

**Public Works and Government Services Canada**

**Construction Specification for:**

**Gold Room (ID29) Mercury Abatement Program  
Bear Creek Complex, Klondike National Historic Site  
PWGSC Project No.: R.042654.007  
AECOM Project No.: 60276314**

**Revision 2 – November 26, 2012**

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PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
GOLD ROOM (ID29) MERCURY ABATEMENT PROGRAM  
BEAR CREEK COMPLEX, KLONDIKE NATIONAL HISTORIC SITE

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Dated: November 2012

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## PART 1. GENERAL

### 1.1 DESCRIPTION OF WORK

- .1 The Work of the Contract consists of the abatement, encapsulation and off-site disposal of Mercury Contaminated Materials inside the building known as the Gold Room (ID29) (herein referred to as the 'Gold Room'), located at the Bear Creek Complex, Klondike National Historic Site, near Dawson City, Yukon, as well as and all other work detailed in the specification documents and drawings.
- .2 Work is being undertaken in order to retain the historical value of the Gold Room and its artifacts, which will be used as an interpretative display for park visitors.
- .3 The Work of the Contract is for the cleaning of all mercury contaminated materials and surfaces, including but not limited to interior surfaces, artifacts, furniture, pipes, sink traps, floor drain, ductwork, and concrete floor joints and possible encapsulation, removal and off-site disposal of items/materials from the building. The primary abatement activities are focused in the interior spaces of the Gold Room, including the process area, office and vault. The abatement work in the storage shed is primarily associated with mercury material in the sump.
- .4 In order to retain the historical value of the building and its components, encapsulation, removal and off-site disposal of mercury contaminated items/materials will only be considered following consultation with the Owner and Departmental Representative, and only if materials cannot be cleaned to required levels on-site.
- .5 Work shall be considered complete when interior surfaces and air quality Post-Abatement confirmatory sample results meet acceptable concentrations as outlined in Section 02 10 00 – Mercury Abatement.
- .6 At a minimum, the scope of Work shall consist of the following:
  - .1 The Contractor shall provide all labor, materials, supplies and equipment to isolate (barriers and containments – Type 3 operation) all areas and rooms, as necessary;
  - .2 The Contractor shall clean all interior mercury contaminated materials as per this specification;
  - .3 Where the cleaning of mercury contaminated materials is not feasible using conventional cleaning/removal methods, and at the discretion of the Owner and Departmental Representative, the Contractor may encapsulate mercury containing materials;
  - .4 Where identified for removal, consideration, in consultation with the Owner, may be given to enclosing the material to allow for observation but not exposure to potential receptors of concern;

- .5 The Contractor shall remove all mercury contaminated materials that cannot be sufficiently cleaned or encapsulated and dispose off-site at an approved licensed waste disposal facility;
- .6 The Contractor shall document and photograph all materials to be encapsulated or removed prior to initiation and under the guidance of the Owner and Departmental Representative Authorized Personnel; and
- .7 Following final cleaning, encapsulation and/or removal, the Departmental Representative Authorized Personnel shall execute the post-abatement confirmatory sampling program. Once results of confirmatory testing have been reviewed by the Departmental Representative, the Departmental Representative will provide written approval to remove containments and barriers.
- .7 Appendix 'A' of the specifications includes the "*Gold Room Schematics*", which includes view-by-view sketches of items contained in the Gold Room. These sketches provide a general overview of building contents and locations within the Gold Room and have been included for the bidder's information only. PWGSC does not guarantee the accuracy of the information provided in the sketches. The Contractor shall satisfy himself of the full scope of work.
- .8 Appendix 'B' of the specifications includes the "*Gold Room Photographs*" report, which includes select photographs from the interior of the Gold Room. This information has been included for the bidder's information only. PWGSC does not guarantee the accuracy of the information provided in the photographs. The Contractor shall satisfy himself of the full scope of work.
- .9 In Appendix 'C' of the specifications includes the "*Gold Room Process Description*" report, which includes information about the historical use of the building, and speaking notes from a guided tour provided by Parks Canada. This information has been included for the bidder's information only.
- .10 In Appendix 'D' of the specifications includes the "*Gold Room Material Inventory*", which provides a list of all material in the Gold Room, as inventoried by Parks Canada. This information has been included for the bidder's information only.
- .11 Drawings 1, 2, 3, and 4 show the location of the site, site layout, a general building layout of the Gold Room, and details of schematic and sampling locations in the Gold Room. These figures have been included for the bidder's information only.
- .12 Table 1 presents the analytical results of recent mercury dust swab samples collected in the Gold Room. These results have been included for the bidder's information only.
- .13 Table 2 presents the historical analytical results of mercury sampling completed in the Gold Room. These results have been included for the bidder's information only.



## 1.2 DEFINITIONS

- .1 Departmental Representative: Within the context of these specifications, this refers to the person exercising the roles and attributes of Canada under the contract. Public Works and Government Services Canada (PWGSC) will be fulfilling the role of Departmental Representative for this Contract.
- .2 Departmental Representative Authorized Personnel: For the purpose of this contract, , this refers to the company appointed by the Departmental Representative or authorized on-site by the Departmental Representative to oversee implementation of the work and act on behalf of the Owner and Departmental Representative. The Departmental Representative Authorized Personnel provides recommendations and technical guidance to the Departmental Representative, as required, for the enforcement of these specifications.
- .3 Owner: For the purpose of this Contract, the Owner is the Parks Canada Agency, who operates the site.
- .4 Authorities Having Jurisdiction: Regional, Territorial, or Federal governmental agencies empowered by regulations, legislation or guidelines that govern activities conducted under this contract.
- .5 Site Superintendent: The person directly supervising Contractor activities on site and having the authority to make decisions on behalf of the Contractor.
- .6 Work: All activities and undertakings required by the Contractor to complete the requirements of these specifications.

## 1.3 SITE DESCRIPTION

- .1 The Bear Creek Complex is located 10 km east of Dawson City, Yukon and the legal description is Lot 582, Group 1052, in the Yukon Territory, as shown on the plan of record in the Yukon Land Registration District Land Titles Office under number 30863.
- .2 The Bear Creek Complex forms part of the Klondike National Historic Sites (KNHS). The Bear Creek Complex was the Klondike headquarters for corporate mining interests from 1905-1966, during which time it was used as the repair centre for goldfields dredging operations and administration. In 1975, Parks Canada purchased the Bear Creek Complex and used it for archaeological and general works collection under control of KNHS.
- .3 The Bear Creek Complex is currently closed to the public. A single residence is maintained year-round on the site for security purposes. Seasonal on-site maintenance and operations work occurs by Parks Canada staff and others under contract.
- .4 The Site comprises part of the Bear Creek Complex and consists of the Gold Room and immediate surrounding ground. The Gold Room is a single story structure with a concrete floor and is connected to electrical services only. The boundaries of the Site are delineated on the Contract Drawings,
- .5 Under regular operating conditions, the Gold Room is not heated in the winter.

#### 1.4 SEQUENCE OF WORK

- .1 The Contractor shall submit the intended sequence of Work as part of the Abatement Plan, detailed in Section 01 33 00 – Submittal Procedures. The following is a suggested sequence for the work:
  - .1 General Site preparation including, but not limited to:
    - .1 Prepare equipment laydown, staging area and storage areas;
    - .2 Install containments, barriers and enclosures; and
    - .3 Documentation of items to be removed/dismantled.
  - .2 Pre-abatement sampling to confirm baseline conditions (performed by Departmental Representative Authorized Personnel);
  - .3 Vacuum cleaning of all surfaces allowing for mercury encapsulation;
  - .4 Three step wipe down;
  - .5 Encapsulation/sealing of items that cannot be sufficiently cleaned via vacuum;
  - .6 Clean up;
  - .7 Heating of Gold Room building to operating temperatures;
  - .8 Post-Abatement Confirmatory Sampling (performed by Departmental Representative Authorized Personnel); and
  - .9 Final clean up.
  - .10 Abatement Report detailing the work completed, including methodology materials and analytical results.

#### 1.5 EXISTING SERVICES

- .1 Where required to access Mercury Contaminated Materials, carefully remove existing equipment, instrumentation and/or mechanical/electrical components employing experienced tradesmen. All equipment, instrumentation and/or mechanical/electrical components must be restored to original condition as inventoried prior to abatement work following the abatement and/or encapsulation of mercury contaminated materials.
- .2 Be responsible for and enforce fire protection methods, procedures, and adherence to local fire regulations, including requirements of the Occupational Health and Safety Act. The Contractor is responsible for the enforcement of these procedures with his own employees and those of all sub-contractors.
- .3 Ensure the existing fire protection, alarm systems, and fire doors are not obstructed, shut off or made inactive at any time. Do not use any fire hydrant, standpipe or hose system for other than fire fighting or property protection purposes.

1.6 EXISTING ROADS AND PARKING AREAS

- .1 Repair all damage to roads and parking areas impacted or disturbed by or for heavy equipment traffic, cranes, delivery of equipment, or any other means during this Contract to their original condition, or better.

1.7 EXISTING DIMENSIONS AND ELEVATIONS

- .1 Dimensions shown on all Drawings are based on existing information and are approximate.
- .2 It is the express, sole responsibility of the Contractor to verify all field dimensions, elevations, clearances and details before commencing work.
- .3 Report all discrepancies identified during such field verification efforts directly to the Departmental Representative without delay.

1.8 PROJECT COORDINATION, SCHEDULING AND CONSTRAINTS

- .1 Contractor staff access is limited to the Site and Bear Creek Complex vehicle parking areas and required laydown or utility access areas. Contractor staff are not permitted to enter any other Bear Creek Complex areas without specific approval of the Owner or Departmental Representative.
- .2 Contractor staff are not permitted to operate or modify in any way any process equipment or systems except as identified on the Drawings or required to do the Work. Where any existing system impacts the Contractors ability to perform work, the Contractor is to advise the Owner or Departmental Representative of the conflict so that the Owner may take appropriate steps to mitigate the impact. A minimum of 24 hours notice will be required.
- .3 Contractor is responsible to take all reasonable measures to mitigate any outdoors noise and minimize such noise between the hours of 8 pm and 7 am.
- .4 Contractor is responsible for transporting any items removed in order to complete the work, to a storage location to be determined by the Owner.

1.9 DISPOSAL

- .1 Contractor is responsible for off-site disposal of Mercury Waste at a licensed mercury disposal facility approved by the Owner and Departmental Representative.
- .2 Non-hazardous waste and debris may be disposed of at the Quigley Landfill, the City of Dawson waste management facility located approximately 10 km away from the City on the Klondike Highway.
- .3 The Quigley landfill operator reserves the right to refuse acceptance of any waste shipment if proper notice and/ or documentation has not been provided.
- .4 The Quigley landfill normal hours of operation 12 pm to 7pm Tuesday to Saturday.

1.10 MEASUREMENT AND PAYMENT

.1 Work under this contract will be paid as follows:

- .1 Lump sum payment items will be paid at the lump sum price tendered for each lump sum item listed in Basis of Pricing Schedule.
- .2 All other items, whether specifically defined in the specific sections of the Specifications or not, will be paid at the lump sum price tendered for "Balance of Project Costs" (BOPC) on Basis of Pricing Schedule.

.2 Direct costs include all costs directly attributable to a particular pay item including equipment, operators, materials, equipment maintenance and depreciation, etc. All direct costs for lump sum price are to be included in the appropriate price item in the Basis of Pricing Schedule.

.3 Indirect costs include all costs not directly attributable to the pay items including profit, supervision, overhead, administration, CGL Insurance, Worker's Safety Compensation Commission WSCC, Contractor's allowance for equipment repairs and depreciation, and any other relevant costs. All indirect costs associated with specific lump sum items will be included in Item BOPC-1, Balance of Project Costs, in the Basis of Pricing Schedule.

.4 Include costs for work, goods or services required in this specification that are not covered by appropriate payment clauses in other sections in Item BOPC-1, Balance of Project Costs, in the Basis of Pricing Schedule.

PART 2. PRODUCTS

2.1 NOT USED

PART 3. EXECUTION

3.1 NOT USED

**END OF SECTION**

## PART 1. GENERAL

### 1.1 SCHEDULE

- .1 Within 10 working days of the written notification of bid acceptance, submit for the Departmental Representative's review, a construction schedule.
- .2 Prepare the schedule in the form of a horizontal bar (GANTT) chart, with a separate bar for each activity, and a time scale identifying the first work day of each week.
- .3 Consult with the Departmental Representative during preparation of the schedule; make any corrections agreed to during the review period, and issue final copies to the Departmental Representative.
- .4 Provide an up to date schedule for review at each bi-weekly meeting during the course of construction and issue a revised schedule following each bi-weekly meeting.
- .5 If the progress of any part of the Work falls behind schedule, immediately notify the Departmental Representative in writing giving the reason for the delay and the action to be taken to regain the construction schedule to complete the Work within the specified Contract Timeframe.
- .6 If the progress of any part of the Work falls behind schedule, the Departmental Representative reserves the right to reduce the scope of Work in order to satisfy the specified completion date.
- .7 The completion date for all Work is June 28, 2013.
- .8 Make allowance for a Pre-Construction Kick-off Meeting with various stake holders prior to onsite mobilization of the Contractor's forces to explain the Work.
- .9 Make allowances for periodic inspections of the work area by the Owner, Departmental Representative or their Authorized Personnel. Ambient air monitoring may also be conducted at various locations inside or outside the work area by the Departmental Representative.
- .10 Make allowances for the Departmental Representative Authorized Personnel to conduct Pre-Abatement sampling prior to initiation of the abatement Work.
- .11 Make allowances for the Departmental Representative Authorized Personnel to visually inspect the work zone post-abatement and to conduct Post-Abatement Confirmatory Sampling prior to demobilization.
- .12 Make allowance for the provision of daily, weekly and final (post-abatement) reporting.

1.2 PERMITS

- .1 Obtain all permits required by federal, territorial, municipal and regional laws.
- .2 Notify all Authorities Having Jurisdiction (AHJ) for inspections as required by federal, territorial, municipal and regional laws.

1.3 SITE SECURITY

- .1 The Contractor shall be responsible for the security of the Site during encapsulation and abatement operations in order to protect work efforts and equipment and the public.
- .2 The Contractor shall immediately decontaminate (if required) and evict any unauthorized individual entering the Site and notify the Departmental Representative of action taken and identity of the unauthorized individual.
- .3 Contractor is to close and lock Klondike National Historic Site access gates each time they are opened to allow ingress or egress of Contractors Equipment or personnel.
- .4 Limit Site access only to persons employed on the Project. Unauthorized persons will be permitted on Site only with the approval of the Departmental Representative or Owner.

1.4 SITE STORAGE SPACE

- .1 Coordinate and consult with Owner to develop an approved plan for the storage of supplies, materials and/or equipment on Site. Storage areas can be made available on Site by the Departmental Representative Authorized Personnel.
- .2 Do not schedule delivery of Products that require protective storage on the Site until suitable enclosed storage space is available.
- .3 Remove from the Site any Products that have been damaged by reason of improper storage or otherwise and replace with new Products.
- .4 Store Products on-site in accordance with manufacturer instructions and any regulatory requirements.

1.5 PARKING ON SITE

- .1 Parking within the Bear Creek Complex will be made available to the Contractor. Keep the surface of the area in proper repair for use, clean and free of litter and remove snow as required. Park Contractors' motor vehicles in excess of Bear Creek Complex capacity, off of the Bear Creek Complex.

1.6 MOBILIZATION/DEMOBILIZATION

- .1 Provide the most cost effective transportation means possible to mobilize personal, material and equipment to and from the Site.

1.7 MEALS AND ACCOMODATIONS

- .1 Source and provide accommodations and meals for Contractor employees for the duration of the Contract.

1.8 SANITATION FACILITIES

- .1 Existing sanitation facilities within the Bear Creek Complex will be made available to the Contractor.
- .2 If required, provide temporary sanitary facilities in enclosed areas of contamination in accordance with the Occupational Health and Safety Act.

1.9 WATER SUPPLY

- .1 Limited amounts of potable water are available on Site; however, use shall be at the discretion of the Owner.
- .2 If large amounts of water are required, Contractor to arrange their own supply, storage, and any provisions to maintain temperature.

1.10 ELECTRICAL SUPPLY

- .1 The Owner will make available a 120V, 15 Amp service. The Contractor is to provide and install all additional electrical required to execute the Work.
- .2 No modifications to the electrical system will be made without prior approval of the Departmental Representative.
- .3 Any specialized electrical installations shall be performed in accordance with the requirements with the latest version of the Yukon Electrical Protection Act and Regulations in particular the requirements for temporary wiring. The Contractor shall provide details of their proposed temporary supplies or installations for approval by the Departmental Representative prior to installation.

1.11 CONFINED SPACE ENTRY

- .1 Contractor agrees that any additional safety related costs associated with confined space entry have been included in the Total Contract Price for which no additional compensation is allowed/ permitted.

#### 1.12 HOT WORK PROCEDURES

- .1 If the Project requires cutting, burning or melting tools (Hot Work), as part of this project, the Contractor shall submit its company policies and procedures for Hot Work as part of the Site Specific Health and Safety Plan.
- .2 Departmental Representative Authorized Personnel is to be advised, and a "Hot Work" permit issued by Contractor's designated representative in all cases involving welding, burning or the use of blow torches and salamanders, in buildings or facilities. Special precautions are necessary to safeguard life and property from damage by fire.

#### 1.13 PROCEDURES FOR WORKING ON ENERGIZED ELECTRICAL SYSTEMS

- .1 If components of this Project require Work on energized electrical systems, the Contractor shall submit its company policies and procedures as part of the Site Specific Health and Safety Plan.

#### 1.14 SITE COMMUNICATIONS

- .1 The proposed or alternate Site Superintendents must be available to respond to the project within one (1) hour of a request made by the Owner or Departmental Representative.

#### 1.15 TESTING AND QUALITY CONTROL

- .1 Unless otherwise noted, select and pay for the services of a testing agency and laboratory for tests required by by-laws, statutes and regulations applicable to the Work, including those that are required but not specified.
- .2 Furnish to the Departmental Representative, when requested and consistent with progress of the Work, test results and designs specified or required by laws, statutes and regulations relating to the Work and the preservation of public health, including inspection and testing performed exclusively for the Contractor's convenience;
- .3 Abate, clean, or remove materials indicated in inspection and test reports as failing to comply with the specification.
- .4 Pay the costs for re-inspection and testing of re-work.
- .5 It is not the responsibility of the Departmental Representative Authorized Personnel to supervise, instruct in current methods or accept or reject a part of the Work, but only to inspect, test and to report conditions to the Departmental Representative.
- .6 Ensure that the Departmental Representative is notified forthwith if the report indicates deficient conditions or procedures.



1.16 CONFIRMATORY SAMPLING

- .1 The Departmental Representative Authorized Personnel shall be responsible for executing a Pre-Abatement and Post-Abatement Confirmatory Sampling program.
- .2 Co-operate with Departmental Representative Authorized Personnel conducting sampling program.

1.17 SETTING OUT OF THE WORK

- .1 Contractor is responsible for the correctness of the position, levels, dimensions and alignment of the Work, and for the provision of necessary instruments and labour in connection therewith.
- .2 Wherever necessary, suspend the Work temporarily to permit the Departmental Representative to inspect and check any portion of the Work.

1.18 LAYOUT OF THE WORK

- .1 Notify the Departmental Representative and request clarification if locations of fixtures, fittings, equipment and services to these items interfere with the Work.

1.19 CODES AND STANDARDS

- .1 In the case of a conflict or discrepancy between the specification and the governing codes and standards, the more stringent requirements apply. The Contractor shall maintain a copy of the complete set of Contract Documents at the site for the duration of the contract. The Contract Documents shall be made available to all sub-contractors. The Contractor shall be responsible for ensuring that all sub-contractors and sub-trades are aware of, and familiar with the requirements of the Contract Documents.
- .2 Unless the edition number and date are specified, the reference to the manufacturer's and published codes, standards, and specifications are to the latest edition published by the issuing authority, current at the date of tender closing.
- .3 Reference standards and specifications are quoted in Contract Documents to establish minimum standards. Conduct Work with quality exceeding these minimum standards in conformance with the Contract.
- .4 Where reference is made to a manufacturer's direction, instruction, or specification it is deemed to include full information on storing, handling, preparing, mixing, installing, erecting, applying, or other matters concerning the Products pertinent to their use and their relationship to Products with which they are incorporated.
- .5 Where reference is made to regulatory authorities, it includes all authorities who have, within their constituted powers, the right to enforce the laws of the place of work.

1.20 COORDINATION AND SEQUENCING OF CONSTRUCTION WITH EXISTING OPERATIONS/UTILITIES/FACILITIES

- .1 Upon award of the Contract, submit to the Departmental Representative a list of services requiring shut-down, proposed shut-down times of existing utilities, roadways and services and their maximum duration.
- .2 Co-ordinate all shut-downs and interruptions to existing utilities, roadways and services with the Owner and the Departmental Representative, and perform shut-down work only at times acceptable to the Owner.
- .3 Seventy-two hours prior to each shut-down or interruption, give written notice to the Owner and the Departmental Representative and obtain written consent to proceed. Do not shut-down or interrupt any system or service without such written consent.
- .4 Perform the work associated with any shut-downs and interruptions as continuous operations to minimize the shut-down period and to reinstate the systems as soon as possible. All Products and labour required to perform the Work for which the shut-down is required must be available at the site before consent is given by the Owner.
- .5 The Contractor must submit to the Departmental Representative in writing the proposed method, indicating in detail, the procedures proposed to accomplish each portion of the work that requires an interruption or possible disruption to existing utilities and services. The proposed method of construction must be forwarded to the Departmental Representative with at least ten working days advanced notice before commencing the work. The Contractor shall not begin any such work until he has received written acceptance of the methodology and approach from the Departmental Representative. The Contractor shall include in his plan the specific number of work hours required to complete each facility interruption.
- .6 All required tools, materials, labour, and miscellaneous equipment must be scheduled and available at the worksite in advance of any shutdowns.
- .7 All installations, alterations, and/or removal procedures must include a well-planned abort procedure in the event that working time exceeds what was expected or in the event anticipated operating conditions are changed.
- .8 Remove and dispose off site any Products not designated for reuse or delivery to the Owner.
- .9 Deliver to the Owner at a designated site location those existing Products named to be kept by the Owner.
- .10 Act as a Fire Warden for the duration of the Contract.
- .11 Be responsible for and enforce fire protection methods and procedures and adherence to local fire regulations, including requirements of the Occupational Health and Safety Act.

- .12 Whenever soldering, welding or any open-flame work is performed, ensure the area is suitable for such work, ensure the proper incombustible shields are provided to protect combustible Products and materials and have an observer present at all times to ensure adjacent Products and materials are not ignited and welding, soldering or open-flame work do not produce a hazardous condition.
- .13 Ensure the existing fire protection and alarm systems are not obstructed, shut-off or made inactive at any time. Do not use any fire hydrant, standpipe or hose system for other than fire protection purposes.

1.21 HOUSEKEEPING

- .1 Maintain the Site in tidy condition, free from accumulation of waste products and debris, other than that caused by the Owner or other Contractors.
- .2 Make arrangements with and obtain permits from Authorities Having Jurisdiction for disposal of waste and debris.

PART 2. PRODUCTS

2.1 NOT USED

PART 3. EXECUTION

3.1 NOT USED

**END OF SECTION**

## PART 1. GENERAL

### 1.1 DEFINITIONS

- .1 Pre-Construction Kickoff Meeting: teleconference meeting to be held prior to Contractor Mobilization and to include the Contractor, Owner, Departmental Representative and Departmental Representative Authorized Personnel.
- .2 Daily Meeting: meeting to be held on-site daily during the abatement Work and to include all Contractor and Sub-Contractor staff, Owner and Departmental Representative Authorized Personnel.
- .3 Progress Meetings: teleconference meeting to be held at bi-weekly intervals during the course of the Work and to include the Contractor, Owner, Departmental Representative and Departmental Representative Authorized Personnel.

### 1.2 PRE-CONSTRUCTION KICKOFF MEETING

- .1 Within ten (10) days after award of Contract, attend a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities. The meeting will be a teleconference between all parties in attendance.
- .2 Departmental Representative, Departmental Representative Authorized Personnel, Owner, Contractor, and major Sub-Contractors will be in attendance.
- .3 Departmental Representative will establish time for the meeting and notify parties concerned minimum five (5) days before meeting.
- .4 The meeting agenda will include:
  - .1 The appointment and notification of official representatives of participants in the Work;
  - .2 Requirements for temporary facilities, storage, utilities, site access and use;
  - .3 Site security;
  - .4 Abatement Plan;
  - .5 Work schedule;
  - .6 A schedule for submissions of shop drawings, reports, cost breakdown and other documents;
  - .7 Schedule for site meetings;
  - .8 A review of administrative procedures, including change notices, change orders, site instructions, record drawings, progress claims;

- .9 Other items that arise at the meeting;
  - .10 Regulatory Issues; and
  - .11 Project Photograph requirements.
- .5 The Departmental Representative will document the responsibilities and necessary activities of the participants during construction as discussed, and prepare and distribute minutes of the meeting to each attendee within three (3) business days of the meeting.

### 1.3 DAILY MEETINGS

- .1 The Owner shall provide suitable accommodation in which to hold site meetings.
- .2 Site meetings will be held on a daily basis at a time agreed to at the preconstruction kickoff meeting. The Departmental Representative Authorized Personnel, Contractor and subcontractors will be in attendance. The Owner may attend at their discretion.
- .3 The purpose of these meetings is to discuss the progress of the Work and related matters including:
  - .1 Review and acceptance of previous meeting minutes;
  - .2 Daily Work tasks to be completed;
  - .3 Provision to Owner of details of any equipment or items that need to be removed, moved or modified to allow progress of the Work,
  - .4 Field observations and any problems or conflicts;
  - .5 Any challenges that may impede Work progress and the construction schedule and corrective measures to be implemented;
  - .6 Review of submittals/testing results; and
  - .7 Safety considerations.
- .4 Departmental Representative Authorized Personnel shall record the meeting minutes from daily meeting. Include significant proceedings and decisions.
- .5 The Departmental Representative Authorized Personnel will only be available for site meetings on Monday to Friday, from 9am to 5pm PST. The Owner will only be available for site meetings on Monday to Friday, from 8 am to 4 pm PST.

### 1.4 PROGRESS MEETINGS

- .1 Progress meetings will be held every two weeks at a time agreed to at the preconstruction kick off meeting. The purpose of these meetings is to discuss the progress of the Work and project management matters.

