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 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

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 handling evidence.

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

C. Examiner's 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 with 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 Quality Record Worksheets located in Appendix 1.

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 Quality Record Worksheet. 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. Use blue ink to record information, including the intended evidence disposition, on the appropriate Quality Record Worksheet. When necessary, other colors of ink may be used.
   1. Date all documentation and test results.
   2. Attach sketches, photocopies and/or photographs as necessary.
   3. Notes may be recorded on the photographs.
   4. 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 Quality Record Worksheet and 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 Quality Record Worksheet.

   2. The contents must again be verified by a second examiner when it is re-packaged and sealed. The second examiner must again date and initial the appropriate Quality Record Worksheet.

   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. Samples for touch/wearer DNA analysis may also 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).

I. 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.

J. Trace material may be collected from evidence and examined when necessary according to FB SOP-19 (Trace Evidence Collection/Hair-like Fiber Examination).

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 Quality Record Worksheets.

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. Sample selection is conducted considering the substrate and the type/amount of sample present. Sample selection details will be included on the appropriate Quality Record Worksheets. These details will not be included with the results stated in the report.

N. When appropriate, 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).When necessary, indicate the size of the stain or sample collected and forwarded on the appropriate Quality Record Worksheets and/or the sketches, photocopies, or photographs. Stain(s) or sample(s) may be photographed with a ruler to indicate the size collected and forwarded.

O. A sample may be examined macroscopically and/or microscopically to determine if it is tissue-like material. Record the findings on the appropriate Quality Record Worksheet.

P. Designate or sub-item 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.

Q. If biological material is identified (i.e. blood, semen, saliva, urine or fecal material) and/or touch/wearer DNA samples are collected, forward the appropriate samples to the DNA Unit according to FB SOP-03 (Guidelines for Collecting and Forwarding Samples for DNA Analysis).The number of swabs being forwarded for DNA and any swabs remaining should be indicated on the appropriate Quality Record Worksheets and in LIMS.

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

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

T. Once the examination(s) is/are complete, 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.

U. Create the samples collected from the evidence in the LIMS computer system according to GL-4 (LIMS/Justice Trax) using the designated sub-items. For evidence submitted as swabs, include the location that the swabs were collected from, if available.

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. Record transfers to other units/sections on the Request for Examination Sheet (FBQR-10).

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 will be recorded on the Evidence Transfer Sheet (FBQR-11).

Z. A physical match examination may be performed macroscopically and microscopically to determine if two (2) items can be physically fit together, demonstrating that they were once part of the same item according to FB SOP-20 (Physical Match Examination).

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

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. For submissions containing fingernail clippings:
   1. For one (1) submission containing fingernail clippings which will be collected as one (1) sample (i.e. clippings with blood-like stains or clippings with no observable biological material):
      Itemize as #1S1 for a swabbing of the fingernail clippings.
   2. For one (1) submission containing fingernail clippings (i.e. two (2) clippings with blood-like stains, one (1) clipping with tissue-like material and clippings with no observable biological material):
      Samples retained from the clippings are sequentially itemized as #1S1, #1S2, #1S3, etc., for example:
      #1S1 for a swabbing of two (2) clippings with blood-like stains
      #1S2 for a swabbing of one (1) clipping with tissue-like material
      #1S3 for a swabbing of clippings with no observable biological material

D. Any portion of a sample being forwarded for DNA analysis while the remaining portion is being retained in Forensic Biology 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 in Forensic Biology
   2. #1S1* for the portion of a cutting (bloodstain) being forwarded for DNA analysis
      #1S1 for the remaining portion of a cutting (bloodstain) retained in Forensic Biology

