Klohn Crippen Berger

City of Edmonton

Environmental Impact Screening Assessment

City of Edmonton River Rescue Site Location

Final Report

June 2013
A05000C20

Klohn Crippen Berger

June 11, 2013

Project Management and Maintenance Services
Community Services
City of Edmonton
18th Floor Century Place
9803 – 102A Avenue
Edmonton, Alberta
T5J 3A3

Devin Richards
Project Officer, Civic Project Delivery

Dear Mr. Richards:

Environmental Impact Screening Assessment - City of Edmonton Repurpose of Station 21

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Should you have any questions, please contact the undersigned at (780) 733-4586.

Yours truly,
KLOHN CRIPPEN BERGER LTD.

Jason Duxbury, PhD, P.Biol.
Biophysical Lead

JD: jt

Klohn Crippen Berger Ltd. • Suite 301, 2627 Ellwood Drive • Edmonton AB T6X 0P7 • CANAD
780.444.0706 t • 780.481.2431 f • www.klohn.com

City of Edmonton

Environmental Impact Screening Assessment

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EXECUTIVE SUMMARY

Purpose

In response to City Council's request that a Site Location Study and a subsequent Environmental Impact Screening Assessment (EISA) be conducted for River Rescue and Fire Rescue Support Services, Klohn Crippen Berger Ltd. (KCB) was retained by the City of Edmonton (the City), Community Services to conduct both the site location study and the EISA. The single property chosen to proceed to the EISA process was the existing Station 21 site in Plan Q Block 1 Lots 1-19; situated at 93rd Avenue and 101 Street NW, in Edmonton, Alberta (Study Area).

Current River Rescue Services operations are based out of Station 21, which is located at the river's edge, but requires the use of a crew stationed at Station 6 which adds 10 to 15 minutes to the response time for launching the rescue boat. Stationing a crew at Station 21 would provide an opportunity for Fire Rescue Services to efficiently provide a higher level of service to the public. The availability of a crew at Station 21 would then also play an important role as part of Fire Rescue Services' redundancy strategy and station support system.

Since 1985, Bylaw 7188 – North Saskatchewan River Valley Area Redevelopment Plan (NSRVARP) has been in place to manage project development and redevelopment within the NSRV and its tributary ravines. The proposed repurposing of Station 21 therefore requires a review under the NSRVARP.

Assessment and Conclusions

The potential effects of the repurposing of Station 21 including stationing staff for River Rescue and support Fire Rescue Services are considered to be not significant. The biophysical elements of topography, geology, hydrology, soils, vegetation, and wildlife are not expected to be negatively affected by the repurposing and refurbishing Station 21. The repurposing of Station 21 falls within acceptable guidelines and policy under the NSRVARP and the Rossdale Area Redevelopment Plan (ARP). Parking and traffic, noise and odours, aesthetics, and human health and safety are not expected to significantly change from existing conditions. Following the submission of a Historical Resources Overview, the decision for clearance from Alberta Culture is pending.

The most notable effect of the repurposing of Station 21 will be the increase in emergency response related traffic and associated noise in the area. However, the noise would be short duration and, as calls are anticipated to reflect current call timing, occur mostly during the day. The frequency of siren use is expected to be approximately less that 10% of that experienced in the residential neighbourhood surrounding Station 3.

The repurposing of Station 21 expected to have negligible to no effects to the natural environment of the NSRV. Thus, the station could be deemed an essential development in the River Valley and not be in conflict with the principles of the NSRVARP.

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1 INTRODUCTION

1.1 Purpose of Report

This report is a response to City of Edmonton's Community Services Committee's motion made on August 20, 2012 that a Site Location Study and a subsequent Environmental Impact Screening Assessment (EISA) be conducted with the goal of finding the best solution to meet the needs of River Rescue and Fire Rescue Support Services. Klohn Crippen Berger Ltd. (KCB) was retained by the City of Edmonton (the City), Community Services (Client) to first conduct a site location study for potential sites for River Rescue and Fire Rescue Support Services, and then to prepare an EISA of the short-listed sites. Upon review of the findings of the *River Rescue and Backup Fire Rescue in the Core – Environmental Screening Assessment and Site Location Study* (KCB 2013), the Client chose a single property to proceed to the EISA phase. The property that was chosen was the existing Station 21 site in Plan Q Block 1 Lots 1-19; situated at 93rd Avenue and 101 Street NW, in Edmonton, Alberta (Appendix I; Figures 1 and 2).