- .2 Departmental Representative, Departmental Representative Authorized Personnel, Owner, Contractor, and major Sub-Contractors will be in attendance.
- .3 Departmental Representative will notify parties five (5) days prior to meetings.
- .4 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance within three (3) business days of the meeting.
- .5 Agenda may include:
  - .1 Summary of the previous week's site activities;
  - .2 Health, safety and security issues;
  - .3 Summary of interactions with AHJ;
  - .4 Any challenges that may impede Work progress;
  - .5 Comparison of progress achieved with the project schedule;
  - .6 Schedules and actions Contractor plans to take to get back on schedule, if required;
  - .7 Work plan for the following weeks;
  - .8 Requests for Information and Change Orders;
  - .9 Progress Payments; and
  - .10 Other business.
- .6 The Departmental Representative may schedule additional site meetings as deemed necessary.
- .7 The Departmental Representative Authorized Personnel will only be available for site meetings on Monday to Friday, from 9am to 5pm PST. The Owner and Departmental Representative will only be available for site meetings on Monday to Friday, from 8 am to 4 pm PST.

#### 1.5 MEASUREMENT AND PAYMENT

- .1 All direct costs for the Pre-construction Kickoff Meeting are to be included in the lump sum price for Item 01 31 19-1 (Pre-construction Kickoff Meeting), as indicated in Basis of Pricing Schedule.
- .2 All direct costs for the Project Meetings are to be included in the lump sum price for Item 01 31 19-2 (Project Meetings), as indicated in Basis of Pricing Schedule. Project meetings are to include progress and daily meetings, and other meetings associated with the requirements in this specification to complete the Work.
- .3 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Pricing Schedule.

PART 2. PRODUCTS

2.1 NOT USED

PART 3. EXECUTION

3.1 NOT USED

**END OF SECTION**

## PART 1 GENERAL

### 1.1 DEFINITIONS

- .1 Shop Drawings: drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Reports: Abatement Plan, health and safety plans, contingency and emergency response plan, daily reports, weekly reports, abatement report, and other written reporting requirements as outlined in this specification.

### 1.2 ADMINISTRATIVE

- .1 Submit to Departmental Representative Authorized Personnel submittals listed for review. Submittal list is bound into specification section and is for information only.
- .2 Departmental Representative Authorized Personnel will review submissions prior to submission to the Departmental Representative.
- .3 Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.
- .4 Work affected by submittal is not to proceed until review is complete.
- .5 Present Shop Drawings and Product data in SI Metric units.
- .6 Where items or information is not produced in SI Metric units, converted values are acceptable.
- .7 Review submittals prior to submission to Departmental Representative Authorized Personnel. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and specifications. Submittals not stamped, signed, dated and identified as to a specific Project will be returned without being examined and will be considered rejected.
- .8 Notify Departmental Representative Authorized Personnel, in writing at time of submission, identifying deviations from requirements of specification and stating reasons for deviations.
- .9 Keep one reviewed copy of each submission on site.
- .10 A copy of the Contractor's policy and procedure for work on energized systems must be submitted a minimum of 15 working days prior to any work on energized systems.
- .11 The Contractor's responsibility for errors and omissions, for providing the specified Products and for the completion of the Work in accordance with the specifications is not relieved or diminished in any way by the Departmental Representative Authorized Personnel's review of submittals.



### 1.3 PLANS, SHOP DRAWINGS AND PRODUCT DATA

- .1 When work begins at the site, obtain from the Departmental Representative Authorized Personnel full size CAD versions of the Contract Drawings.
- .2 Record all changes in the Work caused by site conditions, or originated by the Departmental Representative Authorized Personnel, the Contractor, or a Subcontractor and by addenda, supplemental drawings, site instructions, supplementary instructions, change orders, correspondence, and directions of regulatory authorities. Do not use these drawings for daily working purposes and make the set available for periodic inspection by the Departmental Representative Authorized Personnel.
- .3 Product data sheets are defined as manufacturer's catalogue sheets, brochures, literature, technical data, performance charts and diagrams and similar data used to illustrate quality, characteristics, capacity and performance of the specified, manufactured Products. Where product data sheets are used, the submittal must clearly identify which product and options are to be supplied.
- .4 Submit the plans, Shop Drawings and Product data sheets as specified in sections of the Specification. All submissions must indicate Specification section, Drawing and/or equipment tag reference.
- .5 Show on the Shop Drawings the Products, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for proper performance of the Work. Where Products attach or connect to other Products, indicate that such items have been co-ordinated, regardless of the Specification section under which the various products have been specified. Identify by cross-references to design Drawings and Specifications.
- .6 The Contractor shall submit plans, Shop Drawings and Product data in electronic format through e-mail or submission of CDs or DVDs. E-mail addresses for appropriate recipients to be provided at Pre-Construction Kickoff Meeting.
  - .1 Should the electronic shop drawing exceed the e-mail size limit (10MB), provide a CD or DVD with the applicable plan, report or shop drawing. Submission of multiple electronic shop drawings is acceptable.
  - .2 All electronic submittals must be submitted in ".pdf" format; suitable for viewing in Adobe Acrobat Reader.
  - .3 Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section.
  - .4 File name shall reference the submittal date and a unique submittal identifier, including revision number as applicable.
  - .5 Transmittal Form: The first page of each electronic submittal should be a transmittal form. The transmittal form shall include the following information:
    - .1 Project name.
    - .2 Date.
    - .3 Name and address of Departmental Representative.
    - .4 Name and address of Contractor.
    - .5 Name of firm or entity that prepared submittal.

- .6 Names of subcontractor, manufacturer, and supplier.
  - .7 Submittal purpose and description.
  - .8 Specification section number and title.
  - .9 Drawing number and detail references, as appropriate.
  - .10 Location(s) where product is to be installed, as appropriate.
  - .11 Other necessary identification.
  - .12 Remarks.
- .7 Submit Shop Drawings bearing stamp and signature of qualified Professional Engineer registered or licensed in Yukon Territory, Canada.
- .8 The Departmental Representative Authorized Personnel and Departmental Representative will review the submittals within 7 business days, and will indicate the review status by providing written comments on reports and plans, or by marking shop drawing and Product data sheets, as follows:
- .1 "Reviewed" or "Reviewed as Noted" - If the Departmental Representative Authorized Personnel's review of a shop drawing or Product data sheet is final, the Departmental Representative Authorized Personnel will mark the shop drawing or Product data sheet "Reviewed" or "Reviewed as Noted" (appropriately marked). The electronic copy will be sent back to the Contractor via e-mail or on a CD or DVD.
  - .2 "Revise and Resubmit" - If the Departmental Representative Authorized Personnel's review of a shop drawing or Product data sheet is not final, the Departmental Representative Authorized Personnel will mark the shop drawing or Product data sheet "Revise and Resubmit", mark the submission with his comments, keep one copy for his records, and return the remaining prints to the Contractor. Revise the shop drawing or Product data sheet in accordance with the Departmental Representative Authorized Personnel's notations and resubmit.
- .9 Make changes in Shop Drawings as Departmental Representative Authorized Personnel may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative Authorized Personnel in writing of any revisions other than those requested.
- .10 Adjustments made on Shop Drawings by Departmental Representative or Departmental Representative Authorized Personnel are not intended to change Contract Price or time. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work. Changes involving cost or time are authorized only by a signed Change Order.
- .11 It is understood that the following is to be read in conjunction with the wording on the Departmental Representative Authorized Personnel's shop drawing review markings applied to each and every data sheet or drawing submitted:

"This review by the Departmental Representative Authorized Personnel is for the sole purpose of ascertaining general conformance with the Contract design concept. This review does not mean that the Departmental Representative Authorized Personnel approves the detail design inherent in the shop drawings, responsibility for which remains with the Contractor, and such review does not relieve the Contractor of the responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the specifications. Be responsible for confirming and correlating dimensions at the Place of the Work, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of the work of all subtrades."

#### 1.4 REPORTS

- .1 Accompany Report submissions with transmittal letter, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each report.
  - .5 Other pertinent data.
- .2 All hard copy submittals must be bound and double sided, minimum 10 point font size.
- .3 All electronic submittals must be submitted in ".pdf" format; suitable for viewing in Adobe Acrobat Reader.
- .4 Final reports should also include all result tables in their native format (Excel or Word) as part of the electronic submission.
- .5 Should the electronic report document exceed the e-mail size limit (10MB), provide a CD or DVD with the applicable report. Submission of multiple reports is acceptable.
- .6 Assemble complete electronic submittal package into a single indexed file.
- .7 File name shall reference the submittal date and a unique submittal identifier, including revision number as applicable.

#### 1.5 PHOTOGRAPHS

- .1 Digital photographs to have a minimum of 2,592 x 1,944 pixel (5 Megapixel) resolution.
- .2 Colour copies of digital photographs to be provided for progress reports (daily and weekly reports) and Abatement Report in "Joint Photographic Experts Group" (.jpg) format.
- .3 All photographs to be submitted on a CD in an organized manner with the Abatement Report. Provide one copy of each photograph for each hardcopy report.
- .4 Identification: photographs should be identified with a name and description of the feature when used in the Abatement Report. Photographs not used for the Abatement Report should be organized to facilitate identification.
- .5 Quantity: Provide sufficient number of photographs to adequately describe the Work activities

carried out during the reporting period.

- .6 Provide "Before" and "After" photos of pre- and post-abatement Work and ensure they are correctly referenced in the Abatement Report.

#### 1.6 ABATEMENT PLAN

- .1 Provide the Departmental Representative with an Abatement Plan document that details how abatement and/or encapsulation of Mercury Contaminated Materials in the Gold Room, and associated activities will proceed. This Abatement Plan is to describe how the Contractor will complete the required works called for under this contract, while maintaining all of the required controls such that the Contractors' workers, the Owner's personnel, the Departmental Representative, the public and the environment are not exposed to uncontrolled release of mercury particulates or vapours, during the cleaning, encapsulation and removal of Mercury Contaminated Materials, and the disposal of the resulting Mercury Waste materials and debris.
- .2 Abatement Plan to be submitted as part of Contractor's bid.
- .3 The Departmental Representative reserves the right to refuse acceptance of the Contractors Abatement Plan or request modifications if it is judged to not meet the minimum requirements and intent as summarized in this Section.
- .4 Work activities will not begin at the Site until the Abatement Plan has been accepted in writing by the Departmental Representative.
- .5 Once accepted by the Departmental Representative, the Abatement Plan will govern the cleaning, encapsulation, removal and disposal activities associated with Mercury Contaminated Materials in the Gold Room, however the Departmental Representative reserves the right to request changes to the Abatement Plan during the course of those activities.
- .6 The Contractor shall consider the following items as minimum requirements to address in the Abatement Plan:
  - .1 Identify what utilities will be required to be provided by the Departmental Representative.
  - .2 Describe what caution, emergency response, and general construction PPE signs will be posted and where.
  - .3 Describe the specific procedures that will be followed during the mercury abatement and encapsulation work. List individual tasks/steps in sequence and note testing requirements as appropriate.
  - .4 Identify disposal sites for all Mercury Waste materials and any non-hazardous debris expected during the course of the project.
  - .5 Describe how all Mercury Waste materials and non-hazardous debris will be transported offsite to the disposal and/or recycling site.
  - .6 Describe how and when equipment, material and work force will be brought onsite.
  - .7 Describe how support and decontamination areas will be set up and in what configuration, provide site plans.
  - .8 Describe what site works will be necessary to set project support and decontamination areas in place.
  - .9 Propose areas where equipment, materials and waste materials will be staged.

- .10 Propose where cars and vehicles will be parked when on Site.
- .11 Describe how the Contractor will restore the Site to the requirements of this contract and the satisfaction of the Departmental Representative and Owner.
- .12 Describe how the various elements of the Abatement Plan will be summarized and reported to the Departmental Representative Authorized Personnel on a daily/weekly basis.
- .13 Identify who will be responsible for reporting.
- .14 Include a schedule of all work activities broken down by task for the duration of the Contract, including meetings and reporting.
- .15 Describe hours of operation.
- .16 Identify all permits and approvals required to compete this work.
- .17 Provide an organization chart and contact information for key staff.
- .18 Identify means of communication at the site.
- .19 Describe how waste materials and debris will be handled and processed.
- .20 Describe how the waste material and debris will be packaged for offsite transportation and disposal.
- .21 Describe where the waste material and debris will be disposed.

#### 1.7 SITE SPECIFIC HEALTH AND SAFETY PLAN

- .1 Submit a Site Specific Health and Safety Plan as per Section 01 35 29.15.

#### 1.8 CONTINGENCY AND EMERGENCY RESPONSE PLAN

- .1 Submit a Contingency and Emergency Response Plan as per Section 01 35 29.15.

#### 1.9 SITE REPORTS

- .1 Maintain at the site a permanent daily written record of progress of the Work at the site.
- .2 Submit a daily report by noon the following business day. Report shall be submitted to Departmental Representative via email. Report shall contain the following information:
  - .1 Weather conditions with maximum and minimum temperatures;
  - .2 Time on-site and off-site;
  - .3 Names and classifications of the Contractor's and the Subcontractor's tradesmen working at the site and the list of construction machinery and equipment and the number of hours each is operated;
  - .4 Visitors to the site, including the Departmental Representative Authorized Personnel, regulatory authorities, testing companies, subcontractors and suppliers;
  - .5 Work completed;

- .6 Issues/Concerns noted;
  - .7 Contractor's testing results; and
  - .8 Site Photographs.
- .3 Submit a weekly report by noon the following Monday for the previous work week (Monday to Sunday). Report shall be submitted to Departmental Representative via email. Weekly report shall include the following information:
- .1 Summary of work activities completed;
  - .2 Summary of testing results;
  - .3 Schedule update;
  - .4 Requested and approved changes to the Work;
  - .5 Issues/concerns; and
  - .6 Other items of note.

#### 1.10 ABATEMENT REPORT

- .1 Is to be submitted once the Work has been completed to the satisfaction of the Departmental Representative. The Abatement Report is to include, at minimum, the following:
- .1 Details of the type of mercury abatement and encapsulation work completed, including the regulatory standards or guidelines that the work methods were designed to meet and were conducted under.
  - .2 Details of the surfaces, areas and equipment on which abatement or encapsulation work was completed.
  - .3 Details of analytical results or monitoring data collected and analyzed by the Contractor during work Activities.
  - .4 Disposal acceptance receipts/ letters from disposal locations/ facilities for all Mercury Waste.
  - .5 Photos illustrating work activities.
  - .6 Completed incident/ spill form, if required.
  - .7 Record drawings.
- .2 Submit one (1) electronic copy of draft Abatement Report to Departmental Representative. Submit three (3) hard copies and one (1) electronic copy of final Abatement Report to Departmental Representative.
- .1 Provide draft Abatement Report to the Departmental Representative a maximum of fifteen (15) business days following completion of the Work.
  - .2 Owner, Departmental Representative and Departmental Representative Authorized Personnel will review draft Abatement Report within ten (10) business days.
  - .3 Once comments are received on the draft Abatement Report, revise and resubmit as Final Report within ten (10) business days.

1.11 PROGRESS PAYMENTS, CHANGE ORDERS AND REQUESTS FOR INFORMATION

- .1 Submit requests for payment for review and for transmittal to Departmental Representative.
- .2 Submit requests for interpretation of Contract Documents and obtain instructions through the Departmental Representative.
- .3 Submit and process substitutions through Departmental Representative.
- .4 Submit and process task authorizations and change orders through Departmental Representative.

1.12 MEASUREMENT AND PAYMENT

- .1 All costs for the preparation and completion of the Abatement Report, are to be included in the lump sum price paid for under Item 01 33 00-1, as indicated in Basis of Pricing Schedule.
- .2 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Pricing Schedule.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1. NOT USED

**END OF SECTION**

**Table 01 33 00 - Contractor Submittal Schedule Summary**

Specification Section	Description	Due Date
01 11 01	Project Schedule	Within 10 working days of the written notification of bid acceptance
01 11 01	List of Services Requiring Shut Down and Methods	If required, upon award of Contract
01 33 00	Plans, Shop Drawings and Product Data	as required by this specification, prior to commencement of Work
01 33 00	Abatement Plan	Submitted at the time of Tender closing
01 33 00	Daily Report	Due noon the following business day following the reporting date
01 33 00	Weekly Report	Due noon the following Monday
01 33 00	DRAFT Abatement Report	Maximum of 15 working days following completion of the Work
01 33 00	FINAL Abatement Report	10 working days following receipt of Owner and Departmental Representative comments on the Draft Abatement Report
01 35 29.15	Site Specific Health and Safety Plan	Within 5 working days following award of contract
01 35 29.15	Contingency and Emergency Response Plan	Within 5 working days following award of contract
01 35 29.15	MSDS Sheets	As required, prior to use of Product
01 35 29.15	Proof of Fit Testing	Prior to commencement of Work
01 13 00	Notice of Work to Federal and Territorial AHJ	Prior to commencement of Work
02 10 00	Certification of mercury vacuums and/or other removal or encapsulation equipment	Within 10 working days following award of contract
02 10 00	TDG certification/mercury handling certification	As part of Site Specific Health and Safety Plan
02 10 00	Product data for proposed encapsulation sealant.	Within 10 working days following award of contract



PART 1. GENERAL

1.1 SITE SPECIFIC HEALTH AND SAFETY REQUIREMENTS

- .1 Maintain and complete all health and safety, fire safety, and environmental compliance activities in accordance with applicable sections and Authorities Having Jurisdiction (AHJ).
- .2 Submittals in accordance with Section 01 33 00 – Submittal Procedures.

1.2 SITE SPECIFIC HEALTH AND SAFETY PLAN

- .1 The Site Specific Health and Safety Plan (SSHASP) will include, but is not limited to the following sections:
  - .1 A Statement of Contractor's Safety Policy;
  - .2 Safety responsibilities of all on-site personnel;
  - .3 Standard Operating Procedures (SOPs), Safe Work Practices and/or Job Procedures;
  - .4 Results of safety and health risk or hazard analysis for work activities;
  - .5 Name and telephone number of Contractor's corporate Safety Officer and on-site Safety Representative;
  - .6 Fire Safety Plan;
  - .7 Spill Contingency Plan;
  - .8 Site Storage Plan, including details on the storage of supplies, materials and/or equipment on Site and details of all Products that cannot be stored in the open unprotected and thus require enclosed storage space;
  - .9 The type of training required by onsite personnel and proof of training for those individuals;
  - .10 The level and type of personal protective equipment (PPE) to be worn by workers;
  - .11 PPE use and care procedures;

- .12 The process by which all utilities, services and/or equipment in, or attached to, the Gold Room will be identified, locked out, tagged, isolated and/or protected during encapsulation activities;
  - .13 Worker protection indoor air monitoring plan, including equipment used and frequency of monitoring; and
  - .14 Heat Stress/Cold Stress: Implement heat stress and cold stress monitoring program as applicable.
- .2 Develop, as part of SSHASP, written contaminated site working and decontamination procedures.
- .1 Working procedures to outline PPE requirements for various parts of site and for different operations.
  - .2 Working procedures and decontamination procedures are to be consistent with requirements OSHA's 29 CFR 1910.120 HAZWOPER and territorial environmental regulations for working activities, where employees are likely to be exposed to 50% of Threshold Limit Values (TLV) listed by American Conference of Governmental Hygienists (ACGIH), TLVs and BEIs based on documentation of Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEI) 2004 and amendments thereto.
  - .3 Submit one (1) electronic copy of the SSHSP within 5 business days after contract award to the Departmental Representative for review. Any items, which are identified as missing, will be added and the plan revised, so as to incorporate the additional items. The revised SSHASP will be submitted to the Departmental Representative within five (5) business days after receipt of comments.

### 1.3 CONTINGENCY AND EMERGENCY RESPONSE PLAN

- .1 Prepare and coordinate a Contingency and Emergency Response Plan with contributions from appropriate authorities including Yukon Safety Act, Hospitals, RCMP, Ministry of Transportation, and Ministry of Health.
- .2 The Contingency and Emergency Response Plan will include, but is not limited to the following sections:
  - .1 Identification of an off-site Emergency Response Coordinator, through whom all information and coordination will flow in the event of an incident;
  - .2 Regional/territorial emergency numbers and hospitals; and
  - .3 Standard operating procedures to be implemented during emergency situations including fire safety, mercury incidents or spills, personal injuries, lost of power to the work site, unauthorized entry, and incidents involving vehicles transporting Mercury Waste.

- .4 Establish an emergency plan for the removal of any injured person to medical facilities or a doctor's care in accordance with applicable legislative and regulatory requirements.
- .3 Submit one (1) electronic copy of the Contingency and Emergency Response Plan within 5 business days after contract award to the Departmental Representative for review. Any items, which are identified as missing, will be added and the plan revised, so as to incorporate the additional items. The revised Contingency and Emergency Response Plan will be submitted to the Departmental Representative within five (5) business days after receipt of comments.

#### 1.4 CONSTRUCTION SAFETY MEASURES

- .1 Observe and enforce construction safety measures required by the latest revisions of: Canada Labour Code, National Building Code of Canada, National Fire Code of Canada, Workers' Compensation Board (WCB), the applicable Occupational Health and Safety Regulations, and Territorial and local statutes and authorities.
- .2 In the event of discrepancies between any requirements of the above listed authorities, the more stringent requirements will govern.
- .3 Comply with all applicable health and safety policies and procedures from AHJ.
- .4 Departmental Representative Authorized Personnel has the authority to stop Work on the contract if, in his/her opinion, the Work is being performed in an unsafe manner as required by the applicable safety regulations.
- .5 The Departmental Representative or Departmental Representative Authorized Personnel may stop work where there is reasonable cause to believe that:
  - .1 Dust levels inside Gold Room are unacceptable.
  - .2 Conditions and practice may lead to contamination of previously cleaned sections; or release mercury dust into the environment.
- .6 SSHASP and Contingency and Emergency Response Plan shall be prominently posted in the work zone. Everyone prior to entering the work zone must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures
- .7 Telephone numbers of all emergency response personnel shall be prominently posted in the work zone along with the location of the nearest telephone.
- .8 Verify that emergency procedures including appropriate First Aid facilities and First Aid personnel are in place at the Work Site. First Aid facilities and First Aid personnel must be in compliance with the Yukon Occupational Health and Safety Act.
- .9 Verify that procedures meet the WCB and HRSDC requirements.

#### 1.5 FILING OF NOTICE

- .1 File Notice of Work with Federal and Territorial AHJ prior to commencement of Work.

#### 1.6 REGULATORY REQUIREMENTS

- .1 Comply with all applicable standards, regulations and orders of AHJ to ensure safe operations at site.

#### 1.7 RESPONSIBILITY

- .1 Be responsible for safety of persons and environment to extent that they may be affected by the Site and conduct of Work.
- .2 Control access to the Site. Persons with business at the Site and who are not Contractor's employees must be briefed on site specific health and safety issues and provided with a copy of the site specific health and safety plan.
- .3 Refuse access to the Site to any person not complying with site specific health and safety standards.
- .4 Comply with and enforce compliance by employees with safety requirements of contract documents, applicable federal, territorial and local statutes, regulations and ordinances, and with SSHASP:
  - .1 Conduct appropriate safety training for all personnel working on the site, including evacuation procedures in the event of workplace emergencies.
  - .2 Provide training for all persons entering the site in accordance with specified personnel training requirements, maintain log of who was trained, what training was provided and by whom the training was conducted.
  - .3 Conduct workplace safety inspections for all Work activities; and
  - .4 Maintain a log of first aid and safety supplies, and notify appropriate personnel for restocking after each incident, and periodical restocking to replace out dated or consumable (headache medicines, bandages) products.

#### 1.8 HAZARDOUS COMMUNICATION REQUIREMENTS

- .1 Comply with Work Site Hazardous Materials Information System regulations of the AHJ.
- .2 Submit to Departmental Representative Material Safety Data Sheets (MSDS) and documentation on any "hazardous" chemical that Contractor or Contractor Representatives plan to bring onto site.
- .3 Maintain a copy of all MSDS sheets on-site, bound in one place and stored in accordance with the SSHASP.

#### 1.9 UNFORESEEN HAZARDS

- .1 Should any unforeseen or peculiar safety related factor, hazard, or condition become evident, stop Work, assess, take steps to mitigate if necessary at that time and immediately advise Departmental Representative Authorized Personnel verbally and in writing.

#### 1.10 SAFETY AND HYGIENE

- .1 Personal Protective Equipment (PPE):
  - .1 Furnish site personnel with appropriate PPE as required by legislation;
  - .2 Verify that safety equipment and protective clothing is kept clean and well maintained;
  - .3 Ensure all clothing and personal protective equipment used on site remains on site, to be either decontaminated or disposed of. No Work clothing is to leave Work site without having been properly decontaminated.
  - .4 Outline and designate PPE for each site and Work activity in accordance with AHJ.
- .2 Develop written PPE care and use procedures to be included in the SSHASP and verify that procedures are strictly followed by site personnel including, but not limited to, the following:
  - .1 Provisions for prescription eyeglasses with side shields worn as safety glasses and do not permit contact lenses on-site within Work zones;
  - .2 Provisions for footwear are steel toed safety shoes or boots and are covered by rubber overshoes when entering or working in potentially contaminated Work areas;
  - .3 Dispose of or decontaminate PPE worn on-site at end of each workday;
  - .4 Decontaminate reusable PPE before reissuing; and
  - .5 Provisions for decontamination arising from entry or exit into contaminated areas.
- .3 Personnel Hygiene and Personnel Decontamination Procedures: provide minimum as follows:
  - .1 Suitable containers for storage and disposal of used disposable PPE;
  - .2 Potable water and suitable sanitation facility; and
  - .3 Provisions for proper disposal of contaminated PPE.
- .4 Do not permit smoking, eating or drinking within Work area.

#### 1.11 RESPIRATORY PROTECTION PROGRAM

- .1 Provide workers with respirators and personal protective equipment conforming to Occupational Health and Safety Regulations and guidelines during the Work.
- .2 Develop a written Respiratory Protection Program to be included in the Site Specific Health and Safety Plan and ensure that the program is strictly followed by site personnel; include the following procedures as minimum:
  - .1 Provide site personnel with extensive training in usage and limitations of, and qualitative fit testing for, air purifying and supplied air respirators in accordance with specified regulations;
  - .2 Monitor, evaluate, and provide respiratory protection for site personnel;

- .3 Verify that levels of protection as listed have been chosen to be consistent with site specific potential airborne hazards associated with major contaminants identified on Site;
- .4 Immediately notify Departmental Representative when level of respiratory protection required increases;
- .5 Verify that appropriate respiratory protection during Work activities is available and readily accessible; all personnel entering potentially contaminated Work areas will be supplied with and use appropriate respiratory protection;
- .6 Assess ability for site personnel to wear respiratory protection;
- .7 Verify that site personnel have passed respirator fit test prior to entering potentially contaminated areas. Verify that facial hair does not interfere with proper respirator fit; and
- .8 Submit proof of fit testing for site personnel to Departmental Representative Authorized Personnel. Update submission when new personnel are added to Work or when new Work activities occur.

