



Environment and
Climate Change Canada

Environnement et
Changement climatique Canada

CONTRACT TECHNICAL SPECIFICATIONS

Meanook Abatement and Demolition

at

**Meanook National Wildlife Area
230043 B TWP RD 652
Colinton, AB, T0G 0R0**

Solicitation No: 5000053004

**Real Property Management Division,
Technical Services- ON-Region
Environment and Climate Change Canada**

Project No: Meanook-001

**Issued for Tender
Sept 01 2020**



Environment and Climate Change Canada
Project Name: Meanook Abatement and Demolition
Project Number: Meanook-001

Table of Contents

GENERAL CONDITIONS	3
HEALTH AND SAFETY	14
SITE PLAN	20
ABATEMENT AND DEMOLITION	21
ANNEX 1 - COVID-19 - STANDARDIZED PROTOCOLS FOR ALL CANADIAN CONSTRUCTION SITES	28
ANNEX 2 - BUILDINGS CONDITION REPORT	35
ANNEX 3 - ASBESTOS-CONTAINING MATERIALS SURVEY	302
ANNEX 4 – CANADIAN WILDLIFE SERVICES PERMIT APPLICATION FORMS AND GENERAL PERMIT CONDITIONS	391



1. SUMMARY OF WORK

1. The work to be completed under this contract is to complete abatement of hazardous materials and demolition work of six (6) buildings at Meanook National Wildlife Area site, situated in Meanook, Alberta. The work shall be completed in three (3) phases as described in the technical specifications and over three (3) years, 2020, 2021, and 2022. In consequence of this requirement, the Contractor must plan three (3) mobilizations and demobilization to the site.
The contractor must consider and plan in consequence that there is no utility available on-site. There is no electricity, no water, no sewage, and no gas available on-site.

2. The scope of work includes, but is not limited to, the following:
 - Location and marking of utilities prior to ground disturbance;
 - Removal and disposal of hazardous materials from five (5) buildings (M1, M2, M3, M5, and M6);
 - Demolition and disposal of debris/waste from six (6) buildings (M1, M2, M3, M5, M6, and M9);
 - Disconnect, cut, and remove utilities up to three meters from the perimeter of buildings;
 - Cap and organize location/survey of cut in situ utilities before backfilling;
 - Ensuring current driveway and the paved area is preserved (not removed or damaged);
 - Obtaining permission before removing any vegetation (trees) necessary for mobilization of the site;
 - Disconnect and disposal of all systems (Mechanical, Electrical, Structural, Sewage, Plumbing, etc.);

3. General Contractor is responsible for the coordination of all Sub-Contractor work related to abatement and demolition. For all abatement and/or demolitions described in this contract, a specific procedure will be submitted clearly indicating schedule, location, work method and sequence, depth, specific permit requirements, environmental measures, and a safety plan. If the work is contracted to a contractor, the contractor will be required to submit their specific abatement and/or demolition procedure to Environment and Climate Change Canada (ECCC) Departmental Representative for review and approval, prior to the work starting. **All work necessary for the removal of hazardous materials shall be completed prior to demolition.**



2. TIME OF COMPLETION

1. Commence work in accordance with the notification of acceptance of your tender submission and complete the work including rectification of deficiencies as per **schedule agreement on kick-off meeting.**

3. HOURS OF WORK

1. Hours of operation:
A special schedule should be proposed by the contractor and should be authorized by written from the Departmental Representative.
2. Work requiring power shutdown and/or Lock-Out (LOTO) work shall be completed following a special schedule approved by Departmental Representative. The Contractor must coordinate utility shutdown including any cost or fees when required.
4. Provide an implementation strategy in writing three (3) weeks prior to any shutdowns which clearly lists, the sequence of shutdowns, and the maximum length.
5. The Contractor shall not permit his/her personnel to work alone on this project when the following activities are undertaken;
 1. Work assessment determines that the potential health & safety risk is high;
 2. Work requiring entry into or work within a Confined Space;
 3. Work requiring Lock-Out and Tag-Out;
 4. Work requiring the use of fall arrest equipment;
 5. Work on scaffolding;
 6. Work requiring supplied-air respirators or similar equipment;
 7. Hot Work and/or Hot Tap activities;
 8. Work involving cranes or hoisting;
 9. Work or work situations identified as high risk by the Departmental Representative.

4. SCHEDULING

1. Within two (2) weeks of contract award, submit a bar chart construction schedule for the work, indicating anticipated progress stages within the time of completion. When the schedule has been reviewed and approved by the Departmental Representative take necessary measures to complete work within scheduled times. Do not change the schedule without written approvals from the Departmental Representative. The Contractor must confirm the required power shutdowns required and the activities for each shutdown and have these in his schedule, as well as, coordination with local utility provider if high voltage disconnect is required.



5. CONTRACT DOCUMENTS

1. Drawings and specifications are complementary, items shown or mentioned in one and not in the other are deemed to be included in the contract work.
2. Any questions that arise in relation to the Drawings and specification shall be brought to the attention of the Departmental Representative. Failure to comply with this procedure may necessitate amendments and other layout modifications as required to complete the Work, costs of which shall be solely the responsibility of the Contractor.
3. Study all documents, which describe, or are related to any operation before commencement of that operation. Report discrepancies discovered between existing conditions and documentation. Obtain ruling on required interpretation before commencing work.
4. Any changes to the scope of work are to be confirmed in writing by the Departmental Representative and Contract value changes approved, prior to the start of said work.

6. CONTRACTOR'S USE OF SITE

1. Do not unreasonably encumber site, with material or equipment.
2. Execute the work with the least possible interference or disturbance to the normal use of the existing premises. Make arrangements with the Departmental Representative to facilitate the work as stated.
3. Maintain existing services to the building and provide for personnel and vehicle access.
4. Where security is reduced by the work, provide temporary means to maintain security.
5. The facility is not operational for years, The Contractor shall plan for washrooms, water supply for workers, and for work, (as required). There is no utility on-site.
6. The Contractor shall be responsible to supply their own accommodations. Accommodation will be made for limited on-site storage in the area designated by the Departmental Representative.



7. CONTRACTOR PROJECT SUPERINTENDENT

1. The Contractor shall, upon award of contract, designate a Project Superintendent. The Contractor shall provide the name, cellular phone number to the Departmental Representative at the kick-off meeting. The Project Superintendent shall have full responsibility for the project and shall be authorized to accept and act upon any notice or direction provided by the Departmental Representative. Project Superintendent shall be available on-site at all times that work is being performed under this contract.
2. Supervise and direct all persons engaged in the work, including all tradesmen and suppliers. Become familiar with the requirements of each trade. Coordinate delivery and work operations. Examine the work of all trades during work operations to ensure compliance with the contract requirements. Expedite all work to maintain the contract schedule.
3. Cooperate with all other contractors working on-site in parallel or related projects.
4. Attend coordination and project meetings at the direction of the Departmental Representative.

8. CONTRACTOR and SUBCONTRACTORS

1. The Contractor agrees to employ those sub-contractors proposed by him in writing as listed in the Contractor's tender submission.
2. Do not change or substitute approved sub-contractors without prior authorization from the Departmental Representative.
3. The Contractor and subcontractor personnel shall be qualified as per definitions under the Apprenticeship and Industry Training Act and as required by regulatory agencies in Alberta.
4. Electrical work shall be carried out by qualified and licensed electrical contractors as per Alberta regulations.
5. Fire alarm work, if required, shall be carried out by qualified and accredited personnel as per Alberta regulations.

9. WORKMANSHIP

1. Workmanship shall be the best quality, executed by workers experienced and skilled in the respective duties for which they are employed. Immediately notify the Departmental Representative, if required, if work is such as to make it impractical to produce required results.



2. Do not employ any person unfit or unskilled in their required duties. The Departmental Representative reserves the right to require the dismissal from the site, workers deemed incompetent, careless, insubordinate, or otherwise objectionable.
3. The Work as covered by the tender documents is intended to comply exactly with the latest rules and regulations of the inspection authorities, and these rules are to be considered an integral part of the tender documents. In case of conflict, any ruling by the Inspection Authority shall be final. All changes and alterations to the Contractor's work required by an authorized inspector or any authority having jurisdiction shall be carried out at the expense of the Contractor.
4. Decisions as to the quality or fitness of workmanship in cases of dispute rest solely with the Departmental Representative, whose decision is final.

10. RECORD DRAWINGS

1. As work progresses, maintain accurate records to show deviations from the contract drawings. Just prior to completion of work, supply to the Departmental Representative one set of white prints with all deviations neatly inked in. The Contractor must provide a PDF file with the surveyed location of the cut utilities for the owner's records.

11. SHOP DRAWINGS

1. If required, provide shop drawings as listed in the specifications and/or drawings to the Departmental Representative prior to ordering materials. Shop drawings to illustrate details of the portion of work specific to the project requirements. Information to clearly indicate the items to be reviewed. Generic drawings are not acceptable. Shop drawings shall be forwarded electronically to the Departmental Representative.
2. Allow two (2) working days for the Departmental Representative's review of each shop drawing submission.

12. CODES AND STANDARDS

1. The following codes and standards are in place for work under this contract. The latest edition applicable at the time to be utilized.
 1. The National Building Code of Canada
 2. The National Fire Code of Canada
 3. CSA C22.1-18 Canadian Electrical Code (24th Edition)
 4. National Plumbing Code of Canada 2015
 5. Alberta Occupational Health and Safety Act



6. Canada Labor Code Part II and Federal Occupational Health and Safety Policies

13. FEES AND CERTIFICATES

1. Submit a completed Notice of Project Form to the Alberta Labour and Immigration as required by the notification requirements under the Regulations for Construction Projects made pursuant to the Alberta Occupational Health and Safety Act. Provide a copy to the Departmental Representative.
2. If required, submit to the Electrical Inspection Authority the necessary number of working drawings and specifications for examination and approval prior to commencement of work and pay all associated fees.
 1. Obtain and pay for all electrical inspection fees.
 2. On completion of the work provide copies of the Electrical Inspection Authority inspection approval certificates.

14. CONSTRUCTION SAFETY MEASURES

1. Observe and enforce construction safety measures required by Alberta Occupational Health and Safety Acts, Canada Labor Code Part II, Occupational Health and Safety, Workers' Compensation Board and municipal statutes and authorities and site-specific Health and Safety Policies and Directives
2. In the event of a conflict between any provisions of the above authorities, the most stringent will apply.
3. Provide and maintain guardrails, fences, barricades, lights, signs, and other devices required for the protection of workmen and public in accordance with the requirements of the Canada Labour Code Part II, Occupational Health and Safety, Alberta Occupational Health and Safety Act and Local by-laws. All signs shall be bilingual or CSA universal pictograms.
4. Ensure the safety of building personnel at all times when performing work.

15. FIRE SAFETY REQUIREMENTS

1. Comply with the National Building Code of Canada for fire safety in construction and the National Fire Code of Canada for fire prevention, firefighting, and life safety in building in use.
2. Comply with Human Resources Development Canada (HRDC), Fire Commissioner of Canada (FCC) Standards;



1. No. 301: Standard for Construction Operations
2. No. 302: Standard for Welding and Cutting
3. No. 374: Fire Protection Standard for General Storage (Indoor and Outdoor) available from Fire protection Engineering Services, Labor program.
4. Retain all fire safety documents on-site.

16. WORKPLACE SAFETY AND INSURANCE BOARD

1. Prior to commencing the work, throughout the total performance of the work when requesting payments and prior to receiving final payment, the Contractor shall provide evidence of good standing with Workers' Compensation Board Alberta.

17. UTILITIES

1. Water supply is not available on-site.
2. Electrical service is not available on-site.
3. Sewage service is not available on-site.
4. Gas service is not available on-site.

18. PROTECTION

1. Protect finished work against damage until take-over.
2. Protect the work and all surrounding equipment, landscape, structures, floors, ceilings, walls, etc., from damage.
2. Make good, at no cost to the Owner, any damage caused.
3. Protect any services, which are uncovered during work.
4. Protect all areas adjacent to the construction areas from dust and debris produced during construction.

19. PRODUCT HANDLING AND STORAGE

1. Deliver materials in original and unopened containers or wrappings with Manufacturers' seals and labels intact and legible.
2. Deliver materials in sufficient quantity to allow continuity of the work. Do not



encumber the site with unnecessary materials.

3. All unused materials at the end of any working day shall be properly protected from damage.
4. All materials, equipment, etc. to be handled and stored as not to interfere with the operation of the building.
5. All material and equipment to be new unless specified otherwise.
6. Contractors who use controlled products must ensure that their workers are properly trained in the safe use and handling of such products in compliance with the Workplace Hazardous Materials Information System (WHMIS).
7. Comply with all requirements with respect to Controlled products labeling and Material Safety Data Sheets (MSDSs) according to the requirements of WHMIS and the Hazardous Products Act.

20. PRODUCT AVAILABILITY

1. Upon award of the contract immediately review product delivery requirements and advise the Departmental Representative of any foreseeable delays.
2. In the event of failure to notify the Departmental Representative at the commencement of the work. The Departmental Representative reserves the right to require the supply of substitute products of equivalent quality at no increase in the contract price to ensure adherence to the project schedule.

21. MATERIALS STANDARDS

1. Materials shall be new and work shall conform to the minimum applicable standards of the Canadian General Standards Board, the Canadian Standards Association, the National Building Code of Canada, and all applicable Provincial and Municipal codes. In the case of conflict or discrepancy, the most stringent requirements shall apply.
2. Ensure that materials, equipment, services, and labour are brought to the site in sufficient quantity and in accordance with the requirements of the work schedule.

22. MATERIALS OTHER THAN SPECIFIED

1. Secure in writing, permission from the Departmental Representative to use any materials other than those specified.

23. HAZARDOUS MATERIALS



1. Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding the use, handling, storage, and disposal of hazardous materials: and regarding labeling and the provision of Safety Data Sheets (SDS) acceptable to Human Resources Development Canada, Labour Program.

24. REMOVED MATERIALS

1. Unless otherwise specified, materials for removal become the Contractor's property and shall be taken from the site.

25. PROJECT CLEANLINESS

1. Remove waste materials and debris from the site at the end of each day. Leave the work area unencumbered upon completion of each work shift. Store materials and equipment.
2. Ensure the site is clean, orderly, and neat at all times during the work shift. Provide additional cleaning as requested by the Departmental Representative.
3. Clean areas affected under contract, to a condition at least equal to that previously existing and to satisfaction of the Departmental Representative.

26. WASTE MANAGEMENT

1. Comply with the Environmental Protection Act, Alberta Regulations for waste management programs on construction and demolition projects.

27. EXISTING SERVICES

1. Before commencing Work, establish location and extent of service lines in the area of Work and notify the Departmental Representative of findings.
2. Submit schedule to and obtain approval from the Departmental Representative for any shutdown or closure of active service or Facility. Adhere to the approved schedule and provide notice to affected parties. Do not alter schedule without the prior written consent of the Departmental Representative.
3. Obtain written authorization from the Departmental Representative prior to any interruption. Keep the duration of those interruptions to a minimum.
4. Where unknown services are encountered, immediately advise Departmental



Representative and confirm findings in writing.

28. DEMOLITION

1. Except if expressly stated otherwise, materials indicated for removal, become the Contractor's property and shall be promptly taken from the site.

29. EQUIPMENT

1. Provide and maintain equipment as required for the execution of work.
2. Provide and maintain conveying equipment as required for the execution of work.
3. Assume complete responsibility for construction strength, placing, anchoring and operation of derricks, cranes, hoists, and other mechanical contrivances used for work and ensure that loads carried thereon can be safely supported and be free from accidents to all persons.
4. Have hoist capacities, with regard to anticipated loads, verified by a Professional Engineer registered in the Province of Alberta.
5. Comply with all governing safety regulations in force at the time of construction.
6. Remove immediately such equipment when not required for work.
7. Provide and maintain, on-site, suitable fire extinguishers in sufficient quantities, as required by the Safety Code.

30. LOADING

1. Take precautions to prevent the overloading of any part of the structure during the progress of the work. Make good, at no expense to Owner, any damage resulting from such overloading.

31. HOISTING

1. If required, all crane operations are restricted to the following:
 - a) All craning of materials and equipment must be done outside normal building operating hours, ensure interior areas below are kept unoccupied.



32. SIGNS – ADVERTISING

1. No advertising and/or posting of company signs shall be permitted without written authorization from Departmental Representative.
2. Provide common-use signs as related to traffic control, information, instruction, health and safety, use of equipment, public safety devices, in both official languages or by the use of commonly understood graphic symbols to the Departmental Representative's approval.

33. BUILDING SMOKING ENVIRONMENT

1. Smoking is prohibited in the building and on the roofs. Obey smoking restrictions on building property as directed by the Departmental Representative.

34. GUARANTEE

1. The contractor, at own expense, shall correct any defects in the work due to faulty products and/or workmanship appearing within the extended guarantee/warranty periods set out in the individual sections from the date of final completion.

35. SHIPPING AND RECEIVING

1. The Contractor must be on-site to receive all shipments.
2. The Contractor is responsible to unload all shipments.
3. Deliveries may be turned away if the contractor is not on site.

END OF SECTION



PART 1 – GENERAL

1.1 PRECEDENCE

- .1 For Federal Government projects, this Health and Safety Section takes precedence over technical specification sections in other Divisions and/or Sections of this Contract.

1.2 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety, and Health Regulations.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Safety Data Sheets (SDS).
- .3 Province of Alberta
 - .1 Alberta Occupational Health and Safety Acts.

1.3 SUBMITTALS

- .1 Make submittals to Departmental Representative for review.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after the date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site-specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit an electronic copy of the Contractor's authorized representative's worksite health and safety inspection reports to Departmental Representative weekly.
- .4 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Departmental Representative will review the Contractor's site-specified Health and Safety Plan and provide comments to the Contractor. Revise the plan as appropriate and resubmit the plan to Departmental Representative.



- .7 Departmental Representative's review of the Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work and submit additional certifications for any new site personnel to Departmental Representative.
- .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.4 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to the beginning of Work.

1.5 SAFETY ASSESSMENT

- .1 Perform site specified safety hazard assessment related to the project.

1.6 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of the project and prior to each outage.

1.7 REGULATORY REQUIREMENTS

- .1 The Contractor shall comply with the specified standards and regulations to ensure safe operations. The latest editions are applicable.
 - .1 Canada Labour Code Part II.
 - .2 Canada Occupational Safety and Health Regulations.
 - .3 National Building Code Part 8 – Safety Measures at Construction & Demolition Sites.
 - .4 National Fire Code Part 4 – Flammable and Combustible Liquids.
 - .5 National Fire Code Part 5 – Hazardous Processes and Operations.



.6 Alberta Occupational Health and Safety Acts and Regulations.

1.8 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from the site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.9 RESPONSIBILITY

- .1 The Contractor shall be responsible for the health and safety of persons on-site, the safety of the property on-site and for protection of persons adjacent to site and environment to extent that they may be affected by the conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.10 COMPLIANCE REQUIREMENTS

- .1 Comply with Alberta Occupational Health and Safety Acts.

1.11 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during the performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of the Province of Alberta, and advise Departmental Representative verbally and in writing.

1.12 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted inconspicuous location on-site in accordance with Acts and Regulations of the



Province of Alberta, and in consultation with Departmental Representative.

1.13 CORRECTION OF NON-COMPLIANCE

- .1 The Contractor shall immediately addresses health and safety non-compliance issues identified by the authority having jurisdiction or by Departmental Representative.
- .2 Provide the Departmental Representative with a written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if work is deemed to be life-threatening and non-compliance of health and safety regulations is not corrected.

1.14 DISCIPLINARY ACTION

- .1 The Contractor's disregard and/or lack of compliance to health and safety measures, procedures, and policies may lead to disciplinary action by the Departmental Representative.

1.15 BLASTING

- .1 Blasting or other use of explosives is not permitted.

1.16 CONTRACTOR ACCIDENT AND INCIDENT REPORT

- .1 The Contractor shall advise the Departmental Representative of any accident, injury, near-miss incident, fire, explosion, or chemical spill occurring at the Worksite and any visit to the site by a governmental enforcement official.

1.17 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of the environment over cost and schedule considerations of Work.

1.18 SITE HEALTH AND SAFETY POLICIES AND

- .1 Where applicable the Contractor shall comply and follow all prescribed site Health and Safety Policies and Directives



DIRECTIVES

including but not limited to the following;

.1 Worker Profile Sheet: The Contractor shall submit to the Departmental Representative a completed Worker Profile Sheet c/w all attachments including copies of licenses, certificates, and permits for supporting qualifications to perform required work for a given project for each individual worker requiring access to the site. The completed Worker Profile Sheets are required for each individual worker prior to working on site. Live work is not permitted.

.2 Emergency and Fire Evacuation Route: The Contractor shall obtain training on procedures of evacuating the site under emergency and/or fire situations. Contractor training and sign-off are required prior to initiating site work.

.3 Apprenticeship and Industry Training Act: The Contractor shall sign-off confirming that the Apprenticeship and Industry Training Act shall be observed and followed. Contractor sign-off is required prior to initiating site work.

.4 Lab safety training sessions for all individuals requiring access to specific lab areas with limited access restrictions.

1.19 WORKPLACE SAFETY AND INSURANCE BOARD

.1 Prior to commencing the work, throughout the total performance of the work when requesting payments and prior to receiving final payment, the Contractor shall provide evidence of good standing with Alberta Workers' Compensation Board.

1.20 CONSTRUCTION SAFETY MEASURES

.1 Observe and enforce construction safety measures required by Alberta Occupational Health and Safety Acts, Canada Labour Code Part II, Occupational Health and Safety, Workers' Compensation Board and municipal statutes and authorities, and site-specific Health and Safety Policies and Directives.

.2 In the event of a conflict between any provisions of the above authorities, the most stringent will apply.



- .3 Provide and maintain guardrails, fences, barricades, lights, signs, and other devices required for the protection of workmen and public in accordance with the requirements of the Canada Labour Code Part II, Occupational Health and Safety, Alberta Occupational Health and Safety Acts and Local by-laws. All signs shall be bilingual or CSA universal pictograms.
- .4 Ensure the safety of building personnel at all times when performing work.

PART 2 – PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 – EXECUTION

3.1 NOT USED .1 Not Used.

END OF SECTION



SITE PLAN





ABATEMENT AND DEMOLITION TECHNICAL SPECIFICATIONS

1. SEQUENCE OF WORK

1. Prior to the commencement of any activities (site investigation, abatement, demolition, etc.), the Contractor must submit a Canadian Wildlife Service (CWS) permit application using the form provided in Annex 4. Only after authorization by CWS has been received and notification has been given to Environment and Climate Change Canada (ECCC) and Natural Resources Canada shall the Contractor begin any activities at the Meanook site.
2. A thorough site inspection will be carried out before the start of work. This inspection intends to determine environmental and safety risks as well as developing the necessary work methods and sequence of operations. Site materials will be determined to ensure appropriate permits and risk mitigation are considered. In situ site conditions will be recorded in photographs during a site visit to recall all details and communicate the extent of demolition efforts required. A pre-demolition survey of adjacent surrounding structures will take place to document pre-existing conditions.
3. Abatement and demolition on this project will be contracted to a qualified abatement and demolition Contractor. The sequence and work method for the abatement and demolition of buildings is identified below:

Abatement

1. Building M1 (Structure Number: 108478) – Caretakers Residence;
2. Building M2 (Structure Number: 108482) – Garage;
3. Building M3 (Structure Number: 108479) – Magnetic Residence;
4. Building M5 (Structure Number: 22912) – Meteor Residence;
5. Building M6 (Structure Number: 108484) – Admin Building;

Demolition

1. Building M1 (Structure Number: 108478) – Caretakers Residence;
2. Building M2 (Structure Number: 108482) – Garage;
3. Building M3 (Structure Number: 108479) – Magnetic Residence;
4. Building M5 (Structure Number: 22912) – Meteor Residence;
5. Building M6 (Structure Number: 108484) – Admin Building;
6. Building M9 (Structure Number: 108483) – Fire shed.



4. The abatement and demolition should be completed as scheduled below:

Phase	Affected Buildings and Activities (A – Abatement, D-Demolition, B-Backfill, S-Survey/Locate)	Estimated Date
1	M2 – A, D, S, B M5 – A, D, S, B M6 – A, D, S, B M9 – D, S, B	Start: After contract award in 2020 End: before Mar. 31, 2021
2	M3 – A, D, S, B	Start: May 2021 or before depending on funding End: before Mar. 31, 2022
3	M1 – A, D, S, B	Start: May 2022 or before depending on funding End: before Mar. 31, 2023

5. Within each specific demolition procedure, the Contractor will ensure appropriate control measures are considered and sufficiently mitigated. These control measures may include but are not limited to the following:

- i. Entry and exit procedures (control of the abatement and demolition zone);
- ii. Decontamination of facilities/hazardous material abatement;
- iii. Engineering controls;
- iv. Dust and air quality control.

2. PERMITS

1. The Contractor will obtain all required permits and notify Occupational Health and Safety along with Alberta Labour and Immigration at least 72 hours before beginning activities that may release asbestos fibers. Considerations to permits include:

- Conducting work in a National Wildlife Area
- Athabasca County development
- Transportation of hazardous/demolition materials
- Disposal of materials
- Environmental
- Any other regulatory bodies having jurisdiction

The Contractor must ensure to include in the bid pricing any cost for permit purchasing (if necessary) and consider the processing time when planning work activities.



3. PRE-DEMOLITION ACTIVITIES

1. The Contractor will be responsible for coordinating the shutoff of utilities. The Contractor will be responsible for getting utility lines located and marked. The Contractor will cut and remove utilities up to three meters from the building perimeter (excluding septic tanks). The Contractor will ensure that the cut utility lines left in situ will be capped and surveyed/located before being backfilled.
2. The Contractor must develop and provide to Departmental Representative the mitigation plans to remove, transport, and dispose of the hazardous materials meeting all regulatory requirements.
3. More details of identified hazardous materials can be found on-site investigation report completed by EHS Partnerships Ltd in Annex 3.

4. SITE MOBILIZATION

1. The Contractor will ensure that all equipment to be used for the site abatement and demolition will be inspected and tested to ensure that they are in safe working condition and that all safety apparatuses are in place and functioning as designed.
2. The Contractor will ensure that equipment and work are completed by competent, qualified, and experienced employees.

5. HAZARDOUS MATERIALS ABATEMENT

1. Hazardous material found within the structures will be mitigated as identified in the Alberta Asbestos Abatement Manual, 2019, or the latest and Alberta Occupational Health and Safety Acts.
2. The Contractor is to ensure that all employees and personnel working or entering the site have been trained and briefed properly to perform the work. The Contractor is to provide first aid services, equipment, and supplies for working personnel in accordance with Occupational Health and Safety Regulations. The Contractor is to plan and execute all work in a manner that complies with all Occupational Health and Safety Regulations. The Contractor is to hold safety meetings (daily pre-task safety and possibly weekly safety toolbox). The abatement and demolition safe operating procedures are to be reviewed with all site personnel, signed off, adhered to, and retained for site files. The Contractor must facilitate access to Consultant for inspections at any time during the execution of work.
3. Access/egress will be specific to the work area and the task being performed. Individual



areas will be posted to warn individuals about potential hazards. In case of an emergency within the project area, all project personnel shall evacuate the work area to a muster point that will be identified as part of the pre-abatement/demolition safety meeting. The site supervisor and personnel will agree upon the safest and most logical location factoring in weather conditions, prevailing wind direction, proximity to work areas and other structures, and personnel safety.

4. For projects involving hazardous materials, the Athabasca Regional Waste Management Services Commissions refers to all projects to the Waste Management Landfill in Thorhild County. For others, it is suggested that all non-hazardous debris will be either recycled or landfilled to the Athabasca or Boyle landfills. All debris removed from the site will be manifested and copies of weighing bills will be available if required. The Contractor will be responsible to make any arrangements, including costs and/or any fees with the preferred landfill if it is required.
5. Abatement on the buildings under consideration shall be done prior to structure demolition. The sequence of abatement may vary, depending on site conditions and structural elements to be removed/demolished, but will be identified in a Contractor specific demolition procedure. The Contractor performing the abatement and demolition is to follow the requirements as per their Safe Operating Procedure and the latest revision of the Alberta Asbestos Abatement Manual. Additional information, including specific locations, can be found in the Meanook Asbestos Survey Report by EHS Partnerships Ltd in Annex 1.
6. Contractor must follow the abatement schedule as described below:

Phase 1 (2020):

Building M2 (Structure Number: 108482) - Garage

Building #	Items to be Abated/Removed	Asbestos %	Date
M2 (108482)	Vermiculite – 18 m ²	Vermiculite – 1% Actinolite	2020

Building M5 (Structure Number: 22912) - Meteor Residence

Building #	Items to be Abated/Removed	Lead mg/L	Date
M5 (22912)	Green entrance Door	5.45 mg/L	2020

Building M6 (Structure Number: 108484) - Admin Building

Building #	Items to be Abated/Removed	Asbestos %	Date
M6 (108484)	Aircell insulation – 0.5 m ² Drywall joint compound – 520 m ² Duct paper – 4 m ² Leveler/mastic – 72 m ² Sheet flooring – 28 m ²	Aircell insulation – 50% Chrysotile Drywall joint compound – 2% Chrysotile Duct paper – 60% Chrysotile Leveler/mastic – 1% Chrysotile Sheet flooring – 20% Chrysotile	2020



Phase 2 (2021):

Building M3 (Structure Number: 108479) – Magnetic Residence

Building #	Items to be	Asbestos %	Abatement Date
M3 (108479)	Drywall joint compound – 245 m ² Duct paper – 1 m ² Stucco – 130 m ² Floor tiles – 10 m ² Sheet flooring – 27 m ²	Drywall joint compound – 2% Chrysotile Duct paper – 70% Chrysotile Stucco – 1% Chrysotile Floor tiles – 4% Chrysotile Sheet flooring – 20% Chrysotile	2021

Phase 3 (2023):

Building M1 (Structure Number: 108478) – Caretakers Residence

Building #	Items to be	Asbestos %	Abatement Date
M1 (108478)	Duct paper – 3 m ² Plaster – 118 m ² Floor tiles – 24 m ² Sheet flooring – 21 m ²	Duct Paper – 50% Chrysotile Plaster – 1% Actinolite Floor tiles – 3-20% Chrysotile Sheet flooring – 20% Chrysotile	2022

9. DEMOLITION ACTIVITIES

- Demolition on the building under consideration shall be done only after the completion of hazardous material abatement. The sequence of demolition may vary, depending on site conditions and structural elements to be removed/demolished, but will be identified in a Contractor specific demolition procedure. The Contractor performing the abatement and demolition is to follow the requirements as per their Safe Operating Procedure and the latest revision of the Alberta Asbestos Abatement Manual. Additional information on the buildings, including specific materials, can be found in the Building Condition Report by Public Services and Procurement Canada (PSPC) at Annex 2.
- All components of the demolished structure and substructure shall be removed to a minimum depth of one (1) meter below the final grade or until all debris or hazardous material is removed.
- In order to mitigate dust during the abatement and demolition work, the Contractor will spray the debris with water during demolition and/or other methods during abatement as necessary. Other methods may be required under specific conditions. The Contractor shall follow its Safe Operating Procedures.



4. Contractor must follow the demolition schedule as described below:

Phase 1 (2020):

Building M2 (Structure Number: 108482) - Garage

Building #	Items to be	Demolition Date
M2 (108482)	1 garage, foundation	2020

Building M5 (Structure Number: 22912) - Meteor Residence

Building #	Items to be	Demolition Date
M5 (22912)	1 house with basement, foundation, utilities	2020

Building M6 (Structure Number: 108484) - Admin Building

Building #	Items to be	Demolition Date
M6 (108484)	1 house with basement, foundation, utilities	2020

Building M9 (Structure Number: 108483)- Fireshed

Building #	Items to be	Demolition Date
M9 (108483)	1 shed, foundation, utilities	2020

Phase 2 (2021):

Building M3 (Structure Number: 108479) - Magnetic Residence

Building #	Items to be	Demolition Date
M3 (108479)	1 house with basement, foundation, utilities	2021

Phase 3 (2022):

Building M1 (Structure Number: 108478) - Caretakers Residence

Building #	Items to be	Demolition Date
M1 (108478)	1 house with basement, foundation, utilities	2022

5. Segregation, size reduction, stockpiling, and load-out of the materials will be the responsibility of the Contractor. Stockpiling of debris will be avoided to the extent possible and loading of debris on the day of creation will be preferred.



12. POST DEMOLITION ACTIVITIES

1. All debris and waste will be removed from the project site. The debris/waste will be sent to the appropriate landfill as described in the demolition procedure. Waybills and other documentation relating to disposal will be retained by the Contractor for the project record. After all, wastes have been removed, the Contractor will remove all temporary facilities and structures.
2. Disturbed areas will be restored to a predetermined condition. It shall be backfilled, graded, with a 4 inches top layer of topsoil to allow for vegetation growth, and re-vegetated with seed or sod after completion of cleanup and conclusion of all other activities.
3. Demobilization will be coordinated to remove all personnel, equipment, supplies, and/or other material generated by the Contractor. A final site inspection will be conducted by a Departmental Representative prior to the final departure of all personnel from the site.

END OF SECTION



Environment and Climate Change Canada

Project Name: Meanook Abatement and Demolition

Project Number: Meanook-001

ANNEX 1

ANNEX 1

COVID-19 - STANDARDIZED PROTOCOLS FOR ALL CANADIAN CONSTRUCTION SITES



Canadian
Construction
Association

COVID-19 - Standardized Protocols for All Canadian Construction Sites

Version 2
March 30, 2020

For inquiries: Contact Zack Mullins
at zmullins@cca-acc.com

TABLE OF CONTENTS

<u>Standardized Protocols for All Canadian Construction Sites</u>	<u>1</u>
<u>Prevention measures</u>	<u>1</u>
<u>Communication and awareness</u>	<u>1</u>
<u>Business-related travel</u>	<u>2</u>
<u>Working remotely</u>	<u>2</u>
<u>Access and movement to/from construction site</u>	<u>2</u>
<u>Construction site and site trailer cleaning protocols</u>	<u>2</u>
<u>Limiting and removing internal touch point areas</u>	<u>2</u>
<u>Compartmentalization</u>	<u>3</u>
<u>Site operation</u>	<u>3</u>
<u>Deliveries</u>	<u>3</u>
<u>Other</u>	<u>3</u>
<u>Detection measures</u>	<u>4</u>
<u>Screening at entry of construction site</u>	<u>4</u>
<u>Response measures</u>	<u>4</u>
<u>Possible cases of COVID-19</u>	<u>4</u>
<u>Response plans</u>	<u>4</u>
<u>Other</u>	<u>4</u>

COVID-19 - STANDARDIZED PROTOCOLS FOR ALL CANADIAN CONSTRUCTION SITES

The Standardized Protocols for All Canadian Construction Sites outlines the best practices for construction sites in order to maintain the health and safety of all workers required to perform duties during the COVID-19 crisis. Some provinces and municipalities have implemented stricter measures than those found in this document, and contractors are responsible for compliance with the rules, regulations and practices required by the applicable authorities. The protocols, which include prevention, detection and response measures, will minimize the impacts of the crisis and ensure business continuity in the construction industry

The objectives of the Standardized Protocols are to:

- Prioritize the health and safety of workers and of their surrounding communities;
- Apply recommendations and best practices from federal, provincial and municipal Public Health Authorities to construction site procedures;
- Establish and maintain a common COVID-19 Pandemic Response Plan across construction sites; and
- Foster open communication amongst stakeholders and ensure a respectful work environment.

Standardized Protocols for All Canadian Construction Sites

Prevention measures

Communication and awareness

- Clear signage is posted at entry points on the construction site and outline the commitment of the contractor to maintain health and safety measures during the COVID-19 crisis, with relevant updates from appropriate jurisdictions' public health authorities and self-identification screening tools.
- All workers exercise the following recommended practices for reducing the risk of transmission as identified by the Public Health Agency of Canada (PHAC), Health Canada, and Centers for Disease Control and Prevention:
 - o Avoid touching eyes, nose and mouth with unwashed hands;
 - o When coughing or sneezing:
 - Cough or sneeze into a tissue or the bend of your arm, not your hand;
 - Dispose of any tissues you have used as soon as possible in a lined waste basket and wash your hands afterwards;
 - o Clean and disinfect frequently touched objects and surfaces, including all reusable PPE;
 - o Do not share personal items or supplies such as phones, pens, notebooks, PPE, etc.;
 - o Avoid common physical greetings, such as handshakes;
 - o Maintain a minimum physical distance of two metres from others; and
 - o Wash hands often with soap and water for at least 20 seconds after using the washroom, when preparing food, and after blowing nose, coughing, or sneezing. If hands are not visibly soiled, and soap and water are unavailable, alcohol-based hand sanitizer can be used.



Business-related travel

- Non-essential business travel is not authorized. Business travel is limited and on an exceptional basis only.
- All individuals returning from out of country must undergo a 14-day self-isolation period, as mandated by the federal government and outlined here: www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/latest-travel-health-advice.html.
- As some provincial governments impose similar restrictions for inter-provincial travel, any such requirements for self-isolation must be obeyed as applicable.

Working remotely

- Where practical, all office employees supporting a project work remotely. Meetings are held through teleconferencing or videoconferencing.

Access and movement to/from construction site

- Detailed tracking of worker's status on-site and off-site are kept at all time (e.g., fit to work, sick, off-work for family caring duties, etc.). A list of all quarantined workers is updated daily, with their privacy maintained.
- Wherever possible, workers travel to site using individual modes of transportation (e.g., personal vehicle or bicycle). Additional parking arrangements are made as required.
- All non-essential individuals are not permitted access to the site.

Construction site and site trailer cleaning protocols

- All offices and jobsites implement additional cleaning measures of common areas. All door handles, railings, ladders, switches, controls, eating surfaces, shared tools and equipment, taps, toilets, and personal workstation areas are wiped down at least twice a day with a disinfectant, such as disinfectant wipes. Individuals are responsible for cleaning and disinfecting their workstations.
- Additional sanitary measures are implemented on site: hand washing stations with a posted hand washing protocol, hand sanitizer stations, provision of disinfectant wiping products. These types of facilities are made available at site entries, exits, washrooms, eating areas, offices, and any other areas with commonly touched surfaces.
- Commonly touched surfaces on vehicles and equipment are thoroughly cleaned and disinfected at the end of shifts and between users.
- All cleaning and disinfecting is carried out as PHAC's recommends here: www.canada.ca/en/public-health/services/publications/diseases-conditions/cleaning-disinfecting-public-spaces.html.

Limiting and removing internal touch point areas

- Limit access and use of shared devices like coffee machines, water fountains, microwave ovens, and similar. Means to clean and disinfect such devices between uses is provided.
- Limit use of common pens for sign-in sheet to construction site.
- Washroom modifications - Install more sinks and sinks with physical separation between users where feasible. Change out taps, paper towel dispensers and garbage cans to hands-free models.
- Remove doors/door handles - Look at all reasonable opportunities to remove them.



- Where touch points like door handles and water coolers remain, paper towels are provided to allow users to avoid skin contact.
- Gloves are worn whenever possible while on the worksite, but are treated the same as bare hands in terms of minimizing unnecessary touching of anything on site and the user's face.

Compartmentalization

- The construction site is to be segregated to the extent possible in zones or other methods to keep different crews/trades physically separated at all time. This promotes physical distancing and supports the containment of propagation should it arise.
- Eating is restricted to clearly identified dedicated eating areas with handwashing stations, cleaning and disinfectant materials, and adequate space to maintain minimum physical distancing.
- Upper limits are put on the number of people allowed in each zone and in facilities like washrooms, trailers, and eating areas at once to allow for the recommended minimum physical distancing.
- One-way staircases are established wherever practical to minimize worker contact.
- Freight elevators are operated/occupied by only one individual at a time or where feasible, by respecting the minimum physical distancing guidelines.

Site operation

- The number of in person meetings is minimized. If required, meetings should involve only necessary individuals and include six people or fewer. Minimum physical distancing is maintained, and meetings are held in open spaces when possible.
- The worksite is rearranged to reduce high-traffic areas and allow for the minimum physical distancing.
- Site teams are encouraged to put forward split/alternating shifts to avoid extensive intermingling. Voluntary shift offset and implementing time gaps between shifts are highly encouraged.
- Alternate arrangements are made as necessary to ensure workers avoid breaking the minimum physical distance with others for prolonged periods. When this is not feasible, plans are made to minimize the duration of the task. For any work that ultimately must be done in close-proximity, workers are to wear additional PPE as appropriate for the specific task in order to minimize the risk.
- Project teams stagger break and lunch schedules to minimize the number of people in close proximity to one another. Enclosed lunchrooms are only made available during inclement weather.
- Work schedules are adjusted to provide time for proper cleaning and disinfecting as required.

Deliveries

- Delivery zones are clearly identified and limited to receivers and deliverers only.
- When possible, nothing is passed between the deliverer and the receiver (e.g. shipment documents and pens for signatures). Deliveries are unloaded solely by receivers using proper PPE, while deliverers remain in their vehicles.

Other

- Any other measures deemed to increase the safety or limit the propagation of the virus.



Detection measures

Screening at entry of construction site

- Before entering the site, individuals must confirm that:
 - They are not currently exhibiting flu-like symptoms such as fever, tiredness, coughing, or congestion;
 - They have not returned from outside of Canada within the past 14 days; and
 - They have not been in contact with someone with a confirmed or probable case of COVID-19.
 - Workers who are not authorized to access the site are to be safely transported directly back home, or to a preferred location of self-isolation. When unable to do so themselves, a vehicle and driver will be arranged for them. Both driver and passenger are to be given masks and nitrile gloves. The passenger is to sit in the backseat, and the driver is to open and close the doors for them.
-

Response measures

Possible cases of COVID-19

- Individuals who have been potentially exposed to the virus, or who are exhibiting flu-like symptoms such as fever, tiredness, coughing, or congestion are instructed to:
 - Not come to work;
 - Contact their supervisor and/or human resources department;
 - Stay at home and self-isolate; and
 - Contact local health authorities for further direction.Such individuals are required to follow the recommendations of the local health authority and may not return to work until given approval by the proper health authorities.
- Individuals who begin to display flu-like symptoms on site are instructed to avoid touching anything, take extra care to contain coughs and sneezes, and return home immediately to undergo a 14-day self isolation period.
- All areas on site potentially infected by a confirmed or probable case are barricaded to keep individuals two metres away until the area is properly cleaned and disinfected.

Response plans

- All contractors are to complete an integrated continuity plan to respond to partial or complete shutdown of construction sites or in the case of a severe limitation of site operations.

Other

- Refer to www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html for the latest information.
-

The situation related to COVID-19 is changing rapidly. This Protocol will be updated on an as required basis to reflect the latest broadly adopted measures.





Environment and Climate Change Canada

Project Name: Meanook Abatement and Demolition

Project Number: Meanook-001

ANNEX 2

ANNEX 2

BUILDINGS CONDITION REPORT

**Building Condition Report
November 2013**

**Environment Canada
National Wildlife Area (NWA)
Meanook, AB**



Prepared by:
Technical Services
Professional and Technical Services
Real Property Branch
Ontario Region
PWGSC

Issue Date by:
2014-03-27



This page intentionally left blank

CONTENTS

EXECUTIVE SUMMARY	1	M4 - GARAGE NO. 1	95
Introduction	3	Building Summary	99
Description	3	1.00 Architectural / Structural Systems	103
Recommended Expenditures	3	2.00 Vertical Transportation Systems	109
Short Term Expenditure	4	3.00 Mechanical Systems	109
Long Term Expenditure	4	4.00 Electrical Systems	111
GENERAL INFORMATION	5	M5 - MAGNETIC RESIDENCE	115
Project Team	7	Building Summary	119
Documents	7	1.00 Architectural / Structural Systems	123
Scope	7	2.00 Vertical Transportation Systems	133
Mandate	8	3.00 Mechanical Systems	133
Estimate Costing	8	4.00 Electrical Systems	138
Project Grouping	8	M6 - ADMINISTRATION BUILDING	143
Priority of Work	8	Building Summary	147
Project Priority System	9	1.00 Architectural / Structural Systems	151
Definitions	10	2.00 Vertical Transportation Systems	162
References	11	3.00 Mechanical Systems	162
Average Useful Life	11	4.00 Electrical Systems	169
PROPERTY / SITE	15	M7 - POWER SHED	175
Site Summary	17	Building Summary	179
0.00 Property / Site Systems	17	1.00 Architectural / Structural Systems	183
M1 - CARETAKERS RESIDENCE	21	2.00 Vertical Transportation Systems	188
Building Summary	25	3.00 Mechanical Systems	188
1.00 Architectural / Structural Systems	29	4.00 Electrical Systems	190
2.00 Vertical Transportation Systems	39	M8 - GARAGE NO. 2	195
3.00 Mechanical Systems	39	Building Summary	199
4.00 Electrical Systems	44	1.00 Architectural / Structural Systems	203
M2 - CARETAKERS GARAGE	49	2.00 Vertical Transportation Systems	211
Building Summary	53	3.00 Mechanical Systems	211
1.00 Architectural / Structural Systems	57	4.00 Electrical Systems	216
2.00 Vertical Transportation Systems	62	M9 - FIRE SHED	221
3.00 Mechanical Systems	62	Building Summary	225
4.00 Electrical Systems	62	1.00 Architectural / Structural Systems	229
M3 - METEOR RESIDENCE	67	2.00 Vertical Transportation Systems	235
Building Summary	71	3.00 Mechanical Systems	236
1.00 Architectural / Structural Systems	75	4.00 Electrical Systems	238
2.00 Vertical Transportation Systems	85	ANNEXES	
3.00 Mechanical Systems	85	Annex A - PHOTOGRAPHS	
4.00 Electrical Systems	90	Annex B - REFRIGERANT INVENTORY	
		Annex C - DRAWINGS	
		Annex D - HERITAGE STATEMENT	
		Annex E - ACCESSIBILITY AUDIT	
		Annex F - LIFE SAFETY SYSTEMS TESTING & FIRE CODE COMPLIANCE	

This page intentionally left blank

EXECUTIVE SUMMARY

This page intentionally left blank

EXECUTIVE SUMMARY

INTRODUCTION - In response to a request received from Olaf Jensen (Manager, Protected Areas Coordination), PWGSC's Technical Services group has conducted a condition assessment of the Meanook National Wildlife Area (Meanook, AB).

The completed report, with commentary on the need for a repair/replacement program, complete with related costs and priorities, was commissioned to assist with both short and long term facility planning.

DESCRIPTION - The Meanook National Wildlife Area is a Crown-owned facility with Environment Canada (EC) as the 'Custodial Department'. From 1983 until recently, day-to-day operation of the facility had been managed by the University of Alberta (UoA) in conjunction with their operation of a biological research field station on the site (under License granted by CWS). Since UoA's termination of the Licence and vacation of the site late in 2013, EC has again assumed day-to-day management. Situated in a sparsely populated area within the Athabasca River basin, the site contains a wide range of terrestrial, aquatic and wetland habitats. A magnetic observatory, with Natural Resources Canada (NRCan) as the 'Custodial Department', is located within the NWA.

The main buildings present at this facility, and included within the scope of this report, are as follows:

- M1 - Caretakers Residence - a single-storey, heated structure, used as on-site living accommodation.
- M2 - Caretakers Garage - a single-storey, unheated structure, used as a storage garage.
- M3 - Meteor Residence - a single-storey, heated structure, used as on-site living accommodation.
- ~~M4 - Garage No.1 - a single-storey, heated structure, used as a storage garage.~~
- M5 - Magnetic Residence - a single-storey, heated structure, used as on-site living accommodation.
- M6 - Administration Building - a single-storey, heated structure, used as administrative offices, kitchen/dining hall, and recreational facility.
- ~~M7 - Power Shed - a single-storey, unheated structure, used to house the facility's incoming electrical service.~~
- ~~M8 - Garage No.2 - a single-storey, partially-heated structure, used as a laboratory (heated) and a storage garage (unheated).~~
- M9 - Fire Shed - a single-storey, heated structure, used as a storage garage.

Separate assessments have been prepared for the site of each of the above-noted buildings.

NOTE: Building uses noted above are based on historical usage by UoA. Since vacating the site, the buildings remain vacant, with no known future use.

RECOMMENDED EXPENDITURES - A summary of the recommended expenditure costs as put forth throughout this report are presented as follows:

The total estimated Short Term Expenditure (1 to 5 years) cost for this facility is **\$727,778**, as outlined below:

Property / Site	\$5,606
M1 - Caretakers Residence	\$48,217
M2 - Caretakers Garage	\$2,990
M3 - Meteor Residence	\$68,476
M4 - Garage No.1	\$44,851
M5 - Magnetic Residence	\$76,221
M6 - Administration Building	\$293,452
M7 - Power Shed	\$72,472
M8 - Garage No.2	\$81,859
M9 - Fire Shed	\$33,634
Short Term Total	\$727,778

The total estimated Long Term Expenditures (6 to 25 years) cost for this facility is **\$1,148,114**, as outlined below:

Property / Site	\$28,030
M1 - Caretakers Residence	\$156,764
M2 - Caretakers Garage	\$0
M3 - Meteor Residence	\$109,458
M4 - Garage No.1	\$44,840
M5 - Magnetic Residence	\$264,442
M6 - Administration Building	\$308,594
M7 - Power Shed	\$62,220
M8 - Garage No.2	\$110,594
M9 - Fire Shed	\$63,172
Short Term Total	\$1,148,114

GENERAL INFORMATION

This page intentionally left blank

GENERAL INFORMATION

PROJECT TEAM - An on-site investigation of the facility was conducted on 20, 21 and 22 November 2013, by the following team members:

- Architectural _____ Colin P. Erwin, Technical Specialist, Architectural
- Mechanical _____ Andy Nguyen, Technical Specialist, Mechanical
- Electrical _____ Maurice Edwards, Technical Specialist, Electrical

Present on-site with the inspection team was Todd Kemper (EC - Protected Areas Biologist), to whom thanks is given for his assistance and cooperation.

Additional 'in-house' assistance in the preparation of this report was provided by:
Y.M. Rizzi, Compilation Review.

DOCUMENTS - The following documentation was available and has been used in the development of this report and the preparation of recommendations:

REPORTS

- Level II Building Environmental Site Assessment, dated February 25, 2009, prepared by 'Franz Environmental Inc.'

DRAWINGS

- None

OTHER

- DFRP Site - Property No. 22912 (property)
- DFRP Site - Building No. 022912 (M3 - Meteor Residence)
- DFRP Site - Building No. 108478 (M1 - Caretakers Residence)
- DFRP Site - Building No. 108479 (M5 - Magnetic Residence)
- ~~DFRP Site - Building No. 108480 (M8 - Garage No.2)~~
- ~~DFRP Site - Building No. 108481 (M4 - Garage No.1)~~
- DFRP Site - Building No. 108482 (*formerly 'M10 - Workshop', burned in 2012*)
- DFRP Site - Building No. 108483 (M9 - Fire Shed)
- DFRP Site - Building No. 108484 (M6 - Admin Building)
- ~~DFRP Site - Building No. 108485 (M7 - Power Shed)~~

SCOPE - A multi-discipline team has been assembled to conduct an on-site inspection, interview building maintenance staff and client representatives, and review and analyze existing information in the form of reports, as-built drawings and manuals, in order to provide a comprehensive report on the building systems.

- The on-site inspection was visual only, no destructive testing was performed.
- The building envelope, with the exception of some of the roof areas, was visually observed from ground level. No test cuts were performed and as such, the construction details described in this report were obtained through a review of the available architectural and structural reports and drawings for the building.

MANDATE - To identify and describe existing building systems, assess their current condition and provide commentary on the need for a maintenance and repair/replacement program, with related costs and priorities. It is not intended to 'upgrade' or 'modernize' the building to a higher level to match standards found in newer facilities, except that required system replacements will be to current standards.

- Provide recommendations to ensure that the building systems reach their maximum life expectancy and maintain the required levels of health and safety.
- Recommend further engineering studies where the cause, extent and/or remediation method required for identified deficiencies cannot be determined visually.
- Identify areas where the building does not comply with current code requirements or internal policies. Some of these items are a result of continuing changes to the codes, standards and policies since the original design/construction of the facility.

ESTIMATE COSTING - Costs indicated are Class "D" (preliminary) estimates, expressed in year 2013 constant dollars (escalation factors not included) and provide an indication (rough order of magnitude) of the project construction. Cost estimates in this report are based on information found within published estimating manuals (RS Means, Yardsticks for Costing), historical cost data for similar work in the geographic area, general cost information from material/equipment manufacturers and contractors, and past experiences involving similar work. All Class "D" estimates provided in this report should be verified prior to project implementation.

PROJECT GROUPING (Strategic Planning) - Priorities and time frames for recommendations put forward in this report have been determined on an individual (item by item) basis for preliminary planning purposes only. It is recommended that project work from this BCR and/or other sources be reviewed in order to identify potential items that can be consolidated for greater value (cost, scope, complexity). The intent is also to avoid repeat work as well as to achieve enhanced savings in time and cost, and to reduce inconvenience or disruptions to occupants.

PRIORITY OF WORK - The Priority of Work is time related, with consideration given to the life cycle of the component.

MANDATORY (Man.): Mandatory items should typically be done on an urgent basis or within a year, or with consideration given to the life cycle of the component (e.g., to meet life safety regulations, building codes or other applicable standards).

CYCLICAL (Cyl.): Cyclical items should typically be done within 1 to 5 years, again with consideration given to the life cycle of the component (e.g., component or system replacement) in order to extend the useful life of the building.

OPTIONAL (Opt.): Optional items should typically be done within 5 years or more, but also with consideration given to the life cycle of the component (e.g., component or system updating) in order to upgrade and add capital value to the building and/or to enhance or maintain design standard/market value. The replacement time frames normally do not have a direct effect on the operation of the building.

PROJECT PRIORITY SYSTEM - The Project Priority System, priority ratings are explained below:

PRIORITY A: (Emergency) a deficiency or condition which has already occurred and has already or will shortly result in the shutdown of a building/support system.

Examples:

- .1 Labour or Building Code requirements not being met.
- .2 Critical building system has become inoperative.

PRIORITY B: Priority B projects are priority A type emergencies that have not yet occurred but could at any time.

B1 - Health and Safety - A deficiency that poses an imminent risk to health and/or safety if left uncorrected.

B2 - Operational Efficiency - A condition which threatens operational objectives and results in for Real Property's tenants incurring productivity losses which outweigh the cost of the project.

B3 - System Integrity - A condition which will result in the shutdown of a critical support system of a building, if left uncorrected this fiscal year.

PRIORITY C: A condition/deficiency which is not yet a priority B but, if left uncorrected next fiscal year, may result in regulatory violations, operational inefficiencies and increased costs. Corrective action would demonstrate prudence and due diligence.

C1 - Health and Safety - A deficiency which poses a potential threat to health and safety if left uncorrected.

C2 - Operational Efficiency - A deficiency which hampers operational efficiency if left uncorrected.

C3 - System Integrity - A condition which will result in increasing costs if left uncorrected.

PRIORITY D: A deficiency which requires repair or replacement but does not threaten building systems, operations or health and safety. Action should be taken where funding can be made available.

D1 - Asset Maintenance - A condition/deficiency which could be improved/corrected by repair or replacement but does not threaten building systems, operations, human health, safety and/or the environment.

D2 - Appearance/Image - A condition for which work would improve the appearance or image of the building.

D3 - Other - Any other condition/deficiency which could be improved/corrected but does not threaten building systems, operations, human health, safety and/or the environment.

PRIORITY X: This priority is for projects for which the key factor is a significant financial benefit to Real Property.

X1 - Return within one year

X2 - Return within two years

X3 - Return within three years or more

DEFINITIONS - The following is an interpretation of common terms:

REPAIR (R): An estimated dollar value applied to a building element or building system to perform normal regular scheduled superficial maintenance practices and repairs. The intent is to provide a minimum level of maintenance in order for the building or building system to operate and perform suitably through a typical effective life cycle. Also covers engaging the service of a consultant to conducting an engineering study/analysis of specific portion(s) of the building system(s) to troubleshoot and seek best method(s) for remedial actions, upgrades, refits and/or replacements to extend the life of the facility, or to increase tenant comfort

CAPITAL (C): An estimated dollar value applied as an investment into a building or portion of the building system for upgrade, refit and/or replacement to extend the life of the facility, or to increase tenant comfort.

GOOD: Where the condition of the building requires little or no investment required to the structure, building envelope and related electrical/mechanical systems to life cycle the existing building for 20 years. Most Building Code requirements and Health and Safety issues have been addressed. Very low maintenance/repair costs usually reflect this condition.

FAIR: Where the condition of the building requires a limited cost investment applied to the structure, building envelope and related electrical/mechanical systems to life cycle the existing building for an additional 20 years. Investment may be offset beyond the 5 year time period and applied to the 6 - 10 or the 11 - 15 year time periods. Lower maintenance/repairs expenses also reflect this condition.

POOR: Where the condition of the building requires a substantial investment applied to the structure, building envelope and related electrical/mechanical systems in the immediate future (1 to 5 years) and to address Building Code requirements, replacement and/or upgrade of building systems to comply with current regulations, Health and Safety issues and deficiencies in the normal operations of the buildings to life cycle the existing building for an additional 20 years. Higher maintenance/repair expenses also reflect this condition.

REFERENCES - The following reference materials have been used in the development of this report and the preparation of recommendations:

CODES

- Canada Labour Code, Part II (CLC), R.S., 1985, c. L-2.
- Canada Occupational Health and Safety Regulations (COHSR), SOR/86-304.
- National Building Code of Canada (NBC), Thirteenth Edition, 2010.
- National Fire Code of Canada (NFC), Ninth Edition, 2010.
- National Plumbing Code of Canada (NPC), Ninth Edition, 2010.
- Canadian Electrical Code, Part 1 (CEC), Twenty First Edition, 2009.
- National Fire Protection Association (NFPA).

POLICES & GUIDELINES

Treasury Board of Canada Secretariat (TBS):

- Fire Protection Services (Chapter 3).
- Real Property Accessibility Policy.
- Guide to the Monitoring of Real Property Management (Chapter 2-3).
- Federal Identity Program.
- Federal Identity Program Manual.

STANDARDS

- CAN/CSA - B651-04 Accessible Design for the Built Environment.
- CAN/CSA - C282-M89, Emergency Electrical Power Supply for Buildings.
- CAN/ULC - S536-97, Standard for the Inspection and Testing of Alarm Systems.
- CAN/CSA - B51-97, Boiler, Pressure Vessel and Pressure Piping Code.
- CAN/CSA - B52-99, Mechanical Refrigeration Code.

AVERAGE USEFUL LIFE - The following list of systems/components and average useful life years (extracted from PWGSC's 'Capital Asset Planning System' (CAPS)) is based on regular preventive maintenance, properly performed at prescribed frequencies. Many factors can affect the average useful life, however, this list serves as a basis for future planning.