1.2 Project Purpose and Rationale

Fire Rescue Services is mandated to provide River Rescue Services in the North Saskatchewan River Valley (NSRV). Although River Rescue Services operations are based out of Station 21, which is located at the river's edge, the present operating model requires the use of a crew stationed at Station 6 (located at 96 Street NW and 81 Avenue NW). The non-linear route required to travel between Station 6 and Station 21 (Appendix I; Figure 3) adds 10 to 15 minutes to the response time for launching the rescue boat. In addition, the crew at Station 6 is among the busiest in the City, responding to over 3700 events in 2012. The dependence of a potentially unavailable crew from Station 6 for River Rescue Services; or conversely, the loss of the Station 6 crew to Fire Rescue Services during a river rescue operation, are both negative scenarios that could be prevented by stationing a permanent crew at Station 21.

In 2012, there were 63 river rescue events, with most occurring during the summer months (City of Edmonton, unpublished data). The annual average for summer river rescue events is approximately 40. With the future developments and enhancements reflected in the master plan of the River Valley Alliance (RVA 2013), increased access to the river and associated growth in the number of people visiting the river valley is expected over time. Further, within the City of Edmonton limits, at least seven docks and or boat launches are proposed, with most being additions to existing river access; thereby, use of the river is anticipated to increase. In view of this potential increase in river rescues, Fire Rescue Services proposes to station a full time River Rescue crew at Station 21.

Stationing a crew at Station 21 provides an opportunity for Fire Rescue Services to efficiently provide a higher level of service to the public. The availability of a crew at Station 21 would play an important role as part of Fire Rescue Services' redundancy strategy and station support system. The station would be capable of housing backup Fire Rescue vehicles for the central core of Edmonton as well as the crew without physical expansion.

The current operation of Station 21 includes the storage of specialized emergency response equipment such as a Foam Truck and a Fan Unit. The continued storage of this equipment at the station is considered to be a requirement by Fire Rescue Service. These units are rarely deployed (approximately five dispatches each per year; City of Edmonton, unpublished data). Another empty bay could be used for a Mobile Command Unit. This vehicle is dispatched an average of 21 times a year. In combination, the frequency of events requiring the Foam unit, the Fan unit and/or a Mobile Command Unit average only 32 events per year. Thus, a centrally located backup facility is an ideal storage location for rarely used equipment.

Since 1985, Bylaw 7188 – North Saskatchewan River Valley Area Redevelopment Plan (NSRVARP) has been in place to manage project development and redevelopment within the NSRV and its tributary ravines. Therefore, the proposed repurposing of Station 21 in the river valley requires a Site Location Study and an EISA as directed by the NSRVARP.

The repurposing of the station to support full-time, on-site rescue personnel, along with some physical works on the existing building, are the issues assessed. The crew to be housed at the station will utilize the pre-existing boat launch, located east of the station building. Immediately following the repurposing of Station 21, the number of times the boat launch is used is not expected to change due to the crew's presence. In the long-term, the predicted usage of the boat launch is expected to remain within the intended capacity and configuration of the launch and station. The housing of the crew at the station will also eliminate the current traffic of the crew being dispatched from Station 6. Since the continued presence and usage of the launch will not introduce any new environmental effects, the assessment of the existing boat launch was not included in this EISA. Should the launch require rehabilitation in the future, an environmental screening or assessment of the launch may be required at that time.

Sections 3.3.3, 3.5.1 and 3.5.3, along with Schedule D of the NSRVARP provide direction on the assessment of potential socio-economic and environmental effects of the Project; positive or negative. The process sets out specific requirements towards the determination if the location of such a public facility is essential within the NSRV, and what potential effects of the Project may have on the natural environment of the river valley.

This assessment also took into consideration pertinent Plan Objectives from the Rossdale ARP. The Plan Objectives taken into consideration during assessment process included:

24. *To encourage the retention and development of mature vegetation, particularly as a buffer between residential areas, arterial roadways and non-residential land uses.*

28. *To provide adequate traffic management measures to ensure safe and convenient pedestrian and vehicular access to and egress from the neighbourhood.*

30. *To buffer the impact of City-wide utilities and other municipal services on the community through screen planting and traffic and noise control measures.*

32. *To provide an acceptable level of service for utilities, water, fire and Police protection, public transit and other municipal services.*

38. To encourage retention, restoration and recycling of historically significant buildings, and retention and interpretation of historically and archeologically significant sites, where feasible.