#### 1.12 SITE COMMUNICATION

- .1 Post emergency numbers near site telephones.
- .2 Train personnel in the use of "buddy" system.
- .3 Provide alarm system to notify employees of site emergency situations or to stop Work activities if necessary. Identify emergency stations.

#### 1.13 SAFETY MEETING

- .1 Conduct mandatory daily safety meetings (tailgate meeting) for Site personnel, and additionally as required by special or Work related conditions; include refresher training for existing equipment and protocols, review ongoing safety issues and protocols, and examine new site conditions as encountered. Hold additional safety meetings on an as needed basis or as specified by the AHJ. Keep records of meetings on file.

#### 1.14 FUEL MANAGEMENT

- .1 All vehicle and equipment refuelling must be conducted by appropriately trained personnel using the appropriate personal protective equipment in a manner which meets or exceeds regulatory requirements including using drip pans.
- .2 All fuel transports including mobile refuelling trucks and fuel transport to stationary equipment such as generators or pumps or distributed storage areas must occur in approved (CSA) containers with the notification and consent of site safety personnel.

#### 1.15 VEHICLE AND EQUIPMENT USAGE

- .1 Seatbelts must be worn at all times when vehicle or equipment is in operation.
- .2 Speed limits must be set and obeyed.
- .3 If road conditions are unsafe or marginally unsafe, maintain roads to acceptable standards. Do not risk property damage or injury.
- .4 Vehicles are not to be idled for longer than 10 minutes (warm up) unless explicitly used as a place of refuge during animal encounters or for personnel working outdoors during winter operations. Exceptions are to be made in consultation with Departmental Representative Authorized Personnel.
- .5 Perform vehicle maintenance and lubrication of equipment in a manner that avoids spillage of fuels, oils, grease and coolants. When refuelling equipment, use leak free containers and reinforced rip and puncture proof hoses and nozzles. Remain in attendance for duration of refuelling operation, and ensure that all storage container outlets are properly sealed after use.
- .6 Place drip pans under stationary equipment with potential leaks.

#### 1.16 FLAMMABLE LIQUIDS

- .1 The handling, storage and use of flammable liquids will be governed by the current National Fire Code of Canada.
- .2 Flammable liquids such as gasoline, kerosene and naphtha may be kept for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing the Underwriter's Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable liquids exceeding 45 litres for Work purposes, requires permission of the permitting authority.
- .3 Do not transfer flammable liquids in the vicinity of open flames or any type of heat-producing devices.
- .4 Do not use flammable liquids having a flash point below 38°C such as naphtha or gasoline as solvents or cleaning agents.
- .5 Store flammable waste liquids, for disposal, in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum and Departmental Representative is to be notified when disposal is required.
- .6 Dispose of all flammable liquids in accordance with all applicable environmental regulations.

#### 1.17 MEDICAL

- .1 For medical situations requiring non-urgent medical attention, employees shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the workplace to obtain proper medical treatment.
- .2 For medical situations requiring urgent medical attention, worker decontamination shall take least priority, after measures to stabilize the injured worker, remove the worker from the workplace and secure proper medical treatment.
- .3 Provide the appropriate first aid kit, based on the number of workers, in accordance with the Yukon Occupational Health and Safety Act.
- .4 In the event that the Emergency Medical Transport (EMT) departs site with the patient, replace the EMT as soon as possible.
- .5 Provide the appropriate number of first aid attendants on site in accordance with the AHJ.
- .6 Locate and maintain emergency and first aid equipment in appropriate location on site including first aid kit to accommodate number of site personnel; portable emergency eye wash; fire protection equipment as required by legislation.

#### 1.18 ACCIDENTS AND ACCIDENT REPORTS

- .1 Immediately verbally report, followed by a written report within 24 hours, to Departmental Representative all accidents of any sort arising out of or in connection with the performance of the Work, giving full details and statements of witnesses. If death or serious injuries or damages are caused, report the accident promptly to Departmental Representative by telephone or email in addition to any report required under federal and territorial laws and regulations.
- .2 If a claim is made by anyone against the Contractor or Sub-Contractor on account of any accident, promptly report the facts in writing to Departmental Representative, giving full details of the claim.

#### 1.19 FIRE SAFETY

- .1 Provide fire prevention, fire protection and fire fighting services at the Site.
- .2 Ensure that any Sub-Contractors and other Contractor personnel on-site are briefed on fire safety requirements.
- .3 Work activities are to meet or exceed the most recent editions of the following codes and standards:
  - .1 Yukon Fire Prevention Act;
  - .2 National Fire Code of Canada; and



.3      Canada Labour Code.

.4      A person discovering a fire will, if possible, remain in the vicinity to direct fire fighting personnel.

#### 1.20 FIRE EXTINGUISHERS

.1      Provide and maintain fire extinguishers in sufficient quantity to protect, in an emergency, the Work in progress and the physical plant on-site.

#### 1.21 SMOKING PRECAUTIONS

.1      Do not permit smoking within Site extents.

.2      Provide and place signs prohibiting smoking in areas where smoking is not permitted.

#### 1.22 HAZARDOUS SUBSTANCES

.1      If the work entails the use of any toxic or hazardous materials or chemicals, or otherwise creates a hazard to life, safety or health, work is to be in accordance with the National Fire Code of Canada, Occupational Health and Safety Legislation, and WHMIS.

.2      Wherever work is being carried out in dangerous or hazardous areas involving the use of heat, fire watchers equipped with sufficient fire extinguishers, are to be provided. The determination of dangerous or hazardous areas along with the level of precaution necessary for Fire Watch is to be at the discretion of Contractor. Notify Departmental Representative Authorized Personnel prior to that determination.

.3      Provide proper ventilation and eliminate all sources of ignition where flammable liquids, such as lacquers or urethanes are used.

#### 1.23 UNIQUE HAZARDS

.1      Ensure workers receive training specific to the PPE requirements for working with site-specific unique hazards including safe handling, disposal and emergency procedures.

#### 1.24 MEASUREMENT OF PAYMENT

.1      All costs for the preparation and completion of the Site Specific Health and Safety Plan are to be included in the lump sum price paid for under Item 01 35 29.15-1, as indicated in Basis of Payment Schedule. The lump sum price for the Site Specific Health and Safety Plan will be paid after a Site Specific Health and Safety Plan has been submitted to Departmental Representative, to their

satisfaction.

- .2 All costs for the preparation of the Contingency and Emergency Response Plan are to be included in the lump sum price paid for under item 01 35 29.15-2 as indicated in Basis of Payment Schedule. The lump sum price for the Contingency and Emergency Response Plan will be paid after a Contingency and Emergency Response Plan has been submitted to Departmental Representative, to their satisfaction.
- .3 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Payment Schedule.

## PART 2. PRODUCTS

### 2.1 NOT USED

## PART 3. EXECUTION

### 3.1 NOT USED

**END OF SECTION**

## PART 1. GENERAL

### 1.1 INTENT

- .1 This Section specifies minimum requirements for mercury cleaning, encapsulation, removal and disposal work in the Gold Room (ID29) spaces, including process area, office, vault and storage shed.
- .2 The Contractor is to perform all operations in connection with mercury abatement, encapsulation, removal, disposal and related work as shown on Drawings and/or specified herein.

### 1.2 CODES AND STANDARDS

- .1 Comply with:
  - .1 RSY 2002, c.159 Yukon Occupation Health and Safety Act.
  - .2 RSY 2002, c.76 Yukon Environment Act and Regulations.
  - .3 CAN/CGSB-43.150-97, Performance Packaging for Transportation of Dangerous Goods.
  - .4 Canada Labour Code R.S.C., 1985, c. L-2.
  - .5 Transport of Dangerous Goods Regulations and Guidelines.

### 1.3 DEFINITIONS

- .1 Abatement: cleaning and removal of mercury from contaminated materials to below required criteria specified herein. Mercury contaminated materials in the Gold Room include but are not limited to, all interior building surfaces, ductwork, concrete floor control joints, artifacts, furniture, pipes, sink traps, and floor drains.
- .2 Encapsulation: use of a sealant to capture and contain mercury impacts on a given material, such that it isolates mercury contaminated materials from the environment and human contact.
- .3 Work Area: space in which the Work is being performed and to which general access is prohibited.
- .4 Mercury Contaminated Materials; Materials, surfaces, equipment or substances within the Gold Room containing mercury.
- .5 Mercury Waste: removed and captured Mercury Contaminated Materials as well as products, by-products, or materials containing, or contaminated by, mercury.

- .6 Non-Hazardous Waste: Products, by-products, or materials not defined as, or mixed with, Mercury Contaminated Materials or Mercury Waste.
- .7 Pre-Abatement sampling: Sampling activities conducted inside the Gold Room prior to commencement of the Work to establish baseline conditions. Sampling may include, but not be restricted to, measuring mercury vapor levels and indoor air particulate levels and swab sampling.
- .8 Post-Abatement Confirmatory Sampling: Sampling activities conducted inside the Gold Room to confirm sufficient removal of mercury from the Gold Room surfaces, areas and equipment. Post-Abatement Confirmatory Sampling will entail indoor air particulate sampling, indoor air vapor (mercury) samples and surface swab samples.

#### 1.4 WORKER QUALIFICATIONS

- .1 Workers used for handling, removal, and packaging of Mercury Contaminated Materials or Mercury Waste, must have completed appropriate training to remove and/or supervise the removal of mercury, as required by Authorities Having Jurisdiction (AHJ).
- .2 At least one employee who will be performing the Work shall have completed appropriate first aid training as required by the Yukon Occupational Health and Safety Act.
- .3 Persons involved in loading, transportation, unloading, and disposal of Mercury Waste are to be trained and certified in accordance with applicable Transport of Dangerous Goods Regulations and Guidelines.

#### 1.5 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit certification of mercury vacuums and other removal or encapsulation equipment utilized for the Work within 10 business days of contract award.
- .3 Submit certification for all persons involved in the handling, packing, loading, transportation, unloading, and disposal of Mercury Waste are appropriately trained in accordance with applicable dangerous goods transportation regulations as part of SSHASP.
- .4 Submit product data for proposed Encapsulation sealant within 10 business days of contract award.

#### 1.6 MONITORING AND INSPECTION BY THE DEPARTMENTAL REPRESENTATIVE

- .1 Departmental Representative will pay for the analytical testing of samples collected by the Departmental Representative Authorized Personnel, to perform Pre-Abatement samplings and Post-Abatement Confirmatory Sampling.:

- .2 The Departmental Representative Authorized Personnel will appoint an accredited testing laboratory to analyze pre-Abatement and post-Abatement samples, once authorized by the Departmental Representative.
- .3 Post-Abatement Confirmatory Sampling analysis will be conducted on a rush (24 hour, when possible) turn-around-time.
- .4 Post-Abatement Confirmatory Sampling results must be below the following criteria to consider Work complete.
  - .1 Indoor air particulate samples: As per NIOSH 6009 Modified/OSHA ID-145 method. Results will be compared to the OSHA Permissible Exposure Limit for mercury of  $0.1 \text{ mg/m}^3$ ;
  - .2 Swab samples: As per APHA 3112 B-AAS Cold Vapor Method. Results will be below a maximum of  $0.04 \text{ } \mu\text{g/cm}^2$ ; and
  - .3 Indoor air vapor samples: As per NIOSH 6009 method. Results will be compared to Canada Labour Code threshold limit/ACGIH TVL 8-hr TWA levels for mercury of  $0.025 \text{ mg/m}^3$ .

#### 1.7 TESTING AND AIR MONITORING BY THE CONTRACTOR

- .1 As required by Yukon Occupational Health and Safety Act and other applicable industrial health and safety regulations, monitor air levels inside the Gold Room to ensure that levels are within acceptable limits required and for type of PPE being used by workers.
- .2 Be responsible for the daily air monitoring to ensure occupational health and safety of contractor workers and other persons present during work activities.
- .3 Be responsible for the collection and testing of samples in order to direct Work to meet the Work requirements specified. This testing and monitoring is independent of Pre-Abatement sampling and Post-Abatement Confirmatory Sampling conducted by the Departmental Representative Authorized Personnel on behalf of the Departmental Representative.
- .4 Be responsible for all costs associated with packaging, preservation, handling and transport of Contractors testing and monitoring samples from the site to the authorized and designated testing laboratory.
- .5 Assume all responsibility for samples damaged during transport including all costs for re-sampling, analysis and any resulting delays.
- .6 Submit testing results as part of the Daily Report.

#### 1.8 MEASUREMENT AND PAYMENT

- .1 All costs associated with mobilization and demobilization will be included under Item 02 10 00-1, as indicated in the Basis of Pricing Schedule. This includes all costs for general items which are specified in the Contract or are necessary for

mobilization/demobilization of personal, materials and equipment required to complete the Work.

- .2 All costs for the preparations and completion of Abatement, Encapsulation, removal and packaging of Mercury Contaminated Materials inside Gold Room are to be included in the lump sum price paid for under Item 02 10 00-2, as indicated in Basis of Pricing Schedule.
- .3 All costs for the preparations and completion of off-site transport and disposal of packaged Mercury Waste are to be included in the lump sum price paid for under Item 02 10 00-3, as indicated in Basis of Pricing Schedule.
- .4 All costs for the Contractor's Testing and Monitoring Requirements are to be included in the lump sum price paid under Item 02 10 00-4, as indicated in Basis of Pricing Schedule.
- .5 All costs associated with necessary approvals and permits are to be included in the lump sum price paid under Item 02 10 00-5, as indicated in Basis of Pricing Schedule.
- .6 All costs associated with accommodation and meals are to be included in the lump sum price paid under Item 02 10 00-6, as indicated in Basis of Pricing Schedule.
- .7 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Basis of Pricing Schedule.

## PART 2. PRODUCTS

### 2.1 ABATEMENT MATERIALS

- .1 Amended Water: water containing a surfactant to reduce water surface tension. Surfactant to be added at a concentration to provide penetration and wetting of contaminated material. Use the following:
  - .1 50% polyoxyethylene ester and 50% polyoxyethylene ether.
  - .2 Other products acceptable to the Departmental Representative.
- .2 Plastic Bags: to CAN/CGSB-43.150, minimum 150 micrometer thick sheet polyethylene. Bag seams shall be sufficiently strong to resist pressure and shocks that occur under normal conditions of transport. Designed and manufactured to contain a maximum net mass of 50kg.
- .3 Drums: to CAN/CGSB-43.150, sturdy non-reusable, steel (1A2), aluminum (1B2), or plastic (1H2), with tight fitting lids.
- .4 Sheet Polyethylene: two separate layers, minimum 150 micrometer thick, each layer sealed with water-resistant plastic duct tape.

- .5 Penetrating sealer penetrates and hardens the mercury substrate. Surface film forming sealers create a thin protective covering over the mercury substrate, preventing release of mercury vapours, as follows:

- .1 Type 1 – Penetrating. Acceptable products: American Coating “CC-22P”, Better Working Environments “BWE 3000”, Certified Technologies “Undercoat 2050” Childers “Chil-Abate CP-210”, Fiberlock Technologies “ABC”, Foster “32-20 (yellow), 32-21(blue), 32-22(undyed)”, International Protective Coatings “Serpilock, Serpiflex Shield”, or equivalent approved by the Departmental Representative.
- .2 Type 2 - Surface Film Forming. Acceptable products: American Coating “CC-2B”, Certified Technologies “Overcoat 2000”, Childers “Chil-Bridge CP-211”, Fiberlock Technologies “ABC”, Foster “32-32”, International Protective Coatings “Serpiflex Shield”, or equivalent approved by the Departmental Representative.
- .3 Amalgamation Powers, such as Spilfyter Mercsorb, or equivalent approved by the Departmental Representative.
- .4 Other products acceptable to Departmental Representative.

## 2.2 EQUIPMENT

- .1 Vacuums: mercury recovery vacuum system, with accessories adequate to perform removal and cleanup work, such as those developed by Nikro and Nilfisk, or equivalent approved by the Departmental Representative.
- .2 Hand tools and Supplies: scrapers, brushes, wiping rags, etc. of adequate quality to perform abatement work.

## PART 3. EXECUTION

### 3.1 PREPARATION

- .1 Work may commence only after the following have been completed:
  - .1 Inventory of all Mercury Contaminated Materials;
  - .2 Photographic documentation of items to be removed from the Gold Room, under guidance of Parks Canada Staff; and
  - .3 Pre-Abatement sampling by Departmental Representative Authorized Personnel.

### 3.2 MERCURY ABATEMENT AND ENCAPSULATION

- .1 The recommended mercury Abatement program will consist of a mercury recovery vacuum cleaning of all surfaces allowing for mercury Encapsulation, followed by a three step wipe down.

- .2 After the third wipe down, Confirmatory Sampling and testing will be conducted to confirm sufficient removal of mercury dust. Should areas still contain unacceptable levels of mercury, this cleaning process can be repeated and the area re-tested.
- .3 Mercury is to be removed from all interior Gold Room surfaces, ductwork, concrete floor control joints, artifacts/furniture, pipes, sink traps and floor drains.
- .4 Extremely contaminated porous wood (which has previously exhibited mercury droplets) at the base of the sluice is to be removed and replaced, unless otherwise designated and approved for permanent removal by the Departmental Representative.
- .5 It is acknowledged that potential replacement of other wooden features such as cabinets, weigh scale, furniture and walls may not be possible due to requirements to respect and preserve original fabric wherever possible.
- .6 Use of water during Abatement would likely negatively impact the original characteristics of the building and is to be avoided.
- .7 Items that cannot be abated to required post-Work criteria specified in this section will undergo either a two step encapsulation/sealing process or be packaged for storage and future examination in sealed containers.
- .1 Any removal or modification/dismantling of artifacts/building structure will occur under the guidance of Parks Canada staff and will be documented and photographed prior to initiation.
- .2 If the item cannot be temporarily encapsulated for future Parks Canada reproduction purposes, it must be properly recorded by Parks Canada personnel prior to removal. Consideration may also be given as to whether the item may be enclosed for observation yet limit exposure to potential receptors.
- .8 Items may be removed from the building and then heated under controlled conditions such that mercury vapours volatilize, prior to encapsulation/sealing.
- .9 Material removed from Work area shall not be dropped or thrown to the floor. Material should be removed as intact sections or components whenever possible and carefully lowered to the floor.
- .10 Bags shall be considered full when half their capacity has been filled. Bags should be securely sealed to prevent accidental opening and leakage by tying tops of bags in an overhand knot or by taping in gooseneck fashion. Do not seal bags with wire or cord.
- .11 Mercury Contaminated Materials with sharp edged components (e.g., nails, screws, metal lath, tin sheeting) shall be placed into drums for disposal in lieu of polyethylene bags. Drums shall be marked to differentiate contents from those drums containing bagged material.
- .12 Post-Abatement or encapsulation, the building will be brought up to operating temperatures and mercury level readings will be monitored with a direct reading instrument, prior to collection of Post-Abatement Confirmatory Samples.



### 3.3 TRANSPORTATION AND PERMANENT DISPOSAL OF MERCURY WASTE

- .1 Transport Mercury Waste in accordance with Yukon and Federal legislation and regulations. Ensure that all materials are properly packaged and labeled prior to transportation.
- .2 Each Mercury Waste container must be marked in accordance with applicable transportation of dangerous goods regulations and guidelines.
- .3 Transport Mercury Waste materials in properly placarded vehicles.
- .4 Transport Mercury Waste in a manner which will prevent mercury dust or vapours from becoming airborne or released.
- .5 Transport Mercury Waste accompanied by a properly completed manifest satisfactory to the Authority Having Jurisdiction.
- .6 Dispose of Mercury Waste in a supervised, approved licensed waste disposal facility.
- .7 Make arrangements with operator of disposal location in advance to receive Mercury Waste material.

### 3.4 DAILY WORK AREA CLEANING

- .1 Progressively containerize Mercury Waste and Mercury Contaminated Materials as removal work progresses. Do not permit Mercury Waste to accumulate.
- .2 Keep Mercury Waste enclosed and undisturbed, to minimize generation of mercury vapours and dust.
- .3 Regularly check, clean and replace filters in Mercury vacuums and filtration systems as per manufacturer's recommendations.

### 3.5 FINAL CLEANING

- .1 Upon substantial completion of the Work, perform the following:
  - .1 Remove waste products and debris and leave the Site clean and suitable for use by the Owner;
  - .2 Remove surplus products, tools, construction machinery and equipment. Remove Mercury Waste along with non-hazardous products and debris generated or caused by the Work;
  - .3 Remove stains, spots, marks and dirt from existing equipment, electrical and mechanical fixtures, walls, and floors;
  - .4 Ensure all ducts, enclosed equipment and vessels are cleared of all debris, construction materials, tools and equipment;
  - .5 Broom clean and wash exterior walks, steps and surfaces;

- .6    Clean hardware;
- .7    Make a thorough inspection of all finishes, fixtures, and equipment to ensure proper workmanship and operation
- .8    Repair any damage to existing roadway, fencing, etc. due to Contractor activities;
- .9    Repair any damage to existing painted surfaces; and
- .10   Make good any damage resulting from the Work, to the satisfaction of the Owner and Departmental Representative.

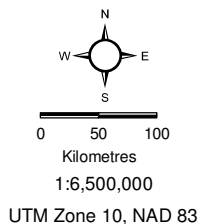
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## Figures

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Basemapping from NTDB, Natural Resources Canada, 2009.



### Legend

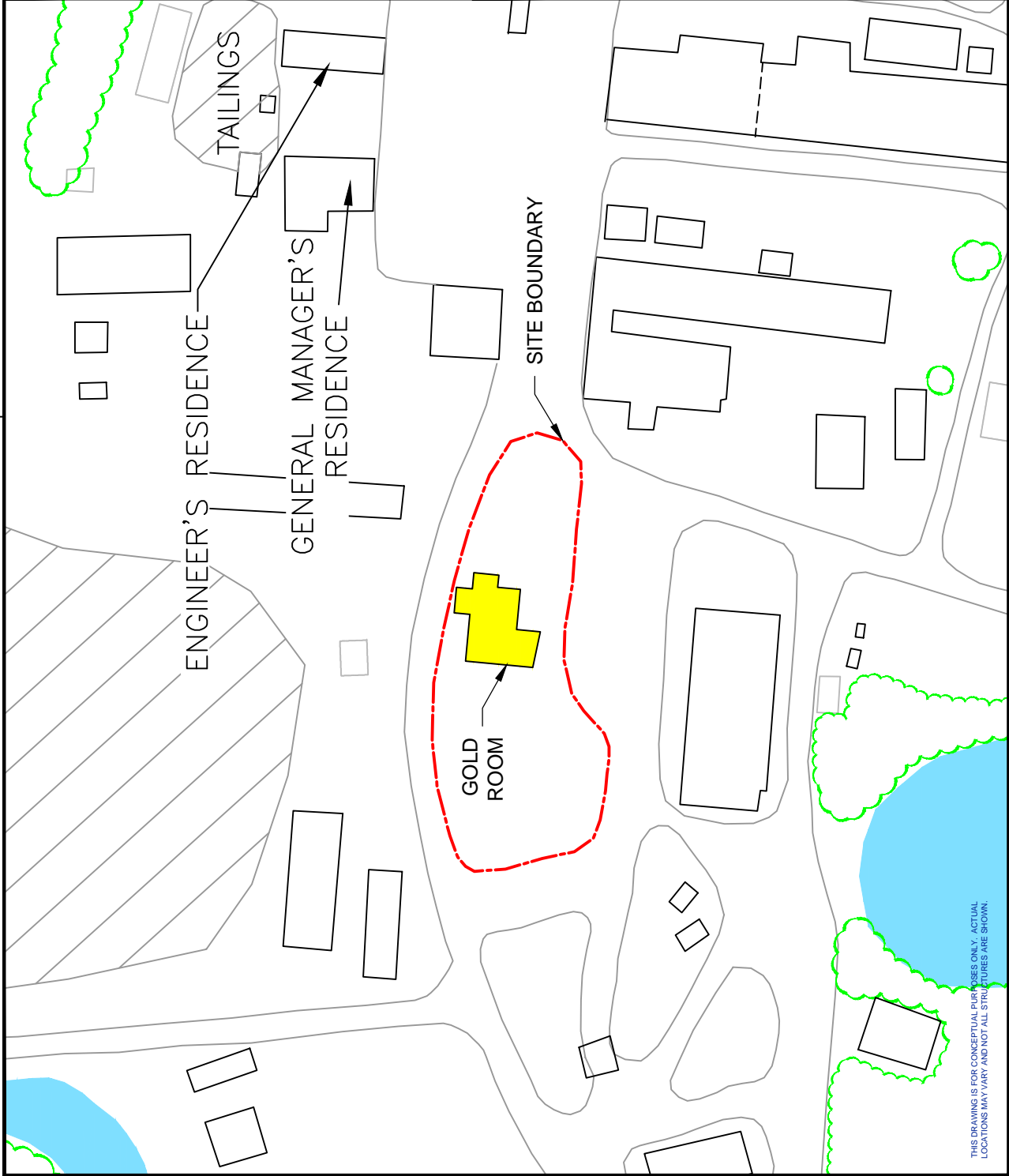
- Waterbody
- City/Town
- Provincial Boundary

Parks Canada - Bear Creek Complex  
Location: Dawson City, Yukon Territory

### Location of the Bear Creek Complex

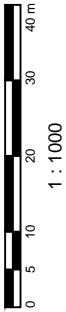
**AECOM**

Figure 1



- BODY OF WATER
- TREES
- TAILINGS
- EXISTING FEATURE
- BUILDING NUMBER

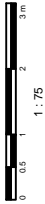
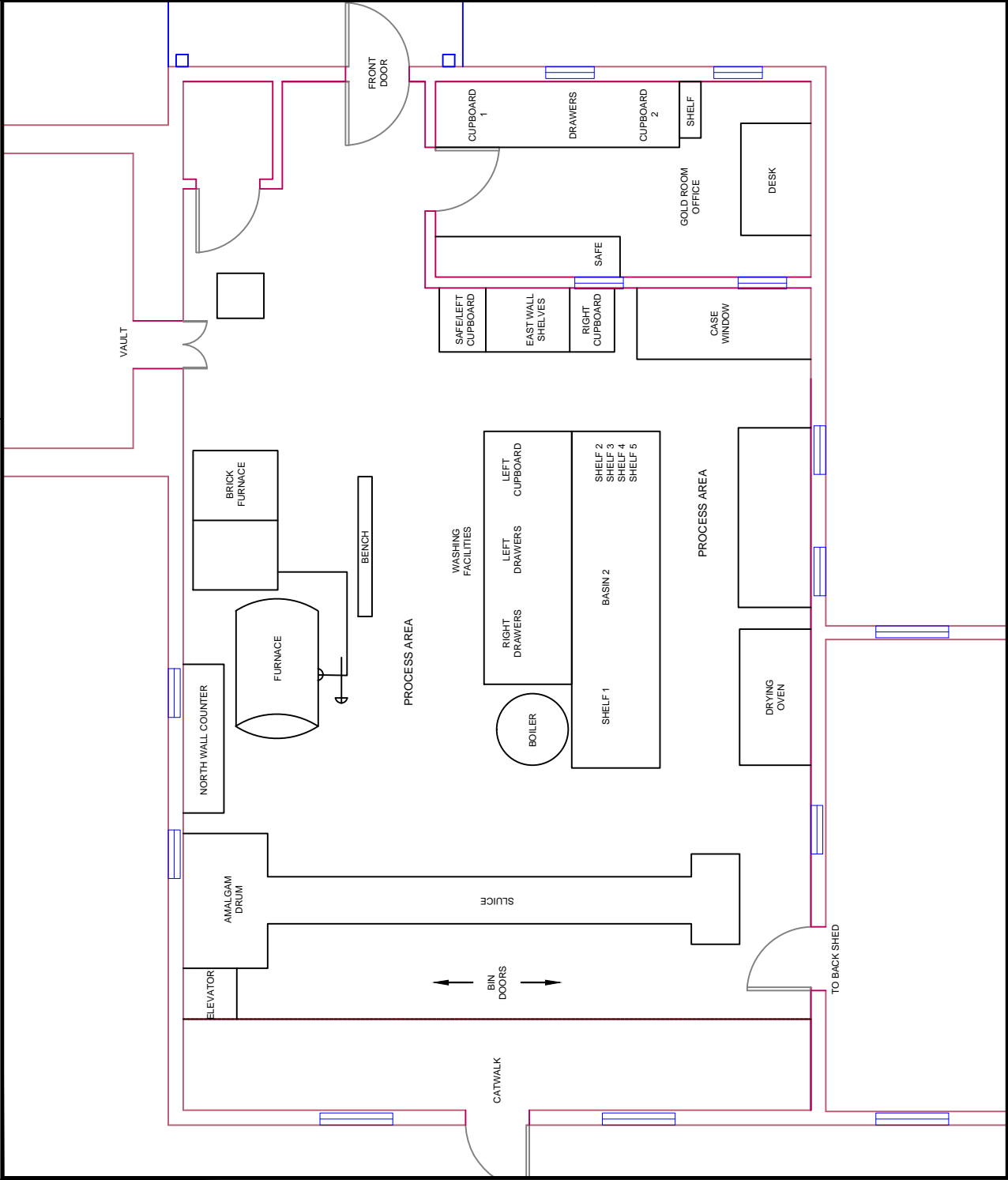
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Assessment, Bear Creek Complex, Dawson City, YT, Dec 2009 SLR Consulting (Canada) Ltd.

