sample is a swab(s)/i.e. submitted as such, a swabbing or cutting. It is not necessary to record the number of swabs or size of the cutting in LIMS.

U. All samples collected and retained will be verified for correct labeling and contents by a second analyst (however titled) prior to its final disposition.

1. In LIMS, the sub-item will be created and transferred to the appropriate storage location(s). The transfer sheet(s) will be printed.

2. The second analyst will review the samples collected/retained and verify that the labeling and contents agrees with the LIMS information.
   a. If in agreement, the second analyst will initial and date the LIMS transfer sheet.

b. If the second analyst discovers a simple discrepancy in documentation, then the appropriate corrections will be performed.

c. If the second analyst discovers a discrepancy greater than the above, then the Unit lead will be informed, the root cause will be determined and corrected. Further appropriate action may be taken by the Unit Lead.

3. The initialed and dated transfer sheet (or copy) will be retained in the appropriate case jacket(s).

4. Trace material being retained will be verified according to section 19.7 (Verification and Retention of Trace samples) in FB SOP-19 (Trace Evidence Collection/Hair-like Fiber Examination).

V. Store samples in designated, secure and temperature appropriate areas or transfer to other Units of the Laboratory using the LIMS computer system according to GL-4 (LIMS/Justice Trax). Print the LIMS transfer sheets as needed.

W. If forwarding sample(s) to DNA, create the appropriate DNA request(s) using the LIMS computer system according to GL-4 (LIMS/Justice Trax).

X. A secure and password protected LIMS computer system is used in accordance with SOP-GL-5 (Ethics).

Y. The transfer of samples from laboratory cases which were opened prior to 1998 and not in the LIMS system will be recorded on the Evidence Transfer Sheet (FBQR-11).

Z. A physical match examination may be performed when necessary according to FB SOP-20 (Physical Match Examination).

AA. The Chemical/Reagent Log Sheets and Equipment Log Sheets are located in Appendix 2. The Forensic Biology Inventory, Consumable Product Inventory and Equipment Inventory are located in Appendix 3.

1.5.5: Examples of evidence/sample itemization in LIMS

A. For submissions containing one (1) piece of evidence (i.e. one (1) baseball cap or one (1) swab carton):
Samples retained from the submission are sequentially itemized as #1S1, #1S2, #1S3, etc., for example:

1. #1S1 for a cutting of a blood-like stain from the cap
   #1S2 for a swabbing from the interior rim of the cap
   #1S3 for trace materials from the cap

2. #1S1 for swab tips from #1 with location

B. For submissions containing more than one (1) piece of evidence (i.e. three (3) swab cartons or a gun and a magazine):
Each piece of evidence is sequentially itemized as #1-1, #1-2, #1-3, etc., for example:

1. #1-1 for swabs from location #1
   #1-2 for swabs from location #2
   #1-3 for swabs from location #3

2. #1-1 for the gun
   #1-2 for the magazine

Samples retained from the items are sequentially itemized as #1-1S1, #1-1S2, #1-2S1, etc., for example:

1. #1-1S1 for swab tips from item #1-1 with location #1
   #1-2S1 for swab tips from item #1-2 with location #2
   #1-3S1 for swab tips from item #1-3 with location #3

2. #1-1S1 for a swabbing from the handle/grip of the gun
   #1-1S2 for a swabbing from the trigger of the gun
   #1-2S1 for a swabbing from the magazine

C. Any portion of a sample being forwarded for DNA analysis while the remaining portion is being retained in Forensic Biology (for possible future testing) should be itemized as #1S1* and #1S1, for example:

1. #1S1* for the portion of a cigarette butt being forwarded for DNA analysis
   #1S1 for the remaining portion of a cigarette butt retained

2. #1S1* for the portion of a cutting (bloodstain) being forwarded for DNA analysis
   #1S1 for the remaining portion of a cutting (bloodstain) retained