1.3 Study Area

The property is located at the south end of the community of Rossdale, in the NSRV (Appendix I; Figures 1 and 2). The legal description in which the Study Area is located is Plan Q, Block 1, Lots 1-19. The property can be found at 93rd Avenue and 101 Street NW, in Edmonton, Alberta. With the aforementioned exclusion of the existing boat launch area, the Study Area for the assessment covers approximately 0.8 ha (Appendix I; Figure 4).

1.4 Study Process and Method

The study process and method of assessment followed the guidelines described in *A Guide to Environmental Review Requirements in the North Saskatchewan River Valley and Ravine System* (COE 2000), and the Terms of Reference (TOR) reviewed and approved by the City of Edmonton, Planning and Development, May 3, 2013 (Appendix II).

One of the purposes of an EISA is to predict, interpret and evaluate the potential environmental effects associated with proposed development (COE 2000). The existing environment was described and evaluated based on a desktop study including: a review of relevant literature, a review of past environmental reports, and existing data. A reconnaissance field visit was conducted on April 23, 2013.

2 PROJECT DESCRIPTION

2.1 Site Selection

The Client evaluated five sites for a combined River Rescue and Fire Rescue Support Services station, including Station 21. KCB assembled existing information for each of the sites which in turn was used by the Client as assessment criteria for the purpose of short-listing the potential sites (KCB 2013).

The other four alternate sites were:

- Cloverdale: 9812 96a Street (Rafters Landing);
- Queen Elizabeth Park: 10370 Queen Elizabeth Park Road (Dantzer's Hill east of Walterdale Bridge);
- Riverdale: 10296 87 St. north of Dawson Bridge; and
- North Rossdale: approximately at 9903 Rossdale Road at James McDonald Bridge.

2.2 Project Setting and Site Description

Currently, Station 21 serves as an unmanned base for river rescue services, to which personnel from Station 6 are dispatched. The building is also the current storage facility for the river rescue boat, a secondary utility boat, a foam truck and a fan unit. The brick station building is approximately 1800 m^2 in size. The north portion of the property contained a smoke house and training tower, both of which were removed in 2004 (pers. comm., Barry Fraser, Fire and Rescue Services; April 25, 2013).

The repurposing of the station (i.e., the addition of a crew at the station and provision of additional services from the station) will not require an expansion of the station footprint. The river rescue boat, utility boat, foam truck and fan unit would continue to be housed in the existing building. It is proposed that a Rescue Truck would be stationed within the building. The remaining capacity of the station would be considered to be a suitable central core location for a Mobile Command Unit.

No new structures are planned for station repurposing, nor will an expansion of the asphalt apron around the station be required. Beyond the extent of asphalt to the east and south of the existing building, the property is landscaped with lawn, shrubs and trees. None of the trees within the Study Area require removal. A graveled covered area is situated to the north of the asphalt. The property is partially fenced. A segment of the City of Edmonton Parks River Valley Trails is situated at the top of the river bank, adjacent to the fence to the east and south. The existing River Rescue boat launch is located east of the of station building.

2.3 Scope of Work

Although Station 21 could be manned and operated under existing conditions, certain improvements at the site would enhance operations at the site.

2.3.1 General

The proposed repurposing of Station 21 would require:

- renovating and upgrading the building interior to match the standards of a manned Fire Rescue Station capable of stationing Fire Rescue vehicles;
- moving the property's north boundary fence line and access gate south approximately 32 m north of the existing building and installing a security card access system in the gate;
- marking parking stalls in the area is to the north of the existing building;
- updating the heating and ventilation systems to current standards and codes;
- removing asbestos used during construction of the building where it is exposed by rehabilitation work;
- completing additional formal testing for other hazardous building material that no longer meets code or OH&S standards; and
- refurbishing the building roof, front entrance and some windows.

There will be no changes to the footprint of the existing building and existing boats and support vehicles will remain at site.