**Parks Canada**  
**Bear Creek Complex - Dawson City, YT**  
**Site Plan**

PROJECT NUMBER <b>60276314</b>	DRAWING NUMBER <b>02</b>	ISSUE/REVISION <b>0</b>
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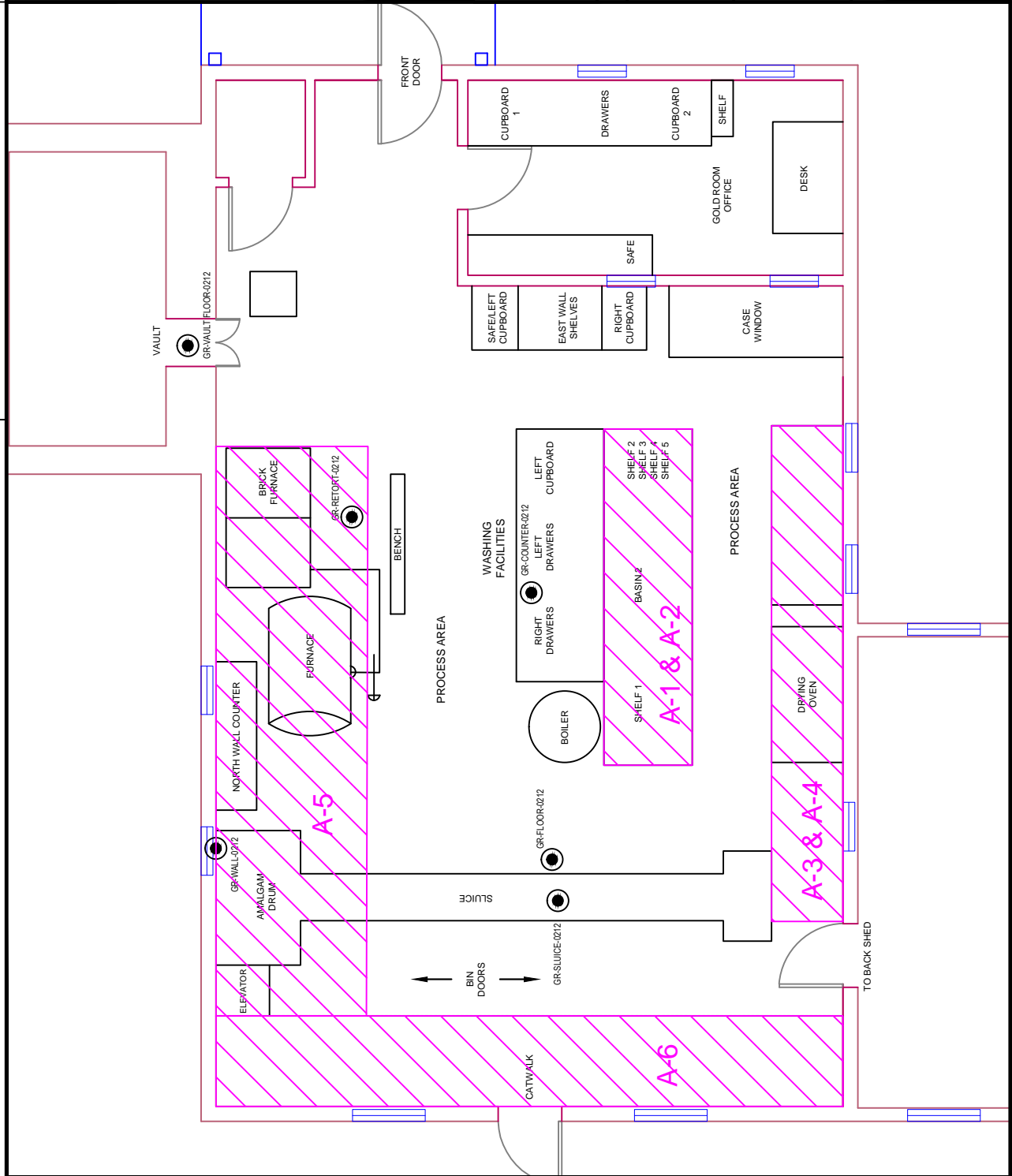


**Parks Canada**  
**Bear Creek Complex - Dawson City, YT**  
**Gold Room (ID29) Floorplan**

PROJECT NUMBER  
**60276314**

DRAWING NUMBER  
**03**

ISSUE/REVISION  
**0**



## LEGEND

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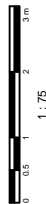
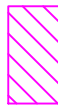
SWAB SAMPLE LOCATION

SCHEMATIC FIGURE NUMBER

## SCHEMATIC OUTLINE



## A-X



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**Parks Canada**  
**Bear Creek Complex - Dawson City, YT**

### Gold Room (ID29) Schematic and Sample Locations

PROJECT NUMBER  
**60276314**

**DRAWING NUMBER**  
**04**

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## Tables



**Table 1. Gold Room Swab Analytical Results (AECOM, 2012)**

Date Sampled	Type	Location	Description	Sample Area (cm <sup>2</sup> )	Sample ID	Lab ID	Total Mercury (µg)	Total Mercury (µg/cm <sup>2</sup> )
28-Feb-12	Swab	Floor	Floor near the sluice box	348	GR-FLOOR-0212	L1119739-1	71.9	0.207
28-Feb-12	Swab	Sluice	Centrally located in the sluice box	1032	GR-SLUICE-0212	L1119739-2	825	0.799
28-Feb-12	Swab	Retort	Output end of the retort tip	16	GR-RETORT-0212	L1119739-3	76.7	4.94
28-Feb-12	Swab	Wall	Wall behind the amalgamation drum	348	GR-WALL-0212	L1119739-4	105	0.302
28-Feb-12	Swab	Counter	Working counter in the Gold Room	348	GR-COUNTER-0212	L1119739-5	15.2	0.044
28-Feb-12	Swab	Vault	Vault floor, inside the vault	348	GR-VAULT FLOOR-0212	L1119739-6	29.9	0.086

**Table 2. Gold Room Historical Mercury Analytical Results**

Date Sampled	Sample Type	Location	Result (mg/m3)
<b>Health Canada, Report dated June 14, 1978</b>			
2-Jun-78	Vapour - Dragar Tube	1. Corner near amalgorum drum	No noticeable change at the time of sampling
2-Jun-78	Vapour - Dragar Tube	2. Corner near furnace (front door)	No noticeable change at the time of sampling
2-Jun-78	Vapour - Dragar Tube	3. Corner near dry section	No noticeable change at the time of sampling
2-Jun-78	Vapour - Dragar Tube	4. Corner near rear door	No noticeable change at the time of sampling
2-Jun-78	Vapour - Dragar Tube	5. Furnace (gold separation/mercury)	No noticeable change at the time of sampling
2-Jun-78	Vapour - Dragar Tube	6. Pipe end-retourting system	0.2
2-Jun-78	Vapour - Dragar Tube	7. End of sluice box	Liquid Mercury Present
2-Jun-78	Vapour - Dragar Tube	8. Open hearth furnace	No noticeable change at the time of sampling
2-Jun-78	Vapour - Dragar Tube	9. Furnace ventilation system (fan-in duct)	No noticeable change at the time of sampling
<b>Indian and Northern Affairs Canada, Report dated June 1, 2005</b>			
1-Jun-05	Vapour	Entrance	0.0104
1-Jun-05	Vapour	Office	0.01189
1-Jun-05	Vapour	Near amalgamation drum	0.03416
1-Jun-05	Vapour	Storage room	0.0105
1-Jun-05	Vapour	Behind building (downwind)	0.000041
1-Jun-05	Vapour	Pipe lay down area	0.00017
<b>Health Canada, Report dated August 2008</b>			
14-Aug-08	Vapour	Shed	0.002
14-Aug-08	Vapour	Workstation (beside retort)	0.053
14-Aug-08	Vapour	Sluice Box	0.022
14-Aug-08	Vapour - direct measurement	Bottom of sluice box (discharge)	0.022
14-Aug-08	Vapour - direct measurement	Amalgam drum exit (breathing zone)	0.020 - 0.113
14-Aug-08	Vapour - direct measurement	Floor drain	0.015
14-Aug-08	Vapour - direct measurement	Sluice Box (middle)	0.031
14-Aug-08	Vapour - direct measurement	Sluice Box (breathing zone)	0.015
14-Aug-08	Vapour - direct measurement	Workbench close to retort (breathing zone)	0.005
14-Aug-08	Vapour - direct measurement	Storage bin	0.008
14-Aug-08	Vapour - direct measurement	Elevator cage (breathing zone)	0.005 - 0.024
14-Aug-08	Vapour - direct measurement	Gold room shed (mud room) doorway (breathing zone)	0.005
14-Aug-08	Vapour - direct measurement	Gold room ground level (beside workbench w/sink)	0.011
14-Aug-08	Vapour - direct measurement	Workbench washing area (breathing zone)	0.011
14-Aug-08	Vapour - direct measurement	Office (breathing zone)	0.005
14-Aug-08	Vapour - direct measurement	Above sluice box at sample point (breathing zone)	0.037
14-Aug-08	Vapour - direct measurement	Shed (breathing zone)	0.024
14-Aug-08	Vapour - direct measurement	Floor drain (catch basin)	0.046
14-Aug-08	Vapour - direct measurement	Outside back of Gold Room	0.002
14-Aug-08	Vapour - direct measurement	Outside of bldg 20	<0.002
14-Aug-08	Air - Particulate	Gold Room Sluice Box	<0.0039
14-Aug-08	Air - Particulate	Gold Room Shed	<0.0019
14-Aug-08	Soil - bulk	Gold Room Sluice Box Discharge	700 mg/kg
14-Aug-08	Soil - bulk	Gold Room Shed Room	48 mg/kg

**Sources:**

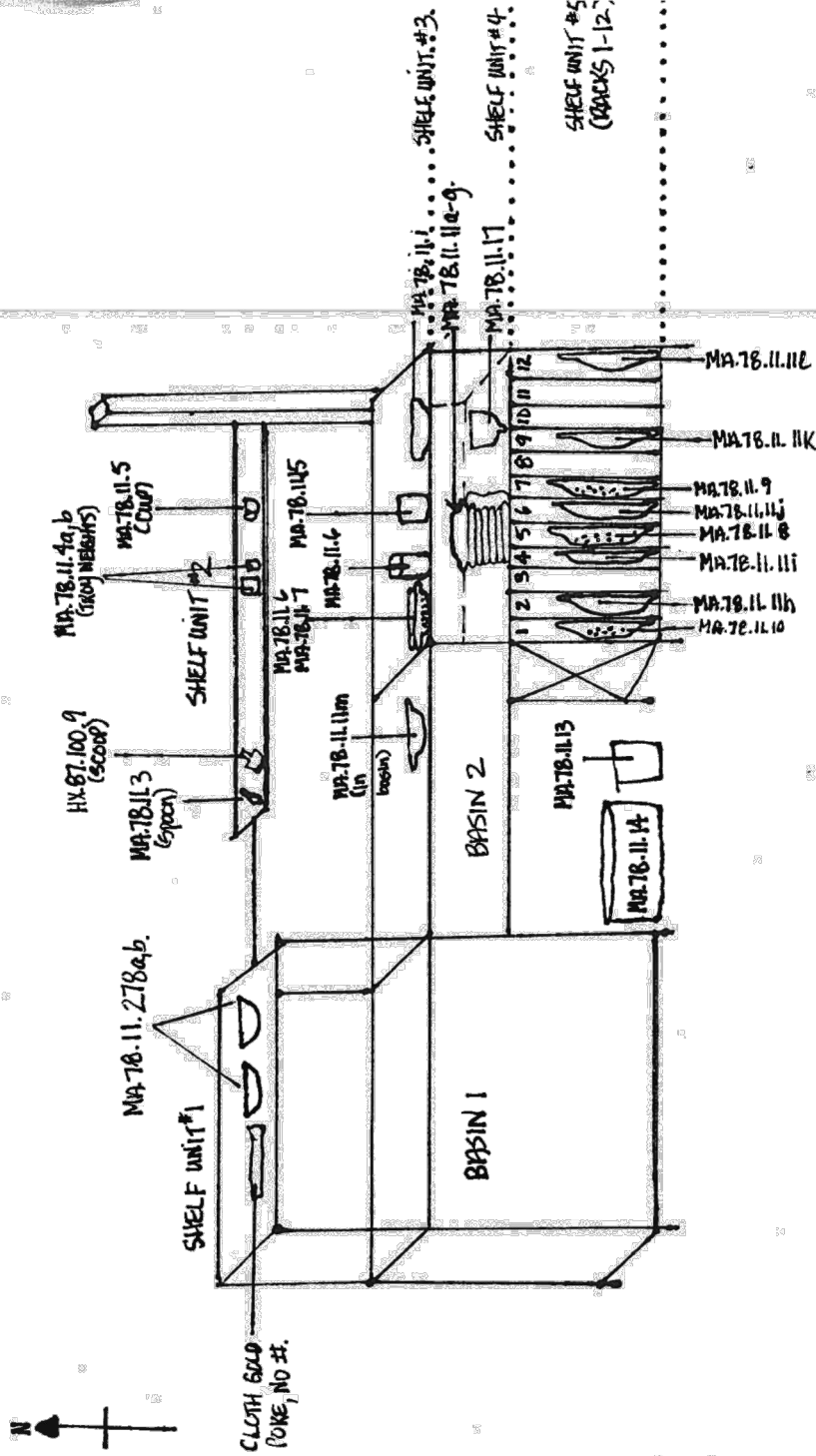
Health Canada. *Gold Room Bear Creek Mercury Vapour Testing*, June 14, 1978.

Indian and Northern Affairs Canada. *Mercury Vapour Concentrations in Ambient Air at the Bear Creek Compound*, June 1, 2005.

Health Canada, *Workplace Investigation, Parks Canada, Bear Creek, Dawson City, YT*, August 2008

**Appendix A**  
**Gold Room Schematics**

GOLD ROOM, BEAR CREEK  
WASHING FACILITIES



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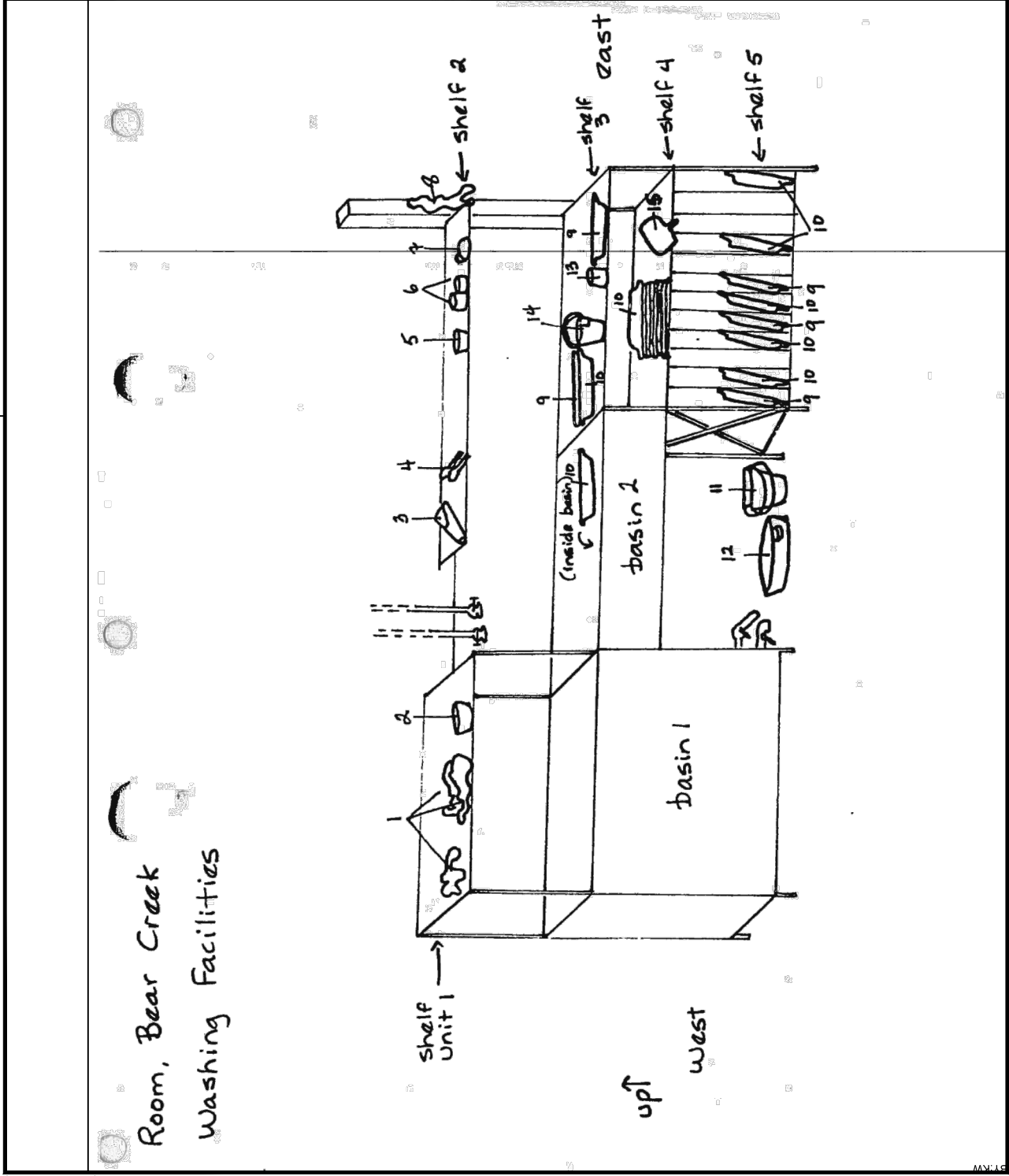
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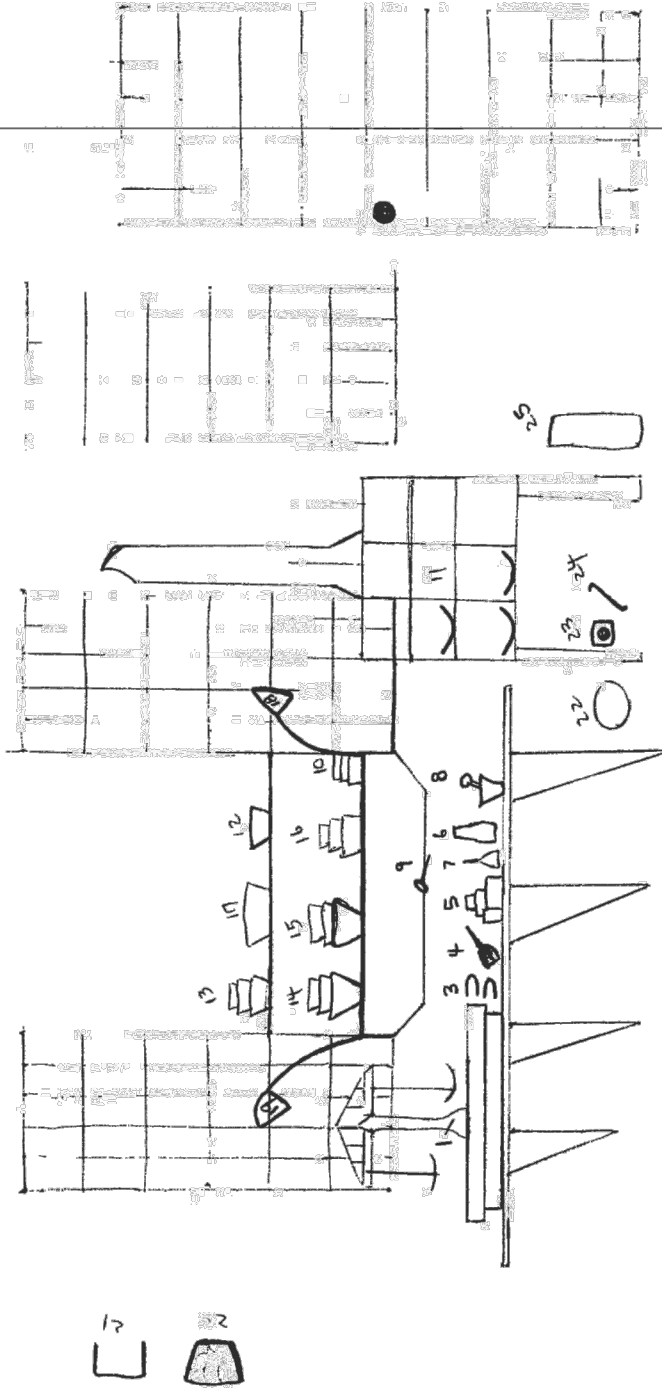
Parks Canada  
Bear Creek Complex - Dawson City, YT  
Gold Room Schematics  
Washing Facilities 1 in Process Area

PROJECT NUMBER	DRAWING NUMBER	ISSUE/REVISION
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NOTES: Sketches provided by Parks Canada Agency.		
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Parks Canada Bear Creek Complex - Dawson City, YT		
Gold Room Schematics Washing Facilities 2 in Process Area		
PROJECT NUMBER 60276314	DRAWING NUMBER A-2	ISSUE/REVISION 0

GOLD ROOM BEAR CREEK  
SOUTH WALL



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NOTES: Sketches provided by Parks Canada Agency.