1.6 REFERENCES

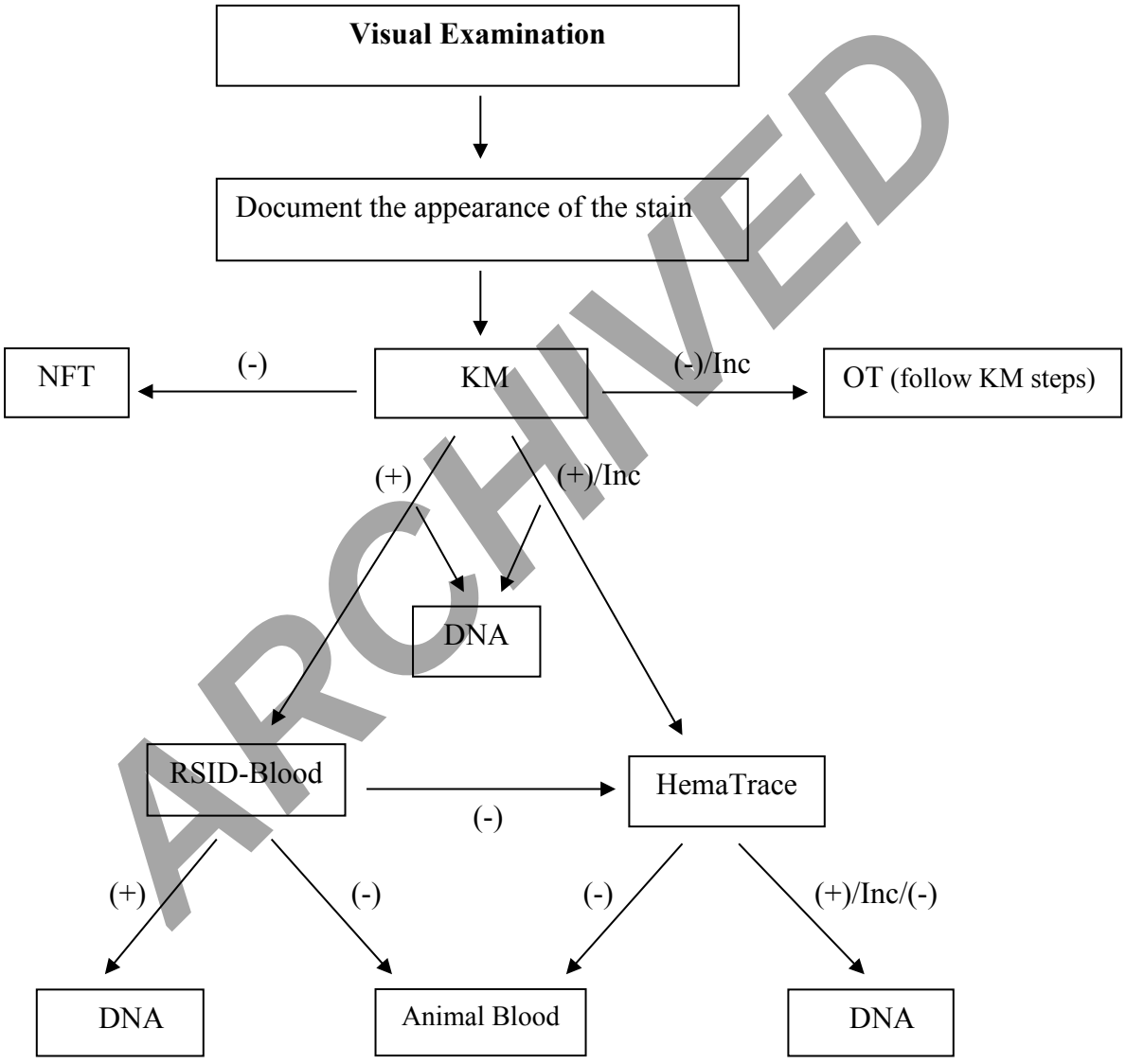
A. GL-2 (Safety Manual)
B. GL-4 (LIMS/Justice Trax)
C. GL-5 (Ethics)
D. GL-13 (General Evidence Handling)
E. FLIN SOP-07 (SEM sample collection on clothing for GSR analysis)

NOTE: As revisions have been made regarding the order and sequence of the current SOP's, please refer to archived SOP's for all previously used versions.

See 1.7 Flow Charts below.