2.3.2 Building Condition Assessment

The City of Edmonton had a Building Condition Assessment conducted at Station 21 in 2012 (Stantec 2012; provided in Appendix I). The purpose of the assessment was to visually review and ascertain the existing condition of the facility, and to establish requirements with respect to maintenance, repair, and capital replacement. The general findings of the report were:

- Building Structure – "Overall, the facility's structural components appeared to be in good condition."
- Building Exterior – "Overall, the facility's exterior finishes are in acceptable condition."
- Building Interior – "Overall, the facility's interior components are in acceptable condition."
- Mechanical Systems – "Overall, the facility's mechanical components are in acceptable condition."
- Electrical Systems – "Overall, the facility's electrical components are in acceptable condition."
- Site Improvements – "Overall, the facility's site components are in acceptable condition."

Options and alternatives for refurbishments identified in Stantec (2012) are outlined below.

External

- The roof systems are original to construction and have surpassed their maximum Expected Useful Life (EUL). The roof needs immediate attention.
- The main entrance storefront doors have surpassed their maximum EUL. They will require replacement within three years.
- The overhead doors serving the equipment bays have surpassed their maximum EUL. They will require replacement within three years.
- The exterior windows are original to construction and will surpass their maximum EUL without replacement. They will require replacement within eight years.
- Lineal cracking in the asphalt apron will need to be repaired when possible.

Internal

- Parts of the interior require some immediate painting.
- Some wall and ceiling repairs from leaking roof are required immediately.
- New tiling and flooring in the washrooms will be required within 8-10 years.
- No electrical repairs or replacement required at this time.
- Minor clean-outs and tune ups are expected for mechanical systems, but no major repairs or replacements are expected.

In addition, a survey to identify and document Asbestos-Containing Materials (ACMs) within the station building was conducted in 2010 (DST 2010; provided in Appendix I). The report provided recommendations for the management, repair or removal of identified ACMs. Confirmed ACMs included drywall joint compound, vinyl floor tiles, pipe parging insulation, and ceiling tiles. All ACMs were found to be in good condition at the time of the survey, but potentially harmful ACMs are to be removed during renovations of the interior should they be exposed.

Based on the cost summary provided in Stantec (2012), the bulk of the building repairs are suggested to take place in 2015. Minor work on mechanical systems and building interiors is proposed for 2013 and 2014. Another period of increased refurbishment activity is expected between 2019 and 2022.

3 EXISTING ENVIRONMENT

3.1 Natural Environment

3.1.1 General Description

The City of Edmonton is situated in the Central Parkland subregion of Alberta. Trembling aspen (*Populus tremuloides*) and balsam poplar (*Populus basamifera*) are common tree species in this subregion. The mean annual temperature for the Central Parkland subregion is 2°C with the average temperature between May and September being 13°C. The frost-free period is approximately 95 days. The mean annual precipitation in this subregion ranges between 350 mm and 450 mm. The majority of the precipitation accumulates between May and September (NRC, 2006).

The riparian (on or near the river bank) habitat of the NSRV supports high levels of biodiversity and can provide a path of least resistance for wildlife traveling through the city (COE 2008). The riparian habitat adjacent to the Study Area is not extensive. However, the forest cover located south and east of the fence that bounds the Study Area plays an important role as a linkage to core areas of habitat located throughout the river valley (*Ibid*).

The majority of the Study Area is devoid of natural cover. Other than a few trees, some ornamental shrubs, and some areas covered by lawn, the Study Area is mostly covered by asphalt or the building structure of Station 21 (Appendix III; Photos 1-7).

3.1.2 Topography

Rossdale neighbourhood is situated atop a river terrace of post glacial (uppermost Pleistocene – Holocene) age. The terrace is approximately 6 m to 8 m above the mean water level in the North Saskatchewan River. The river banks steeply to approximately 60 m above mean water level to the south and to approximately 50 m to the north, though the latter rise occurs gradually over approximately 800 m north – northwest from the Study Area towards downtown.

The topography of the Study Area is flat lying with approximately 70% covered by asphalt or building structures. The North Saskatchewan River can be accessed to the east of the Study Area via a narrow, paved decline. There is a small knoll located along the southern perimeter of the site, it is not known, however, if the knoll is natural or artificial.

3.1.3 Geology

As noted above, the Study Area is located on a river terrace in the North Saskatchewan River Valley. The terrace is comprised of fine grained sediments deposited post-glacially on Cretaceous bedrock of the Edmonton Formation.