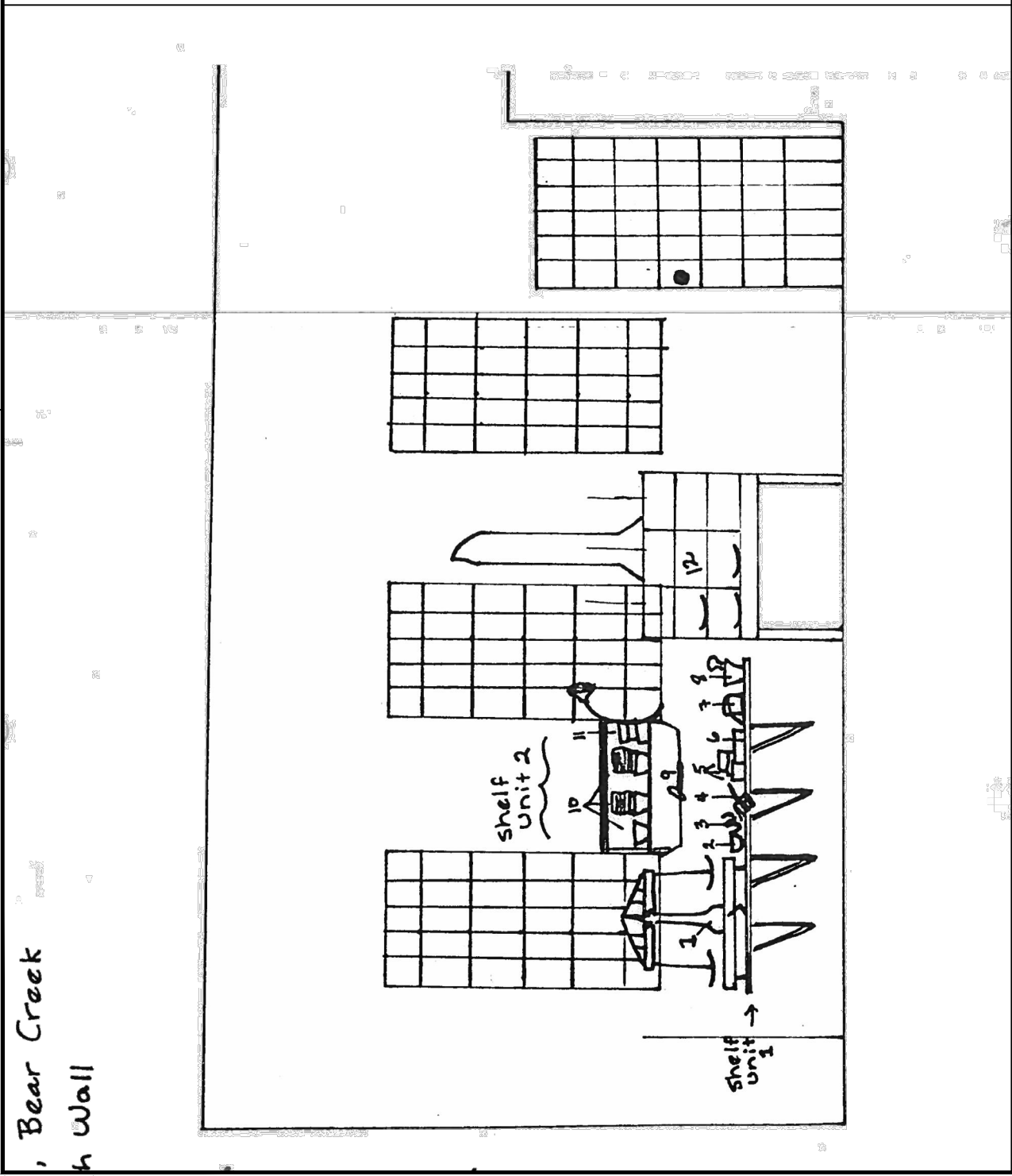
Parks Canada  
Bear Creek Complex - Dawson City, YT

Gold Room Schematics  
South Wall 1 in Process Area

PROJECT NUMBER  
60276314

DRAWING NUMBER  
A-3

ISSUE/REVISION  
0



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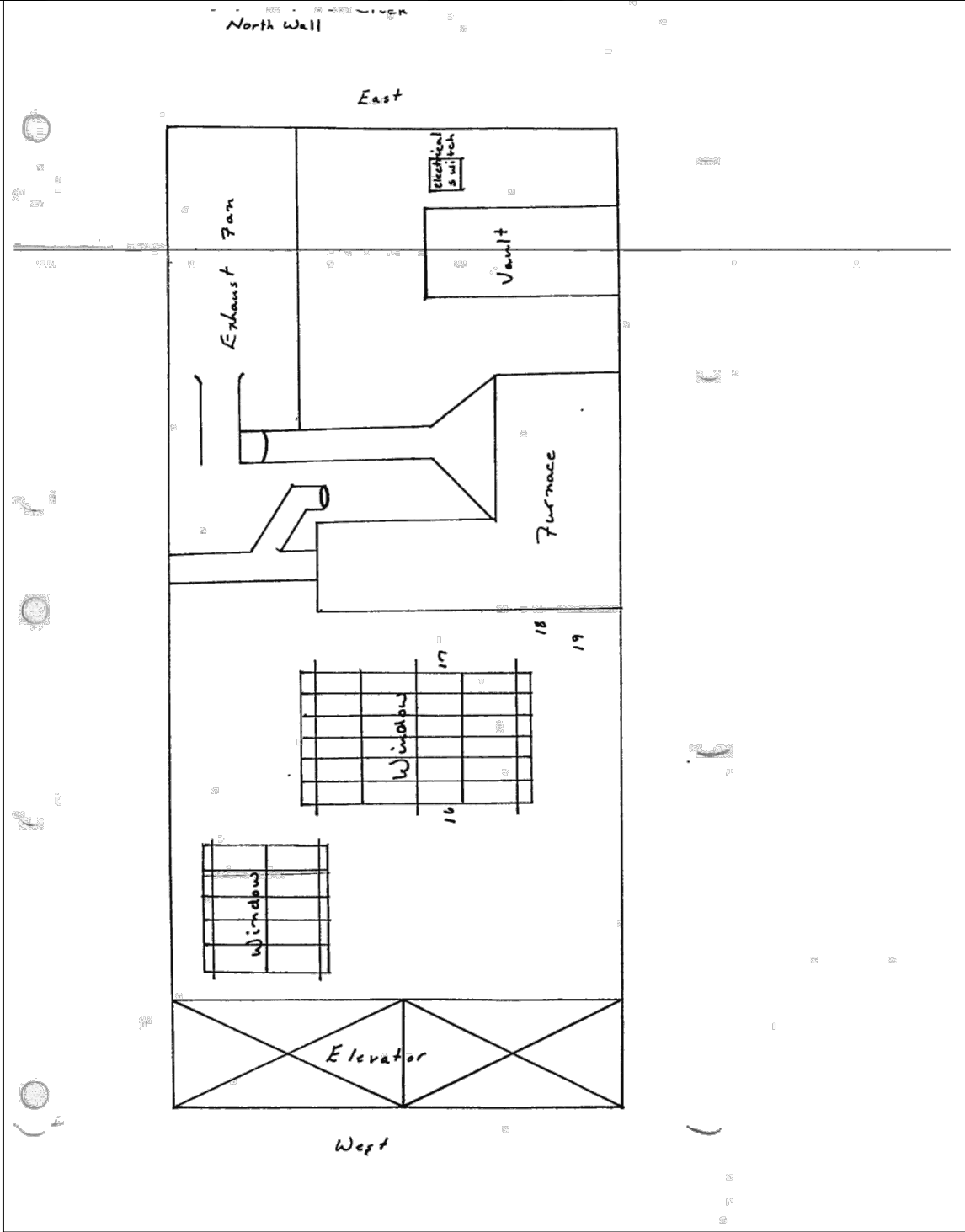
**Parks Canada**  
Bear Creek Complex - Dawson City, YT

**Gold Room Schematics**  
South Wall 2 in Process Area

PROJECT NUMBER  
**60276314**

DRAWING NUMBER  
**A-4**

ISSUE/REVISION  
**0**



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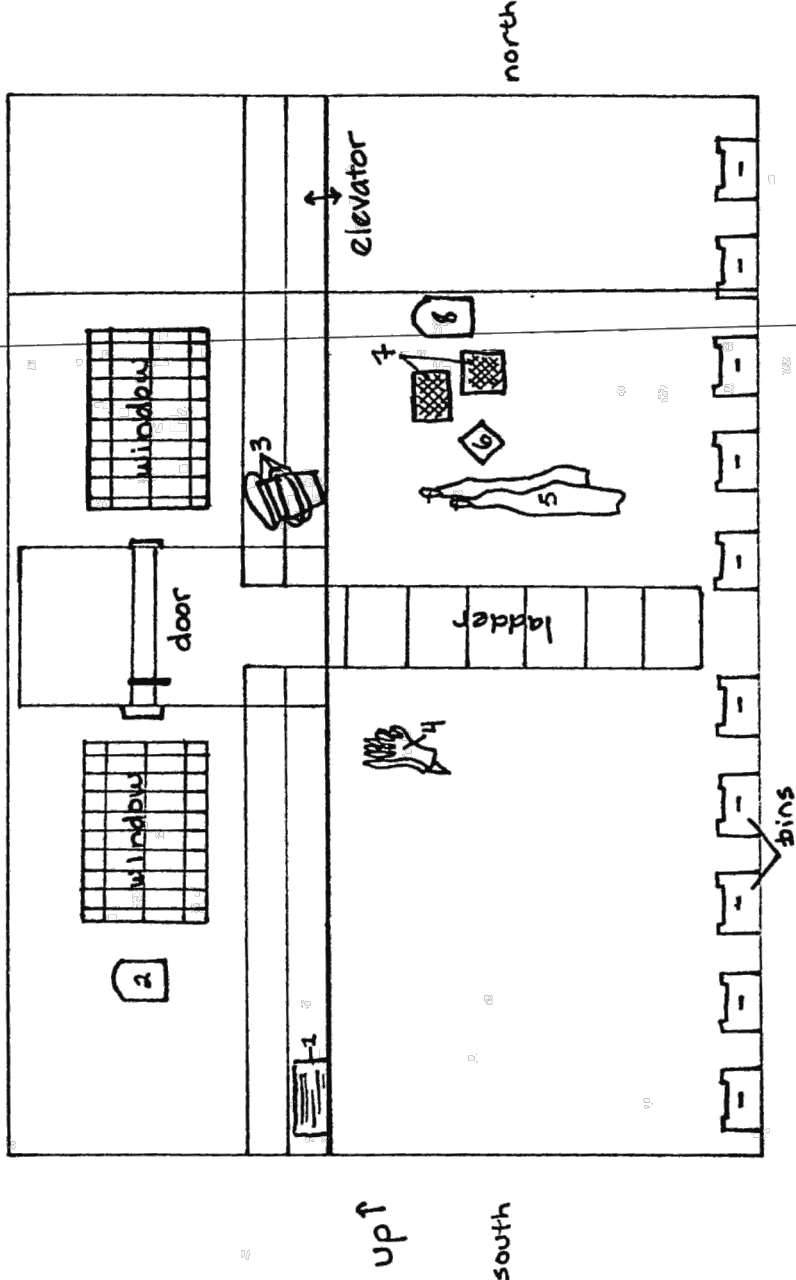


Parks Canada  
Bear Creek Complex - Dawson City, YT  
Gold Room Schematics  
North Wall in Process Area

PROJECT NUMBER	DRAWING NUMBER	ISSUE/REVISION
60276314	A-5	0



Room, Bear Creek  
West Wall



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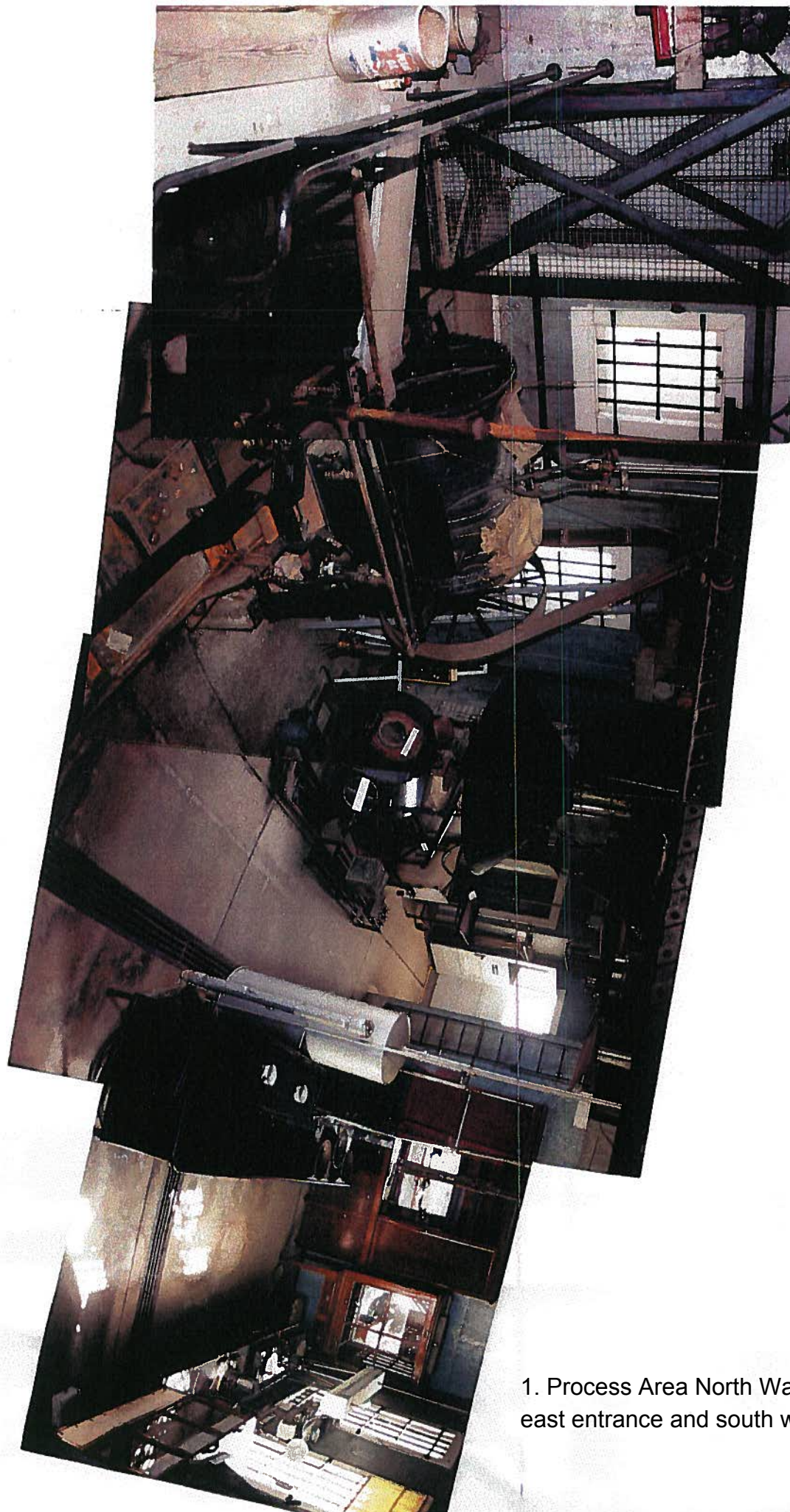
NOTES: Sketches provided by Parks Canada Agency.



Parks Canada  
Bear Creek Complex - Dawson City, YT  
Gold Room Schematics  
West Wall in Process Area

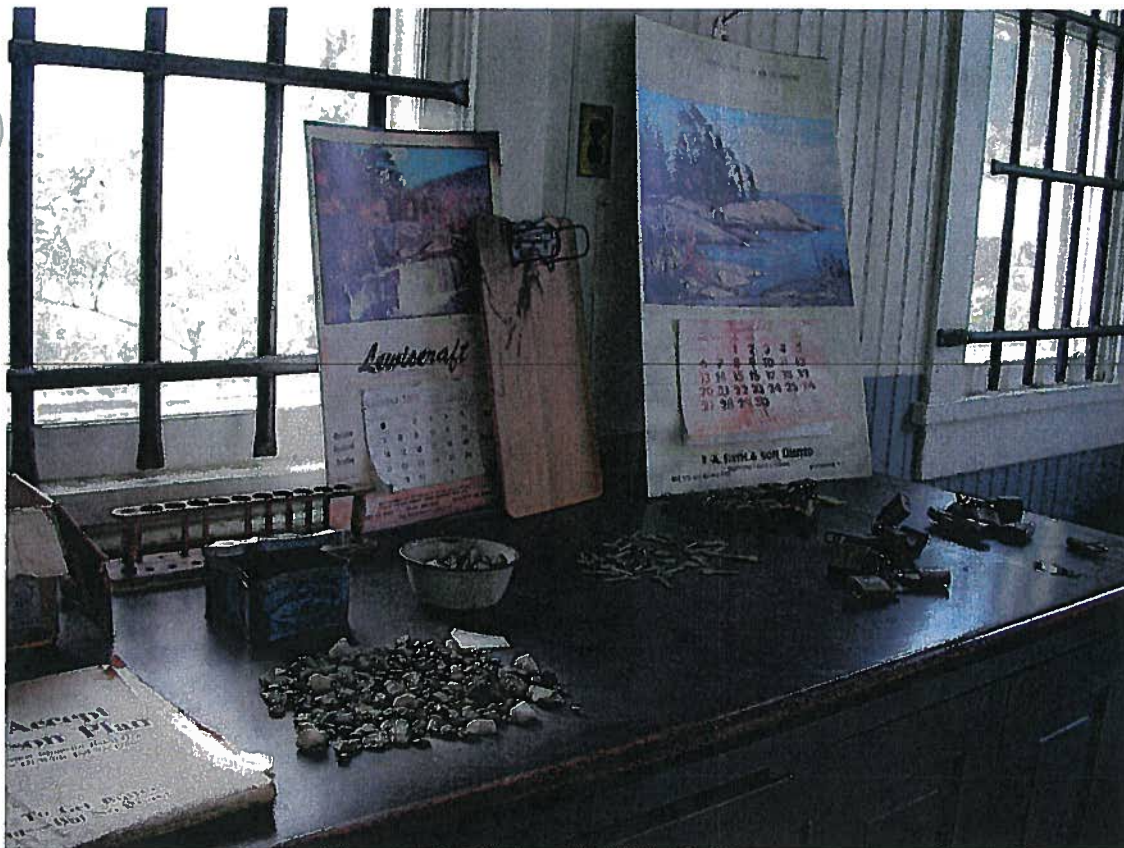
PROJECT NUMBER	DRAWING NUMBER	ISSUE/REVISION
60276314	A-6	0