Site Improvements

Area Lighting	20 Years
Area Posts/Bollards	40 Years
Concrete Wall	50 Years
Fence & Gates	20 Years
Flagpole	25 Years
Masonry Wall	35 Years
Monuments, Fountains & Artwork	25 Years
Stone Wall	40 Years
Planters	25 Years
Signage	15 Years
Site Furnishings	20 Years
Slope Protection	60 Years

Site Related Stairs, Plazas & Decks

Bleachers	15 Years
Handrails & Railings - Site Related	20 Years
Ramps - Site Related	25 Years
Stairs - Site Related	25 Years
Wood Deck	15 Years

Retaining Walls

Concrete Reinforced Retaining Wall	40 Years
------------------------------------	----------

Interior Construction - Special Partitions

Copper Lined Partition	75 Years
Lead Lined Partition	75 Years
Wood Panel Partitions	20 Years

Interior Construction - Interior Doors & Screens

Glass Doors	30 Years
Aluminum Doors	60 Years
Hollow Metal Doors	60 Years
Wood Doors	40 Years
Other Doors	45 Years
Plastic Doors	?? Years
Interior Door Hardware	20 Years
Interior Screens	20 Years

Interior Construction - Interior Wall Finishes

Acoustic Wall Treatment	20 Years
Ceramic Wall Tile	40 Years
Lath & Plaster Wall	40 Years
Paint	10 Years
Vinyl Wall covering	10 Years
Stucco Wall Finish	40 Years
Wood Paneled Wall Finish	30 Years

Concrete Pavers Retaining Wall	20 Years
Gabion Retaining Wall	40 Years
Metal Retaining Wall	35 Years
Stone/Masonry Retaining Wall	30 Years
Wood Retaining Wall	25 Years

Site Utilities

Underground Utilities	50 Years
Aboveground Utilities	40 Years
Signage - Site Related	15 Years
Undeveloped Lands	150 Years
Landscaping	30 Years
Stormwater Management Systems	30 Years
Septic Systems	35 Years
Well Water Systems	40 Years

Paved Surface Systems

Vehicle Areas - Asphalt	20 Years
Vehicle Areas - Concrete, Insitu	20 Years
Vehicle Areas - Concrete, Precast	20 Years
Paved Playgrounds	25 Years
Paved Sports & Recreational Spaces	25 Years
Pedestrian Areas - Asphalt	22 Years
Pedestrian Areas - Concrete, Insitu	25 Years
Pedestrian Areas - Concrete, Precast	25 Years
Pavement Marking	5 Years
Traffic Control Devices	15 Years

Other Surface Systems

Vehicle Areas - Other	10 Years
Playgrounds - Other	10 Years
Sports & Recreational Spaces - Other	10 Years
Pedestrian Areas - Other	10 Years

Foundations

Footings & Foundations	110 Years
Basement Walls	110 Years

Superstructure

Frame - Concrete	110 Years
Frame - Concrete & Steel	110 Years
Frame - Steel	110 Years
Frame - Steel (Prefab)	110 Years
Frame - Wood	65 Years
Frame - Wood (Post & Beams)	75 Years
Slab on Grade - Asphalt	25 Years
Slab on Grade - Concrete	110 Years
Slab on Grade - Wood	75 Years
Suspended Slab - Concrete Joist & Concrete Deck	110 Years
Suspended Slab - Concrete Joist & Steel Deck	110 Years
Suspended Slab - Steel Joist & Steel Deck	75 Years
Suspended Slab - Steel Joist & Concrete Deck	110 Years
Suspended Slab - Steel Joist & Wood Deck	110 Years
Suspended Slab - Wood Joist & Wood Deck	75 Years
Roof Str - Concrete Joist & Concrete Deck	110 Years
Roof Str - Concrete Joist & Steel Deck	70 Years
Roof Str - Steel Joist & Steel Deck	75 Years
Roof Str - Steel Joist & Concrete Deck	110 Years
Roof Str - Steel Joist & Wood Deck	110 Years
Roof Str - Timber Joist & Wood Deck	85 Years
Roof Str - Wood Joist & Wood Deck	85 Years

Miscellaneous Structures

Balconies	35 Years
Entrance/Canopies	40 Years
Exterior Ramps	25 Years
Exterior Stairs	30 Years
Parking Garage	50 Years
Vehicle Ramps	30 Years
Basement Garage	50 Years

Other Wall Finishes	20 Years
Wall Waterproof Membrane	20 Years
Glazed Wall Coating	15 Years

Interior Construction - Flooring

Asphalt/Asbestos Tile Floor	15 Years
Carpeting (Sheet & Tile)	10 Years
Ceramic Tile Floor	30 Years
Granite Floor	50 Years
Wood Floor - Strip	25 Years
Linoleum Floor	15 Years
Marble Floor	50 Years
Painted Concrete Floor	10 Years
Wood Floor - Parquet	25 Years
Porcelain Tile Floor	25 Years
Quarry Tile Floor	30 Years
Rubber Floor	18 Years
Sealed-Epoxy Concrete Floor	15 Years
Vinyl Tile Floor	20 Years
Vinyl Sheet Floor	20 Years
Terrazzo Floor - Insitu	50 Years
Terrazzo Floor - Tile	50 Years
Special or Other Floor Finishes	40 Years
Raised Floor Systems	25 Years
Floor Toppings & Traffic Membranes	15 Years
Masonry & Stone Flooring	75 Years
Composition Flooring	20 Years
Waterproof Membrane on Floors	20 Years
Floor Control Joints	25 Years
Floor Expansion Joints	25 Years
Lead Lined Flooring	20 Years
Copper Lined Flooring	20 Years

Interior Construction - Ceiling Finishes

Acoustic Tile Ceiling	30 Years
Plaster & Gypsum Board Ceiling	40 Years
Metal Panel Ceiling	30 Years
Painted Ceiling Structures	15 Years
Plaster & Lath Ceiling	40 Years
Suspended Acoustic Panel Ceiling	25 Years
Wood Ceiling	40 Years
Ceiling Paint	10 Years
Other Ceiling Finishes	35 Years
Lead Lined Ceiling	30 Years
Copper Lined Ceiling	30 Years

Interior Construction - Interior Ramps & Stairs

Guards, Handrails & Railings - Interior	75 Years
Ramps - Interior	75 Years
Stairs - Interior	75 Years
Interior Ladders	75 Years

Interior Construction - Miscellaneous Items

Building Signage - Interior	10 Years
Catwalks	40 Years
Fixed Furnishing (Millwork)	20 Years
Fountain	20 Years
Kitchen Equipment	20 Years
Ice Rink & Equipment Accessories	20 Years
Squash Courts & Accessories	45 Years
Swimming Pools, Spas & Accessories	15 Years
Walk-in Freezer/Cold Storage	18 Years
Window Washing Device Anchors	30 Years
Solar Control Systems - Solar Shelves	?? Years
Bird Control Systems	?? Years

Conveying Systems - V & H Movement

Elevators	25 Years
-----------	----------

Loading Docks	20 Years
Areaways	?? Years

External Walls/Closures - Concrete or Masonry Walls

Ext.W - Aggregate or Texture, Block back-up	40 Years
Ext.W - Brick, Block Back-up	75 Years
Ext.W - Brick, Solid	75 Years
Ext.W - Concrete Block	60 Years
Ext.W - Concrete, Precast Panels	50 Years
Ext.W - Concrete, Insitu	50 Years
Ext.W - Stone	75 Years
Ext.W -, Aluminum or Steel, Block Back-Up	35 Years
Ext.W - Fieldstone, In Mortar	85 Years
Ext.W - Fieldstone, Block Back-up	85 Years
Ext.W - Fieldstone, Solid	85 Years
Ext.W - Ornamented Concrete Block	85 Years
Ext.W - Panels, Brick or Tile	50 Years

External Walls/Closures - Curtain Walls

Ext.W - Concrete & Glass Panels, Precast	50 Years
Ext.W - Metal & Glass Panels	50 Years
Ext.W - Steel Studs & Stucco	40 Years
Ext.W - Stone Panels	50 Years

External Walls/Closures - Pre-Engineered Walls

Ext.W - Prefab Panels, Alum, Steel, Glass	50 Years
Ext.W - Prefab Panels, Stucco, Steel	50 Years
Ext.W - Prefab. Panels, Veneer, Block	50 Years
Ext.W - Sandwich Panels, Alum or Steel	50 Years
Ext.W - Sandwich Panels, Cement Fiber	50 Years
Ext.W - Sandwich Panels, Fiberglass	50 Years
Ext.W - Sandwich Panels, Glass & Metal	50 Years

External Walls/Closures - Wood or Steel Stud Walls

Ext.W - Aluminum or Steel, Siding	35 Years
Ext.W - Asphalt Siding	40 Years
Ext.W - Cement Fiber, Siding or Shingles	40 Years
Ext.W - Hardboard, Siding or Shingles	40 Years
Ext.W - Plywood textures	25 Years
Ext.W - Wood, Shingles or Shakes	40 Years
Ext.W - Stucco	40 Years
Ext.W - Synthetic Plaster on Rigid Insulation	30 Years
Ext.W - Veneer, Common Brick	75 Years
Ext.W - Veneer, Face Block or Concrete Brick	60 Years
Ext.W - Veneer, Stone	85 Years
Ext.W - Vinyl, Siding	40 Years
Ext.W - Wood, Siding	40 Years

External Walls/Closures - Finishes

Ext.W - Paint	15 Years
Ext.W - Sealer	20 Years
Exterior Insulation and Finishing Systems (EFIS)	?? Years

External Walls/Closures - Exterior Doors

Revolving Door	20 Years
Aluminum Doors	50 Years
Glass Doors	40 Years
Metal Doors	45 Years
Wood Doors	40 Years
Overhead Door	20 Years
Other Doors	45 Years
Exterior Door Hardware	15 Years

External Walls/Closures - Windows

Aluminum Windows	50 Years
PVC Windows	35 Years
Steel Windows	50 Years
Wood Windows	40 Years
Aluminum Skylights	50 Years
Plastic Skylights	35 Years

Escalators	25 Years
Freight Elevators	25 Years
Wheelchair Platform Lifts	25 Years

Conveying Systems - Specialties

Bridge Cranes	25 Years
Chain Hoists	25 Years
Dumbwaiters	25 Years
Loading Dock Equipment	25 Years
Moveable Floors	25 Years
Moving Walkways	25 Years
Scissor Lifts	25 Years

HVAC

Building Heat Transfer System Exchangers	30 Years
Duct Systems	40 Years
Self-Contained AHU - Cool	25 Years
DX Split AHU - Cool	25 Years
Computer Cooling AHU	25 Years
Roof Top AHU - Heat&Cool	25 Years
Window Unit A/C - Heat&Cool	25 Years
Packaged Terminal AC AHU	25 Years
Heat Pumps	40 Years
Central Station AHU	35 Years
Ventilation Fans	25 Years
Humidifiers	25 Years
Make-up Air AHU	25 Years
Heating & Cooling Piping Systems	30 Years
HVAC Pumps	25 Years
Chemical Feed System	25 Years
Boilers	30 Years
Boiler Oil Supply System	20 Years
Boiler Auxiliary System	30 Years

Terminal Units	35 Years
Chillers	20 Years
Cooling Towers	25 Years
Furnace/Forced Air	20 Years
Gas Fired Radiant Heater	30 Years
Gas Piping System	35 Years
Snow Melting System	12 Years

Control Systems

Controls, Electrical or Pneumatic	24 Years
Direct Digital Control	20 Years

Plumbing

Plumbing Piping	40 Years
Plumbing Fixtures and Accessories	30 Years
Plumbing Pumps	20 Years

Tanks

Domestic Hot Water Tanks	20 Years
Water Storage Tanks	35 Years
Water Treatment Systems	30 Years

Special Systems

Stacks & Breaching	25 Years
Compressed Air Systems	75 Years
Medical Air Systems	25 Years
Medical Vacuum Systems	40 Years
Water Distillation Units	40 Years
Sterilization System	15 Years
Vehicle Fuel Storage and Distribution	35 Years
Vacuum Systems	30 Years
Incinerators	20 Years
Compactors	15 Years
Diesel Generator Fuel Supply Systems	30 Years
Swimming Pool and Systems	40 Years
Methane Venting Systems	30 Years

Steel Skylights	50 Years
Wood Skylights	40 Years
Other Windows	40 Years
Window Coverings	15 Years

External Walls/Closures - Soffits

Metal Soffits	50 Years
Gypsum Board Soffits	50 Years
Cement Plaster Soffits	50 Years
Wood Soffits	40 Years
Stone Soffits	75 Years
Other Soffits	?? Years

External Walls/Closures Construction - Miscellaneous Items

Louvres	50 Years
Ladders	50 Years
Grilles	50 Years

External Walls/Closures - Roof Coverings

Metal Roof	30 Years
Atrium type-Glass, frame and glazing	45 Years
Built-Up-Roof	25 Years
Asphalt Shingles Roof	22 Years
Copper Roof	50 Years
1-Ply Membrane Roofing - SBS (Mod.Bit.)	20 Years
1-Ply Membrane Roofing - EPDM	25 Years
1-Ply Membrane Roofing - PVC	25 Years
Slate Roof	50 Years
Tile, Terracotta or Concrete Roof	42 Years
Wood, Shake or Shingle Roof	35 Years
Other Roof Coverings	50 Years
Green Roof	?? Years

External Walls/Closures - Roof Specialties

Gutter	30 Years
Ice/Snow Guard	?? Years
Chimneys	45 Years
Roof Hatch - Access	?? Years
Roof Hatch - Smoke	?? Years

Interior Construction - Masonry Partitions

Concrete Block Partition	75 Years
Concrete Partition	75 Years
Brick Partition	75 Years
Stone Partition	75 Years
Glazed Block (Facing Block) Partition	75 Years
Interior Glazed Opening	40 Years
Tile Partition	50 Years
Glass Block Partition	75 Years

Interior Construction - Frame Partitions

Plaster & Gypsum Board Partition with Studs	40 Years
---	----------

Ice Rink Systems	40 Years
------------------	----------

Fire Protection

Fire Pumps	25 Years
Specialty Fire Protection Systems	40 Years
Smoke Protection Fans	40 Years
Sprinkler Systems	35 Years
Standpipe Systems	26 Years
Portable Fire Extinguishers	30 Years
Fire Protection Water Storage Tanks	45 Years

Main Service Electrical

Primary Switch Gear	30 Years
Primary Transformer & Vault	30 Years

Secondary Service Electrical

Distribution	30 Years
MCC	45 Years
Secondary Transformer	30 Years
Electric Power Meter	50 Years
Inverters	45 Years
Rectifiers	45 Years
Cabling Raceways & Bus Ducts	40 Years
Capacitors	40 Years

Lighting Fixtures

General Lighting	30 Years
Exit Lighting	30 Years
Exterior Lighting	15 Years
Emergency Lighting	18 Years

Electrical Service Ground

Grounding Systems	40 Years
-------------------	----------

Electrical Systems

Fire Alarm System	17 Years
Emergency Power System	35 Years
Communications Systems	25 Years
Security System	20 Years

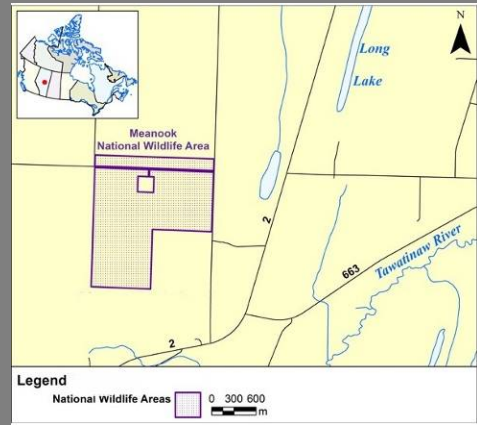
Special Electrical Systems

Automatic Door Devices	20 Years
Clock Systems	25 Years

Electric Heating Systems

Electric Baseboard Heaters	10 Years
Underfloor Electric Cables	10 Years
In-Ceiling Electric Radiant Heating	10 Years
In-Wall Electric Radiant Heating	10 Years
Snow Melting Cables	10 Years
Electrical Radiant Unit Heaters	10 Years
Fan Powered Unit Electric Heaters	10 Years
Duct Electric Heaters	10 Years

PROPERTY / SITE



This page intentionally left blank

SITE SUMMARY

HISTORY - The site was first developed in 1916 when the Department of Energy, Mines, and Resources (EMR) was granted use of the land to establish a Dominion Geomagnetic Observatory (to facilitate contemporary navigation techniques by measuring variations in the earth's magnetic field). Throughout the 1940's, 50's and 60's, the several structures in and around the building compound were constructed. In 1977, EMR declared most of the property surplus, and in 1979 administrative control of the land was transferred to the Department of the Environment (now Environment Canada) so that a National Wildlife Area could be established, with EMR (now Natural Resources Canada) retaining a 213 m by 213 m area containing the observatory building and related outbuildings. In 1983, the University of Alberta (UoA), under a License of Occupation granted by the Canadian Wildlife Service (CWS), began operating a biological research field station on the site. Under the terms of the License, UoA oversaw the upkeep and management of the building and lands, with a goal to maintain the native plant communities in as close to a natural state as possible. Within its first few years of occupation, UoA carried out extensive restoration and refurbishment of the facility. Late in 2013, UoA terminated the Licence and vacated the site.

DESCRIPTION - The property, covering a 214 ha area, is located within the Athabasca River basin and encompasses three quarter sections (NW 1/4 12-65-23-W4 6 0 . 3 ha, SW 1/4 12-65-23-W4 6 4 . 8 ha, and NE 1/4 12-65-23-W4 6 4 . 8 ha) and a 1.61 km long "buffer zone" which extends 151 m to the north of the section road at the north of the property. The site is bounded on the east by Range Road 230 and on the west by Range Road 231, with the section road (Township Road 652) running through the northern portion of the site. The site, which is situated on a rolling hilly landscape, sloping from the southwest to the Northeast, is bisected in a north-south direction by a perennial intermittent stream (which terminates in a large man-made dugout originally constructed as a water source for fire-fighting) and consists of natural forest, cultivated land, including a number of previously cultivated areas in various stages of natural reclamation, and several very small natural wetlands. The buildings forming the scope of this assessment are located in the EC building compound located adjacent to the northern section road, halfway between the east and west borders of the property, with the EMR magnetic observatory property located directly to the south of the compound.

NOTE: Information was limited to visual observations. No destructive testing was carried out.

CONDITION - Most property/site elements are considered to be in fair overall condition, and with minor repairs and ongoing maintenance, should continue to perform satisfactorily for the next 30 years, with only life cycle replacement of components anticipated.

0.00 PROPERTY / SITE SYSTEMS

0.01 SITE FIXTURES - Site fixtures include:

- Chain-link fencing (partial) - along the north side of the building compound.
- Wire cattle fencing (partial) - along the north side of the building compound.

- Wire fencing - along the east side of the building compound.
- A wood flagpole - adjacent to 'M6 - Administration Building'.

Condition - The site fixtures are considered to be in fair overall condition, performing as expected, and with no obvious damage or deterioration outside of normal wear, based on age and usage.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the site fixtures.

Design Problems/Deficiencies - To our knowledge, no design problems/deficiencies exist with the existing site fixtures.

Effective Remaining Life - The site fixtures date from various times over the life of the facility, and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i> Site fixture refurbishment	
<i>Action Year:</i> 1 - 5	<i>Estimated Cost</i>
It is recommended that an allowance be made in each 5-year period for the refurbishment of the site fixtures (including cleaning/repainting of finishes, and replacement of damaged/missing components), in order to preserve the components and restore functionality.	<i>Material & Labour:</i> \$3,750
	<i>Contingency:</i> \$563
	<i>Project Soft Costs:</i> \$1,294
	<i>Total:</i> \$5,606

0.02 SITE SIGNAGE - There is no site signage present within the confines of the building compound.

NOTE: The site identification sign at the main gate is the property of UoA, and therefore is not included within the scope of this assessment.

0.03 SITE STAIR & RAMPS - There are no 'site related' (i.e. freestanding) stairs or ramps present within the confines of the building compound.

0.04 SITE STRUCTURES - There are no site structures (i.e. equipment platforms, equipment sheds, storage containers, etc.) present within the confines of the building compound.

NOTE: The quonset hut and several storage containers/sheds present on site are the property of UoA, and are therefore not included within the scope of this assessment.

0.05 UNDEVELOPED LANDS - There are no undeveloped lands present within the confines of the building compound.

0.06 LANDSCAPING - Landscaping consists mainly of maintained lawns, shrubs, hedges, and specimen trees, adjacent to the buildings and roads/driveways.

NOTE: Full assessment of the landscaping was not possible, owing to coverage by snow.

Condition - The landscaping is considered to be in fair overall condition, well maintained and free of infestation (insects/weeds) and dead plant material.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the landscaping.

Design Problems/Deficiencies - To our knowledge, no design problems/deficiencies exist with the landscaping.

Effective Remaining Life - The landscaping dates from various times over the life of the facility. Given its current condition, and with normal maintenance, it can likely be expected to perform indefinitely.

0.07 PAVEMENTS - Pavement throughout this facility, serving both vehicle and pedestrian traffic, consists of gravel surfaced driveways, parking areas and walkways, connecting the municipal road and the buildings within the compound.

A single catch basin (concrete, with cast steel grate), located adjacent to the 'M6 - Administration Building', is provided to accommodate drainage of surface water. In all other locations, drainage of surface water relies on runoff to adjacent areas.

NOTE: Full assessment of the pavement components was not possible, owing to coverage by snow.

Condition - The pavements were found to be in fair overall condition, performing as expected, and with no obvious damage or deterioration.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the pavements.

Design Problems/Deficiencies - To our knowledge, no design problems/deficiencies exist with the pavements.

Effective Remaining Life - The pavement components date from various times over the life of the facility, and with normal maintenance can likely be expected to perform indefinitely.

Recommendations - None identified.

0.08 UTILITIES - Various utility types are employed throughout this facility, as follows:

Underground:

- Electrical power.
- Telephone/communication lines.

Condition - There is no information available on the condition of the utilities serving this facility. No problems/concerns were identified by on-site personnel. *Refer to '4.01 Electrical Power', and '4.09 Telephone & Communications System' for detailed assessments.*

M1 - CARETAKERS RESIDENCE



This page intentionally left blank

Contents

BUILDING SUMMARY

- History
- Description
- Classification
- Facility Condition
 - Architectural/Structural
 - Conveying Systems
 - Mechanical
 - Electrical
- Compliance Issues
 - Environmental
 - Accessibility
 - Seismic Assessment
 - Heritage
- Recommended Expenditures
 - Short Term Expenditures (1 to 5 Years)
 - Long Term Expenditures (6 to 30 Years)

1.00 ARCHITECTURAL/STRUCTURAL

- 1.01 Substructure
- 1.02 Superstructure
- 1.03 Ancillary Structures
- 1.04 Exterior Walls
- 1.05 Exterior Doors
- 1.06 Windows, Skylights & Sloped Glazing
- 1.07 Suspended Floors/Soffits
- 1.08 Roofing
- 1.09 Floorings
- 1.10 Interior Partitions and Finishes
- 1.11 Ceilings
- 1.12 Interior Doors, Frames and Screens
- 1.13 Window Coverings
- 1.14 Interior Stairs
- 1.15 Fixed Furnishings
- 1.16 Design Issues
- 1.17 Environmental
- 1.18 Accessibility
- 1.19 Seismic Assessment
- 1.20 Heritage

2.00 VERTICAL TRANSPORTATION

- 2.01 Passenger Elevators
- 2.02 Freight Elevators
- 2.03 Escalators
- 2.04 Dumbwaiters
- 2.05 Platform Lifts
- 2.06 Scissor Lifts
- 2.07 Dock Levellers

3.00 MECHANICAL

- 3.01 Primary Heating
- 3.02 Primary Cooling
- 3.03 Primary Air Supply
- 3.04 Hydronic Heating System
- 3.05 Supplemental Heating Units
- 3.06 Supplemental Air Conditioning
- 3.07 Control System
- 3.08 Storm Sewer
- 3.09 Sanitary Sewer
- 3.10 Water Supply & Treatment
- 3.11 Domestic Hot Water
- 3.12 Plumbing Distribution & Fixtures
- 3.13 Fire Protection: Standpipe System
- 3.14 Fire Protection: Sprinkler System
- 3.15 Fire Protection: Specialty System(s)
- 3.16 Fire Protection: Portable Extinguishers
- 3.17 Ozone Depleting Substances (ODS) Management

4.00 ELECTRICAL

- 4.01 Electrical Power
- 4.02 Emergency Power
- 4.03 Exterior Lighting
- 4.04 Interior Lighting
- 4.05 Emergency Lighting
- 4.06 Exit Lighting
- 4.07 Fire Alarm System
- 4.08 Security System
- 4.09 Telephone & Communications System

This page intentionally left blank

BUILDING SUMMARY

HISTORY - No detailed history of the building is available. It is believed to have been constructed in 1953 as an on-site residence. Originally designed as a single-family dwelling, the building has most recently been utilized as a dormitory. Other than minor repair and fit-up works, no significant alteration/renovation to the building has occurred.

DESCRIPTION - This building is a single-storey (with full basement), heated structure, designed as a single-family dwelling, but most recently being utilized as a dormitory. The ground floor is divided into a combined living/dining room, kitchen, hall, bathroom, and two sleeping rooms. The basement has a single finished room, with the remaining space being unfinished and used exclusively as service space.

CLASSIFICATION - Based on its existing size, height and use, this facility falls under the design criteria outlined in Part 9 of the most recent edition of the National Building Code of Canada (NBC 2010). The following building code matrix information is applicable:

- Building area: 88 m²
 - Building height: One (1) storey
 - Storeys below grade: One (1)
 - Sprinklered: No
 - Major occupancy: Group C - Residential
 - Subsidiary occupancy: None
 - Number of streets: Three (3)
 - Construction type: Combustible
 - Required fire resistance ratings: (NBC 9.10.8.1 and 9.10.10.3) Floor assemblies (except over crawl spaces) - ¾ hour *; roof assemblies - n/a; load-bearing walls, columns and arches - not less than that of the supported assembly; service rooms - n/a.
 - Fire alarm: No
- * *Waived, as per NBC 9.10.9.4.(2).*

Based on its year of construction, the building was originally designed/constructed under the 1941 (First Edition) of the NBC and other National codes.

FACILITY CONDITION - Inspection has determined the buildings and their systems located at this facility to be in the following overall condition:

- **ARCHITECTURAL/STRUCTURAL** - The architectural/structural elements are considered to be in fair overall condition, and with minor repairs and ongoing maintenance, should continue to perform satisfactorily for the next 30 years, with only life cycle replacement of components anticipated.
- **MECHANICAL** - Overall, the mechanical systems installed at building M1 are considered to be in fair to good condition. Consider updating the fire safety plan, as the current posting was dated June 1986. Priority should be given to ensure the portable fire extinguishers are in compliance with NFPA 10. It is also recommended to ensure that the water is maintained and tested as required, in accordance with the Ontario Safe Drinking Water Act, and local by-laws.

- **ELECTRICAL** - Although it would appear that the electrical installation is in good condition, it was determined after a cursory inspection of each building that a complete electrical rewire and upgrade, including an effective grounding system, must be carried out to bring all buildings up to present day codes and standards. We have also included some recommendations that will improve the security of the whole facility.

COMPLIANCE ISSUES - Inspection has identified various compliance issues throughout the facility, as follows:

ENVIRONMENTAL - Given the age of the facility, there is a high probability that building materials may contain hazardous materials; several building materials observed on-site and suspect materials in concealed spaces are suspected as possibly containing hazardous materials. Some of the observed suspect materials were noted to be in poor condition - posing an imminent health concern. No information with respect to existing hazardous materials was available, and no record of any previous inspection/testing of hazardous materials was available. It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

ACCESSIBILITY - The accessibility audit (see 'Annex E') recommends that this building be considered for full exemption, presuming that given both its location and its use, it is outside the scope of areas identified for inclusion under Treasury Board's 'Accessibility Standard for Real Property'. It is recommended that this building be considered for exemption, and that it be documented as such in accordance with EC's internally established procedure (as is required under the ASRP).

SEISMIC ASSESSMENT - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading. Since the Edmonton area is in a zone of low seismicity, and there are no significant projects planned for this facility, no actions (e.g. completion of seismic screening or assessment) are recommended.

HERITAGE - As the maximum age for review is 40 years and the building is now 60 years old, a request for review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

RECOMMENDED EXPENDITURES - A summary of the recommended expenditure costs as put forth throughout this report is presented as follows:

The total estimated Short Term Expenditure (1 to 5 years) cost for this facility is **\$48,217**, as outlined below:

Architectural / Structural Systems	\$16,819
Vertical Transportation Systems	\$0
Mechanical Systems	\$14,205
Electrical Systems	\$17,193
<hr/>	
Short Term Total	\$48,217
<hr/>	

The total estimated Long Term Expenditures (6 to 25 years) cost for this facility is **\$156,764**, as outlined below:

Architectural / Structural Systems	\$48,364
Vertical Transportation Systems	\$0
Mechanical Systems	\$108,400
Electrical Systems	\$0
<hr/>	
Long Term Total	\$156,764
<hr/>	

This page intentionally left blank

1.00 ARCHITECTURAL / STRUCTURAL SYSTEMS

1.01 SUBSTRUCTURE - A variety of components are employed throughout the substructure of this building, as follows:

- Concrete foundation walls - cast-in-place concrete, located around the perimeter of the basement and pump room annex - exterior surfaces above grade are cast to resemble concrete block (i.e. with replicated block joints).
- Concrete column - cast-in-place concrete, located outside the basement, at the corner of the exterior north stair.
- Concrete slab, on-grade - cast-in-place concrete, extending throughout the basement.
- Concrete slab, suspended - cast-in-place concrete, located above grade over the basement pump room annex.
- Wood columns - built-up, located in the basement (supporting the suspended floor structure) and at the corner of the exterior north stair (bearing on the concrete column and supporting the overhanging roof structure).

Condition - The substructure is considered to be in fair overall condition, performing as expected with no obvious signs of settlement or failure, and with no obvious damage, however with some minor deterioration:

- Some areas of spalled concrete were noted on the foundation wall exterior surfaces.

Recent Repairs/Modifications - To our knowledge, no recent repairs/modifications have been carried out on the substructure.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the substructure.

Effective Remaining Life - The substructure dates from the original construction (c.1953), and given its current condition, and with normal maintenance, it can likely be expected to perform indefinitely.

Recommendations - None identified.

1.02 SUPERSTRUCTURE - The superstructure is integral with various other building components - *refer to '1.04 Exterior Walls', '1.07 Suspended Floors/Soffits', and '1.08 Roofing', below.*

1.03 ANCILLARY STRUCTURES - There are several ancillary structures associated with this building, as follows:

- North Stair - located at the front (main) entrance door - wood (paint finished) landing and skirting, pressure treated wood stair, suspended from building - serves as required exit, providing access between ground floor level and grade.
- Fireplace - a built-in masonry structure, brick facing, concrete block structure, stucco finish above roofline, centrally located in the building with the hearth located in the living room.

Condition - The ancillary structures are considered to be in fair overall condition, performing as expected, and with no obvious damage; however, there is some minor deterioration:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - To our knowledge, no recent repairs/modifications have been carried out on the ancillary structures.

Design Problems/Deficiencies - The north stair is not equipped with required guards/handrails (NBC 9.8.7 and 9.8.8).

Effective Remaining Life - The ancillary structures date from the original construction (c.1953). Given their current condition, the fireplace can likely be expected to perform indefinitely, while the wood decks/stairs can likely be expected to perform over the next 11 - 15 years.

Recommendations - *It is presumed that the above noted deficiency will be corrected in the short-term under normal O&M operations or as a part of other work(s).*

<i>Description:</i> North stair replacement	
<i>Action Year:</i> 11 - 15	<i>Estimated Cost</i>
Pending future assessment and verification, the north stair will likely require replacement at the end of its effective service life, in accordance with good life cycle maintenance practice in order to maintain safe building access.	<i>Material & Labour:</i> \$3,350
	<i>Contingency:</i> \$503
	<i>Project Soft Costs:</i> \$1,156
	<i>Total:</i> \$5,008

1.04 EXTERIOR WALLS - The existing walls are of conventional wood frame design. Exterior cladding is wood siding (horizontal at walls, vertical at gables, all paint finish). Interior cladding is gypsum board (paint finish). No other assembly details (i.e. sheathing type, presence of insulation, etc.) are available.

Condition - The exterior walls are considered to be in fair overall condition, performing as expected, and with no obvious damage; however, there was some minor deterioration:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the exterior walls.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior walls.

Effective Remaining Life - The exterior walls date from the original construction (c.1953). Given their current condition, with periodic refurbishment and normal maintenance they can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i> Exterior wall repairs	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that corrective actions (including repair/replacement of deteriorated components, and cleaning/painting of wood components) be carried out at each 10-year period in accordance with good life cycle maintenance practice in order to maintain the integrity of the building envelope, and to deter damage. • This work should also allow for any required repair/repainting of other exterior wood components (refer to '1.05 Exterior doors' and 1.06 Windows', below), including those on the adjacent garage (refer to separate report for 'M2 - Caretakers Garage).	<i>Material & Labour:</i> \$5,500
	<i>Contingency:</i> \$825
	<i>Project Soft Costs:</i> \$1,898
	<i>Total:</i> \$8,223

1.05 EXTERIOR DOORS - The exterior doors are wood (hollow core, flush type, paint finish) - with outer aluminum (prefinished, single glazed) storm doors. Hardware is knob type.

Condition - Exterior doors, frames and hardware were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the exterior doors, frames and hardware.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior doors, frames and hardware.

Effective Remaining Life - The wood doors date from the original construction (c.1953), while the aluminum storms are later additions (date unknown), and given their current condition, with normal maintenance they can likely be expected to perform indefinitely.

Recommendations - It is recommended that cleaning/repainting of the exterior doors be included within the scope of the exterior wall repair/repainting works (refer to '1.04 Exterior Walls', above).

1.06 WINDOWS - The windows throughout are a mixture of:

- Wood - wood frames and sashes, paint finished, single glazed, vertical sliding type - basement locations with outer wood (paint finished, single glazed, fixed type) storm sashes - ground floor locations with outer aluminum (prefinished, single glazed, vertical sliding type) storm sashes.
- Vinyl - fixed and horizontal sliding types, insulating glass units (no date).

Condition - The windows were found to be in fair overall condition, performing as expected and with normal wear based on age; however:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the windows.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the windows.

Effective Remaining Life - The wood windows and storms date from the original construction (c.1953), while the aluminum storms are later additions (date unknown), and given their current condition, with normal maintenance they can likely be expected to perform indefinitely. The age of the vinyl windows is unknown; however, based on appearance and condition are presumed to be approximately 5 - 10 years old, and given their current condition, and with normal maintenance, they can likely be expected to perform over the next 21 - 25 years.

Recommendations - It is recommended that cleaning/repainting of the wood windows be included within the scope of the exterior wall repair/repainting works (*refer to '1.04 Exterior Walls', above*).

<i>Description:</i> Window replacement	
<i>Action Year:</i> 21 - 25	<i>Estimated Cost</i>
Pending future assessment and verification, the vinyl windows will likely require replacement at the end of their effective service life in accordance with good life cycle maintenance practice in order to maintain the integrity of the building envelope and prevent damage/ deterioration and/or known health issues associated with leakage.	<i>Material & Labour:</i> \$3,500
	<i>Contingency:</i> \$525
	<i>Project Soft Costs:</i> \$1,208
	<i>Total:</i> \$5,233

1.07 SUSPENDED FLOORS/SOFFITS - The suspended floor is of standard wood-frame construction, consisting of wood subflooring (boards, diagonal), wood joists, and built-up wood beams.

Condition - The suspended floor is considered to be in fair overall condition, performing as expected, and with no obvious damage or deterioration.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the suspended floor.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the suspended floor.

NOTE: Viewed from the exterior the building appears to be of conventional wood-frame construction; however, viewed from the basement, the wood joists appear to be set directly into the concrete foundation wall, a condition which would promote deterioration;

as no deterioration is evident, this is presumed not to be the case.

Effective Remaining Life - The suspended floor dates from the original construction (c.1953), and given its current condition, can likely be expected to perform indefinitely.

Recommendations - None identified.

1.08 ROOFING - The roofing is of conventional wood frame design, consisting of asphalt shingles, wood board decking, wood rafters, unheated attic space, blown-in mineral wool insulation, and wood joists filled with mineral wool batt insulation. Most soffits and fascias are capped with prefinished metal, except that the soffit where the roof overhangs the entrance stair is plywood (paint finish). Drainage is provided by prefinished metal eavestroughs and downspouts, discharging at grade. Access to the roof requires use of a portable ladder.

NOTE: Assessment of the full roof was not possible owing to coverage by snow - findings and recommendations noted below are based on a limited sample area where snow was removed.

Condition - The roofing is considered to be in fair overall condition, performing as expected, with no reported leakage, and with no obvious damage; however, with some minor deterioration:

- Initial deterioration of the asphalt shingles (beginning to lift/curl at edges) was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the roofing.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the roofing.

Effective Remaining Life - The roof structure dates from the original construction (c.1953), and given its current age and condition, can likely be expected to perform indefinitely. The age of the asphalt shingle roofing is unknown; however, based on appearance and condition, is presumed to be approximately 10 - 15 years old. Given its presumed age and condition, with normal maintenance it can likely be expected to perform over the next 5 years.

Recommendations -

<i>Description:</i> Roof replacement	
<i>Action Year:</i> 5	<i>Estimated Cost</i>
Pending future assessment and verification, roofing will be reaching the end of its effective service life and likely require replacement, in accordance with good life cycle maintenance practice, in order to maintain the integrity of the building envelope and prevent damage/deterioration and/or known health issues associated with leakage. • This work should also allow for roof replacement on the adjacent gaarge (<i>refer to seperate report for 'M2 - Caretakers Garage</i>).	<i>Material & Labour:</i> \$5,750
	<i>Contingency:</i> \$863
	<i>Project Soft Costs:</i> \$1,984
	<i>Total:</i> \$8,596

1.09 FLOORINGS - The finished floorings throughout are a mixture of:

- Vinyl sheet flooring in the kitchen and bathroom.
 - Vinyl strip flooring throughout remaining ground floor areas.
 - Vinyl tile in the basement finished space - on plywood and sleepers over the concrete slab.
- No finished floorings are provided in the remaining basement areas - exposed concrete slab.

Condition - Flooring throughout is considered to be in fair overall condition, performing as expected, with normal wear patterns based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the floorings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the floorings.

Effective Remaining Life - The finished floorings date from various times over the life of the building, and given their current condition and usage, and with normal maintenance, they can likely be expected to perform over the next 11 - 15 years.

Recommendations -

<i>Description:</i> Flooring replacement	
<i>Action Year:</i> 11 - 15	<i>Estimated Cost</i>
It is recommended that an allowance be made for replacement of the flooring, in accordance with good life cycle maintenance practice in order to maintain safety, functionality, and aesthetics. • This work should be carried out in conjunction with other interior works to minimize disruption.	<i>Material & Labour:</i> \$8,750
	<i>Contingency:</i> \$1,313
	<i>Project Soft Costs:</i> \$3,019
	<i>Total:</i> \$13,081

1.10 INTERIOR PARTITIONS AND FINISHES - The interior partitions are frame (wood studs), clad with a mixture of:

- Gypsum board (paint finished) throughout the ground floor.
- Plywood (paint finished) at the basement partitions.

Condition - The interior partitions and finishes throughout are considered to be in fair overall condition, performing as expected, and with normal wear patterns based on age and traffic

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the interior partitions and finishes.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the interior partitions and finishes.

Effective Remaining Life - The interior partitions date from the original construction (c.1953), and given their current condition and usage, and with normal maintenance, they can likely be expected to perform indefinitely; however, the paint finishes will continue to require replacement on an ongoing cyclical basis.

Recommendations - None identified.

1.11 CEILINGS - The ceilings throughout are a mixture of:

- Gypsum board (paint finished, secured to the underside of the roof structure) throughout the ground floor.
- Plywood (paint finished, installed to the underside of the suspended floor structure) in the basement finished space.

No ceilings are provided in the remaining basement areas - exposed underside of wood structure.

Condition - The ceilings throughout are considered to be in fair overall condition, performing as expected, and with normal wear patterns based on age and usage.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the ceilings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the ceilings.

Effective Remaining Life - The ceilings date from the original construction (c.1953). Given their current condition and usage, and with normal maintenance, they can likely be expected to perform indefinitely; however, the paint finishes will continue to require replacement on an ongoing cyclical basis.

Recommendations - None identified.

1.12 INTERIOR DOORS - The interior doors throughout are wood (hollow core, flush type, paint finish). Hardware throughout is knob type (various functions).

Condition - Interior doors, frames and hardware were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior doors, frames and hardware.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the interior doors, frames and hardware.

Effective Remaining Life - The interior doors, frames and hardware date from the original construction (c.1953), and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

1.13 WINDOW COVERINGS - The window coverings throughout are a mixture of

- Vinyl horizontal louvre blinds (bathroom).
- Metal horizontal louvre blinds (kitchen and dining room).
- Vinyl fabric roller shade (dining room).

No window coverings are provided at remaining window locations.

Condition - The window coverings were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the window coverings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the window coverings.

Effective Remaining Life - The window coverings date from various times over the life of the building, and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

1.14 INTERIOR STAIRS - The interior stair is of conventional residential wood design - providing egress between the basement and ground floor, exiting directly to the exterior at grade from the intermediate landing level.

Condition - The interior stair was found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior stair.

Design Problems/Deficiencies - The stair guards/handrails do not meet current design criteria with respect to opening size and handrail extension (NBC 9.8.7 and 9.8.8).

Effective Remaining Life - The interior stair dates from the original construction (c.1953), and given its current condition, it can likely be expected to perform indefinitely.

Recommendations - None identified.

It is presumed that the above noted deficiency will be corrected under normal O&M operations or as a part of other work(s).

1.15 FIXED FURNISHINGS - The fixed furnishings throughout consist of:

- Kitchen cupboards (wood and plastic laminate) in the kitchen.
- Vanity (melamine, solid top) in the bathroom.

Condition - The fixed furnishings were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the fixed furnishings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the fixed furnishings.

Effective Remaining Life - The fixed furnishings date from various times over the life of the building, and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

1.16 DESIGN ISSUES - While compliance issues (with respect to codes, standards, etc. governing design, installation and maintenance/testing) are typically identified within the report under their applicable components, this component addresses any 'general' design issues not otherwise covered.

Condition - Other than the identified design/compliance issues described within the report under their applicable components, no 'general' deficiencies (with respect to building design) have been identified in this facility.

Recommendations - None identified.

1.17 ENVIRONMENTAL - For the purpose of this inspection, "Hazardous Materials" are defined as designated substances (O. Reg. 213/91 as amended), Polychlorinated Biphenyls: PCB's (O. Reg. 11/82), or surface mould.

Condition - Given the age of the facility, there is a high probability that building materials may contain hazardous materials.

- Several building materials observed on-site are suspected as possibly containing hazardous materials (i.e. gypsum products, paint, older vinyl tile, older electrical equipment).
- Some of the observed suspect materials were noted to be in poor condition - posing an imminent health concern.
- Suspect materials in concealed spaces (i.e. insulation, roofing materials, adhesives) may possibly contain hazardous materials.
- No information with respect to existing hazardous materials was available.
- No record of any previous inspection/testing of hazardous materials was available.

Recommendations - It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

1.18 ACCESSIBILITY - In response to the '2005 Accessibility for All' report, the Treasury Board requires that accessibility audits be completed for all Crown facilities by 2008/09 to verify the degree of compliance with the Treasury Board Real Property Accessibility Policy (RPAP) for crown facilities, and its designated technical standard (CAN/CSA-B651-04 Accessible Design for the Built Environment).

Condition - The recently completed accessibility audit (see 'Annex E') recommends that this building be considered for full exemption, presuming that given both its location (naturally inaccessible, remote location) and its use (designed/constructed to accommodate able-bodied personnel), it is outside the scope of areas identified for inclusion under the ASRP.

- No record of any previous assessment of accessibility was available.
- No previously documented exemption(s) or minor variation(s) was available.

Recommendations - It is recommended that this building be considered for exemption, and that it be documented as such in accordance with EC's internally established procedure (*as is required under the ASRP*).

1.19 SEISMIC ASSESSMENT - As the seismic (earthquake) resistance of older existing buildings may not meet the stricter requirements of current building codes for seismic loading and design, a risk management approach is often taken, such as completion of seismic assessment for buildings located in zones of moderate to high seismicity, or that are being considered for major renovation or rehabilitation.

Condition - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading.

Recommendations - None identified (*since the Edmonton area is a zone of low seismicity ($Z_e=1$), a seismic assessment is not recommended*).

1.20 HERITAGE - As the "Custodial Department" for this facility, EC is responsible for arranging a review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage, to identify any elements which may have heritage value, and thereafter be responsible for submitting concept proposals and detailed design proposals for and interventions (defined as alteration, demolition or disposal) to FHBRO for review and comment.

Condition - This facility has not been reviewed by the Federal Heritage Building Review Board (FHBRO) through Canadian Heritage.

Recommendations - As the maximum age for review is 40 years and the building is now 60 years old, a request for review is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

2.00 VERTICAL TRANSPORTATION SYSTEMS

Not applicable to this building.

3.00 MECHANICAL SYSTEMS

3.01 PRIMARY HEATING - The primary heating for building M1 is generated by a gas fired furnace, "Flame Master", installed in the basement level. The supply air is delivered through low pressure ductwork and controlled via wall mounted thermostat.

Condition - The existing heating system is considered to be in fair condition for the operating environment.

Recent Repairs/Modifications - At the time of site visit, no repair service records available.

Design Problems/Deficiencies - To our knowledge, no design problems/deficiencies were noted with the existing system.

Effective Remaining Life - The average life expectancy for gas fired furnaces is in the 15 - 20 year range. The estimated effective remaining life of the existing furnace is anticipated to be 6 - 10 years, based on the current condition and provided regular maintenance is carried out as per manufacturer's recommendations and/or best practice.

Recommendations - *Note: The suspected furnaces "Flame Master" having model numbers FM-70-HB, FM-90-H, FM-105-HB and FM-135-HB have the potential of*

releasing carbon monoxide due to cracked heat exchangers. It is recommended the heating contractor inspect and ensure annually that the furnaces are in good working order.

<i>Description:</i> Replace furnace	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace the furnace and associated controls.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

<i>Description:</i> Maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Provide annual maintenance and repairs (check, clean, lubricate and/or alignment).	<i>Material & Labour:</i> \$200
	<i>Contingency:</i> \$30
	<i>Project Soft Costs:</i> \$69
	<i>Total:</i> \$299

- 3.02 PRIMARY COOLING** - Building M1 is not equipped with cooling.
- 3.03 PRIMARY AIR SUPPLY** - No mechanical ventilation system is installed.
- 3.04 HYDRONIC HEATING SYSTEM** - No hydronic heating system is installed.
- 3.05 SUPPLEMENTAL HEATING UNITS** - No mechanical supplemental heating is installed, only a fireplace.
- 3.06 SUPPLEMENTAL AIR CONDITIONING** - No supplemental air conditioning is installed.
- 3.07 CONTROL SYSTEM** - No control system is installed.
- 3.08 STORM SEWER** - Refer to Architectural section for details and associated costs.
- 3.09 SANITARY SEWER** - The sanitary sewer system consists of PVC piping which is connected from the sinks, toilets and shower drainage. There is a sump pump located in the basement level that combines with the main branch prior to exiting to the septic tank, which located on the exterior on the east side of the building.

Condition - The inspection of the existing piping system was limited to that in exposed areas. The sump pump and the piping system were considered to be in fair condition, with no obvious leaks at the time of site visit.

Recent Repairs/Modifications - None identified.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted at the time of site visit.

Effective Remaining Life - The life expectancy for a sanitary piping system under normal conditions is approximately 50 years. It is anticipated the existing sanitary sewer will continue to perform over the next 16 - 20 years.

Recommendations -

<i>Description:</i> Sanitary sewer	
<i>Action Year:</i> 16 - 20	<i>Estimated Cost</i>
Consider budgeting to replace the sanitary sewer system at the end of its service life. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$10,000
	<i>Contingency:</i> \$1,500
	<i>Project Soft Costs:</i> \$3,450
	<i>Total:</i> \$14,950

<i>Description:</i> Sanitary sewer maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Consider a preventive maintenance program to ensure the sump pump and septic tank are in working order. Anticipate pumping out/cleaning septic tank every 1 - 3 years, depending on usage.	<i>Material & Labour:</i> \$500
	<i>Contingency:</i> \$75
	<i>Project Soft Costs:</i> \$173
	<i>Total:</i> \$748

3.10 WATER SUPPLY & TREATMENT - Building M1 is equipped with a water well and water treatment system in associated expansion tanks, injector, filtering and pressure switch/sensor to maintain system pressure.

It is assumed the water treatment is maintained and tested as required in accordance with the Ontario Safe Drinking Water Act, and local by-laws. For more information, contact 1-800-565-4923 or visit <http://www.ene.gov.on.ca/environment>

Condition - The existing water treatment system appeared to be operating as intended. The water system is considered to be in fair condition; however, the system was off-line at the time of site visit.

Recent Repairs/Modifications - No service records/log book were available for review at the time of site visit.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted.

Effective Remaining Life - The average life expectancy for the mechanical devices for the water treatment system ranges from 20 - 25 years. However, various types of filtration and/or processes require regular maintenance and replacement to meet specific requirements due to undesirable chemicals, biological contaminants, suspended solids and gases in the water.

Recommendations -

<i>Description:</i> Maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Consider implementing a preventive maintenance program and/or monitoring the water.	<i>Material & Labour:</i> \$1,000
	<i>Contingency:</i> \$150
	<i>Project Soft Costs:</i> \$345
	<i>Total:</i> \$1,495

3.11 DOMESTIC HOT WATER - The domestic hot water is generated by a gas fired, John Wood hot water heater located in the basement level. The following data were obtained: model JW402NA-04, serial 8810788004, input 36,000 BTU/hr, capacity 33.3 Imp. gallons.

Condition - The existing hot water tank appears to be operating as intended and is considered to be in fair condition.

Recent Repairs/Modifications - No service records were available.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted.

Effective Remaining Life - The life expectancy for hot water tanks ranges from 15 - 20 years. It is anticipated the existing hot water tank will continue to perform over the next 6 - 10 years, provided regular maintenance is carried out as per manufacturer's recommendations and/or best practice.

Recommendations -

<i>Description:</i> Hot water tank replacement	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace the hot water tank as it approaches its life expectancy. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

3.12 PLUMBING DISTRIBUTION AND FIXTURES - The plumbing distribution system in building M1 provides water to the sinks, toilets and showers. The plumbing consists mostly of copper piping.

Condition - The plumbing distribution and fixtures are considered to be in fair to good condition. Some fixtures are newer than others and no apparent leakages were found at the time of site visit.

Recent repairs/Modifications - No major repairs or modifications were identified.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted.

Effective Remaining Life - The plumbing fixtures have a life expectancy of 20 - 25 years. It is anticipated the existing fixtures will continue to perform for the next 6 - 10 years.

Recommendations -

<i>Description:</i> Fixtures replacement	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace fixtures as they approach their life expectancy. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

3.13 FIRE PROTECTION: STANDPIPE SYSTEM - No standpipe system is installed.

3.14 FIRE PROTECTION: SPRINKLER SYSTEM - No sprinkler system is installed.

3.15 FIRE PROTECTION: SPECIALTY SYSTEM(S) - No special systems are installed.

3.16 FIRE PROTECTION: PORTABLE SYSTEM(S) - Building M1 is equipped with a portable fire extinguisher installed on the south entrance/exit.

Condition - The existing portable fire extinguisher is considered to be in fair condition. There was no evidence to suggest monthly inspections are being performed in accordance with NFPA 10

Recent Repairs/Modifications - An annual inspection was performed by Fire Protection on June 20, 2013.

Design Problems/Deficiencies - Refer to National Fire Protection Association NFPA 10 Standard for Portable Fire Extinguishers, Chapter 7 - Inspection, Maintenance, and Recharging of Portable Fire Extinguishers.

Effective Remaining Life - The fire extinguishers are certified and/or replaced on an "as and when needed" basis under the certified company and/or service agency.

Recommendations -

<i>Description:</i> Yearly inspection and/or replacement	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Annual inspection and/or replacement as required.	<i>Material & Labour:</i> \$200
	<i>Contingency:</i> \$30
	<i>Project Soft Costs:</i> \$69
	<i>Total:</i> \$299

3.17 OZONE-DEPLETING SUBSTANCES (ODS) MANAGEMENT - The Federal Halocarbon Regulations 2003 requires management keep records of ozone-depleting substances identified on site. There were no ozone-depleting substances at building M1 at the time of site visit.

4.00 ELECTRICAL SYSTEMS

4.01 ELECTRICAL POWER - Electrical power to this building is provided from a 100 amp, single phase, two pole circuit breaker fed from building M-7. This circuit breaker also feeds building M-3 branch circuit panel. Cables are run underground in rigid PVC and metal conduit to a surface mounted junction box that feeds a two pole, weatherproof main disconnect mounted on the exterior of the building beside the rear entrance.

From this disconnect, conductors in rigid conduit feed a recessed Federal Pacific Stab-Lok branch circuit panel, model 108-16, rated at 100 amps, 120/240 volts recessed in the hallway of the building.

Condition - The junction box located on the exterior of the building is showing signs of corrosion, along with the main disconnect that has a buildup from insect infestation. The branch circuit panel appears to be of the original construction, which we assumed was installed about 1960 and is in poor condition.

At the time of this site inspection, load readings were not taken. Branch circuit wiring consists of two different systems (lighting and power). Wiring in this building appears to be from around the early 1960s, where synthetic spun rayon was being permitted to replace the cotton thread in the jacket braid. Additional wiring used during partial upgrade to some parts of the installation consists of non-metallic sheathed cables with a PVC jacket which came into effect around 1970. Metallic sheathed cable (BX's) was also discovered as part of the wiring in this building and was also used on the exterior.

For receptacles, cable drops are run through walls to flush mounted devices and EMT conduits used for exposed applications. A cursory inspection of the receptacles indicated that some of these devices have been replaced over the years and are in poor condition.

Recent Repairs/Modifications - It is our understanding that there have been no recent repairs or modifications to the branch circuit panel and electrical installation within the last 5 years.

Design Problems/Deficiencies - Based upon a cursory inspection of the branch circuit panel, it was noted that the panel directory was incomplete and presently does not meet the requirements of the electrical code rule 2-100. Records of service and maintenance of the equipment have not been carried out over the life of the installation. Therefore, please refer to the electrical summary of building M-7 under the heading "Distribution System" for further details.

Exposed EMT conduits in the basement require protective bushings or insuliners to prevent damage to non-metallic sheathed cables feeding outlet devices; there are also locations where non-metallic sheathed cables are in direct contact with the heating ducts and require protection to prevent overheating of cables to meet the requirements of the electrical code rule 12-506 (4).

Receptacle installed on the exterior of the building was noted to be of the original design, with a weathertight cover and gasket that is in poor condition. It is recommended that exterior receptacles be replaced and provided with GFCI protection to ensure that no potential shock hazard exists when employees are working outside in damp conditions.

The Canadian Electrical Code (CEC) part 1 2012, Section 26-702 states that receptacles exposed to the weather shall be provided with wet location cover plates, allowing plugs to remain plugged in. The overall electrical installation appears to be in poor working condition due to the age of the different types of wiring materials and lack of service.

Receptacles located within 1 m of sinks must be replaced with GFCI's, either in the panel or at the outlets. This would also apply to receptacles on the exterior of the building to meet the requirements of the electrical code, see sections 26-702 (2) and 26-710 (f). Where metallic sheathed cables (BX's) are used on the exterior of the building, a weatherproof jacket must be provided.

Receptacles in the bedrooms are presently wired and protected by a standard circuit breaker; outlets in bedrooms today require special protection and should be wired to an "arc fault circuit interrupter" (AFCI) to meet the requirements of the electrical code rules 26-722 (f) and (g). The reason for the new requirement is that a standard circuit breaker could fail to open the circuit under short circuit or arcing condition, allowing a fire to erupt.

The electrical installation appears to have been upgraded in some parts of the building, but still violates the electrical code. It is highly recommended that the installation be rewired and brought up to present day standards where outlets in the bedrooms can be protected with AFCI circuit breakers and combined smoke and carbon monoxide alarms, which shall be installed between each sleeping area and interconnected where two or more are installed, with dual power supply.

Effective Remaining Life - Branch circuit panels generally have a life expectancy of approximately 30 years. However, since the distribution equipment is of the original

installation and has surpassed its life expectancy, and because regular service and maintenance has not been carried out over the life of the equipment, consideration should be given to replace and upgrade the electrical installation and branch circuit panel within the next 1 - 5 years.

Recommendations -

<i>Description:</i> Complete rewire of the electrical installation	
<i>Action Year:</i> 1 - 5	<i>Estimated Cost</i>
Complete rewire of the electrical installation and replacement of all devices and panel to bring up to present day standards. This includes repairing damaged walls, etc.	<i>Material & Labour:</i> \$11,500
	<i>Contingency:</i> \$1,725
	<i>Project Soft Costs:</i> \$3,968
	<i>Total:</i> \$17,193

4.02 EMERGENCY POWER - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency power is not applicable to this building.

4.03 EXTERIOR LIGHTING - This building is equipped with two exterior lights - a surface Mounted, dome style ceiling fixture utilizing incandescent lamps, and a surface wall mounted carriage light at the rear of the building, all of which are operated by independent wall mounted toggle switches at 120 volts.

Condition - It would appear that these fixtures are of the original installation. The one at the rear of the building is in poor condition requiring repair and lamp replacement, while the one at the front of the building is in fair working condition.

Recent Repairs/Modifications - Based upon the condition of the rear exterior light, service and maintenance has not been carried out for quite some time.

Design Problems/Deficiencies - Apart from the lack of service and repairs to the broken fixture and lamps at the rear of the building, no other deficiencies were noted.

Effective Remaining Life - Exterior lighting generally has a life expectancy of approximately 15 years. However, the present exterior light fixtures have surpassed their life expectancy and should be considered for an upgrade, and replace all lamps with compact fluorescents or LED's within the next 1 - 5. These types of lamps consume less energy and generally have a longer life expectancy and require less maintenance.

Recommendations - See recommendation above under the heading "Electrical Power" to rewire and upgrade the building.

4.04 INTERIOR LIGHTING - For interior lighting, the wiring is fed from the branch circuit panel, with home runs to junction boxes and then from fixture to fixture using non-metallic sheathed cables. Interior lighting presently consist of ceiling mounted fixtures with dome or globe type reflectors utilizing incandescent lamps operated by single and multi-gang wall

mounted toggle switches. In the basement there are pendant type fixtures utilizing incandescent and compact fluorescent lamps controlled by local wall switches.

Condition - It is assumed that these fixtures have been replaced within the last ten years and are in fair condition.

Recent Repairs/Modifications - It would appear that there have been no recent repairs or modifications to the lighting installation within the last ten years, other than lamp replacements.

Design Problems/Deficiencies - There are no design problems or deficiencies other than to replace all incandescent lamps with compact fluorescents or LED lamps.

Effective Remaining Life - The present interior lighting units may have surpassed their life expectancy, but with on-going service and repairs, they should last 1 - 5 years; at that time, consideration should be given for replacement.

Recommendations - See recommendation above under the heading "Electrical Power", to rewire and upgrade the building.

4.05 EMERGENCY LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency lighting is not applicable to this building.

4.06 EXIT LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, exit lighting is not applicable to this building.

4.07 FIRE ALARM SYSTEM - This building is equipped with several smoke alarms operated at 120 volts; during the inspection, tests carried out on the devices indicated they did not operate as required.

Condition - The smoke alarms installed in this building are of two different types and are in poor condition.

Recent Repairs/Modifications - We believe that there have been no recent repairs or modifications to the smoke alarms since installation.

Design Problems/Deficiencies - During testing of the smoke alarms, it would appear that the smoke alarms in this building are not interconnected; this is a requirement of the electrical code section 32-110 (c) so that in the event of a fire, all alarm devices will sound. It is recommended that the smoke alarms be replaced with units that combine both smoke and carbon monoxide sensors.

Please refer to the electrical summary of building M-7 under the heading "Fire Alarm/Security Systems" for additional information.

Effective Remaining Life - Smoke alarms generally have a life expectancy of approximately 5 - 15 years, depending on the manufacturer. Therefore, based upon a cursory inspection of the devices, they should be replaced within the next 1 - 5 years with the units mentioned above.

Recommendations - Please refer to the electrical summary of building M-7 under the heading "Fire Alarm/Security Systems" for additional information.

4.08 SECURITY SYSTEM - A security system is not present in this building. However, please refer to the electrical summary of building M-7 under the heading "Fire Alarm/Security Systems" for additional information.

4.09 TELEPHONE & COMMUNICATION SYSTEM - An underground telephone system is run to a junction box on the north side of this building is provided by AGT; from the junction box, conductors in PVC conduit are run on the exterior to a multi-line termination point in the basement. FT4 cables are run from the box behind walls or in free air open on the surface to various outlets in the building.

Condition - The telephone installation appeared to be in fair condition at the time of this site inspection; however, it could not be verified if the systems still function since a phone was not present.

Recent Repairs/Modifications - It is our understanding, based on information gathered on site and the condition of the wiring, that there have been no recent repairs or modifications to the telephone system in the last 5 years.

Design Problems/Deficiencies - There were no design problems or deficiencies.

Effective Remaining Life - It would appear that the telephone line to this building is leased by the tenant, therefore, any repairs or replacement cost would be between the tenant and the local telephone company.

Recommendations - No recommendations at this time, since the installation meets the client needs. Any upgrade or replacement would be negotiated with the client and local telephone company.

SUMMARY OF RECOMMENDED EXPENDITURES
M1 - CARETAKERS RESIDENCE

ARCHITECTURAL / STRUCTURAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures				
						Year					Year				
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30
1.03	Ancillary Structures	North stair replacement.	Man./Cyl.	D1/B1	R							\$5,008			
1.04	Exterior Walls	Exterior wall repairs.	Cyl.	C1/D1	R		\$8,223					\$8,223		\$8,223	
1.06	Windows	Window replacement.	Cyl.	C1/D1	R									\$5,233	
1.08	Roofing	Roof replacement.	Cyl.	C1/C2	R					\$8,596					\$8,596
1.09	Flooring	Flooring replacement.	Cyl.	D1	R							\$13,081			
1.20	Heritage	FHBRO review.	Man.	A	-	- no cost -									
						\$0	\$8,223	\$0	\$0	\$8,596	\$0	\$26,312	\$0	\$13,456	\$8,596
						Total Short Term Expenditures					Total Long Term Expenditures				
						\$16,819					\$48,364				

MECHANICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures				
						Year					Year				
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30
3.01	Primary Heating	Replace furnace.	Cyl.	C2	C					\$7,475					
3.01	Primary Heating	Maintenance and repairs.	Man./Cyl.	C1	R	\$299	\$299	\$299	\$299	\$299	\$1,495	\$1,495	\$1,495	\$1,495	\$1,495
3.09	Sanitary Sewer	Sanitary sewer.	Cyl.	C3	C					\$14,950					
3.09	Sanitary Sewer	Tank maintenance and repairs.	Man./Cyl.	C1	R	\$748	\$748	\$748	\$748	\$748	\$3,740	\$3,740	\$3,740	\$3,740	\$3,740
3.10	Water Supply & Treatment	Maintenance and repairs.	Man./Cyl.	C1	C	\$1,495	\$1,495	\$1,495	\$1,495	\$1,495	\$7,475	\$7,475	\$7,475	\$7,475	\$7,475
3.11	Domestic Hot Water	Hot water tank replacement.	Cyl.	C2	C					\$7,475					
3.12	Plumbing Distribution & Fixtures	Replace plumbing fixtures.	Cyl.	C2	C					\$7,475					
3.16	Fire Protection: Portable Systems	Portable fire extinguishers inspection and/or certification.	Man./Cyl.	C1	R	\$299	\$299	\$299	\$299	\$299	\$1,495	\$1,495	\$1,495	\$1,495	\$1,495
						\$2,841	\$2,841	\$2,841	\$2,841	\$2,841	\$36,630	\$14,205	\$29,155	\$14,205	\$14,205
						Total Short Term Expenditures					Total Long Term Expenditures				
						\$14,205					\$108,400				

ELECTRICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures				
						Year					Year				
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30
4.01	Electrical Power	Remove existing wiring and rewire electrical installation to present day standards.	Man.	C1	R	\$17,193									
						\$17,193	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
						Total Short Term Expenditures					Total Long Term Expenditures				
						\$17,193					\$0				

M2 - CARETAKERS GARAGE



This page intentionally left blank

Contents

BUILDING SUMMARY

- History
- Description
- Classification
- Facility Condition
 - Property
 - Architectural/Structural
 - Conveying Systems
 - Mechanical
 - Electrical
- Compliance Issues
 - Building & Occupant Fire Safety
 - Regulatory Compliance
 - Environmental
 - Accessibility
 - Seismic Assessment
 - Heritage
- Recommended Expenditures
 - Short Term Expenditures (1 to 5 Years)
 - Long Term Expenditures (6 to 30 Years)

1.00 ARCHITECTURAL/STRUCTURAL

- 1.01 Substructure
- 1.02 Superstructure
- 1.03 Ancillary Structures
- 1.04 Exterior Walls
- 1.05 Exterior Doors
- 1.06 Windows, Skylights & Sloped Glazing
- 1.07 Suspended Floors/Soffits
- 1.08 Roofing
- 1.09 Floorings
- 1.10 Interior Partitions and Finishes
- 1.11 Ceilings
- 1.12 Interior Doors, Frames and Screens
- 1.13 Window Coverings
- 1.14 Interior Stairs
- 1.15 Fixed Furnishings
- 1.16 Design Issues
- 1.17 Environmental
- 1.18 Accessibility
- 1.19 Seismic Assessment
- 1.20 Heritage

2.00 VERTICAL TRANSPORTATION

- 2.01 Passenger Elevators
- 2.02 Freight Elevators
- 2.03 Escalators
- 2.04 Dumbwaiters
- 2.05 Platform Lifts
- 2.06 Scissor Lifts
- 2.07 Dock Levellers

3.00 MECHANICAL

- 3.01 Primary Heating
- 3.02 Primary Cooling
- 3.03 Primary Air Supply
- 3.04 Hydronic Heating System
- 3.05 Supplemental Heating Units
- 3.06 Supplemental Air Conditioning
- 3.07 Control System
- 3.08 Storm Sewer
- 3.09 Sanitary Sewer
- 3.10 Water Supply & Treatment
- 3.11 Domestic Hot Water
- 3.12 Plumbing Distribution & Fixtures
- 3.13 Fire Protection: Standpipe System
- 3.14 Fire Protection: Sprinkler System
- 3.15 Fire Protection: Specialty System(s)
- 3.16 Fire Protection: Portable Extinguishers
- 3.17 Ozone Depleting Substances (ODS) Management

4.00 ELECTRICAL

- 4.01 Electrical Power
- 4.02 Emergency Power
- 4.03 Exterior Lighting
- 4.04 Interior Lighting
- 4.05 Emergency Lighting
- 4.06 Exit Lighting
- 4.07 Fire Alarm System
- 4.08 Security System
- 4.09 Telephone & Communications System

This page intentionally left blank

BUILDING SUMMARY

HISTORY - No detailed history of the building is available. It is believed to have been constructed in 1953 (in conjunction with the adjacent residence) as a single-car garage. At an unknown later date, the building was converted to a heated structure, insulated and given interior cladding and a permanent heat source; the heat source has since been removed. Since that time, other than minor repair works, no significant alteration/renovation to the building, or change in its use/occupancy has occurred.

DESCRIPTION - This building is a single-storey, insulated but unheated structure, designed as a storage garage. The interior is a single open space used exclusively for storage.

CLASSIFICATION - Based on its existing size, height and use, this facility falls under the design criteria outlined in Part 9 of the most recent edition of the National Building Code of Canada (NBC 2010). The following building code matrix information is applicable:

- Building area: 19 m²
- Building height: One (1) storey
- Storeys below grade: One (1)
- Sprinklered: No
- Major occupancy: Group F, Division 3 - Low Hazard Industrial (storage garage/storage)
- Subsidiary occupancy: None
- Number of streets: Three (3)
- Construction type: Combustible
- Required fire resistance ratings: (NBC 9.10.8.1 and 9.10.10.3) Floor assemblies (except over crawl spaces) – ¾ hour; roof assemblies – n/a; load-bearing walls, columns and arches - not less than that of the supported assembly; service rooms – n/a.
- Fire alarm: No

Based on its year of construction, the building was originally designed/constructed under the 1941 (First Edition) of the NBC and other National codes.

FACILITY CONDITION - Inspection has determined the buildings and their systems located at this facility to be in the following overall condition:

- **ARCHITECTURAL/STRUCTURAL** - The architectural/structural elements are considered to be in fair overall condition, and with minor repairs and ongoing maintenance, should continue to perform satisfactorily for the next 30 years, with only life cycle replacement of components anticipated.
- **MECHANICAL** - Building M2 has no mechanical systems installed.
- **ELECTRICAL** - Although it would appear that the electrical installation is in good condition, it was determined after a cursory inspection of each building that a complete electrical rewire and upgrade, including an effective grounding system, must be carried out to bring all buildings up to present day codes and standards. We have also included some recommendations that will improve the security of the whole facility.

COMPLIANCE ISSUES - Inspection has identified various compliance issues throughout the facility, as follows:

ENVIRONMENTAL - Given the age of the facility, there is a high probability that building materials may contain hazardous materials; several building materials observed on-site and suspect materials in concealed spaces are suspected as possibly containing hazardous materials. Some of the observed suspect materials were noted to be in poor condition – posing an imminent health concern. No information with respect to existing hazardous materials was available, and no record of any previous inspection/testing of hazardous materials was available. It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

ACCESSIBILITY - The accessibility audit (see 'Annex E') recommends that this building be considered for full exemption, presuming that given both its location and its use, it is outside the scope of areas identified for inclusion under Treasury Board's 'Accessibility Standard for Real Property'. It is recommended that this building be considered for exemption, and that it be documented as such in accordance with EC's internally established procedure (as is required under the ASRP).

SEISMIC ASSESSMENT - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading. Since the Edmonton area is in a zone of low seismicity, and there are no significant projects planned for this facility, no actions (e.g. completion of seismic screening or assessment) are recommended.

HERITAGE - As the maximum age for review is 40 years and the building is now 60 years old, a request for review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

RECOMMENDED EXPENDITURES - A summary of the recommended expenditure costs as put forth throughout this report is presented as follows:

The total estimated Short Term Expenditure (1 to 5 years) cost for this facility is **\$2,990**, as outlined below:

Architectural / Structural Systems	\$0
Vertical Transportation Systems	\$0
Mechanical Systems	\$0
Electrical Systems	\$2,990
Short Term Total	\$2,990

The total estimated Long Term Expenditures (6 to 25 years) cost for this facility is **\$0**, as outlined below:

Architectural / Structural Systems	\$0
Vertical Transportation Systems	\$0
Mechanical Systems	\$0
Electrical Systems	\$0
<hr/> Long Term Total	<hr/> \$0 <hr/>

This page intentionally left blank

1.00 ARCHITECTURAL / STRUCTURAL SYSTEMS

1.01 SUBSTRUCTURE - The substructure is cast-in-place concrete, with a concrete slab-on-grade extending throughout. No other assembly details (i.e. footing type, etc.) are available.

Condition - The substructure is considered to be in fair overall condition, performing as expected with no obvious signs of settlement or failure, and with no obvious damage; however, there is some minor deterioration:

- The slab surface is rough and pitted.

Recent Repairs/Modifications - To our knowledge, no recent repairs/modifications have been carried out on the substructure.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the substructure.

Effective Remaining Life - The substructure dates from the original construction (c.1953), and given its current condition can likely be expected to perform indefinitely.

Recommendations - None identified.

1.02 SUPERSTRUCTURE - The superstructure is integral with various other building components - *refer to '1.04 Exterior Walls' and '1.08 Roofing', below.*

1.03 ANCILLARY STRUCTURES - There are no ancillary structures (e.g. canopies, loading docks, etc.) associated with this building.

1.04 EXTERIOR WALLS - The existing walls are of conventional wood frame design, consisting of wood siding (horizontal, paint finish), wood board sheathing (horizontal, shiplap), wood studs filled with fibreglass insulation, and plywood interior cladding (unfinished). No other assembly details (i.e. presence of vapour barrier) are available.

Condition - The exterior walls are considered to be in fair overall condition, performing as expected, and with no obvious damage; however, there is some minor deterioration:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the exterior walls.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior walls.

Effective Remaining Life - Most of the exterior wall components date from the original construction (c.1953); however, the insulation and interior cladding are recent additions

(date unknown). Given their current condition, with normal maintenance they can likely be expected to perform indefinitely.

Recommendations - It is recommended that cleaning/repainting of the exterior walls be included within the scope of the exterior wall repair/repainting works for the adjacent residence (*refer to separate report for 'M1 - Caretakers Residence'*).

1.05 EXTERIOR DOORS - A variety of exterior doors are employed throughout this building, as follows:

- Wood Door - solid core, flush type, paint finished (1 single).
- Overhead Door - wood panel, sectional, manual operation (2440 mm wide x 2135 mm height).

Condition - The exterior doors were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic; however:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the exterior doors.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior doors.

Effective Remaining Life - The single wood door dates from the original construction (c.1953), and given its current condition, with normal maintenance can likely be expected to perform indefinitely. The overhead door is presumed to be approximately 25 - 30 years old, and given its current condition, with normal maintenance can likely be expected to perform over the next 11 - 15 years.

Recommendations - It is recommended that cleaning/repainting of the exterior doors be included within the scope of the exterior wall repair/repainting works for the adjacent residence (*refer to separate report for 'M1 - Caretakers Residence'*).

1.06 WINDOWS - The window is wood - wood frame and sashes, paint finished, single glazed, fixed type.

Condition - The window was found to be in fair overall condition, performing as expected and with normal wear based on age; however:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the window.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the window.

Effective Remaining Life - The window dates from the original construction (c.1953), and given its current condition, with normal maintenance it can likely be expected to perform indefinitely.

Recommendations - It is recommended that cleaning/repainting of the wood window be included within the scope of the exterior wall repair/repainting works for the adjacent residence (*refer to separate report for 'M1 - Caretakers Residence'*).

1.07 SUSPENDED FLOORS/SOFFITS - There are no suspended floors/soffits (i.e. insulated floors separating interior and exterior spaces) present at this building.

1.08 ROOFING - The roofing is of conventional wood frame design, consisting of asphalt shingles, wood board decking, wood rafters, unheated attic space, wood joists partially filled with insulation (a mixture of fibreglass batt and loose-fill vermiculite), and plywood interior finish (unfinished). Soffits and fascias are capped with prefinished metal. Drainage is provided by prefinished metal eavestroughs and downspouts, discharging at grade. Access to the roof requires use of a portable ladder.

NOTE: Assessment of the full roof was not possible owing to coverage by snow - findings and recommendations noted below are based on a limited sample area where snow was removed.

Condition - The roofing is considered to be in fair overall condition, performing as expected, with no reported leakage, and with no obvious damage; however, there is some minor deterioration:

- Initial deterioration of the asphalt shingles (beginning to lift/curl at edges) was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the roofing.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the roofing.

Effective Remaining Life - Most of the roof structure components date from the original construction (c.1953); however, the insulation and interior cladding are recent additions (date unknown). Given their current condition, with normal maintenance they can likely be expected to perform indefinitely.

The age of the asphalt shingle roofing is unknown; however, based on appearance and condition, it is presumed to be approximately 10 - 15 years old. Given its presumed age and condition, with normal maintenance it can likely be expected to perform over the next 5 years.