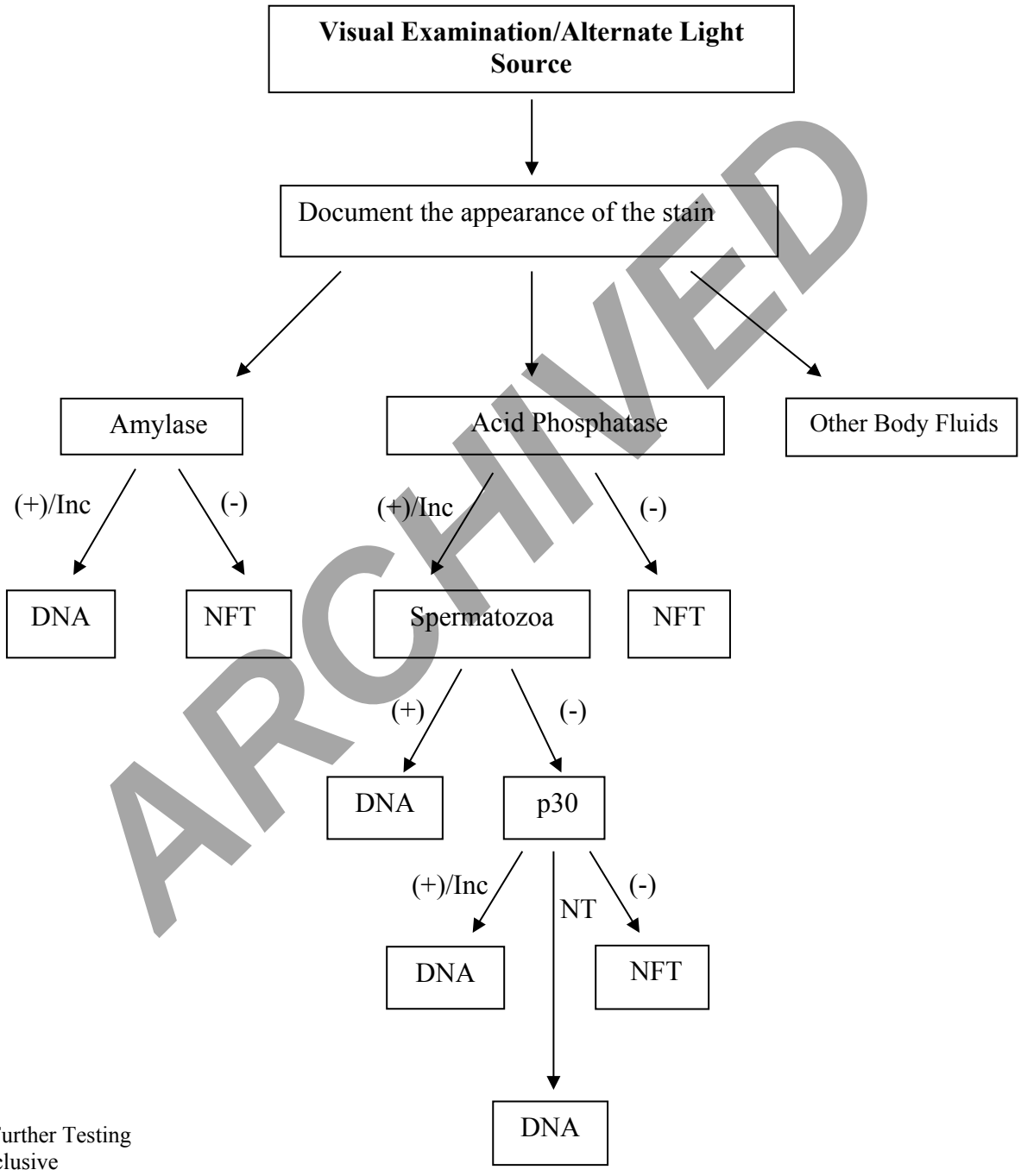
1.7 FLOW CHARTS (General Pathways of Serological Testing)

1.7.1 Bloodstain Analysis (steps during analysis may be evaluated on a case-by-case basis)



NFT = No Further Testing
Inc=Inconclusive
KM=Kastle Meyer
OT=o-Tolidine

1.7.2 Body Fluid Stain Analysis (steps during analysis may be evaluated on a case-by-case basis)



NFT=No Further Testing
Inc=Inconclusive
NT=Not Tested (due to compromised sample)