**Appendix B**  
**Gold Room Photographs**



1. Process Area North Wall, looking towards east entrance and south wall.





2. Office, east wall looking from doorway DK 07/07

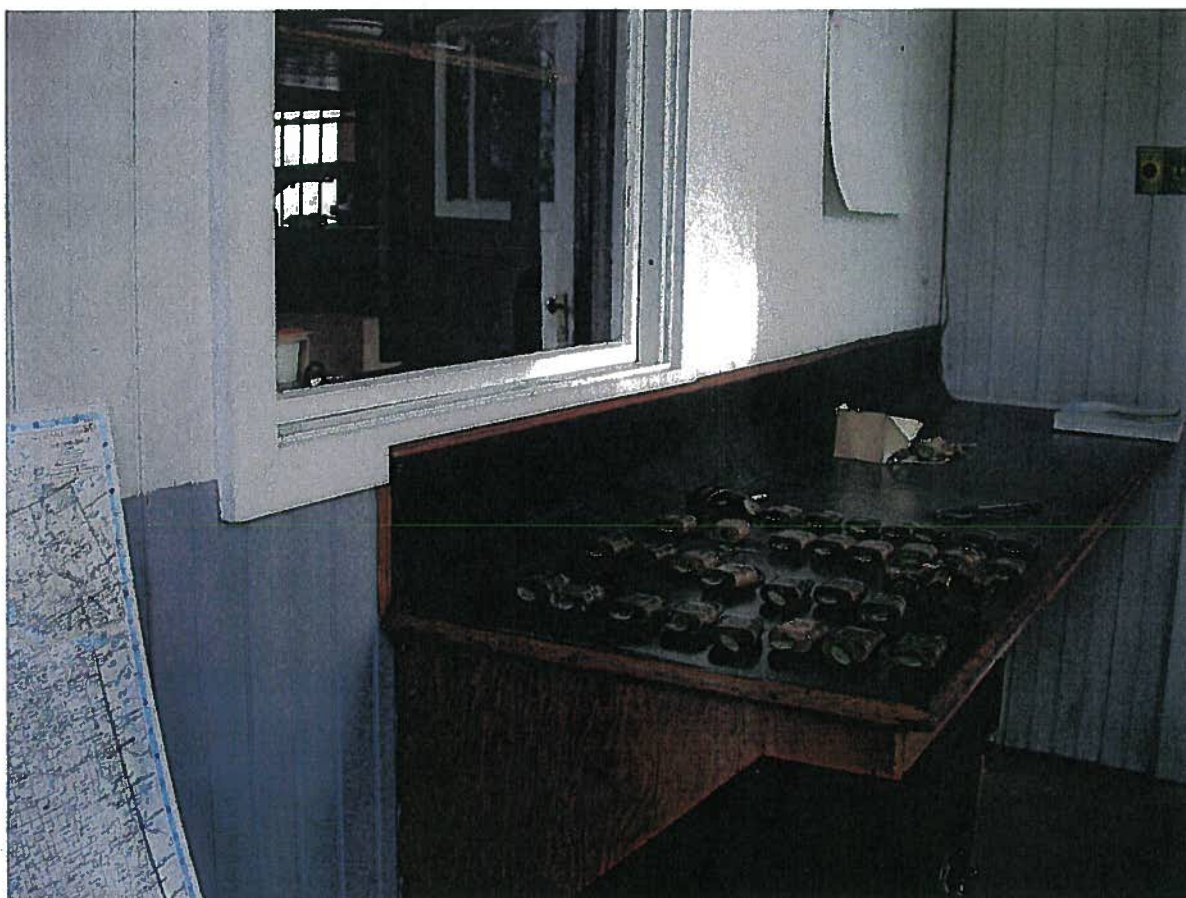


3. Office south wall DK 07/07





4. Office south wall desktop DK 07/07



5. Office northwest wall, view from south DK 07/07



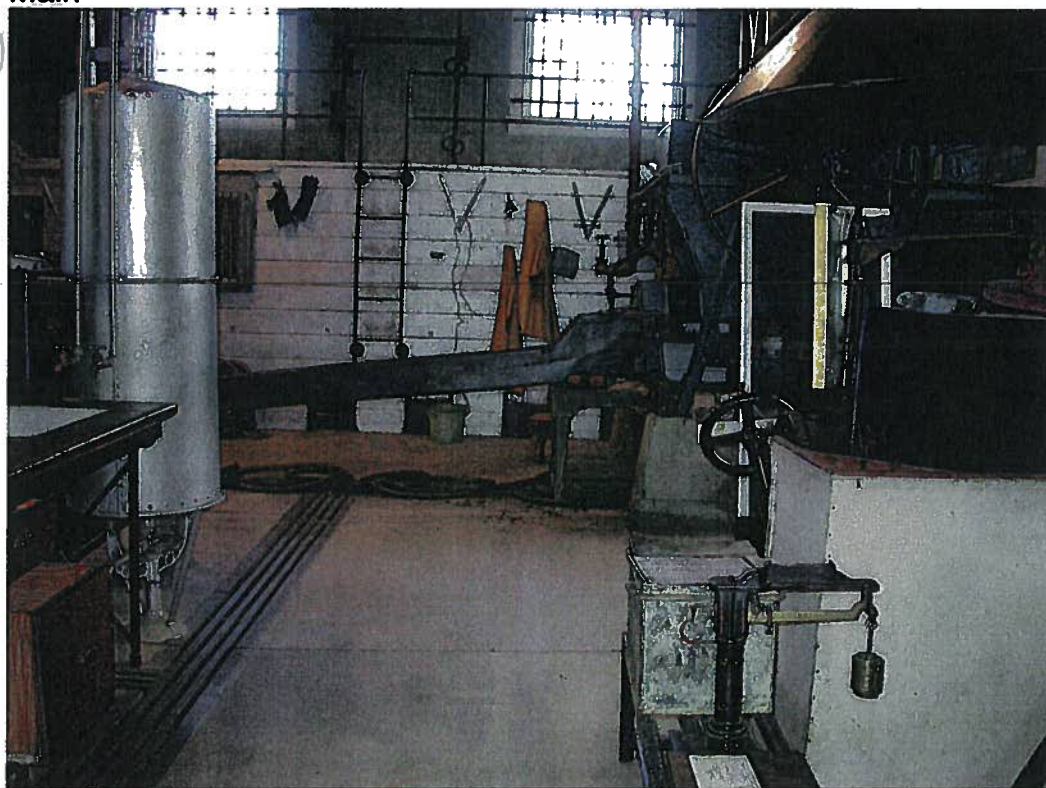
6. Sump in Shed



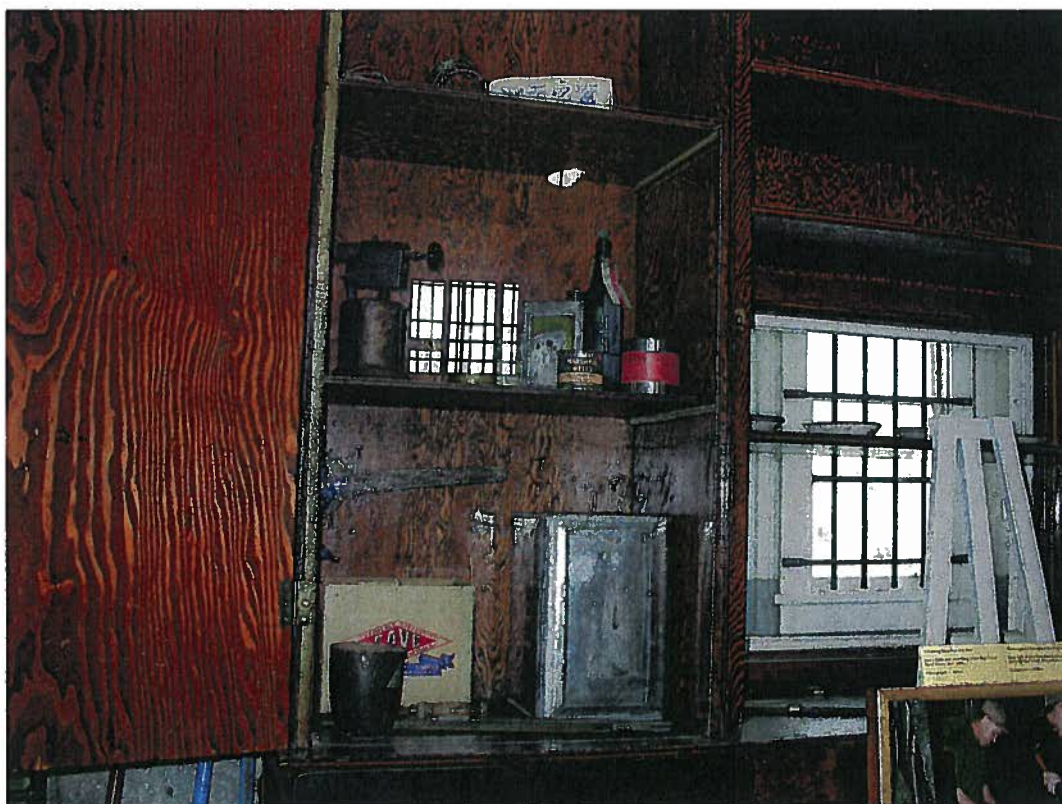


7. Sump in Shed

Main

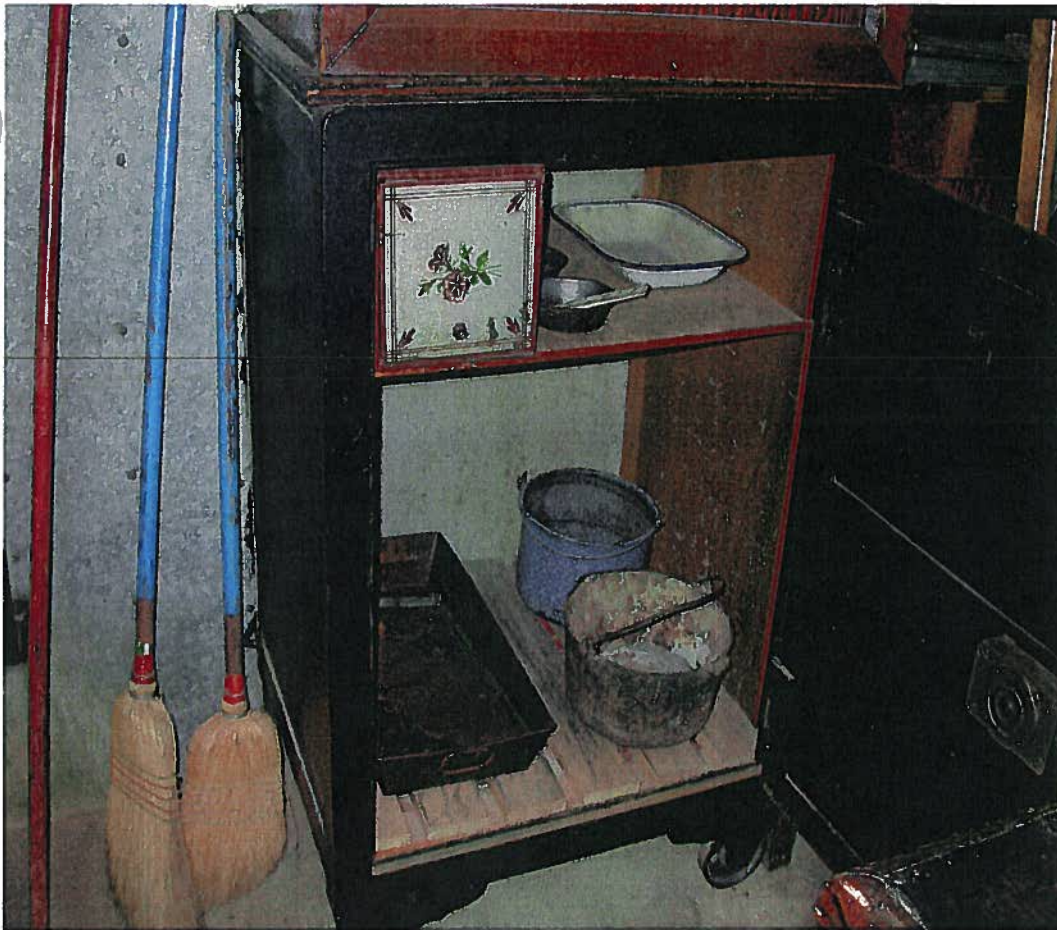


8. gold room overview facing west DK 07/07

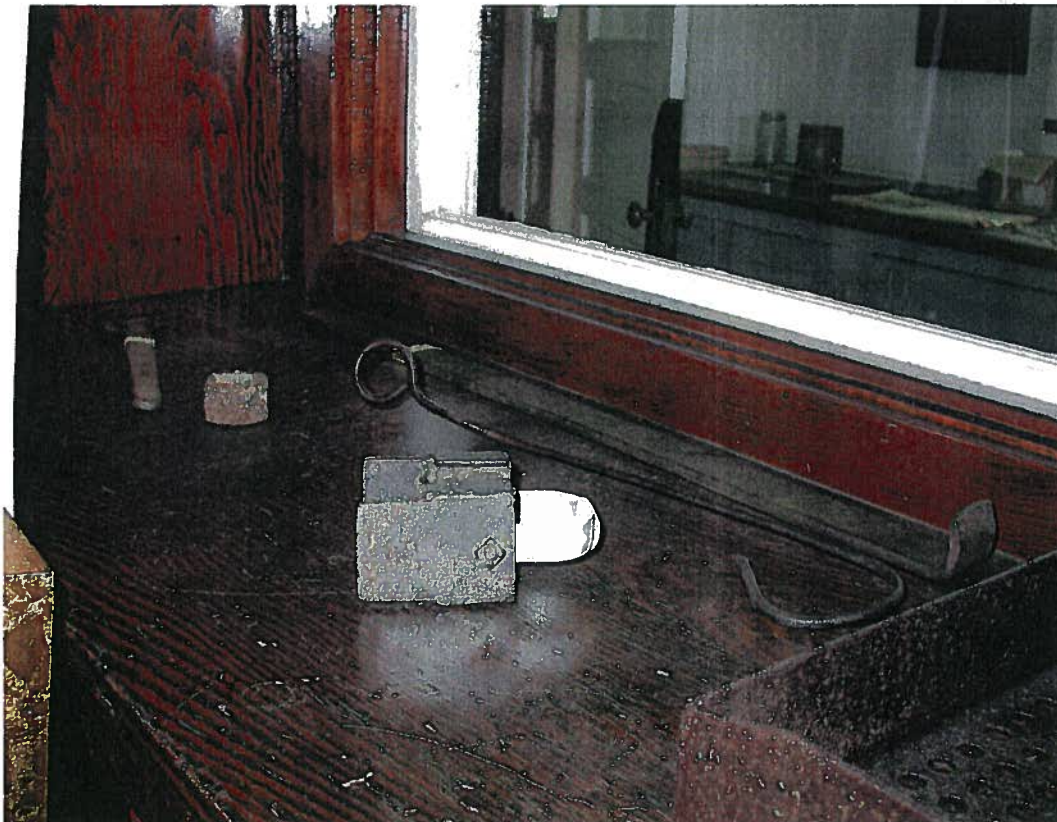


9. gold room east wall proper right cupboards upper level DK 07/07





10. gold room east wall proper right cupboards upper level DK 07/07



11. gold room east wall middle cupboard shelf DK 07/07



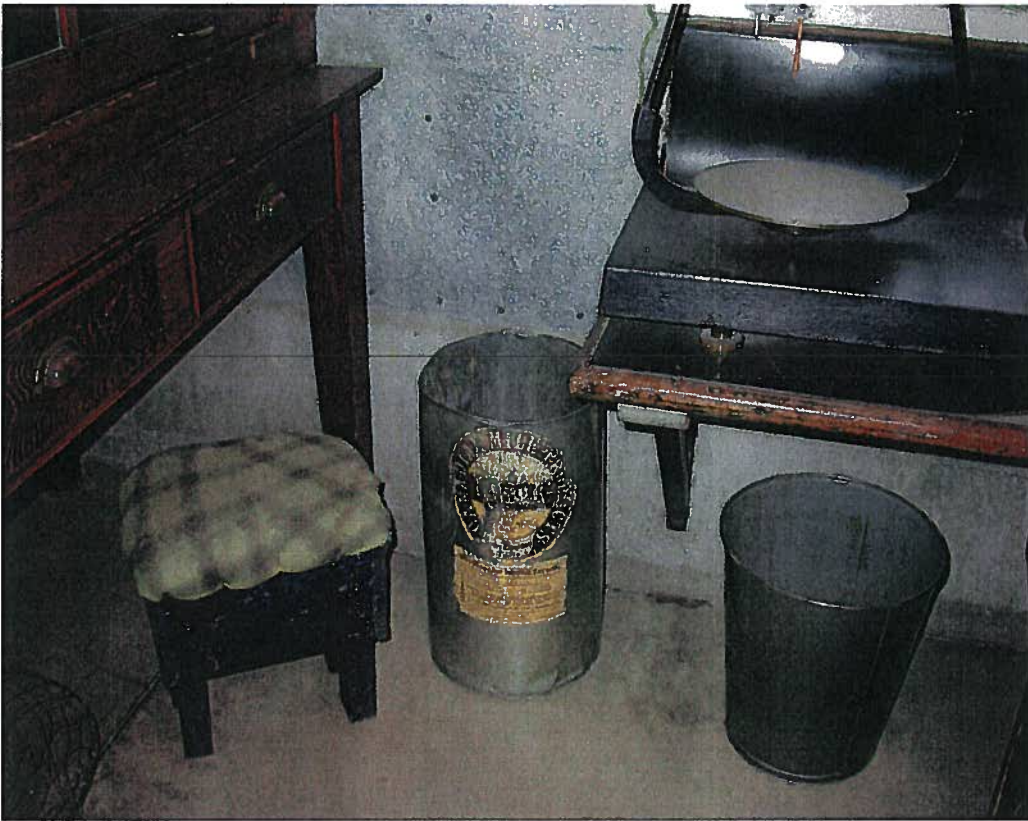


12. gold room east wall middle cupboard shelf DK 07/07



13. gold room east wall middle cupboard shelf DK 07/07



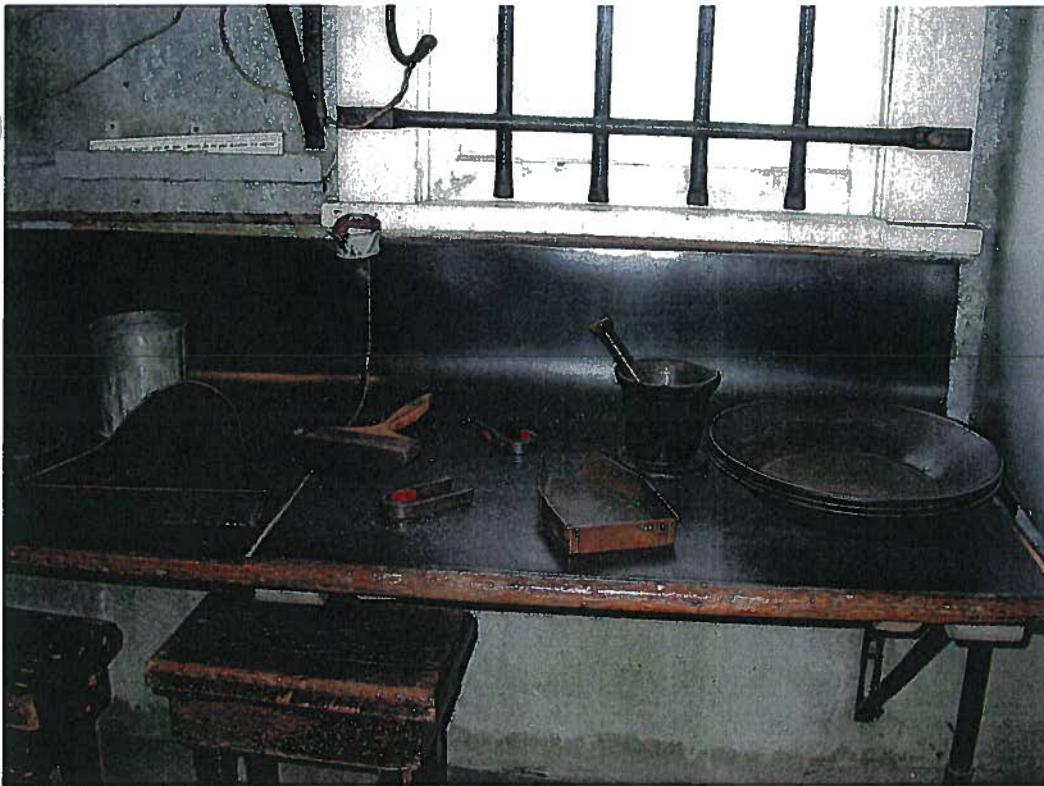


14. gold room south east corner floor level DK 07/07



15. gold room south east corner floor level DK 07/07





16. gold room south wall countertop DK 07/07



17. gold room S wall above counter, between windows DK 07/07



18. gold room S wall above countertop right of windows DK 07/07

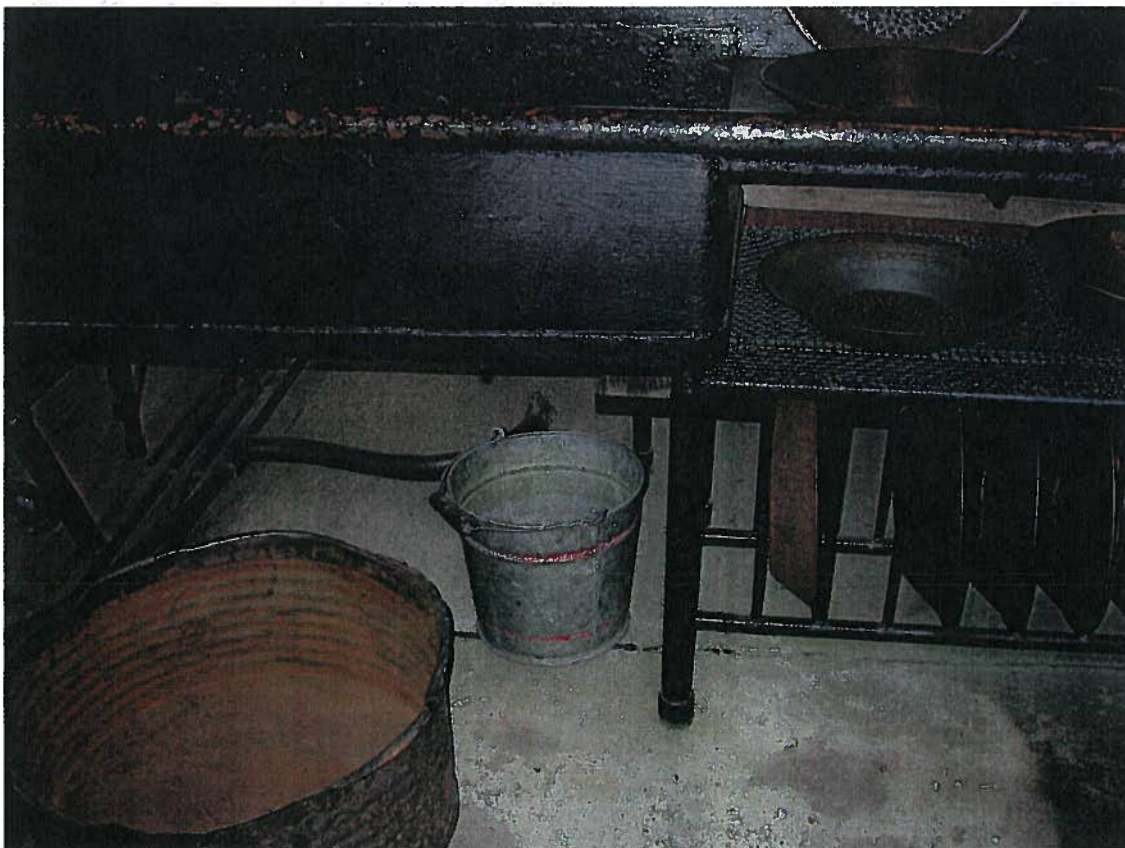


19. gold room overview facing south west DK 07/07



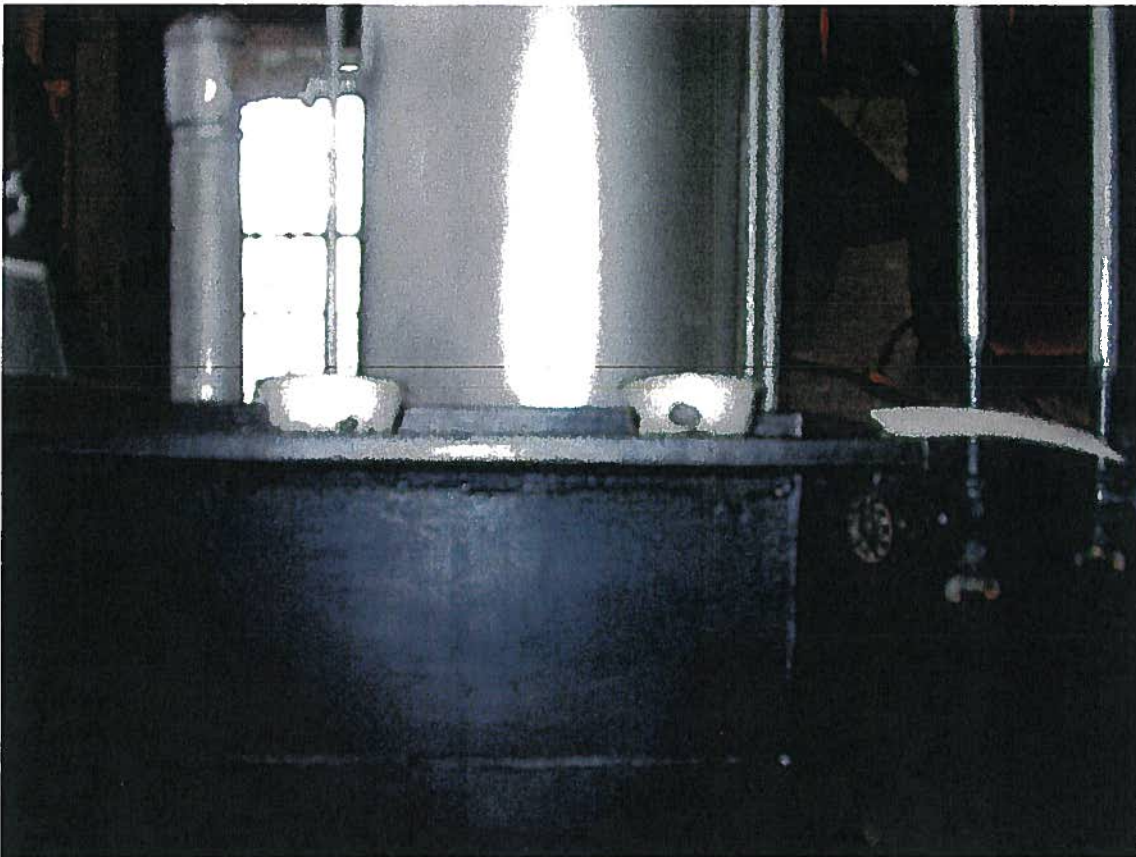


20. gold room, center of floor, west side view from north DK 07/07



21. gold room, center of floor, west side view from north DK 07/07





22. gold room, center of floor, west side view from north DK 07/07



23. gold room, centre of floor, view from south, above drawers DK 07/07



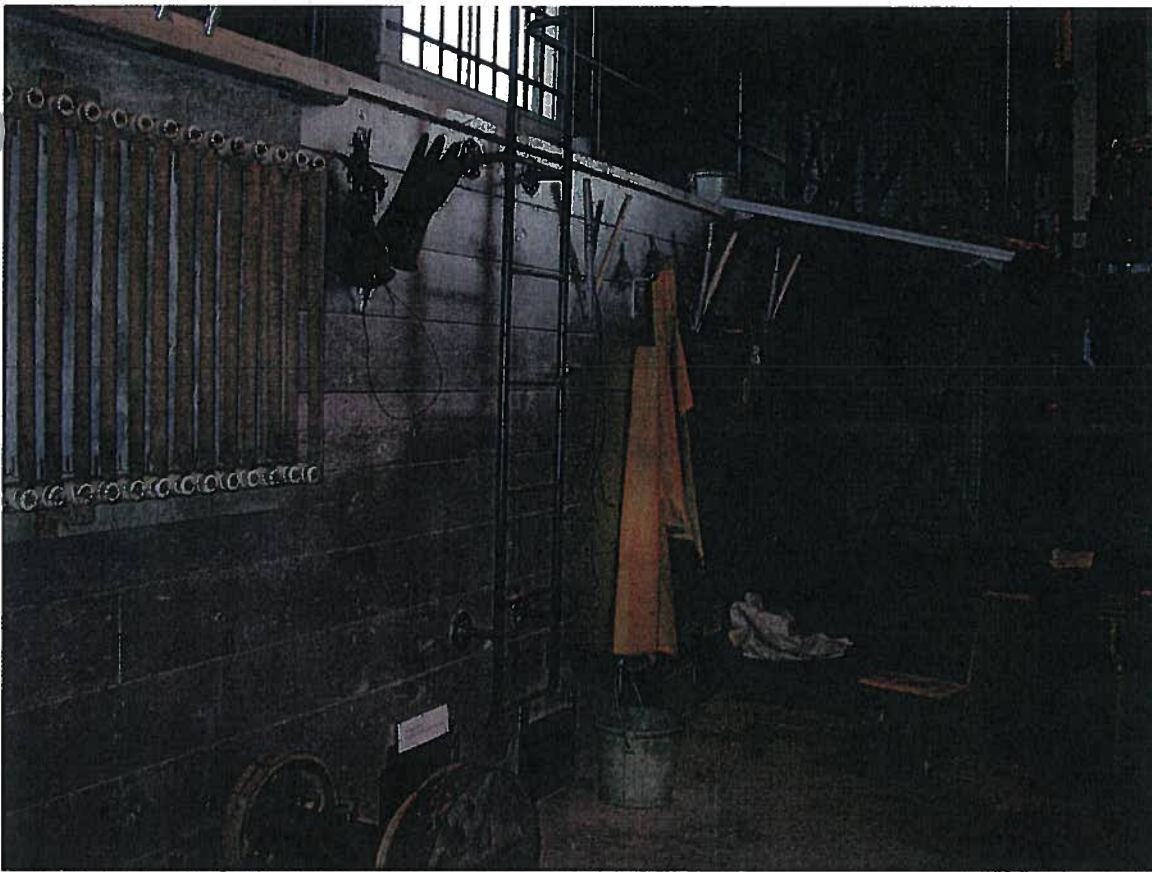


24. gold room, center of floor, drawers, view from south DK 07/07



25. gold room, south-west corner right of door DK 07/07



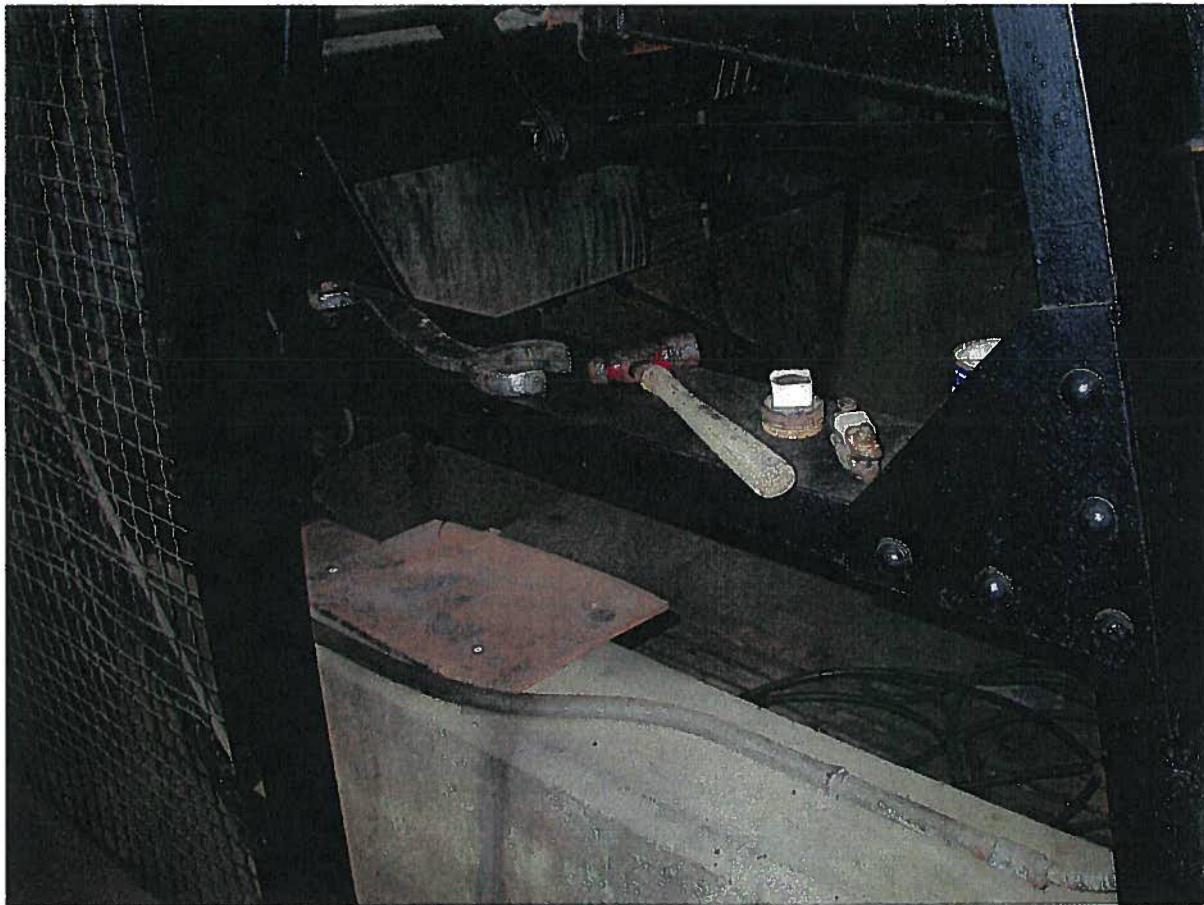


26. gold room, west wall view from south DK 07/07

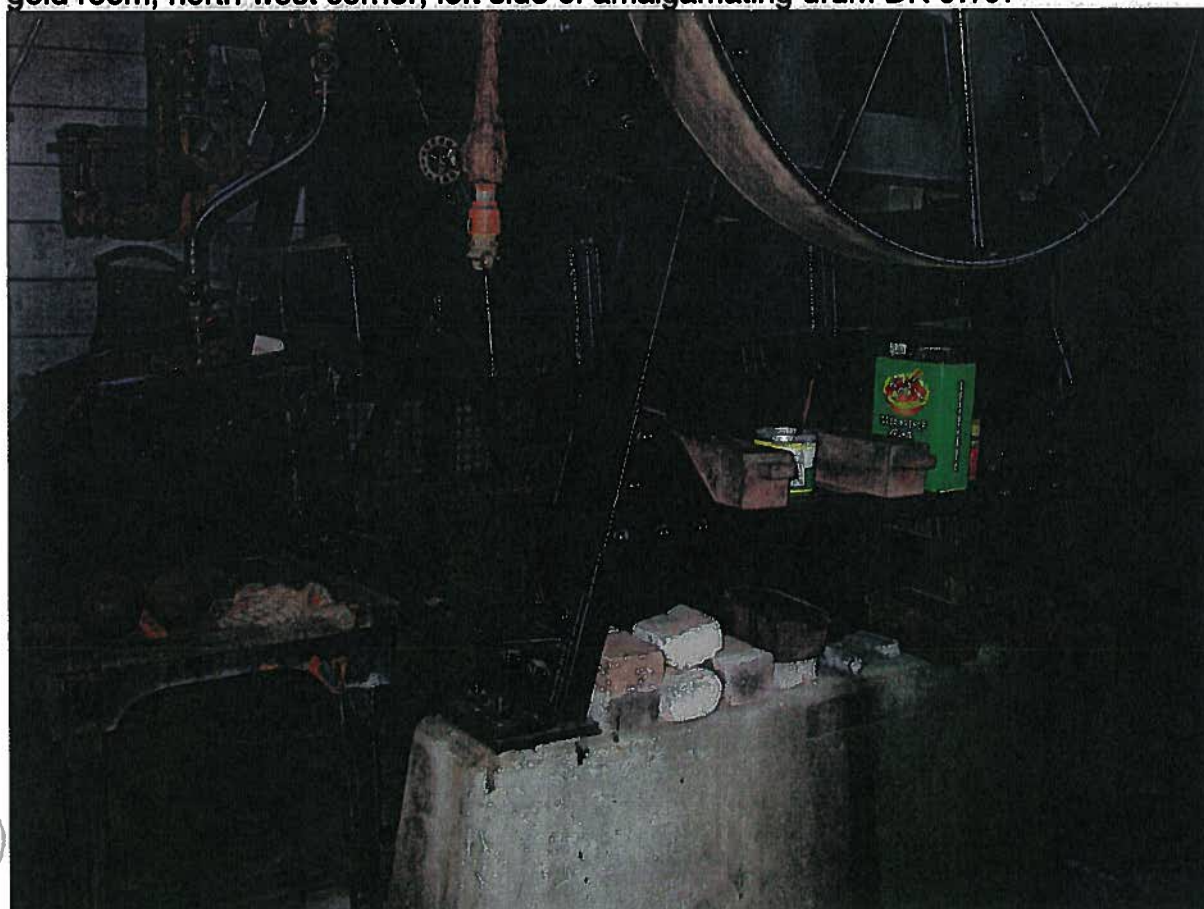


27. gold room, west wall view from north, left of amalgamating drum DK 07/07



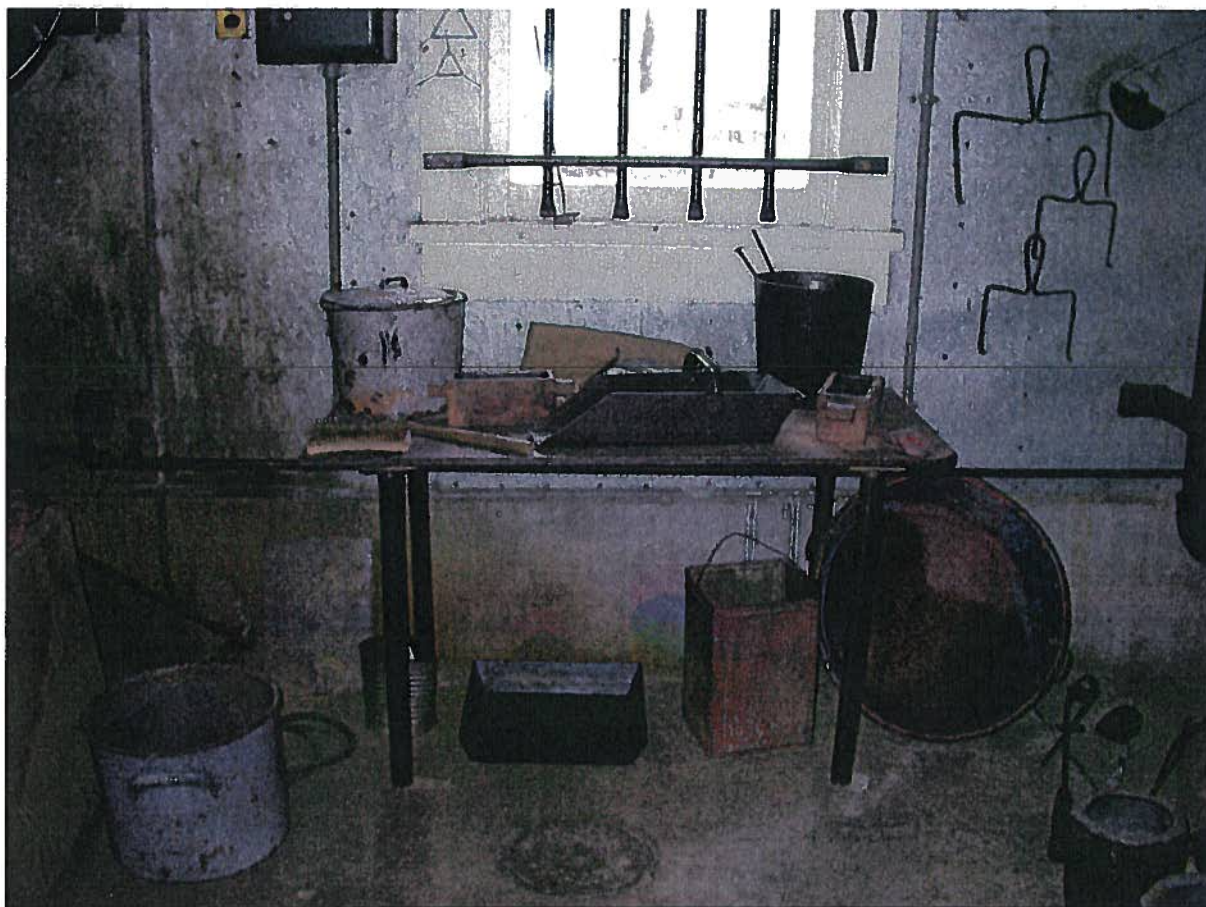


28. gold room, north-west corner, left side of amalgamating drum DK 07/07

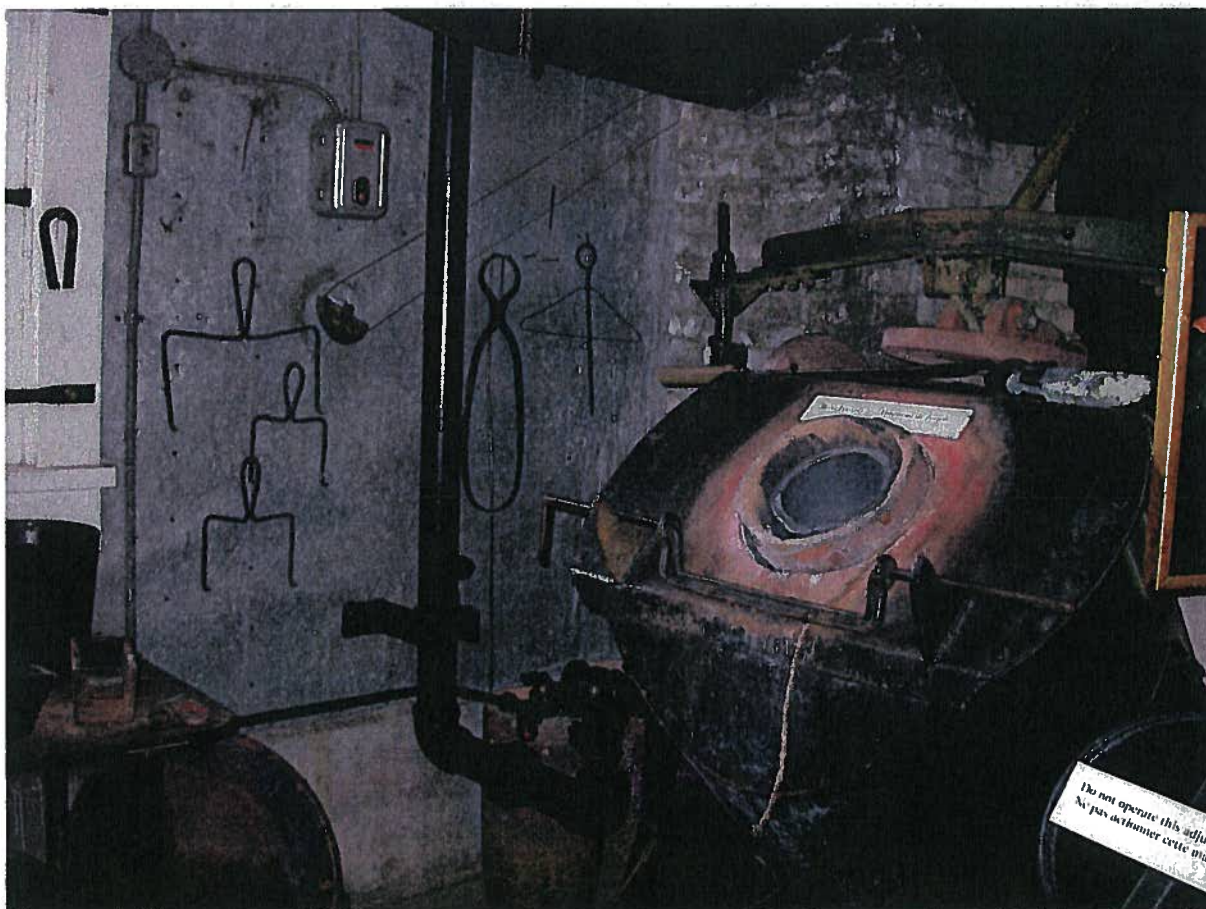


29. gold room, north wall view from east, right side of amalgamating drum DK 07/07





30. gold room, north wall right of amalgamating drum, under window DK 07/07



31. gold room north wall, right of window, wall left of furnace DK 07/07

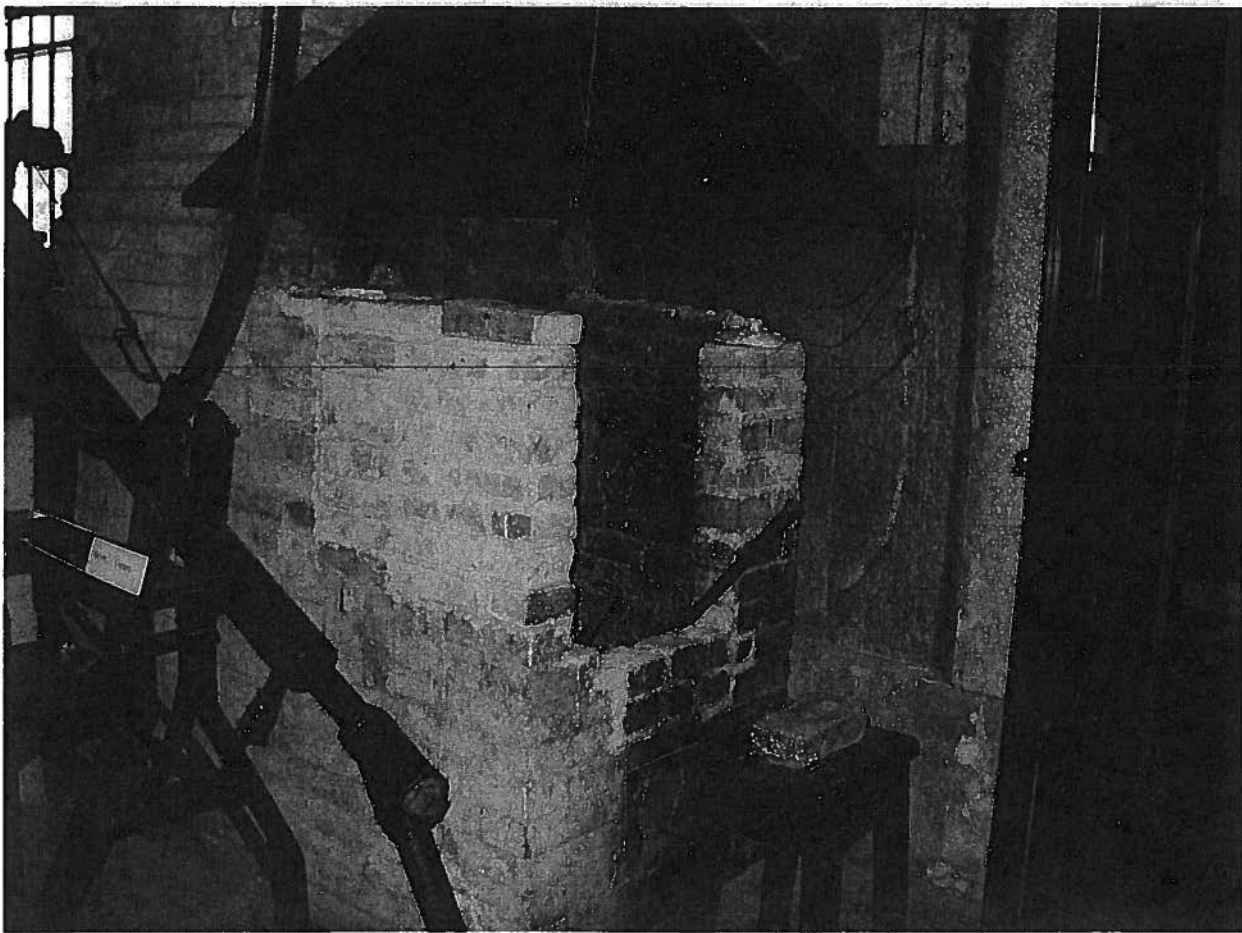


32. gold room north wall, right of window, floor near furnace DK 07/07





33. gold room, centre of floor, south of safe DK 07/07



34. gold room, north wall facing west DK 07/07



35. gold room, north wall facing west DK 07/07



**Appendix C**  
**Gold Room Process Description**



29/51

GOLD ROOM

The first gold room in Bear Creek was in one corner of the steam generating power house. This power house was burnt down on October 29, 1915. The plant had not been used since the North Fork Hydro plant was built except for heating the main buildings in Bear Creek. The gold room section of the building was not destroyed in the fire. A new gold room was built of logs between buildings No. 19 and 20. ( there is a photo of this gold room ). The present gold room was built in 1939. The last gold was cleaned and poured into a brick in the late fall of 1966.

To the left as you go into the building is a small office, here the man in charge kept his records. Around the corner of the office to the left is the scales, used for weighing the gold. In the cupboard under the scales is the material that were used in the melting of the gold. At the far wall is a metal bench where those working there cleaned the gold. Behind them in the middle of the room is a large sink, used for washing the mat from the dredges panning was done in wooden tubs on the floor. The electric ovens on the wall near the cleaning bench were used to dry the gold after panning. On the back wall are a number of bins. Each bin has a number that corresponds with a dredge or operation number. Into these bins went the dirt and sand from the long toms at the operation. After the mining season was over, the men in the gold room, put this material into the amalgam drum, up high on the north wall. Hot water and a cleaning agent,

probably lye, and a large steel ball was put in. The drum was then turned for about 8 hour, mercury was also put in the drum during this time. The drum was then opened and the material was washed down through the small sluice box, trapping the gold in the riffles and on the mercury coated copper plate. The gold saved this way was cleaned of any dirt that was in it. It was then put in a crucible and taken to the furnace, where it was heated enough to vaporize the mercury. The vaporized mercury would flow along a pipe that was cooled by water and be deposited in a bucket of water, back into its liquid form. Once the gold had been cleaned it was taken to the furnace in a graphite crucible. In making a melt of 900 to 1000 ounces of gold.  $\frac{3}{4}$  pound of borax is first melted in the crucible as a flux, the gold is then poured in followed by a  $\frac{1}{4}$  pound of soda and a further  $\frac{1}{2}$  pound of borax. The soda unites with the silica of any sand in the gold and the borax unites with the iron content. during the melt the slag must be skimmed off a few times. A long special rod is used, it has an enlargement at the lower end to which the slag sticks. Once the rod becomes loaded and heavy to handel, it is dipped in water and broken off. A second flux of borax is added, when this is melted, the gold is ready to pour. The mold is preheated to where when the oil is poured in it will smoke and start to burn, the gold is then poured in. Once the gold is cooled in the mold, it is removed and place in a bath of 3 to 4 parts water to one part nitric acid. This cleans the gold of any superficial deposits. The slag is knocked off with a

hammer and the bar is brushed with a wire brush.

The company then stamped a number on the bar which was recorded, along with the weight of the bar against the operation from whence the gold came.

There is a safe in the gold room where the gold was stored until a shipment could be made. The gold room crew consisted of 4 men during the summer operating season and two men during the winter months. The dredge sluice boxes or tables as they were known as, were cleaned up of the concentrates every 3 to 4 days. some times if they ran into rich ground they would be cleaned every day. With as amny as 9 dredges operating during the summer months, it kept the gold room crew busy. They would handel as much as 120,000 ounce in a year.

~~There are some good photos available of the gold room operation and a couple of good 16mm films.~~

I think it would be a good idea, to get some one, who is familiar with the gold room to demonstrate to the interpreters, what went on in there and how the gold was cleaned. There are two people who have worked in the gold room, my brother Allen Gould who lives in Dawson and Peter Foth, who is here in the summer months. I could also give a familarization tour, time permitting.

## Gold Room Tour

### Site 1 ; Porch on outside of Gold Room

Bear Creek was the corporate headquarters for the large-scale dredging operations in the Klondike from 1905 to 1966. The first building in Bear Creek (indicate Boyle house) was built in 1905 by Joe Boyle. In August 1905, Boyle's company, the Canadian Klondike Mining Company, started up the first large dredge, No.1. The Company ran up to four large dredges from 1905 to 1918. At that time the company went into receivership. From 1918 to 1923 the Company was run by receivers. In 1923, operations were taken over by A N C Treadgold. He ran the Company until 1930. By that time the Company was called the Yukon Consolidated Gold Company (YCGC).

YCGC was then run by a Board of Directors through the on-site manager. The YCGC was shut down in 1966 and officially closed it's books in 1968.

Most maintenance and repair was done on-site at the dredge. Major repair (eg. Bucket-line) was done here at the machine shop (point out machine shop) during the winter.

The other major function of Bear Creek was the recovery of gold from the dredge concentrates and we will show you that now.

Joke: No, we don't have any samples.

### Site 2: In the Gold Room between sinks and cleaning table.

There were three men who worked in the Gold Room. They were the Gold Room Manager and his two assistants. These men were year-round employees. They worked for the Company in other jobs during the winter. Processing the gold was done when the dredges were running.

These men were also responsible for setting up the sluicing tables on each of the dredges every spring before dredging operations resumed. After that they concentrated on processing the gold.

Two men would do the dredge clean-ups. Usually it was the Gold Room Manager and one assistant. The other person remained behind working in the Gold Room.

Anecdote: One job he might have was cleaning up the floor drains. These were done once a week. The material was panned out and the gold recovered.