Recommendations - It is recommended that replacement of the roofing be included within the scope of the roof replacement for the adjacent residence (*refer to separate report for 'M1— Caretakers Residence'*).

1.09 FLOORINGS - There are no finished floorings present in this building.

1.10 INTERIOR PARTITIONS AND FINISHES - There are no interior partition and/or finishes present in this building.

1.11 CEILINGS - There are no ceilings present in this building.

1.12 INTERIOR DOORS - There are no interior doors present in this building.

1.13 WINDOW COVERINGS - There are no window coverings present in this building.

1.14 INTERIOR STAIRS - There are no interior stairs present in this building.

1.15 FIXED FURNISHINGS - There are no fixed furnishings (i.e. fitments, millwork, manufactured specialties) fitments present in this building.

1.16 DESIGN ISSUES - While compliance issues (with respect to codes, standards, etc. governing design, installation and maintenance/testing) are typically identified within the report under their applicable components, this component addresses any 'general' design issues not otherwise covered.

Condition - Other than the identified design/compliance issues described within the report under their applicable components, no 'general' deficiencies (with respect to building design) have been identified in this facility.

Recommendations - None identified.

1.17 ENVIRONMENTAL - For the purpose of this inspection, "Hazardous Materials" are defined as designated substances (O. Reg. 213/91 as amended), Polychlorinated Biphenyls: PCB's (O. Reg. 11/82), or surface mould.

Condition - Given the age of the facility, there is a high probability that building materials may contain hazardous materials.

- Several building materials observed on-site are suspected as possibly containing hazardous materials (i.e. vermiculite, paint, older electrical equipment).
- Some of the observed suspect materials were noted to be in poor condition - posing an imminent health concern.
- Suspect materials in concealed spaces (i.e. roofing materials, adhesives) may possibly contain hazardous materials.
- No information with respect to existing hazardous materials was available.
- No record of any previous inspection/testing of hazardous materials was available.

Recommendations - It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

1.18 ACCESSIBILITY - In response to the '2005 Accessibility for All' report, the Treasury Board requires that accessibility audits be completed for all Crown facilities by 2008/09 to verify the degree of compliance with the Treasury Board Real Property Accessibility Policy (RPAP) for crown facilities, and its designated technical standard (CAN/CSA-B651-04 Accessible Design for the Built Environment).

Condition - The recently completed accessibility audit (see 'Annex E') recommends that this building be considered for full exemption, presuming that given both its location (naturally inaccessible, remote location) and its use (designed/constructed to accommodate able-bodied personnel), it is outside the scope of areas identified for inclusion under the ASRP.

- No record of any previous assessment of accessibility was available.
- No previously documented exemption(s) or minor variation(s) was available.

Recommendations - It is recommended that this building be considered for exemption, and that it be documented as such in accordance with EC's internally established procedure (*as is required under the ASRP*).

1.19 SEISMIC ASSESSMENT - As the seismic (earthquake) resistance of older existing buildings may not meet the stricter requirements of current building codes for seismic loading and design, a risk management approach is often taken, such as completion of seismic assessment for buildings located in zones of moderate to high seismicity, or that are being considered for major renovation or rehabilitation.

Condition - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading.

Recommendations - None identified (*since the Edmonton area is a zone of low seismicity ($Z_e=1$), a seismic assessment is not recommended*).

1.20 HERITAGE - As the "Custodial Department" for this facility, EC is responsible for arranging a review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage, to identify any elements which may have heritage value, and thereafter be responsible for submitting concept proposals and detailed design proposals for and interventions (defined as alteration, demolition or disposal) to FHBRO for review and comment.

Condition - This facility has not been reviewed by the Federal Heritage Building Review Board (FHBRO) through Canadian Heritage.

Recommendations - As the maximum age for review is 40 years and the building is now 60 years old, a request for review is now overdue and should be made ASAP, with

no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

2.00 VERTICAL TRANSPORTATION SYSTEMS

Not applicable to this building.

3.00 MECHANICAL SYSTEMS

Building M2 has no mechanical systems installed.

4.00 ELECTRICAL SYSTEMS

4.01 ELECTRICAL POWER - Electrical power to this garage was provided from an unknown source at the time of this site visit. There was no single line diagram present in building M-7 to indicate the current and voltage that supplies the whole complex, and the panel in building M-2 did not have a label to indicate where it was fed from.

Condition - The branch circuit panel in this garage is a Federal Pioneer 60 amp, 8-way unit that contains three 15 amp circuits, and appears to have been recently installed. The panel is recessed in the wall surrounded by dark insulation fibres and was in fair condition, installation date unknown.

At the time of this site inspection, load readings were not taken. Branch circuit wiring consists of two different systems (lighting and power). Wiring of receptacles was carried out using non-metallic sheathed cables that are run through walls to flush mounted outlets. A cursory inspection of the receptacles indicated that they are old and in poor condition.

Recent Repairs/Modifications - Due to the lack of information, it is assumed that there have been no recent repairs or modifications to the branch circuit panel within the last 5 years.

Design Problems/Deficiencies - Based upon a cursory inspection of the branch circuit panel, it was noted that the panel directory was complete but was difficult to read.

The electrical code rule 2-100 (3) states that each distribution point, circuit breaker and switches shall be marked adjacent thereto, in a conspicuous and legible manner to indicate clearly which installation or portion of the installation they protect or control.

Although the branch circuit panel is very small, maintenance to ensure connections are secure must still be carried out over time. Therefore, please refer to the electrical summary of building M-7 under the heading "Distribution Systems" for further details.

A receptacle installed on the exterior of the building was noted to be of original design, with a weather-tight cover that is in poor condition. It is recommended that this receptacle be replaced and provided with GFCI protection to ensure that no potential shock hazard exists when employees are working outside in damp conditions.

The Canadian Electrical Code (CEC) part 1 2012, Section 26-702 states that receptacles exposed to the weather shall be provided with GFCI and wet location cover plates that will allow plugs to remain plugged in while in use.

The electrical installation is in poor working condition and should be rewired and brought up to present day standards.

Effective Remaining Life - The branch circuit panel appears to have been installed within the last five years on top of the old wiring. Therefore, consideration should be given to upgrade the wiring installation to present day standards within the next 1 - 5 years.

Recommendations -

<i>Description:</i> Complete rewire of installation	
<i>Action Year:</i> 1 - 5	<i>Estimated Cost</i>
Rewire and replace all electrical devices and branch circuit panels, bringing up to present day standards.	<i>Material & Labour:</i> \$2,000
	<i>Contingency:</i> \$300
	<i>Project Soft Costs:</i> \$690
	<i>Total:</i> \$2,990

4.02 EMERGENCY POWER - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency power is not applicable to this building.

4.03 EXTERIOR LIGHTING - This building is equipped with two surface mounted exterior carriage lights utilizing incandescent lamps operated by a wall mounted toggle switch.

Condition - Exterior light fixtures were in poor condition and should be replaced with LED wall packs which have a long life expectancy and consume less energy.

Recent Repairs/Modifications - It is assumed that there have been no recent repairs or modifications to the exterior lighting within the last 5 years, other than lamp replacements.

Design Problems/Deficiencies - There are no design problems or deficiencies.

Effective Remaining Life - Exterior lighting generally has a life expectancy of approximately 15 years. However, the present exterior fixtures appear to have surpassed their life expectancy and should be considered for an upgrade to LED wall packs with built in photocells within the next 1 - 5 years

Recommendations - See recommendation to rewire and upgrade the installation of the garage under the heading "Electrical Power" for further details.

4.04 INTERIOR LIGHTING - Interior lighting presently consists of a pendant style ceiling mounted fixture utilizing an incandescent lamp operated by a single wall mounted toggle switch. In addition, there are several ceiling, surface mounted, wrap around fluorescent fixtures utilizing T12 lamps and magnetic ballasts; wiring and control of these fixtures was carried out using an extension cord plugged into wall outlets.

Condition - Interior lighting originally consisted of one ceiling mounted fixture utilizing an incandescent lamp. Over time, and due to lack of lighting, several ceiling mounted fluorescent lighting fixtures were installed, wired and controlled by outlet devices.

Recent Repairs/Modifications - It is assumed that there have been recent modifications to the installation, although the date of such modifications could not be determined.

Design Problems/Deficiencies - The wiring of these additional surface mounted fluorescent fixtures was carried out using an extension cord plugged into a receptacle. This violates the electrical code, since these fixtures are not designed for continuous row mounting or wiring.

The electrical code 30-310 states that where fixtures are continuous row mounted, rule 30-312 (3) requires they shall be marked for such use with interconnection that must be rated for 600 volts, 90 C conductors whether temporary or permanent. Additional cable supports are also required to support the cables where they are run on the ceiling to and through the fixtures.

Effective Remaining Life - The present interior lighting units have surpassed their life expectancy and should be considered for replacement and rewiring within 1 - 5 years.

Recommendations - See recommendation to rewire the installation of the garage under the heading "Electrical Power" for further details.

4.05 EMERGENCY LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency lighting is not applicable to this building.

4.06 EXIT LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, exit lighting is not applicable to this building.

4.07 FIRE ALARM SYSTEM - Under the classification of this building and the requirements of the National Building Code of Canada 2010, a fire alarm system is not applicable to this building.

4.08 SECURITY SYSTEM - A security system is not applicable to this building.

4.09 TELEPHONE & COMMUNICATION SYSTEM - A telephone system is not applicable to this building.

This page intentionally left blank

SUMMARY OF RECOMMENDED EXPENDITURES
M2 - CARETAKERS GARAGE

ARCHITECTURAL / STRUCTURAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures									
						Year					Year									
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30					
1.20	Heritage	FHBRO review.	Man.	A	-	- no cost -														
						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
						Total Short Term Expenditures					\$0	Total Long Term Expenditures					\$0			

ELECTRICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures									
						Year					Year									
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30					
4.01	Electrical Power	Remove existing wiring and rewire electrical installation to present day standards.	Man.	C1	R	\$2,990														
						\$2,990	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
						Total Short Term Expenditures					\$2,990	Total Long Term Expenditures					\$0			

M3 - METEOR RESIDENCE



This page intentionally left blank

Contents

BUILDING SUMMARY

- History
- Description
- Classification
- Facility Condition
 - Property
 - Architectural/Structural
 - Conveying Systems
 - Mechanical
 - Electrical
- Compliance Issues
 - Building & Occupant Fire Safety
 - Regulatory Compliance
 - Environmental
 - Accessibility
 - Seismic Assessment
 - Heritage
- Recommended Expenditures
 - Short Term Expenditures (1 to 5 Years)
 - Long Term Expenditures (6 to 30 Years)

1.00 ARCHITECTURAL/STRUCTURAL

- 1.01 Substructure
- 1.02 Superstructure
- 1.03 Ancillary Structures
- 1.04 Exterior Walls
- 1.05 Exterior Doors
- 1.06 Windows, Skylights & Sloped Glazing
- 1.07 Suspended Floors/Soffits
- 1.08 Roofing
- 1.09 Floorings
- 1.10 Interior Partitions and Finishes
- 1.11 Ceilings
- 1.12 Interior Doors, Frames and Screens
- 1.13 Window Coverings
- 1.14 Interior Stairs
- 1.15 Fixed Furnishings
- 1.16 Design Issues
- 1.17 Environmental
- 1.18 Accessibility
- 1.19 Seismic Assessment
- 1.20 Heritage

2.00 VERTICAL TRANSPORTATION

- 2.01 Passenger Elevators
- 2.02 Freight Elevators
- 2.03 Escalators
- 2.04 Dumbwaiters
- 2.05 Platform Lifts
- 2.06 Scissor Lifts
- 2.07 Dock Levellers

3.00 MECHANICAL

- 3.01 Primary Heating
- 3.02 Primary Cooling
- 3.03 Primary Air Supply
- 3.04 Hydronic Heating System
- 3.05 Supplemental Heating Units
- 3.06 Supplemental Air Conditioning
- 3.07 Control System
- 3.08 Storm Sewer
- 3.09 Sanitary Sewer
- 3.10 Water Supply & Treatment
- 3.11 Domestic Hot Water
- 3.12 Plumbing Distribution & Fixtures
- 3.13 Fire Protection: Standpipe System
- 3.14 Fire Protection: Sprinkler System
- 3.15 Fire Protection: Specialty System(s)
- 3.16 Fire Protection: Portable Extinguishers
- 3.17 Ozone Depleting Substances (ODS) Management

4.00 ELECTRICAL

- 4.01 Electrical Power
- 4.02 Emergency Power
- 4.03 Exterior Lighting
- 4.04 Interior Lighting
- 4.05 Emergency Lighting
- 4.06 Exit Lighting
- 4.07 Fire Alarm System
- 4.08 Security System
- 4.09 Telephone & Communications System

This page intentionally left blank

BUILDING SUMMARY

HISTORY - No detailed history of the building is available. It is believed to have been constructed in 1962 as an on-site residence. Originally designed as a single-family dwelling, the building has most recently been utilized as a dormitory. Other than minor repair and fit-up works, no significant alteration/renovation to the building has occurred.

DESCRIPTION - This building is a single-storey (with full basement), heated structure, designed as a single-family dwelling, but most recently being utilized as a dormitory. The ground floor is divided into a living room, kitchen, pantry/entry, hall, bathroom, and three sleeping rooms. The basement has a single finished room, with the remaining space being unfinished and used exclusively as service space.

CLASSIFICATION - Based on its existing size, height and use, this facility falls under the design criteria outlined in Part 9 of the most recent edition of the National Building Code of Canada (NBC 2010). The following building code matrix information is applicable:

- Building area: 92 m²
 - Building height: One (1) storey
 - Storeys below grade: One (1)
 - Sprinklered: No
 - Major occupancy: Group C - Residential
 - Subsidiary occupancy: None
 - Number of streets: Three (3)
 - Construction type: Combustible
 - Required fire resistance ratings: Required fire resistance ratings: (NBC 9.10.8.1 and 9.10.10.3) Floor assemblies (except over crawl spaces) - ¾ hour *; roof assemblies - n/a; load-bearing walls, columns and arches - not less than that of the supported assembly; service rooms - n/a.
 - Fire alarm: No
- * *Waived, as per NBC 9.10.9.4.(2).*

Based on its year of construction, the building was originally designed/constructed under the 1960 (Third Edition) of the NBC and other National codes.

FACILITY CONDITION - Inspection has determined the buildings and their systems located at this facility to be in the following overall condition:

- **ARCHITECTURAL/STRUCTURAL** - The architectural/structural elements are considered to be in fair overall condition, and with minor repairs and ongoing maintenance, should continue to perform satisfactorily for the next 30 years, with only life cycle replacement of components anticipated.
- **MECHANICAL** - Many components of the mechanical systems installed at building M3 are operating beyond their average life expectancies. Consider updating the fire safety plan, as the current posting was dated June 1986. Priority should be given to ensure the portable fire extinguisher is in compliance with NFPA 10. Consideration for the replacement of the

furnace, domestic hot water tank, washroom exhaust and sump pump should be given in the identified time frame.

- **ELECTRICAL** - Although it would appear that the electrical installation is in good condition, it was determined after a cursory inspection of each building that a complete electrical rewire and upgrade, including an effective grounding system, must be carried out to bring all buildings up to present day codes and standards. We have also included some recommendations that will improve the security of the whole facility.

COMPLIANCE ISSUES - Inspection has identified various compliance issues throughout the facility, as follows:

ENVIRONMENTAL - Given the age of the facility, there is a high probability that building materials may contain hazardous materials; several building materials observed on-site and suspect materials in concealed spaces are suspected as possibly containing hazardous materials. Some of the observed suspect materials were noted to be in poor condition - posing an imminent health concern. No information with respect to existing hazardous materials was available, and no record of any previous inspection/testing of hazardous materials was available. It is recommended that this building be considered for exemption, and that it be documented as such in accordance with EC's internally established procedure (as is required under the ASRP).

ACCESSIBILITY - The accessibility audit (see 'Annex E') recommends that this building be considered for full exemption, presuming that given both its location and its use, it is outside the scope of areas identified for inclusion under Treasury Board's 'Accessibility Standard for Real Property'. It is recommended that exemption of this building be documented in accordance with EC's internally established procedure (as is required under the ASRP).

SEISMIC ASSESSMENT - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading. Since the Edmonton area is in a zone of low seismicity, and there are no significant projects planned for this facility, no actions (e.g. completion of seismic screening or assessment) are recommended.

HERITAGE - As the maximum age for review is 40 years and the building is now 51 years old, a request for review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

RECOMMENDED EXPENDITURES - A summary of the recommended expenditure costs as put forth throughout this report is presented as follows:

The total estimated Short Term Expenditure (1 to 5 years) cost for this facility is **\$68,476**, as outlined below:

Architectural / Structural Systems	\$24,667
Vertical Transportation Systems	\$0
Mechanical Systems	\$24,374
Electrical Systems	\$19,435
Short Term Total	\$68,476

The total estimated Long Term Expenditures (6 to 25 years) cost for this facility is **\$109,458**, as outlined below:

Architectural / Structural Systems	\$49,633
Vertical Transportation Systems	\$0
Mechanical Systems	\$59,825
Electrical Systems	\$0
Long Term Total	\$109,458

This page intentionally left blank

1.00 ARCHITECTURAL / STRUCTURAL SYSTEMS

1.01 SUBSTRUCTURE - A variety of components are employed throughout the substructure of this building, as follows:

- Concrete foundation walls - cast-in-place concrete, located around the perimeter of the basement and pump room annex - exterior surfaces above grade are cast to resemble concrete block (i.e. with replicated block joints).
- Concrete columns - cast-in-place concrete, located outside the basement, at the corner of the exterior west stair.
- Concrete slab, on-grade - cast-in-place concrete, extending throughout the basement.
- Concrete slab, suspended - cast-in-place concrete, located above grade over the basement pump room annex.
- Wood columns - built-up, located in the basement (supporting the suspended floor structure) and at the exterior west stair (bearing on the concrete columns and supporting the overhanging roof structure).

Condition - The substructure is considered to be in fair overall condition, performing as expected with no obvious signs of settlement or failure, and with no obvious damage; however, with some minor deterioration:

- Efflorescence was noted on the lower portions of the foundation wall at the southeast corner of the basement.
- Cracking and movement (flexing under weight) of the concrete slab was noted at the southeast corner of the basement.

Recent Repairs/Modifications - To our knowledge, no recent repairs/modifications have been carried out on the substructure.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the substructure.

Effective Remaining Life - The substructure dates from the original construction (c.1962), and given its current condition, and with normal maintenance, it can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i> Substructure repair	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that the cracked/flexing portions of the slab be cut out and re-poured to its original profile in order to restore the integrity of the component and to eliminate a potential safety hazard. • Upon completion the repaired area should be kept monitored for signs of movement.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

1.02 SUPERSTRUCTURE - The superstructure is integral with various other building components - refer to '1.04 Exterior Walls', '1.07 Suspended Floors/Soffits', and '1.08 Roofing', below.

1.03 ANCILLARY STRUCTURES - There are several ancillary structures associated with this building, as follows:

- West Stair - located at the front (main) entrance door - pressure treated wood, suspended from building - serves as required exit, providing access between ground floor level and grade.
- South Stair - located at the side entrance door - pressure treated wood, suspended from building - serves as required exit, providing access between ground floor level and grade.

Condition - The ancillary structures are considered to be in fair overall condition, performing as expected, and with no obvious damage; however, there is some minor deterioration:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - To our knowledge, no recent repairs/modifications have been carried out on the ancillary structures.

Design Problems/Deficiencies - The stair guards/handrails do not meet current design criteria with respect to opening size and handrail extension (NBC 9.8.7 and 9.8.8).

Effective Remaining Life - The west stair dates from the original construction (c.1962), while the south stair has been replaced within the past 5 years (date and reason unknown). Given their current condition, with normal maintenance the west and south decks/stairs can likely be expected to perform over the next 11 - 15 years and 21 - 25 years, respectively.

Recommendations - *It is presumed that the above noted deficiency will be corrected in the short-term under normal O&M operations or as a part of other work(s).*

<i>Description:</i> West stair replacement	
<i>Action Year:</i> 11 - 15	<i>Estimated Cost</i>
Pending future assessment and verification, the west stair will likely require replacement at the end of its effective service life in accordance with good life cycle maintenance practice in order to maintain safe building access.	<i>Material & Labour:</i> \$3,350
	<i>Contingency:</i> \$503
	<i>Project Soft Costs:</i> \$1,156
	<i>Total:</i> \$5,008

<i>Description:</i> South stair replacement	
<i>Action Year:</i> 21 - 25	<i>Estimated Cost</i>
Pending future assessment and verification, the south stair will likely require replacement at the end of its effective service life in accordance with good life cycle maintenance practice in order to maintain safe building access.	<i>Material & Labour:</i> \$3,350
	<i>Contingency:</i> \$503
	<i>Project Soft Costs:</i> \$1,156
	<i>Total:</i> \$5,008

1.04 EXTERIOR WALLS - The exterior walls are of conventional wood frame design. Exterior cladding is stucco (paint finish). Interior cladding is gypsum board (paint finish). No other assembly details (i.e. sheathing type, presence of insulation, etc.) are available.

Condition - The exterior walls are considered to be in fair overall condition, performing as expected, and with no obvious damage; however, there was with some minor deterioration:

- Cracks were noted in the exterior stucco finish at various locations throughout - this is not an unexpected condition with older stucco (i.e. not fibreglass reinforced).

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the exterior walls.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior walls.

Effective Remaining Life - The exterior walls date from the original construction (c.1962), and given their age and current condition, can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i> Exterior wall repairs	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that corrective actions (including repair/replacement of deteriorated components, and cleaning/painting) be carried out at <u>each 10-year period</u> in accordance with good life cycle maintenance practice in order to maintain the integrity of the building envelope, and to deter damage. • This work should also allow for any required repair/repainting of other exterior components (<i>refer to '1.05 Exterior doors' and 1.06 Windows', below</i>).	<i>Material & Labour:</i> \$5,750
	<i>Contingency:</i> \$863
	<i>Project Soft Costs:</i> \$1,984
	<i>Total:</i> \$8,596

1.05 EXTERIOR DOORS - The exterior doors are wood (hollow core, flush type, paint finish) - with outer aluminum (prefinished, single glazed) storm doors. Hardware is knob type.

Condition - Exterior doors, frames and hardware were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the exterior doors, frames and hardware.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior doors, frames and hardware.

Effective Remaining Life - The wood doors date from the original construction (c.1962), while the aluminum storms are later additions (date unknown), and given their current condition, with normal maintenance they can likely be expected to perform indefinitely.

Recommendations - It is recommended that cleaning/repainting of the exterior doors be included within the scope of the exterior wall repair/repainting works (*refer to '1.04 Exterior Walls', above*).

1.06 WINDOWS - The windows throughout are wood (wood frames and sashes, paint finished, single glazed, vertical sliding type); basement locations with outer wood (paint finished, single glazed, fixed type) storm sashes; ground floor locations with outer aluminum (prefinished, single glazed, vertical sliding type) storm sashes.

Condition - The windows were found to be in fair overall condition, performing as expected and with normal wear based on age; however:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the windows.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the windows.

Effective Remaining Life - The wood windows and storms date from the original construction (c.1962), while the aluminum storms are later additions (date unknown), and given their current condition, with normal maintenance they can likely be expected to perform indefinitely.

Recommendations - It is recommended that cleaning/repainting of the wood windows be included within the scope of the exterior wall repair/repainting works (*refer to '1.04 Exterior Walls', above*).

1.07 SUSPENDED FLOORS/SOFFITS - The suspended floor is of standard wood-frame construction, consisting of wood subflooring (boards, diagonal), wood joists, and built-up wood beams.

Condition - The suspended floor is considered to be in fair overall condition, performing as expected, and with no obvious damage or deterioration.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the suspended floor.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the suspended floor.

Effective Remaining Life - The suspended floor dates from the original construction (c.1962), and given its current condition can likely be expected to perform indefinitely.

Recommendations - None identified.

1.08 ROOFING - The roofing is of conventional wood frame design, consisting of asphalt shingles, wood board decking, wood rafters, unheated attic space, blown-in mineral wool insulation, and wood joists filled with mineral wool batt insulation. Most soffits and fascias are capped with prefinished metal, except that the soffit where the roof overhangs the entrance stair is plywood (paint finish). Drainage is provided by prefinished metal eavestroughs and downspouts, discharging at grade. Access to the roof requires use of a portable ladder.

NOTE: Assessment of the full roof was not possible owing to coverage by snow - findings and recommendations noted below are based on a limited sample area where snow was removed.

Condition - The roofing is considered to be in fair overall condition, performing as expected, with no reported leakage, and with no obvious damage; however, there was some minor deterioration:

- Initial deterioration of the asphalt shingles (beginning to lift/curl at edges) was noted.
- Missing metal soffit piece - providing opening to attic space.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the roofing.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the roofing.

Effective Remaining Life - The roof structure dates from the original construction (c.1962), and given its current age and condition, can likely be expected to perform indefinitely. The age of the asphalt shingle roofing is unknown; however, based on appearance and condition, is presumed to be approximately 10 - 15 years old. Given its presumed age and condition, with normal maintenance it can likely be expected to perform over the next 5 years.

Recommendations -

<i>Description:</i> Roof replacement	
<i>Action Year:</i> 5	<i>Estimated Cost</i>
Pending future assessment and verification, roofing will be reaching the end of its effective service life and likely require replacement, in accordance with good life cycle maintenance practice, in order to maintain the integrity of the building envelope and prevent damage/deterioration and/or known health issues associated with leakage.	<i>Material & Labour:</i> \$5,750
	<i>Contingency:</i> \$863
	<i>Project Soft Costs:</i> \$1,984
	<i>Total:</i> \$8,596

1.09 FLOORINGS - The finished floorings throughout are a mixture of:

- Vinyl sheet flooring in the kitchen, pantry/entry, and bathroom.
 - Wood strip flooring (natural finish) throughout the remaining ground floor areas.
 - Vinyl tile in the basement finished space - on plywood and sleepers over the concrete slab.
- No finished floorings are provided in the remaining basement areas - exposed concrete slab.

Condition - Flooring throughout is considered to be in fair overall condition, performing as expected, with normal wear patterns based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the floorings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the floorings.

Effective Remaining Life - The finished floorings date from various times over the life of the building, and given their current condition and usage, and with normal maintenance, they can likely be expected to perform over the next 11 - 15 years.

Recommendations -

<i>Description:</i> Flooring refurbishment	
<i>Action Year:</i> 11 - 15	<i>Estimated Cost</i>
It is recommended that an allowance be made for replacement of the resilient floorings and refinishing of the wood flooring, in accordance with good life cycle maintenance practice in order to maintain safety, functionality, and aesthetics. • This work should be carried out in conjunction with other interior works to minimize disruption.	<i>Material & Labour:</i> \$9,250
	<i>Contingency:</i> \$1,388
	<i>Project Soft Costs:</i> \$3,191
	<i>Total:</i> \$13,829

1.10 INTERIOR PARTITIONS AND FINISHES - The interior partitions are frame (wood studs), clad with a mixture of:

- Gypsum board (paint finished) throughout the ground floor.
- Plywood (paint finished) at the basement partitions.

Condition - The interior partitions and finishes throughout are considered to be in fair overall condition, performing as expected, and with normal wear patterns based on age and traffic; however:

- Localized cracks were noted in the gypsum board.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior partitions and finishes.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the interior partitions and finishes.

Effective Remaining Life - The interior partitions date from the original construction (c.1962), and given their current condition and usage, and with normal maintenance, they can likely be expected to perform indefinitely; however, the paint finishes will continue to require replacement on an ongoing cyclical basis.

Recommendations - None identified.

1.11 CEILINGS - The ceilings throughout are a mixture of:

- Gypsum board (paint finished, secured to the underside of the roof structure) throughout the ground floor.
- Plywood (paint finished, installed to the underside of the suspended floor structure) in the basement finished space.

No ceilings are provided in the remaining basement areas - exposed underside of wood structure.

Condition - The ceilings throughout are considered to be in fair overall condition, performing as expected, and with normal wear patterns based on age and usage; however:

- Localized cracks were noted in the gypsum board.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the ceilings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the ceilings.

Effective Remaining Life - The ceilings date from the original construction (c.1962), and given their current condition and usage, and with normal maintenance, they can likely be expected to perform indefinitely; however, the paint finishes will continue to require replacement on an ongoing cyclical basis.

Recommendations - None identified.

1.12 INTERIOR DOORS - The interior doors throughout are wood (panel type, natural finish). Hardware throughout is knob type (various functions).

Condition - Interior doors, frames and hardware were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior doors, frames and hardware.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the interior doors, frames and hardware.

Effective Remaining Life - The interior doors, frames and hardware date from the original construction (c.1962), and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

1.13 WINDOW COVERINGS - The window coverings throughout are a mixture of

- Fabric drapes (northwest bedroom).
- Metal horizontal louvre blinds (remaining ground floor windows).

No window coverings are provided at basement windows.

Condition - The window coverings were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the window coverings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the window coverings.

Effective Remaining Life - The window coverings date from various times over the life of the building, and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

1.14 INTERIOR STAIRS - The building is served by two separate interior stairs:

North stair - providing egress between the basement and ground floor.

South stair - providing egress between the basement and the exterior at grade.

Both stairs are of conventional residential wood design.

Condition - The interior stairs were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior stairs.

Design Problems/Deficiencies - The stair guards/handrails do not meet current design criteria with respect to opening size and handrail extension (NBC 9.8.7 and 9.8.8).

Effective Remaining Life - The interior stairs date from the original construction (c.1962), and given their current condition can likely be expected to perform indefinitely.

Recommendations - None identified.

It is presumed that the above noted deficiency will be corrected in the short-term under normal O&M operations or as a part of other work(s).

1.15 FIXED FURNISHINGS - The fixed furnishings throughout consist of:

- Kitchen cupboards (wood and plastic laminate) in the kitchen.
- Storage cupboards and shelving (wood) in the basement finished space.

Condition - The fixed furnishings were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the fixed furnishings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the fixed furnishings.

Effective Remaining Life - The fixed furnishings date from various times over the life of the building, and given their current condition, and with normal maintenance, they can likely be expected to perform indefinitely.

Recommendations - None identified.

1.16 DESIGN ISSUES - While compliance issues (with respect to codes, standards, etc. governing design, installation and maintenance/testing) are typically identified within the report under their applicable components, this component addresses any 'general' design issues not otherwise covered.

Condition - Other than the identified design/compliance issues described within the report under their applicable components, no 'general' deficiencies (with respect to building design) have been identified in this facility.

Recommendations - None identified.

1.17 ENVIRONMENTAL - For the purpose of this inspection, “Hazardous Materials” are defined as designated substances (O. Reg. 213/91 as amended), Polychlorinated Biphenyls: PCB’s (O. Reg. 11/82), or surface mould.

Condition - Given the age of the facility, there is a high probability that building materials may contain hazardous materials.

- Several building materials observed on-site are suspected as possibly containing hazardous materials (i.e. gypsum products, paint, older vinyl tile, older electrical equipment).
- Some of the observed suspect materials were noted to be in poor condition - posing an imminent health concern.
- Suspect materials in concealed spaces (i.e. insulation, roofing materials, adhesives) may possibly contain hazardous materials.
- No information with respect to existing hazardous materials was available.
- No record of any previous inspection/testing of hazardous materials was available.

Recommendations - It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

1.18 ACCESSIBILITY - In response to the ‘2005 Accessibility for All’ report, the Treasury Board requires that accessibility audits be completed for all Crown facilities by 2008/09 to verify the degree of compliance with the Treasury Board Real Property Accessibility Policy (RPAP) for crown facilities, and its designated technical standard (CAN/CSA-B651-04 Accessible Design for the Built Environment).

Condition - The recently completed accessibility audit (see ‘Annex E’) recommends that this building be considered for full exemption, presuming that given both its location (naturally inaccessible, remote location) and its use (designed/constructed to accommodate able-bodied personnel), it is outside the scope of areas identified for inclusion under the ASRP.

- No record of any previous assessment of accessibility was available.
- No previously documented exemption(s) or minor variation(s) was available.

Recommendations - It is recommended that this building be considered for exemption, and that it be documented as such in accordance with EC’s internally established procedure (*as is required under the ASRP*).

1.19 SEISMIC ASSESSMENT - As the seismic (earthquake) resistance of older existing buildings may not meet the stricter requirements of current building codes for seismic loading and design, a risk management approach is often taken, such as completion of seismic assessment for buildings located in zones of moderate to high seismicity, or that are being considered for major renovation or rehabilitation.

Condition - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading.

Recommendations - None identified (*since the Edmonton area is a zone of low seismicity ($Z_e=1$), a seismic assessment is not recommended*).

1.20 HERITAGE - As the "Custodial Department" for this facility, EC is responsible for arranging a review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage, to identify any elements which may have heritage value, and thereafter be responsible for submitting concept proposals and detailed design proposals for and interventions (defined as alteration, demolition or disposal) to FHBRO for review and comment.

Condition - This facility has not been reviewed by the Federal Heritage Building Review Board (FHBRO) through Canadian Heritage.

Recommendations - As the maximum age for review is 40 years and the building is now 51 years old, a request for review is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

2.00 VERTICAL TRANSPORTATION SYSTEMS

Not applicable to this building.

3.00 MECHANICAL SYSTEMS

3.01 PRIMARY HEATING - The primary heating for building M3 is generated by a gas fired furnace, "Flame Master", installed in the basement level. The supply air is delivered through low pressure ductwork and controlled via wall mounted thermostat.

Condition - The existing furnace appears to be operating beyond its average life expectancy.

Recent Repairs/Modifications - At the time of site visit, no repair service records were available.

Design Problems/Deficiencies - To our knowledge, no design problems/deficiencies were noted with existing system.

Effective Remaining Life - The average life expectancy for gas fired furnaces ranges from 15 - 20 years. Based on the existing condition, it is recommended the heating system be replaced as soon as funding allows.

Recommendations - *Note: The suspected furnaces "Flame Master" having model numbers FM-70-HB, FM-90-H, FM-105-HB and FM-135-HB have the potential of releasing carbon monoxide due to cracked heat exchangers. It is recommended the*

heating contractor inspect and ensure annually that the furnaces are in good working order.

<i>Description:</i> Replace furnace	
<i>Action Year:</i> 1	<i>Estimated Cost</i>
Consider budgeting to replace the furnace and associated controls.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

<i>Description:</i> Maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Provide annual maintenance and repairs (check, clean, lubricate and/or alignment).	<i>Material & Labour:</i> \$200
	<i>Contingency:</i> \$30
	<i>Project Soft Costs:</i> \$69
	<i>Total:</i> \$299

3.02 PRIMARY COOLING - Building M3 is not equipped with cooling.

3.03 PRIMARY AIR SUPPLY - The ventilation is provided via forced air through low pressure ductwork from the existing furnace mentioned above. In addition, the washroom is equipped with local on/off wall mounted exhaust fan.

Condition - The exhaust fan in the washroom could not be turned on at the time of site visit.

Recent Repairs/Modifications - None identified

Design Problems/Deficiencies - It is possible that the motor is seized and/or there may be issues with the electrical feed.

Effective Remaining Life - The life expectancy for fans typically ranges from 15 - 20 years. Verify the power supply and/or replace the motor.

Recommendations -

<i>Description:</i> Exhaust fan replacement	
<i>Action Year:</i> 1	<i>Estimated Cost</i>
Exhaust fan is recommended to be replaced.	<i>Material & Labour:</i> \$300
	<i>Contingency:</i> \$45
	<i>Project Soft Costs:</i> \$104
	<i>Total:</i> \$449

3.04 HYDRONIC HEATING SYSTEM - No hydronic heating system is installed.

3.05 SUPPLEMENTAL HEATING UNITS - No supplemental heating units are installed.

3.06 SUPPLEMENTAL AIR CONDITIONING - No supplemental air conditioning is installed.

3.07 CONTROL SYSTEM - No control system is installed.

3.08 STORM SEWER - Refer to the Architectural section for details and associated costs.

3.09 SANITARY SEWER - The sanitary sewer system consists of PVC piping which is connected from the sinks, toilets and shower drainage. There is a sump pump located in the basement level that combines with the main branch prior to exiting to the septic tank which is located on the exterior on the east side of the building.

Condition - The inspection of the existing piping system was limited to that in exposed areas. The piping system is considered to be in fair condition with no obvious leaks. The sump pump is considered to be in poor condition and requires replacement at earliest funding will allow.

Recent Repairs/Modifications - None identified.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted at the time of site visit.

Effective Remaining Life - The life expectancy for a sanitary piping system under normal conditions is approximately 50 years. It is anticipated the existing sanitary sewer will continue to perform over the next 11 - 15 years.

Recommendations -

<i>Description:</i> Sanitary sewer	
<i>Action Year:</i> 11 - 15	<i>Estimated Cost</i>
Consider budgeting to replace the sanitary sewer system at the end of service life. Assess the condition prior replacement.	<i>Material & Labour:</i> \$10,000
	<i>Contingency:</i> \$1,500
	<i>Project Soft Costs:</i> \$3,450
	<i>Total:</i> \$14,950

<i>Description:</i> Sump pump replacement	
<i>Action Year:</i> 1	<i>Estimated Cost</i>
The sump pump and associated controls is recommended to be replaced.	<i>Material & Labour:</i> \$1,000
	<i>Contingency:</i> \$150
	<i>Project Soft Costs:</i> \$345
	<i>Total:</i> \$1,495

<i>Description:</i> Sanitary sewer maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Consider a preventive maintenance program to ensure the sump pump and septic tank are in working order. Anticipate pumping out/cleaning the septic tank every 1 - 3 years, depending on usage.	<i>Material & Labour:</i> \$500
	<i>Contingency:</i> \$75
	<i>Project Soft Costs:</i> \$173
	<i>Total:</i> \$748

3.10 WATER SUPPLY & TREATMENT - Building M3 has no water treatment system installed. Potable water is treated and supplied from building M5.

3.11 DOMESTIC HOT WATER - The domestic hot water is generated by a gas fired, "State Courier 510" hot water heater located in the basement level. The following data were obtained: model CV 40 NSRSO DCGA, serial J94476530, input: 36,000 BTU/hr, capacity 40 US gallons.

Condition - The existing hot water tank appears to be operating beyond its average life expectancy.

Recent Repairs/Modifications - No service records were available.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted.

Effective Remaining Life - The life expectancy for hot water tanks ranges from 15 - 20 years. It is recommended to replace the existing hot water heater within the next 3 years.

Recommendations -

<i>Description:</i> Hot water tank replacement	
<i>Action Year:</i> 1 - 3	<i>Estimated Cost</i>
Consider replacing the hot water heater within the next 3 years.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

3.12 PLUMBING DISTRIBUTION AND FIXTURES - The plumbing distribution system in building M1 provides water to the sinks, toilets, showers and washing machine in the basement level. The plumbing consists of copper piping and PEX/high density polyethylene polymer.

Condition - The plumbing distribution and fixtures are considered to be in fair to good condition. Some fixtures are newer than others and no apparent leakages were found at the time of visit.

Recent repairs/Modifications - No major repairs or modifications were identified.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted.

Effective Remaining Life - The plumbing fixtures have a life expectancy of 20 - 25 years. It is anticipated the existing fixtures will continue to perform for the next 6 - 10 years.

Recommendations -

<i>Description:</i> Fixtures replacement	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace fixtures as approaching their life expectancy. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

3.13 FIRE PROTECTION: STANDPIPE SYSTEM - No standpipe system is installed.

3.14 FIRE PROTECTION: SPRINKLER SYSTEM - No sprinkler system is installed.

3.15 FIRE PROTECTION: SPECIALTY SYSTEM – No specialty systems are installed.

3.16 FIRE PROTECTION: PORTABLE SYSTEM(S) - Building M3 is equipped with two (2) portable fire extinguishers, one installed on the south entrance/exit and the other in the basement.

Condition - The existing portable fire extinguisher is considered to be in fair condition. There was no evidence to suggest monthly inspections are being performed in accordance with NFPA 10.

Recent Repairs/Modifications - An annual inspection was performed by Fire Protection on June 20, 2013.

Design Problems/Deficiencies - Refer to National Fire Protection Association NFPA 10 Standard for Portable Fire Extinguishers, Chapter 7 - Inspection, Maintenance, and Recharging of Portable Fire Extinguishers.

Effective Remaining Life - The fire extinguishers are certified and/or replaced on an “as and when needed” basis under the certified company and/or service agency.

Recommendations -

<i>Description:</i> Inspection and/or replacement	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Annual inspection and/or replacement as required.	<i>Material & Labour:</i> \$300
	<i>Contingency:</i> \$45
	<i>Project Soft Costs:</i> \$104
	<i>Total:</i> \$449

3.17 OZONE-DEPLETING SUBSTANCES (ODS) MANAGEMENT - The Federal Halocarbon Regulations 2003 requires management keep records of ozone-depleting substances identified on site. There were no ozone-depleting substances at building M3 at the time of site visit.

4.00 ELECTRICAL SYSTEMS

4.01 ELECTRICAL POWER - Electrical power to this building is provided from a 100 amp, single phase, two pole circuit breaker fed from building M-7. This circuit breaker also feeds building M-1. Conductors are run underground in PVC and rigid metal conduit to a junction box mounted on the exterior of the building.

From the junction box, rigid conduit is run to a recessed Federal Pioneer Stab-Lok branch circuit panel, model #BE-112-24, located in the entrance rated at 125 amps, 120/240 volts, single phase, 3-wire.

Condition - It was noted from an inspection tag on the branch circuit panel that renovations have been carried out in this building, dated August 2011. The panel directory was incomplete; however, based upon further investigation, the branch circuit panel appears to be of the original construction from around 1960 and has not been replaced. The installation was found to be in poor condition, with joints made between cables without the use of proper junction boxes.

At the time of this site inspection, load readings were not taken. Branch circuit wiring consists of two different systems (lighting and power) utilizing the old braided paper wrap conductors, PVC and metallic sheathed (BX's).

For receptacles, cable drops are run through walls to flush mounted devices; receptacles that are within 1 m of sinks must be protected by a GFCI or circuit breaker in the panel.

EMT conduits used for exposed applications in the basement require plastic bushings to prevent damage to non-metallic sheathed cable that feeds outlets devices. A cursory inspection of the receptacles indicated that some of the devices have been replaced over the years and are in fair condition and showed no signs of abuse or overloading. However, while conducting tests on the outlets it was discovered that poor grounding and open wiring was present in the installation.

Recent Repairs/Modifications - The inspection label on the panel indicated that renovation was carried out in August 2011. Information pertaining to the type of work carried out was not available at the time of this site inspection.

Design Problems/Deficiencies - Based upon a cursory inspection of the branch circuit panel, it was noted that the panel directory was incomplete, and a label to indicate where the panel is being fed from was missing. These deficiencies must be corrected as soon as possible to meet the requirements of the electrical code section 2-100 (2) & (3) that clearly states that at each distribution point, circuit breakers, fuses, and switches shall be marked to clearly indicate which installation or portion of the installation they control.

Branch circuit panel must also be serviced and maintained, therefore, please refer to the electrical summary of building M-7 under the heading "Distribution Systems" for further details.

The electrical installation appears to have been upgraded in some areas of the building with new light fixtures and outlet devices installed on top of the old wiring that is in poor working condition. However, there are locations where the wiring violates the electrical code with splices made without the use of proper junction boxes, cables run through walls without mechanical protection, and conduits stubbed up into the ceiling with that has non-metallic sheathed cables without protection such as conduit insuliners as well as the faulty condition mentioned above.

Receptacles in the bedrooms are presently wired and protected by a standard circuit breaker; outlets in bedrooms today require special protection and should be wired to "arc fault circuit interrupters" (AFCI) to meet the requirements of the electrical code rule 26-722 (f) and (g). The reason for the new requirement is that a standard circuit breaker could fail to open the circuit under certain short circuit co arcing condition, allowing a fire to erupt.

Receptacles located within 1 m of sinks must be replaced with GFCI's, either in the panel or at the outlets. This would also apply to receptacles on the exterior of the building to meet the requirements of the electrical code, see sections 26-702 (2) and 26-710 (f).

The electrical installation overall is in poor working condition due to the age of the wiring and the present unsafe condition. Therefore, it is highly recommended that the installation be rewired and brought up to present day standards.

Effective Remaining Life - Branch circuit panels generally have a life expectancy of approximately 30 years. However, since the distribution equipment is of the original installation and has surpassed its life expectancy and because regular service and maintenance was never carried out over the life of the equipment, consideration should be given to replace and upgrade the wiring and branch circuit panel within the next 1 - 5 years.

Recommendations -

<i>Description:</i> Complete rewire of electrical installation	
<i>Action Year:</i> 1 - 5	<i>Estimated Cost</i>
Removal, rewiring, branch circuit panel, rewire building to present day standards and install new fixtures replace devices, label panel and panel directory. Install new smoke alarms, repair all damaged walls, etc.	<i>Material & Labour:</i> \$13,000
	<i>Contingency:</i> \$1,950
	<i>Project Soft Costs:</i> \$4,485
	<i>Total:</i> \$19,435

4.02 EMERGENCY POWER - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency power is not applicable to this building.

4.03 EXTERIOR LIGHTING - This building is equipped with two exterior lights, a surface mounted dome style ceiling fixture utilizing incandescent lamps and a surface wall mounted wall light at the rear of the building, all of which are operated at 120 volts by independent wall mounted toggle switches.

Condition - It would appear that these fixtures are of the original installation, and are in fair working condition.

Recent Repairs/Modifications - It would appear from the information on the label at the branch circuit panel that the exterior lighting may have been replaced at the time of renovation; no other information was available to confirm this.

Design Problems/Deficiencies - There are no design problems or deficiencies with the exterior lighting.

Effective Remaining Life - Exterior lighting generally has a life expectancy of approximately 15 years. However, the present exterior light fixtures should be replaced with LED wall packs, which are longer lasting and require less maintenance.

Recommendations - See recommendation above under the heading "Electrical Power" to rewire and upgrade the building.

4.04 INTERIOR LIGHTING - Interior lighting presently consists of various types of ceiling mounted, decorative globe and dome type fixtures utilizing incandescent and compact fluorescent lamps. Wiring of these fixtures is carried out with home runs from the panel to junction boxes, and then from fixture to fixture using metallic sheathed (BX's) and non-metallic sheathed cables.

Control of these fixtures is carried out using wall mounted multi- and single-gang, 120 volt toggle switches.

Condition - Since this building was recently renovated, general lighting appeared to be in fair condition.

Recent Repairs/Modifications - Repairs and modifications to this building, we believe, were carried out in August 2011.

Design Problems/Deficiencies - There are no design problems or deficiencies other than to replace all incandescent lamps with compact fluorescents or LED lamps.

Effective Remaining Life - Interior lighting generally has a life expectancy of approximately 15 years. However, since the building was not rewired as part of the renovation in August 2011, a complete rewire and upgrade will be required within the next 1 - 5 years.

Recommendations - See recommendation above under the heading "Electrical Power", to rewire and upgrade the building.

4.05 EMERGENCY LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency lighting is not applicable to this building.

4.06 EXIT LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, exit lighting is not applicable to this building.

4.07 FIRE ALARM SYSTEM - A fire alarm system is not applicable to this building; however, the building is equipped with two 120 volt smoke alarms that when tested, did not operate as required.

Condition - Smoke alarms operating at 120 volts are installed in this building; during our inspection, they were found to be in poor working condition.

Recent Repairs/Modifications - Although renovations have been carried out in the building, we believe that no recent repairs or modifications have been carried out on the smoke alarms since installation.

Design Problems/Deficiencies - It would appear that the smoke alarms in this building are not interconnected; this is a requirement of the electrical code section 32-102 and 32-110 (c) so that in the event of a fire, all alarm devices will sound notifying the occupant of a fire.

It is recommended that smoke alarms presently installed should be changed to the combined smoke and carbon monoxide type of detectors installed outside each sleeping area, interconnected to meet the requirements of the electrical code.

Recommendations - Please refer to the electrical summary of building M-7 under the heading "Fire Alarm/Security Systems" for additional information.

4.08 SECURITY SYSTEM - A security system is not applicable to this building. However, please refer to the electrical summary of building M-7 under the heading "Fire Alarm/Security System" for further details.

4.09 TELEPHONE & COMMUNICATION SYSTEM - An underground telephone system is run to a junction box on the north side of this building is provided by AGT; from the junction box, conductors in PVC conduit are run into the basement area to a multi-line box. From there, FT4 rated cables are run behind walls or open on the surface to various outlets in the building.

Condition - The telephone installation appeared to be in fair condition at the time of this site inspection; however, it could not be verified if the system still functions.

Recent Repairs/Modifications - It is our understanding based on information gathered on site and the condition of the wiring, that there have been no recent repairs or modifications to the telephone system in the last 5 years.

Design Problems/Deficiencies - There are no design problems or deficiencies.

Effective Remaining Life - It would appear that the telephone system to this building is leased by the tenant, therefore, any repairs or replacement cost would be between the tenant and the local telephone company.

Recommendations - No recommendations at this time, since the installation meets the client needs. Any upgrade or replacement would be negotiated with the client and local telephone company.

SUMMARY OF RECOMMENDED EXPENDITURES
M3 - METEOR RESIDENCE

ARCHITECTURAL / STRUCTURAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures						
						Year					Year						
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30		
1.01	Substructure	Substructure repair.	Cyl.	C1/D1	R		\$7,475										
1.03	Ancillary Structures	West stair replacement.	Man./Cyl.	D1/B1	R							\$5,008					
1.03	Ancillary Structures	South stair replacement.	Man./Cyl.	D1/B1	R									\$5,008			
1.04	Exterior Walls	Exterior wall repairs.	Cyl.	C1/D1	R		\$8,596					\$8,596		\$8,596			
1.08	Roofing	Roof replacement.	Cyl.	C1/C2	R					\$8,596							\$8,596
1.09	Flooring	Flooring refurbishment.	Cyl.	D1	R							\$13,829					
1.20	Heritage	FHBRO review.	Man.	A	-	- no cost -											
						\$0	\$16,071	\$0	\$0	\$8,596	\$0	\$27,433	\$0	\$13,604	\$8,596		
						Total Short Term Expenditures					Total Long Term Expenditures						
										\$24,667					\$49,633		

MECHANICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures						
						Year					Year						
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30		
3.01	Primary Heating	Replace furnace.	Cyl.	C1	C	\$7,475											
3.01	Primary Heating	Maintenance and repairs.	Man./Cyl.	C1	R	\$299	\$299	\$299	\$299	\$299	\$1,495	\$1,495	\$1,495	\$1,495	\$1,495		
3.03	Primary Air Supply	Exhaust fan replacement.	Cyl.	C1	C	\$449											
3.09	Sanitary Sewer	Sanitary sewer.	Cyl.	C3	C				\$14,950								
3.09	Sanitary Sewer	Sump pump replacement.	Cyl.	C1	C	\$1,495											
3.09	Sanitary Sewer	Tank maintenance and repairs.	Man./Cyl.	C1	R	\$748	\$748	\$748	\$748	\$748	\$3,740	\$3,740	\$3,740	\$3,740	\$3,740		
3.11	Domestic Hot Water	Hot water tank replacement.	Cyl.	C1	C	\$7,475											
3.12	Plumbing Distribution & Fixtures	Replace plumbing fixtures.	Cyl.	C2	C					\$7,475							
3.16	Fire Protection: Portable Systems	Portable fire extinguishers inspection and/or certification.	Man./Cyl.	C1	R	\$449	\$449	\$449	\$449	\$449	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245		
						\$10,915	\$8,971	\$1,496	\$1,496	\$1,496	\$14,955	\$22,430	\$7,480	\$7,480	\$7,480		
						Total Short Term Expenditures					Total Long Term Expenditures						
										\$24,374					\$59,825		

ELECTRICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures						
						Year					Year						
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30		
4.01	Electrical Power	Remove existing wiring and rewire electrical installation to present day standards.	Man.	C1	R	\$19,435											
						\$19,435	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
						Total Short Term Expenditures					Total Long Term Expenditures						
										\$19,435				\$0			

M5 - MAGNETIC RESIDENCE



This page intentionally left blank

Contents

BUILDING SUMMARY

- History
- Description
- Classification
- Facility Condition
 - Property
 - Architectural/Structural
 - Conveying Systems
 - Mechanical
 - Electrical
- Compliance Issues
 - Building & Occupant Fire Safety
 - Regulatory Compliance
 - Environmental
 - Accessibility
 - Seismic Assessment
 - Heritage
- Recommended Expenditures
 - Short Term Expenditures (1 to 5 Years)
 - Long Term Expenditures (6 to 30 Years)

1.00 ARCHITECTURAL/STRUCTURAL

- 1.01 Substructure
- 1.02 Superstructure
- 1.03 Ancillary Structures
- 1.04 Exterior Walls
- 1.05 Exterior Doors
- 1.06 Windows, Skylights & Sloped Glazing
- 1.07 Suspended Floors/Soffits
- 1.08 Roofing
- 1.09 Floorings
- 1.10 Interior Partitions and Finishes
- 1.11 Ceilings
- 1.12 Interior Doors, Frames and Screens
- 1.13 Window Coverings
- 1.14 Interior Stairs
- 1.15 Fixed Furnishings
- 1.16 Design Issues
- 1.17 Environmental
- 1.18 Accessibility
- 1.19 Seismic Assessment
- 1.20 Heritage

2.00 VERTICAL TRANSPORTATION

- 2.01 Passenger Elevators
- 2.02 Freight Elevators
- 2.03 Escalators
- 2.04 Dumbwaiters
- 2.05 Platform Lifts
- 2.06 Scissor Lifts
- 2.07 Dock Levellers

3.00 MECHANICAL

- 3.01 Primary Heating
- 3.02 Primary Cooling
- 3.03 Primary Air Supply
- 3.04 Hydronic Heating System
- 3.05 Supplemental Heating Units
- 3.06 Supplemental Air Conditioning
- 3.07 Control System
- 3.08 Storm Sewer
- 3.09 Sanitary Sewer
- 3.10 Water Supply & Treatment
- 3.11 Domestic Hot Water
- 3.12 Plumbing Distribution & Fixtures
- 3.13 Fire Protection: Standpipe System
- 3.14 Fire Protection: Sprinkler System
- 3.15 Fire Protection: Specialty System(s)
- 3.16 Fire Protection: Portable Extinguishers
- 3.17 Ozone Depleting Substances (ODS) Management

4.00 ELECTRICAL

- 4.01 Electrical Power
- 4.02 Emergency Power
- 4.03 Exterior Lighting
- 4.04 Interior Lighting
- 4.05 Emergency Lighting
- 4.06 Exit Lighting
- 4.07 Fire Alarm System
- 4.08 Security System
- 4.09 Telephone & Communications System

This page intentionally left blank

BUILDING SUMMARY

HISTORY - No detailed history of the building is available. It is believed to have been constructed in 1952 as an on-site residence. Originally designed as a single-family dwelling, the building has most recently been utilized as a dormitory. Other than minor repair and fit-up works, no significant alteration/renovation to the building has occurred.

DESCRIPTION - This building is a single-storey (with full basement), heated structure, designed as a single-family dwelling, but most recently being utilized as a dormitory. The ground floor is divided into a combined living/dining room, kitchen, hall, bathroom, and two sleeping rooms.

CLASSIFICATION - Based on its existing size, height and use, this facility falls under the design criteria outlined in Part 9 of the most recent edition of the National Building Code of Canada (NBC 2010). The following building code matrix information is applicable:

- Building area: 103 m²
- Building height: One (1) storey
- Storeys below grade: One (1)
- Sprinklered: No
- Major occupancy: Group C - Residential
- Subsidiary occupancy: None
- Number of streets: Three (3)
- Construction type: Combustible
- Required fire resistance ratings: (NBC 9.10.8.1 and 9.10.10.3) Floor assemblies (except over crawl spaces) - ¾ hour *; roof assemblies - n/a; load-bearing walls, columns and arches - not less than that of the supported assembly; service rooms - n/a.
- Fire alarm: No

* *Waived, as per NBC 9.10.9.4.(2).*

Base on its year of construction, the building was originally designed/constructed under the 1951 (Second Edition) of the NBC and other National codes.

FACILITY CONDITION - Inspection has determined the buildings and their systems located at this facility to be in the following overall condition:

- **ARCHITECTURAL/STRUCTURAL** - The architectural/structural elements are considered to be in fair overall condition, and with minor repairs and ongoing maintenance, should continue to perform satisfactorily for the next 30 years, with only life cycle replacement of components anticipated.
- **MECHANICAL** - Overall, the mechanical systems installed at building M5 are considered to be in fair condition. Consider updating the fire safety plan, as the current posting was dated June 1986. Priority should be given to ensure the fire suppression system is in accordance with NFPA 17A, and portable fire extinguishers are in compliance with NFPA 10.

- **ELECTRICAL** - Although it would appear that the electrical installation is in good condition, it was determined after a cursory inspection of each building that a complete electrical rewire and upgrade, including an effective grounding system, must be carried out to bring all buildings up to present day codes and standards. We have also included some recommendations that will improve the security of the whole facility.

COMPLIANCE ISSUES - Inspection has identified various compliance issues throughout the facility, as follows:

ENVIRONMENTAL - Given the age of the facility, there is a high probability that building materials may contain hazardous materials; several building materials observed on-site and suspect materials in concealed spaces are suspected as possibly containing hazardous materials. Some of the observed suspect materials were noted to be in poor condition - posing an imminent health concern. No information with respect to existing hazardous materials was available, and no record of any previous inspection/testing of hazardous materials was available. It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

ACCESSIBILITY - The accessibility audit (see 'Annex E') recommends that this building be considered for full exemption, presuming that given both its location and its use, it is outside the scope of areas identified for inclusion under Treasury Board's 'Accessibility Standard for Real Property'. It is recommended that exemption of this building be documented in accordance with EC's internally established procedure (as is required under the ASRP).

SEISMIC ASSESSMENT - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading. Since the Edmonton area is in a zone of low seismicity, and there are no significant projects planned for this facility, no actions (e.g. completion of seismic screening or assessment) are recommended.

HERITAGE - As the maximum age for review is 40 years and the building is now 61 years old, a request for review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

RECOMMENDED EXPENDITURES - A summary of the recommended expenditure costs as put forth throughout this report is presented as follows:

The total estimated Short Term Expenditure (1 to 5 years) cost for this facility is **\$76,221**, as outlined below:

Architectural / Structural Systems	\$32,816
Vertical Transportation Systems	\$0
Mechanical Systems	\$23,970
Electrical Systems	\$19,435
Short Term Total	\$76,221

The total estimated Long Term Expenditures (6 to 25 years) cost for this facility is **\$264,442**, as outlined below:

Architectural / Structural Systems	\$39,692
Vertical Transportation Systems	\$0
Mechanical Systems	\$224,750
Electrical Systems	\$0
<hr/> Long Term Total	<hr/> \$264,442 <hr/>

This page intentionally left blank

1.00 ARCHITECTURAL / STRUCTURAL SYSTEMS

1.01 SUBSTRUCTURE - A variety of components are employed throughout the substructure of this building, as follows:

- Concrete foundation walls - cast-in-place concrete, located around the perimeter of the basement, most interior surfaces are provided with wood studs filled with batt insulation and surfaced with a mixture of plywood (natural finish), fibreboard (vinyl faced), and hardboard (factory finished).
- Concrete slab, on-grade - cast-in-place concrete, extending throughout the basement.

Condition - The substructure is considered to be in fair overall condition, performing as expected with no obvious signs of settlement or failure; however, there is some obvious damage/deterioration, as follows:

- Water damaged fibreboard was observed at low levels of the southeast service room.

Recent Repairs/Modifications - To our knowledge, no recent repairs/modifications have been carried out on the substructure.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the substructure.

Effective Remaining Life - The substructure dates from the original construction (c.1952), and given its current condition, and with normal maintenance, it can likely be expected to perform indefinitely.

Recommendations - None identified.

It is presumed that the above noted deficiency will be corrected in the short-term under normal O&M operations or as a part of other work(s).

1.02 SUPERSTRUCTURE - The superstructure is integral with various other building components - refer to '1.04 Exterior Walls', '1.07 Suspended Floors/Soffits', and '1.08 Roofing', below.

1.03 ANCILLARY STRUCTURES - There are several ancillary structures associated with this building, as follows:

- East Stair - located at the east (front) entrance door - consisting of pressure treated wood joists and decking - serves as required exit, providing access between ground floor level and grade.
- South Stair - located at the south entrance door - consisting of pressure treated wood joists and decking - serves as required exit, providing access between ground floor level and grade.

Condition - The ancillary structures are considered to be in fair overall condition, performing as expected, and with no obvious damage or deterioration.

Recent Repairs/Modifications - To our knowledge, no recent repairs/modifications have been carried out on the ancillary structures.

Design Problems/Deficiencies - The stair guards/handrails do not meet current design criteria with respect to opening size and handrail extension (NBC 9.8.7 and 9.8.8).

Effective Remaining Life - The age of the stairs is unknown, but based upon appearance and condition, they are presumed to have been replaced within the past 5 years (date and reason unknown). Given their current condition, with normal maintenance the stairs can likely be expected to perform over the next 21 - 25 years.

Recommendations - *It is presumed that the above noted deficiency will be corrected in the short-term under normal O&M operations or as a part of other work(s).*

<i>Description:</i> West stair replacement	
<i>Action Year:</i> 21 - 25	<i>Estimated Cost</i>
Pending future assessment and verification, the exterior stairs will likely require replacement at the end of their effective service life, in accordance with good life cycle maintenance practice in order to maintain safe building access.	<i>Material & Labour:</i> \$3,350
	<i>Contingency:</i> \$503
	<i>Project Soft Costs:</i> \$1,156
	<i>Total:</i> \$5,008

1.04 EXTERIOR WALLS - The existing walls are of conventional wood frame design. Exterior cladding is stucco (pebbledash finish). Interior cladding is gypsum board (paint finish). No other assembly details (i.e. sheathing type, presence of insulation, etc.) are available.

Condition - The exterior walls are considered to be in fair overall condition, performing as expected, and with no obvious damage; however, there is some minor deterioration:

- Minor localized cracks were noted in the exterior stucco finish at various locations throughout.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the exterior walls.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior walls.

Effective Remaining Life - The exterior walls date from the original construction (c.1952), and given their age and current condition, they can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i> Exterior wall repairs	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that corrective actions (including repair/replacement of deteriorated components, and cleaning/painting) be carried out at each 10-year period in accordance with good life cycle maintenance practice in order to maintain the integrity of the building envelope, and to deter damage. • This work should also allow for any required repair/repainting of other exterior components (<i>refer to '1.05 Exterior doors' and 1.06 Windows', below</i>).	<i>Material & Labour:</i> \$5,750
	<i>Contingency:</i> \$863
	<i>Project Soft Costs:</i> \$1,984
	<i>Total:</i> \$8,596

1.05 EXTERIOR DOORS - The exterior doors are wood (hollow core, flush type, paint finish) - with outer aluminum (prefinished, single glazed) storm doors. Hardware is knob type.

Condition - Exterior doors, frames and hardware were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the exterior doors, frames and hardware.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior doors, frames and hardware.

Effective Remaining Life - The wood doors date from the original construction (c.1952), while the aluminum storms are later additions (date unknown), and given their current condition, with normal maintenance they can likely be expected to perform indefinitely.

Recommendations - It is recommended that cleaning/repainting of the exterior doors be included within the scope of the exterior wall repair/repainting works (*refer to '1.04 Exterior Walls', above*).

1.06 WINDOWS - The windows throughout are wood (wood frames and sashes, paint finished, single glazed, vertical sliding type) - basement locations with outer wood (paint finished, single glazed, fixed type) storm sashes - ground floor locations with outer aluminum (prefinished, single glazed, vertical sliding type) storm sashes.

Condition - The windows were found to be in fair overall condition, performing as expected and with normal wear based on age; however:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the windows.

Design Problems/Deficiencies - The windows and window wells at the basement level bedrooms do not meet code requirements for egress - the windows with respect to operation, and the wells with respect to clearance (NBC 9.9.10.1).

Effective Remaining Life - The wood windows and storms date from the original construction (c.1952), while the aluminum storms are later additions (date unknown), and given their current condition, with normal maintenance they can likely be expected to perform indefinitely.

Recommendations - It is recommended that cleaning/repainting of the wood windows be included within the scope of the exterior wall repair/repainting works (*refer to '1.04 Exterior Walls', above*).

<i>Description:</i> Basement window and well replacement	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that the windows and window wells at the basement level bedrooms be replaced in order to meet code requirements for egress. <i>NOTE: Only required if room use continues as sleeping rooms.</i>	<i>Material & Labour:</i> \$4,500
	<i>Contingency:</i> \$675
	<i>Project Soft Costs:</i> \$1,553
	<i>Total:</i> \$6,728

1.07 SUSPENDED FLOORS/SOFFITS - The suspended floor is of standard wood-frame construction, consisting of wood subflooring (boards, diagonal) and wood joists.

Condition - The suspended floor is considered to be in fair overall condition, performing as expected, and with no obvious damage or deterioration.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the suspended floor.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the suspended floor.

Effective Remaining Life - The suspended floor dates from the original construction (c.1952), and given its current condition, it can likely be expected to perform indefinitely.

Recommendations - None identified.

1.08 ROOFING - The roofing is of conventional wood frame design, consisting of asphalt shingles, wood board decking, wood rafters, unheated attic space, blown-in mineral wool insulation, and wood joists filled with mineral wool batt insulation. Soffits and fascias are capped with prefinished metal. Drainage is provided by prefinished metal eavestroughs and downspouts, discharging at grade. Access to the roof requires use of a portable ladder.

NOTE: Assessment of the full roof was not possible owing to coverage by snow - findings and recommendations noted below are based on a limited sample area where snow was removed.

Condition - The roofing is considered to be in fair overall condition, performing as expected, with no reported leakage, and with no obvious damage; however, there was some minor deterioration:

- Initial deterioration of the asphalt shingles (beginning to lift/curl at edges) was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the roofing.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the roofing.

Effective Remaining Life - The roof structure dates from the original construction (c.1952), and given its current age and condition, it can likely be expected to perform indefinitely. The age of the asphalt shingle roofing is unknown; however, based on appearance and condition, it is presumed to be approximately 10 - 15 years old. Given its presumed age and condition, with normal maintenance it can likely be expected to perform over the next 5 years.

Recommendations -

<i>Description:</i> Roof replacement	
<i>Action Year:</i> 5	<i>Estimated Cost</i>
Pending future assessment and verification, the roofing will be reaching the end of its effective service life and likely require replacement, in accordance with good life cycle maintenance practice, in order to maintain the integrity of the building envelope and prevent damage/deterioration and/or known health issues associated with leakage.	<i>Material & Labour:</i> \$6,450
	<i>Contingency:</i> \$968
	<i>Project Soft Costs:</i> \$2,225
	<i>Total:</i> \$9,643

1.09 FLOORINGS - The finished floorings throughout are a mixture of:

- Vinyl strip flooring in the entrance, dining room, kitchen, and ground floor bathroom.
- Vinyl tile in the basement hallway, northeast bedroom, and southeast service room.
- Vinyl sheet flooring in the basement hall, laundry/washroom and remaining bedrooms.
- Carpet in the living room and ground floor hallway and bedrooms.

No finished floorings are provided in remaining basement areas - exposed concrete slab. Finished floorings in basement are installed on plywood and sleepers over concrete slab.