To the south, immediately across the North Saskatchewan River, the river bank consists of a thick exposure of bedrock overlain by thin layers of reworked Saskatchewan gravels and sands, unsorted glacial till and glaciolacustrine deposits from the former Glacial Lake Edmonton (Kathol and McPherson, 1975). To the north of the river, the geology is similar with the exceptions of a gentler

slope gradient and the presence of sands and gravels derived from glacial melt-waters (Kathol and McPherson, 1975).

The Edmonton Formation consists primarily of fine-grained bentonitic sandstone and siltstone interbedded with, and grading vertically and laterally into bentonitic silty claystone. Coal seams and bentonitic beds of variable thickness are common, along with beds of claystone and sideritic sandstone. Beds in the Edmonton Formation are lenticular and difficult to trace because of the lateral and vertical variation of the lithologies over short distances. Bedrock mineralogy (Locker 1969) is characterized by a high proportion of volcanic detritus in the sand and silt fractions. Biotite and montmorillonite clay are the predominant minerals that enhance the fracturing nature of the bedrock.

3.1.4 Hydrology and Hydrogeology

The 1:100 year floodplain historically extended from the North Saskatchewan River to 637 m above sea level (asl) in the NSRV (AENV 1974). According to the Edmonton Zoning Bylaw 12800, Section 812, Floodplain Protection Overlay, the Study Area is situated within the 1:100 year floodplain (COE 2008). There are no wetlands or low-lying areas that maintain surface water on-site.

Raw HEC-2 data gleaned from Alberta Environmental Protection (AEP 1994) was modeled to determine whether or not the Study Area fell within the 1:25 year floodplain. Based on available data (to be confirmed), the station grounds are located at approximately 622 m above sea level (asl), the 1:25 year flood levels would be expected to reach 621 m asl. Therefore, except for some undulation in the ground surface, most of the Study Area would be above the 1:25 flood level.

Groundwater depth beneath the Study Area was taken from EBA (2002). Wells that were installed to measure and monitor groundwater made reached groundwater between 8.5 m and 11 m below ground surface. EBA (2001) noted possible groundwater contamination within the Study Area.

3.1.5 Soil

Soils in the Study Area have been artificially enhanced and disturbed during the course of site development. The Study Area is situated on river terrace deposits consisting mainly of flood plain deposits of silts and clays with some sand. Native soils have been described as belonging to the Orthic Regosol Group and are developed on recently deposited river materials (Kathol and McPherson, 1975). The soils are characterized by immature textures, lacking distinct horizon development and are classified based primarily upon parent materials (Bowser et. al. 1962). Texturally, the soils are loams, silty loams, or in some instances sandy loams (Bowser et. al. 1962). EBA (2001) noted an area of soil contamination partially within the Study Area.

3.1.6 Vegetation

The Alberta Conservation Information Management System (ACIMS) was queried to for information on rare plant occurrences in the NSRV within Edmonton city limits. The ACIMS (2013) included 12 rare plant occurrences (Appendix IV; Table 1).

Very little of the Study Area is vegetated and it does not provide suitable habitat for any of the plant species of concern listed in Table 1 (Appendix IV). The majority of the moss species of concern have been reported on steep spruce-dominated slopes (Ecomark 2009). Smooth sweet cicely (*Osmorhiza longistylis*) and flat-topped white aster (*Aster umbellatus*) have been found in open mixedwood or aspen-dominated forests within the river valley, whereas false dragonhead (*Physostegia ledinghamii*) and seaside sedge (*Carex incurviformis* var *incurviformis*) have been found in moist areas near the river shore (*Ibid*). The steep forested slopes across the river from the Study Area, likely provide higher quality habitat for these species of concern.

3.1.7 Wildlife

Existing databases and lists of wildlife provided in previous assessments of proposed projects within the NSRV were used to compile a list of wildlife species that could potentially be found on, or adjacent to, the Study Area. Data were gathered from:

- Alberta Biodiversity Monitoring Institute (ABMI 2013);
- Fish and Wildlife Management Information System (FWMIS 2013);
- National Audubon Society (NAS) Christmas Bird Count (CBC 2013); and
- Kin Park Playground Environmental Impact Assessment (KCB 2011).

Additional government sources were reviewed to determine the conservation status or legal protection of wildlife and vegetation found in the Study Area. These sources include:

- The *Species at Risk Act* Public Registry (2013);
- The Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2013) searchable database; and
- Alberta Environment and Sustainable Resource Development General Status of Wild species database (ASRD 2010).