There was always somebody in the room. For security reasons the gold and concentrates were kept in the vault under lock and key. Only the General Manager had the keys. With regards to the bars on the door and windows, they were only installed in 1964 at the request of the local RCMP.

Once the concentrates arrived here, if time permitted processing would start immediately. If not, they would be stored in the vault and processing would start the next day. Concentrates were divided up among the three men and placed in the gold

pans behind us. They were first screened using the grizzly (the pan with the holes). Any gold nuggets which wouldn't fit through the holes were removed and placed in one of a number of bowls on the cleaning table. At this point you can indicate the stacks of enamel bowls on the table. Gold was sized and separated during the cleaning. This allows for a more uniform melting.

Then you start panning the concentrates. The basic principle of panning is gold is 19 times heavier than water. The panning was done in three wooden tubs which were placed on the floor here (indicate the marks on the floor). The concentrates were panned until you can see nothing in that pan but gold. Anything removed from the pan at this point was recovered and placed in the bins at the far end of the room. The bins were marked as to which dredge they represented. The concentrates were mostly black sand (magnetite) and reprocessed as time permitted.

The pans were placed in the drying oven over here (indicate dryer). This was an electric oven. Once the gold was dry it was placed on the floor over by the back door and allowed to cool off.

Once it could be handled it was taken to the cleaning table. Once again it would be screened and sized. There are screens of various sizes. You would start with the very coarse and progress to the very fine. Once you got to the very fine the gold was placed in the blower (the triangular container). You would hold this so that the opening was away from your mouth and you would then blow (very gently) on the gold. In this way you would separate the fine gold from the fine sand. The sand was also reprocessed.

At all stages of this process you would be removing various impurities. These would include nails, bullets, coins, and also iron pyrite. The most common one though, was black sand (magnetite). It was removed by using a magnet. Iron pyrite had to be picked out by hand using your fingers and a pair of tweezers.

The gold recovered using this method (which was the bulk of the gold) was called "clean gold". This was put in 5lb. Baking powder tins, weighed and marked as to which dredge it came out of and then stored in the vault until there was enough gold to do a "melt". A "melt" was usually done about once every 10 days on average.

### Site 3: The large sinks.

In the sinks, the men would wash out the cocoa mats from the dredge. The material in the mats would be panned out in the same method as the other concentrates.

### Site 4: The bins and the Long Tom sluice box.

The bins stored the waste material from the dredge sluice boxes and the panning operations in the Gold Room. Most of this would have been Black Sand and very fine sand. There are openings for the bins at both the bottom and the top. Sacks of concentrates from the General clean-ups at the dredges would be dumped in from the top. Concentrates were removed from the bottom. These concentrates would be put in a barrel suspended from the overhead crane above the Long Tom. The barrel was

then dumped into the amalgamating drum at the far end of the Long Tom.

This drum is actually a ball mill because it has in it large steel bills. The drum is closed and then it rotates using the nearby electric motor. The drum would turn for two to four hours depending on the amount of concentrates in it. Then it was stopped and a mixture of hot water, lye, and mercury (half a cup to a drum load) was placed in the drum. Hot water and lye were used to clean the gold. Mercury was used because it amalgamates (sticks to) very fine gold and makes it easier to recover in the sluice box. It is also heavier than gold.

The drum would be stopped after a couple of hours. It was opened up and the water turned on. The drum was hosed out. The concentrates were then run through the sluice box. In the top run of the sluice there was a copper plate coated with a fine smear of mercury. Most of the mercury and fine gold would have been caught in the two mercury traps in the middle of the sluice (point out the pit and the slotted trap). The rest of the gold would be caught in the expanded metal riffles and the cocoa mat underneath. The amalgam or "dirty gold" was then panned out using the same method as for "clean gold".

When sluicing the amalgam there will be more mercury in the mercury traps than there is gold. This was scooped out of the traps using a spoon (once the water is shut off). The mercury was placed in a cloth bag and the excess mercury was squeezed out through the cloth. They wore rubber gloves when they did this.

The amalgam was weighed and stored in the vault. It was also marked as to which dredge it came out of. "Melts" from amalgam were done far less frequently than that for "clean" gold.

#### Site 5: The Blast Furnace.

This is a comparatively small blast furnace. It was oil-fired and rumbled and roared when it was in operation. The oil came in under pressure (you can point out the burner underneath). Gold melts at around 1000 degrees celsius, so when they were "melting" it got incredibly hot in the building. That's why there is steel sheeting on the walls. They opened up all the doors and windows on those days.

To melt the "clean" gold would take about 4 hrs. They would place about 12 to 15 hundred ounces of gold in the crucible (point out the crucibles on the floor and in the furnace). They are made of specially treated graphite so that the graphite melts at a higher temperature than the gold does. They also mixed in a flux of borax and baking soda which would cause some of the impurities in the gold to rise to the surface during the melting process. This is called slag. The slag was scooped off using the shovel laying on the floor. The slag on the shovel would harden, then they would beat it off using a hammer.

While they were melting the gold they would be heating the brick moulds in the open brick furnace behind the blast furnace. These moulds were coated with vegetable oil (usually Mazola or St. Lawrence Corn Oil) and heated until the oil was smoking.

The moulds were picked up using the long bar suspended from the blast furnace.



The two men who handled this protected their hands using asbestos mitts. The furnace was then tilted and the molten gold poured into the mould.

The moulds were then set in a trough of water (the table by the entrance) to cool. As the bricks are cooling more slag will rise to the surface of the bar forming a black layer of slag on the brick. The bricks are cleaned using the wire brush and the various other tools on the table beside the blast furnace. Once cleaned, the brick was weighed, stamped, and tagged with a numbered tag (like the one on the counter opposite the blast furnace). In the drawer underneath the counter you will find a bin containing the flux mixture and another drawer containing the stamps.

The process for melting the amalgam was the same, with the exception being that you first had to remove the mercury. Removing the mercury was done by placing the amalgam in the crucible which was then placed in the furnace. The furnace was turned upright, the heat was turned down low, and the retort was lowered down on top of the crucible (point out retort suspended above the furnace). A sealing gasket, a half-inch thick, was made of asbestos and water. The mixture was plastered around the lip of the crucible and the retort was lowered on to this. The gasket would help to prevent the escape of mercury fumes. The venting system above the furnace would also remove fumes.

As far as we know, nobody who worked in the Gold Room has died as a result of mercury poisoning. However, some individuals were temporarily ill from what were certainly the affects of mercury.

The mercury would take about 4 hrs. To burn off The fumes from the mercury are drawn into the pipe extending out of the retort. There is a water jacket on the outside of the pipe. This cooled the mercury, causing it to condense and then the mercury was collected in the pit at the bottom of the pipe. The pit had water in it and the pipe extended below the waterline. This prevented the escape of fumes from the pipe. The mercury was collected and re-used. It was stored in 5 gal. Containers along side of the Long Tom. The gold could then be melted using the regular process.

#### Site 6: The Vault.

The gold bricks were stored in the vault until they could be sent to town. The bricks were placed in metal boxes like the one on the bench at the back end of the furnace. These were locked and put in the back of a pickup truck. The Gold Room Manager would take them to town. They were deposited with the Bank Of Montreal which was in what is now calles the Bank of British North America building on the corner of Queen and Second Ave. In Dawson.

End of tour: Call for questions. Then return people to the Bear Creek VRC.

References: Taped and personal interview with John King.

Taped interview with Alan Gould.

The Gold Hustlers - Lewis Greene. All reference material is courtesy of Parks Canada.