Condition - Flooring throughout is considered to range from fair to poor overall condition, performing as expected, with normal wear patterns based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the floorings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the floorings.

Effective Remaining Life - The finished floorings dates from various times over the life of the building, and given their current condition and usage, with normal maintenance, the basement floorings are considered to have surpassed their effective service life and are due for replacement, while the ground floor floorings can likely be expected to perform over the next 11 - 15 years.

Recommendations -

<i>Description:</i> Flooring replacement (partial - basement)	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that an allowance be made for replacement of the basement floorings in accordance with good life cycle maintenance practice in order to maintain safety, functionality, and aesthetics. <ul style="list-style-type: none"> • This work should be carried out in conjunction with other interior works to minimize disruption. 	<i>Material & Labour:</i> \$5,250
	<i>Contingency:</i> \$788
	<i>Project Soft Costs:</i> \$1,811
	<i>Total:</i> \$7,849

<i>Description:</i> Flooring replacement (partial - ground floor)	
<i>Action Year:</i> 11 - 15	<i>Estimated Cost</i>
It is recommended that an allowance be made for replacement of the ground floor floorings in accordance with good life cycle maintenance practice in order to maintain safety, functionality, and aesthetics. <ul style="list-style-type: none"> • This work should be carried out in conjunction with other interior works to minimize disruption. 	<i>Material & Labour:</i> \$5,250
	<i>Contingency:</i> \$788
	<i>Project Soft Costs:</i> \$1,811
	<i>Total:</i> \$7,849

1.10 INTERIOR PARTITIONS AND FINISHES - The interior partitions are frame (wood studs), clad with a mixture of:

- Gypsum board (paint finished) throughout the ground floor.
- Fibreboard (vinyl faced) at the basement hall and northeast bedroom (upper wall areas).
- Plywood (natural finished) throughout remaining basement areas.

Condition - The interior partitions and finishes throughout are considered to be in fair overall condition, performing as expected, and with normal wear patterns based on age and traffic; however:

- Water damaged fibreboard was observed at low levels of the southeast service room.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior partitions and finishes.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the interior partitions and finishes.

Effective Remaining Life - The interior partitions date from the original construction (c.1952), and given their current condition and usage, and with normal maintenance, they can likely be expected to perform indefinitely; however, the paint finishes will continue to require replacement on an ongoing cyclical basis.

Recommendations - None identified.

1.11 CEILINGS - The ceilings throughout are a mixture of:

- Cement plaster (paint finished, secured to the underside of the roof structure) throughout the ground floor.
- Gypsum board (paint finished, secured to the underside of the suspended floor structure) in the basement laundry/washroom.
- Fibreboard panels (installed to the underside of the suspended floor structure) in the basement hall and bedrooms.

No ceilings are provided in the remaining basement areas - exposed underside of wood structure.

Condition - The ceilings throughout are considered to be in fair overall condition, performing as expected, and with normal wear patterns based on age and usage.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the ceilings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the ceilings.

Effective Remaining Life - The ceilings date from the original construction (c.1952). Given their current condition and usage, and with normal maintenance, they can likely be expected to perform indefinitely; however, the paint finishes will continue to require replacement on an ongoing cyclical basis.

Recommendations - None identified.

It is presumed that the above noted deficiency will be corrected in the short-term under normal O&M operations or as a part of other work(s).

1.12 INTERIOR DOORS - The interior doors throughout are wood (hollow core, flush type, natural finish). Hardware throughout is knob type (various functions).

Condition - Interior doors, frames and hardware were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior doors, frames and hardware.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the interior doors, frames and hardware.

Effective Remaining Life - The interior doors, frames and hardware date from the original construction (c.1952), and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

- 1.13 WINDOW COVERINGS** - The window coverings throughout are a mixture of
- Vinyl roller shades (northeast basement bedroom and northwest ground floor bedroom).
 - Fabric drapes (most remaining locations).

No window coverings are provided at the northeast basement bedroom and service rooms.

Condition - The window coverings were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the window coverings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the window coverings.

Effective Remaining Life - The window coverings date from various times over the life of the building, and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

- 1.14 INTERIOR STAIRS** - The interior stair is of conventional residential wood design - providing egress between the basement and ground floor.

Condition - The interior stair was found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior stair.

Design Problems/Deficiencies - Several issues were identified, as follows:

- The bottom riser is shorter (i.e. not of uniform height) than remaining risers (NBC 9.8.4.4) due to the raised area of basement floor.
- The handrail does not meet current design criteria with respect to extension (NBC 9.8.7).

Effective Remaining Life - The interior stair dates from the original construction (c.1952), and given its current condition, can likely be expected to perform indefinitely.

Recommendations - None identified.

It is presumed that the above noted deficiencies will be corrected in the short-term under normal O&M operations or as a part of other work(s).

1.15 FIXED FURNISHINGS - The fixed furnishings throughout consist of:

- Kitchen cupboards (wood and plastic laminate) in the kitchen.
- Vanity (wood and plastic laminate) in the laundry/bathroom and the bathroom.

Condition - The fixed furnishings were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the fixed furnishings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the fixed furnishings.

Effective Remaining Life - The fixed furnishings date from the original construction (c.1952), and given their current condition, and with normal maintenance, they can likely be expected to perform indefinitely.

Recommendations - None identified.

1.16 DESIGN ISSUES - While compliance issues (with respect to codes, standards, etc. governing design, installation and maintenance/testing) are typically identified within the report under their applicable components, this component addresses any 'general' design issues not otherwise covered.

Condition - Other than the identified design/compliance issues described within the report under their applicable components, no 'general' deficiencies (with respect to building design) have been identified in this facility.

Recommendations - None identified.

1.17 ENVIRONMENTAL - For the purpose of this inspection, "Hazardous Materials" are defined as designated substances (O. Reg. 213/91 as amended), Polychlorinated Biphenyls: PCB's (O. Reg. 11/82), or surface mould.

Condition - Given the age of the facility, there is a high probability that building materials may contain hazardous materials.

- Several building materials observed on-site are suspected as possibly containing hazardous materials (i.e. gypsum products, fibreboard, paint, older vinyl tile, duct-wrap paper, older electrical equipment).
- Some of the observed suspect materials were noted to be in poor condition - posing an imminent health concern.

- Suspect materials in concealed spaces (i.e. insulation, roofing materials, adhesives) may possibly contain hazardous materials.
- No information with respect to existing hazardous materials was available.
- No record of any previous inspection/testing of hazardous materials was available.

Recommendations - It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

1.18 ACCESSIBILITY - In response to the '2005 Accessibility for All' report, the Treasury Board requires that accessibility audits be completed for all Crown facilities by 2008/09 to verify the degree of compliance with the Treasury Board Real Property Accessibility Policy (RPAP) for crown facilities, and its designated technical standard (CAN/CSA-B651-04 Accessible Design for the Built Environment).

Condition - The recently completed accessibility audit (see 'Annex E') recommends that this building be considered for full exemption, presuming that given both its location (naturally inaccessible, remote location) and its use (designed/constructed to accommodate able-bodied personnel), it is outside the scope of areas identified for inclusion under the ASRP.

- No record of any previous assessment of accessibility was available.
- No previously documented exemption(s) or minor variation(s) was available.

Recommendations - It is recommended that this building be considered for exemption, and that it be documented as such in accordance with EC's internally established procedure (*as is required under the ASRP*).

1.19 SEISMIC ASSESSMENT - As the seismic (earthquake) resistance of older existing buildings may not meet the stricter requirements of current building codes for seismic loading and design, a risk management approach is often taken, such as completion of seismic assessment for buildings located in zones of moderate to high seismicity, or that are being considered for major renovation or rehabilitation.

Condition - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading.

Recommendations - None identified (*since the Edmonton area is a zone of low seismicity ($Z_e=1$), a seismic assessment is not recommended*).

1.20 HERITAGE - As the "Custodial Department" for this facility, EC is responsible for arranging a review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage, to identify any elements which may have heritage value, and thereafter be responsible for submitting concept proposals and detailed design proposals for and interventions (defined as alteration, demolition or disposal) to FHBRO for review and comment.

Condition - This facility has not been reviewed by the Federal Heritage Building Review Board (FHBRO) through Canadian Heritage.

Recommendations - As the maximum age for review is 40 years and the building is now 61 years old, a request for review is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

2.00 VERTICAL TRANSPORTATION SYSTEMS

Not applicable to this building.

3.00 MECHANICAL SYSTEMS

3.01 PRIMARY HEATING - The primary heating for building M5 is generated by a gas fired furnace, "Flame Master", installed in the basement level. The supply air is delivered through low pressure ductwork and controlled via wall mounted thermostat.

Condition - The existing heating system is considered to be fair condition for the operating environment.

Recent Repairs/Modifications - At the time of site visit, no repair service records were available. Duct cleaning was performed by Don's Power Vac in June 2002.

Design Problems/Deficiencies - To our knowledge, no design problems/deficiencies were noted with the existing system.

Effective Remaining Life - The average life expectancy for gas fired furnaces ranges from 15 - 20 years. The estimated effective remaining life of the existing furnace is anticipated to be in the 6 - 10 year range, based on the current condition and provided regular maintenance is carried out as per manufacturer's recommendations and/or best practice.

Recommendations - *Note: The suspected furnaces "Flame Master" having model numbers FM-70-HB, FM-90-H, FM-105-HB and FM-135-HB have the potential of releasing carbon monoxide due to cracked heat exchangers. It is recommended the heating contractor inspect and ensure annually that the furnaces are in good working order.*

<i>Description:</i> Replace furnace	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace the furnace and associated controls.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

<i>Description:</i> Maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Provide annual maintenance and repairs (check, clean, lubricate and/or alignment).	<i>Material & Labour:</i> \$200
	<i>Contingency:</i> \$30
	<i>Project Soft Costs:</i> \$69
	<i>Total:</i> \$299

3.02 PRIMARY COOLING - Building M5 is not equipped with cooling.

3.03 PRIMARY AIR SUPPLY - The ventilation is provided via forced air through low pressure ductwork from the existing furnace mentioned above. There are (3) additional exhaust fans - one installed above the stove in the kitchen on the main level, one for the basement washroom, and the other ceiling suspended above the pump in the water treatment area.

Condition - The exhaust fans are aged and appear to be operating as intended. The exhaust fans are considered to be in poor condition.

Recent Repairs/Modifications - No recent repairs/modifications records were available.

Design Problems/Deficiencies - No design problems or deficiencies were noted at the time of site visit.

Effective Remaining Life - The life expectancy for fans typically ranges from 15 - 20 years. The existing exhaust fans are anticipated to need replacement within the next 3 years.

Recommendations -

<i>Description:</i> Exhaust fan replacement	
<i>Action Year:</i> 1 - 3	<i>Estimated Cost</i>
Consider budgeting to replace the exhaust fans.	<i>Material & Labour:</i> \$1,000
	<i>Contingency:</i> \$150
	<i>Project Soft Costs:</i> \$345
	<i>Total:</i> \$1,495

3.04 HYDRONIC HEATING SYSTEM - No hydronic heating system is installed.

3.05 SUPPLEMENTAL HEATING UNITS - No supplemental heating is installed.

3.06 SUPPLEMENTAL AIR CONDITIONING - No supplemental air conditioning is installed.

3.07 CONTROL SYSTEM - No control system is installed.

3.08 STORM SEWER - Refer to Architectural section for details and associated costs.

3.09 SANITARY SEWER - The sanitary sewer system consists of PVC piping which is connected from the sinks, toilets and shower drainage. The septic tank is located on the west side of the building.

Condition - The inspection of the existing piping system was limited to that in exposed areas. The piping system is considered to be in good condition, with no obvious leaks at the time of site visit.

Recent Repairs/Modifications - None identified.

Design Problems/Deficiencies - There were no apparent design problems or deficiencies noted at the time of site visit.

Effective Remaining Life - The life expectancy for a sanitary piping system under normal conditions is approximately 50 years. It is anticipated the existing sanitary sewer will continue to perform over the next 16 - 20 years.

Recommendations -

<i>Description:</i> Sanitary sewer	
<i>Action Year:</i> 16 - 20	<i>Estimated Cost</i>
Consider budgeting to replace the sanitary sewer system at the end of its service life. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$10,000
	<i>Contingency:</i> \$1,500
	<i>Project Soft Costs:</i> \$3,450
	<i>Total:</i> \$14,950

<i>Description:</i> Sanitary sewer maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Consider a preventive maintenance program to ensure the septic tank is in working order. Anticipate pumping out/cleaning septic tank every 1 - 3 years, depending on usage.	<i>Material & Labour:</i> \$500
	<i>Contingency:</i> \$75
	<i>Project Soft Costs:</i> \$173
	<i>Total:</i> \$748

3.10 WATER SUPPLY & TREATMENT - Building M5 is equipped with a water treatment system which provides potable water to all the buildings in the facility. Water is drawn from the

well in association with the mechanical pump, expansion tanks and pressure switch/sensor to maintain system pressure. The tanks are composed of fibreglass with epoxy resin from Wellmate installed in the basement level.

It is assumed the water treatment is maintained and tested as required in accordance with the Ontario Safe Drinking Water Act, and local by-laws. For more information, contact 1-800-565-4923 or visit <http://www.ene.gov.on.ca/environment>

Condition - The existing water treatment system is very well insulated for both tanks and piping. The system appears to be operating as intended and is considered to be in fair condition.

Recent Repairs/Modifications - Monthly service records/log book were not up-to-date at the time of site visit.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted.

Effective Remaining Life - Average life expectancy for mechanical devices for a water treatment system ranges from 20 - 25 years. However, various types of filtration and/or processes require regular maintenance and replacement to meet specific requirements due to undesirable chemicals, biological contaminants, suspended solids and gases in the water.

Recommendations -

<i>Description:</i> Maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Consider implementing a preventive maintenance system and/or monitoring of the water.	<i>Material & Labour:</i> \$2,000
	<i>Contingency:</i> \$300
	<i>Project Soft Costs:</i> \$690
	<i>Total:</i> \$2,990

3.11 DOMESTIC HOT WATER - The domestic hot water is generated by a gas fired, GSW Series 6 hot water heater located in the basement level. The following data were obtained: model 6G40ENA-04, serial 0003 802000, capacity 151 litres.

Condition - The existing hot water tank appears to be operating as intended and is considered to be in fair condition.

Recent Repairs/Modifications - No service records were available.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted.

Effective Remaining Life - The life expectancy for hot water tanks ranges from 15 - 20 years. It is anticipated the existing hot water tank will continue to perform for the next 6 -

10 years, provided regular maintenance is carried out as per manufacturer's recommendations and/or best practice.

Recommendations -

<i>Description:</i> Hot water tank replacement	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace the hot water tank as it approaches it's life expectancy. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

3.12 PLUMBING DISTRIBUTION AND FIXTURES - The plumbing distribution system in building M5 provides water to the sinks, toilets, showers, and connections for the washing machine. The plumbing consists mostly of copper piping.

Condition - The plumbing distribution and fixtures are considered to be in fair condition. Some fixtures are newer than others and no apparent leakages were found at the time of site visit.

Recent repairs/Modifications - No major repairs or modifications were identified.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted.

Effective Remaining Life - The plumbing fixtures have a life expectancy of 20 - 25 years. It is anticipated the existing fixtures will continue to perform for the next 6 - 10 years.

Recommendations -

<i>Description:</i> Fixtures replacement	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace fixtures as they approach their life expectancy. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

3.13 FIRE PROTECTION: STANDPIPE SYSTEM - No standpipe system is installed.

3.14 FIRE PROTECTION: SPRINKLER SYSTEM - No sprinkler system is installed.

3.15 FIRE PROTECTION: SPECIALTY SYSTEM - No special systems are installed.

3.16 FIRE PROTECTION: PORTABLE SYSTEM(S) - Building M5 is equipped with two (2) portable fire extinguishers. The fire extinguishers are provided according to the anticipated building hazards.

Condition - The existing portable fire extinguishers are considered to be in fair condition. There was no evidence to suggest monthly inspections are being performed in accordance with NFPA 10.

Recent Repairs/Modifications - An annual inspection was performed by Fire Protection on June 20, 2013.

Design Problems/Deficiencies - Refer to National Fire Protection Association NFPA 10 Standard for Portable Fire Extinguishers, Chapter 7 - Inspection, Maintenance, and Recharging of Portable Fire Extinguishers.

Effective Remaining Life - The fire extinguishers are certified and/or replaced on an “as and when needed” basis under the certified company and/or service agency.

Recommendations -

<i>Description:</i> Inspection and/or replacement	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Annual inspection and/or replacement as required.	<i>Material & Labour:</i> \$300
	<i>Contingency:</i> \$45
	<i>Project Soft Costs:</i> \$104
	<i>Total:</i> \$449

3.17 OZONE-DEPLETING SUBSTANCES (ODS) MANAGEMENT -The Federal Halocarbon Regulations 2003 requires management keep records of ozone-depleting substances identified on site. There were no ozone-depleting substances at building M5 at the time of site visit.

4.00 ELECTRICAL SYSTEMS

4.01 ELECTRICAL POWER - Electrical power to this building is provided from a 100 amp, single phase, two pole circuit breaker fed from building M-7. According to information gathered on site, a label adjacent to the circuit breaker indicated it also feeds building M-6. It would appear that cables are run underground from building M-7 in rigid PVC and metal conduit to a surface mounted disconnect located at the rear of building; from this disconnect, a conduit is run on the surface to a branch circuit panel mounted above the disconnect. This panel is housed in a wooden box that has been severely damaged by the weather over the years.

Another conduit is run from the branch circuit panel through the wall to a recess mounted “Square D” branch circuit panel, model XOC-4F10, rated at 100 amps, 120/240 volts. From the panel, a conduit is run through the wall to another branch circuit panel that provides power to the entire building.

Condition - The electrical equipment at the rear of this building is in very poor condition and appears to be from the original installation in the 1960's.

At the time of this site inspection, load readings were not taken. Branch circuit wiring consists of two different systems (lighting and power). For lighting, the wiring is fed from the branch circuit panel, with home runs to junction boxes and then from fixture to fixture using, non-metallic sheathed and metallic sheathed (BX) cables.

General wiring of the installation appears to be from around the mid-1960's. However, over time, renovations have been carried out using non-metallic sheathed cables with PVC jacket which came into effect in 1970. Metallic sheathed cables (BX's) were also discovered as part of the wiring in this building.

For receptacles, cable drops are run through walls to flush mounted devices and EMT conduits that are used for exposed applications. A cursory inspection of some of the receptacles indicated that these devices are in poor condition and should be replaced as soon as possible.

Based upon a cursory inspection of the branch circuit panel, it was noted that the panel directory was incomplete; however, there are no records to indicate that service and maintenance have ever been carried out on the equipment during the course of service.

Recent Repairs/Modifications - It is our understanding that there have been no recent repairs or modifications to the branch circuit panel in the last 5 years.

Design Problems/Deficiencies - Based upon a cursory inspection of the branch circuit panel, it was noted that the panel directory has not been completed and presently does comply with the requirements of the electrical code rule 2-100.

Therefore, please refer to the report for building M-7 under the heading "Distribution System" for further details.

A cursory inspection of some of the receptacles indicated that these devices are in poor condition and should be replaced as soon as possible. Receptacles located within 1 m of sinks must be replaced with GFCI's either in the panel or at the outlets. This would also apply to receptacles on the exterior of the building to meet the requirements of the electrical code, sections 26-702 (2) and 26-710 (f).

Junction boxes used for the termination of branch circuit wiring in some areas of the basement exceed the requirements of the electrical code rule 12-3034 (6) for box fill, and should be replaced to meet the electrical code.

It was noted that non-metallic cables in some areas of the basement are run in close proximity to heating ducts without adequate protection. The electrical code rule 12-506 (4) requires that a distance of at least 25 mm away from all hot air heating ducts and hot water piping must be maintained. A thermal barrier conforming to the National Building Code of Canada or local legislation shall be permitted.

Receptacles in the bedrooms are presently wired and protected by a standard circuit breaker; outlets in bedrooms today require special protection and should be wired to an “arc fault circuit interrupter” (AFCI) to meet the requirements of the electrical code rule 26-722 (f) and (g). The reason for the new requirement is that a standard circuit breaker could fail to open the circuit under certain short circuit or arcing conditions.

The electrical installation appears to have been upgraded in some parts of the building but there are locations where the wiring violates the electrical code, with wiring run below ceiling joists, and through walls without adequate mechanical protection. The electrical installation overall is in poor working condition, and due to the age of the building and the condition of the installation, it is highly recommended that the installation be completely rewired and brought up to present day standards.

Effective Remaining Life - Branch circuit panels generally have a life expectancy of approximately 30 years. However, since the distribution equipment is of the original installation and has surpassed its life expectancy, and because regular service and maintenance has not been carried out over the life of the equipment, consideration should be given to replace and upgrade the wiring and branch circuit panel within the next 1 - 5 years.

Recommendations -

<i>Description:</i> Complete rewire of electrical installation	
<i>Action Year:</i> 1 - 5	<i>Estimated Cost</i>
Completely rewire and replace all devices, including branch circuit panel, grounding and conductors to present day standards.	<i>Material & Labour:</i> \$13,000
	<i>Contingency:</i> \$1,950
	<i>Project Soft Costs:</i> \$4,485
	<i>Total:</i> \$19,435

4.02 EMERGENCY POWER - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency lighting is not applicable to this building.

4.03 EXTERIOR LIGHTING - The exterior lighting for this building presently consists of two wall mounted carriage lights utilizing incandescent lamps and a high intensity discharge (HID) fixture mounted on a post at the rear of the building to illuminate a walkway. These fixtures are all operated by photocell rated at 120 volts.

Condition - It would appear that the carriage lights at the front and rear of the building have been installed during some upgrade, the date of which is unknown, and they are in fair condition; however, the high intensity discharge fixture mounted on the pole appears to have been part of the original installation and is in very poor condition.

Recent Repairs/Modifications - It is our understanding that there have been no recent repairs or modifications to the exterior lighting since installation, other than lamp replacements.

Design Problems/Deficiencies - There are no design problems with the carriage lights, but the pole mounted HID fixture requires repairs, such as the cleaning of the lens and the remove of water buildup in the housing.

Effective Remaining Life - Exterior lighting generally has a life expectancy of approximately 15 years. However, the present exterior light fixtures have surpassed their life expectancy and should be considered for replacement with LED wall packs within the next 1 - 5 years, since they consume less energy and have a longer life expectancy.

Recommendations - See recommendation above under the heading "Electrical Power" to rewire and upgrade building.

4.04 INTERIOR LIGHTING – Interior lighting presently consist of various types of ceiling mounted decorative globe type fixtures with opaque shades utilizing incandescent and compact fluorescent lamps, a two lamp fluorescent fixture utilizing T12 lamps and magnetic ballasts operated by local wall mounted toggle switches is installed in the kitchen. Switches are all operated at 120 volts.

Condition – Interior lighting appears to be in fair condition.

Recent Repairs/Modifications – It would appear that there have been some recent repairs and modification to the interior lighting, date of such repairs and modifications are unknown.

Design Problems/Deficiencies – There are no design problems or deficiencies other than to replace all incandescent lamps with compact fluorescents or LED lamps. Fluorescent fixtures presently utilizing T12 lamps and magnetic ballasts are to be replaced or retro-fitted with T8 lamps and electronic ballasts.

Effective Remaining Life – Interior decorative light fixtures generally have a life expectancy of approximately 15 years depending on manufacture and the condition of use. Fluorescent fixtures have a life expectancy of approximately 30 years. However, these fixtures could remain in service for another 1-5 years before considering replacement.

Recommendations - See recommendation above under the heading "Electrical Power 4.01" to rewire and upgrade building.

4.05 EMERGENCY LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency lighting is not applicable to this building.

4.06 EXIT LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, exit lighting is not applicable to this building.

4.07 FIRE ALARM SYSTEM - This building is equipped with several smoke alarms operated at 120 volts; during our inspection, tests carried out on some of the devices indicated they did not operate as required.

Condition - Smoke alarms installed in this building are of various types and are in poor condition.

Recent Repairs/Modifications - We believe that there have been no recent repairs or modifications to the smoke alarms since installation.

Design Problems/Deficiencies - The smoke alarms in this building are not interconnected; this is a requirement of the electrical code, sections 32-102 and 32-110 (c) so that in the event of a fire, all alarm devices will sound. It is recommended that the smoke alarms be replaced with units that combine both smoke and carbon monoxide sensors with dual power.

Please refer to the electrical summary of building M-7 under the heading "Fire Alarm/Security Systems" for additional information.

Effective Remaining Life - Smoke alarms generally have a life expectancy of approximately 5 - 15 years, depending on the manufacturer. Therefore, based upon a cursory inspection of the devices, they should all be replaced within the next 1 - 5 years with the units mentioned above.

Recommendations - Please refer to the electrical summary of building M-7 under the heading "Fire Alarm/Security Systems" for additional information.

4.08 SECURITY SYSTEM - Please refer to the electrical summary of building M-7 under the heading "Fire Alarm/Security Systems" for additional information.

4.09 TELEPHONE & COMMUNICATION SYSTEM - A telephone system does not exist in this building.

SUMMARY OF RECOMMENDED EXPENDITURES
M5 - MAGNETIC RESIDENCE

ARCHITECTURAL / STRUCTURAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures				
						Year					Year				
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30
1.03	Ancillary Structures	West stair replacement.	Man./Cyl.	D1/B1	R									\$5,008	
1.04	Exterior Walls	Exterior wall repairs.	Cyl.	C1/D1	R		\$8,596					\$8,596		\$8,596	
1.06	Windows	Basement window and well replacement.	Cyl.	C1/D1	R		\$6,728								
1.08	Roofing	Roof replacement.	Cyl.	C1/C2	R					\$9,643					\$9,643
1.09	Flooring	Flooring replacement (partial - basement).	Cyl.	D1	R		\$7,849								
1.09	Flooring	Flooring replacement (partial - ground floor).	Cyl.	D1	R							\$7,849			
1.20	Heritage	FHBRO review.	Man.	A	-	- no cost -									
						\$0	\$23,173	\$0	\$0	\$9,643	\$0	\$16,445	\$0	\$13,604	\$9,643
						Total Short Term Expenditures					Total Long Term Expenditures				
										\$32,816					\$39,692

MECHANICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures				
						Year					Year				
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30
3.01	Primary Heating	Replace furnace.	Cyl.	C2	C					\$7,475					
3.01	Primary Heating	Maintenance and repairs.	Man./Cyl.	C1	R	\$299	\$299	\$299	\$299	\$299	\$1,495	\$1,495	\$1,495	\$1,495	\$1,495
3.03	Primary Air Supply	Exhaust fans replacement.	Cyl.	C1	C		\$1,495								
3.09	Sanitary Sewer	Sanitary sewer.	Cyl.	C3	C					\$14,950					
3.09	Sanitary Sewer	Tank maintenance and repairs.	Man./Cyl.	C1	R	\$748	\$748	\$748	\$748	\$748	\$3,740	\$3,740	\$3,740	\$3,740	\$3,740
3.10	Water Supply & Treatment	Maintenance and repairs.	Man./Cyl.	C1	C	\$2,999	\$2,999	\$2,999	\$2,999	\$2,999	\$29,995	\$29,995	\$29,995	\$29,995	\$29,995
3.11	Domestic Hot Water	Hot water tank replacement.	Cyl.	C2	C					\$7,475					
3.12	Plumbing Distribution & Fixtures	Replace plumbing fixtures.	Cyl.	C2	C					\$7,475					
3.16	Fire Protection: Portable Systems	Portable fire extinguishers inspection and/or certification.	Man./Cyl.	C1	R	\$449	\$449	\$449	\$449	\$449	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245
						\$4,495	\$5,990	\$4,495	\$4,495	\$4,495	\$59,900	\$37,475	\$52,425	\$37,475	\$37,475
						Total Short Term Expenditures					Total Long Term Expenditures				
										\$23,970					\$224,750

ELECTRICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures				
						Year					Year				
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30
4.01	Electrical Power	Remove existing wiring and rewire electrical installation to present day standards.	Man.	C1	R	\$19,435									
						\$19,435	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
						Total Short Term Expenditures					Total Long Term Expenditures				
										\$19,435					\$0

M6 - ADMINISTRATION BUILDING



This page intentionally left blank

Contents

BUILDING SUMMARY

- History
- Description
- Classification
- Facility Condition
 - Property
 - Architectural/Structural
 - Conveying Systems
 - Mechanical
 - Electrical
- Compliance Issues
 - Building & Occupant Fire Safety
 - Regulatory Compliance
 - Environmental
 - Accessibility
 - Seismic Assessment
 - Heritage
- Recommended Expenditures
 - Short Term Expenditures (1 to 5 Years)
 - Long Term Expenditures (6 to 30 Years)

1.00 ARCHITECTURAL/STRUCTURAL

- 1.01 Substructure
- 1.02 Superstructure
- 1.03 Ancillary Structures
- 1.04 Exterior Walls
- 1.05 Exterior Doors
- 1.06 Windows, Skylights & Sloped Glazing
- 1.07 Suspended Floors/Soffits
- 1.08 Roofing
- 1.09 Floorings
- 1.10 Interior Partitions and Finishes
- 1.11 Ceilings
- 1.12 Interior Doors, Frames and Screens
- 1.13 Window Coverings
- 1.14 Interior Stairs
- 1.15 Fixed Furnishings
- 1.16 Design Issues
- 1.17 Environmental
- 1.18 Accessibility
- 1.19 Seismic Assessment
- 1.20 Heritage

2.00 VERTICAL TRANSPORTATION

- 2.01 Passenger Elevators
- 2.02 Freight Elevators
- 2.03 Escalators
- 2.04 Dumbwaiters
- 2.05 Platform Lifts
- 2.06 Scissor Lifts
- 2.07 Dock Levellers

3.00 MECHANICAL

- 3.01 Primary Heating
- 3.02 Primary Cooling
- 3.03 Primary Air Supply
- 3.04 Hydronic Heating System
- 3.05 Supplemental Heating Units
- 3.06 Supplemental Air Conditioning
- 3.07 Control System
- 3.08 Storm Sewer
- 3.09 Sanitary Sewer
- 3.10 Water Supply & Treatment
- 3.11 Domestic Hot Water
- 3.12 Plumbing Distribution & Fixtures
- 3.13 Fire Protection: Standpipe System
- 3.14 Fire Protection: Sprinkler System
- 3.15 Fire Protection: Specialty System(s)
- 3.16 Fire Protection: Portable Extinguishers
- 3.17 Ozone Depleting Substances (ODS) Management

4.00 ELECTRICAL

- 4.01 Electrical Power
- 4.02 Emergency Power
- 4.03 Exterior Lighting
- 4.04 Interior Lighting
- 4.05 Emergency Lighting
- 4.06 Exit Lighting
- 4.07 Fire Alarm System
- 4.08 Security System
- 4.09 Telephone & Communications System

This page intentionally left blank

BUILDING SUMMARY

HISTORY - No detailed history of the building is available. It is believed to have been constructed in 1957 for use as office space and a kitchen/dining hall. At some point (specific date unknown) the basement level was converted to finished space. Otherwise, other than minor repair and fit-up works, no significant alteration/renovation to the building, or change in its use/occupancy has occurred.

DESCRIPTION - This building is a single-storey (with full basement), heated structure, currently used as administrative offices, a kitchen/dining hall, labs, and general use laundry and recreational facility.

CLASSIFICATION - Based on its existing size, height and use, this facility falls under the design criteria outlined in Part 9 of the most recent edition of the National Building Code of Canada (NBC 2010). The following building code matrix information is applicable:

- Building area: 125 m²
- Building height: One (1) storey
- Storeys below grade: One (1)
- Sprinklered: No
- Major occupancy: Group D - Business and Personal Service
- Subsidiary occupancy: Group F, Division 3 - Low Hazard Industrial
- Number of streets: Three (3)
- Construction type: Combustible
- Required fire resistance ratings: Floor assemblies - ¾ hour; roof assemblies - n/a; load-bearing walls, columns and arches - not less than that of the supported assembly; service rooms - 1 hour.
- Fire alarm: No

Based on its year of construction, the building was originally designed/constructed under the 1953 (Second Edition) of the NBC and other National codes.

FACILITY CONDITION - Inspection has determined the buildings and their systems located at this facility to be in the following overall condition:

- **ARCHITECTURAL/STRUCTURAL** - The architectural/structural elements are considered to be in fair overall condition, and with minor repairs and ongoing maintenance, should continue to perform satisfactorily for the next 30 years, with only life cycle replacement of components anticipated. Several issues identified with respect to fire separation, which may potentially impact the structure and its users if not addressed, should have recommended corrective actions carried out in the short-term (pending determination of the building's future use).
- **MECHANICAL** - The overall mechanical systems installed at building M6 are considered to be in fair condition. Consider updating the fire safety plan, as the current posting was dated June 1986. Priority should be given to ensure the fire suppression system is in accordance with NFPA 17A, and portable fire extinguisher is in compliance with NFPA 10.

- **ELECTRICAL** - Although it would appear that the electrical installation is in good condition, it was determined after a cursory inspection of each building that a complete electrical rewire and upgrade, including an effective grounding system, must be carried out to bring all buildings up to present day codes and standards. We have also included some recommendations that will improve the security of the whole facility.

COMPLIANCE ISSUES - Inspection has identified various compliance issues throughout the facility, as follows:

ENVIRONMENTAL - Given the age of the facility, there is a high probability that building materials may contain hazardous materials; several building materials observed on-site and suspect materials in concealed spaces are suspected as possibly containing hazardous materials. No information with respect to existing hazardous materials was available, and no record of any previous inspection/testing of hazardous materials was available. It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

ACCESSIBILITY - The most recently completed Accessibility Audit rates this facility as only 61% compliant with the 2004 version of CAN/CSA-B651. Deficiencies are identified with the walkways, parking, entrances, interior doors, washrooms and tactile signage. Either corrective actions must be undertaken to ensure this facility complies with current accessibility standards, or a formal exemption (either full or partial, with some corrective actions undertaken) must be obtained.

SEISMIC ASSESSMENT - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading. Since the Edmonton area is in a zone of low seismicity, and there are no significant projects planned for this facility, no actions (e.g. completion of seismic screening or assessment) are recommended.

HERITAGE - As the maximum age for review is 40 years and the building is now 56 years old, a request for review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

RECOMMENDED EXPENDITURES - A summary of the recommended expenditure costs as put forth throughout this report is presented as follows:

The total estimated Short Term Expenditure (1 to 5 years) cost for this facility is **\$293,452**, as outlined below:

Architectural / Structural Systems	\$242,617
Vertical Transportation Systems	\$0
Mechanical Systems	\$28,410
Electrical Systems	\$22,425
Short Term Total	\$293,452

The total estimated Long Term Expenditures (6 to 25 years) cost for this facility is **\$308,594**, as outlined below:

Architectural / Structural Systems	\$91,046
Vertical Transportation Systems	\$0
Mechanical Systems	\$217,548
Electrical Systems	\$0
<hr/> Long Term Total	<hr/> \$308,594 <hr/>

This page intentionally left blank

1.00 ARCHITECTURAL / STRUCTURAL SYSTEMS

1.01 SUBSTRUCTURE - A variety of components are employed throughout the substructure of this building, as follows:

- Concrete foundation walls - cast-in-place concrete, located around the perimeter of the basement and pump room annex - exterior surfaces above grade are cast to resemble concrete block (i.e. with replicated block joints), although much of the above grade surfaces are covered with rigid insulation. Most interior surfaces are concealed behind gypsum board (paint finished).
- Concrete slab, on-grade - cast-in-place concrete, extending throughout the basement.

Condition - The substructure is considered to be in fair overall condition, performing as expected with no obvious signs of settlement or failure, and with no obvious damage; however, there is some minor deterioration:

- Deteriorating rigid insulation above grade at foundation exterior surfaces.
- Crack in foundation wall in sump/storage room (cause unknown - no visible signs of leakage).

Recent Repairs/Modifications - To our knowledge, no recent repairs/modifications have been carried out on the substructure.

Design Problems/Deficiencies - Several issues have been identified, as follows:

- The rigid insulation above grade at foundation exterior surface is not provided with any protection from deterioration or physical damage (NBC 5.1.4).
- The rigid insulation at foundation exterior surface is inconsistent, with several adjacent areas not provided with insulation - a condition which is likely to encourage condensation (NBC 5.3.1.2).

Effective Remaining Life - The substructure dates from the original construction (c.1957), and given its current condition, and with normal maintenance, it can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i>	Foundation wall upgrades	
<i>Action Year:</i>	2	
It is recommended that upgrades to the foundation walls be carried out to ensure that they comply with code requirements for heat transfer, vapour diffusion, and moisture protection, in order to ensure a safe and functional work space. • Physical work should be preceded by a destructive investigation of all walls in the heated space in order to determine the extent of upgrades required.	<i>Estimated Cost</i>	
	<i>Material & Labour:</i>	\$15,000
	<i>Contingency:</i>	\$2,250
	<i>Project Soft Costs:</i>	\$5,175
	<i>Total:</i>	\$22,425

1.02 SUPERSTRUCTURE - The superstructure is integral with various other building components - refer to '1.04 Exterior Walls', '1.07 Suspended Floors/Soffits', and '1.08 Roofing', below.

1.03 ANCILLARY STRUCTURES - There are several ancillary structures associated with this building, as follows:

- **North Stair** - located at the north (front) entrance door - cast in place concrete landing/stair with painted steel pipe guards/handrails - serves as required exit, providing access between ground floor level and grade.
- **West Landing** - located at the side entrance door - cast in place concrete landing (at grade level) - located in a required exit route.

Condition - The ancillary structures are considered to be in fair overall condition, performing as expected, and with no obvious damage; however, with some minor deterioration:

- Deterioration of the north stair paint finish was noted.

Recent Repairs/Modifications - To our knowledge, no recent repairs/modifications have been carried out on the ancillary structures.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the ancillary structures.

Effective Remaining Life - The ancillary structures date from the original construction (c.1957), and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

It is presumed that the above noted deficiency will be corrected in the short-term under normal O&M operations or as a part of other work(s).

1.04 EXTERIOR WALLS - The exterior walls are of conventional wood frame design. Exterior cladding is stucco (paint finish). Interior cladding is gypsum board (paint finish). No other assembly details (i.e. sheathing type, presence of insulation, etc.) are available.

Condition - The exterior walls are considered to be in fair overall condition, performing as expected, and with no obvious damage; however, with some minor deterioration:

- Cracks were noted in the exterior stucco finish at various locations throughout - this is not an unexpected condition with older stucco (i.e. not fiberglass reinforced).

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the exterior walls.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior walls.

Effective Remaining Life - The exterior walls date from the original construction (c.1957), and given their age and current condition, can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i> Exterior wall repairs	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that corrective actions (including repair/replacement of deteriorated components, and cleaning/painting) be carried out <u>at each 10-year period</u> in accordance with good life cycle maintenance practice in order to maintain the integrity of the building envelope, and to deter damage. • This work should also allow for any required repair/repainting of other exterior components (<i>refer to '1.05 Exterior doors' and 1.06 Windows', below</i>).	<i>Material & Labour:</i> \$7,800
	<i>Contingency:</i> \$1,170
	<i>Project Soft Costs:</i> \$2,691
	<i>Total:</i> \$11,661

1.05 EXTERIOR DOORS - The exterior doors are wood (hollow core, flush type, paint finish) - with outer aluminum (prefinished, single glazed) storm doors. Hardware is knob type.

Condition - Exterior doors, frames and hardware were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the exterior doors, frames and hardware.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior doors, frames and hardware.

Effective Remaining Life - The wood doors date from the original construction (c.1957), while the aluminum storms are later additions (date unknown), and given their current condition, with normal maintenance they can likely be expected to perform indefinitely.

Recommendations - It is recommended that cleaning/repainting of the exterior doors be included within the scope of the exterior wall repair/repainting works (*refer to '1.04 Exterior Walls', above*).

1.06 WINDOWS - The windows throughout are wood (wood frames and sashes, paint finished, single glazed, vertical sliding type) - ground floor locations with outer aluminum (prefinished, single glazed, vertical sliding type) storm sashes.

Condition - The windows were found to be in fair overall condition, performing as expected and with normal wear based on age; however:

- Deterioration of the paint finish was noted.
- A broken pane was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the windows.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the windows.

Effective Remaining Life - The wood windows and storms date from the original construction (c.1957), while the aluminum storms are later additions (date unknown), and given their current condition, with normal maintenance they can likely be expected to perform indefinitely.

Recommendations - It is recommended that cleaning/repainting of the wood windows be included within the scope of the exterior wall repair/repainting works (*refer to '1.04 Exterior Walls', above*).

1.07 SUSPENDED FLOORS/SOFFITS - The suspended floor is of standard wood-frame construction, consisting of wood subflooring (boards, diagonal) and wood joists.

Condition - The suspended floor is considered to be in fair overall condition, performing as expected, and with no obvious damage or deterioration.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the suspended floor.

Design Problems/Deficiencies - Several issues have been identified, as follows:

- The suspended floor structure is a required fire separation but has not been designed/constructed as such (NBC 9.10.8.1).
- Insulation is missing from the rim joists at several locations around the building perimeter (NBC 5.3).

Effective Remaining Life - The suspended floor dates from the original construction (c.1957), and given its current condition, it can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i>	Suspended floor upgrade	
<i>Action Year:</i>	2	
It is recommended that upgrades to the suspended walls be carried out to ensure that they comply with code requirements for heat transfer, vapour diffusion, moisture protection, and fire resistance, in order to ensure a safe and functional work space. • This work should be carried out in conjunction with other interior work(s) in order to minimize disruption.	<i>Estimated Cost</i>	
	<i>Material & Labour:</i>	\$35,000
	<i>Contingency:</i>	\$5,250
	<i>Project Soft Costs:</i>	\$12,075
	<i>Total:</i>	\$52,325

1.08 ROOFING - The roofing is of conventional wood frame design, consisting of asphalt shingles, wood board decking, wood rafters, unheated attic space, blown-in mineral wool insulation, and wood joists filled with mineral wool batt insulation. Soffits and fascias are capped with prefinished metal. Drainage is provided by prefinished metal eavestroughs and downspouts, discharging at grade. Access to the roof requires use of a portable ladder.

NOTE: Assessment of the full roof was not possible owing to coverage by snow - findings and recommendations noted below are based on a limited sample area where snow was removed.

Condition - The roofing is considered to be in fair overall condition, performing as expected, with no reported leakage, and with no obvious damage; however, there is some minor deterioration:

- Initial deterioration of the asphalt shingles (beginning to lift/curl at edges) was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the roofing.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the roofing.

Effective Remaining Life - The roof structure dates from the original construction (c.1957), and given its current age and condition, can likely be expected to perform indefinitely. The age of the asphalt shingle roofing is unknown; however, based on appearance and condition, it is presumed to be approximately 10 - 15 years old. Given its presumed age and condition, with normal maintenance it can likely be expected to perform over the next 5 years.

Recommendations -

<i>Description:</i> Roof replacement	
<i>Action Year:</i> 5	<i>Estimated Cost</i>
Pending future assessment and verification, roofing will be reaching the end of its effective service life and likely require replacement, in accordance with good life cycle maintenance practice, in order to maintain the integrity of the building envelope and prevent damage/deterioration and/or known health issues associated with leakage.	<i>Material & Labour:</i> \$7,800
	<i>Contingency:</i> \$1,170
	<i>Project Soft Costs:</i> \$2,691
	<i>Total:</i> \$11,661

1.09 FLOORINGS - The finished floorings throughout are a mixture of:

- Carpet in the lounge.
- Vinyl sheet flooring in the kitchen and laundry area.
- Vinyl tile throughout remaining areas.

Condition - Flooring throughout is considered to be in fair overall condition, performing as expected, with normal wear patterns based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the floorings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the floorings.

Effective Remaining Life - The finished floorings date from various times over the life of the building, and given their current condition and usage, and with normal maintenance, they can likely be expected to perform over the next 11 - 15 years.

Recommendations -

<i>Description:</i> Flooring refurbishment	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
It is recommended that an allowance be made for replacement of the floorings in accordance with good life cycle maintenance practice in order to maintain safety, functionality, and aesthetics. • This work should be carried out in conjunction with other interior works to minimize disruption.	<i>Material & Labour:</i> \$12,500
	<i>Contingency:</i> \$1,875
	<i>Project Soft Costs:</i> \$4,313
	<i>Total:</i> \$18,688

1.10 INTERIOR PARTITIONS AND FINISHES - The interior partitions are frame (wood studs), clad with gypsum board (paint finished).

Condition - The interior partitions and finishes throughout are considered to be in fair overall condition, performing as expected, and with normal wear patterns based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior partitions and finishes.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the interior partitions and finishes.

Effective Remaining Life - The interior partitions date from the original construction (c.1957), and given their current condition and usage, and with normal maintenance, they can likely be expected to perform indefinitely; however, the paint finishes will continue to require replacement on an ongoing cyclical basis.

Recommendations - None identified.

1.11 CEILINGS - The ceilings throughout are a mixture of:

- Suspended metal T-bar (with lay-in acoustic tile) throughout most of the basement.
- Gypsum board (paint finished, secured to the underside of the roof structure) in the kitchen.
- Fibreboard panels (unfinished, secured to the underside of the roof structure) throughout the remaining ground floor areas.

No ceilings are provided in the basement washroom or sup/storage room - exposed underside of wood structure.

Condition - The ceilings throughout are considered to be in fair overall condition, performing as expected, and with normal wear patterns based on age and usage; however:

- A water stained/damaged acoustic tile was observed in the basement hall.
- Loose fibreboard panels were observed at several locations.
- A water stained/damaged fibreboard panel was observed in the washroom
- A missing section of fibreboard crown moulding was observed in the lounge.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the ceilings.

Design Problems/Deficiencies - The fibreboard ceiling components (panels, trim, etc.) are no longer manufactured, therefore, required replacement components cannot be acquired.

Effective Remaining Life - The fibreboard ceilings date from the original construction (c.1957), and given their current condition and usage, are considered to be at the end of their effective service life and in need of replacement.

The age of the suspended T-bar ceilings is unknown, and given their current condition and usage, and with normal maintenance, they can likely be expected to perform indefinitely.

NOTE: Removal of the suspended t-bar ceilings will be required in order to implement several other recommended corrective actions in the basement.

Recommendations -

<i>Description:</i> Ceiling replacement - partial (ground floor)	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
It is recommended that an allowance be made for replacement of the fibreboard ceiling system throughout the ground floor level in accordance with good life cycle maintenance practice in order to maintain functionality, and aesthetics. • This work should be carried out in conjunction with other interior works to minimize disruption.	<i>Material & Labour:</i> \$25,000
	<i>Contingency:</i> \$3,750
	<i>Project Soft Costs:</i> \$8,625
	<i>Total:</i> \$37,375

1.12 INTERIOR DOORS - The interior doors throughout are wood (solid core, flush type, natural finish). Hardware throughout is knob type (various functions).

Condition - Interior doors, frames and hardware were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior doors, frames and hardware.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the interior doors, frames and hardware.

Effective Remaining Life - The interior doors, frames and hardware date from the original construction (c.1957), and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

1.13 WINDOW COVERINGS - The window coverings throughout are vinyl roller blinds, located in the office, dining room and lounge. No window coverings are provided at remaining location.

Condition - The window coverings were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the window coverings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the window coverings.

Effective Remaining Life - The window coverings date from various times over the life of the building, and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

1.14 INTERIOR STAIRS - The interior stair is of convention residential wood design - providing egress between the basement and ground floor.

NOTE: The building size/occupancy is such that it meets the requirements to allow a storey to be served by a single exit (NBC 9.9.8.1).

Condition - The interior stair was found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior stair.

Design Problems/Deficiencies - Several issues have been identified, as follows:

- The stair forms part of a required exit (from the basement) but is not fire separated from adjacent floor areas (NBC 9.9.4.2).

- The stair guards/handrails do not meet current design criteria with respect to height, opening size, and handrail ‘graspability’ and extension (NBC 9.8.7 and 9.8.8).

Effective Remaining Life - The interior stair dates from the original construction (c.1953), and given its current condition, it can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i> Interior stair upgrade	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that upgrades to the interior stair be carried out to ensure that they comply with code requirements for design, egress, and fire separation, in order to ensure a safe and functional work space. • This work should be carried out in conjunction with other interior work in order to minimize disruption.	<i>Material & Labour:</i> \$22,500
	<i>Contingency:</i> \$3,375
	<i>Project Soft Costs:</i> \$7,763
	<i>Total:</i> \$33,638

1.15 FIXED FURNISHINGS - The fixed furnishings throughout consist of:

- Kitchen cupboards (wood and plastic laminate) in the kitchen.
- Cabinets (wood and plastic laminate) in the labs.
- Vanities (wood and plastic laminate) in the washrooms.

Condition - The fixed furnishings were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the fixed furnishings.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the fixed furnishings.

Effective Remaining Life - The fixed furnishings date from various times over the life of the building, and given their current condition, and with normal maintenance, can likely be expected to perform indefinitely.

Recommendations - None identified.

1.16 DESIGN ISSUES - While compliance issues (with respect to codes, standards, etc. governing design, installation and maintenance/testing) are typically identified within the report under their applicable components, this component addresses any ‘general’ design issues not otherwise covered.

Condition - In addition to identified design/compliance issues described within the report under their applicable components, the following ‘general’ deficiency (with respect to building design) has been identified in this facility:

- Fuel fired appliances (i.e. furnace and water heater) in basement are not located in fire separated service rooms (NBC 9.10.10).

Recommendations -

<i>Description:</i> Service room construction	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that a fire rated service room be constructed for housing the fuel fired appliances to ensure compliance with code requirements, in order to ensure a safe and functional work space. • This work should be carried out in conjunction with other interior work in order to minimize disruption.	<i>Material & Labour:</i> \$15,500
	<i>Contingency:</i> \$2,325
	<i>Project Soft Costs:</i> \$5,348
	<i>Total:</i> \$23,173

1.17 ENVIRONMENTAL - For the purpose of this inspection, “Hazardous Materials” are defined as designated substances (O. Reg. 213/91 as amended), Polychlorinated Biphenyls: PCB’s (O. Reg. 11/82), or surface mould.

Condition - Given the age of the facility, there is a high probability that building materials may contain hazardous materials.

- Several building materials observed on-site are suspected as possibly containing hazardous materials (i.e. stucco, paint, flooring, board and joint compound, ceiling tiles, older electrical equipment).
- Suspect materials in concealed spaces (i.e. insulation, roofing materials, adhesives) may possibly contain hazardous materials.
- No information with respect to existing hazardous materials was available.
- No record of any previous inspection/testing of hazardous materials was available.

Recommendations - It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

1.18 ACCESSIBILITY - In response to the ‘2005 Accessibility for All’ report, the Treasury Board requires that accessibility audits be completed for all Crown facilities by 2008/09 to verify the degree of compliance with the Treasury Board Real Property Accessibility Policy (RPAP) for crown facilities, and its designated technical standard (CAN/CSA-B651-04 Accessible Design for the Built Environment).

Condition - The latest accessibility audit of this facility (*refer to ‘Annex E’*) was carried out in December 2014:

- The building is rated as being as only 61% compliant with the 2004 version of CAN/CSA-B651.
- Deficiencies are identified with walkways, parking, entrances, interior doors, washrooms, and tactile signage.
- No exemptions, full or partial, are known to be in place for this building.

Recommendations -

<i>Description:</i> Accessibility upgrades	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that an allowance be made for the correction of deficiencies identified in the Accessibility Audit in order to meet current Treasury Board requirements.	<i>Material & Labour:</i> \$81,185
	<i>Contingency:</i> \$12,178
	<i>Project Soft Costs:</i> \$28,009
	<i>Total:</i> \$121,372

NOTE: Within the ASRP, Treasury Board allows certain elements to be exempted from the full accessibility requirements “unless the intended use requires public access or the job requirements are such that a person with a disability could meet these requirements”. The ‘custodial department’ is required to establish internal procedures for identifying and seeking the deputy head's approval of full or partial exemptions from accessibility requirements, including: documentation of the rationale for exemptions, maintaining records of all real property that is partially or fully exempted, and reassessment of the real property if the criteria that justified the exemptions change.

1.19 SEISMIC ASSESSMENT - As the seismic (earthquake) resistance of older existing buildings may not meet the stricter requirements of current building codes for seismic loading and design, a risk management approach is often taken, such as completion of seismic assessment for buildings located in zones of moderate to high seismicity, or that are being considered for major renovation or rehabilitation.

Condition - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading.

Recommendations - None identified (*since the Edmonton area is a zone of low seismicity (Ze=1), a seismic assessment is not recommended*).

1.20 HERITAGE - As the “Custodial Department” for this facility, EC is responsible for arranging a review and preparation of a “Heritage Character Statement” by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage, to identify any elements which may have heritage value, and thereafter be responsible for submitting concept proposals and detailed design proposals for and interventions (defined as alteration, demolition or disposal) to FHBRO for review and comment.

Condition - This facility has not been reviewed by the Federal Heritage Building Review Board (FHBRO) through Canadian Heritage.

Recommendations - As the maximum age for review is 40 years and the building is now 56 years old, a request for review is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

2.00 VERTICAL TRANSPORTATION SYSTEMS

Not applicable to this building.

3.00 MECHANICAL SYSTEMS

3.01 PRIMARY HEATING - The primary heating for building M6 is generated by 2 American Standard Freedom 80 single-stage furnaces. The furnaces are natural gas fired, installed in the basement level. The supply air is delivered through low pressure ductwork and controlled via wall mounted thermostat.

Condition - The existing heating system is considered to be in fair condition for the operating environment.

Recent Repairs/Modifications - At the time of site visit, no repair service records were available. Duct cleaning was performed by Don's Power Vac in June 2002.

Design Problems/Deficiencies - To our knowledge, no design problems/deficiencies were noted with the existing system. At the time of site visit, it was noted the furnaces were running without the filters in place.

Effective Remaining Life - The average life expectancy for gas fired furnaces ranges from 15 - 20 years. The installation and/or manufacture date was unknown. The estimated effective remaining life of the existing furnaces is anticipated to be 6 - 10 years, based on the current condition and provided regular maintenance is performed as per manufacturer's recommendations and/or best practice.

Recommendations -

<i>Description:</i> Replace furnace (2 units)	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace furnace and associated controls.	<i>Material & Labour:</i> \$10,000
	<i>Contingency:</i> \$1,500
	<i>Project Soft Costs:</i> \$3,450
	<i>Total:</i> \$14,950

<i>Description:</i> Maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Provide annual maintenance and repairs (check, clean, lubricate and/or alignment).	<i>Material & Labour:</i> \$300
	<i>Contingency:</i> \$45
	<i>Project Soft Costs:</i> \$104
	<i>Total:</i> \$449

3.02 PRIMARY COOLING - Building M6 is not equipped with cooling.

3.03 PRIMARY AIR SUPPLY - The ventilation is provided via forced air through low pressure ductwork from the same furnaces mentioned above. There are two (2) exhaust fans for the labs in the basement level mounted above the ceiling and ducted to the exterior on the south and east walls. There are also two (2) ceiling mounted exhaust fans for the washrooms - one located in the basement level, and the other on the main level. In addition, the kitchen is equipped with a roof mounted exhaust fan working in conjunction with the gas fired heater make-up unit installed on the exterior on the east side of the building.

Condition - The fans are in various stages in age and considered to be operating as intended. The roof mounted exhaust hood/fan appears to be recently installed or replaced and is considered to be in good condition. The make-up air unit and the washroom exhaust fans are considered to be in fair condition. The exhaust fans for the labs are considered to be in poor condition due to buildup of dirt and debris and the excessive vibration noise they are generating while in operation.

Recent Repairs/Modifications - No recent repairs/modifications records available.

Design Problems/Deficiencies - No design problems or deficiencies were noted at the time of site visit.

Effective Remaining Life - The life expectancy for fans typically ranges from 15 - 20 years. Due to the original construction in the 1950's, components were modified and/or replaced over the years on an "as needed" basis and/or compliance with current codes and regulations. The following are estimated time frames for the components anticipated to be replaced:

- Roof mount kitchen exhaust/hood fan: 11 - 15 years
- Make-up air unit: 6 - 10 years
- Washroom exhausts: 6 - 10 years
- Lab exhaust fans: within the next 3 years

Recommendations -

<i>Description:</i> Roof mount kitchen exhaust replacement	
<i>Action Year:</i> 11 - 15	<i>Estimated Cost</i>
Consider budgeting to replace the roof mounted kitchen exhaust fan/hood at the end of service life. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

<i>Description:</i> Gas fired make-up air handling unit replacement	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace the make-up AHU at the end of service life. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$10,000
	<i>Contingency:</i> \$1,500
	<i>Project Soft Costs:</i> \$3,450
	<i>Total:</i> \$14,950

<i>Description:</i> Washroom exhausts (2) replacement	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace the washroom exhausts at the end of service life. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$500
	<i>Contingency:</i> \$75
	<i>Project Soft Costs:</i> \$173
	<i>Total:</i> \$748

<i>Description:</i> Labs exhaust fans (2) replacement	
<i>Action Year:</i> 1-3	<i>Estimated Cost</i>
Consider budgeting to replace the labs exhaust fans within the next 3 years.	<i>Material & Labour:</i> \$1,000
	<i>Contingency:</i> \$150
	<i>Project Soft Costs:</i> \$345
	<i>Total:</i> \$1,495

<i>Description:</i> Maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Consider implementing annual preventive maintenance and repairs.	<i>Material & Labour:</i> \$1,000
	<i>Contingency:</i> \$150
	<i>Project Soft Costs:</i> \$345
	<i>Total:</i> \$1,495

3.04 HYDRONIC HEATING SYSTEM - Building M6 is not equipped with an hydronic heating system.

3.05 SUPPLEMENTAL HEATING UNITS - Supplemental heating is generated from a gas fired make-up air handling unit. *Refer to section 3.03 Primary Air Supply.*

3.06 SUPPLEMENTAL AIR CONDITIONING - Building M6 is not equipped with supplemental air conditioning.

3.07 CONTROL SYSTEM - There are no centralized control systems installed at building M6. The building is equipped with local on/off switches to control various fans and wall mounted thermostats to maintain temperature from the furnace.

Condition - The controls are operating as intended and considered to be in fair condition.

Recent Repairs/Modifications - No recent repairs/modifications have been conducted on these controls.

Design Problems/Deficiencies - No design problems or deficiencies were noted at the time of site visit.

Effective Remaining Life - The existing controls are expected to perform for the life span of the components they serve. We expect they will be replaced with new equipment installation.

Recommendations - None identified.

3.08 STORM SEWER - Refer to architectural section for details and associated costs.

3.09 SANITARY SEWER - The sanitary sewer system consists of PVC piping which is connected from the sinks, toilets and showers drainage and discharges into the septic tank. The septic tank is located on the east side of the building and appears to be monitored in conjunction with the strobe light.

Condition - The inspection of the existing piping system was limited to that in exposed areas. The piping system is considered to be in good condition, with no obvious leaks at the time of site visit.

Recent Repairs/Modifications - None identified.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted at the time of visit.

Effective Remaining Life - The life expectancy for a sanitary piping system under normal conditions is approximately 50 years. It is anticipated the existing sanitary sewer will continue performing for the next 16 - 20 years.

Recommendations -

<i>Description:</i> Sanitary sewer	
<i>Action Year:</i> 16 - 20	<i>Estimated Cost</i>
Consider budgeting to replace the sanitary sewer system at the end of service life. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$10,000
	<i>Contingency:</i> \$1,500
	<i>Project Soft Costs:</i> \$3,450
	<i>Total:</i> \$14,950

<i>Description:</i> Sanitary sewer maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Consider a preventive maintenance program to ensure the monitoring system is working as intended. Anticipate pumping out/cleaning septic tank every 1 - 3 years depending on usage.	<i>Material & Labour:</i> \$1,000
	<i>Contingency:</i> \$150
	<i>Project Soft Costs:</i> \$345
	<i>Total:</i> \$1,495

3.10 WATER SUPPLY & TREATMENT - Building M6 has no water treatment system installed. Potable water is treated and supplied from building M5.

3.11 DOMESTIC HOT WATER - The domestic hot water is generated by a gas fired A.O. Smith Preferred hot water heater located in the washroom on the basement level. The following data was obtained: Model BT 80-112, Serial A06M008345, Input 67,590 BTU/hr, Capacity 74 gallons.

Condition - The existing hot water tank appears to be operating as intended and is considered to be in fair condition.

Recent Repairs/Modifications - No service records were available.

Design Problems/Deficiencies - No apparent design problems or deficiencies were noted.

Effective Remaining Life - The life expectancy for hot water tanks ranges from 15 - 20 years. It is anticipated the existing hot water tank will continue performing for the next 6 - 10 years, provided regular maintenance is carried out as per manufacturer's recommendations and/or best practice.

Recommendations -

<i>Description:</i> Hot water tank replacement	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace the hot water tank as it approaches its life expectancy. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

3.12 PLUMBING DISTRIBUTION AND FIXTURES - The plumbing distribution system in building M6 provides potable water to the sinks for the kitchen, labs, and washrooms. The plumbing consists of copper piping, and PEX/ high density polyethylene polymer.

Condition - The plumbing distribution and fixtures are considered to be in fair condition. Some fixtures are newer than others and no apparent leakages were found at the time of visit.

Recent repairs/Modifications - No major repairs or modifications were identified.

Design Problems/Deficiencies - It was noted that a vacuum breaker is required to be installed on the slop sink and/or any faucet where hose fitting can be attached. The intent is to prevent contaminated water returning back into the water supply as per the Ontario Plumbing Code.

Effective Remaining Life - The plumbing fixtures have a life expectancy of 20 - 25 years. It is anticipated the existing fixtures will continue performing for the next 6 - 10 years.

Recommendations -

<i>Description:</i> Fixtures replacement	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Consider budgeting to replace fixtures as they approach their life expectancy. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

3.13 FIRE PROTECTION: STANDPIPE SYSTEM - No standpipe system is installed for this building.

3.14 FIRE PROTECTION: SPRINKLER SYSTEM - No sprinkler system is installed in this building.

3.15 FIRE PROTECTION: SPECIALTY SYSTEMS - Building M6 is equipped with a fire suppression system installed for the hood range. The system includes a Range Guard control box, fire extinguisher cylinder model 2.5G wet chemical factory filled and pressurized, associated fusible links, and piping configuration with nozzles.

Condition - The existing fire suppression system appeared to be in operation and in fair condition. The system was observed to have no obvious physical damage or evidence of tampering at the time of site visit. There were no monthly inspection tags attached and/or records available for review.

Recent Repairs/Modifications - Annual exhaust system cleaning was performed in October 2012 by Hydro Blast Ltd.

Design Problems/Deficiencies - Certification and/or inspection is required to be performed annually as per NFPA 17A.

Effective Remaining Life - The life expectancy for specialty fire protection systems ranges from 35 - 40 years. It is anticipated the existing fire suppression system will continue to perform for the next 11 - 15 years, provided regular maintenance is carried out as per manufacturer's recommendations and/or best practice.

Recommendations -

<i>Description:</i> Fire suppression system replacement	
<i>Action Year:</i> 11 - 15	<i>Estimated Cost</i>
Consider budgeting to replace the fire suppression system as it approaches its life expectancy. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$10,000
	<i>Contingency:</i> \$1,500
	<i>Project Soft Costs:</i> \$3,450
	<i>Total:</i> \$14,950

<i>Description:</i> Maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Certification and/or inspection in accordance with NFC and NFPA 17A.	<i>Material & Labour:</i> \$1,000
	<i>Contingency:</i> \$150
	<i>Project Soft Costs:</i> \$345
	<i>Total:</i> \$1,495

3.16 FIRE PROTECTION: PORTABLE SYSTEM(S) - Building M6 is equipped with five (5) portable fire extinguishers. The fire extinguishers are provided according to the anticipated building hazards. Three are installed on the main floor and two in the basement level.

Condition - The existing portable fire extinguishers are considered to be in fair condition. There was no evidence to suggest monthly inspections are being performed, in accordance with NFPA 10.

Recent Repairs/Modifications - Annual inspection was performed by Fire Protection on June 20, 2013.

Design Problems/Deficiencies - Refer to National Fire Protection Association NFPA-10 Standard for Portable Fire Extinguishers, Chapter 7 - Inspection, Maintenance, and Recharging of Portable Fire Extinguishers.

Effective Remaining Life - The fire extinguishers are certified and/or replaced on an “as and when needed” basis under the certified company and/or service agency.

Recommendations -

<i>Description:</i> Inspection and/or replacement	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Annual inspection and/or replacement as required.	<i>Material & Labour:</i> \$300
	<i>Contingency:</i> \$45
	<i>Project Soft Costs:</i> \$104
	<i>Total:</i> \$449

3.17 OZONE DEPLETING SUBSTANCES (ODS) MANAGEMENT - The Federal Halocarbon Regulations 2003 requires management to keep records of ozone-depleting substances (ODS) identified on site. There were no ozone-depleting substances in building M6 at the time of site visit.

4.00 ELECTRICAL SYSTEMS

4.01 ELECTRICAL POWER - Electrical power to this building is provided from a 100 amp, single phase, two pole circuit breaker fed from building M-7. This circuit breaker also feeds building M-5 where cables are run underground in rigid PVC and metal conduit to a surface mounted splitter in a cupboard located in the basement.

Mounted on the splitter are two Federal Pioneer Stab-Lok branch circuit panels, one of which is ref 120-32, rated at 200 amps, 120/240 volts, single phase, 3-wire protected by a separate disconnect, and the other panel ref BE112-24-1C100, rated at 125 amps, 120/240 volts, single phase, 3-wire.

Condition - The splitter appears to be of the original construction, which we assumed was installed in 1960; the branch circuit panels appear to have been added or replaced between 1960 and 1980 and are all in fair condition.

At the time of this site inspection, load readings were not taken. Branch circuit wiring consists of two different systems (lighting and power). For lighting the wiring is fed from the branch circuit panel, with home runs to junction boxes and then from fixture to fixture using conduit, metallic sheathed (BX's) and non-metallic sheathed cables.

General wiring of the installation appears to be from around the mid-1960's, with single core cables run in conduit to junction boxes to feed devices. However, over time renovations have been carried out using non-metallic sheathed cables with PVC jacket which came into effect in 1970. Metallic sheathed cables (BX's) were also discovered as part of the wiring in this building.

For receptacles, cable drops are run through walls to flush mounted devices and EMT conduits that are used for exposed applications. A cursory inspection of some of the receptacles indicated that these devices are in fair condition and showed no signs of abuse or overloading.

Based upon a cursory inspection of the branch circuit panel, it was noted that the panel directories have been completed; however, there are no records to indicate that service and maintenance have been carried out on the equipment during the course of service.

Recent Repairs/Modifications - It is our understanding that there have been no recent repairs or modifications to the branch circuit panels in the last 5 years.

Design Problems/Deficiencies - Based upon a cursory inspection of the branch circuit panels, it was noted that the panel directories have been completed and presently comply with the requirements of the electrical code rule 2-100. However, there are no

records to indicate that service and maintenance have been carried out on the equipment during the course of service.

Therefore, please refer to the report of building M-7 under the heading "Distribution System" for further details.

A cursory inspection of some of the receptacles indicated that these devices are in fair condition and showed no signs of abuse or overloading. However, receptacles located within 1 m of sinks must be replaced with GFCI's either in the panel or at the outlets. This would also apply to receptacles on the exterior of the building to meet the requirements of the electrical code, see sections 26-702 (2) and 26-710 (f).