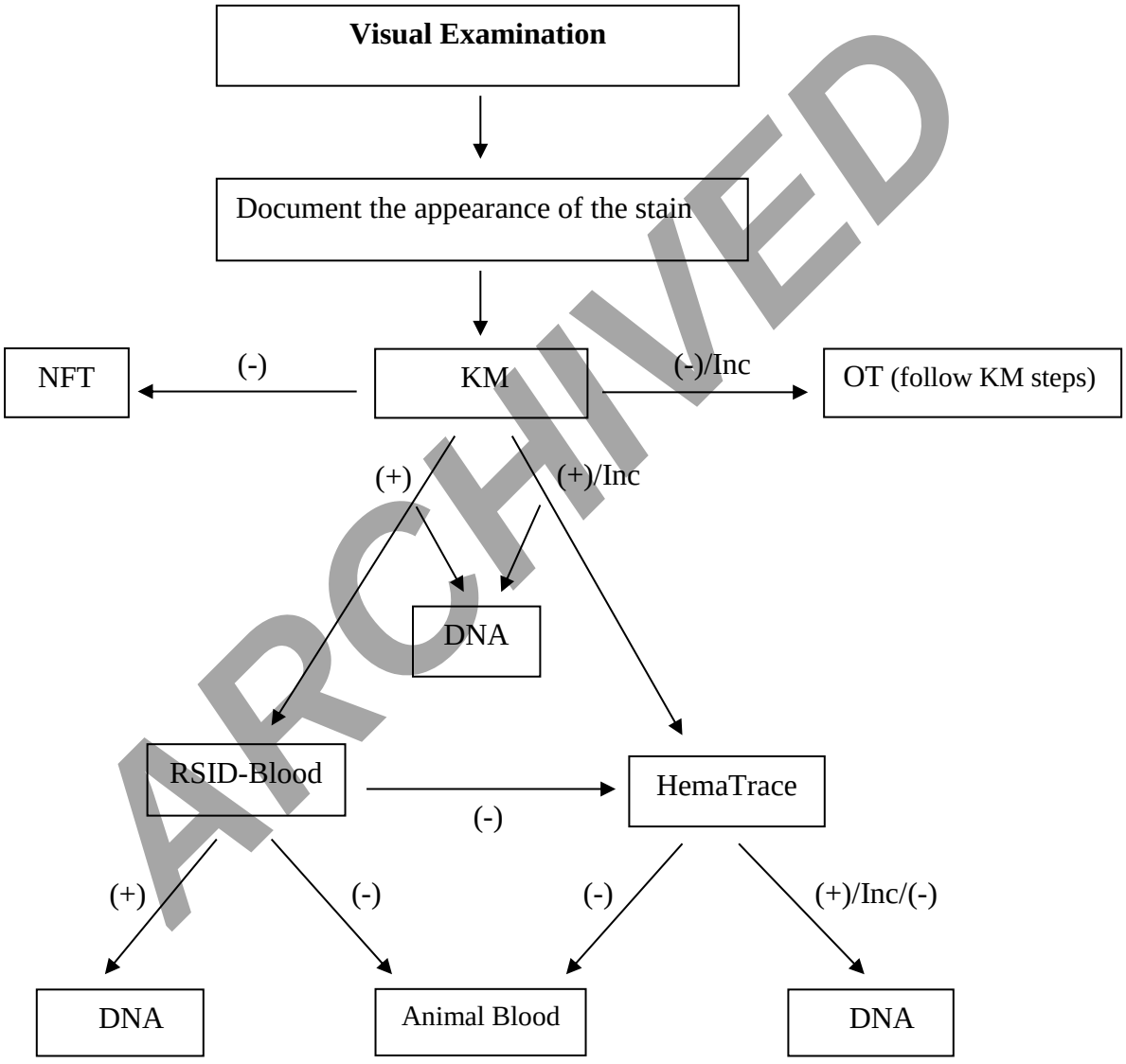
1.6 REFERENCES

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.

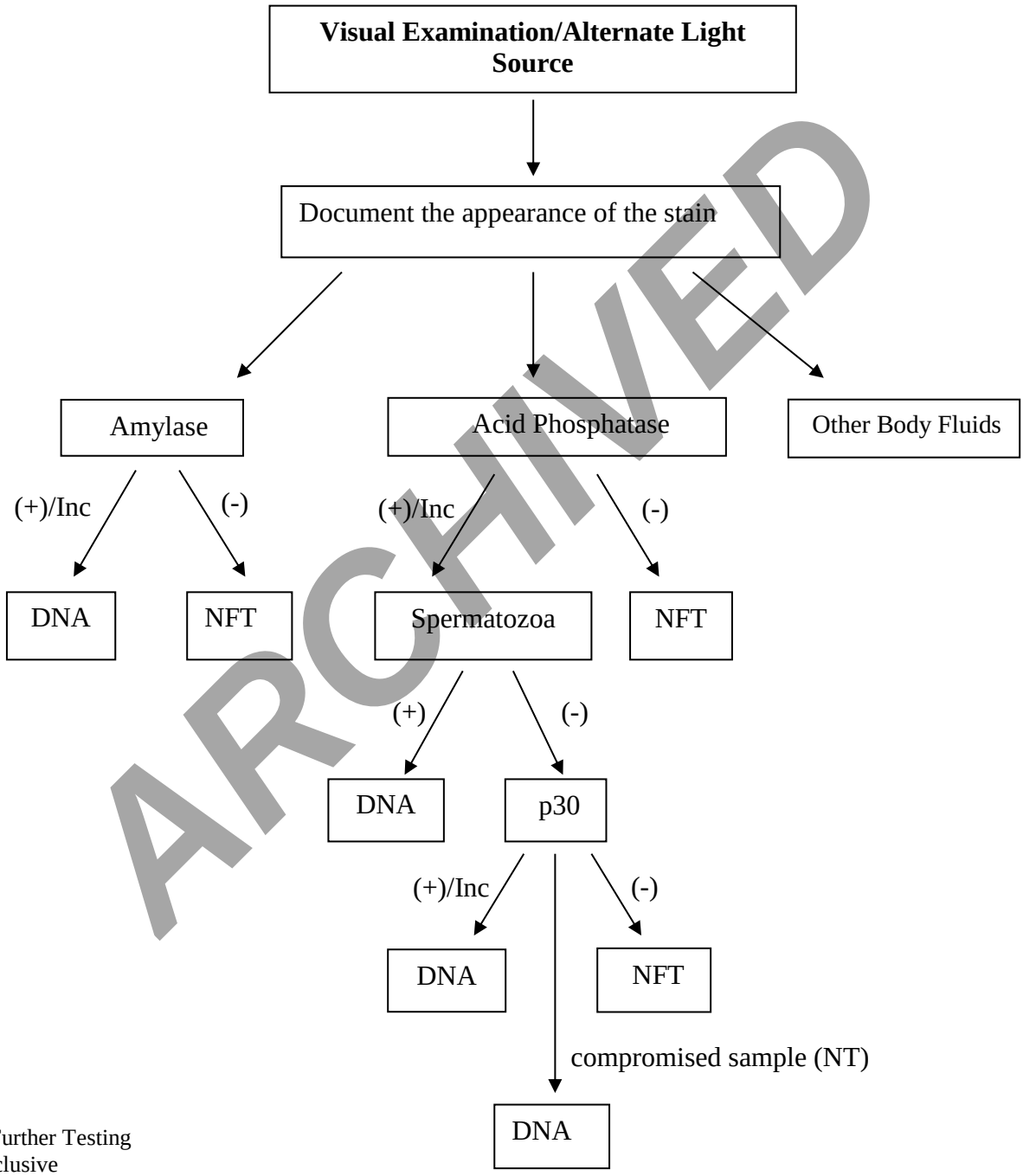
1.7 FLOW CHARTS (General Pathways of Serological Testing)

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