**Appendix D**  
**Gold Room Material Inventory**



# Gold Room Materials Inventory

Item	Qty.	Inventory Number	Photo
<b>OFFICE</b>			2
<i>*denotes a porous item that may not be suitable for cleaning with liquid</i>			
Wood desk – rubber top	1	MA.78.11.103	2,4
Desk chair – wooden	1	MA.78.11.59	2
Yale/Best locks	60	MA.78.11.54/70	2,3,6
Yale keys	58	MA.78.11.60	2,3
Desk trays – wire	3	MA.78.11.102	5
Desk tray – wire	1	MA.78.11.102D	5
Pencil sharpener	1	MA.78.11.116	4
Ink bottle – glass	1	MA.78.11.98	5
Counter and cabinets/drawers	1		2,3
Counter and top one drawer	1		2,6
Safe under counter	1		2
Test tube holder – wooden	1	MA78.11.94	3
Clipboard-wooden	1	MA78.11.114	2
Tin Box blue design	1	MA.78.11.206	
Bowl- enamelled with pebbles	1	MA78.11.66	3
Tube end cap – metal, grey	2	HX.87.100.10/11	5
Paint scraper	1	HX.87.100.13	
Tongs – metal	1	MA.78.11.123	2
Stool – wooden	1	MA.78.11.104	
Pick head – steel	1	MA.78.11.115	
Bottle (empty) – sodium hydroxide	1	MA.78.11.174	
Can opener	1	MA.78.11.217	
Tongs –metal spring, rubber	1	MA.78.11.219	2
Hot pad – grey metal round	1	MA.79.5.21	
Coin envelope box*	1	HX.87.100.12	5
First aid book*	1	MA.78.11.100	5
Book YCGC warehouse*	1	MA.78.11.101	5
Time Sheet pad*	1	MA.78.11.97	5
Envelopes*	6	MA.78.11.99A/B	5
Newspapers*	2	MA.79.5.11/12	3
Accident/sickness pad*	1	MA.79.5.7	5
Work order pad*	1	MA.79.5.8	5
Time check pad*	1	MA79.5.9	5
Transfer slip pad*	1	MA.79.5.6	5
Crucibles in cupboard	2		
Cardboard box with keys	1		
Graphite bars in box	4		
Glass jars on desk	2		
Wood cabinet on wall with keys	1		

**Gold Room Materials Inventory**

Item	Qty.	Inventory Number	Photo
<b>WASHING FACILITIES</b>			18,19
<b>Upper Shelves</b>			
Bowls – enamelled	2	MA78.11.278A/B	22
Spoon – stainless tablespoon	2	MA.78.11.3, #20	19
Gold Pan	1	MA.78.11.12	19
Scoop – metal	1	HX.87.100.9	19
Metal cup - battered	1	MA.78.11.5	19
Scale weights – steel (50, 100)	2	MA.78.11.4A/B	19
<b>Basin Level</b>			
burner	1	MA.78.11.53	23
Bar-hooked steel	1	HX.87.100.30	23
Pail with lid-steel	1	MA.78.11.16	23
Gold Pans - perforated	3	MA.78.11.7/8/9	23
Box – rectangular steel DRG	1	MA.78.11.277	23
<b>Lower Level</b>			
Gold pans (solid and perforated)	11	MA.78.11.10/44/10/6/11	20,21
Dust pan – steel	1	MA.78.11.17	19,21
Tub – corrugated metal	1	MA.78.11.14	19,21
Pail – galvanized	1	MA.78.11.13	19,21
Tin can on floor	1	29	
<b>In Drawers</b>			
Metal stamps numbers in wood block	1	MA.78.11.136	24
Metal stamps letters in wood block	1	MA.78.11.137	24
Metal stamps letters in wood block	1	MA.78.11.126	24
Woodbox with 3 stamps	1	MA78.11.133	24
Wire brush wood handle	1	MA.78.11.169	24
Chisels – flat	3	MA.78.11.145/148/159	24
Chisel - hooked	1	MA78.11.180	
Chisel-	1	MA.78.11.147	
Punch - steel	1	MA.78.11.178	
Hammer – ball peen	1	MA.78.11.165	24
Chisels/drifts – pointy	4	MA.78.11.159/161/162/178	24
Flat bar	1	MA.78.11.119	
Pick-hand made	1	MA.78.11.122	24
Flat file	2	MA.78.11.257/124	24
Crowbar	1	MA.78.11.107	24
Wood Block	1	MA.78.11.143	
Crucibles in cardboard (new)	4	MA.78.11.119	
Light Bulb 100w	1		

**Gold Room Materials Inventory**

Item	Qty.	Inventory Number	Photo
<b>FURNACE/RETORT AREA</b>			32
Crucibles	5	MA.78.11.76/	33,34
Gold brick moulds	3	MA.78.11.50 A,B,C	33,34
Dolly - black metal expanded metal/solid	1		
Scale - balance beam	1	MA.78.11.47	35
Metal rack - brick cleaning	1	MA.78.11.46	35
Metal hinged box by scale	1	MA.78.11.48	35
Tongs	2	MA.78.11.69/75	31,32
Mould racks Y-shaped	5	MA.78.11.78A/B/C/D	31,32
Pan flared– metal 3 sides	1	MA.78.11.87	31
Scoop – metal handmade	1	MA.78.11.86	31
Bucket – blue enamelled no lid	1	MA.78.11.85	31
Pot – blue enamelled with lid	1	MA.78.11.84	31
Wire brush	1	MA.78.11.140	
Metal washer two holes	1	MA.78.11.150	
Funnel - metal red	1	HX.87.100.5	
Small hammer	1	MA.78.11.142	
Bolt approx 12" long x 3/8"	1	HX.78.100.37	
Pan 24" diameter blue	1	HX.87.100.31	
Bucket – metal cylindrical brown/black	1	MA.78.11.79	31
Horseshoe magnet	1	MA.78.11.68	31
Metal container - rectangular	1	MA.78.11.95	31
Bar - steel	1	MA.78.11.49	31
Bunsen burner	1	HX.87.100.35	31
Long handled custom shovel	1		
Metal fans under furnace (3x3', 1x1')	2		
Poker Iron with loop	1	MA.78.11.83	
Tongs on floor	2	MA.78.11.83/70	
Crowbars	2	HX.87.100.29	
Rods- steel 2 small, 1 large	3		
Lids- cast metal	2		
crucible in brick furnace	1		
Ladle	1	MA.78.11.81	
Royal Mint Deposit form*	1	MA.79.5.3	35
Burlap			

**Gold Room Materials Inventory**

Item	Qty.	Inventory Number	Photo
<b>AMALGAMATION DRUM/SLUICE</b>			28
Gold brick moulds	5	MA.78.11.50/c,d,g,h / 71	30
Refractory bricks	6		30
Tobacco tin	1	HX.87.100.39	30
Corn oil tin	1	HX.87.100.4	30
Drum balls - steel worn	8		28
Burlap on drum*			28
Gaskets - drum cover	4		28
Wood planking on elevator*	3		28
Gold pan	1	MA.78.11.9	28
Wooden sluice insert - grooved*	1		28
Expanded metal insert	1		28
Wooden wedges*			28
Burlap in sluice*	1		28
Stool- wooden	1	MA.78.11.51	28
Pails -galvanized on catwalk	2		28
Wrench - open ended	1		29
Hammer - ball peen	1		29
Hose -rubber, black	1	MA.78.11.188	28
Belt - spare	1	MA.78.11.158	
Tin tomatoes - empty	1	HX.11.100.40	
Drano can	1		
pipe plug	1	#21	
steel clamp	1	#15	
steel pan 15"x15"	1		
<b>EAST WALL (OUTSIDE OF OFFICE)</b>			7
Tall wooden cabinet with cupboards/glass	1		1
Saucer - metal enamelled	9	MA.78.11.204/a-i	8,9
Saucer - china	1	MA78.11.205	8
Blow Torch	1	MA79.5.41	8
Can - varnish	1	MA.78.11.275	8
Can - bronzing powder	1	MA.78.11.274	8
Can - linseed putty	1	MA.78.11.273	8
Bottle - turpentine	1	MA.78.11.272	8
Tin - flake graphite	1	MA.78.11.271	8
Container - saltpetre	1	MA.78.11.270	11
Tin -rectangular metal genuine parts	1	HX.87,100.3	
Goggles-	1	MA.78.11.264	
Wrench-open end	1	MA.78.11.267	
File - half round	1	MA.78.11.257	
File -round rats tail	1	MA.78.11.258	
Crucible	1	MA.78.11.268	
Steel tin - rectangular	1	MA.78.11.95	

**Gold Room Materials Inventory**

Item	Qty.	Inventory Number	Photo
Knife - linoleum wood handle	1	MA.78.11.265	
Saw blades metal	2	MA.78.11.266/13	
Horseshoe magnets	8	MA.78.11.19/253a-d/254a-d	11
Padlocks	4		11
Round cardboard containers	3		11
Coffee pot - electric	1		12
Coffee pot - stovetop	1		12
Coffee cups	3		12
Cups-plastic	2		12
Flat round metal piece	1		12
Tin - tobacco with lid	1		12
Magnet holders	5	MA.78.11.255/b,c,d /258d/#13	
Valve globe brass	1	MA.78.11.269	
Sodium Nitrate - 5# cardboard boxes	3	MA.78.11.270/a-c	
Graphite bars	4	MA.78.11.276/a-d	
Castors, loose	3	MA.78.11.113	12
Metal perforated box	1	#24	
steel rod hooked end	1		
Wrench - open ended	1	#17	
Prybar	1	#12	
Nut steel rusty	1		
Safe on castors, Marvin	1	MA.78.11.200	9
Pan - rectangular metal	1	MA.78.11.221	9
Pot - cast iron with handle, black	1	MA.78.11.244	9
Pail - Enamelled blue, with handle	1	MA.78.11.245	9
Pan - white enamelled, blue trim	1	MA.78.11.246	9
Metal sheet - cookie	1	MA.78.11.187	
Metal pans- small	2	MA.78.11.203, MA.79.5.15	
Stick wooden	1	MA.78.11.201	
Strongbox metal, floral	1	MA.79.5.42	9
Brooms - 3 straw, 1 push wood handle	4	MA.78.11.249/250	9
Wooden cabinet for large scale	1		37
weights, brass for scale	6	X71.457.1b	37
enamelled metal plates	5		37

**Gold Room Materials Inventory**

Item	Qty.	Inventory Number	Photo
<b>SOUTH WALL</b>			42
Counter along wall and floor:			42
Large balance beam scale	1		14,37
Foot stool, wooden with fabric cover	1	MA.78.11.112	13
Waste basket, wiremetal	1	MA.78.11.111	13
Metal powered milk can	1	MA.78.11.108	
Waste pail - metal	1	MA.78.11.52	
Gold pans	5	MA.78.11.11/a,b,c,l,m	14,15
Scoop metal, small	1		15
Blower scoop - metal, triangular	1	MA.78.11.23	15
Mortar and Pestle, metal	1	MA.78.11.24	15
ring metal round, holes	1	MA.78.11.105	15
Paint brush, wood/nylon*	1	MA.78.11.20	15
Scoop - metal	1	MA.78.11.22	
Horseshoe magnets	2	MA.78.11.19A/B	15
Tin can - galvanized	1		
Pail - small galvanized	1		15
Drying oven:	1	MA.78.11.26	17
Spoons - metal	2		17
Gold pans	3		17
Expanded metal shelf	1		17
Dish - porcelain with chalk	1	MA.78.11.26e	17
Lamp, electric - green enamelled metal	2	MA.78.11.109/110	14
Beneath Counter:			42
Stools - wooden	3		15
Crowbar-steel	1	MA.78.11.107	
Hotplate - ceramic, electric	1	MA.78.11.120	42
Shelf:			
Bowls - enamelled metal	18	MA.78.11.28/29/30a-g/	16
		MA.78.11.31a-d/32a-d/33	
Blocks - wooden	3	MA.78.11.27/a-c	16
<b>WEST WALL</b>			26
Aprons - rubber, yellow	2	MA.78.11.39	27
Clipboard - wooden	2	MA.78.11.35/43	27
Gloves - rubber, black	2	HX.90.28.311/316	26
Funnel - metal	1	MA.78.11.117	26
Crow bar - metal 4'	1	MA.78.11.89	25
Bucket - galvanized	1	MA.78.11.36	26
Squeegee wood handle	1	MA.78.11.88	
Screen - expanded metal with wood handles	2	MA.78.11.41/42	27
Scoop - sampling, metal, white	1	#8	27
Metal cup	1	MA.78.11.118	
Rounded heavy metal pan on floor	1		
Screen metal box	1	MA.78.11.40	

**Gold Room Materials Inventory**

Item	Qty.	Inventory Number	Photo
<b>CATWALK</b>			
Can - belt dressing	1	HX.87.100.6	
Pans - galvanized	2	MA.78.11.36/a-b	
Kerosene can	1		
Wood pole with hook	1		
<b>WASHROOM/ELECTRICAL</b>			
<b>VAULT</b>			
Safe with compartments	1		38
Table - grey wooden	1		38
Picture - framed, river, geese	1	MA.78.11.134	38
Corner shelving unit - grey metal	1		39
Briefcase - leather	1	MA.78.11.125	39
Fluorescent bulbs	4		39
Electrical heater	1	MA.78.11.120	
Bottle, powder solvent	1	MA.78.11.129	
Cardboard box of new cupels	1		
Dishes enamelled white with blue	2		
Suitcase, black empty	1	MA.78.11.121	
Jug -ceramic buff, cork lid	1	MA.78.11.128	
Metal box with locks	1		
Metal pans	2	MA.78.11.131/a,b	
Metal box no lid	1	MA.78.11.130	
Axe handle	1		
Workboots and socks pair	1		
Rubber galoshes	2		39
Metal book ends	2		39
Cardboard box of YCGC seals*	1		38
Binder cover 1953 employment*	1		
Rags*			39
Books*			39
<b>ATTIC SPACE ABOVE OFFICE</b>			40
Sheets*			41
Burlap*			41
Cardboard box*			41

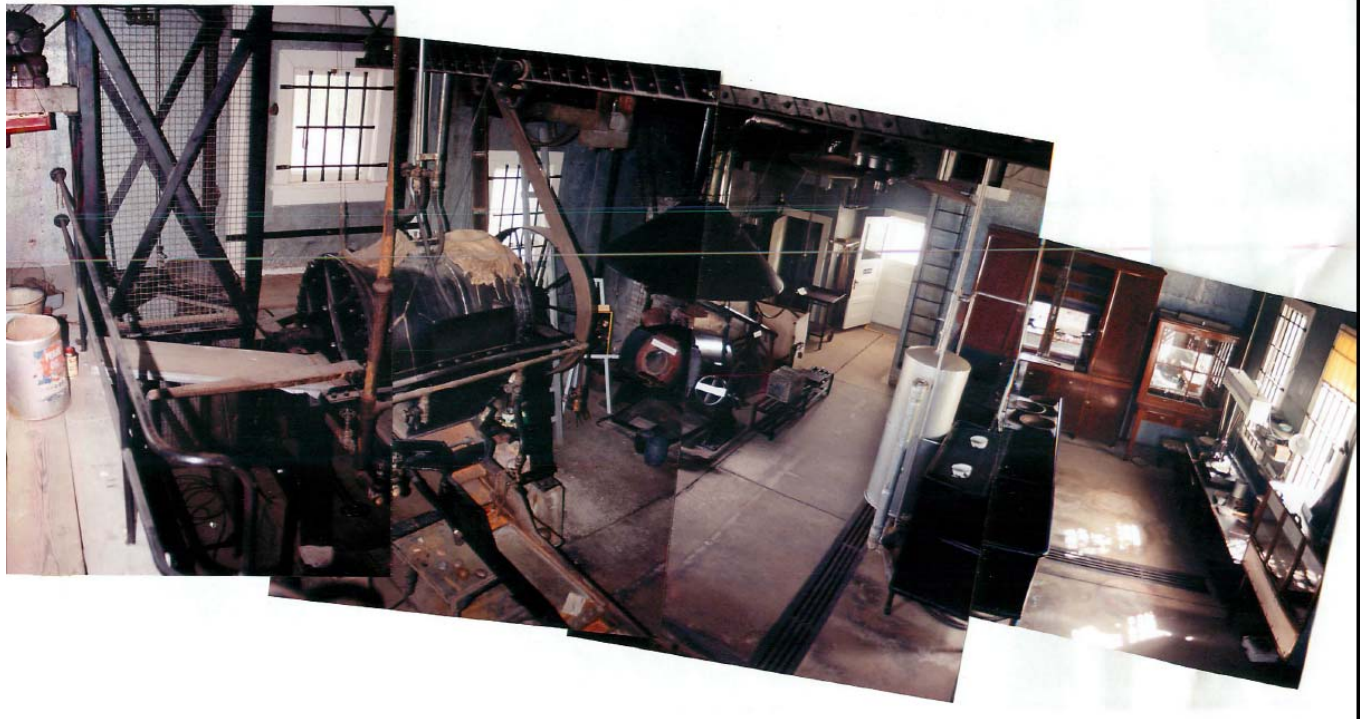


Photo 1: Gold Room Panorama



Photo 2: The Office





Photo 3: Office, east wall



Photo 4: Office, west wall desk



Photo 5: Office, south wall desktop

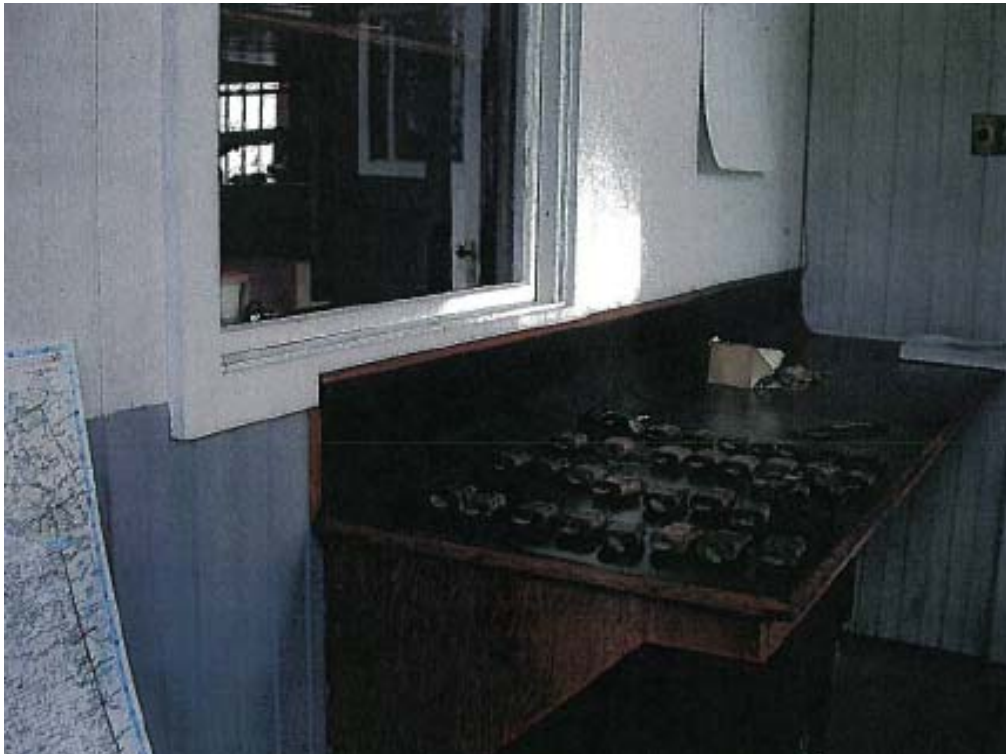


Photo 6: Office, west wall counter



Photo 7: East Wall



Photo 8: East wall, tall cabinet, upper cupboards





Photo 9: East Wall, safe below tall cabinet



Photo 10: East Wall, tall cabinet, middle shelf



Photo 11: East Wall, tall cabinet, right side cupboards



Photo 12: East Wall, tall cabinet, lower cupboard





Photo 13: South Wall, below scale



Photo 14: South Wall, scale, counter and shelving





Photo 15: South Wall, counter



Photo 16: South Wall, shelving



Photo 17: South Wall, drying oven



Photo 18: Washing facilities: from north side





Photo 19: Washing facilities from south side



Photo 20: Washing facilities, pans



Photo 21: Washing Facilities, floor



Photo 22: Washing Facilities, shelf





Photo 23: Washing Facilities, counter



Photo 24: Washing Facilities, drawers

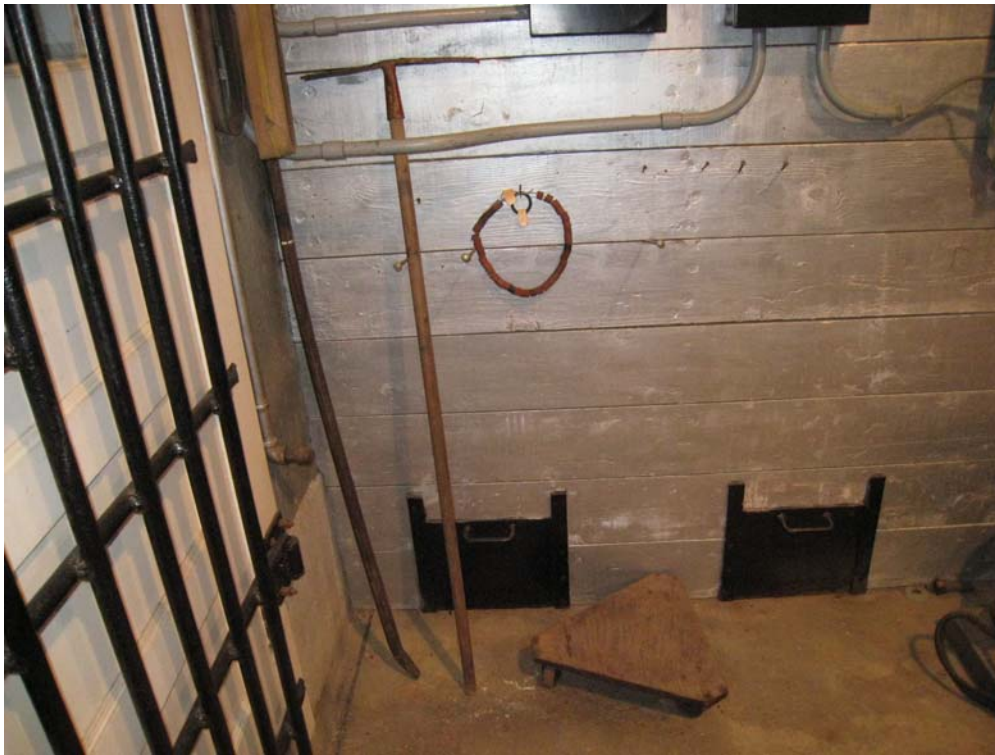


Photo 25: West Wall, near lean to door



Photo 26: West Wall, centre





Photo 27: West Wall near amalgamation drum

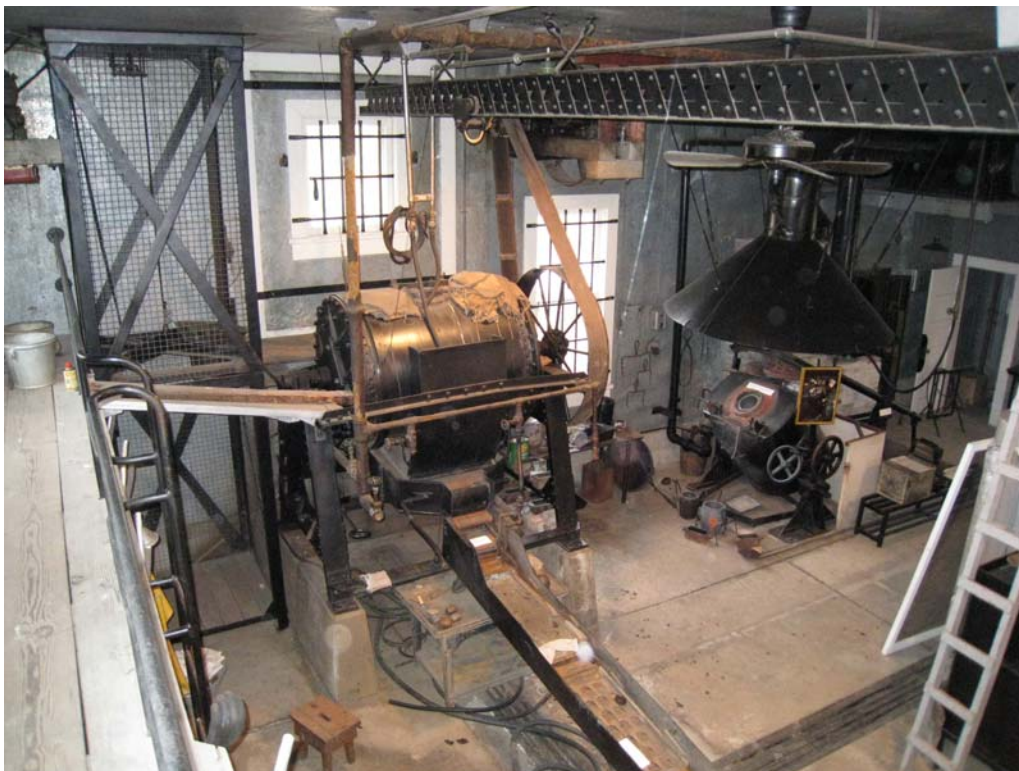


Photo 28: Amalgamation drum and sluice



Photo 29: Amalgamation drum, base on west side



Photo 30: Amalgamation drum, east side





Photo 31: North Wall: Bench between amalgamation drum and furnace



Photo 32: Furnace



Photo 33: Furnace, floor on west side



Photo 34: Furnace, floor behind beside furnace, north side





Photo 35: Rack and balance beam scale beside furnace



Photo 36: Brick furnace





Photo 37: Cabinets east wall



Photo 38: Vault: safe, picture and desk



Photo 39: Vault: counter and items



Photo 40: Attic entrance above office





Photo 41: Attic contents



Photo 42: South wall

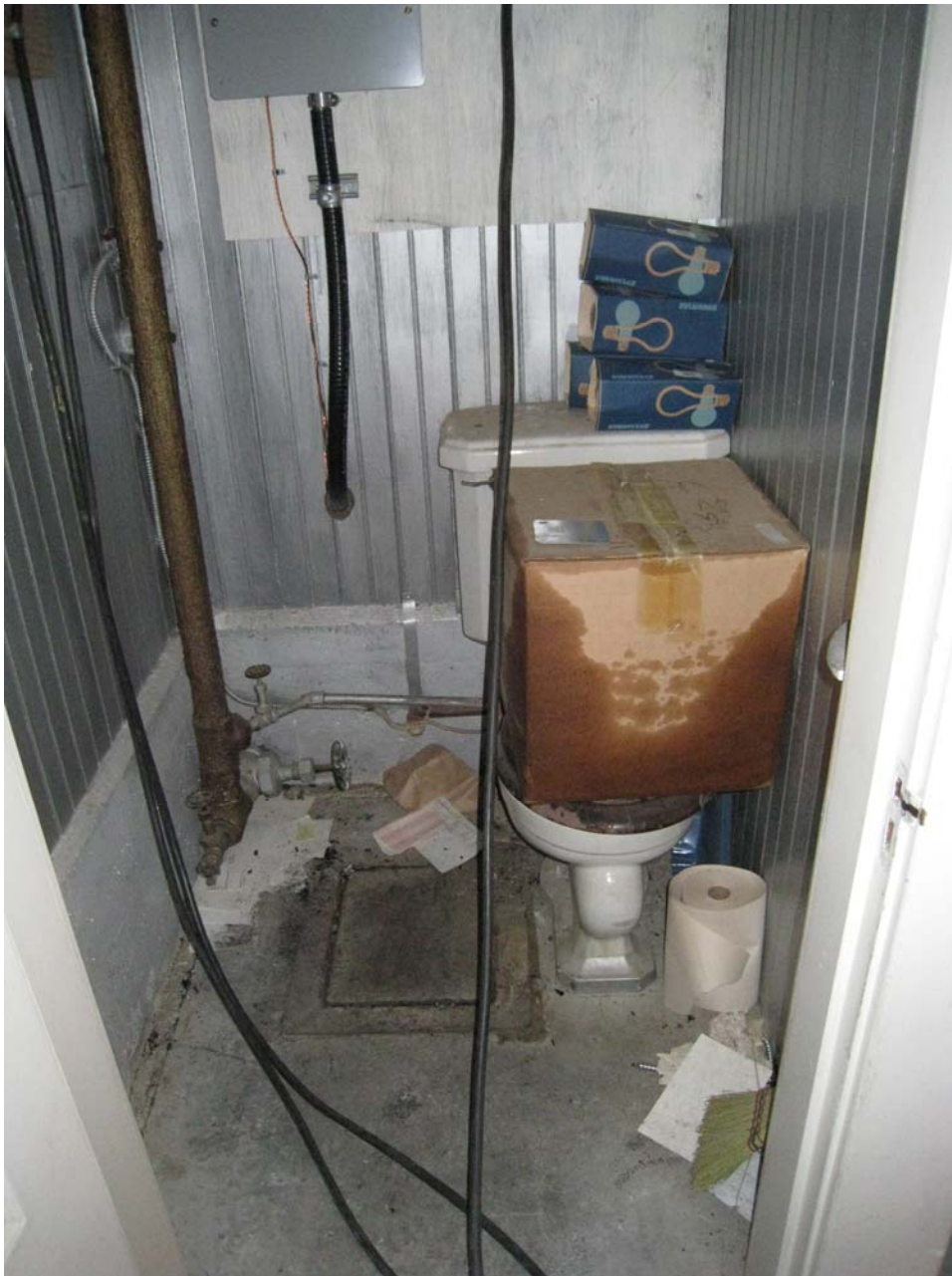


Photo 43: Washroom/Electrical room