Junction boxes used for the termination of branch circuit wiring in some areas of the basement exceed the requirements of the electrical code rule 12-3034 (6) for box fill, and should be replaced to meet the electrical code.

It was noted that non-metallic cable in some areas of the basement are run in close proximity to heating ducts without adequate protection. The electrical code rule 12-506 (4) requires that a distance of at least 25 mm away from all hot air heating ducts and hot water piping must be maintained. A thermal barrier conforming to the National Building Code of Canada or local legislation shall be permitted.

On the exterior of the building there is an exhaust fan with a local disconnect, this disconnect should have a label to indicate its circuit number and panel designation for ease of service and maintenance.

Receptacles in the bedrooms are presently wired and protected by a standard circuit breaker; outlets in bedrooms today require special protection and should be wired to an "arc fault circuit interrupter" (AFCI) to meet the requirements of the electrical code rule 26-722 (f) and (g). The reason for the new requirement is that a standard circuit breaker could fail to open the circuit under certain short circuit or arcing conditions, allowing a fire to breakout.

The electrical installation appears to have been upgraded in some parts of the building but there are locations where the wiring violates the electrical code, with wiring run through window casing, below joist or ceiling, and through walls without adequate protection to name just a few violations. The electrical installation overall is in fair working condition, but due to the age and the condition of the wiring it is highly recommended that the installation be rewired and brought up to present day standards.

Effective Remaining Life - Branch circuit panels generally have a life expectancy of approximately 30 years. However, since the distribution equipment is of the original installation and has surpassed its life expectancy, and because regular service and maintenance has not been carried out over the life of the equipment, consideration should be given to replace and upgrade the wiring and branch circuit panel within the next 1 - 5 years.

Recommendations -

<i>Description:</i> Complete rewire of electrical installation	
<i>Action Year:</i> 1 - 5	<i>Estimated Cost</i>
Completely rewire and replace all devices, including branch circuit panels, grounding and conductors to present day standards.	<i>Material & Labour:</i> \$15,000
	<i>Contingency:</i> \$2,250
	<i>Project Soft Costs:</i> \$5,175
	<i>Total:</i> \$22,425

4.02 EMERGENCY POWER - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency lighting is not applicable to this building.

4.03 EXTERIOR LIGHTING - The exterior lighting for this building consists of wall mounted, high intensity discharge (HID) fixtures operated by wall mounted toggle switch and a photocell at 120 volts.

Condition - It would appear that these fixtures are of the original installation and are in fair condition.

Recent Repairs/Modifications - It is our understanding that there have been no recent repairs or modification to the exterior lighting since installation other than lamp replacements.

Design Problems/Deficiencies - There are no design problems or deficiencies with the exterior lighting.

Effective Remaining Life - Exterior lighting generally has a life expectancy of approximately 15 years. However, the present exterior light fixtures have surpassed their life expectancy and should be considered for replacement with LED wall packs within the next 1 - 5 years, since they consume less energy and have a longer life expectancy.

Recommendations - See recommendation above under the heading "Electrical Power" to rewire and upgrade the building.

4.04 INTERIOR LIGHTING - Interior lighting presently consists of various types of ceiling mounted and decorative globe type fixtures with incandescent and compact fluorescent lamps; wrap-around two- and three-lamp fluorescent fixtures are also used with T12 lamps and magnetic ballasts operated by 120 volt wall mounted toggle switches.

Condition - The interior lighting appears to be in fair working condition.

Recent Repairs/Modifications - It would appear that there have been some recent repairs and modifications to the interior lighting in the last ten years, as well as lamp and ballast replacements.

Design Problems/Deficiencies - There are no design problems or deficiencies other than to replace all incandescent lamps with compact fluorescents or LED lamps. Fluorescent fixtures presently utilizing T12 lamps and magnetic ballasts are to be replaced or retrofitted with T8 lamps and electronic ballasts.

Effective Remaining Life - Interior decorative lighting units generally have a life expectancy of 15 years, depending on the manufacturer and the conditions of use. Fluorescent fixtures have a life expectancy of approximately 30 years. However, these fixtures could remain in service for another 5 years before considering replacement.

Recommendations - See recommendation above under the heading "Electrical Power" to rewire and upgrade the building.

4.05 EMERGENCY LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency lighting is not applicable to this building.

4.06 EXIT LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, exit lighting is not applicable to this building.

4.07 FIRE ALARM SYSTEM - This building is equipped with several smoke alarms operated at 120 volts; during our inspection, tests carried out on some of the devices indicated they did not operate as required.

Condition - Smoke alarms installed in this building are of various types and are in poor condition.

Recent Repairs/Modifications - We believe that there have been no recent repairs or modifications to the smoke alarms since installation.

Design Problems/Deficiencies - It would appear that the smoke alarms in this building are not interconnected; this is a requirement of the electrical code sections 32-102 and 32-110 (c), so that in the event of a fire, all alarm devices will sound. It is recommended that the smoke alarms be replaced with units that combine both smoke and carbon monoxide sensors with dual power.

Please refer to the electrical summary of building M-7 under the heading "Fire Alarm/ Security Systems" for additional information.

Effective Remaining Life - Smoke alarms generally have a life expectancy of approximately 5 - 15 years, depending on the manufacturer. Therefore, based upon a

cursory inspection of the devices, they should all be replaced within the next 1 - 5 years with units mentioned above.

Recommendations - See recommendation above under the heading "Electrical Power" to rewire and upgrade the building.

4.08 SECURITY SYSTEM - Please refer to the electrical summary of building M-7 under the heading "Fire Alarm/Security Systems" for additional information.

4.09 TELEPHONE & COMMUNICATION SYSTEM - A telephone system run underground to a junction box on the north side of this building is provided. Unfortunately the point of entry could not be determined due to the heavy snowfall on the exterior of the building; cables in the ceiling are run from the junction box in the building using FT4 fire rated cables run behind walls or open on the surface to various outlets in the building. The system appears to be designed for general site purpose only when staff is occupying the buildings.

Condition - The telephone installation was in poor condition. At the time of this site inspection it could not be verified if the system still functions.

Recent Repairs/Modifications - It is our understanding based on information gathered and the condition of the wiring; there have been no recent repairs or modification to the telephone system in the last 5 years.

Design Problems/Deficiencies - There are no design problems or deficiencies with this building.

Effective Remaining Life - It would appear that the telephone system was once linked to most of the buildings, but have since been disconnected and is only used when the site is occupied. Information was not available to clarify the operating procedure of the system.

Recommendations - No recommendations at this time, since the installation meets the client needs. Any upgrade or replacement would be negotiated with the client and local telephone company

This page intentionally left blank

SUMMARY OF RECOMMENDED EXPENDITURES
M6 - ADMINISTRATION BUILDING

ARCHITECTURAL / STRUCTURAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures						
						Year					Year						
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30		
1.01	Substructure	Foundation wall upgrades.	Man.	C1/D1	C		\$22,425										
1.04	Exterior Walls	Exterior wall repairs.	Cyl.	C1/D1	R		\$11,661					\$11,661		\$11,661			
1.07	Suspended Floors/Soffits	Suspended floor upgrade.	Man.	B1	C		\$52,325										
1.08	Roofing	Roof replacement.	Cyl.	C1/C2	R					\$11,661							\$11,661
1.09	Flooring	Flooring refurbishment.	Cyl.	D1	R						\$18,688						
1.11	Ceilings	Ceiling replacement - partial (ground floor).	Cyl.	C3/D2	R						\$37,375						
1.14	Interior Stairs	Interior stair upgrade.	Man.	B1	C												
1.16	Design Issues	Service room construction.	Man.	B1	C		\$23,173										
1.18	Accessibility	Accessibility upgrades.	Man.	A	C		\$121,372										
1.20	Heritage	FHBRO review.	Man.	A	-	- no cost -											
						\$0	\$230,956	\$0	\$0	\$11,661	\$56,063	\$11,661	\$0	\$11,661	\$11,661	\$11,661	
						Total Short Term Expenditures					\$242,617	Total Long Term Expenditures					\$91,046

MECHANICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures						
						Year					Year						
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30		
3.01	Primary Heating	Replace furnace (2 units).	Cyl.	C2	C					\$14,950							
3.01	Primary Heating	Maintenance and repairs.	Man./Cyl.	C1	R	\$449	\$449	\$449	\$449	\$449	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245
3.03	Primary Air Supply	Roof mounted kitchen exhaust/hood fan.	Cyl.	C3	C						\$7,475						
3.03	Primary Air Supply	Make-up AHU.	Cyl.	C2	C						\$14,950						
3.03	Primary Air Supply	Washroom exhaust.	Cyl.	C2	C					\$748							
3.03	Primary Air Supply	Labs exhaust fans.	Cyl.	C1	C		\$1,495										
3.03	Primary Air Supply	Maintenance and repairs.	Man./Cyl.	C1	R	\$1,495	\$1,495	\$1,495	\$1,495	\$1,495	\$7,475	\$7,475	\$7,475	\$7,475	\$7,475	\$7,475	\$7,475
3.09	Sanitary Sewer	Sanitary sewer.	Cyl.	C3	C					\$14,950							
3.09	Sanitary Sewer	Tank maintenance and repairs.	Man./Cyl.	C1	R	\$1,495	\$1,495	\$1,495	\$1,495	\$1,495	\$7,475	\$7,475	\$7,475	\$7,475	\$7,475	\$7,475	\$7,475
3.11	Domestic Hot Water	Hot water tank replacement.	Cyl.	C2	C					\$7,475							
3.12	Plumbing Distribution & Fixtures	Replace plumbing fixtures.	Cyl.	C2	C						\$7,475						
3.15	Fire Protection: Specialty Systems	Fire suppression replacement.	Cyl.	C3	C						\$14,950						
3.15	Fire Protection: Specialty Systems	Maintenance and repairs.	Man./Cyl.	C1	R	\$1,495	\$1,495	\$1,495	\$1,495	\$1,495	\$7,475	\$7,475	\$7,475	\$7,475	\$7,475	\$7,475	\$7,475
3.16	Fire Protection: Portable Systems	Portable fire extinguishers inspection and/or certification.	Man./Cyl.	C1	R	\$449	\$449	\$449	\$449	\$449	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245
						\$5,383	\$6,878	\$5,383	\$5,383	\$5,383	\$57,563	\$64,290	\$41,865	\$26,915	\$26,915	\$26,915	
						Total Short Term Expenditures					\$28,410	Total Long Term Expenditures					\$217,548

ELECTRICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures						
						Year					Year						
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30		
4.01	Electrical Power	Remove existing wiring and rewire electrical installation to present day standards.	Man.	C1	R	\$22,425											
						\$22,425	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
						Total Short Term Expenditures					\$22,425	Total Long Term Expenditures					\$0

M9 - FIRE SHED



This page intentionally left blank

Contents

BUILDING SUMMARY

- History
- Description
- Classification
- Facility Condition
 - Property
 - Architectural/Structural
 - Conveying Systems
 - Mechanical
 - Electrical
- Compliance Issues
 - Building & Occupant Fire Safety
 - Regulatory Compliance
 - Environmental
 - Accessibility
 - Seismic Assessment
 - Heritage
- Recommended Expenditures
 - Short Term Expenditures (1 to 5 Years)
 - Long Term Expenditures (6 to 30 Years)

1.00 ARCHITECTURAL/STRUCTURAL

- 1.01 Substructure
- 1.02 Superstructure
- 1.03 Ancillary Structures
- 1.04 Exterior Walls
- 1.05 Exterior Doors
- 1.06 Windows, Skylights & Sloped Glazing
- 1.07 Suspended Floors/Soffits
- 1.08 Roofing
- 1.09 Floorings
- 1.10 Interior Partitions and Finishes
- 1.11 Ceilings
- 1.12 Interior Doors, Frames and Screens
- 1.13 Window Coverings
- 1.14 Interior Stairs
- 1.15 Fixed Furnishings
- 1.16 Design Issues
- 1.17 Environmental
- 1.18 Accessibility
- 1.19 Seismic Assessment
- 1.20 Heritage

2.00 VERTICAL TRANSPORTATION

- 2.01 Passenger Elevators
- 2.02 Freight Elevators
- 2.03 Escalators
- 2.04 Dumbwaiters
- 2.05 Platform Lifts
- 2.06 Scissor Lifts
- 2.07 Dock Levellers

3.00 MECHANICAL

- 3.01 Primary Heating
- 3.02 Primary Cooling
- 3.03 Primary Air Supply
- 3.04 Hydronic Heating System
- 3.05 Supplemental Heating Units
- 3.06 Supplemental Air Conditioning
- 3.07 Control System
- 3.08 Storm Sewer
- 3.09 Sanitary Sewer
- 3.10 Water Supply & Treatment
- 3.11 Domestic Hot Water
- 3.12 Plumbing Distribution & Fixtures
- 3.13 Fire Protection: Standpipe System
- 3.14 Fire Protection: Sprinkler System
- 3.15 Fire Protection: Specialty System(s)
- 3.16 Fire Protection: Portable Extinguishers
- 3.17 Ozone Depleting Substances (ODS) Management

4.00 ELECTRICAL

- 4.01 Electrical Power
- 4.02 Emergency Power
- 4.03 Exterior Lighting
- 4.04 Interior Lighting
- 4.05 Emergency Lighting
- 4.06 Exit Lighting
- 4.07 Fire Alarm System
- 4.08 Security System
- 4.09 Telephone & Communications System

This page intentionally left blank

BUILDING SUMMARY

HISTORY - No detailed history of the building is available. It is believed to have been constructed in 1957, with its original use presumed to have been related to on-site fire protection. At present it is being utilized for general storage.

DESCRIPTION - This building is a single-storey, heated structure, currently used for the storage of miscellaneous materials/equipment.

CLASSIFICATION - Based on its existing size, height and use, this facility falls under the design criteria outlined in Part 9 of the most recent edition of the National Building Code of Canada (NBC 2010). The following building code matrix information is applicable:

- Building area: 62 m²
- Building height: One (1) storey
- Storeys below grade: None (0)
- Sprinklered: No
- Major occupancy: Group F, Division 3 - Low Hazard Industrial
- Subsidiary occupancy: None
- Number of streets: Three (3)
- Construction type: Combustible
- Required fire resistance ratings: Floor assemblies - 1 hour; roof assemblies - 1 hour; load-bearing walls, columns and arches - not less than that of the supported assembly; service rooms - 1 hour.
- Fire alarm: No

Based on its year of construction, the building was originally designed/constructed under the 1941 (First Edition) of the NBC and other National codes.

FACILITY CONDITION - Inspection has determined the buildings and their systems located at this facility to be in the following overall condition:

- **ARCHITECTURAL/STRUCTURAL** - Most architectural/structural elements are considered to be in fair overall condition, and with minor repairs and ongoing maintenance, should continue to perform satisfactorily for the next 30 years, with only life cycle replacement of components anticipated. The exception is the substructure which shows signs of movement, and although not considered to be significant, should be kept monitored.
- **MECHANICAL** - The gas fired unit heaters appeared to have been installed within the last 5 years and are considered to be in good condition. Consider updating the fire safety plan, as the current posting was dated June 1986. Priority should be given to ensure the portable fire extinguisher is in compliance with NFPA 10.
- **ELECTRICAL** - Although it would appear that the electrical installation is in good condition, it was determined after a cursory inspection of each building that a complete electrical rewire and upgrade, including an effective grounding system, must be carried out to bring all buildings up to present day codes and standards. We have also included some recommendations that will improve the security of the whole facility.

COMPLIANCE ISSUES - Inspection has identified various compliance issues throughout the facility, as follows:

ENVIRONMENTAL - Given the age of the facility, there is a high probability that building materials may contain hazardous materials; several building materials observed on-site and suspect materials in concealed spaces are suspected as possibly containing hazardous materials. Some of the observed suspect materials were noted to be in poor condition - posing an imminent health concern. No information with respect to existing hazardous materials was available, and no record of any previous inspection/testing of hazardous materials was available. It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

ACCESSIBILITY - The accessibility audit (see 'Annex E') recommends that this building be considered for full exemption, presuming that given both its location and its use, it is outside the scope of areas identified for inclusion under Treasury Board's 'Accessibility Standard for Real Property'. It is recommended that this building be considered for exemption, and that it be documented as such in accordance with EC's internally established procedure (as is required under the ASRP).

SEISMIC ASSESSMENT - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading. Since the Edmonton area is in a zone of low seismicity, and there are no significant projects planned for this facility, no actions (e.g. completion of seismic screening or assessment) are recommended.

HERITAGE - As the maximum age for review is 40 years and the building is now 56 years old, a request for review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

RECOMMENDED EXPENDITURES - A summary of the recommended expenditure costs as put forth throughout this report is presented as follows:

The total estimated Short Term Expenditure (1 to 5 years) cost for this facility is **\$33,634**, as outlined below:

Architectural / Structural Systems	\$19,426
Vertical Transportation Systems	\$0
Mechanical Systems	\$4,490
Electrical Systems	\$9,718
Short Term Total	\$33,634

The total estimated Long Term Expenditures (6 to 25 years) cost for this facility is **\$63,172**, as outlined below:

Architectural / Structural Systems	\$31,752
Vertical Transportation Systems	\$0
Mechanical Systems	\$31,420
Electrical Systems	\$0
Long Term Total	\$63,172

This page intentionally left blank

1.00 ARCHITECTURAL / STRUCTURAL SYSTEMS

1.01 SUBSTRUCTURE - The substructure is cast-in-place concrete, with a concrete slab-on-grade extending throughout. No other assembly details (i.e. footing type, etc.) are available.

Condition - The substructure is considered to be in fair overall condition, performing as expected; however:

- The foundation/slab along the south wall is shifted and cracked at the southwest corner (cause unknown).

Recent Repairs/Modifications - To our knowledge, no recent repairs/modifications have been carried out on the substructure.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the substructure.

Effective Remaining Life - The substructure dates from the original construction (c.1957), and given its current condition, can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i> Substructure repair	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that the cracked/broken portion of the slab be cut out and re-poured to its original profile in order to restore the integrity of the component and to eliminate a potential safety hazard. • Upon completion the repaired area should be kept monitored for signs of movement. • This work should be completed in conjunction with recommended exterior wall repairs (refer to '1.05 Exterior Walls', below).	<i>Material & Labour:</i> \$5,000
	<i>Contingency:</i> \$750
	<i>Project Soft Costs:</i> \$1,725
	<i>Total:</i> \$7,475

1.02 SUPERSTRUCTURE - The superstructure is integral with various other building components - refer to '1.04 Exterior Walls' and '1.08 Roofing', below.

1.03 ANCILLARY STRUCTURES - There are no ancillary structures (e.g. canopies, loading docks, etc.) associated with this building.

1.05 EXTERIOR WALLS - The existing walls are masonry, consisting mostly of concrete block, with cast concrete frames around the overhead door openings. Exterior surfaces are finished with stucco (painted). Most interior surfaces are finished with a brick veneer, except for

the north wall which is exposed concrete block/concrete. No other assembly details (i.e. insulation, etc.) are available.

Condition - The exterior walls throughout are considered to be in fair overall condition, performing as expected; however with some obvious minor deterioration/damage:

- Cracks were noted in the exterior stucco finish at various locations throughout; however, cracks appear to be forming independently of the concrete block substrate (i.e. not corresponding with block joints) - this is not an unexpected condition with older stucco (i.e. not fibreglass reinforced).
- Cracks were noted at the mortar joints of the interior brick veneer at the southwest corner (presumably caused by movement of the substructure - refer to '1.01 Substructure', above).

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge, no recent repairs/modifications have been carried out on the exterior walls.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior walls.

Effective Remaining Life - Most of the exterior wall components date from the original construction (c.1957); however, the interior brick veneer is considered to be a later addition. Given their current condition, with remedial action and with normal maintenance, they can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i> Exterior wall repairs	
<i>Action Year:</i> 2	<i>Estimated Cost</i>
It is recommended that corrective actions (including repair/replacement of deteriorated components, and cleaning/painting) be carried out at <u>each 10-year period</u> in accordance with good life cycle maintenance practice in order to maintain the integrity of the building envelope, and to deter damage. <ul style="list-style-type: none"> • This work should also allow for any required repair/repainting of other exterior components (<i>refer to '1.05 Exterior doors' and 1.06 Windows', below</i>). 	<i>Material & Labour:</i> \$4,250
	<i>Contingency:</i> \$638
	<i>Project Soft Costs:</i> \$1,466
	<i>Total:</i> \$6,354

1.05 EXTERIOR DOORS - A variety of exterior doors are employed throughout this building, as follows:

- Wood Door - solid, flush type, paint finished (1 single).
- Overhead Doors - wood panel, sectional, manual operation - (2 x 3050 mm wide x 3050 mm height).

Condition - The exterior doors were found to be in fair overall condition, performing as expected and with normal wear based on age and traffic; however:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the exterior doors.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the exterior doors.

Effective Remaining Life - The exterior doors date from the original construction (c.1957). Given their current condition, with normal maintenance and periodic refurbishment, the exterior doors can likely be expected to perform indefinitely.

Recommendations -

<i>Description:</i> Overhead door refurbishment	
<i>Action Year:</i> 6 - 10	<i>Estimated Cost</i>
Pending future assessment and verification, it is recommended that an allowance be made for refurbishment of the overhead doors in order to extend their effective service life.	<i>Material & Labour:</i> \$4,500
	<i>Contingency:</i> \$675
	<i>Project Soft Costs:</i> \$1,553
	<i>Total:</i> \$6,728

1.06 WINDOWS - The windows are wood (wood frames and sashes, paint finished, single glazed, vertical sliding type with outer removable storm sashes).

Condition - The windows were found to be in fair overall condition, performing as expected and with normal wear based on age; however:

- Deterioration of the paint finish was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the windows.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the windows.

Effective Remaining Life - The windows date from the original construction (c.1957), and given their current condition, with normal maintenance they can likely be expected to perform indefinitely.

Recommendations - None identified.

NOTE: It is expected that correction of the above noted deficiencies will be carried out either under normal O&M operations, or as part of other work(s).

1.07 SUSPENDED FLOORS/SOFFITS - There are no suspended floors/soffits (i.e. insulated floors separating interior and exterior spaces) present at this building.

1.08 ROOFING - The roofing is of conventional wood frame design, consisting of asphalt shingles, wood board decking, wood rafters, unheated attic space, blown-in mineral wool insulation, wood joists filled with mineral wool batt insulation, and plywood interior cladding (paint finished). Soffits and fascias are capped with prefinished metal. Drainage is provided by prefinished metal eavestroughs and downspouts, discharging at grade. Access to the roof requires use of a portable ladder.

NOTE: Assessment of the full roof was not possible owing to coverage by snow - findings and recommendations noted below are based on a limited sample area where snow was removed.

Condition - The roofing is considered to be in fair overall condition, performing as expected, with no reported leakage, and with no obvious damage; however, there was some minor deterioration:

- Initial deterioration of the asphalt shingles (beginning to lift/curl at edges) was noted.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the roofing.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the roofing.

Effective Remaining Life - The roof structure dates from the original construction (c.1957), and given its current age and condition, it can likely be expected to perform indefinitely. The age of the asphalt shingle roofing is unknown; however based on appearance and condition, it is presumed to be approximately 10 - 15 years old. Given its presumed age and condition, with normal maintenance it can likely be expected to perform over the next 5 years.

Recommendations -

<i>Description:</i> Roof replacement	
<i>Action Year:</i> 5	<i>Estimated Cost</i>
Pending future assessment and verification, roofing will be reaching the end of its effective service life and likely require replacement, in accordance with good life cycle maintenance practice, in order to maintain the integrity of the building envelope and prevent damage/deterioration and/or known health issues associated with leakage.	<i>Material & Labour:</i> \$3,750
	<i>Contingency:</i> \$563
	<i>Project Soft Costs:</i> \$1,294
	<i>Total:</i> \$5,606

1.09 FLOORINGS - There are no finished floorings present in this building.

1.10 INTERIOR PARTITIONS AND FINISHES - A single interior partition divides the building into two (2) separate bays. The partition is frame (metal studs) with gypsum board on one (1) side (paint finished).

Condition - The interior partition and finish are considered to be in fair overall condition, performing as expected, and with normal wear patterns based on age and traffic; however:

- What appears to be mould is visible along the lower edge of the gypsum board (to ± 150 mm above floor).

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior partition and finish.

Design Problems/Deficiencies - Due to possible exposure to moisture/water, the use of standard gypsum board at the lower portion of the interior partition is not considered an appropriate choice.

Effective Remaining Life - The age of the interior partition and finish is unknown. Given their current condition, and with remedial work and normal maintenance, the interior partitions can likely be expected to perform indefinitely.

Recommendations - None identified.

NOTE: It is expected that correction of the above noted deficiencies will be carried out either under normal O&M operations, or as part of other work(s).

1.11 CEILINGS - Refer to 1.08 'Roofing', above.

1.12 INTERIOR DOORS - A single interior door is located in the partition which divides the interior bays (hollow metal, flush type, prime finished).

Condition - The interior door was found to be in fair condition, with no obvious damage or deterioration; however:

- The door is currently inoperable due binding at the floor - a result of the shifted concrete substructure.

Recent Repairs/Modifications - Other than normal maintenance, to our knowledge no recent repairs/modifications have been carried out on the interior door.

Design Problems/Deficiencies - To our knowledge, there are no design problems/deficiencies with the interior door.

Effective Remaining Life - The age of the interior door is unknown. Given its current condition, and with remedial work and normal maintenance, the interior partitions can likely be expected to perform indefinitely.

Recommendations - None identified.

NOTE: It is expected that correction of the above noted deficiencies will be carried out as part of other work - refer to '1.01 'Substructure', above.

1.13 WINDOW COVERINGS - There are no window coverings present in this building.

1.14 INTERIOR STAIRS - There are no interior stairs present in this building.

1.15 FIXED FURNISHINGS - There are no fixed furnishings (i.e. fitments, millwork, manufactured specialties) fitments present in this building.

1.16 DESIGN ISSUES - While compliance issues (with respect to codes, standards, etc. governing design, installation and maintenance/testing) are typically identified within the report under their applicable components, this component addresses any 'general' design issues not otherwise covered.

Condition - Other than the identified design/compliance issues described within the report under their applicable components, no 'general' deficiencies (with respect to building design) have been identified in this facility.

Recommendations - None identified.

1.17 ENVIRONMENTAL - For the purpose of this inspection, "Hazardous Materials" are defined as designated substances (O. Reg. 213/91 as amended), Polychlorinated Biphenyls: PCB's (O. Reg. 11/82), or surface mould.

Condition - Given the age of the facility, there is a high probability that building materials may contain hazardous materials.

- Several building materials observed on-site are suspected as possibly containing hazardous materials (i.e. stucco, paint, mould, older electrical equipment).
- Some of the observed suspect materials were noted to be in poor condition - posing an imminent health concern.
- Suspect materials in concealed spaces (i.e. insulation, roofing materials, adhesives) may possibly contain hazardous materials.
- No information with respect to existing hazardous materials was available.
- No record of any previous inspection/testing of hazardous materials was available.

Recommendations - It is recommended that all existing environmental information should be collected and reviewed to determine what actions, if any, are required.

1.18 ACCESSIBILITY - In response to the '2005 Accessibility for All' report, the Treasury Board requires that accessibility audits be completed for all Crown facilities by 2008/09 to verify the degree of compliance with the Treasury Board Real Property Accessibility Policy (RPAP) for crown facilities, and its designated technical standard (CAN/CSA-B651-04 Accessible Design for the Built Environment).

Condition - The recently completed accessibility audit (see 'Annex E') recommends that this building be considered for full exemption, presuming that given both its location

(naturally inaccessible, remote location) and its use (designed/constructed to accommodate able-bodied personnel), it is outside the scope of areas identified for inclusion under the ASRP.

- No record of any previous assessment of accessibility was available.
- No previously documented exemption(s) or minor variation(s) was available.

Recommendations - It is recommended that this building be considered for exemption, and that it be documented as such in accordance with EC's internally established procedure (*as is required under the ASRP*).

1.19 SEISMIC ASSESSMENT - As the seismic (earthquake) resistance of older existing buildings may not meet the stricter requirements of current building codes for seismic loading and design, a risk management approach is often taken, such as completion of seismic assessment for buildings located in zones of moderate to high seismicity, or that are being considered for major renovation or rehabilitation.

Condition - It is unknown if the design/construction of the existing structure would meet current code requirements with respect to seismic loading.

Recommendations - None identified (*since the Edmonton area is a zone of low seismicity ($Z_e=1$), a seismic assessment is not recommended*).

1.20 HERITAGE - As the "Custodial Department" for this facility, EC is responsible for arranging a review and preparation of a "Heritage Character Statement" by the Federal Heritage Building Review Office (FHBRO) through Canadian Heritage, to identify any elements which may have heritage value, and thereafter be responsible for submitting concept proposals and detailed design proposals for and interventions (defined as alteration, demolition or disposal) to FHBRO for review and comment.

Condition - This facility has not been reviewed by the Federal Heritage Building Review Board (FHBRO) through Canadian Heritage.

Recommendations - As the maximum age for review is 40 years and the building is now 56 years old, a request for review is now overdue and should be made ASAP, with no interventions (e.g. alteration, demolition or disposal) exercised prior to FHBRO review.

2.00 VERTICAL TRANSPORTATION SYSTEMS

Not applicable to this building.

3.00 MECHANICAL SYSTEMS

3.01 PRIMARY HEATING - The primary heating for building M9 is generated by two (2) "Hot Dawg" gas fired unit heaters. The heaters are ceiling suspended, one in each bay, and controlled via wall mounted thermostat.

Condition - The existing unit heaters appeared to have been installed within the last 5 years. The heaters are operating as intended and are considered to be in good condition.

Recent Repairs/Modifications - No recent repairs/modifications records were available.

Design Problems/Deficiencies - To our knowledge, no design problems/deficiencies were noted with the existing system.

Effective Remaining Life - The average life expectancy for gas fired unit heaters ranges from 15 - 20 years. The existing unit heater appeared to be recently installed and is anticipated to need replacement in 11 - 15 years, based on the current condition and provided regular maintenance is carried out as per manufacturer's recommendations and/or best practice.

Recommendations -

<i>Description:</i> Replace unit heaters (2 units)	
<i>Action Year:</i> 11 - 15	<i>Estimated Cost</i>
Consider budgeting to replace unit heaters as they approaching their life expectancy. Assess the condition prior to replacement.	<i>Material & Labour:</i> \$6,000
	<i>Contingency:</i> \$900
	<i>Project Soft Costs:</i> \$2,070
	<i>Total:</i> \$8,970

<i>Description:</i> Maintenance and repairs	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Provide annual maintenance and repairs (check, clean, lubricate and/or alignment).	<i>Material & Labour:</i> \$300
	<i>Contingency:</i> \$45
	<i>Project Soft Costs:</i> \$104
	<i>Total:</i> \$449

3.02 PRIMARY COOLING - Building M9 is not equipped with cooling.

3.03 PRIMARY AIR SUPPLY - No mechanical ventilation is installed.

3.04 HYDRONIC HEATING SYSTEM - No hydronic heating system is installed.

- 3.05 SUPPLEMENTAL HEATING UNITS** - No supplemental heating is installed.
- 3.06 SUPPLEMENTAL AIR CONDITIONING** - No supplemental air conditioning is installed.
- 3.07 CONTROL SYSTEM** - Not applicable to this building.
- 3.08 STORM SEWER** - Refer to Architectural section for details and associated costs.
- 3.09 SANITARY SEWER** - Not applicable to this building.
- 3.10 WATER SUPPLY & TREATMENT** - Building M9 does not have a water treatment system installed. Potable water is treated and supplied from building M5.
- 3.11 DOMESTIC HOT WATER** - Not applicable to this building.
- 3.12 PLUMBING DISTRIBUTION AND FIXTURES** - Not applicable to this building.
- 3.13 FIRE PROTECTION: STANDPIPE SYSTEM** - Not applicable to this building.
- 3.14 FIRE PROTECTION: SPRINKLER SYSTEM** - Not applicable to this building.
- 3.15 FIRE PROTECTION: SPECIALTY SYSTEM** - Not applicable to this building.
- 3.16 FIRE PROTECTION: PORTABLE SYSTEM(S)** - Building M9 is equipped with two (2) portable fire extinguishers, one on each bay. The fire extinguishers are provided according to the anticipated building hazards.

Condition - The existing portable fire extinguishers are considered to be in fair condition. There was no evidence to suggest monthly inspections are being performed in accordance with NFPA 10.

Recent Repairs/Modifications - An annual inspection was performed by Fire Protection on June 20, 2013.

Design Problems/Deficiencies - Refer to National Fire Protection Association NFPA 10 Standard for Portable Fire Extinguishers, Chapter 7 - Inspection, Maintenance, and Recharging of Portable Fire Extinguishers.

Effective Remaining Life - The fire extinguishers are certified and/or replaced on an “as and when needed” basis under the certified company and/or service agency.

Recommendations -

<i>Description:</i> Inspection and/or replacement	
<i>Action Year:</i> Annually	<i>Estimated Cost</i>
Annual inspection and/or replacement as required.	<i>Material & Labour:</i> \$300
	<i>Contingency:</i> \$45
	<i>Project Soft Costs:</i> \$104
	<i>Total:</i> \$449

3.17 OZONE-DEPLETING SUBSTANCES (ODS) MANAGEMENT - The Federal Halocarbon Regulations 2003 require management keep records of ozone-depleting substances identified on site. There were no ozone-depleting substances at building M9 at the time of site visit.

4.00 ELECTRICAL SYSTEMS

4.01 ELECTRICAL POWER - Electrical power to this building is provided from a 30 amp, single phase, two pole circuit breaker fed from building M-7, where conductors are run underground in PVC and rigid metal conduit to a recess mounted branch circuit Square “D” panel model QO-6A, rated at 60 amps, 120/240 volts.

Condition - The branch circuit panel feeds two halves of this building and appears to be of the original construction, which we believe was installed between 1960 and 1980 and was found to be in fair condition. The panel is recessed deeply in the block wall making it very difficult to replace or remove it without doing damage to the blocks surrounding it.

A label to indicate where the panel is being fed from was not attached to the branch circuit panel and a panel directory was not present to indicate what circuit is being controlled from which circuit breaker. Load readings were not taken; branch circuit wiring consists of two different systems (lighting and power).

For receptacles, surface mounted EMT conduits are used with cable drops run through walls to surface and flush mounted devices. A cursory inspection of the receptacles indicated that these devices are in fair condition and showed no signs of abuse or overloading.

Recent Repairs/Modifications - It is our understanding that there have been no recent repairs or modifications to the branch circuit panel since installation.

Design Problems/Deficiencies - Based upon a cursory inspection of the branch circuit panel, it was noted that the panel directory has not been completed and presently does not comply to the electrical code rules 2-100 (2) and (3) which requires that each fuse,

circuit breaker be marked in a conspicuous and legible and permanent manner to indicate clearly which installation or portion of the installation they protect and control.

Service and maintenance must also be carried out on the panel to ensure that connections remain secure during the course of use. Therefore, please refer to the electrical summary of building M-7 under the heading "Distribution Systems" for further details.

Effective Remaining Life - Branch circuit panels generally have a life expectancy of approximately 30 years. However, since the distribution equipment is of the original installation and has surpassed its life expectancy and because regular service and maintenance has not been carried out over the life of the equipment, consideration should be given to replace and upgrade the wiring and branch circuit panel within the next 1 - 5 years.

Recommendations -

<i>Description:</i> Rewire and upgrade installation	
<i>Action Year:</i> 1 - 5	<i>Estimated Cost</i>
Rewire electrical installation, bringing it up to present day standards, including replacing service and all devices as mentioned above.	<i>Material & Labour:</i> \$6,500
	<i>Contingency:</i> \$975
	<i>Project Soft Costs:</i> \$2,243
	<i>Total:</i> \$9,718

4.02 EMERGENCY POWER - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency power is not applicable to this building.

4.03 EXTERIOR LIGHTING - This building is equipped with a wall mounted high intensity discharge (HID) light fixture controlled and operated by 120 volt photocells.

Condition - The exterior light fixture is of the original installation and is in poor condition, requiring lens cleaning.

Recent Repairs/Modifications - We believe that there have been no repairs or modifications carried out on this fixture other than lamp and ballast replacements over the life of this fixture.

Design Problems/Deficiencies - The exterior light requires lens cleaning; no other design problems or deficiencies were noted with the exterior lighting.

Effective Remaining Life - Exterior lighting generally has a life expectancy of approximately 15 years. However, the present exterior light fixture has surpassed its life expectancy and should be considered for replacement in the next 1 - 5 years with and LED wall pack, which has a longer life expectancy, consumes less energy and requires less maintenance.

Recommendations - See recommendation above under the heading "Electrical Power" to rewire and upgrade the building.

4.04 INTERIOR LIGHTING - Interior lighting for both halves of the building is fed from the branch circuit panel presently recessed in the block wall. Wiring of light fixtures is carried out using EMT conduits surface mounted on the walls and recessed in the ceiling space, with home runs to junction boxes and then from fixture to fixture using single core cables.

The fixtures presently installed were originally designed for a drop in or false ceiling; instead they are surface mounted on the ceiling. These fixtures utilize two T12 lamps and a hinged door for ease of lamp and ballast replacements, operated at 120 volts and controlled by wall mounted toggle switches.

Condition - We believe that these fixtures are from the original installation and appear to be in fair condition.

Recent Repairs/Modifications - It would appear that there have been no recent repairs or modifications to the lighting installation other than lamp or ballast replacements.

Design Problems/Deficiencies - Due to the phasing out of T12 lamps and magnetic ballasts these fixtures must be retrofitted with T8 lamps and electronic ballasts or replaced and brought up to present day standards.

Effective Remaining Life - Generally fluorescent lighting have a life expectancy of approximately 30 years. These fixtures have not surpassed their life expectancy, but with on-going service and repairs they should last another 1 - 5 years; at that time consideration should be given for replacement.

Recommendations - See recommendation above under the heading "Electrical Power" to rewire and upgrade the building.

4.05 EMERGENCY LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, emergency lighting is not applicable to this building.

4.06 EXIT LIGHTING - Under the classification of this building and the requirements of the National Building Code of Canada 2010, exit lighting is not applicable to this building.

4.07 FIRE ALARM SYSTEM - There are no smoke alarm devices in this building; however, see recommendation under electrical summary of building M-7 for "Fire Alarm/Security System" for further details.

4.08 SECURITY SYSTEM - A security system is no present in this building; however, see recommendation under electrical summary of building M-7 for “Fire Alarm/Security System” for further details.

4.09 TELEPHONE & COMMUNICATION SYSTEM - A telephone system is not present in this building.

This page intentionally left blank

SUMMARY OF RECOMMENDED EXPENDITURES
M9 - FIRE SHED

ARCHITECTURAL / STRUCTURAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures							
						Year					Year							
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30			
1.01	Substructure	Substructure repairs.	Opt.	C1/C2	R		\$7,475											
1.04	Exterior Walls	Exterior wall repairs.	Cyl.	C1/D1	R		\$6,345											
1.05	Exterior Doors	Overhead door refurbishment.	Cyl.	C1/C2	R						\$6,728	\$6,345		\$6,345				
1.08	Roofing	Roof replacement.	Cyl.	C1/C2	R					\$5,606							\$5,606	
1.20	Heritage	FHBRO review.	Man.	A	-	- no cost -												
						\$0	\$13,820	\$0	\$0	\$5,606	\$6,728	\$6,345	\$0	\$6,345	\$12,334			
						Total Short Term Expenditures					Total Long Term Expenditures							
										\$19,426								\$31,752

MECHANICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures							
						Year					Year							
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30			
3.01	Primary Heating	Replace unit heater.	Cyl.	C3	C						\$8,970							
3.01	Primary Heating	Maintenance and repairs.	Man./Cyl.	C1	R	\$449	\$449	\$449	\$449	\$449	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245	
3.16	Fire Protection: Portable Systems	Portable fire extinguishers inspection and/or certification.	Man./Cyl.	C1	R	\$449	\$449	\$449	\$449	\$449	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245	\$2,245	
						\$898	\$898	\$898	\$898	\$898	\$4,490	\$13,460	\$4,490	\$4,490	\$4,490	\$4,490	\$4,490	
						Total Short Term Expenditures					Total Long Term Expenditures							
											\$4,490							\$31,420

ELECTRICAL SYSTEMS

Report Section No.	Systems Description	Description of Work	Priority of Work	Project Priority System	Type of Expenditures	Short Term Expenditures					Long Term Expenditures							
						Year					Year							
						1	2	3	4	5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30			
4.01	Electrical Power	Remove existing wiring and rewire electrical installation to present day standards.	Man.	C1	R	\$9,718												
						\$9,718	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
						Total Short Term Expenditures					Total Long Term Expenditures							
											\$9,718							\$0

ANNEXES

This page intentionally left blank

ANNEX A

PHOTOGRAPHS

This page intentionally left blank

M1 – CARETAKERS RESIDENCE



AR-001 – West and north elevations.



AR-002 – East and south elevations.



AR-003 – Area of deteriorated concrete at foundation wall exterior surface.



AR-004 – Localized efflorescence at interior surface of foundation wall.

M1 – CARETAKERS RESIDENCE



AR-005 - Deteriorated paint finish at exterior wall.



AR-006 – Deteriorated paint finish at gable.



AR-007 – Initial deterioration of asphalt shingles.



AR-008 – Deteriorated paint finish at window.

M1 – CARETAKERS RESIDENCE



ME-001 – Building M1 view from south side.



ME-002 – View from northwest.



ME-003 – Furnace.



ME-004 – Wall mounted thermostat.

M1 – CARETAKERS RESIDENCE



ME-005 – Living room & dining room.



ME-006 – Living room & dining room.



ME-007 – Kitchen sink and faucet.



ME-008 – Plumbing and drainage.

M1 – CARETAKERS RESIDENCE



ME-009 – Main floor.



ME-010 – Tub and shower.



ME-011 – Sink and toilet.



ME-012 – Piping and drainage.

M1 – CARETAKERS RESIDENCE



ME-013 – Sanitary sewer.



ME-014 – Sump pump.



ME-015 – Water supply system.



ME-016 – Water generation.

M1 – CARETAKERS RESIDENCE



ME-017 – Water piping configuration.



ME-018 – Water filter.



ME-019 – Gas fired hot water tank.



ME-020 – Fire extinguisher.

M1 – CARETAKERS RESIDENCE



EL-001 – Building M-1.



EL-002 – Incoming service, with BX and conduit installation outdoors in poor condition.



EL-003 – Main service junction box showing corrosion and metallic sheathed cable not design for outside use.



EL-004 – Main service disconnect on the exterior of building showing insect infestation.

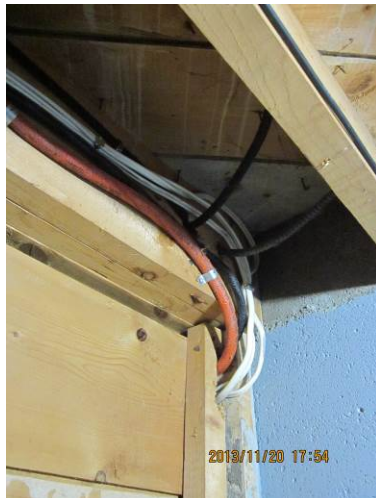
M1 – CARETAKERS RESIDENCE



EL-005 – Branch circuit panel recessed in wall, with incomplete panel directory.



EL-006 – Frontal view of branch circuit panel showing old and new circuit breakers.



EL-007 – Some of the old and new cables used in the installation.



EL-008 – Section of electrical wiring pressing against the heating duct to be protected and various types of wiring shown.

M1 – CARETAKERS RESIDENCE



EL-009 – Protective bushing required to prevent damage to non-metallic sheathed cables.



EL-010 – Ground conductor not effectively connected to ground; see area burnt due to short circuit, to be completed.



EL-011 – Receptacles within 1 m of sinks to be replaced with GFCI or install GFCI breakers in panel.



EL-012 – Interior lighting in kitchen.

M1 – CARETAKERS RESIDENCE



EL-013 – Interior lighting in living and dining area.



EL-014 – Interior lighting in washroom with GFCI that must be replaced.



EL-015 – Compact fluorescent lamp used in other fixture in basement.
Note the various wiring.



EL-016 – Incandescent lighting in basement.

M1 – CARETAKERS RESIDENCE



EL-017 – Smoke alarm to be interconnected.



EL-018 – Smoke alarm to be replaced.



EL-019 – View of telephone junction box at front of building.



EL-020 – Telephone junction box provided by AGT.

M1 – CARETAKERS RESIDENCE



EL-021 – Internal telephone wiring in basement.



EL-022 – One of the telephone outlets in building



EL-023 – Wall mounted telephone outlet.



EL-024 – Exterior lighting at front of building.

M2 – CARETAKERS GARAGE



AR-001 – North and east elevations.



AR-002 – South and west elevations.



AR-003 – Cracked/pitted concrete floor surface.



AR-004 – Deteriorated paint finish at exterior wall.

M2 – CARETAKERS GARAGE



AR-005 – Initial deterioration of asphalt shingles.



AR-006 – Attic view of uninsulated portion of ceiling.

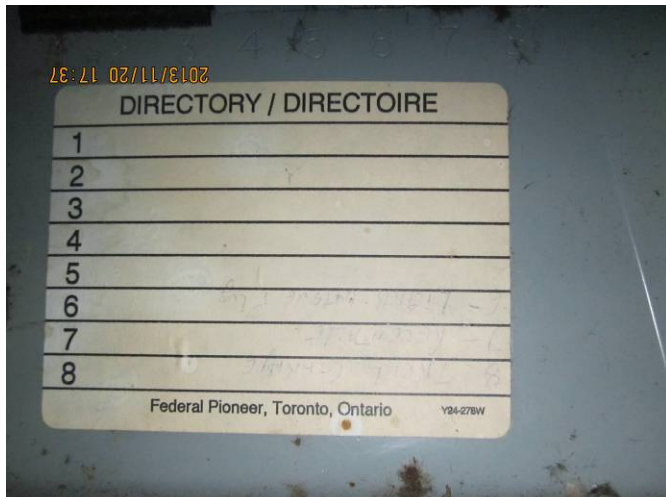
M2 – CARETAKERS GARAGE



EL-001 – Building M-2.



EL-002 – Branch circuit panel recessed in around combustible material.



EL-003- Panel directory which is not legible.



EL-004 – Receptacle used to feed light fixtures with old non-metallic sheathed cable running above switch.

M2 – CARETAKERS GARAGE



EL-005 – Exterior receptacle to be replaced with GFCI.



EL-006 – View of extension cord used to wire through light fixtures running across ceiling.



EL-007 – Cables used to wire outside light fixture without junction box.



EL-008 – View of interior lighting in garage.

M3 – METEOR RESIDENCE



AR-001 – West and north elevations.



AR-002 – East and south elevations.



AR-003 – Efflorescence at foundation wall and cracked concrete floor.



AR-004 – Area of unstable concrete floor.

M3 – METEOR RESIDENCE



AR-005 – Shifted window well.



AR-006 – Deteriorated stucco finish.



AR-007 – Missing metal soffit piece providing opening to attic space.



AR-008 – Damaged flooring termination strip.

M3 – METEOR RESIDENCE



AR-009 – Cracked gypsum board at wall.



AR-010 – Cracked gypsum board at ceiling.

M3 – METEOR RESIDENCE



ME-001 – Building M3 view from west side.



ME-002 – View from southeast.



ME-003 – Furnace.



ME-004 – Wall mounted thermostat.

M3 – METEOR RESIDENCE



ME-005 – Living room.



ME-006 – Kitchen.



ME-007 –Kitchen sink and faucet.



ME-008 – Plumbing and drainage.

M3 – METEOR RESIDENCE



ME-009 – Washroom.



ME-010 – Sink and toilet.



ME-011 – Wall mounted exhaust fan.



ME-012 – Tub and shower.

M3 – METEOR RESIDENCE



ME-013 – Water supply.



ME-014 – Sanitary piping.



ME-015 – Sump pump.



ME-016 – Sump pump.

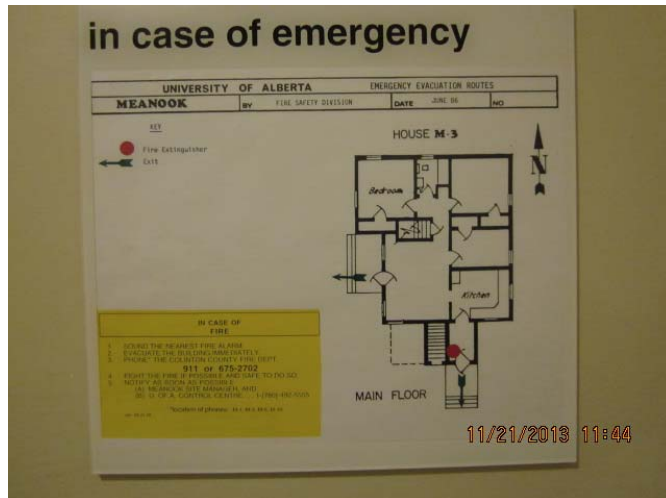
M3 – METEOR RESIDENCE



ME-017 – Hot water heater.



ME-018 – PEX tubing and fittings.



ME-019 – Fire safety plan dated "June 1986".



ME-020 – Fire extinguisher.

M3 – METEOR RESIDENCE



EL-001 – Frontal view of Building M-3.



EL-002 – Incoming service junction box showing signs of deterioration, with opening in side allowing water penetration.



EL-003 – Branch circuit panel recessed in wall at main entrance.



EL-004 – Incomplete panel directory and some of the wiring materials used.

M3 – METEOR RESIDENCE



EL-005 – New and old wiring with cable clips required as per code.



EL-006 – Electrical splice made without junction box between Romex and BX cable.



EL-007 – Cable drilled too close to bottom of beam requires mechanical protection or re-routing.



EL-008 – View of electrical splice made without junction box.

M3 – METEOR RESIDENCE



EL-009 – Receptacles within 1 m of sink to be GFCI protected.



EL-010 – Test of electrical installation indicating missing ground and open neutral.



EL-011 – Type of receptacle used in building that are presently incorrectly wired.



EL-012 – Wall mounted toggle switch used in the building.

M3 – METEOR RESIDENCE



EL-013 – Exterior lighting at rear of building.



EL-014 – Dome style fixture used at the front of the building.



EL-015 – View of interior lighting.



EL-016 – View of interior lighting in bedroom.

M3 – METEOR RESIDENCE



EL-017 – Interior lighting in washroom.



EL-018 – Interior lighting in entrance hallway.



EL-019 – General wiring and lighting in basement.



EL-020 – View of junction box that is undersized for the number of cables allowed.

M3 – METEOR RESIDENCE



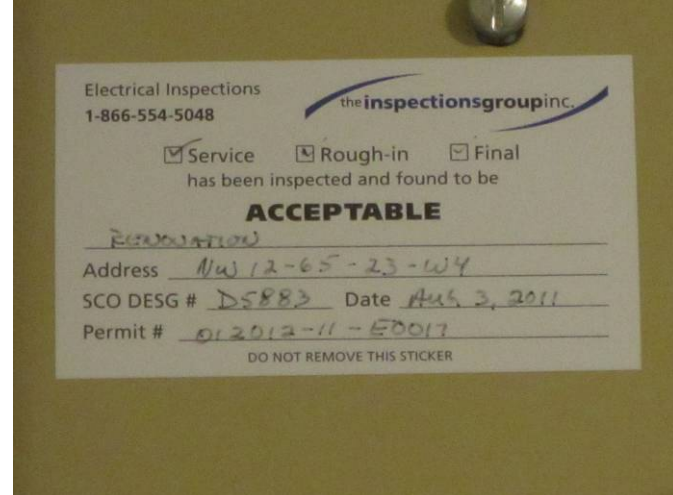
EL-021 – Smoke alarm on main floor only.



EL-022 – Telephone junction box provided by AGT.



EL-023 – Internal telephone wiring in basement.



EL-024 – View of inspection tag on branch circuit panel.

M5 – MAGNETIC RESIDENCE



AR-001 – South and west elevations.



AR-002 – North and east elevations.



AR-003 – Basement bedroom window and well,
shifted and not code compliant.



AR-004 – Crack and minor deterioration of stucco finish.

M5 – MAGNETIC RESIDENCE



AR-005 – Initial deterioration of asphalt shingles.



AR-006 – Deteriorated flooring in basement service area.



AR-007 – Suspect ACM flooring at basement bedroom/corridor.



AR-008 – Deteriorated wall finish at basement service area.

M5 – MAGNETIC RESIDENCE



AR-009 – Damaged basement wall in basement corridor.



AR-010 – Ceiling falling down in basement bedroom.

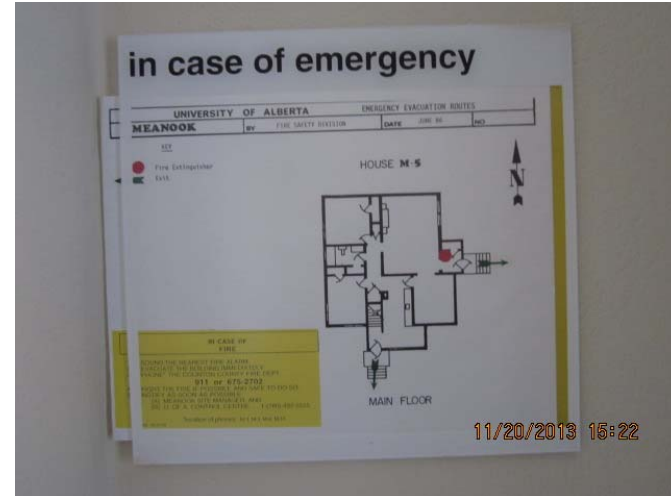


AR-011 – Basement view of suspect ACM duct-wrap paper.

M5 – MAGNETIC RESIDENCE



ME-001 – Building M5.



ME-002 – Fire safety plan dated "June 1986".



ME-003 – Furnace.



ME-004 – Wall mounted thermostat.

M5 – MAGNETIC RESIDENCE



ME-005 – Air grille.



ME-006 – Kitchen.



ME-007 – Sink and faucet.



ME-008 – Piping and drainage.

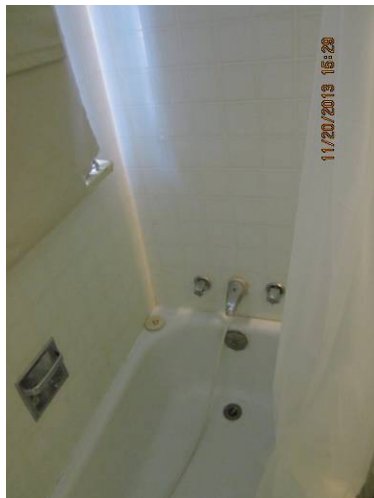
M5 – MAGNETIC RESIDENCE



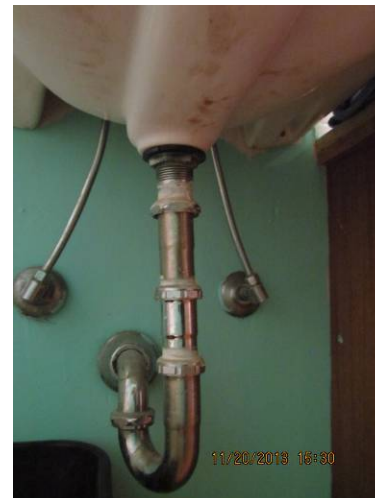
ME-009 – Washroom.



ME-010 – Plumbing fixtures.



ME-011 – Tub and shower.



ME-012 – Piping and drainage.

M5 – MAGNETIC RESIDENCE



ME-013 – Basement washroom.



ME-014 – Washing machine water connection.



ME-015 – Plumbing fixtures.



ME-016 – Piping and drainage.

M5 – MAGNETIC RESIDENCE



ME-017 – Water treatment system.



ME-018 – Water treatment system.



ME-019 – Water treatment control.



ME-020 – Water treatment control.

M5 – MAGNETIC RESIDENCE



ME-021 – Pressure gauge.



ME-022 – Water distribution.



ME-023 – Water meter.



ME-024 – Detail water distribution.

M5 – MAGNETIC RESIDENCE



ME-025 – Hot water tank.



ME-026 – Kitchen exhaust fan.



ME-027 – Exhaust fan in basement.



ME-028 – Fire extinguisher.

M5 – MAGNETIC RESIDENCE



EL-001 – Rear view of building M-5.



EL-002 – Incoming services to an exterior disconnect and branch circuit panel, all of which needs to be removed and installation rewired and placed indoors.



EL-003 – Frontal view and condition of exterior branch circuit panel without panel directory.



EL-004 – Recessed branch circuit panel in rear entrance hallway with incomplete panel directory and very old circuit breakers.

M5 – MAGNETIC RESIDENCE



EL-005 – Additional sub-panel in basement mounted on wooden board and an abandoned cable.



EL-006 – Poor and ineffective electrical grounding of installation. Point of termination needs to be cleaned and conductor secured.



EL-007 – View of an undersized outlet box with various types of wiring and a pendant fixture with an oversized incandescent lamp.



EL-008 – Various types of wiring with mechanical protection needed for wires penetrating floor and an inaccessible junction box.

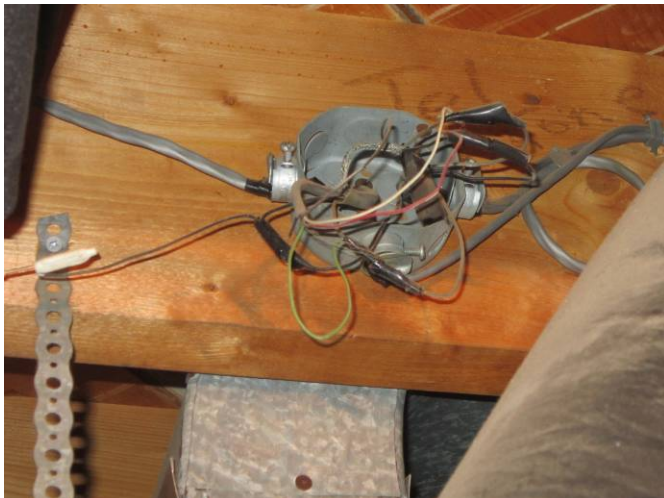
M5 – MAGNETIC RESIDENCE



EL-009 – Open junction box without cover plate and a pendant light fixture utilizing incandescent lamp.



EL-010 – Metallic sheathed cables with low voltage wiring and junction box that could not be properly closed; cable supports needed.



EL-011 – Open wiring and cables requiring supports and box cover.



EL-012 – Surface mounted outlets wired with non-metallic sheathed cables in conduit, lacking mechanical protection in ceiling.

M5 – MAGNETIC RESIDENCE



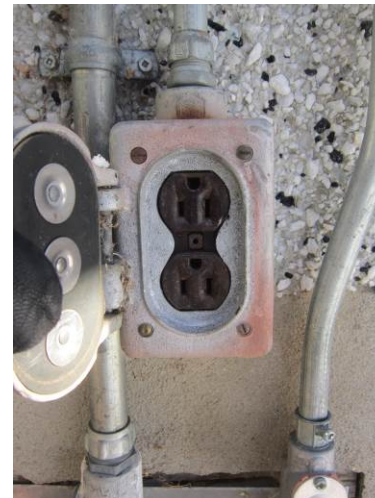
EL-013 – An old two wire duplex receptacle without ground terminal still in use.



EL-014 – A three wire duplex receptacle with ground terminal.



EL-015 – Receptacle within 1 M of kitchen sink to be replaced with GFCI.



EL-016 – Exterior receptacle to be replaced with GFCI, weatherproof gasket and cover plate, conduit fitting incorrect and not rain tight.

M5 – MAGNETIC RESIDENCE



EL-017 – A very old combination key and toggle switch.



EL-018 – Interior decorative light fixture utilizing incandescent lamp.



EL-019 – Fluorescent light fixture in kitchen utilizing T12 lamp and magnetic ballast along with an old exhaust fan.



EL-020 – Interior lighting in bedroom.

M5 – MAGNETIC RESIDENCE



EL-021 – Interior lighting of bathroom.



EL-022 – Interior lighting of basement hallway.



EL-023 – View of 120 volt working smoke alarm.

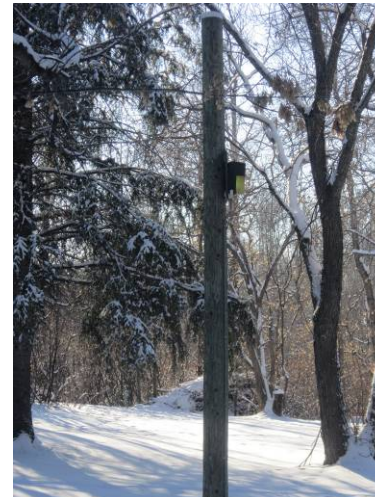


EL-024 – View of non-working 120 volt smoke alarm, all of which are to be interconnected.

M5 – MAGNETIC RESIDENCE



EL-025 – Exterior carriage lighting at the front and rear entrance of building.



EL-026 – Exterior pole light for walkway at rear of building.



EL-027 – A close view and present condition of exterior pole mounted light with water penetration.



EL-028 – View of photocell that controls exterior lighting

M6 – ADMINISTRATION BUILDING



AR-001 – West and north elevations.



AR-002 – East and south elevations.



AR-003 – Exposed and deteriorating insulation at foundation perimeter.



AR-004 – Crack in foundation wall below main entrance.

M6 – ADMINISTRATION BUILDING



AR-005 – Uninsulated portions of rim joist.



AR-006 – Cracked/broken stucco finish.



AR-007 – Deteriorated paint finish at wood window,
and uninsulated portion of foundation wall.



AR-008 – Deteriorated paint finish at concrete entrance landing/steps.

M6 – ADMINISTRATION BUILDING



AR-009 – Deteriorating asphalt shingles.



AR-010 – Water stained/damaged tile at basement ceiling below main entrance.



AR-011 – Water stained/damaged tile at ground floor washroom ceiling.



AR-012 – Damaged paint finish and broken glass at window.

M6 – ADMINISTRATION BUILDING



AR-013 – Missing fibreboard crown moulding in lounge.



AR-014 – Patched floor finish in office.



AR-015 – Loose and damaged fibreboard ceiling.

M6 – ADMINISTRATION BUILDING



ME-001 – Building M6.



ME-002 – Fire safety plan dated "June 1986".



ME-003 – Dual furnace.



ME-004 – Wall mounted thermostat.

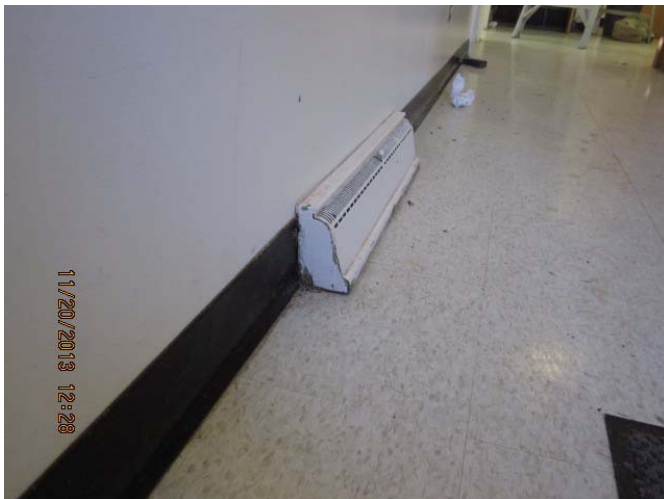
M6 – ADMINISTRATION BUILDING



ME-005 – Supply air grille.



ME-006 – Return air grille.



ME-007 – Supply air grille.



ME-008 – Staircase.

M6 – ADMINISTRATION BUILDING



ME-009 – Hot water tank.



ME-010 – Plumbing.



ME-011 – Slop sink - faucet with built-in vacuum breaker.



ME-012 – Piping and drainage.

M6 – ADMINISTRATION BUILDING



ME-013 – Washroom main floor.



ME-014 – Washroom basement.



ME-0015 – Kitchen.



ME-016 – Basement lab.

M6 – ADMINISTRATION BUILDING



ME-017 – Commercial stove and range hood.



ME-018 – Range guard control box.



ME-019 – Exhaust fan and make-up air control switches.



ME-020 – Fire extinguisher cylinder.

M6 – ADMINISTRATION BUILDING



ME-021 – Piping and nozzles.



ME-022 – Filter details.



ME-023 – Filter details.



ME-024 – Filter details.

M6 – ADMINISTRATION BUILDING



ME-025 – Fire extinguisher.



ME-026 – Strobe light - septic tank monitor.



ME-027 – Make-up air handling unit.



ME-028 – Septic tank.

M6 – ADMINISTRATION BUILDING



EL-001 – Frontal view of building M-6.



EL-002 – Location of branch circuit panels in cupboard.



EL-003 – Frontal view of branch circuit panel showing panel disconnect.



EL-004 – View of a more recent branch circuit panel.

M6 – ADMINISTRATION BUILDING



EL-005 – Condition of some of the wiring left hanging by the panel.



EL-006 – View of an undersized junction in ceiling.



EL-007 – Cable run in conduit without insuliner or mechanical protection, and cable resting on heating duct.



EL-008 – Cables bunched together and run through wall without mechanical protection and below ceiling joist.

M6 – ADMINISTRATION BUILDING



EL-009 – Cables run below ceiling without mechanical protection.



EL-010 – Receptacles within 1 m of sinks to be replaced with GFCI.



EL-011 – Conduits penetrating wall presently sealed with mono foam is deteriorating, a certified fire retardant material must be used.



EL-012 – Abandoned conduits to be removed, cut off and holes fire stopped.

M6 – ADMINISTRATION BUILDING



EL-013 – Exterior receptacle to be replaced with GFCI and rainproof cover.



EL-014 – Exterior exhaust fan with local disconnect to be labelled.



EL-015 – Open junction box above kitchen stove with missing cover plate.



EL-016 – View of kitchen stove with junction box above.

M6 – ADMINISTRATION BUILDING



EL-017 – View of fluorescent fixture with T12 lamps and magnetic ballasts.



EL-018 – Missing rubber grommet for cables on furnace.



EL-019 – Two-lamp ceiling mounted, wrap-around fluorescent fixtures and cable run through window casing.



EL-020 – Three-lamp ceiling wrap-around fluorescent fixtures.

M6 – ADMINISTRATION BUILDING



EL-021 – Decorative dome style light fixtures using incandescent and compact fluorescent lamps.



EL-022 – Lighting in Lab.



EL-023 – Exterior high intensity discharge (HID) fixture.



EL-024 – Indicator light for sewage system.

M6 – ADMINISTRATION BUILDING



EL-025 – 120 volt smoke alarm to be replaced with combined smoke and carbon monoxide units and dual voltage.



EL-026 – A different style of smoke alarm all to be replaced and interconnected when installing new units.

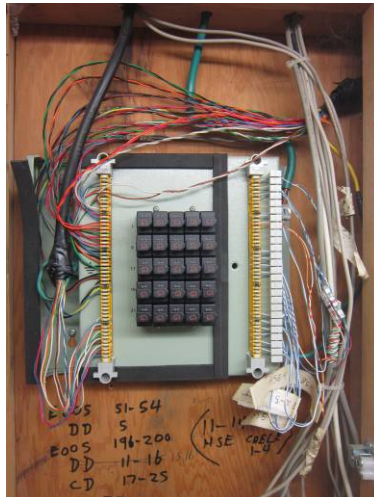


EL-027 – Cable to be re-routed removed from window casing.