Amphibians and Reptiles

The FWMIS was queried for any occurrence records of reptiles and amphibians (herptiles) for the Study Area. Based on the FWMIS occurrence records and a review of relevant literature seven species of herptiles could potentially occur within the Study Area (Appendix V; Table 2).

The Study Area does not provide suitable breeding habitat for amphibians, as there are no temporary or permanent wetlands. The riparian zone outside of the fence to the east and south of the Study Area may provide suitable feeding habitat and overwintering habitat for the wood frog (*Rana sylvatica*), as this species prefers damp, shady woods (ASRD 2009). The conifer covered south bank of the North Saskatchewan River Valley south across the river from the Study Area may provide suitable overwintering habitat for the Canadian toad (*Bufo hemiophyrys*) (Hamilton et al. 1998); however, the sheer incline of the slope may not be suitable for toads.

Birds

Bird occurrence data for the Study Area was a compilation of data from Ecomark (2009), KCB (2011), ABMI (2013), and the National Audubon Society (2013) (Appendix V; Table 3). The FWMIS (2013) database was also queried to determine if occurrences of sensitive species have been recorded in the vicinity of the Study Area. Over 60 species of birds would be expected in or adjacent to the Study Area, with most occurring in the riparian zone outside of the Study Area.

Approximately one-third of the bird species considered to be possible in and around the Study Area could theoretically nest inside the Study Area; however, only a few are actually likely to nest inside the Study Area. Some would require special circumstances such as nest cavities present in the larger trees, or specific roof conditions that would be suitable for species such as Common Nighthawk (*Chordeiles minor*). Those most likely to nest in the Study area are those habituated to human activity; American Crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), Black-billed Magpie (*Pica hudsonia*) and Black-Capped Chickadee (*Poecile atricapillus*). These species likely have the greatest potential to use the few trees and shrubs in the Study Area for nesting and foraging habitat. Non-native species such as House Sparrows (*Passer domesticus*), European Starlings (*Sturnus vulgaris*), and Rock Pigeons (*Columba livia*) are highly adaptive to human made structures, and would also be expected to nest in the Study Area.

The thin, treed riparian zone located east and south of the Study Area likely provides higher quality habitat for other bird species. However, the species richness and diversity of birds utilizing this section of riparian habitat at this location in the city is expected to be less than what would occur in the NSRV outside of an urban setting. Species that would still be expected adjacent to the Study Area include: Alder Flycatcher (*Empidonax alnorum*), Common Yellowthroat (*Geothlypis trichas*), Red-eyed Vireo (*Vireo olivaceus*), yellow warbler (*Dendroica coronata*), and White-throated Sparrow (*Zonotrichia albicollis*) (Cornell 2013).

Mammals

The provincial FWMIS was queried to report any wildlife occurrence records within 3 km of the Study Area. Based on the FWMIS occurrence data and a review of COE (2008), KCB (2011) and AMBI (2013), there are 38 mammal species that could potentially occur on or near the subject property (Appendix VI; Table 4).

The Study Area does not provide high quality habitat for most mammals. The site is open, with very little cover and browse available for ungulates. The sparse ornamental trees and shrubs provide very little habitat for most mammals. Some cover is present for common small mammals such as least chipmunk (*Tamias minimus*), red squirrel (*Tamiasciurus hudsonicus*) and snowshoe hare (*Lepus americanus*). The larger aspen trees could provide roosting and nursery habitat for bats, including the little brown myotis (*Myotis lucifugus*) which listed by the Committee on the Status of Endangered Wildlife in Canada as an 'Endangered' species. However, it has yet to be legally designated as 'Endangered' under the Canada's Species at Risk Act.

Fish

The provincial FWMIS database was queried for fish occurrences within a 3 km radius of the North Saskatchewan River near the subject property. Seventeen fish species occurrences were reported in the North Saskatchewan River (Appendix VI; Table 5), including lake sturgeon which listed by the Committee on the Status of Endangered Wildlife in Canada as an 'Endangered' species. However, it has yet to be legally designated as 'Endangered' under the Canada's *Species at Risk Act*. A documented location for lake sturgeon breeding habitat is known to be located just beyond 3 km downriver from the Study Area. An additional 11 species of fish that are commonly found in the North Saskatchewan River (Alberta Environment 1984; Nelson and Paetz 1992) are also provided. There is no suitable fish habitat in the Study Area.