EL-028 – Cables to be installed properly and junction box closed.

M6 – ADMINISTRATION BUILDING



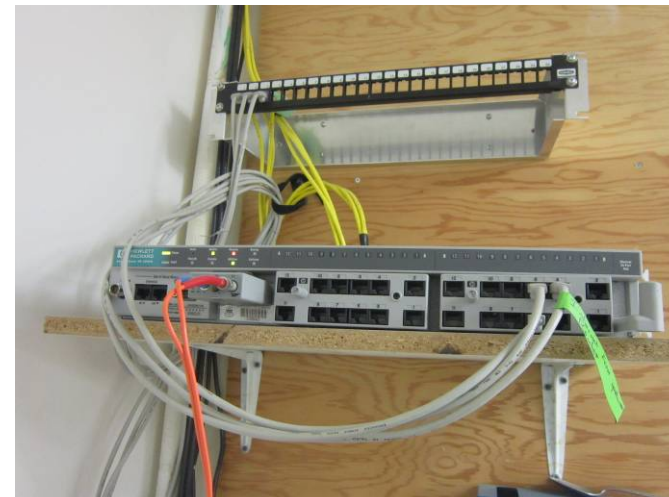
EL-029 – Existing telephone system, incoming supply unknown.



EL-030 – View of data equipment for site and location of telephone junction box.



EL-031 – Fibre optic and data equipment for site.



EL-032 – Data equipment for connecting to lab building on the site.

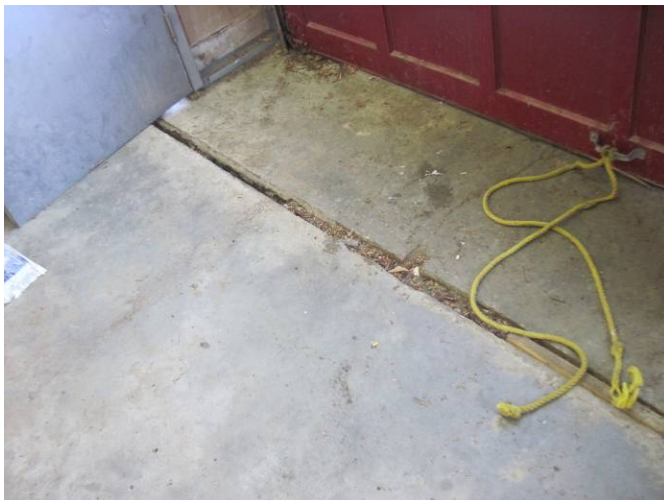
M9 – FIRE SHED



AR-001 – South and west elevations.



AR-002 – North and east elevations.

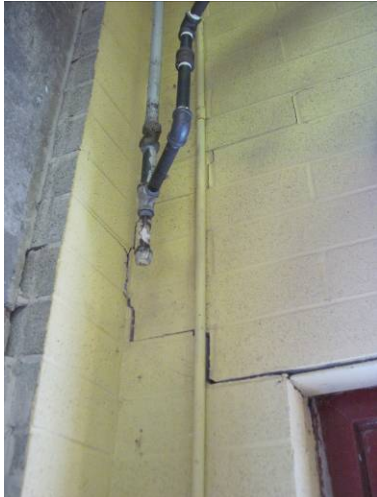


AR-003 – Shifted foundation/floor - binding interior door.



AR-004 – Cracked/shifted foundation at southwest corner.

M9 – FIRE SHED



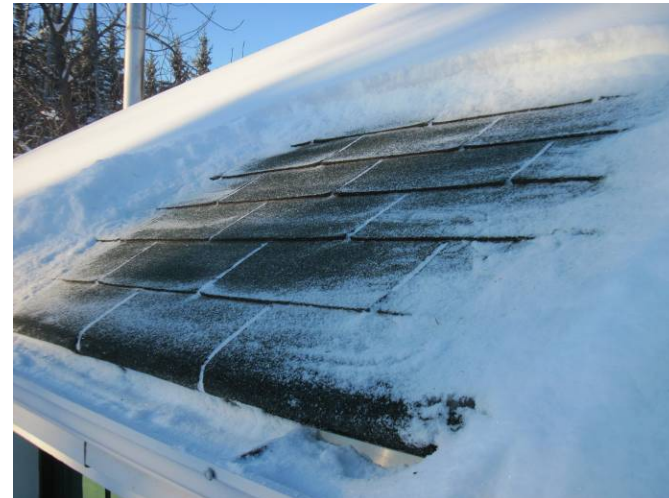
AR-005 - Cracked/shifted concrete block at southwest corner.



AR-006 – Cracks, including previous repairs, at stucco finish.



AR-007 – Deteriorated paint finish at door.



AR-008 – Initial deterioration of asphalt shingles.

M9 – FIRE SHED



AR-009 – Suspect mould along bottom of interior partition.



AR-010 – Deteriorated paint finish at window.

M9 – FIRE SHED



ME-001 – Building M9 view from south side.



ME-002 – View from east side.



ME-003 – Unit heater.



ME-004 – Wall mounted thermostat.

M9 – FIRE SHED



ME-005 – Gas fired unit heater.



ME-006 – Wall mounted thermostat.



ME-007 – Portable fire extinguisher.



ME-008 – Portable fire extinguisher.

M9 – FIRE SHED



EL-001 – Building M-9.



EL-002 – Branch circuit panel incoming service.



EL-003 – Branch circuit panel recessed in block wall.



EL-004 – Frontal view of branch circuit breakers.

M9 – FIRE SHED



EL-005 – One of the many surface mounted receptacles.



EL-006 – Outlet providing heat trace protection for water main.



EL-007 – Flush mounted receptacle mounted in one half of the building.



EL-008 – Existing high intensity discharge fixture to be replaced with LED wall pack fixture and photocell.

M9 – FIRE SHED



EL-009 – Interior lighting in one half of the building.



EL-010 – Interior lighting in the other half of the building.



EL-011 – Interior lighting.



EL-012 – Interior lighting and door leading to the exterior.



Environment and Climate Change Canada
Project Name: Meanook Abatement and Demolition
Project Number: Meanook-001

ANNEX 3

ANNEX 3

ASBESTOS-CONTAINING MATERIALS SURVEY



ASBESTOS-CONTAINING MATERIALS SURVEY
MEANOOK NATIONAL WILDLIFE AREA
MEANOOK, ALBERTA

EHS Partnerships Ltd. Project #: 456BM-18-004

Prepared by:

EHS Partnerships Ltd.
4940 – 87 Street NW
Edmonton, AB
T6E 5W3

Prepared for:

Environment and Climate Change Canada
Meanook National Wildlife Area

September, 2018

Prepared by:

Lucas Sheptycki, B.Sc., CHT
Project Coordinator

Reviewed by:

Brad Burwash, B.A.Sc., CRSP
Division Manager

CONFIDENTIAL

Distribution:

Two (2) Hard Copies to – PSPC

Three (3) Electronic Copies to - PSPC

EXECUTIVE SUMMARY

EHS Partnerships Ltd. (EHS^P) was retained by PSPC on behalf of Environment and Climate Change Canada to conduct an asbestos-containing materials survey of Meanook National Wildlife Area here in referred to as the Subject Property.

The Scope of Work for the project was to conduct an asbestos-containing materials (ACM) survey of 9 buildings within the Subject Property. The remanence of a burnt down laboratory was observed and included into the project scope of work. The survey was restricted to accessible locations. Inaccessible areas, such as fixed ceiling spaces and behind fixed walls, were not investigated at the time of the survey.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the survey, EHS^P makes the following conclusions and recommendations:

1. Appropriate precautions must be used during disturbance of the ACM. Prior to renovation, alteration or demolition work, ACM must be enclosed, encapsulated, or removed. If additional materials not previously identified during the survey are identified during renovation activities, samples should be collected to identify for potential ACM.
 - Asbestos-containing vinyl floor tiles were observed to be in good condition in an accessible area at the time of the investigation. Asbestos-containing floor tile was observed in Building M1 (Room B-1), Building M3 (Room B-2), and Building M5 (Room B-3). Routine surveillance of the ACM should be conducted on a regular basis. These materials have all been assigned an Action Level of 5/7, as per the PSPC Asbestos Management Standard. If the material is to be removed, low-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
 - Asbestos-containing cement board was observed to be in good condition in an accessible area at the time of the investigation. Asbestos-containing cement board was observed in the fume hood of Building M8 (Room 1-1). Routine surveillance of the ACM should be conducted on a regular basis. This material has been assigned an Action Level of 5/7, as per the PSPC Asbestos Management Standard. If the material is to be removed, low-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
 - Asbestos-containing drywall joint compound was observed to be in good condition in accessible areas at the time of the investigation. Asbestos-containing drywall joint compound was observed on the walls and ceiling of Building M3 (Walls and Ceilings) and the walls in Building M6 (Rooms 1-1 through 1-7). Routine surveillance of the ACM should be conducted on a regular basis. The drywall joint compound has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, moderate-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.

Asbestos-containing drywall joint compound was observed to be in poor condition in accessible areas at the time of the investigation. Asbestos-containing drywall joint compound was observed in Building M6 (Rooms B-1 through B-5). The drywall in poor condition has been assigned an Action Level of 3, as per the PSPC Asbestos Management Standard. There is no immediate risk

to staff as the building is currently unoccupied. Removal of the drywall should be completed if the building is to be re-occupied, prior to renovations or prior to demolition of the building.

- Asbestos-containing plaster was observed to be in good condition at the time of the investigation. Asbestos-containing plaster was observed in Building M1 (Rooms 1-1, 1-2, 1-3, 1-4, and 1-5) and in M7 Building (Room 1-1). Routine surveillance of the materials should be conducted on a regular basis. The plaster has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, moderate-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
- Asbestos-containing vermiculite was observed to be in good condition at the time of the investigation. Asbestos-containing vermiculite insulation was observed in the ceiling spaces of Building M2 and Building M5. Routine surveillance of the materials should be conducted on a regular basis. The vermiculite has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, high-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
- Asbestos-containing vinyl sheet flooring was observed to be in good to fair condition at the time of the investigation. Asbestos-containing vinyl sheet flooring was observed in Building M1 (Rooms 1-4 and 1-5), Building M3 (Rooms 1-5 and 1-6), Building M6 (Rooms 1-4 and 1-5), and Building M8 (Rooms 1-1 and 1-2). Routine surveillance of the materials should be conducted on a regular basis. The vinyl sheet flooring has been assigned an Action Level 5/7, as per the PSPC Asbestos Management Standard. If the material is to be removed, high-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
- Asbestos-containing, duct paper was observed to be in good condition at the time of the investigation. Asbestos-containing duct paper was observed in Building M1 (Rooms 1-1, 1-2, and 1-3), Building M3 (Rooms 1-1, 1-2, 1-3, 1-4, and 1-7), Building M5 (Rooms 1-1, 1-2, 1-3, 1-4, 1-5, and 1-6) and Building M6 (Rooms 1-1, 1-2, 1-3, 1-4, 1-5, 1-6, B-1, B-2, B-3, B-4, and B-6). Routine surveillance of the materials should be conducted on a regular basis. The duct paper has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, low-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
- Asbestos-containing aircell insulation was observed to be in poor condition at the time of the investigation. Asbestos-containing aircell insulation was observed in Building M6 (Room B-4). The aircell insulation in poor condition has been assigned an Action Level of 3. There is no immediate risk to staff as the building is currently unoccupied. Removal of the drywall should be completed if the building is to be re-occupied, prior to renovations or prior to demolition of the building.
- Asbestos-containing leveling compound was observed to be in good condition at the time of the investigation. Asbestos-containing leveling compound was observed under the flooring in Building M6 (Room 1-2). Routine surveillance of the materials should be conducted on a regular basis. The leveling compound has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, moderate-risk work procedures must be

followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.

- Asbestos-containing stucco was observed to be in good condition at the time of the investigation. Asbestos-containing stucco was observed on the exterior walls of Building M3. Routine surveillance of the materials should be conducted on a regular basis. The stucco has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, moderate-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.

Notification must be given to Alberta OH&S 72 hours prior to beginning the activities that may release asbestos fibers. Asbestos abatement must be completed by workers certified from Alberta OH&S. Throughout the abatement activities, appropriate air monitoring and inspections should be conducted by qualified personnel to demonstrate that work procedures are effective, asbestos is contained, and the waste is handled appropriately. It is recommended that a proper scope of work be developed that details the proper removal of identified ACM.

The abatement should be completed by workers certified by Alberta Workplace Health and Safety. Throughout the abatement activities, appropriate air monitoring and inspection should be conducted by qualified personnel to ensure all contamination is contained and ACM are disposed of appropriately.

- The survey was non-destructive in nature; therefore, ACM's may be present within fixed ceilings, wall cavities, or other inaccessible locations. If suspect material is found during renovation or demolition activities, they should be positively identified and disposed of appropriately.

Summary of Asbestos-Containing Material Location, Condition and Quantity

Material	Location	Condition	Quantity
Air Cell	Building M6	Poor	0.5 m ²
Cement Boards	Building M8	Good	1.5 m ²
Drywall Joint Compound	Building M3	Good	245 m ²
	Building M6	Poor	520 m ²
Duct Paper	Building M1	Good	3 m ²
	Building M3	Good	1 m ²
	Building M5	Good	3 m ²
	Building M6	Good	0.5 m ²
Floor Tiles	Building M1	Good	24 m ²
	Building M3	Good	10 m ²
	Building M5	Good	14 m ²
Leveling Compound	Building M6	Good	72 m ²
Plaster	Building M1	Good	118 m ²
	Building M7	Good	70 m ²
Sheet Flooring	Building M1	Good	21 m ²
	Building M3	Good	27 m ²
	Building M5	Good	26 m ²
	Building M6	Good	28 m ²
	Building M8	Good	18 m ²
Stucco	Building M3	Good	130 m ²
Vermiculite	Building M2	Good	18 m ²
	Building M5	Good	115 m ²

TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 BACKGROUND INFORMATION 1
3.0 REGULATIONS AND GUIDELINES 2
4.0 survey METHODOLOGY 3
5.0 RESULTS 4
6.0 DISCUSSION 12
7.0 CONCLUSIONS AND RECOMMENDATIONS 14
8.0 LIMITATIONS..... 16

TABLES

- Table 2.0: Buildings Included in the Scope of Work
- Table 4.1: Bulk Material Samples
- Table 5.0: Results of Asbestos Analysis

APPENDICES

- APPENDIX A – Classification, Condition, and Accessibility
- APPENDIX B – Laboratory Certificates of Analysis – Asbestos
- APPENDIX C – Floor Plans
- APPENDIX D – Room-by-Room Inventories
- APPENDIX E – Photographic Log
- APPENDIX F – Quality Assurance/Quality Control Plan

1.0 INTRODUCTION

1.1 Purpose

EHS Partnerships Ltd (EHSP) was retained by Public Services and Procurement Canada (PSPC) on behalf of Environment and Climate Change Canada (ECCC) to conduct an asbestos survey of the Meanook Biological Research Station, here in referred to as the Subject Property.

Fieldwork for the project was conducted on August 14, 2018 by Lucas Sheptycki B.Sc., CHT Project Coordinator and Amy Kadwell B.A.Sc., Project Technician under the direction of Brad Burwash B.A.Sc., CRSP Division Manager.

1.2 Scope of Work

The Scope of Work for the project was to conduct an asbestos-containing materials (ACM) survey of 9 buildings within the Subject Property. The remanence of a burnt down laboratory was observed and included into the project scope of work. The survey was restricted to accessible locations. Inaccessible areas, such as fixed ceiling spaces and behind fixed walls, were not investigated at the time of the survey.

2.0 BACKGROUND INFORMATION

EHSP conducted the surveys for PSPC on behalf of ECCC. The surveys consisted of investigations of 9 buildings and the remanence of a burnt down laboratory on the Subject Property located in Meanook, Alberta. The list of buildings that were surveyed, including building area and construction dates, is provided below.

Table 2.0: Buildings Included in Scope of Work

Structure Number	Building #	Building Name	Building Area (m ²)	Construction Date	ACM Identified?
108478	M1	Caretakers Residence	88	1953	Yes
108482	M2	Garage	19	1953	Yes
108479	M3	Magnetic Residence	103	1962	Yes
108481	M4	Garage	85	1959	No
22912	M5	Meteor Residence	92	1952	Yes
108484	M6	Admin Building	125	1957	Yes
108485	M7	Power Shed	20	1948	Yes
108480	M8	Garage	142	1954	Yes
108483	M9	Fireshed	62	1957	No
-	M10	Burnt Down Laboratory	-	-	No

3.0 REGULATIONS AND GUIDELINES

3.1 Federal Regulations and Guidelines

The Subject Property is owned by ECCC and is not occupied. Occupational Health and Safety (OHS) for federal employees is regulated by the Canada Labour Code (CLC) Part II. The *Canada Occupational Health and Safety Regulations (COHSR), Part X, Hazardous Substances* covers specific requirements related to the management and control of asbestos-containing materials (ACM). There are also specific requirements for hazard prevention detailed in the Hazard Prevention Program (HPP) in the CLC.

The asbestos management requirements in federally owned or leased buildings and facilities is also provided by the federal government in the National Joint Council Occupational Health and Safety Directive (NJC OHS), Part XI – Hazardous Substances, 11.6 Asbestos Management. Currently the NJC OHS Directive directs federal departments to follow the PSPC (formerly Public Works and Government Services Canada) Policy DP 057 dated 1997-12-03 for asbestos management. The NJC OHS Directive will soon be updated and DP 057 will be replaced with the new PSPC Asbestos Management Standard that was released in June 2017.

The June 2017 PSPC Asbestos Management Standard was released prior to recent changes made in the CLC Part II regarding asbestos management. The PSPC Standard is currently being revised and updated to include these recent amendments to the CLC.

For the purposes of this report, the following federal requirements will be followed, unless provincial requirements are more stringent. Federal legislation and policy referenced in this report includes:

- Canada Labour Code, *Canada Occupational Health and Safety Regulations Part X, Hazardous Substances*; SOR/86-304, 2017-06-20 (or most current version);
- Public Services and Procurement Canada Asbestos Management Standard, June 2017 (or most current version);
- National Joint Council Occupational Health and Safety Directive (NJC OHS), Part XI – Hazardous Substances, 11.6 Asbestos Management, January 1, 2001 (or most current version); and
- Transport Canada, Transport of Dangerous Goods Regulations.

3.2 Provincial Regulations

The management and requirements for the potential disturbance of asbestos in buildings is also regulated at the provincial level under the Alberta OH&S Act, Regulations and Code, 2009. The legislation is referenced below:

- Alberta OH&S Act, Regulations and Code, 2009; and
- Alberta Asbestos Abatement Manual, 2012.

Federal Regulations define an ACM as a material that contains 1% or greater asbestos. For contractors onsite in Alberta, the Provincial Regulations are followed, as they are more stringent than the Federal Regulations. Alberta does not define ACM. Any amount of asbestos in a building material means the material is ACM, however employers are required to develop a Code of Practice for managing any ACM that is 0.1% or greater.

Part 4 Chemical Hazards, Biological Hazards, Harmful Substances, of the Alberta (OH&S) Code, 2009 defines the general requirements for controlling worker exposure to chemical hazards in the work place. Sections 31 through 38 of Part 4 outline the requirements related to asbestos in facilities. Sections 31 to 35 outline the specific limitations on the use of asbestos in buildings and are summarized below:

- asbestos products that have the potential for releasing fibres may not be installed (31);
- all materials containing crocidolite are banned from use (32(1));
- spray-applied asbestos products are banned from use (32(2));
- asbestos products, in general, must not be in a form or location where they could release airborne fibres and allow them to enter a ventilation system (33);
- buildings to be demolished are to have all materials with the potential of releasing asbestos fibres removed (34); and
- buildings being altered or renovated are to have all materials with the potential of releasing asbestos fibres in the alteration or renovation areas removed (35).

The Alberta Asbestos Abatement Manual, 2012 is a guide published by Alberta OH&S that is used for determining compliance with the Alberta OH&S Act, Regulations and Code, 2009. The manual covers basic information on asbestos health hazards, requirements for worker protection, safe work practices, minimum sampling requirements, and the basic principles to follow for the safe abatement of ACM.

4.0 SURVEY METHODOLOGY

4.1 Asbestos-containing Materials

The Subject Property was inspected on a room-by-room and system-by-system basis in order to identify the locations of potential ACM. Representative samples of materials suspected of containing asbestos were sampled and submitted to EMSL Analytical Inc. (EMSL) for analysis to determine asbestos type and percentage content using Polarized Light Microscopy and dispersion staining techniques in accordance with the United States Environmental Protection Agency (USEPA) methodologies. The systems reviewed included, but were not limited to:

- Structural - systems including fireproofing on beams, open and solid webbed joist systems, Q-deck;
- Mechanical - systems insulation including hot water and steam system, condensate system, chilled water system, glycol system, domestic hot and cold water, emergency generator exhaust, boiler units, heat exchangers, reboiler units, asbestos cement piping, wall joint compound, asbestos sheet products; and
- Architectural - systems including texture coats, sheet flooring, vinyl floor tile, acoustical spray-applied materials, condensation control applications, ceiling tile, wall board, drywall joint compound, asbestos sheet products.

Bulk sampling protocols followed the PSPC Standard, which indicates requirements for the number of samples to collect for each homogeneous material. Table 3, Section 5.6.4 of the Alberta Asbestos Abatement Manual, 2012 also provides recommendations for sampling of homogeneous materials. For homogeneous materials, the minimum number of bulk samples collected should be completed as noted in Table 4.1 as per the Alberta Asbestos Abatement Manual and PSPC. If analysis establishes that a bulk material sample does contain asbestos then the entire area of homogeneous material from which the bulk material sample was taken is considered to be asbestos-containing.

Table 4.1: Bulk Material Samples

Type of Material	Size of Area of Homogeneous Material	Minimum Number of Samples Collected
Any homogeneous material, including but not limited to fireproofing, drywall joint compound, ceiling tile stucco, acoustical and stipple finishes and visually similar floor tiles.	Less than 90 m ² (<1000 ft ²)	3
	90 m ² or more but less than 450 m ² (1000-5000 ft ²)	5
	450 m ² or more (>5000 ft ²)	7

The work was conducted in accordance with standards outlined by the National Institute for Occupational Safety and Health (NIOSH).

4.1.1 Classification, Condition, and Accessibility

The classification, condition, and accessibility were assessed for the materials that were identified to contain asbestos. To determine these factors, EHS^P followed the methodology outlined in the PSPC Asbestos Management Standard. The Standard provides definitions and criteria for the assessment of ACM. The classification, conditions, and accessibility information are provided in Appendix A. The table provided in Appendix D presents classification, condition, and accessibility rankings for all ACM identified onsite.

5.0 RESULTS

Bulk samples of materials suspected to contain asbestos were collected at the Subject Property. A total of 162 samples were collected and sent via Chain of Custody to EMSL for analysis. 45 samples were identified to contain asbestos. Laboratory certificates of analysis have been provided in Appendix B. Floor plans indicating sample locations are provided in Appendix C. A room-by-room inventory has been provided in Appendix D. Photographs are provided in Appendix E. The results are summarized in Table 5.0.

Table 5.0 Results of Asbestos Analysis

Building #	Sample #	Sample Description	Sample Location	Asbestos %	Condition
M1 Caretakers Residence	M1-1	Red Brick	Living Room Fireplace	None Detected	Good
	M1-2	Brick Mortar	Living Room Fireplace	None Detected	Good
	M1-3	Plaster	Living Room Wall	< 1% Actinolite	Good
	M1-4	Duct Paper	Living Room Duct Boot	50% Chrysotile	Good
	M1-5	Plaster	North Bedroom Wall	None Detected	Good
	M1-6	Plaster	South Bedroom Wall	None Detected	Good

Building #	Sample #	Sample Description	Sample Location	Asbestos %	Condition	
	M1-7	Duct paper	South Bedroom Duct Boot	50% Chrysotile	Good	
	M1-8	Drywall Joint Compound	Bathroom Demising Wall	None Detected	Good	
	M1-9	Caulk	Bathroom – Around Bath Tub	None Detected	Good	
	M1-10	Brown Vinyl Sheet Flooring (Beige Paper Backing)	Bathroom 1 st Layer	None Detected	Good	
		Mastic	Bathroom 1 st Layer	None Detected	Good	
	M1-11	White Vinyl Sheet Flooring (Beige Paper Backing)	Bathroom 2nd Layer	20 % Chrysotile	Good	
	M1-12	Drywall Joint Compound	Bathroom Perimeter Wall	None Detected	Good	
	M1-13	Duct Paper	North Bedroom Duct Boot	50% Chrysotile	Good	
	M1-14	Plaster	North Bedroom Ceiling	None Detected	Good	
	M1-15	Drywall Joint Compound	Kitchen Ceiling	None Detected	Good	
	M1-16	Brown Vinyl Sheet Flooring (1 st Layer) (Beige Paper Backing)	Kitchen	None Detected	Good	
		Mastic	Kitchen	None Detected	Good	
	M1-17	White Vinyl Sheet Flooring (2nd Layer)	Kitchen	20% Chrysotile	Good	
	M1-18	Brown 12”x12” Vinyl Floor Tile	Basement	3% Chrysotile	Good	
	M1-19	White 12”x12” Vinyl Floor Tile	Basement	3% Chrysotile	Good	
	M1-20	White Duct Tape	Basement Ceiling Space	None Detected	Good	
	M1-21	Green Shingles	Exterior Roof	None Detected	Good	
	M2 Garage	M2-1A	Vermiculite Insulation	Ceiling Space	< 1% Actinolite	Good
		M2-1B	Vermiculite Insulation	Ceiling Space	< 1% Actinolite	Good
		M2-2	Green Shingles	Roof	None Detected	Good
			Shingle Bottom Layer	Roof	None Detected	Good

Building #	Sample #	Sample Description	Sample Location	Asbestos %	Condition
M3 Magnetic Residence	M3-1	Drywall Joint Compound	North Bedroom Perimeter Wall	2% Chrysotile	Good
	M3-2	Drywall Joint Compound	Hallway Demising Wall	2% Chrysotile	Good
	M3-3	Drywall Joint Compound	South East Bedroom Perimeter Wall	2% Chrysotile	Good
	M3-4	Duct paper	South East Bedroom Duct Boot	70% Chrysotile	Good
	M3-5	Drywall Joint Compound	Bathroom Demising Wall	None Detected	Good
	M3-6	Grey Vinyl Sheet Flooring (Beige Paper Backing)	Bathroom	20% Chrysotile	Good
	M3-7	Caulk	Bathroom Around the Tub	None Detected	Good
	M3-8	Duct Paper	Hallway Duct Boot	70% Chrysotile	Good
	M3-9	Grey Vinyl Sheet Flooring (Beige Paper Backing)	Kitchen	20% Chrysotile	Good
	M3-10	Drywall Joint Compound	Living Room Ceiling	None Detected	Good
		Drywall Joint Compound 2nd Layer	Living Room Ceiling	2% Chrysotile	Good
	M3-11	Drywall Joint Compound	Kitchen Ceiling	None Detected	Good
		Drywall Joint Compound 2nd Layer	Kitchen Ceiling	2% Chrysotile	Good
	M3-12	Grey 12" x 12" Vinyl Floor Tile	Basement	4% Chrysotile	Good
		Mastic	Basement	None Detected	Good
	M3-13	Brick Mortar	Basement	None Detected	Good
	M3-14	Red Brick	Basement	None Detected	Good
M3-15	Caulking	Exterior Roof	None Detected	Good	
M3-16	Stucco	Exterior West Wall	< 1% Chrysotile	Good	
M3-17	Stucco	Exterior South Wall	< 1% Chrysotile	Good	

Building #	Sample #	Sample Description	Sample Location	Asbestos %	Condition
	M3-18	Stucco	Exterior East Wall	< 1% Chrysotile	Good
	M3-19	Green Shingles	Exterior Roof	None Detected	Good
	M3-19	Shingle Bottom Layer	Roof	None Detected	Good
	M3-20	Caulk	Exterior South Doorway	None Detected	Good
M4 Garage	M4-1	Green Shingles	Exterior Roof	None Detected	Good
		Shingle Bottom Layer	Roof	None Detected	Good
	M4-2	Stucco Skim Coat	Exterior South Wall	None Detected	Good
		Stucco Base Coat	Exterior South Wall	None Detected	Good
	M4-3	Stucco	Exterior East Wall	None Detected	Good
	M4-4	Stucco	Exterior West Wall	None Detected	Good
	M4-5	Drywall Joint Compound	Interior North Perimeter Wall	None Detected	Good
	M4-6	Drywall Joint Compound	Interior East Perimeter Wall	None Detected	Good
	M4-7	Brick Mortar	East Wall	None Detected	Good
	M4-8	Brick	East Wall	None Detected	Good
M5 Metrological Residence	M5-1	Wood Design Vinyl Sheet Flooring (Beige Paper Backing)	Kitchen 1st Layer	None Detected	Good
		Mastic	Kitchen 1st Layer	None Detected	Good
	M5-2	White with Pattern Vinyl Sheet Flooring (Beige Paper Backing)	Kitchen 2nd Layer	2% Chrysotile	Good
	M5-3	Brown Vinyl Sheet Flooring (Beige Paper Backing)	Kitchen 3 rd Layer	None Detected	Good
		Mastic	Kitchen 3 rd Layer	None Detected	Good
	M5-4	Brown / Beige Vinyl Sheet Flooring (Beige Paper Backing)	North Bedroom Under Carpet	None Detected	Good

Building #	Sample #	Sample Description	Sample Location	Asbestos %	Condition
		Mastic	North Bedroom Under Carpet	None Detected	Good
	M5-5	Black Mastic	Bathroom	None Detected	Good
	M5-6	Duct Paper	Kitchen Duct Boot	80 % Chrysotile	Good
	M5-7	Drywall Joint Compound	Kitchen Demising Wall	None Detected	Good
	M5-8	Drywall Joint Compound	Kitchen Perimeter Wall	None Detected	Good
	M5-9	Drywall Joint Compound	Bathroom Demising Wall	None Detected	Good
	M5-10	Plaster	North Bedroom Wall	None Detected	Good
	M5-11	Plaster	Living Room Wall	None Detected	Good
	M5-12	Wood Design Vinyl Sheet Flooring (Beige Paper Backing)	Basement Stairwell	None Detected	Good
		Mastic	Basement Stairwell	None Detected	Good
	M5-13	Multi-Color Vinyl Sheet Flooring (Beige Paper Backing)	Basement North West Bedroom	None Detected	Good
	M5-14	Grey Vinyl Floor Tile	Basement North East Bedroom	5 % Chrysotile	Good
		Mastic	Basement North East Bedroom	None Detected	Good
	M5-15	2'x2' Plain Ceiling Tile	Basement North East Bedroom	None Detected	Poor
	M5-16	Grey Square Pattern Vinyl Sheet Flooring (Beige Paper Backing)	Basement Bathroom	None Detected	Poor
	M5-17	Drywall Joint Compound	Basement Bathroom Perimeter Wall	None Detected	Poor
	M5-18	2'x2' Plain Ceiling Tile	Basement Bathroom	None Detected	Poor
	M5-19	Duct Paper	Basement Furnace Room Ceiling Space	60% Chrysotile	Good
	M5-20A	Vermiculite Insulation	Main Floor Ceiling Space	< 1% Actinolite	Good
	M5-20B	Vermiculite Insulation	Main Floor Ceiling Space	< 1% Actinolite	Good
	M5-20C	Vermiculite Insulation	Main Floor Ceiling Space	< 1% Actinolite	Good
	M5-21	Texture Coat	Basement Stairwell Walls	None Detected	Good

Building #	Sample #	Sample Description	Sample Location	Asbestos %	Condition
	M5-22	Stucco	Exterior Walls	None Detected	Good
	M5-23	Green Shingles	Exterior Roof	None Detected	Good
	M5-24	Parging	Exterior Base of Walls	None Detected	Good
	M5-25	Brick Mortar	Exterior South East Wall	None Detected	Good
	M5-26	Brick	Exterior South East Wall	None Detected	Good
M6 Admin Building	M6-1	Beige Vinyl Floor Tile (Beige Paper Backing)	Bathroom	None Detected	Good
		Mastic	Bathroom	None Detected	Good
	M6-2	Pink Vinyl Sheet Flooring (Beige Paper Backing)	Kitchen	None Detected	Good
		Mastic	Kitchen	None Detected	Good
	M6-3	White / Yellow Vinyl Sheet Flooring (Beige Paper Backing)	Kitchen	None Detected	Good
	M6-4	Grey Leveling Compound	Kitchen	None Detected	Good
	M6-5	Drywall Joint Compound	South East Room Perimeter Wall	None Detected	Fair
	M6-6	Yellow Vinyl Sheet Flooring (Beige Paper Backing)	North West Room	20% Chrysotile	Good
	M6-7	Grey Vinyl Sheet Flooring (Beige Paper Backing)	North West Room	None Detected	Good
	M6-8	Drywall Joint Compound	North West Room Demising Wall	None Detected	Good
	M6-9	Yellow Vinyl Sheet Flooring (Beige Paper Backing)	South West Room Under Carpet	20% Chrysotile	Good
	M6-10	Drywall Joint Compound	South West Room Perimeter Wall	None Detected	Good
		Drywall Joint Compound 2nd Layer	South West Room Perimeter Wall	2% Chrysotile	Good
	M6-11	Duct Paper	South West Room Duct Boot	60% Chrysotile	Good
M6-12	Green Shingle	Exterior Roof	None Detected	Good	

Building #	Sample #	Sample Description	Sample Location	Asbestos %	Condition
	M6-13	2'x2' Plain Ceiling Tiles	Entrance Way	None Detected	Good
	M6-14	2'x2' Plain Ceiling Tiles	South East Room	None Detected	Good
	M6-15	Beige Vinyl Floor Tile (Beige Paper Backing)	Basement North West Room	None Detected	Good
		Mastic	Basement North West Room	None Detected	Good
	M6-16	Beige Vinyl Floor Tile (Beige Paper Backing)	Basement South East Room	None Detected	Good
	M6-16	Mastic / Leveler	Basement South East Room	<1 % Chrysotile	Good
	M6-17	2'x4' Ceiling Tile with Pinholes	Basement South East Room	None Detected	Good
	M6-18	2'x4' Ceiling Tile with Pinholes	Basement Adjacent to Stairwell	None Detected	Good
	M6-19	2'x4' Ceiling Tile with Pinholes	Basement North West Room	None Detected	Good
	M6-20	Duct Paper	Basement North Duct Boot	60% Chrysotile	Good
	M6-21	Aircell Insulation	Basement East Wall of Bathroom	50% Chrysotile	Poor
	M6-22	Aircell Insulation	Basement West Wall of Bathroom	50% Chrysotile	Poor
	M6-23	Mortar	Basement Chimney	None Detected	Good
	M6-24	Brick	Basement Chimney	None Detected	Good
	M6-25	Drywall Joint Compound	Basement South East Room	None Detected	Good
	M6-26	Drywall Joint Compound	Basement Adjacent to the Stairwell	None Detected	Good
	M6-27	Drywall Joint Compound	Basement North West Room	None Detected	Good to Poor
	M6-28	Cement Board	Basement Inside Chimney	None Detected	Good
	M6-29	Stucco	North Exterior	None Detected	Good
	M6-30	Stucco	East Exterior	None Detected	Good
	M6-31	Stucco	West Exterior	None Detected	Good
	M6-32	Caulking	Exterior Windows	None Detected	Good
M7 Powershed	M7-1	Shingles	Roof	None Detected	Good
		Shingle Bottom Layer	Roof	None Detected	Good

Building #	Sample #	Sample Description	Sample Location	Asbestos %	Condition
	M7-2	Stucco	West Exterior	None Detected	Good
	M7-3	Stucco	North Exterior	None Detected	Good
	M7-4	Stucco	East Exterior	None Detected	Good
	M7-5	Plaster	South Wall	10% Chrysotile	Good
	M7-6	Plaster	Ceiling	10% Chrysotile	Good
	M7-7	Plaster	West Wall	10% Chrysotile	Good
	M8 Garage	M8-1	Vinyl Sheet Flooring (Beige Paper Backing)	South Laboratory	20% Chrysotile
M8-2		Leveling Compound	South Laboratory	None Detected	Poor
M8-3		Stucco	South Laboratory	None Detected	Good
		Parging Mud	South Laboratory	None Detected	Good
M8-4		Texture Coat	South Laboratory	None Detected	Good
M8-5		Leveling Compound	North Laboratory	None Detected	Good
M8-6		Drywall Joint Compound	South Wall	None Detected	Good
M8-7		Vinyl Sheet Flooring (Beige Paper Backing)	North Laboratory	20% Chrysotile	Poor
M8-8		Counter Top	North Laboratory	None Detected	Good
M8-9		Grey Mortar	West Garage Wall	None Detected	Good
M8-10		Dark Grey Cement Board	Fume Hood South Lab	50% Chrysotile	Good
M8-11		Light Grey Cement Board	Fume Hood South Lab	20% Chrysotile 10% Amosite	Good
M8-12		Stucco	West Exterior	None Detected	Good
M8-13		Stucco	South Exterior	None Detected	Good
M8-14		Stucco	East Exterior	None Detected	Good
M8-15		Caulking	Exterior Wall	None Detected	Good
M8-16	Shingles	Roof	None Detected	Good	

Building #	Sample #	Sample Description	Sample Location	Asbestos %	Condition
		Tar Felt	Roof	None Detected	Good
M9 Fireshed	M9-1	Shingles	Roof	None Detected	Good
		Shingle Bottom Layer	Roof	None Detected	Good
	M9-2	Stucco	West Exterior	None Detected	Good
	M9-3	Stucco	North Exterior	None Detected	Good
	M9-4	Stucco	East Exterior	None Detected	Good
	M9-5	Drywall Joint Compound	Center Wall	None Detected	Good
	M9-6	Caulking	East Wall	None Detected	Good
M10 Lab	M10-1	Vinyl Sheet Flooring (Beige Paper Backing)	Exposed Flooring	None Detected	Good
		Mastic	Exposed Flooring	None Detected	Good
		Leveler	Exposed Flooring	None Detected	Good

The following materials were common at the Subject Property. These materials do not contain asbestos and were not sampled during the survey:

- Wood framing;
- Fiberglass insulation;
- Wood shelving;
- Poured concrete flooring; and
- Wood subfloor.

6.0 DISCUSSION

A total of 162 samples were collected from the 9 buildings and the remanence of a burnt down building on site. 45 were identified to contain asbestos. The following locations were found to possess asbestos containing materials;

Building M1 Caretakers Residence Building

- Plaster (Rooms 1-1, 1-2, 1-3, 1-4, and 1-5);
- Duct Paper on Duct Boots (Rooms 1-1, 1-2, and 1-3);
- White Vinyl Sheet Flooring with Beige Paper Backing (Rooms 1-4 and 1-5);
- Brown 12"x12" Vinyl Floor Tile (Room B-1); and
- White 12"x12" Vinyl Floor Tile (Room B-1).

Building M2 Garage

- Vermiculite Insulation (Ceiling Space/Attic).

Building M3 Magnetic Residence Building

- Drywall Joint Compound (Rooms 1-1, 1-2, 1-3, 1-4, 1-5, 1-6, and 1-7);
- Duct Paper on Duct Boots (Rooms 1-1, 1-2, 1-3, 1-4, and 1-7);
- Grey Vinyl Sheet Flooring with Beige Paper Backing (Rooms 1-5 and 1-6);
- Grey 12"x12" Vinyl Floor Tile (Room B-2); and
- Stucco (Exterior).

M5 Metrological Residence Building

- White with Pattern Vinyl Sheet Flooring with Beige Paper Backing (Room 1-1);
- Duct Paper on Duct Work (Rooms 1-1, 1-2, 1-3, 1-4, 1-5, 1-6 and Basement);
- Grey Vinyl Floor Tile (Room B-3); and
- Vermiculite Insulation (Ceiling Space/Attic).

M6 Admin Building

- Yellow Vinyl Sheet Flooring with Beige Paper Backing (Rooms 1-4 and 1-5);
- Drywall Joint Compound (Rooms 1-1, 1-2, 1-3, 1-4, 1-5, 1-6, B-1, B-2, B-3, B-4, and B-5);
- Duct Paper on Duct Boots (Rooms 1-2, 1-3, 1-4, 1-5, and B-1);
- Mastic / Leveler (Room B-2); and
- Aircell Insulation (Room B-4).

M7 Powershed Building

- Plaster (Room 1-1).

M8 Garage

- Vinyl Sheet Flooring with Beige Paper Backing (Room 1-1 and B-2);
- Dark grey Cement Board (Room 1-1); and
- Light Grey Cement Board (Room 1-1).

The survey was non-destructive in nature therefore additional ACM may be present within fixed ceilings, walls and/or floor cavities. Precautions must be taken whenever accessing these concealed areas.

A destructive survey for concealed ACM may be required prior to completing renovation and/or demolition activities.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the survey, EHS^P makes the following conclusions and recommendations:

1. Appropriate precautions must be used during disturbance of the ACM. Prior to renovation, alteration or demolition work, ACM must be enclosed, encapsulated, or removed. If additional materials not previously identified during the survey are identified during renovation activities, samples should be collected to identify for potential ACM.
 - Asbestos-containing vinyl floor tiles were observed to be in good condition in an accessible area at the time of the investigation. Asbestos-containing floor tile was observed in Building M1 (Room B-1), Building M3 (Room B-2), and Building M5 (Room B-3). Routine surveillance of the ACM should be conducted on a regular basis. These materials have all been assigned an Action Level of 5/7, as per the PSPC Asbestos Management Standard. If the material is to be removed, low-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
 - Asbestos-containing cement board was observed to be in good condition in an accessible area at the time of the investigation. Asbestos-containing cement board was observed in the fume hood of Building M8 (Room 1-1). Routine surveillance of the ACM should be conducted on a regular basis. This material has been assigned an Action Level of 5/7, as per the PSPC Asbestos Management Standard. If the material is to be removed, low-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
 - Asbestos-containing drywall joint compound was observed to be in good condition in accessible areas at the time of the investigation. Asbestos-containing drywall joint compound was observed on the walls and ceiling of Building M3 (Walls and Ceilings) and the walls in Building M6 (Rooms 1-1 through 1-7). Routine surveillance of the ACM should be conducted on a regular basis. The drywall joint compound has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, moderate-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.

Asbestos-containing drywall joint compound was observed to be in poor condition in accessible areas at the time of the investigation. Asbestos-containing drywall joint compound was observed in Building M6 (Rooms B-1 through B-5). The drywall in poor condition has been assigned an Action Level of 3, as per the PSPC Asbestos Management Standard. There is no immediate risk to staff as the building is currently unoccupied. Removal of the drywall should be completed if the building is to be re-occupied, prior to renovations or prior to demolition of the building.

- Asbestos-containing plaster was observed to be in good condition at the time of the investigation. Asbestos-containing plaster was observed in Building M1 (Rooms 1-1, 1-2, 1-3, 1-4, and 1-5) and in M7 Building (Room 1-1). Routine surveillance of the materials should be conducted on a regular basis. The plaster has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, moderate-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.

- Asbestos-containing vermiculite was observed to be in good condition at the time of the investigation. Asbestos-containing vermiculite insulation was observed in the ceiling spaces of Building M2 and Building M5. Routine surveillance of the materials should be conducted on a regular basis. The vermiculite has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, high-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
- Asbestos-containing vinyl sheet flooring was observed to be in good to fair condition at the time of the investigation. Asbestos-containing vinyl sheet flooring was observed in Building M1 (Rooms 1-4 and 1-5), Building M3 (Rooms 1-5 and 1-6), Building M6 (Rooms 1-4 and 1-5), and Building M8 (Rooms 1-1 and 1-2). Routine surveillance of the materials should be conducted on a regular basis. The vinyl sheet flooring has been assigned an Action Level 5/7, as per the PSPC Asbestos Management Standard. If the material is to be removed, high-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
- Asbestos-containing, duct paper was observed to be in good condition at the time of the investigation. Asbestos-containing duct paper was observed in Building M1 (Rooms 1-1, 1-2, and 1-3), Building M3 (Rooms 1-1, 1-2, 1-3, 1-4, and 1-7), Building M5 (Rooms 1-1, 1-2, 1-3, 1-4, 1-5, and 1-6) and Building M6 (Rooms 1-1, 1-2, 1-3, 1-4, 1-5, 1-6, B-1, B-2, B-3, B-4, and B-6). Routine surveillance of the materials should be conducted on a regular basis. The duct paper has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, low-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
- Asbestos-containing aircell insulation was observed to be in poor condition at the time of the investigation. Asbestos-containing aircell insulation was observed in Building M6 (Room B-4). The aircell insulation in poor condition has been assigned an Action Level of 3. There is no immediate risk to staff as the building is currently unoccupied. Removal of the drywall should be completed if the building is to be re-occupied, prior to renovations or prior to demolition of the building.
- Asbestos-containing leveling compound was observed to be in good condition at the time of the investigation. Asbestos-containing leveling compound was observed under the flooring in Building M6 (Room 1-2). Routine surveillance of the materials should be conducted on a regular basis. The leveling compound has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, moderate-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.
- Asbestos-containing stucco was observed to be in good condition at the time of the investigation. Asbestos-containing stucco was observed on the exterior walls of Building M3. Routine surveillance of the materials should be conducted on a regular basis. The stucco has been assigned an Action Level of 7, as per the PSPC Asbestos Management Standard. If the material is to be removed, moderate-risk work procedures must be followed as per the PSPC Asbestos Management Standard and the Alberta Asbestos Abatement Manual, dated 2012.

Notification must be given to Alberta OH&S 72 hours prior to beginning the activities that may release asbestos fibers. Asbestos abatement must be completed by workers certified from Alberta

OH&S. Throughout the abatement activities, appropriate air monitoring and inspections should be conducted by qualified personnel to demonstrate that work procedures are effective, asbestos is contained, and the waste is handled appropriately. It is recommended that a proper scope of work be developed that details the proper removal of identified ACM.

The abatement should be completed by workers certified by Alberta Workplace Health and Safety. Throughout the abatement activities, appropriate air monitoring and inspection should be conducted by qualified personnel to ensure all contamination is contained and ACM are disposed of appropriately.

2. The survey was non-destructive in nature; therefore, ACM's may be present within fixed ceilings, wall cavities, or other inaccessible locations. If suspect material is found during renovation or demolition activities, they should be positively identified and disposed of appropriately.

8.0 LIMITATIONS

The conclusions and recommendations contained in this assessment report are based upon professional opinions with regard to the subject matter. These opinions are in accordance with currently accepted environmental assessment standards and practices applicable to these locations and are subject to the following inherent limitations:

1. The data and findings presented in this report are valid as of the dates of the investigations. The passage of time, manifestation of latent conditions or occurrence of future events may warrant further exploration at the properties, analysis of the data, and re-evaluation of the findings, observations, and conclusions expressed in this report.
2. The data reported and the findings, observations and conclusions expressed in this report are limited by the Scope of Work. The Scope of Work was defined by the request of the client, the time and budgetary constraints imposed by the client, and availability of access to the properties.
3. Because of the limitations stated above, the findings, observations and conclusions expressed by EHS^P in this report are not, and should not be, considered an opinion concerning compliance of any past or present owner or operator of the site with any federal, provincial or local laws or regulations.
4. No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon site conditions in existence at the time of investigation.
5. EHS^P assessment reports present professional opinions and findings of a scientific and technical nature. While attempts were made to relate the data and findings to applicable environmental laws and regulations, the report shall not be construed to offer legal opinion or representations as to the requirements of, nor compliance with, environmental laws, rules, regulations or policies of federal, provincial, or local governmental agencies. Any use of the assessment report constitutes acceptance of the limits of EHS^P's liability. EHS^P's liability extends only to its client and not to other parties who may obtain this assessment report. Issues raised by the report should be reviewed by appropriate legal counsel.

Appendix A
Classification, Condition, and Accessibility
Meanook National Wildlife Area

Asbestos-Containing Material Survey
Environment and Climate Change Canada
Meanook National Wildlife Area
Meanook, Alberta
Project #: 456BM-18-004

CLASSIFICATION, CONDITION, AND ACCESSIBILITY

The Standard provides definitions and criteria for the assessment of ACM. The classification and condition definitions are provided in Table 1.1. Accessibility information is provided in Table 1.2.

Table 1.1: Classification and Condition

Parameter	Definition	
	Spray Applied ACM ⁽¹⁾	Mechanical Insulation ACM ⁽²⁾
Friable asbestos product	ACM, that when dry, can be crumbled, pulverized or powdered by hand pressure	
Debris from Friable ACM	The presence of fallen ACM is noted separately from the presumed friable ACM source and is referred to as DEBRIS.	
Debris from Damaged Non-Friable ACM	The presence of fallen ACM, from damaged non-friable ACM, is reported separately from the non-friable ACM source. Only fallen non-friable ACM, that has become friable, is reported as DEBRIS.	
GOOD Condition	Surface of material shows no significant signs of damage, deterioration or delamination. Up to one (1) percent visible damage to surface is allowed within range of GOOD	Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.
FAIR Condition	n/a ⁽³⁾	Minor penetrating damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.
POOR Condition	Sprayed materials show signs of damage, delamination or deterioration. More than one percent damage to surface of ACM spray.	Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

Notes:

- (1) Spray applied fireproofing, insulation, and texture finishes
- (2) Mechanical insulation; on boilers, breeching, ductwork, piping, tanks, equipment, etc.
- (3) n/a - not applicable

Table 1.2: Accessibility

Access	Definition
A	Areas of the building within reach (from floor level) of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users may result in disturbance of ACM not normally within reach from floor level.
B	Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder. Includes: frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.
C - Exposed	Areas of the building above 8'0" where use of a ladder is required to reach the ACM. Only refers to ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building.
C - Concealed	Areas of the building which require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces, etc. Observations are limited to the extent visible from the access points.
D	Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc., where demolition of the ceiling, wall or equipment, etc., is required to reach the ACM. Evaluation of condition and extent of ACM is limited or impossible, depending on the surveyor's ability to visually examine the materials in Access D.

ACTION LEVELS

The Standard requires responses as a result of the classification and accessibility of ACM. The formula for determining the appropriate action level as determined by PSPC is presented in Table 2.1. The action levels and their definitions are provided in Table 2.2.

Table 2.1: Action Matrix Table

Access	Condition			Debris
	Good	Fair	Poor	
A	Action 5/7 ⁽¹⁾	Action 5/7 ⁽²⁾	Action 3	Action 1
B	Action 7	Action 6/5 ⁽³⁾	Action 3	Action 1
C - Exposed	Action 7	Action 6	Action 4	Action 2
C - Concealed	Action 7	Action 7	Action 4	Action 2
D	Action 7	Action 7	Action 7	Action 7

Notes:

- (1) If material in Access A/Good condition is not removed Action 7 is required
- (2) If material in Access A/Fair condition is not removed Action 6 is required
- (3) Remove ACM in Access B/Fair condition if ACM is likely to be disturbed

Table 2.2: Action Level

Action	Definition
1	<p>Immediate Clean-up of Debris That is Likely to be Disturbed Restrict access that is likely to cause a disturbance of the ACM DEBRIS and clean up ACM DEBRIS immediately. Utilize correct asbestos procedures. This action is required for compliance with regulatory requirements. This condition should immediately be reported.</p>
2	<p>Entry Into Areas With ACM Debris - Type 2 Precautions At locations where ACM DEBRIS can be isolated in lieu of removal or cleaned up, use appropriate means to limit entry to the area. Restrict access to the area to persons utilizing Type 2 asbestos-work precautions. The precautions will be required until the ACM DEBRIS has been cleaned up, and the source of the DEBRIS has been stabilized or removed.</p>
3	<p>ACM Removal Required for Compliance Remove ACM for compliance with regulatory requirements. Utilize asbestos procedures appropriate to the scope of the removal work.</p>
4	<p>Access into Areas Where ACM is Present and Likely to be Disturbed by Access - Type 2 Precautions Use Type 2 asbestos precautions when entry or access into an area is likely to disturb the ACM. ACTION 4 must be used until the ACM is removed (Use ACTION 1 or 2 if DEBRIS is present).</p>
5	<p>Proactive ACM Removal Remove ACM in lieu of repair, or at locations where the presence of asbestos in GOOD condition is not desirable</p>
6	<p>ACM Repair Repair ACM found in FAIR condition, and not likely to be damaged again or disturbed by normal use of the area or room. Upon completion of the repair work, treat ACM as material in GOOD condition and implement ACTION 7. If ACM is likely to be damaged or disturbed, during normal use of the area or room, implement ACTION 5.</p>
7	<p>Routine Surveillance Institute routine surveillance of the ACM. Trained workers or contractors must use appropriate asbestos precautions (Low-Risk, Moderate-Risk, High-Risk) during disturbance of the remaining ACM.</p>

Appendix B
Laboratory Certificates of Analysis - Asbestos
Meanook National Wildlife Area

Asbestos-Containing Material Survey
Environment and Climate Change Canada
Meanook National Wildlife Area
Meanook, Alberta
Project #: 456BM-18-004



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / CalgaryLab@EMSL.com

EMSL Canada Order: 651807933
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Attention: Amy Kadwell EHS Partnerships Ltd. 4940 - 87 Street NW Edmonton, AB T6E 5W3	Phone: (780) 395-0700 Fax: Received Date: 08/17/2018 9:00 AM Analysis Date: 08/22/2018 Collected Date: 08/14/2018
Project: MEANOOK	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M1 - 1 <small>651807933-0001</small>	FIREPLACE LIVING ROOM - BRICK	Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M1 - 2 <small>651807933-0002</small>	FIREPLACE LIVING ROOM - BRICK MORTAR	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M1 - 3 <small>651807933-0003</small>	LIVING ROOM - PLASTER	Beige Fibrous Homogeneous		5% Quartz 10% Vermiculite 85% Non-fibrous (Other)	<1% Actinolite
M1 - 4 <small>651807933-0004</small>	DUCT IN LIVING ROOM - DUCT PAPER	Beige Fibrous Homogeneous	5% Cellulose	45% Non-fibrous (Other)	50% Chrysotile
M1 - 4D <small>651807933-0005</small>	DUCT IN LIVING ROOM - DUCT PAPER	Beige Fibrous Homogeneous	5% Cellulose	45% Non-fibrous (Other)	50% Chrysotile
M1 - 5 <small>651807933-0006</small>	BEDROOM 1 - PLASTER	Beige Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M1 - 6 <small>651807933-0007</small>	BEDROOM 2 - PLASTER	Beige Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M1 - 7 <small>651807933-0008</small>	DUCT IN BEDROOM 2 - DUCT PAPER	Beige Fibrous Homogeneous	5% Cellulose	45% Non-fibrous (Other)	50% Chrysotile
M1 - 8 <small>651807933-0009</small>	BATHROOM - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M1 - 9 <small>651807933-0010</small>	BATHROOM - CAULKING	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M1 - 10-Vinyl Sheet Flooring <small>651807933-0011</small>	BATHROOM (TOP LAYER) - VINYL SHEET FLOORING (BROWN)	Brown Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
M1 - 10-Mastic <small>651807933-0011A</small>	BATHROOM (TOP LAYER) - VINYL SHEET FLOORING (BROWN)	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M1 - 11 <small>651807933-0012</small>	BATHROOM (BOTTOM LAYER) - VINYL SHEET FLOORING (BEIGE)	Beige Fibrous Homogeneous	3% Cellulose	77% Non-fibrous (Other)	20% Chrysotile
M1 - 12 <small>651807933-0013</small>	BATHROOM CEILING - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M1 - 13 <small>651807933-0014</small>	BEDROOM (NE) - DUCT PAPER	Beige Fibrous Homogeneous	5% Cellulose	45% Non-fibrous (Other)	50% Chrysotile

Initial report from: 08/23/2018 14:35:56



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / CalgaryLab@EMSL.com

EMSL Canada Order: 651807933
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M1 - 14 <small>651807933-0015</small>	BEDROOM (NE) - PLASTER	Beige Non-Fibrous Homogeneous		5% Quartz 5% Vermiculite 90% Non-fibrous (Other)	None Detected
M1 - 15 <small>651807933-0016</small>	KITCHEN - DWJC	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M1 - 16-Vinyl Sheet Flooring <small>651807933-0017</small>	KITCHEN - BROWN VSF	Brown Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
M1 - 16-Mastic <small>651807933-0017A</small>	KITCHEN - BROWN VSF	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M1 - 17 <small>651807933-0018</small>	KITCHEN - WHITE WSF	White Fibrous Homogeneous	3% Cellulose	77% Non-fibrous (Other)	20% Chrysotile
M1 - 18 <small>651807933-0019</small>	BASEMENT - BROWN VFT	Brown Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
M1 - 19 <small>651807933-0020</small>	BASEMENT - WHITE VFT	White Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
M1 - 20 <small>651807933-0021</small>	BASEMENT - WHITE TAPE OF DUCTS	Brown/Beige Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
M1 - 21 <small>651807933-0022</small>	EXTERIOR - SHINGLES	Black Fibrous Homogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected

Analyst(s) _____
Kate Fee (24)

Jefferson Salvador, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 08/23/2018 14:35:56



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / CalgaryLab@EMSL.com

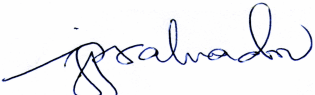
EMSL Canada Order: 651807931
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Attention: Lucas Sheptycki EHS Partnerships Ltd. 4940 - 87 Street NW Edmonton, AB T6E 5W3	Phone: (780) 395-0700 Fax: Received Date: 08/17/2018 9:00 AM Analysis Date: 08/22/2018 Collected Date: 08/14/2018
Project: MEANOOK BUILDING M2	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M2 - 1A <small>651807931-0001</small>	CEILING SPACE - VERMICULITE INSULATION	Brown/Various Fibrous Homogeneous		100% Vermiculite	<1% Actinolite
M2 - 1B <small>651807931-0002</small>	CEILING SPACE - VERMICULITE INSULATION	Brown/Various Fibrous Homogeneous		100% Vermiculite	<1% Actinolite
M2 - 2-Shingle 1 <small>651807931-0003</small>	ROOF - GREEN SHINGLES	Black/Green Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
M2 - 2-Shingle 2 <small>651807931-0003A</small>	ROOF - GREEN SHINGLES	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected

Analyst(s) _____
Leanne Roy (4)


Jefferson Salvador, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 08/23/2018 14:48:30



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / CalgaryLab@EMSL.com

EMSL Canada Order: 651807944
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Attention: Lucas Sheptycki EHS Partnerships Ltd. 4940 - 87 Street NW Edmonton, AB T6E 5W3	Phone: (780) 395-0700 Fax: Received Date: 08/17/2018 9:00 AM Analysis Date: 08/22/2018 Collected Date: 08/14/2018
Project: MEANOOK ASBESTOS SURVEY	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M3-1 651807944-0001	BEDROOM (NE) - PERIMETER WALL - DWJC	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
M3-2 651807944-0002	HALLWAY - DEMISING WALL - DWJC	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
M3-3 651807944-0003	BEDROOM (SE) - PERIMETER WALL - DWJC	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
M3-4 651807944-0004	BEDROOM (SE) - PERIMETER WALL - DUCT PAPER	Beige Fibrous Homogeneous		30% Non-fibrous (Other)	70% Chrysotile
M3-5 651807944-0005	BATHROOM - DEMISING WALL - DWJC	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M3-6 651807944-0006	BATHROOM - GREY VSF	Beige Fibrous Homogeneous	5% Cellulose	75% Non-fibrous (Other)	20% Chrysotile
M3-7 651807944-0007	BATHROOM - AROUND TUB - WHITE CAULK	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M3-8 651807944-0008	HALLWAY - DUCT PAPER	Beige Fibrous Homogeneous		30% Non-fibrous (Other)	70% Chrysotile
M3-9 651807944-0009	KITCHEN - GREY VSF	Beige Fibrous Homogeneous	5% Cellulose	75% Non-fibrous (Other)	20% Chrysotile
M3-10-Joint Compound 1 651807944-0010	LIVING ROOM - CEILING - DWJC	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M3-10-Joint Compound 2 651807944-0010A	LIVING ROOM - CEILING - DWJC	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
M3-11-Joint Compound 1 651807944-0011	KITCHEN - CEILING - DWJC	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M3-11-Joint Compound 2 651807944-0011A	KITCHEN - CEILING - DWJC	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
M3-9D 651807944-0012	KITCHEN - GREY VSF	Beige Fibrous Homogeneous	5% Cellulose	75% Non-fibrous (Other)	20% Chrysotile
M3-12-Vinyl Floor Tile 651807944-0013	BASEMENT - GREY VFT	Gray Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile

Initial report from: 08/23/2018 14:53:58



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

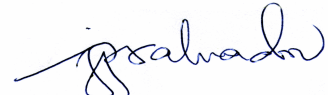
<http://www.EMSL.com / CalgaryLab@EMSL.com>

EMSL Canada Order: 651807944
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M3-12-Mastic <small>651807944-0013A</small>	BASEMENT - GREY VFT	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M3-13 <small>651807944-0014</small>	BASEMENT - BRICK MORTAR	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M3-14 <small>651807944-0015</small>	BASEMENT - BRICK	Red Non-Fibrous Homogeneous		6% Quartz 94% Non-fibrous (Other)	None Detected
M3-15 <small>651807944-0016</small>	ROOF - CAULK	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M3-16 <small>651807944-0017</small>	EXTERIOR WALL (WEST) - STUCCO	White Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	<1% Chrysotile
M3-17 <small>651807944-0018</small>	EXTERIOR WALL (SOUTH) - STUCCO	White Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	<1% Chrysotile
M3-18-Texture 1 <small>651807944-0019</small>	EXTERIOR WALL (EAST) - STUCCO	White Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	<1% Chrysotile
M3-18-Texture 2 <small>651807944-0019A</small>	EXTERIOR WALL (EAST) -STUCCO	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M3-19-Shingle 1 <small>651807944-0020</small>	ROOF - SHINGLES	Black/Green Non-Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
M3-19-Shingle 2 <small>651807944-0020A</small>	ROOF - SHINGLES	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
M3-20 <small>651807944-0021</small>	EXTERIOR DOOR FRAME - CAULK	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)
Leanne Roy (26)


Jefferson Salvador, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 08/23/2018 14:53:58



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / CalgaryLab@EMSL.com

EMSL Canada Order: 651807932
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Attention: Lucas Sheptycki EHS Partnerships Ltd. 4940 - 87 Street NW Edmonton, AB T6E 5W3	Phone: (780) 395-0700 Fax: Received Date: 08/17/2018 9:00 AM Analysis Date: 08/22/2018 Collected Date: 08/14/2018
Project: MEANOOK - M4	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M4 - 1-Shingle 1 <small>651807932-0001</small>	EXTERIOR ROOF - GREEN SHINGLES	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
M4 - 1-Shingle 2 <small>651807932-0001A</small>	EXTERIOR ROOF - GREEN SHINGLES	Black/Green Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
M4 - 2-Skim Coat <small>651807932-0002</small>	EXTERIOR WALL (SOUTH) - STUCCO	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M4 - 2-Base Coat <small>651807932-0002A</small>	EXTERIOR WALL (SOUTH) - STUCCO	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M4 - 3-Texture 1 <small>651807932-0003</small>	EXTERIOR WALL (EAST) - STUCCO	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M4 - 3-Texture 2 <small>651807932-0003A</small>	EXTERIOR WALL (EAST) - STUCCO	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M4 - 4 <small>651807932-0004</small>	EXTERIOR WALL (WEST) - STUCCO	Gray/White Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M4 - 5 <small>651807932-0005</small>	NORTH PERIMETER WALL - DWJC	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M4 - 6 <small>651807932-0006</small>	EAST PERIMETER WALL - DWJC	White Non-Fibrous Homogeneous		5% Perlite 95% Non-fibrous (Other)	None Detected
M4 - 7 <small>651807932-0007</small>	CHIMNEY - BRICK MORTAR	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M4 - 8 <small>651807932-0008</small>	CHIMNEY - BRICK	Red Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected

Analyst(s)
Leanne Roy (11)

Jefferson Salvador, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 08/23/2018 14:46:11



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com / CalgaryLab@EMSL.com>

EMSL Canada Order: 651807939

Customer ID: 55EHAB42

Customer PO: 456BM18004

Project ID:

Attention: Lucas Sheptycki
EHS Partnerships Ltd.
4940 - 87 Street NW
Edmonton, AB T6E 5W3

Phone: (780) 395-0700

Fax:

Received Date: 08/17/2018 9:00 AM

Analysis Date: 08/23/2018

Collected Date: 08/14/2018

Project: MEANOOK M5

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M5 - 1-Vinyl Sheet Flooring <small>651807939-0001</small>	KITCHEN FLOOR - 1ST LAYER - VINYL SHEET FLOORING - WOOD DESIGN	Brown Fibrous Homogeneous	5% Glass	95% Non-fibrous (Other)	None Detected
M5 - 1-Mastic <small>651807939-0001A</small>	KITCHEN FLOOR - 1ST LAYER - VINYL SHEET FLOORING - WOOD DESIGN	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M5 - 2 <small>651807939-0002</small>	KITCHEN FLOOR - 2ND LAYER - VSF - WHITE WITH PATTERN	White/Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
M5 - 3-Vinyl Sheet Flooring <small>651807939-0003</small>	KITCHEN FLOOR - 3RD LAYER - VSF - BROWN	Brown Fibrous Homogeneous	25% Cellulose	75% Non-fibrous (Other)	None Detected
M5 - 3-Mastic <small>651807939-0003A</small>	KITCHEN FLOOR - 3RD LAYER - VSF - BROWN	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M5 - 4-Vinyl Sheet Flooring <small>651807939-0004</small>	BEDROOM (NORTH WEST) - UNDER CARPET - VSF - BROWN - BEIGE	Brown/Beige Fibrous Homogeneous	25% Cellulose	75% Non-fibrous (Other)	None Detected
M5 - 4-Mastic <small>651807939-0004A</small>	BEDROOM (NORTH WEST) - UNDER CARPET - VSF - BROWN - BEIGE	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M5 - 5 <small>651807939-0005</small>	BATHROOM - UNDER FLOORING - BLACK MASTIC	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M5 - 6 <small>651807939-0006</small>	KITCHEN - DUCT PAPER	Gray Fibrous Homogeneous		20% Non-fibrous (Other)	80% Chrysotile
M5 - 7 <small>651807939-0007</small>	KITCHEN - DEMISING WALL - DWJC	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M5 - 8 <small>651807939-0008</small>	KITCHEN - PERIMETER WALL - DWJC	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M5 - 9-Skim Coat <small>651807939-0009</small>	BATHROOM - DEMISING WALL - DWJC	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M5 - 9-Base Coat <small>651807939-0009A</small>	BATHROOM - DEMISING WALL - DWJC	Beige Fibrous Homogeneous	<1% Hair	10% Quartz 90% Non-fibrous (Other)	None Detected
M5 - 10-Base Coat <small>651807939-0010</small>	BEDROOM (NW) - PLASTER	Beige Fibrous Homogeneous	<1% Hair	10% Quartz 5% Vermiculite 85% Non-fibrous (Other)	None Detected

Initial report from: 08/23/2018 14:30:51



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / CalgaryLab@EMSL.com

EMSL Canada Order: 651807939
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M5 - 11 <small>651807939-0011</small>	LIVING ROOM - PLASTER	Beige Fibrous Homogeneous	<1% Hair	10% Quartz 5% Vermiculite 85% Non-fibrous (Other)	None Detected
M5 - 12-Vinyl Sheet Flooring <small>651807939-0012</small>	BSMT: STAIRWELL - WOOD - DESIGN VSF	Various/Green/Beige Fibrous Homogeneous	20% Cellulose 10% Synthetic	70% Non-fibrous (Other)	None Detected
M5 - 12-Mastic <small>651807939-0012A</small>	BSMT: STAIRWELL - WOOD - DESIGN VSF	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M5 - 13 <small>651807939-0013</small>	BSMT: BEDROOM (NW) - MULTI - COLOUR VSF	Various/Green/Beige Fibrous Homogeneous	20% Cellulose 10% Synthetic	70% Non-fibrous (Other)	None Detected
M5 - 14-Vinyl Floor Tile <small>651807939-0014</small>	BSMT: BEDROOM (NE) - GREY VINYL FLOOR TILE	Gray Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
M5 - 14-Mastic <small>651807939-0014A</small>	BSMT: BEDROOM (NE) - GREY VINYL FLOOR TILE	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M5 - 15 <small>651807939-0015</small>	BSMT: BEDROOM (NE) - 2' X 2' CEILING TILE PLAIN	Brown/White Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
M5 - 16-Vinyl Sheet Flooring <small>651807939-0016</small>	BSMT: BATHROOM - GREY SQUAR DESIGN VSF	Gray Fibrous Homogeneous	20% Cellulose 5% Glass	75% Non-fibrous (Other)	None Detected
M5 - 16-Mastic <small>651807939-0016A</small>	BSMT: BATHROOM - GREY SQUAR DESIGN VSF	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M5 - 17 <small>651807939-0017</small>	BSMT: BATHROOM - PERIMETER WALL - DWJC	Beige Non-Fibrous Homogeneous	2% Fibrous (Other)	98% Non-fibrous (Other)	None Detected
M5 - 18 <small>651807939-0018</small>	BSMT: BATHROOM 2' X 2' CEILING TILE PLAIN	Brown/White Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
M5 - 19 <small>651807939-0019</small>	BSMT: FURNACE ROOM - DUCT PAPER	Gray Fibrous Homogeneous	20% Cellulose	20% Non-fibrous (Other)	60% Chrysotile
M5 - 20A <small>651807939-0020</small>	CEILING SPACE - VERMICULITE INSULATION	Brown/Various Fibrous Homogeneous		100% Vermiculite	<1% Actinolite
M5 - 20B <small>651807939-0021</small>	CEILING SPACE - VERMICULITE INSULATION	Brown/Various Fibrous Homogeneous		100% Vermiculite	<1% Tremolite
M5 - 20C <small>651807939-0022</small>	CEILING SPACE - VERMICULITE INSULATION	Brown/Various Fibrous Homogeneous		100% Vermiculite	<1% Actinolite
M5 - 21 <small>651807939-0023</small>	STAIRWELL - WALL - TEXTURE COAT	Beige Fibrous Homogeneous	<1% Hair	10% Quartz 5% Vermiculite 85% Non-fibrous (Other)	None Detected
M5 - 22 <small>651807939-0024</small>	EXTERIOR WALL - STUCCO	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M5 - 23 <small>651807939-0025</small>	ROOF - GREEN SHINGLES	Black/Green Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected

Initial report from: 08/23/2018 14:30:51



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / CalgaryLab@EMSL.com

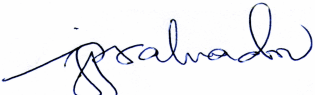
EMSL Canada Order: 651807939
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M5 - 24 <small>651807939-0026</small>	EXTERIOR WALLS - BASE - PARGING	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M5 - 25 <small>651807939-0027</small>	EXTERIOR - SE SIDE - BRICK MORTAR	Gray Non-Fibrous Homogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
M5 - 26 <small>651807939-0028</small>	EXTERIOR - SE SIDE - BRICK	Red Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected

Analyst(s)

 Brett Olsen (35)



 Jefferson Salvador, Laboratory Manager
 or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 08/23/2018 14:30:51



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / CalgaryLab@EMSL.com

EMSL Canada Order: 651807950
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Attention: Lucas Sheptycki EHS Partnerships Ltd. 4940 - 87 Street NW Edmonton, AB T6E 5W3	Phone: (780) 395-0700 Fax: Received Date: 08/17/2018 9:00 AM Analysis Date: 08/23/2018 Collected Date: 08/14/2018
Project: MEANOOK ASBESTOS SURVEY	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M6-1-Vinyl Floor Tile <small>651807950-0001</small>	KITCHEN (R1) - VINYL FLOOR TILE / MASTIC (BEIGE)	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-1-Mastic <small>651807950-0001A</small>	KITCHEN (R1) - VINYL FLOOR TILE / MASTIC (BEIGE)	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-2-Vinyl Sheet Flooring <small>651807950-0002</small>	KITCHEN (UNDER BEIGE) - VINYL SHEET FLOORING / MASTIC (PINK)	Pink Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-2-Mastic / Leveler <small>651807950-0002A</small>	KITCHEN (UNDER BEIGE) - VINYL SHEET FLOORING / MASTIC (PINK) <i>Result is a composite of mastic and leveler.</i>	Gray/Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-3 <small>651807950-0003</small>	KITCHEN (UNDER PINK) - VINYL SHEET FLOORING (YELLOW)	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-4 <small>651807950-0004</small>	KITCHEN (UNDER VSF) - GREY FLOOR LEVELING COMPOUND	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-1D-Vinyl Floor Tile <small>651807950-0005</small>	ROOM 2 - VINYL FLOOR TILE / MASTIC (BEIGE)	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-1D-Mastic <small>651807950-0005A</small>	ROOM 2 - VINYL FLOOR TILE / MASTIC (BEIGE)	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-5 <small>651807950-0006</small>	PERIMETER ROOM 2 - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-6 <small>651807950-0007</small>	ROOM 3 - VINYL SHEET FLOORING (YELLOW)	Yellow Fibrous Homogeneous	5% Cellulose	75% Non-fibrous (Other)	20% Chrysotile
M6-7 <small>651807950-0008</small>	ROOM 3 - VINYL SHEET FLOORING (GREY) <i>Small amount of mastic included in analysis.</i>	Gray/Yellow Fibrous Homogeneous	20% Cellulose 5% Glass	75% Non-fibrous (Other)	None Detected
M6-8 <small>651807950-0009</small>	ROOM 3 DEMISING - DRYWALL JOINT COMPOUND	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-9 <small>651807950-0010</small>	ROOM 4 - VINYL SHEET FLOORING (YELLOW)	Yellow Fibrous Homogeneous	5% Cellulose	75% Non-fibrous (Other)	20% Chrysotile
M6-10-Joint Compound 1 <small>651807950-0011</small>	ROOM 4 PERIMETER - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 08/23/2018 14:51:38



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / CalgaryLab@EMSL.com

EMSL Canada Order: 651807950
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M6-10-Joint Compound 2 651807950-0011A	ROOM 4 PERIMETER - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
M6-11 651807950-0012 M6-12-	ROOM 4 WALL DUCT - DUCT PAPER	Beige Fibrous Homogeneous	5% Cellulose	35% Non-fibrous (Other)	60% Chrysotile
Shingle 651807950-0013	ROOF - SHINGLES AND PAPER BACKING	Black/Green Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
M6-12-Tar Paper 651807950-0013A	ROOF - SHINGLES AND PAPER BACKING	Black Fibrous Homogeneous	50% Cellulose	50% Non-fibrous (Other)	None Detected
M6-13 651807950-0014	ENTRANCE - CEILING TILE 2 X 2	Tan/White Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
M6-14 651807950-0015	ROOM 2 - CEILING TILE 2 X 2	Tan/White Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
M6-15-Vinyl Floor Tile 651807950-0016	ROOM 6 - VINYL FLOOR TILE (BEIGE)	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-15-Mastic / Leveler 651807950-0016A	ROOM 6 - VINYL FLOOR TILE (BEIGE)	Gray/Black Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
M6-16-Vinyl Floor Tile 651807950-0017	ROOM 8 - VINYL FLOOR TILE (BEIGE)	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-16-Mastic / Leveler 651807950-0017A	ROOM 8 - VINYL FLOOR TILE (BEIGE)	Black/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<1% Chrysotile
<i>Result is a composite of mastic and leveler.</i>					
M6-17 651807950-0018	ROOM 8 - 2 X 4 CEILING TILE (PINHOLES)	Gray/White Fibrous Homogeneous	40% Cellulose 20% Min. Wool	30% Perlite 10% Non-fibrous (Other)	None Detected
M6-18 651807950-0019	ROOM 5 - 2 X 4 CEILING TILE (PINHOLES)	Gray/White Fibrous Homogeneous	40% Cellulose 20% Min. Wool	30% Perlite 10% Non-fibrous (Other)	None Detected
M6-19 651807950-0020	ROOM 6 - 2 X 4 CEILING TILE (PINHOLES)	Gray/White Fibrous Homogeneous	40% Cellulose 20% Min. Wool	30% Perlite 10% Non-fibrous (Other)	None Detected
M6-20 651807950-0021	ROOM 6 CEILING SPACE - DUCT PAPER	Beige Fibrous Homogeneous	10% Cellulose	30% Non-fibrous (Other)	60% Chrysotile
M6-21 651807950-0022	BASEMENT BATHROOM (ABOVE SINK) - AIRCELL INSULATION	Beige Fibrous Homogeneous	20% Cellulose	30% Non-fibrous (Other)	50% Chrysotile
M6-22 651807950-0023	BASEMENT BATHROOM - AIRCELL INSULATION	Beige Fibrous Homogeneous	20% Cellulose	30% Non-fibrous (Other)	50% Chrysotile
M6-23 651807950-0024	ROOM 5 - BRICK MORTAR	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M6-24 651807950-0025	ROOM 5 - BRICK	Red Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected

Initial report from: 08/23/2018 14:51:38



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com / CalgaryLab@EMSL.com>

EMSL Canada Order: 651807950
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M6-25 <small>651807950-0026</small>	BASEMENT DEMISING - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M6-26 <small>651807950-0027</small>	BASEMENT DEMISING - DRYWALL JOINT COMPOUND	White Non-Fibrous Homogeneous		30% Perlite 70% Non-fibrous (Other)	None Detected
M6-27 <small>651807950-0028</small>	BASEMENT PERIMETER - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		20% Perlite 80% Non-fibrous (Other)	None Detected
M6-28 <small>651807950-0029</small>	CHINMEY (INSIDE) - CEMENT BOARD	Gray Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
M6-29 <small>651807950-0030</small>	NORTH EXTERIOR - STUCCO	White Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M6-30 <small>651807950-0031</small>	EAST EXTERIOR - STUCCO	Gray/White Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M6-31 <small>651807950-0032</small>	SOUTH EXTERIOR - STUCCO	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M6-32 <small>651807950-0033</small>	WINDOWS (EXTERIOR) - CAULKING	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s) _____

Leanne Roy (40)

Jefferson Salvador, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 08/23/2018 14:51:38



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com / CalgaryLab@EMSL.com>

EMSL Canada Order: 651807947
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Attention: Lucas Sheptycki EHS Partnerships Ltd. 4940 - 87 Street NW Edmonton, AB T6E 5W3	Phone: (780) 395-0700 Fax: Received Date: 08/17/2018 9:00 AM Analysis Date: 08/22/2018 Collected Date: 08/14/2018
Project: MEANOOK ASBESTOS SURVEY	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M7 - 1-Shingle 1 <small>651807947-0001</small>	ROOF - SHINGLES AND TAR	Black/Green Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
M7 - 1-Shingle 2 <small>651807947-0001A</small>	ROOF - SHINGLES AND TAR	Black Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
M7 - 2-Texture 1 / Texture 2 <small>651807947-0002</small> <i>Inseparable sample layers combined prior to analysis.</i>	WEST EXTERIOR - STUCCO	Gray/White Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M7 - 3-Texture 1 / Texture 2 <small>651807947-0003</small> <i>Inseparable sample layers combined prior to analysis.</i>	NORTH EXTERIOR - STUCCO	Gray/White Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M7 - 4 <small>651807947-0004</small>	EAST EXTERIOR - STUCCO	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M7 - 5 <small>651807947-0005</small>	WALL - PLASTER	Beige Fibrous Homogeneous	15% Cellulose	15% Vermiculite 60% Non-fibrous (Other)	10% Chrysotile
M7 - 6 <small>651807947-0006</small>	CEILING - PLASTER	Beige Fibrous Homogeneous	15% Cellulose	15% Vermiculite 60% Non-fibrous (Other)	10% Chrysotile
M7 - 7 <small>651807947-0007</small>	WALL - PLASTER	Beige Fibrous Homogeneous	15% Cellulose	15% Vermiculite 60% Non-fibrous (Other)	10% Chrysotile

Analyst(s) _____
Leanne Roy (8)

Jefferson Salvador, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 08/23/2018 14:49:33



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com / CalgaryLab@EMSL.com>

EMSL Canada Order: 651807948
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Attention: Lucas Sheptycki EHS Partnerships Ltd. 4940 - 87 Street NW Edmonton, AB T6E 5W3	Phone: (780) 395-0700 Fax: Received Date: 08/17/2018 9:00 AM Analysis Date: 08/23/2018 Collected Date: 08/14/2018
Project: MEANOOK ASBESTOS SURVEY	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M8-1 651807948-0001	LABORATORY 2 - VINYL SHEET FLOORING (STONE PATTERN)	Beige Fibrous Homogeneous		80% Non-fibrous (Other)	20% Chrysotile
M8-2 651807948-0002	LABORATORY 2 (UNDER VSF) - LEVELING COMPOUND (YELLOW)	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M8-3-Stucco 651807948-0003	LABORATORY 2 - PARGING MUD	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M8-3-Parging Mud 651807948-0003A	LABORATORY 2 - PARGING MUD	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M8-3-Parging 651807948-0003B	LABORATORY 2 - PARGING MUD	Gray Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
M8-4 651807948-0004	LABORATORY 1 - TEXTURE COAT	White Non-Fibrous Homogeneous		2% Quartz 98% Non-fibrous (Other)	None Detected
M8-5 651807948-0005	LABORATORY 1 (UNDER VSF) - FLOOR LEVELING COMPOUND (YELLOW)	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M8-6 651807948-0006	LABORATORY 2 - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M8-7 651807948-0007	LABORATORY 1 - VINYL SHEET FLOORING (STONE PATTERN)	Beige Fibrous Homogeneous		80% Non-fibrous (Other)	20% Chrysotile
M8-8 651807948-0008	LABORATORY 1 - BLACK COUNTERTOP	Brown/Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M8-9 651807948-0009	GARAGE - GREY MORTAR	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M8-10 651807948-0010	FUME HOOD LAB 2 - DARK GREY CEMENT BOARD	Gray Fibrous Homogeneous		50% Non-fibrous (Other)	50% Chrysotile
M8-11 651807948-0011	FUME HOOD LAB 2 - LIGHT GREY CEMENT BAORD	Beige Fibrous Homogeneous		70% Non-fibrous (Other)	10% Amosite 20% Chrysotile
M8-12 651807948-0012	WEST EXTERIOR - STUCCO	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected

Initial report from: 08/23/2018 14:43:34



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

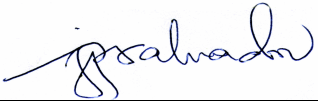
<http://www.EMSL.com> / CalgaryLab@EMSL.com

EMSL Canada Order: 651807948
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M8-13 <small>651807948-0013</small>	SOUTH EXTERIOR - STUCCO	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M8-14 <small>651807948-0014</small>	EAST EXTERIOR - STUCCO	White Non-Fibrous Homogeneous		2% Quartz 98% Non-fibrous (Other)	None Detected
M8-15 <small>651807948-0015</small>	EXTERIOR WALL - CAULKING	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M8-16-Tar <small>651807948-0016</small>	ROOF - SHINGLES AND TAR	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
M8-16-Tar Felt <small>651807948-0016A</small>	ROOF - SHINGLES AND TAR	Black Fibrous Homogeneous	25% Cellulose	75% Non-fibrous (Other)	None Detected

Analyst(s) _____
 Kate Fee (19)



Jefferson Salvador, Laboratory Manager
 or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 08/23/2018 14:43:34



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com / CalgaryLab@EMSL.com>

EMSL Canada Order: 651807946
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Attention: Lucas Sheptycki EHS Partnerships Ltd. 4940 - 87 Street NW Edmonton, AB T6E 5W3	Phone: (780) 395-0700 Fax: Received Date: 08/17/2018 9:00 AM Analysis Date: 08/22/2018 Collected Date: 08/14/2018
Project: MEANOOK ASBESTOS SURVEY	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M9-1-Shingle 1 <small>651807946-0001</small>	ROOF - SHINGLES AND TAR	Black/Green Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
M9-1-Shingle 2 <small>651807946-0001A</small>	ROOF - SHINGLES AND TAR	Black Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
M9-2 <small>651807946-0002</small>	WEST WALL - STUCCO	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M9-3 <small>651807946-0003</small>	NORTH WALL - STUCCO	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
M9-4 <small>651807946-0004</small>	EAST WALL - STUCCO	Gray/White Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
M9-5 <small>651807946-0005</small>	DIVIDING WALL - DRYWALL JOINT COMPOUND	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M9-6 <small>651807946-0006</small>	EAST WALL - CAULKING (GREY)	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s) _____
Leanne Roy (7)

Jefferson Salvador, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 08/23/2018 14:47:34



EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / CalgaryLab@EMSL.com

EMSL Canada Order: 651807945
Customer ID: 55EHAB42
Customer PO: 456BM18004
Project ID:

Attention: Lucas Sheptycki EHS Partnerships Ltd. 4940 - 87 Street NW Edmonton, AB T6E 5W3	Phone: (780) 395-0700 Fax: Received Date: 08/17/2018 9:00 AM Analysis Date: 08/22/2018 Collected Date: 08/14/2018
Project: MEANOOK ASBESTOS SURVEY	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
M10 - 1-Vinyl Sheet Flooring 651807945-0001	M10 BUILDING (BURNT DOWN) - VINYL SHEET FLOORING (BEIGE)	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M10 - 1-Mastic 651807945-0001A	M10 BUILDING (BURNT DOWN) - VINYL SHEET FLOORING (BEIGE)	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
M10 - 1-Leveler 651807945-0001B	M10 BUILDING (BURNT DOWN) - VINYL SHEET FLOORING (BEIGE)	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s) _____
Kate Fee (3)

Jefferson Salvador, Laboratory Manager
or Other Approved Signatory

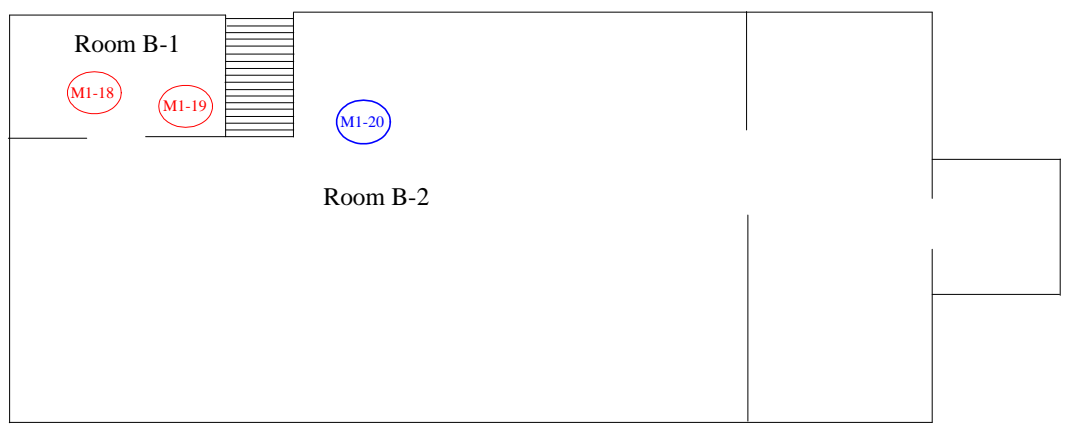
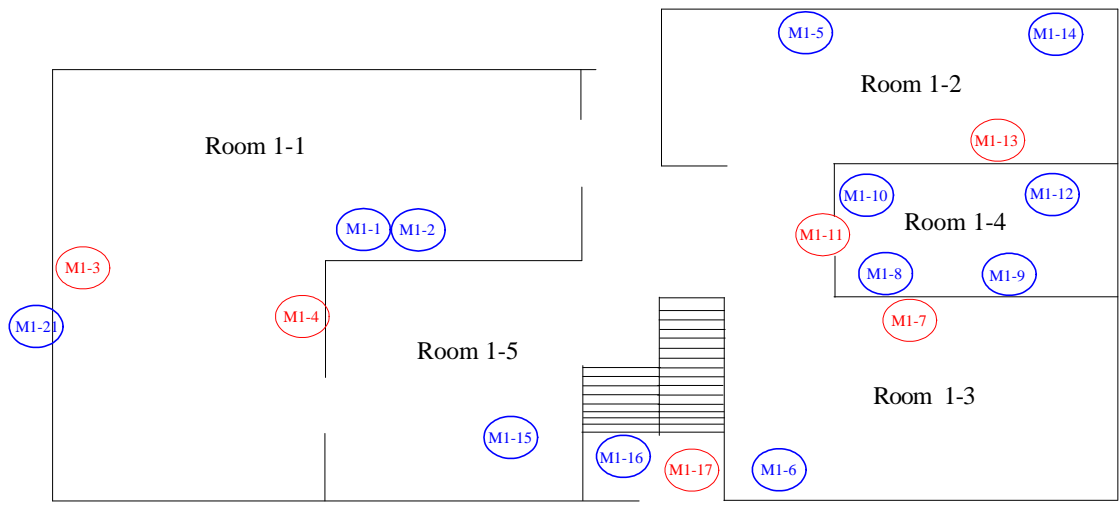
EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 08/23/2018 14:42:06

Appendix C
Floor Plans
Meanook National Wildlife Area

Asbestos-Containing Material Survey
Environment and Climate Change Canada
Meanook National Wildlife Area
Meanook, Alberta
Project #: 456BM-18-004



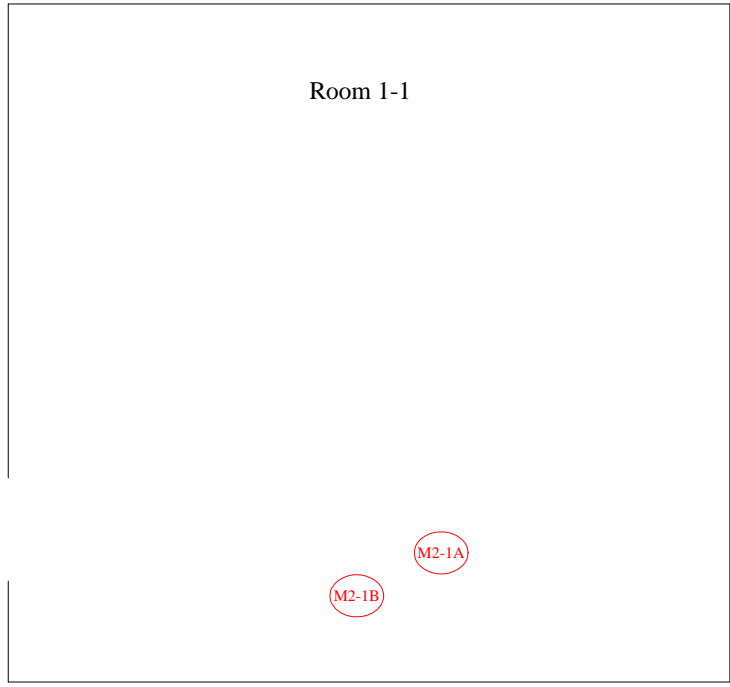

EHS Partnerships Ltd.
 4303 - 11 Street SE
 Edmonton, AB T6E 5W3
 Phone: 780.395.0700

LEGEND

	Negative Asbestos Sampling Locations
	Positive Asbestos Sampling Locations

SITE Meanook National Wildlife Area M1 Caretakers Residence		
CLIENT PSPC / ECCC		
PROJECT#	SCALE	REFERENCE
456BM-18-004	NTS	EHSP Site Sketch

DATE	REV	DRAWN BY
Sept 2018	1.0	LS
DWG#		
1 / of 10		



Room 1-1

M2-2



M2-1A

M2-1B



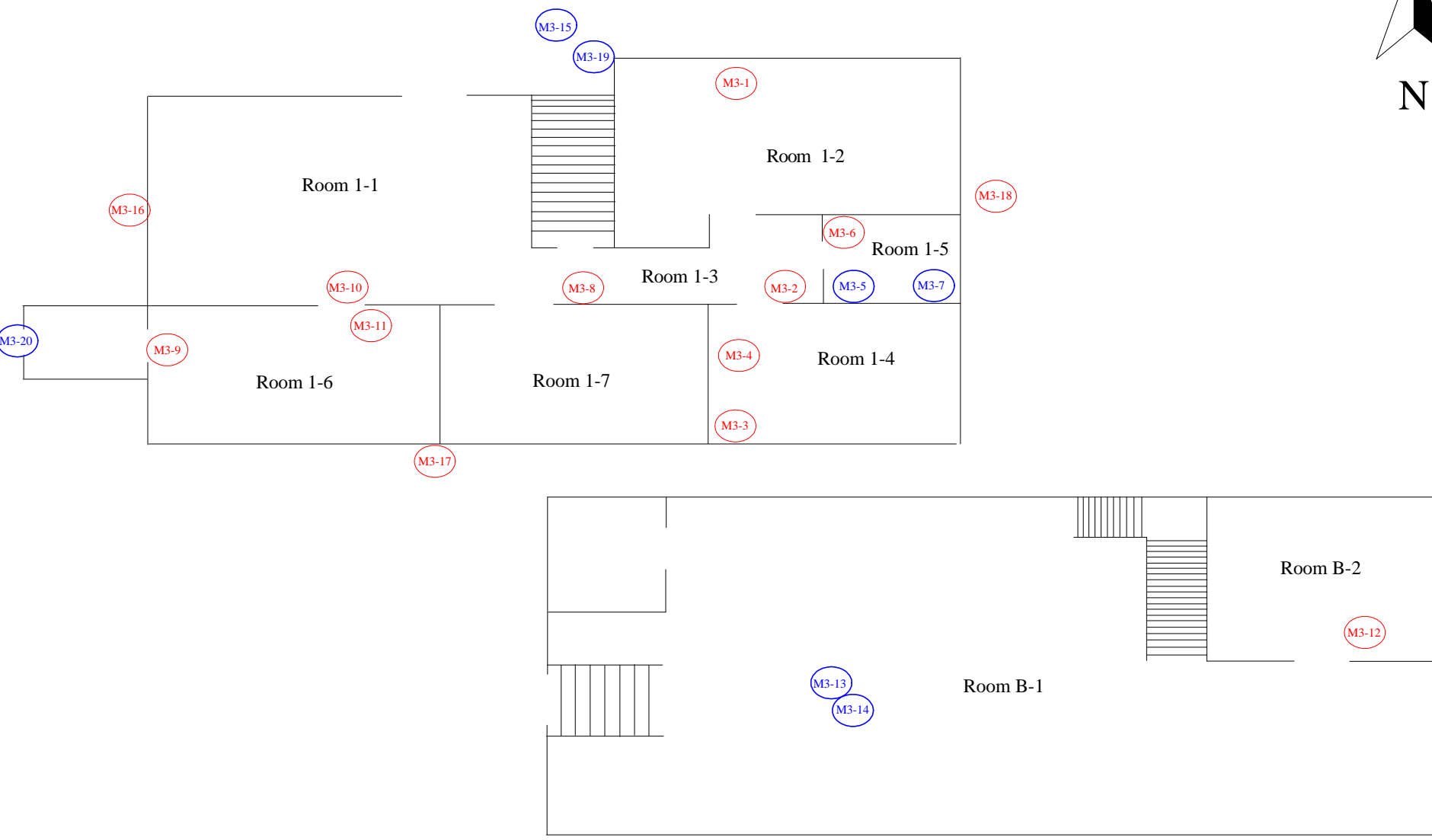
EHS Partnerships Ltd.
4303 - 11 Street SE
Edmonton, AB T6E 5W3
Phone: 780.395.0700

LEGEND

	Negative Asbestos Sampling Locations
	Positive Asbestos Sampling Locations

SITE Meanook National Wildlife Area M2 Garage		
CLIENT PSPC / ECCC		
PROJECT# 456BM-18-004	SCALE NTS	REFERENCE EHSP Site Sketch

DATE Sept 2018	REV 1.0	DRAWN BY LS
DWG# 2 / of 10		



LEGEND

- (M3-2) Negative Asbestos Sampling Locations
- (M3-1) Positive Asbestos Sampling Locations

SITE

Meanook National Wildlife Area
M3 Magnetic Residence

CLIENT

PSPC / ECCC

PROJECT#

456BM-18-004

SCALE

NTS

REFERENCE

EHSP Site Sketch

DATE

Sept 2018

REV

1.0

DRAWN BY

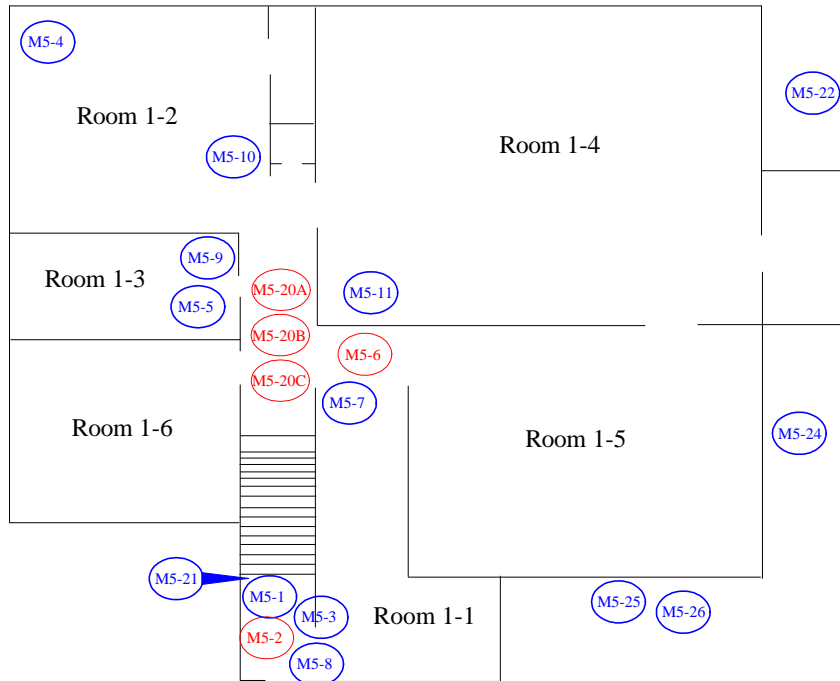
LS

DWG#

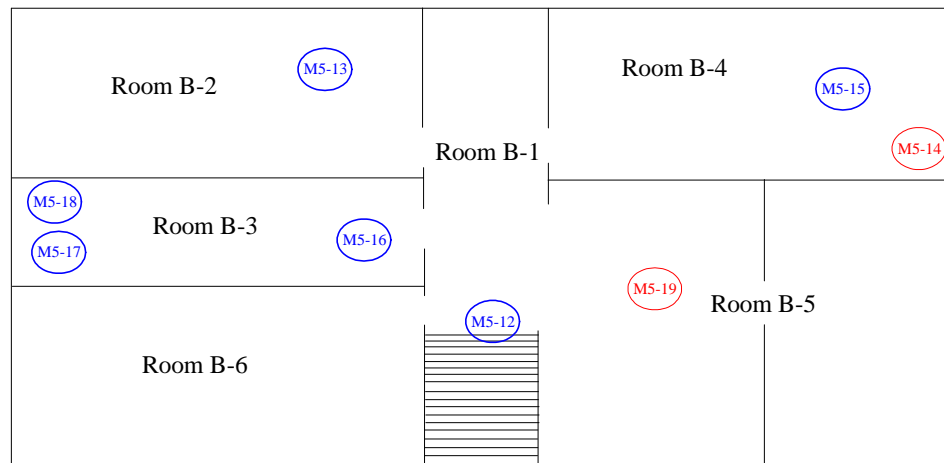
3 / of 10

EHS Partnerships Ltd.
4303 - 11 Street SE
Edmonton, AB T6E 5W3
Phone: 780.395.0700



ehs^p



M5-23

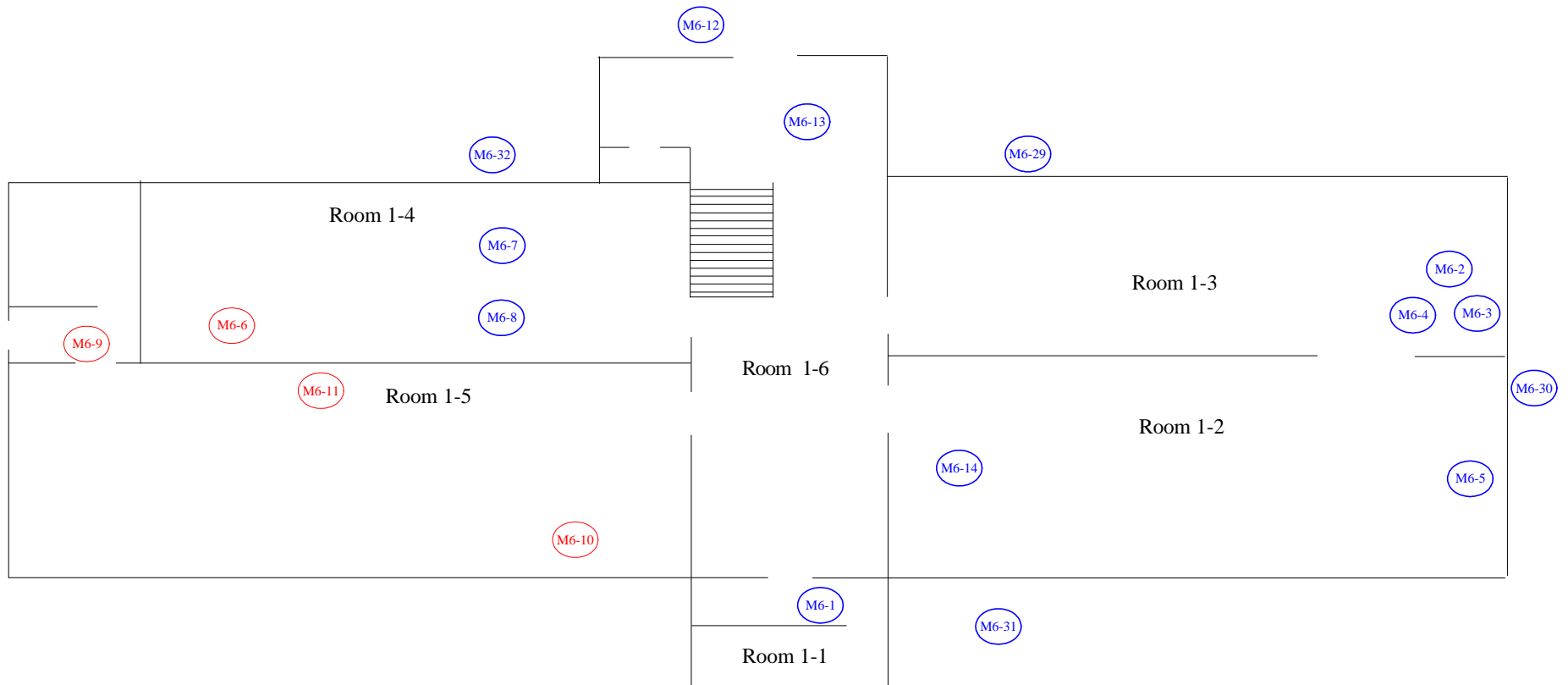



EHS Partnerships Ltd.
4303 - 11 Street SE
Edmonton, AB T6E 5W3
Phone: 780.395.0700

LEGEND	
	Negative Asbestos Sampling Locations
	Positive Asbestos Sampling Locations



SITE Meanook National Wildlife Area M5 Meteor Residence		
CLIENT PSPC / ECCC		
PROJECT# 456BM-18-004	SCALE NTS	REFERENCE EHSP Site Sketch

DATE Sept 2018	REV 1.0	DRAWN BY LS
DWG#		
5 / of 10		



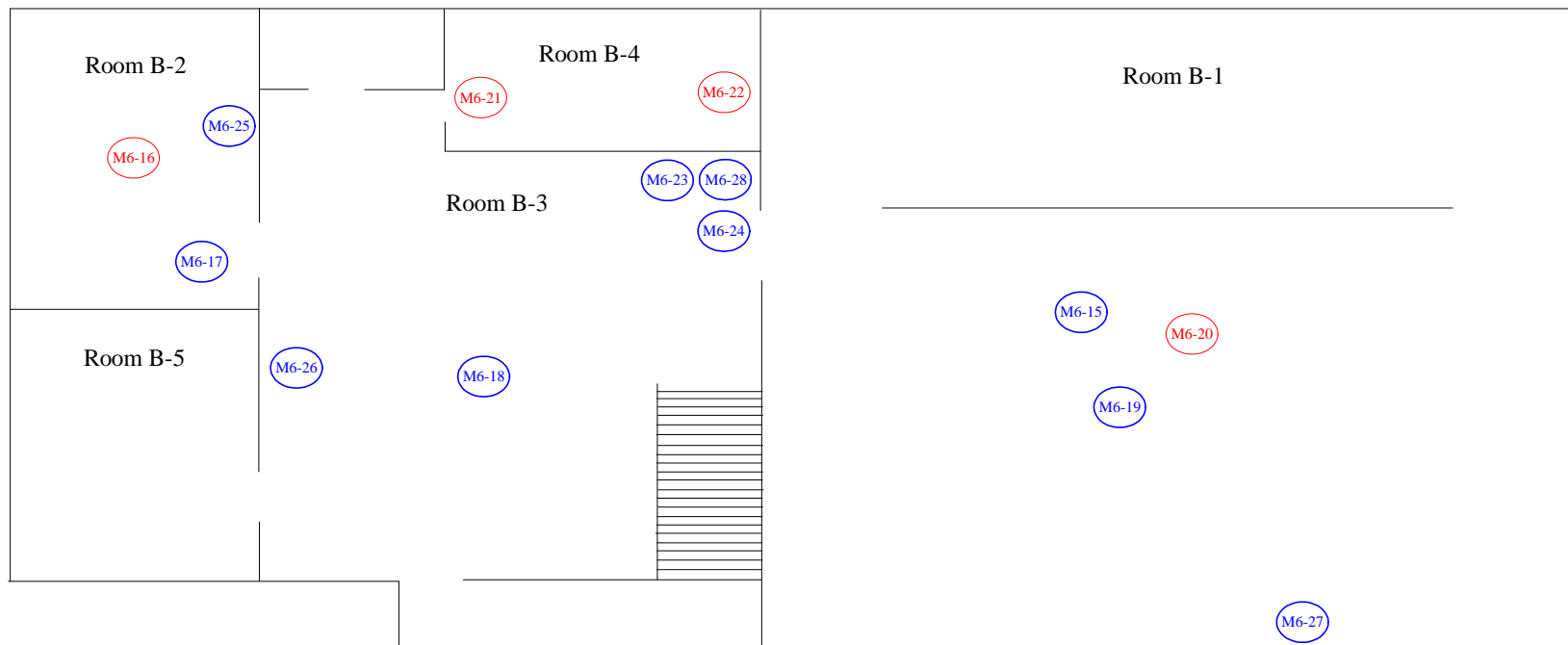

EHS Partnerships Ltd.
4303 - 11 Street SE
Edmonton, AB T6E 5W3
Phone: 780.395.0700

LEGEND

	Negative Asbestos Sampling Locations
	Positive Asbestos Sampling Locations

SITE Meanook National Wildlife Area M6 Administration Building 1st Floor		
CLIENT PSPC / ECCC		
PROJECT# 456BM-18-004	SCALE NTS	REFERENCE EHSP Site Sketch

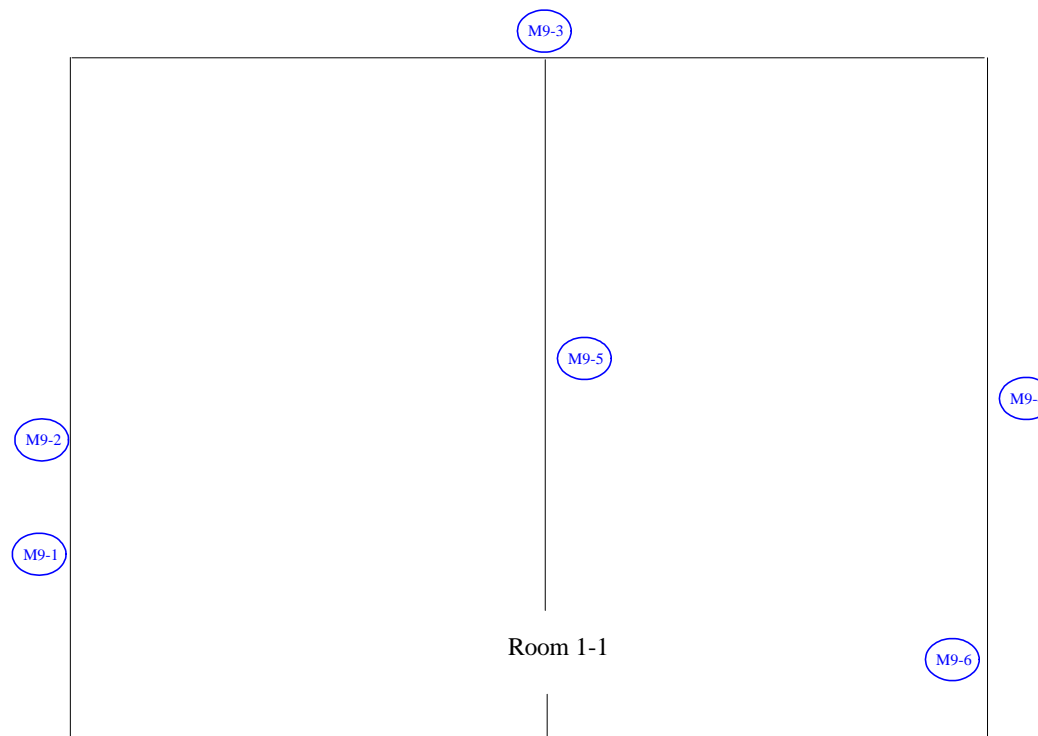
DATE Sept 2018	REV 1.0	DRAWN BY LS
DWG# 6 / of 10		



EHS Partnerships Ltd.
 4303 - 11 Street SE
 Edmonton, AB T6E 5W3
 Phone: 780.395.0700

- (M6-15) Negative Asbestos Sampling Locations
- (M6-16) Positive Asbestos Sampling Locations

SITE Meanook National Wildlife Area M6 Administration Building			DATE Sept 2018	REV 1.0	DRAWN BY LS
CLIENT Basement			DWG#		
PSPC / ECCC			7 / of 10		
PROJECT# 456BM-18-004	SCALE NTS	REFERENCE EHSP Site Sketch			



Room 1-1



EHS Partnerships Ltd.
4303 - 11 Street SE
Edmonton, AB T6E 5W3
Phone: 780.395.0700

- LEGEND**
- #A-3 Negative Asbestos Sampling Locations
 - #A-3 Positive Asbestos Sampling Locations

SITE		Meanook National Wildlife Area M9 Fireshed		DATE	REV	DRAWN BY
CLIENT		PSPC / ECCC		Sept 2018	1.0	LS
PROJECT#	SCALE	REFERENCE	10 / _{of 10}			
456BM-18-004	NTS	EHSP Site Sketch				

Appendix D
Room by Room Inventories
Meanook National Wildlife Area

Asbestos-Containing Material Survey
Environment and Climate Change Canada
Meanook National Wildlife Area
Meanook, Alberta
Project #: 456BM-18-004

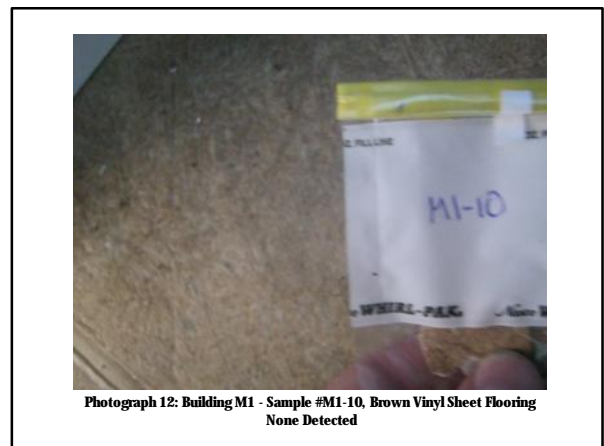
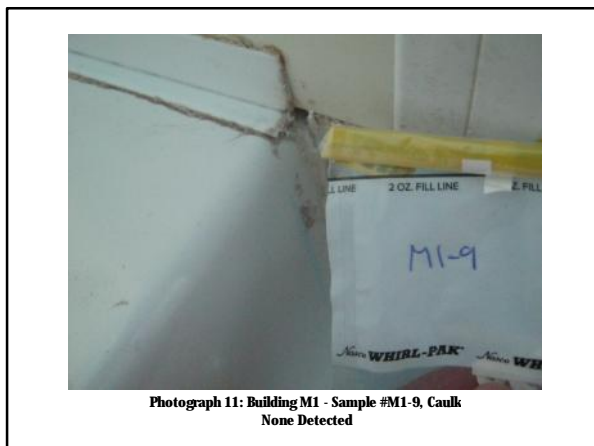
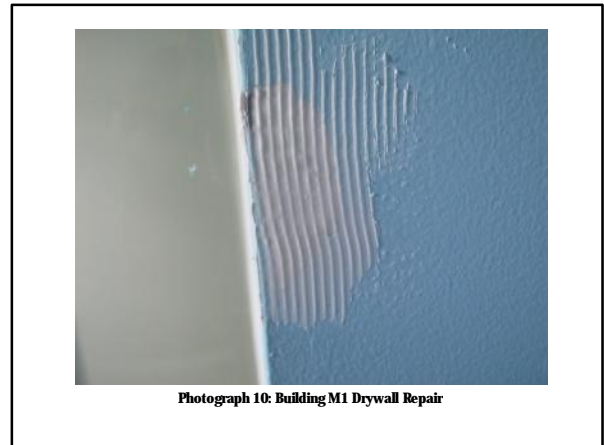
Assess_type	bl_id	fl_id	rm_id	rm-name	Sample ID	Location	Ref	Ref_Sample	Material Description	Material Description 2	Quantity	Units	Concentration	type	Condition	Access	Friability	Action Level	date_inserted
Comment	M1	1	1-1	Living Room		Floor			Wood Flooring		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-1	Living Room	M1-1	General Room			Brick	Fireplace	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-1	Living Room	M1-2	General Room			Brick Mortar	Fireplace	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-1	Living Room	M1-3	Wall			Plaster	Wall	29	sq. m	1%	Actinolite	Good	A	Friable	7	8/28/2018
ACM	M1	1	1-1	Living Room	M1-4	Wall			Duct Paper	Ductwork	2	ducts	50%	Chrysotile	Good	C-Concealed	Friable	7	8/28/2018
ACM	M1	1	1-1	Living Room		Ceiling	Y	M1-15	Drywall Joint Compound		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-1	Living Room		Wall	Y	M1-13	Duct Paper	Ductwork	2	ducts	50%	Chrysotile	Good	C-Concealed	Friable	7	8/28/2018
ACM	M1	1	1-2	Bedroom	M1-13	Wall			Duct Paper	Ductwork	2	ducts	50%	Chrysotile	Good	C-Concealed	Friable	7	8/28/2018
ACM	M1	1	1-2	Bedroom	M1-14	Ceiling			Plaster		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-2	Bedroom		Ceiling	Y	M1-3	Plaster	RE: Homogenous Sampling	11	sq. m	1%	Actinolite	Good	A	Friable	7	8/28/2018
ACM	M1	1	1-2	Bedroom	M1-5	Wall			Plaster		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-2	Bedroom		Wall	Y	M1-3	Plaster	RE: Homogenous Sampling	30	sq. m	1%	Actinolite	Good	A	Friable	7	8/28/2018
Comment	M1	1	1-2	Bedroom		Floor			Wood Board		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-3	Bedroom	M1-6	Wall			Plaster		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-3	Bedroom		Wall	Y	M1-3	Plaster	RE: Homogenous Sampling	27	sq. m	1%	Actinolite	Good	A	Friable	7	8/28/2018
ACM	M1	1	1-3	Bedroom		Ceiling	Y	M1-3	Plaster		10	sq. m	1%	Actinolite	Good	A	Friable	7	8/28/2018
Comment	M1	1	1-3	Bedroom		Floor			Wood Board		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-3	Bedroom	M1-7	Wall			Duct Paper	Ductwork	1	duct	50%	Chrysotile	Good	C-Concealed	Friable	7	8/28/2018
ACM	M1	1	1-4	Bathroom	M1-8	Wall			Drywall Joint Compound	Demising Wall	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-4	Bathroom	M1-9	Wall			Caulking	Bathub	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-4	Bathroom	M1-10	Floor			Vinyl Sheet Flooring	Brown / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-4	Bathroom	M1-11	Floor			Vinyl Sheet Flooring	White (Under First Layer) / Beige Paper Backing	4.5	sq. m	20%	Chrysotile	Good	C-Concealed	Friable	7	8/28/2018
ACM	M1	1	1-4	Bathroom	M1-12	Ceiling			Drywall Joint Compound		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-5	Kitchen	M1-15	Ceiling			Drywall Joint Compound		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-5	Kitchen	M1-16	Floor			Vinyl Sheet Flooring	Brown / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	1-5	Kitchen	M1-17	Floor			Vinyl Sheet Flooring	White (Under First Layer) / Beige Paper Backing	16	sq. m	20%	Chrysotile	Good	C-Concealed	Friable	7	8/28/2018
ACM	M1	1	1-5	Kitchen		Walls	Y	M1-3	Plaster		11	sq. m	1%	Actinolite	Good	A	Friable	7	8/28/2018
ACM	M1	Basement	B-1	Basement	M1-18	Floor			Vinyl Floor Tile	6"x6" Brown	12	sq. m	3%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M1	Basement	B-1	Basement	M1-19	Floor			Vinyl Floor Tile	6"x6" White	12	sq. m	3%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
Comment	M1	Basement	B-1	Basement		Ceiling			Wood		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M1	Basement	B-1	Basement		Wall			Concrete		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M1	Basement	B-2	Basement		Floor			Concrete		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M1	Basement	B-2	Basement		Wall			Concrete		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	Basement	B-2	Basement	M1-20	Ceiling Space			Duct Tape	White Tape on Ductwork	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M1	1	Exterior	Roof	M1-21	Roof			Shingles		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M10	1	1-1	Outdoor	M10-1	Floor			Vinyl Sheet Flooring	White / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M2	1	1-1	Garage	M2-1A	Ceiling Space			Vermiculite Insulation		9	sq. m	<1%	Actinolite	Good	C-Concealed	Friable	7	8/28/2018
ACM	M2	1	1-1	Garage	M2-1B	Ceiling Space			Vermiculite Insulation		9	sq. m	<1%	Actinolite	Good	C-Concealed	Friable	7	8/28/2018
Comment	M2	1	1-1	Garage		Floor			Concrete		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M2	1	1-1	Garage		Walls			Wood		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M2	1	1-1	Garage		Ceiling			Wood		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M2	1	Exterior	Roof	M2-2	Roof			Shingles		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M2	1	Exterior	Garage		Walls			Wood		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M3	1	1-1	Living Room		Floor			Wood Board		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M3	1	1-1	Living Room		Wall	Y	M3-1	Drywall Joint Compound	Perimeter Wall	40	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M3	1	1-1	Living Room	M3-10	Ceiling			Drywall Joint Compound		10	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M3	1	1-2	Bedroom	M3-1	Wall			Drywall Joint Compound	Perimeter Wall	30	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
Comment	M3	1	1-2	Bedroom		Floor			Wood Board		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M3	1	1-2	Bedroom		Ceiling	Y	M3-10	Drywall Joint Compound		9.2	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
Comment	M3	1	1-3	Hallway		Floor			Wood Board		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M3	1	1-3	Hallway		Ceiling	Y	M3-10	Drywall Joint Compound		4.6	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M3	1	1-3	Hallway	M3-8	Wall			Duct Paper	Ductwork	1	duct	70%	Chrysotile	Good	C-Concealed	Friable	7	8/28/2018
ACM	M3	1	1-3	Hallway	M3-2	Wall			Drywall Joint Compound	Demising Wall	2.6	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
Comment	M3	1	1-4	Bedroom		Floor			Wood Board		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M3	1	1-4	Bedroom		Ceiling	Y	M3-10	Drywall Joint Compound		9.2	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M3	1	1-4	Bedroom	M3-3	Wall			Drywall Joint Compound	Perimeter Wall	28	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M3	1	1-4	Bedroom	M3-4	Wall			Duct Paper	Ductwork	1	duct	70%	Chrysotile	Good	C-Concealed	Friable	7	8/28/2018
ACM	M3	1	1-5	Bathroom	M3-5	Wall			Drywall Joint Compound	Demising Wall	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M3	1	1-5	Bathroom		Wall	Y	M3-2	Drywall Joint Compound	RE: Homogenous Sampling	12	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018

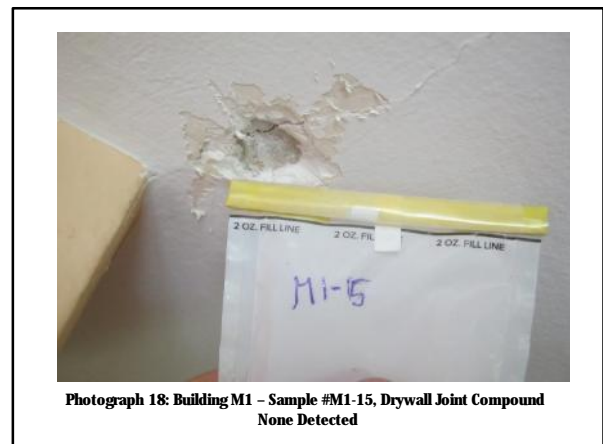
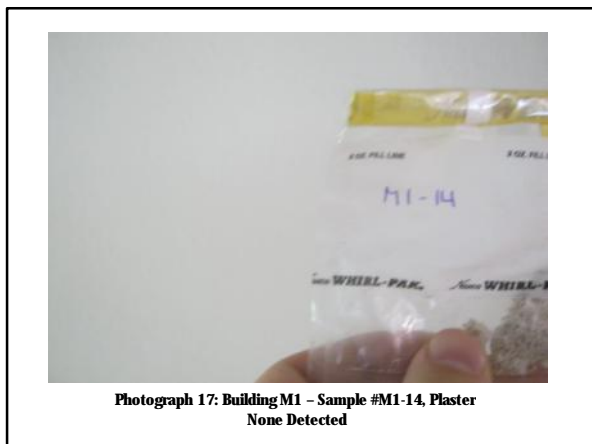
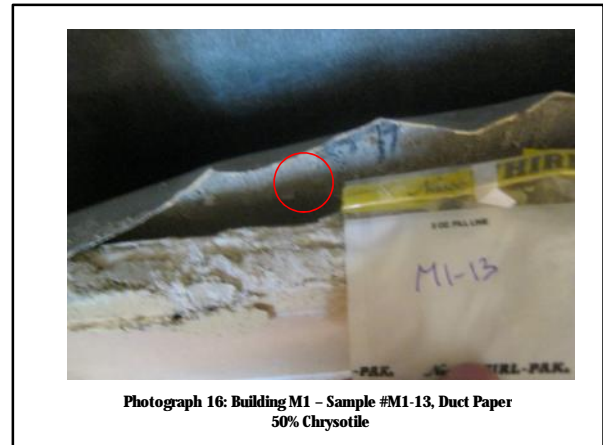
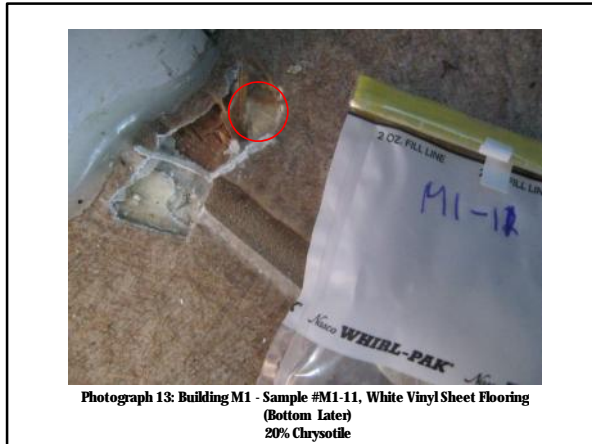
Assess_type	bl_id	fl_id	rm_id	rm-name	Sample ID	Location	Ref	Ref_Sample.	Material Description	Material Description 2	Quantity	Units	Concentration	type	Condition	Access	Friability	Action Level	date_inserted
Comment	M5	1	1-6	Bedroom		Floor			Carpet		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	1	1-6	Bedroom		Floor	Y	M5-4	Vinyl Sheet Flooring	Brown (2nd Layer) / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	1	1-6	Bedroom		Wall	Y	M5-6	Duct Paper	Ductwork	1	duct	80%	Chrysotile	Good	C-Conceled	Friable	7	8/28/2018
ACM	M5	1		Attic	M5-20A	Ceiling Space			Vermiculite Insulation		114	sq. m	1%	Actinolite	Good	C-Conceled	Friable	7	8/28/2018
ACM	M5	1		Attic	M5-20B	Ceiling Space			Vermiculite Insulation		114	sq. m	1%	Tremolite	Good	C-Conceled	Friable	7	8/28/2018
ACM	M5	1		Attic	M5-20C	Ceiling Space			Vermiculite Insulation		114	sq. m	1%	Actinolite	Good	C-Conceled	Friable	7	8/28/2018
Comment	M5	Basement	B-1	Hallway		Wall			Wood Panel		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-1	Hallway		Ceiling	Y	M5-15	Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-1	Hallway	M5-12	Floor			Vinyl Sheet Flooring	Multi-Color / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-1	Hallway (Stairs)	M5-21	Wall			Texture Coat		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M5	Basement	B-2	Bedroom		Wall			Wood Panel		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-2	Bedroom		Ceiling	Y	M5-18	Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-2	Bedroom	M5-13	Floor			Vinyl Sheet Flooring	Multi-Color/ Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-3	Bathroom	M5-16	Floor			Vinyl Sheet Flooring	Grey Pattern / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M5	Basement	B-3	Bathroom		Wall			Wood Panel		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-3	Bathroom	M5-15	Ceiling			Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-4	Bedroom	M5-14	Floor			Vinyl Floor Tile	12"x12" Grey	13.4	sq. m	5%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M5	Basement	B-4	Bedroom	M5-17	Wall			Drywall Joint Compound	Demising Wall	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-4	Bedroom	M5-18	Ceiling			Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M5	Basement	B-5	Furnace Room		Floor			Concrete		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M5	Basement	B-5	Furnace Room		Wall			Wood Panel		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-5	Furnace Room	M5-19	Ceiling Space			Duct Paper	Ductwork	1	sq. m	60%	Chrysotile	Fair	A	Friable	7	8/28/2018
Comment	M5	Basement	B-6	Bedroom		Wall			Wood Panel		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-6	Bedroom		Ceiling	Y	M5-18	Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	Basement	B-6	Bedroom		Floor	Y	M5-13	Vinyl Sheet Flooring	Multi-Color / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	1	Exterior	Wall	M5-22	Wall			Stucco		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	1	Exterior	Roof	M5-23	Roof			Shingles		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	1	Exterior	Wall	M5-24	Wall			Parging		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	1	Exterior	Wall	M5-25	Wall			Brick Mortar		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M5	1	Exterior	Wall	M5-26	Wall			Brick		n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-1	Bathroom	M6-1	Floor			Vinyl Floor Tile	12"x12" Beige	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-1	Bathroom		Wall	Y	M6-10	Drywall Joint Compound		10	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M6	1	1-1	Bathroom		Ceiling	Y	M6-14	Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-2	Dining Room		Floor	Y	M6-2	Vinyl Sheet Flooring	Pink / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-2	Dining Room	M6-5	Wall			Drywall Joint Compound	Perimeter Wall	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-2	Dining Room		Wall	Y	M6-10	Drywall Joint Compound	RE: Homogenous Sampling	60	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M6	1	1-2	Dining Room	M6-14	Ceiling			Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-3	Kitchen	M6-2	Floor			Vinyl Sheet Flooring	Pink / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-3	Kitchen	M6-3	Floor			Vinyl Sheet Flooring	White and Yellow / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-3	Kitchen	M6-4	Floor			Leveling Compound	Grey	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-3	Kitchen		Wall	Y	M6-10	Drywall Joint Compound		60	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M6	1	1-3	Kitchen		Ceiling	Y	M6-14	Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-4	Office	M6-6	Floor			Vinyl Sheet Flooring	Yellow / Beige Paper Backing	9	sq. m	20%	Chrysotile	Good	A	Friable	7	8/28/2018
ACM	M6	1	1-4	Office	M6-7	Floor			Vinyl Sheet Flooring	Grey / Beige Paper Backing	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-4	Office	M6-8	Wall			Drywall Joint Compound	Demising Wall	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-4	Office		Wall	Y	M6-10	Drywall Joint Compound	RE: Homogenous Sampling	60	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M6	1	1-4	Office		Ceiling	Y	M6-14	Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-5	Office	M6-9	Floor			Vinyl Sheet Flooring	Yellow / Beige Paper Backing	19	sq. m	20%	Chrysotile	Good	A	Friable	7	8/28/2018
ACM	M6	1	1-5	Office	M6-10	Wall			Drywall Joint Compound	Demising Wall	70	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M6	1	1-5	Office	M6-11	Wall			Duct Paper	Ductwork	3	ducts	60%	Chrysotile	Good	C-Conceled	Friable	7	8/28/2018
ACM	M6	1	1-5	Office		Ceiling	Y	M6-14	Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-6	Hallway / Entrance		Floor	Y	M6-1	Vinyl Floor Tile	12"x12" Beige	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	1	1-6	Hallway / Entrance		Wall	Y	M6-10	Drywall Joint Compound		60	sq. m	2%	Chrysotile	Good	A	Non-Friable	7	8/28/2018
ACM	M6	1	1-6	Hallway / Entrance	M6-13	Ceiling			Ceiling Tile	2'x2' Plain	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
Comment	M6	1	1-6	Hallway / Entrance		Attic			Fibreglass Insulation		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	Basement	B-1	Living Room	M6-15	Floor			Vinyl Floor Tile	12"x12" Beige	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	Basement	B-1	Living Room	M6-15A	Floor			Mastic / Leveler	Grey / Black	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	Basement	B-1	Living Room	M6-19	Ceiling			Ceiling Tile	2'x4' Pinholes	n/a	n/a	none detected	n/a	n/a	n/a	n/a	n/a	8/28/2018
ACM	M6	Basement	B-1	Living Room	M6-20	Ceiling Space			Duct Paper	Ductwork	0.3	sq. m	60%	Chrysotile	Good	A	Friable	7	8/28/2018

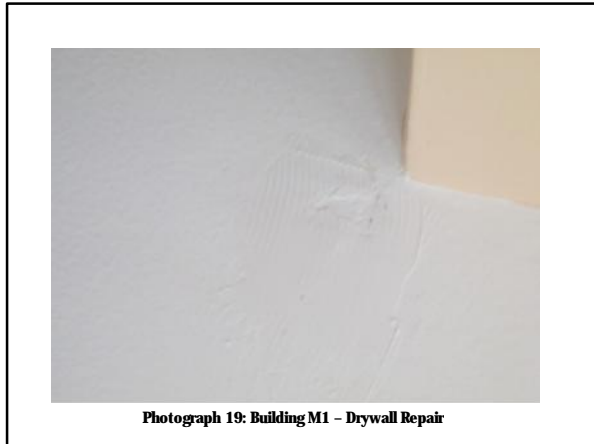
Appendix E
Photographic Log
Meanook National Wildlife Area

Asbestos-Containing Material Survey
Environment and Climate Change Canada
Meanook National Wildlife Area
Meanook, Alberta
Project #: 456BM-18-004









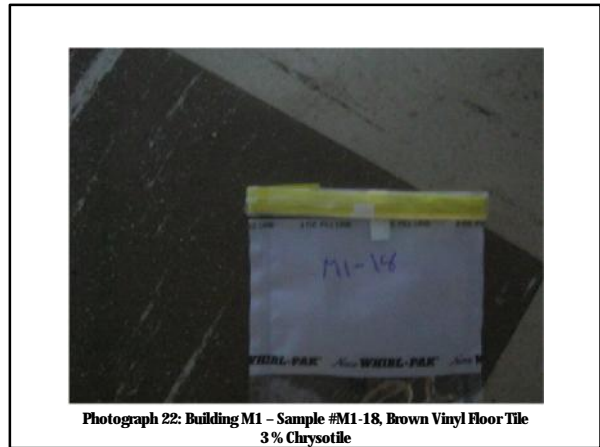
Photograph 19: Building M1 - Drywall Repair



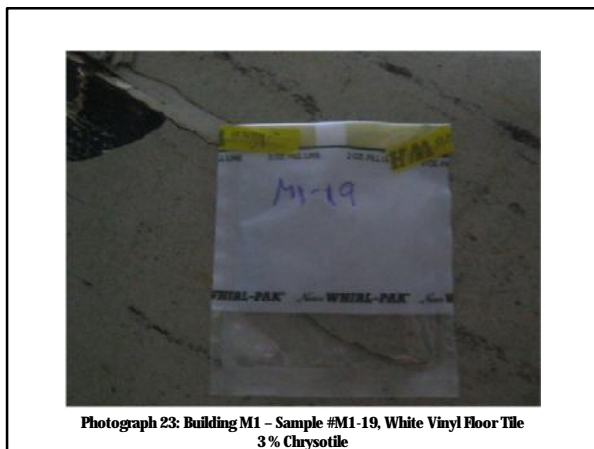
Photograph 20: Building M1 - Sample #M1-16, Brown Vinyl Sheet Flooring
None Detected



Photograph 21: Building M1 - Sample #M1-17, White Vinyl Sheet Flooring
20 % Chrysotile



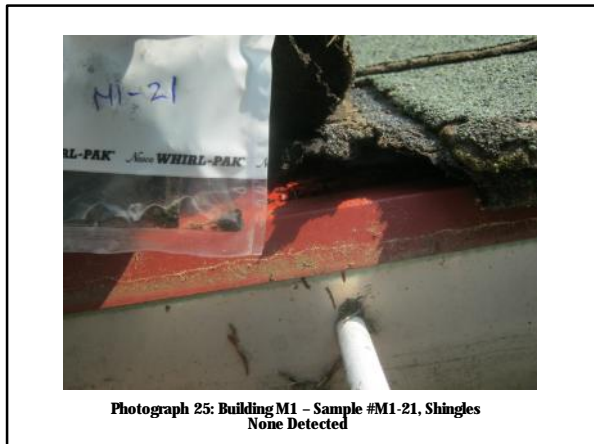
Photograph 22: Building M1 - Sample #M1-18, Brown Vinyl Floor Tile
3 % Chrysotile



Photograph 23: Building M1 - Sample #M1-19, White Vinyl Floor Tile
3 % Chrysotile



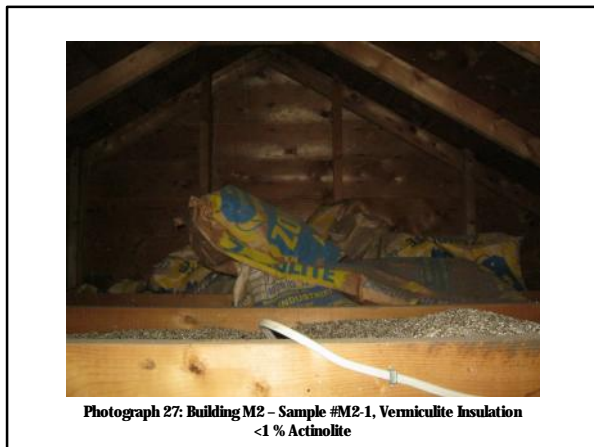
Photograph 24: Building M1 - Sample #M1-20, White Duct Tape
None Detected



Photograph 25: Building M1 - Sample #M1-21, Shingles
None Detected



Photograph 26: Building M2 - Garage



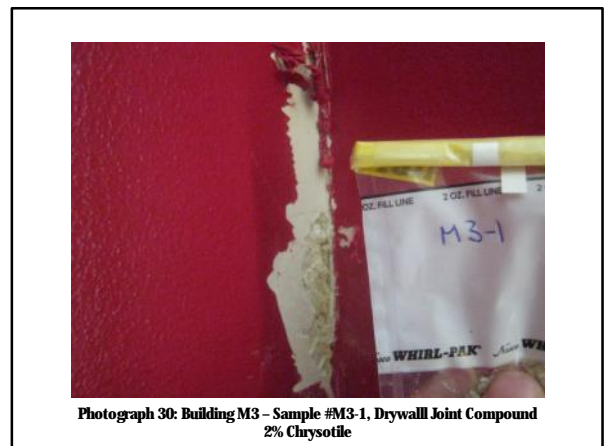
Photograph 27: Building M2 - Sample #M2-1, Vermiculite Insulation
<1 % Actinolite



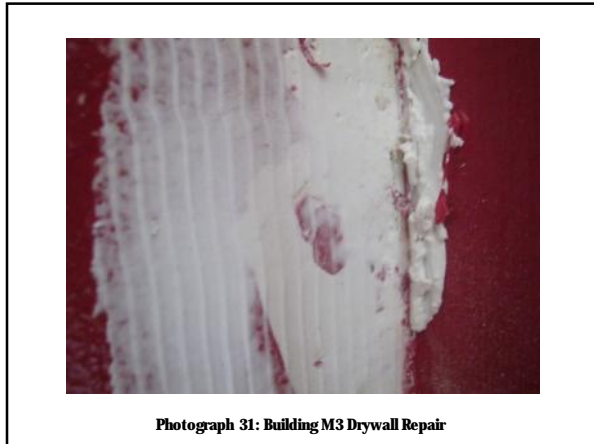
Photograph 28: Building M2 - Sample #M2-2, Shingle
None Detected



Photograph 29: Building M3 - Magnetic Residence



Photograph 30: Building M3 - Sample #M3-1, Drywall Joint Compound
2% Chrysotile



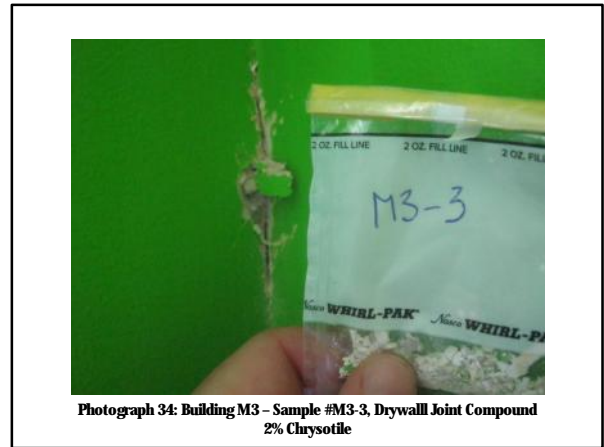
Photograph 31: Building M3 Drywall Repair



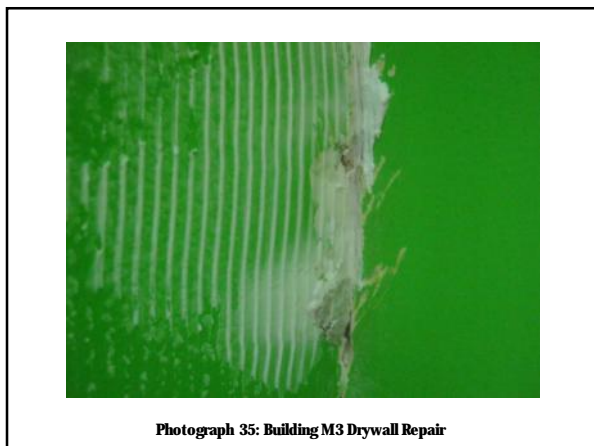
Photograph 32: Building M3 - Sample #M3-2, Drywall Joint Compound
2% Chrysotile



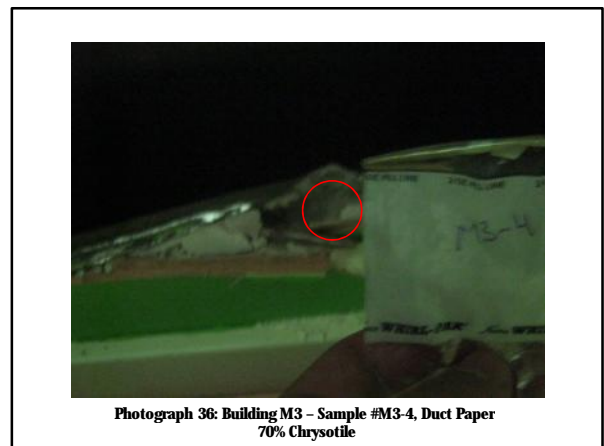
Photograph 33: Building M3 Drywall Repair



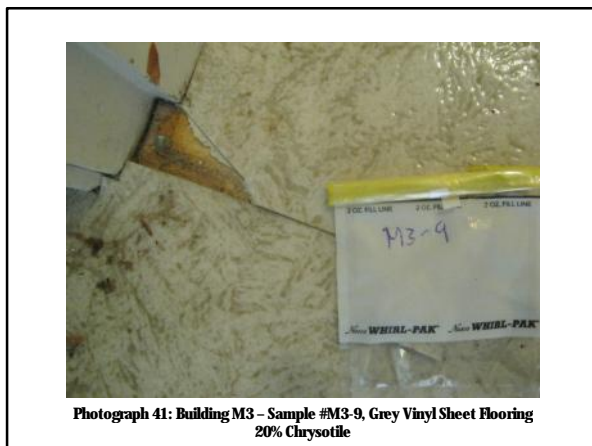
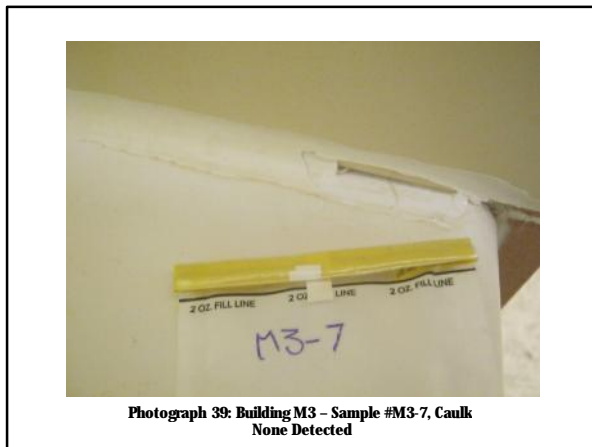
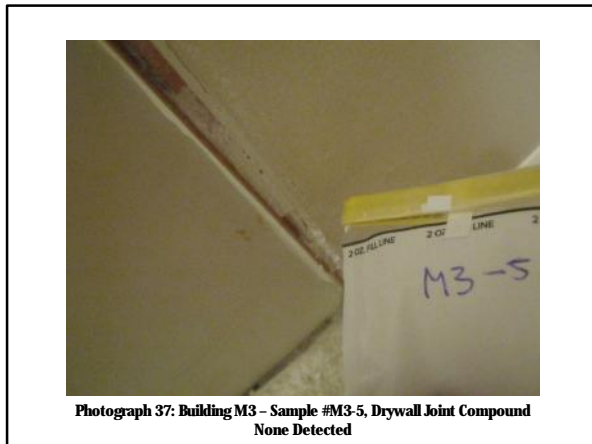
Photograph 34: Building M3 - Sample #M3-3, Drywall Joint Compound
2% Chrysotile



Photograph 35: Building M3 Drywall Repair



Photograph 36: Building M3 - Sample #M3-4, Duct Paper
70% Chrysotile





Photograph 33: Building M3 Drywall Repair



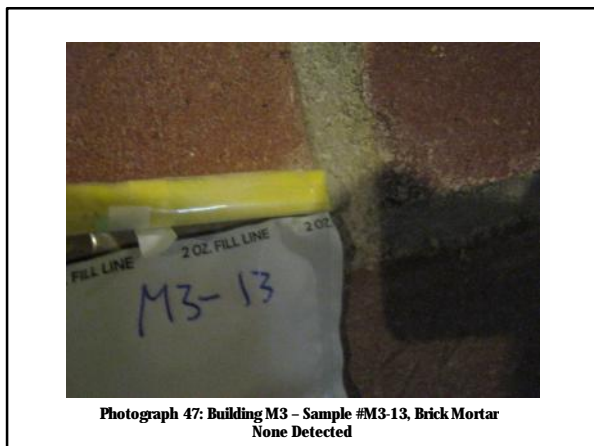
Photograph 44: Building M3 - Sample #M3-11, Drywall Joint Compound 2% Chrysotile



Photograph 45: Building M3 Drywall Repair



Photograph 46: Building M3 - Sample #M3-12, Grey Vinyl Floor Tile 4% Chrysotile



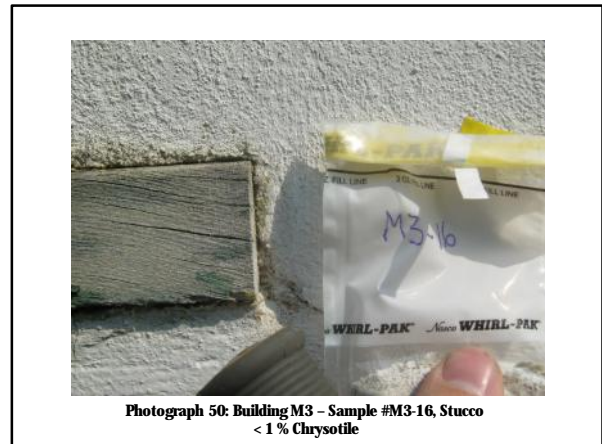
Photograph 47: Building M3 - Sample #M3-13, Brick Mortar None Detected



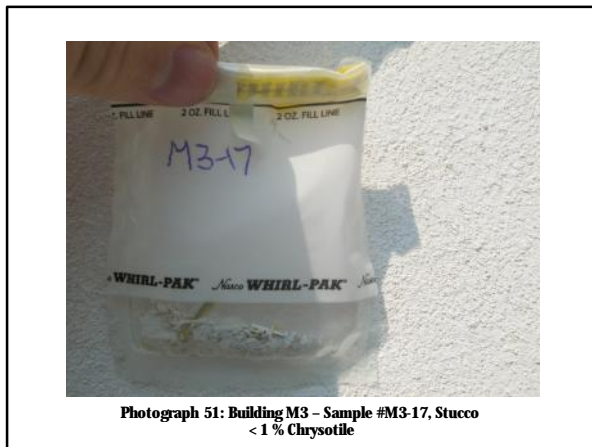
Photograph 48: Building M3 - Sample #M3-14, Brick None Detected



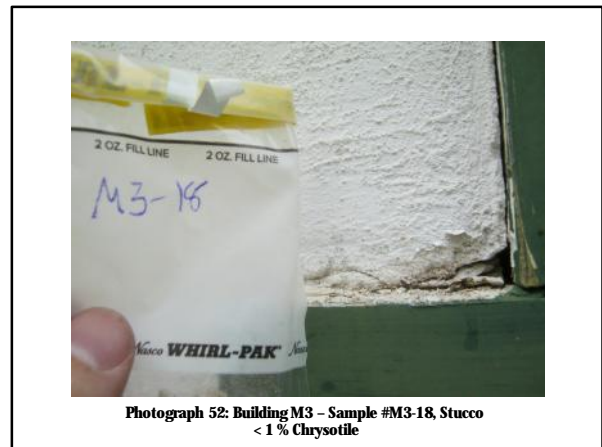
Photograph 49: Building M3 - Sample #M3-15, Caulking
None Detected



Photograph 50: Building M3 - Sample #M3-16, Stucco
< 1 % Chrysotile



Photograph 51: Building M3 - Sample #M3-17, Stucco
< 1 % Chrysotile



Photograph 52: Building M3 - Sample #M3-18, Stucco
< 1 % Chrysotile



Photograph 53: Building M3 - Sample #M3-19, Shingles
None Detected



Photograph 54: Building M3 - Sample #M3-20, Caulk
None Detected



Photograph 55: Building M4 - Garage



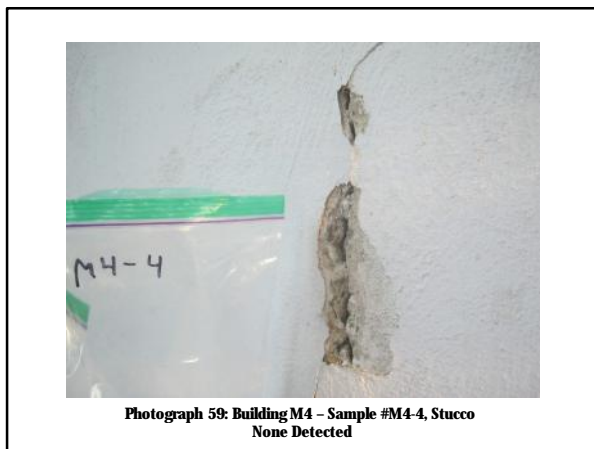
Photograph 56: Building M4 - Sample #M4-1, Shingles
None Detected



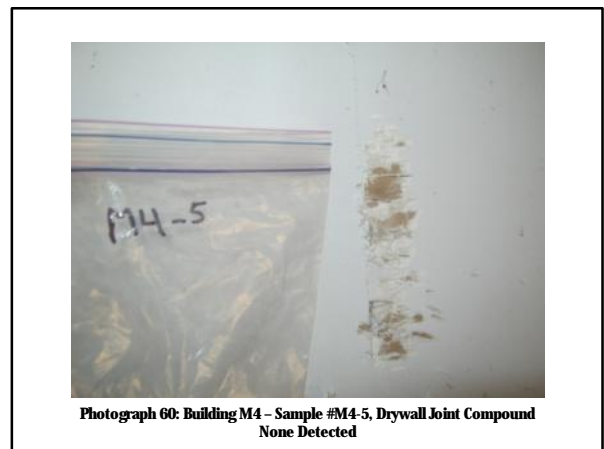
Photograph 57: Building M4 - Sample #M4-2, Stucco
None Detected



Photograph 58: Building M4 - Sample #M4-3, Stucco
None Detected



Photograph 59: Building M4 - Sample #M4-4, Stucco
None Detected



Photograph 60: Building M4 - Sample #M4-5, Drywall Joint Compound
None Detected



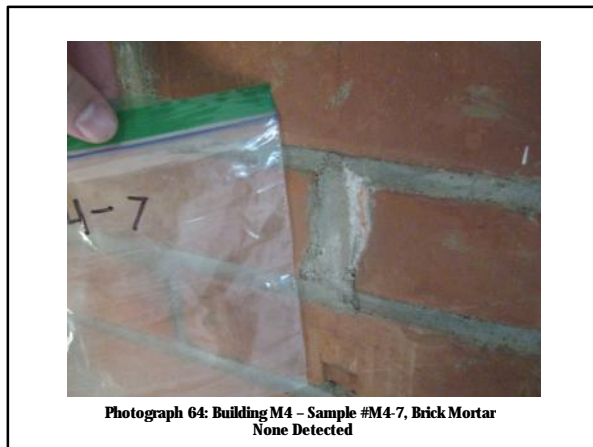
Photograph 61: Building M4 Drywall Repair



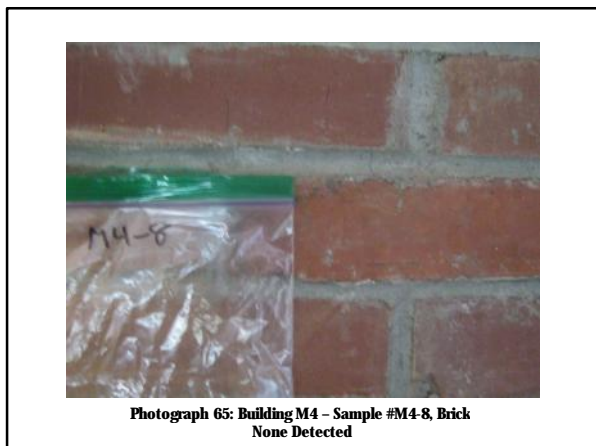
Photograph 62: Building M4 - Sample #M4-6, Drywall Joint Compound
None Detected



Photograph 63: Building M4 Drywall Repair



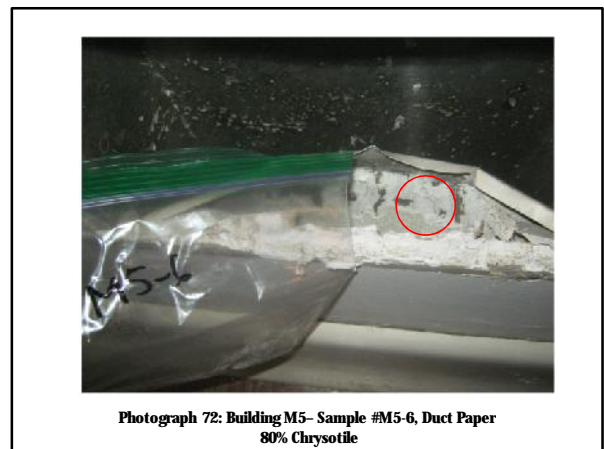
Photograph 64: Building M4 - Sample #M4-7, Brick Mortar
None Detected



Photograph 65: Building M4 - Sample #M4-8, Brick
None Detected



Photograph 66: Building M5 - Meteorological Residence





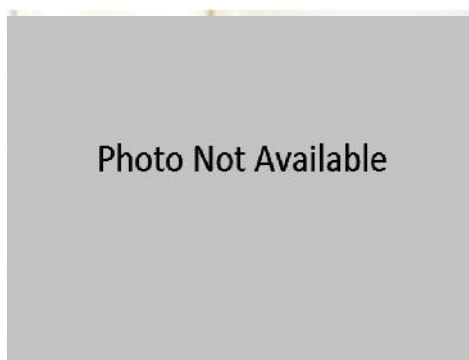
**Photograph 73: Building M5- Sample #M5-7, Drywall Joint Compound
None Detected**



Photograph 74: Building M5 Drywall Repair



**Photograph 75: Building M5- Sample #M5-8, Drywall Joint Compound
None Detected**



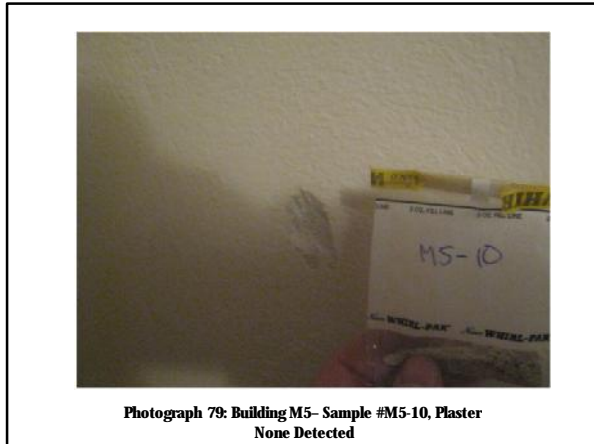
Photograph 76: Building M5 Drywall Repair



**Photograph 77: Building M5- Sample #M5-9, Drywall Joint Compound
None Detected**



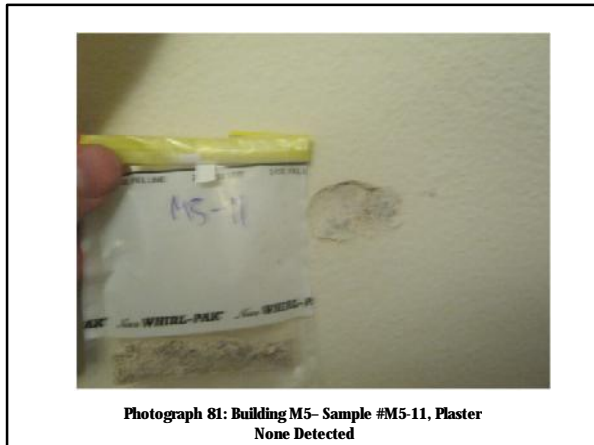
Photograph 78: Building M5 Drywall Repair



Photograph 79: Building M5- Sample #M5-10, Plaster
None Detected



Photograph 80: Building M5 Plaster Repair



Photograph 81: Building M5- Sample #M5-11, Plaster
None Detected



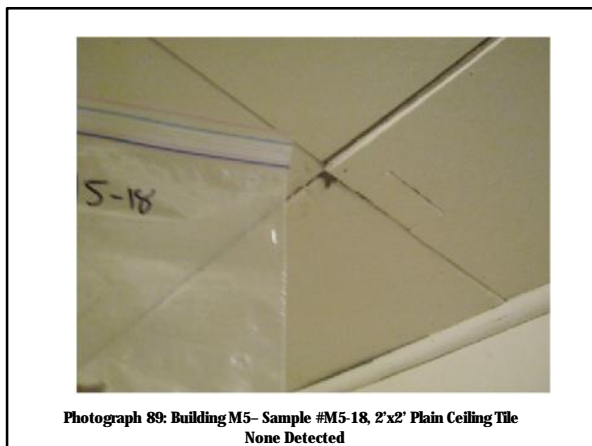
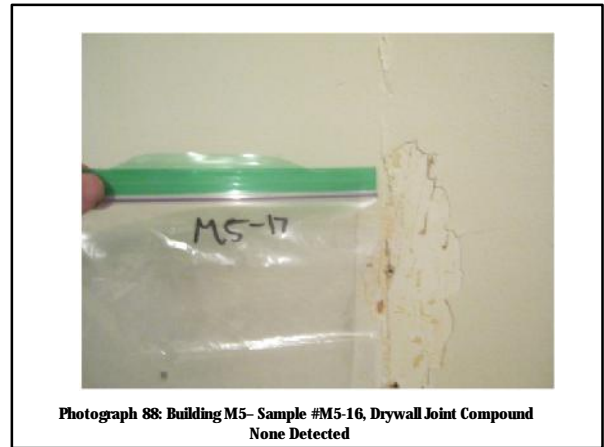
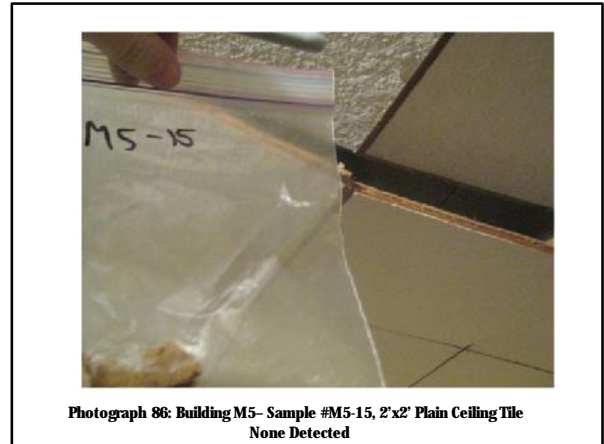
Photograph 82: Building M5 Plaster Repair

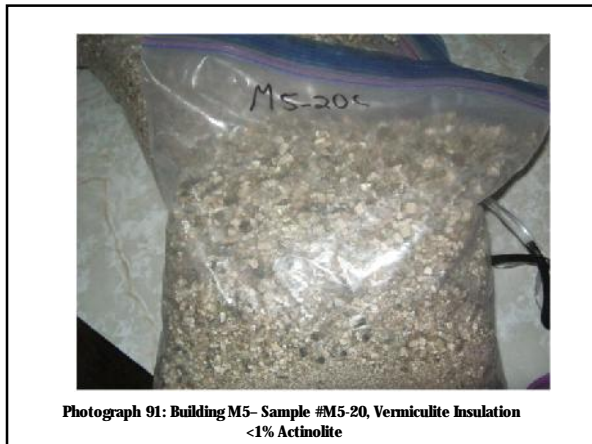


Photograph 83: Building M5- Sample #M5-12, Wood Design Vinyl Sheet Flooring
None Detected

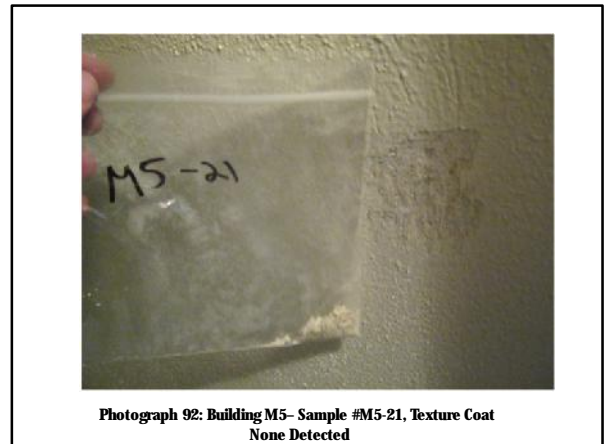


Photograph 84: Building M5- Sample #M5-13, Multi-Color Vinyl Sheet Flooring
None Detected





Photograph 91: Building M5- Sample #M5-20, Vermiculite Insulation
<1% Actinolite



Photograph 92: Building M5- Sample #M5-21, Texture Coat
None Detected



Photograph 93: Building M5- Sample #M5-22, Stucco
None Detected



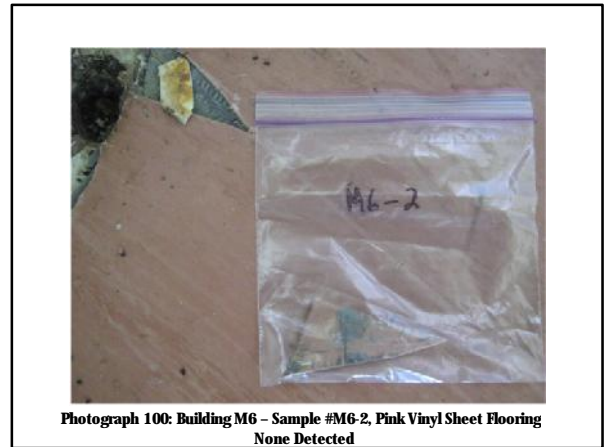
Photograph 94: Building M5- Sample #M5-23, Shingles
None Detected

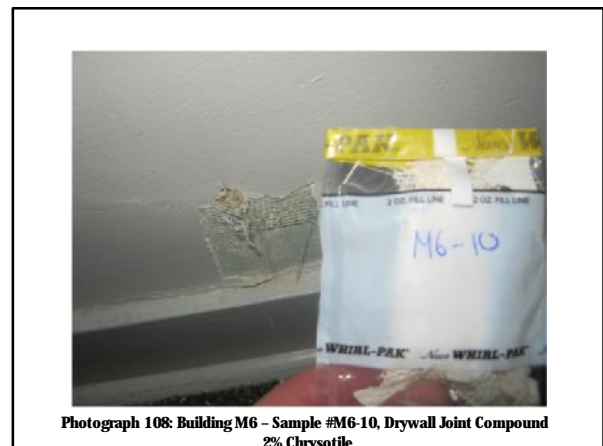
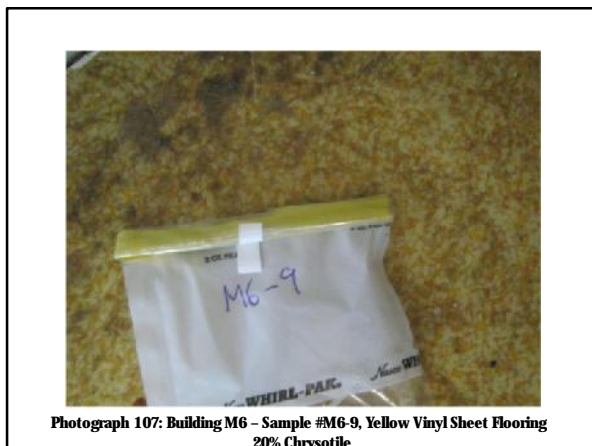
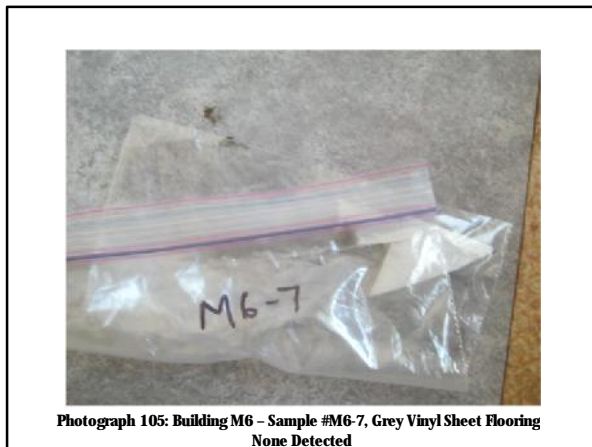
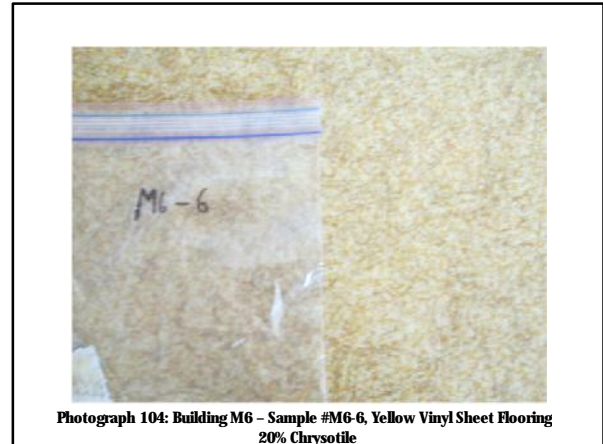


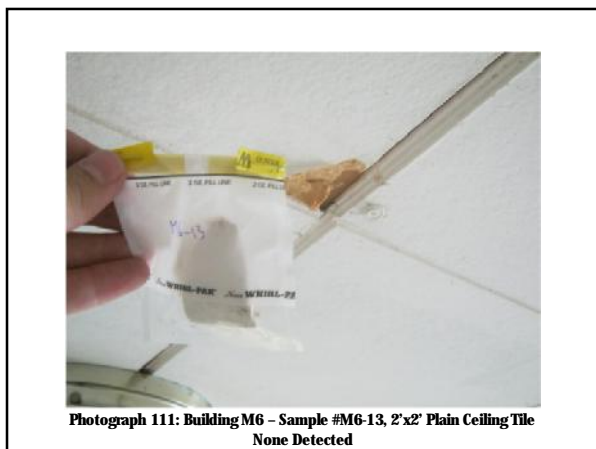
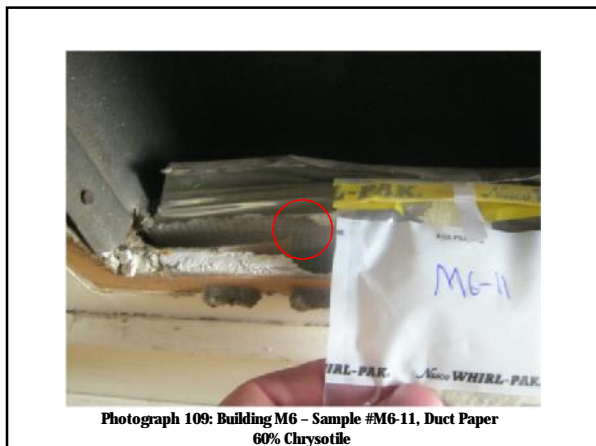
Photograph 95: Building M5- Sample #M5-24, Parging
None Detected

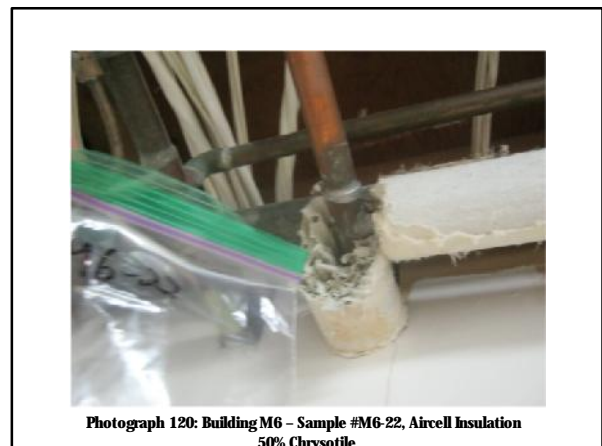
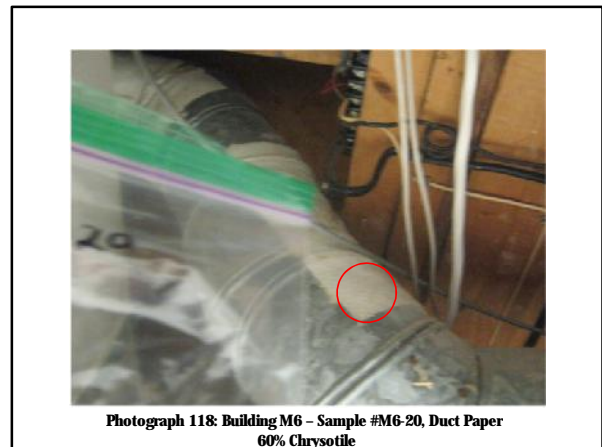
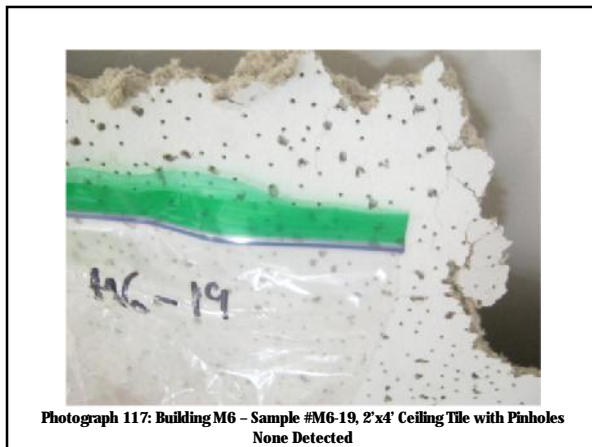
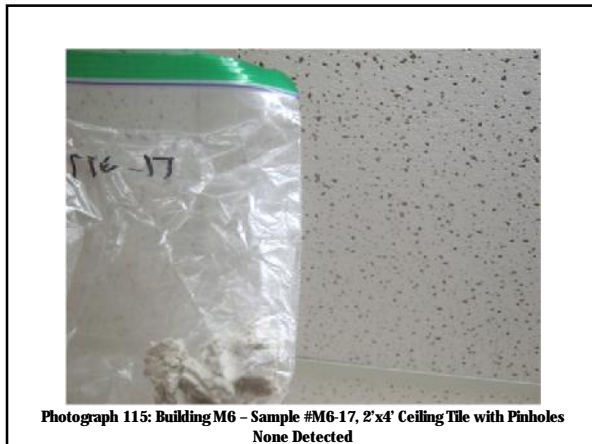


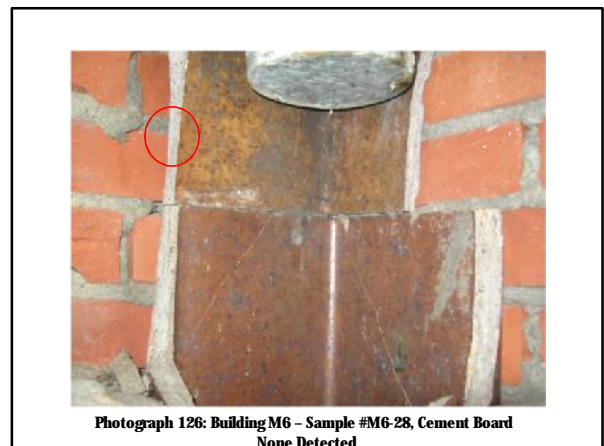
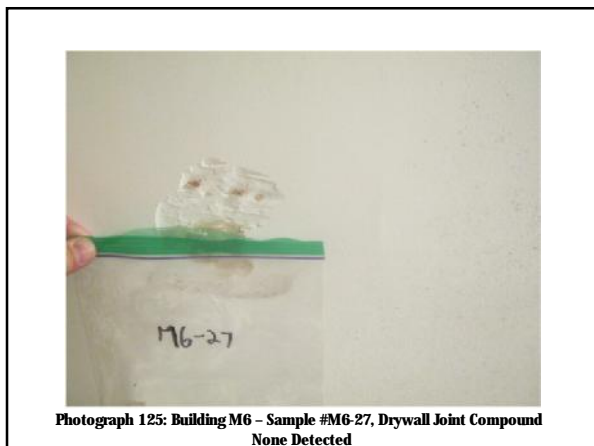
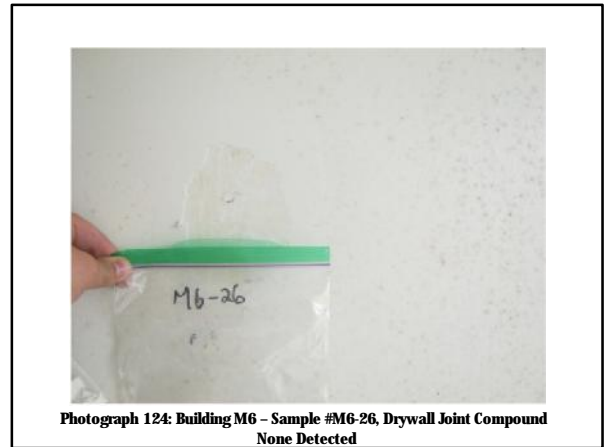
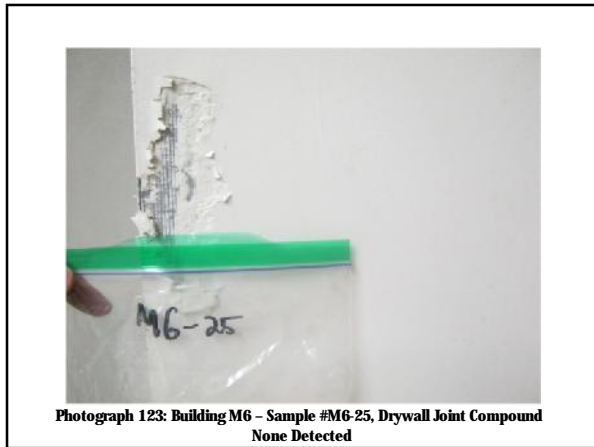
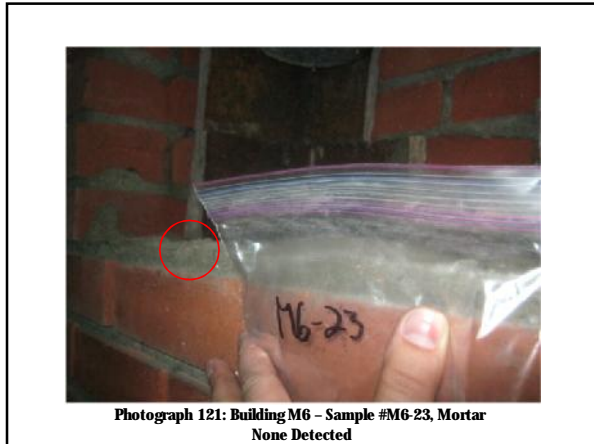
Photograph 96: Building M5- Sample #M5-25, Brick Mortar
None Detected





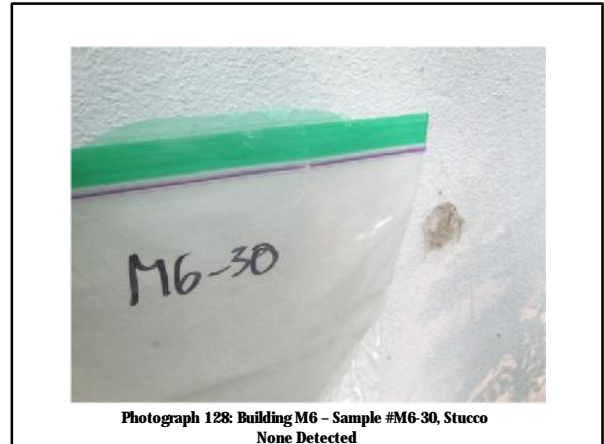








Photograph 127: Building M6 - Sample #M6-29, Stucco
None Detected



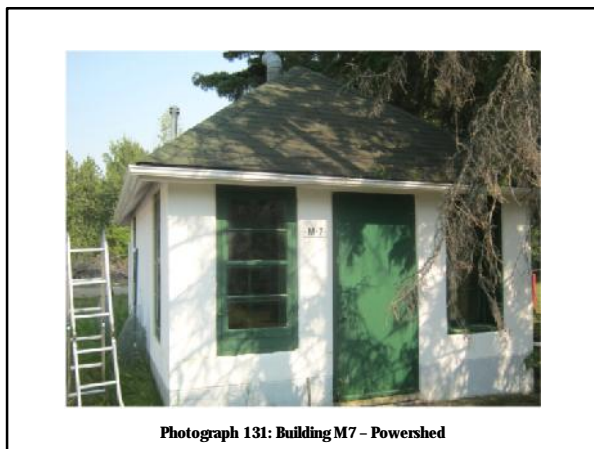
Photograph 128: Building M6 - Sample #M6-30, Stucco
None Detected



Photograph 129: Building M6 - Sample #M6-31, Stucco
None Detected



Photograph 130: Building M6 - Sample #M6-32, Caulk
None Detected



Photograph 131: Building M7 - Powershed



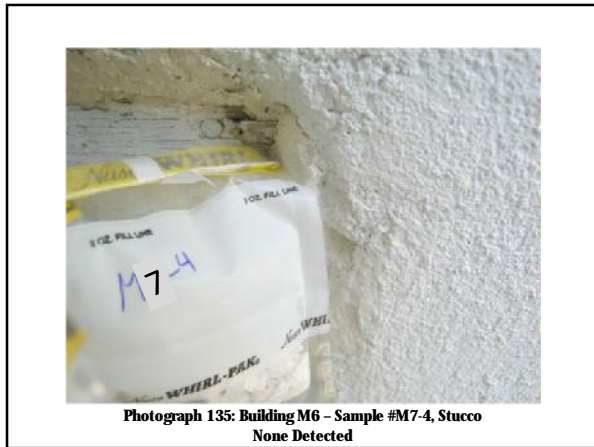
Photograph 132: Building M6 - Sample #M7-1, Shingles
None Detected



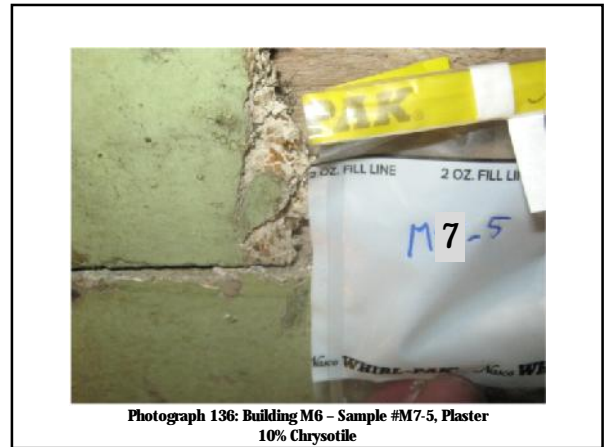
Photograph 133: Building M6 - Sample #M7-2, Stucco
None Detected



Photograph 134: Building M6 - Sample #M7-3, Stucco
None Detected



Photograph 135: Building M6 - Sample #M7-4, Stucco
None Detected



Photograph 136: Building M6 - Sample #M7-5, Plaster
10% Chrysotile



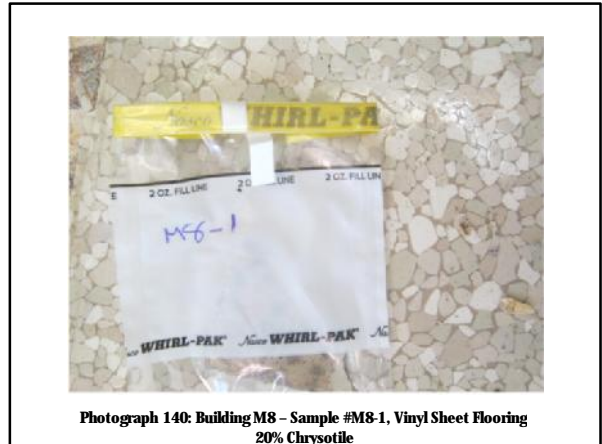
Photograph 137: Building M6 - Sample #M7-6, Plaster
10% Chrysotile



Photograph 138: Building M6 - Sample #M7-7, Plaster
10% Chrysotile



Photograph 139: Building M8 - Garage



Photograph 140: Building M8 - Sample #M8-1, Vinyl Sheet Flooring
20% Chrysotile



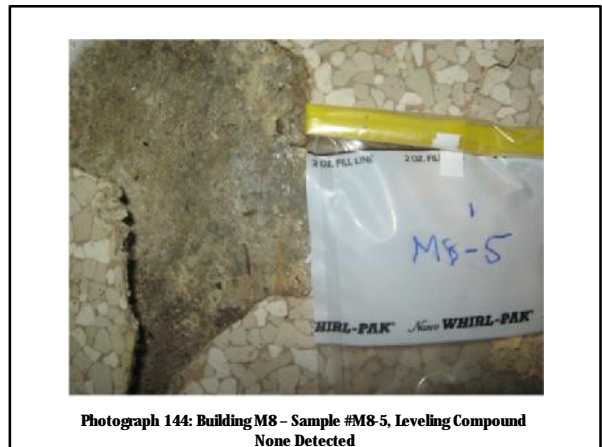
Photograph 141: Building M8 - Sample #M8-2, Leveling Compound
None Detected



Photograph 142: Building M8 - Sample #M8-3, Stucco
None Detected



Photograph 143: Building M8 - Sample #M8-4, Texture Coat
None Detected



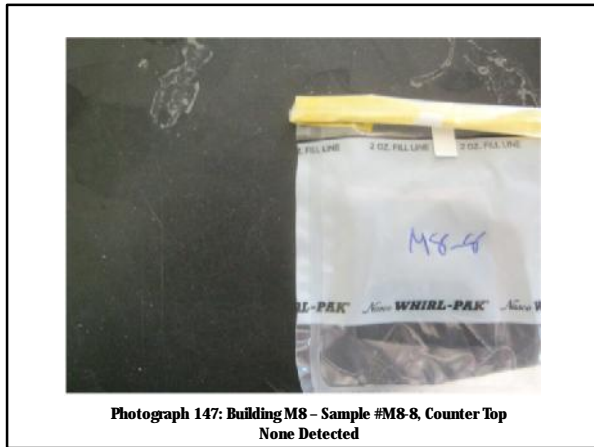
Photograph 144: Building M8 - Sample #M8-5, Leveling Compound
None Detected



Photograph 145: Building M8 - Sample #M8-6, Drywall Joint Compound
None Detected



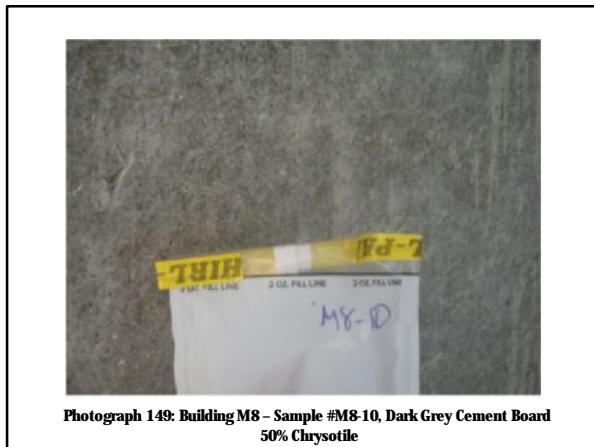
Photograph 146: Building M8 - Sample #M8-7, Vinyl Sheet Flooring
20% Chrysotile



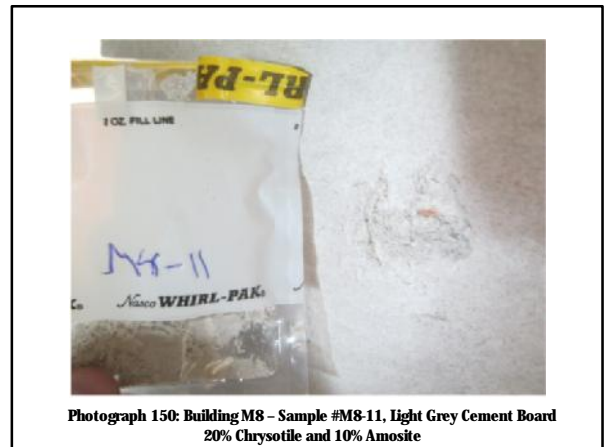
Photograph 147: Building M8 - Sample #M8-8, Counter Top
None Detected



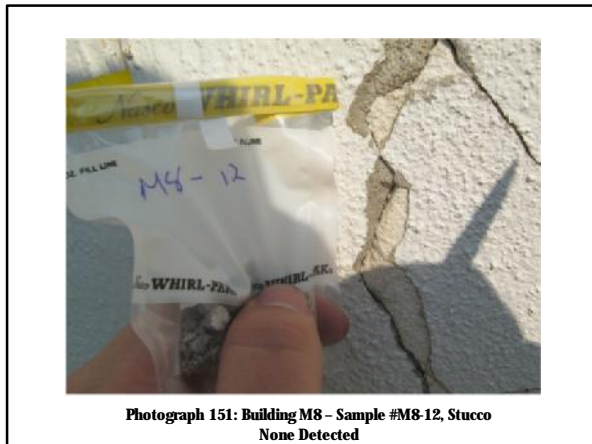
Photograph 148: Building M8 - Sample #M8-9, Grey Mortar
None Detected



Photograph 149: Building M8 - Sample #M8-10, Dark Grey Cement Board
50% Chrysotile



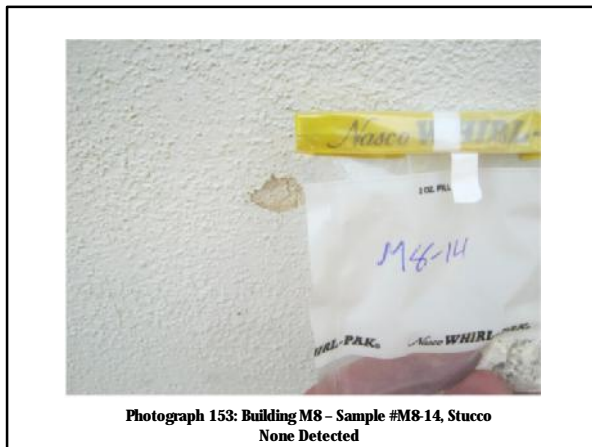
Photograph 150: Building M8 - Sample #M8-11, Light Grey Cement Board
20% Chrysotile and 10% Amosite



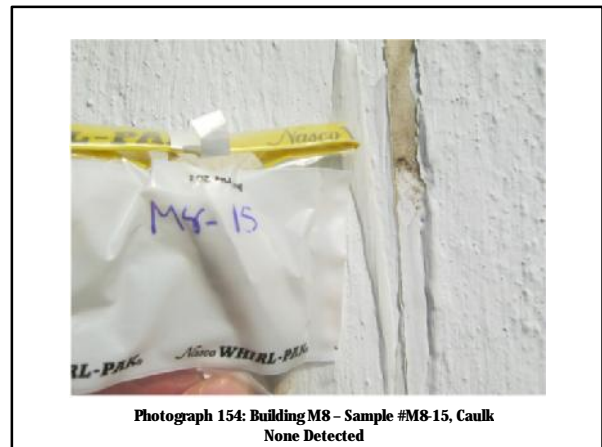
Photograph 151: Building M8 - Sample #M8-12, Stucco
None Detected



Photograph 152: Building M8 - Sample #M8-13, Stucco
None Detected



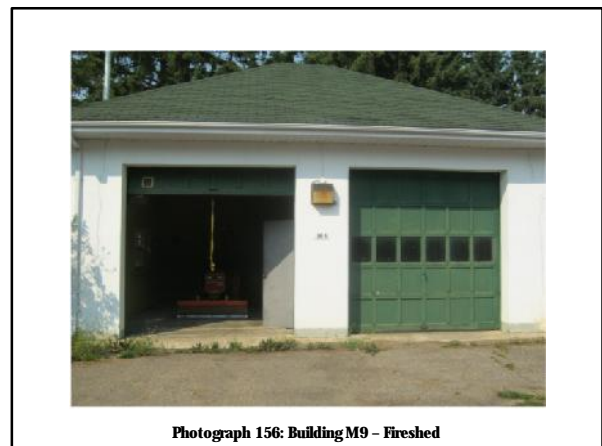
Photograph 153: Building M8 - Sample #M8-14, Stucco
None Detected



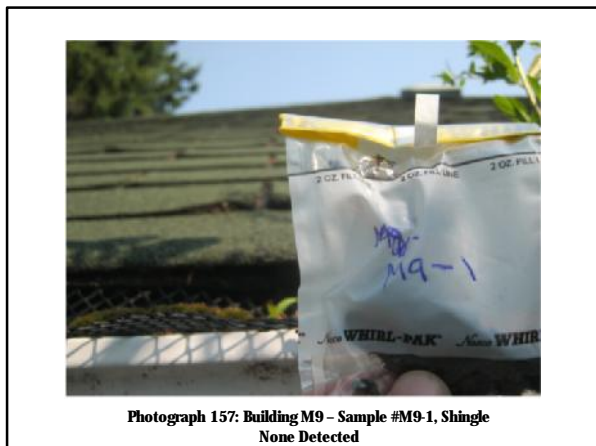
Photograph 154: Building M8 - Sample #M8-15, Caulk
None Detected



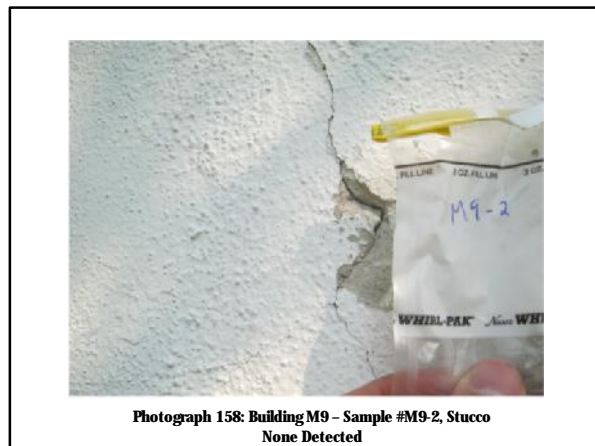
Photograph 155: Building M8 - Sample #M8-16, Shingle
None Detected



Photograph 156: Building M9 - Fireshed



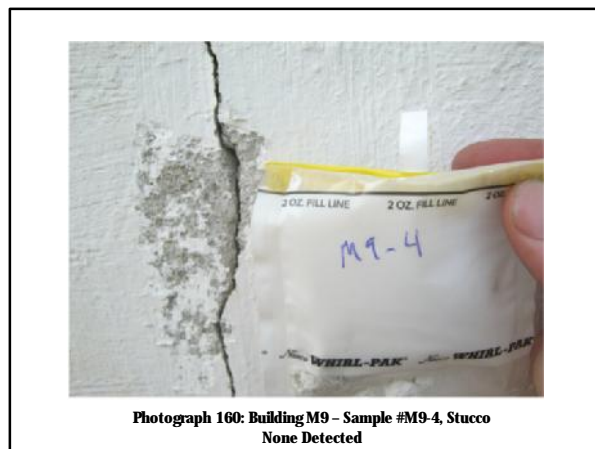
Photograph 157: Building M9 - Sample #M9-1, Shingle
None Detected



Photograph 158: Building M9 - Sample #M9-2, Stucco
None Detected



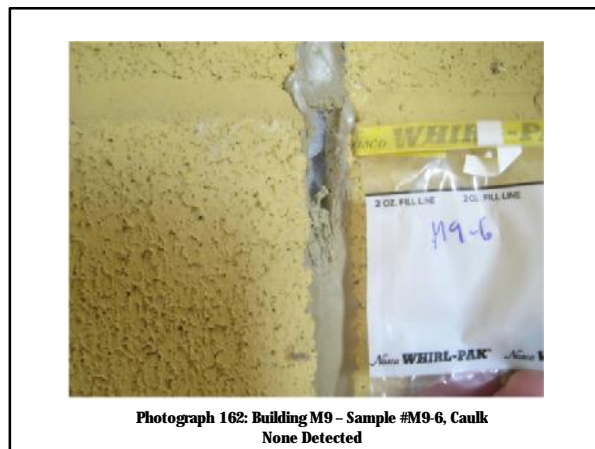
Photograph 159: Building M9 - Sample #M9-3, Stucco
None Detected



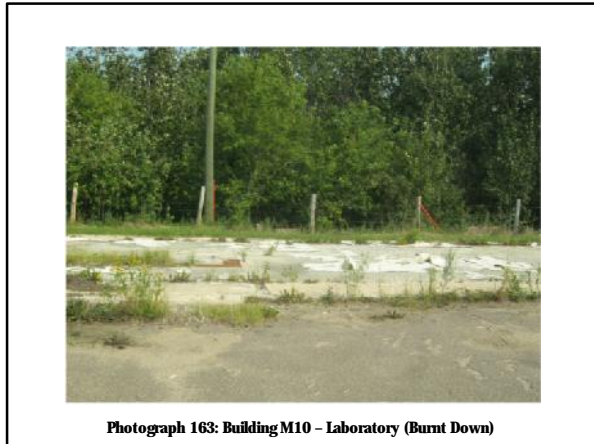
Photograph 160: Building M9 - Sample #M9-4, Stucco
None Detected



Photograph 161: Building M9 - Sample #M9-5, Drywall Joint Compound
None Detected



Photograph 162: Building M9 - Sample #M9-6, Caulk
None Detected



Photograph 163: Building M10 - Laboratory (Burnt Down)



Photograph 164: Building M10 - Sample #M10-1, Vinyl Sheet Flooring
None Detected

Appendix F
Quality Assurance / Quality Control Plan
Meanook National Wildlife Area

Asbestos-Containing Material Survey
Environment and Climate Change Canada
Meanook National Wildlife Area
Meanook, Alberta
Project #: 456BM-18-004

QUALITY ASSURANCE/QUALITY CONTROL

Quality Assurance and Quality Control (QA/QC) Plans ensure that data used to evaluate laboratory results are accurate and reliable. In this way, data interpretation and analysis will produce results that are scientifically accurate and defensible. The QA/QC program employed for this assessment included the use of duplicate sampling methodologies to determine the precision and bias of the results obtained from laboratory analysis.

Duplicates

Duplicate samples are analysed to check the reproducibility of laboratory analyses. A duplicate sample is defined as any additional sample collected at the same time and in the same as another sample in such a way as to minimize any differences between them. One (1) sample in every 20 was duplicated and submitted for laboratory analysis.

Relative percent difference (a measure of precision) was used to calculate reproducibility in duplicate samples.

Relative Percent Difference (RPD) is calculated by: $RD\% = [X_1 - X_2]/X_{avg} \times 100$, where:

X_1 = concentration observed in the first sample;

X_2 = concentration observed in the second sample; and

X_{avg} = average concentration $[(X_1 + X_2)/2]$.

Acceptable limits for RPD range from 40-50% depending on the sampled material. If a value is within the acceptable limit it is an indication that laboratory results are precise and reliable. Table 1 summarizes acceptable RPD limits:

Table 1: Limits for Relative Percent Difference

Sample Analysis	Acceptable RPD
Asbestos	< 50%

Table 2 below summarizes the duplicated asbestos samples and their calculated RPD.

Table 2: Asbestos Bulk Duplicate Sample RPD

Sample ID	Result	Duplicate ID	Duplicate Result	RPD	Pass/Fail
M1-4	50% Chrysotile	M1-4D	50% Chrysotile	0	Pass
M2-1A	< 1% Actinolite	M2-1B	< 1% Actinolite	0	Pass
M3-9	20% Chrysotile	M3-9D	20% Chrysotile	0	Pass
M5-20A	< 1% Actinolite	M5-20B	< 1% Actinolite	0	Pass
M6-1	None Detected	M6-1D	None Detected	0	Pass
M7-5	10% Chrysotile	M7-7	10% Chrysotile	0	Pass

Six (6) duplicated samples were compared. The samples passed.



Environment and Climate Change Canada

Project Name: Meanook Abatement and Demolition

Project Number: Meanook-001

ANNEX 4

ANNEX 4

CWS Permit Application Forms and General Permit Conditions

General Permit Conditions for Access to National Wildlife Areas (Alberta)

Reporting Chemical and Fuel Spills

Permit holders are responsible for ensuring fuel and chemical storage containers brought on site are secured and in good condition, and refuelling operations are carried out to avoid spills.

Should a spill of any fuel or chemical into the soil or water be observed, or be caused by the permit holder, that individual will immediately report the incident to the Alberta Environmental Hotline (1 800 222 6514), then phone Environment Canada in Edmonton (780-951-8700). The permit holder will be responsible for remediation costs.

Fire Prevention and Protection

Permit holders are responsible for preventing fires in order to protect infrastructure on-site. All permit holders must have operational fire extinguishers co-located with all combustion engine vehicles or equipment. Vehicles will remain on designated trails unless otherwise allowed in a permit, and generators or equipment will not under any circumstances be placed in dry grassy fuels during or immediately following operation. Fires can be started easily in dry grassy fuels, during hot and dry weather, simply from contact with the heated metal.

Should a fire be observed, or be caused by the permit holder, that individual will immediately report the incident to emergency services (911), then phone Environment Canada (780-951-8700).

Wet Weather Shut-down Criteria

Permit holders are responsible for mitigating damage to the environment caused by vehicle operation in wet weather. Generally, vehicular access should cease when there is:

- a) rutting of topsoil >10 cm deep, such that topsoil and subsoil mixing may occur;
- b) excessive wheel slip such that trails are widened or mud is splattered off-trail;
- c) excessive build-up of soil on tires and cleats, such that weed seeds are transported and manoeuvrability of vehicles is compromised; or
- d) formation of puddles on trail surfaces, indicative of soil compaction.

Vehicular activity can resume when soils have dried or frozen to avoid the situations above.

Should a vehicle become stuck in the mud, the permit holder is responsible for emergency services (911), towing, and any reclamation costs associated with damage to the environment.

Weed and Soil-born Livestock Disease Prevention

Permit holders are responsible for ensuring foot-wear, vehicles, equipment, and supplies are clean and free of weed seeds or mud from off-site. Water can be used to clean most things off-site and prior to access. In the case of soil excavations, metal tools should be cleaned thoroughly off-site before cores and pits are excavated on-site.

Waste Disposal

No waste disposal facilities are provided, and all waste materials (organic, recyclable, or non-recyclable) must be removed at the end of each day by those who generate the waste. All permit holders must bring containers suitable for the storage and removal of those waste materials. No toilet facilities are provided, so this also applies to human wastes.



PERMIT APPLICATION FOR A PROJECT IN A NATIONAL WILDLIFE AREA OR A MIGRATORY BIRD SANCTUARY

SECTION 1 – Applicant information (permit holder)

Last name and first name <i>(in block letters)</i> :	Name of organization <i>(if applicable)</i> :
--	---

Current address:

City:	Province/territory:	Postal code:
-------	---------------------	--------------

Telephone number:	Fax <i>(if applicable)</i> :	Email:
-------------------	------------------------------	--------

Will the project be carried out in or near a:

- National wildlife area (NWA)? yes no
- Migratory bird sanctuary (MBS)? yes no

If yes, indicate the name of all protected areas concerned:

Please indicate the project period:

From _____ to _____
(yyyy/mm/dd) (yyyy/mm/dd)

Have you ever obtained a permit for a national wildlife area or migratory bird sanctuary?
 yes no

Did you produce reports for the old permit? yes no

If this is a permit renewal, please indicate the number of the previous permit:

Is this application for a commercial activity in a national wildlife area?
 yes no

If yes, please fill out the section on commercial activity below.

Commercial activity. Please provide a description of the proposed commercial activity *(e.g., agricultural activity, boat rental, guided tour with a naturalist)*:



SECTION 2 – Collaborator(s). Please indicate the name and contact details of all collaborators that will take part in the activities covered by this permit application (add another sheet if need be).

Name	Organization (<i>if applicable</i>) and address	Telephone number

SECTION 3 – Nature of the project

- a) Please describe the project for which you are applying for a permit and specify the goal and objectives (add another sheet if need be) (e.g., *wildlife inventory, nature interpretation, monitoring of invasive species, repair of dyke overflow structure*).



b) Please indicate in detail the method proposed for the project. *Specifically, indicate the project duration; frequency of visits to the protected area; techniques, tools and machinery used; research protocol; number of samples gathered; follow-ups planned etc. and any other information that can help us assess the impact of the project on the environment of the protected area and migratory birds.* (Add another sheet if need be or attach separate descriptive documents by referring to them clearly in this section.)

c) In the table below, please identify the specific types of activities that need to be carried out to successfully complete the project covered by the permit application (check mark).

Operate a conveyance	Carry on any commercial or industrial activity
Swim, picnic, camp or carry on any other recreational activity or light a fire	Carry on any agricultural activity, graze livestock or harvest any natural or cultivated crop
Possess any wildlife or carcass, nest, egg or parts thereof	Disturb or remove soils, sand, gravel, rock or related material
Remove, deface, damage or destroy any artifact, natural object, building, fence, poster sign or other structure	Dump or deposit waste or other refuse materials or substances that would degrade or alter the quality of the environment
Damage, destroy or remove a plant	Possess any firearm, slingshot, bow and arrow, shot other than non-toxic shot or any instrument that could be used for the purpose of hunting or possess, while fishing, any lead sinkers or lead jigs that weigh less than 50 grams
Allow any domestic animal to run at large	
Hunt or fish	
Destroy or molest any wildlife, carcasses, nests or eggs	



d) Please indicate environmental impact mitigation methods and risk management techniques, if applicable. *For example, carrying out work after the bird nesting period, cleaning machinery to avoid introducing invasive alien species, having a response kit in the event of a hydrocarbon spill.* (Add a sheet if need be)

IMPORTANT NOTE

Incomplete applications will not be considered. Attach with the duly completed form any documents deemed relevant to the application (geographic coordinates, site maps, photographs, copy of a previous permit or permit issued by another authority, detailed description of the project methods, etc.).

Environment and Climate Change Canada may request additional information before issuing the permit.

SECTION 4 – Attestation and signature

I, _____ (print name), hereby certify that:

- All information provided is accurate and complete to the best of my knowledge
- I, or the permit holder, have the skills and knowledge required for the project covered by the permit
- I understand my obligation to obtain in advance any other permits or federal, provincial or municipal authorization required to complete this project legally

APPLICANT’S SIGNATURE: _____ **DATE:** _____
(yyyy/mm/dd)