3.2 Socio-Economic Environment

3.2.1 Land Use

3.2.1.1 Overview

The Rossdale community is bounded by the Downtown and McKay Avenue Boundary areas on the north, the Legislative Grounds on the west, and the North Saskatchewan River on the south and east. The 0.8 ha Study Area is located in the Rossdale community at the southern end of 101 Street. The North Saskatchewan River bounds the site to the south and east with the EPCOR property and facility located to the west and residential lands to the north. Land use along 101 Street from the Study Area to 97 Avenue is residential on the east side and open space with the baseball field on the west side. Residential use continues to the east to the North Saskatchewan River and mixed use with limited residential continues west to 105 Street.

Provincial legislation sets out a hierarchy of planning instruments to be used by Alberta municipalities in guiding and regulating development as follows:

- General Municipal Plan which sets out overall vision and goals for the City.
- Intermediate policy plans including ARPs which more specifically guide change and development within older communities in the City.
- Zoning which is applied to properties to establish property owner rights and to regulate the uses allowed on specific properties.

In terms of zoning, each zone includes Permitted Uses and Discretionary Uses. Development Permits must be issued for Permitted Uses that conform in all respects to the Zoning Bylaw. Discretionary uses may be approved if the Development Officer is of the opinion that they will not adversely affect the use and enjoyment of surrounding properties. However the Development Officers decision on a discretionary use must conform to any direction given in an applicable ARP Bylaw or the ARP must be amended to accommodate the discretionary use before approval can be provided.

The instruments most relevant to this Project are the ARPs and zoning. As mentioned in Section 2.4, the ARPs applicable to the study area are the North Saskatchewan River Valley ARP (NSRVARP) and the Rossdale ARP which were adopted in 1985 and 1986 respectively.

3.2.1.2 Area Redevelopment Plans

North Saskatchewan River Valley ARP

A key objective of the NSRVARP is to protect the natural environment of the valley area by requiring that new or intensified public facilities proposed in the River Valley be screened to ensure that the facilities are essential within the River Valley. The screening process involves a review of potential environmental effects of the development and requires that a decision regarding the location be made by City Council prior to any monies being spent on the capital project (Section 3.4.3 and Schedule D of the Bylaw). As a result of the adoption of the NSRVARP, the Rossdale and Cloverdale communities experienced a policy shift from a future as City park areas to redeveloped mixed-use residential communities.

Rossdale ARP

The Rossdale ARP recognizes a wide variety of uses in the community ranging from residential opportunities to the power generating facility, the water treatment facility, the ball park and a variety of other mixed-uses.

In 2011 the West Rossdale Plan amendment was approved. Of particular note, this amendment brought opportunities for significant building density and population increases estimated at 3500 people. The 2011 amendment also added the following to Section 3.3:

- South Rossdale has a number of City-wide recreational and utility sites which will be retained and/or repurposed: These include the former Donald Ross School, The EPCOR Rossdale Power Plant, the Rossdale Water Treatment Plant, and the Rossdale Fire Station No. 21.

The Rossdale ARP includes 41 Plan Objectives outlined in Section 1.2. Although none of the objectives reference Station 21 specifically, there are those that are relevant to development in the area such as:

> *24. To encourage the retention and development of mature vegetation, particularly as a buffer between residential areas, arterial roadways and non-residential land uses.*
>
> *28. To provide adequate traffic management measures to ensure safe and convenient pedestrian and vehicular access to and egress from the neighbourhood.*
>
> *30. To buffer the impact of City-wide utilities and other municipal services on the community through screen planting and traffic and noise control measures.*
>
> *32. To provide an acceptable level of service for utilities, water, fire and Police protection, public transit and other municipal services.*

38. To encourage retention, restoration and recycling of historically significant buildings, and retention and interpretation of historically and archeologically significant sites, where feasible.

3.2.2 Station 21

Station 21 was constructed in the 1950's to serve a variety of Fire Rescue Service functions including the River Rescue facility and the Training Centre. In the late 1990's Station 21 was repurposed to act as an unmanned station within which to store and launch the River Rescue boat, a Fan Unit, and a Foam Truck. The City has considered repurposing the facility back to a functioning station in the past but the application did not proceed.

With respect to conventions for developments within floodplain zone, Station 21 is located within the 1 to 100 year flood zone. The Rossdale ARP allows for development in this zone with conditions.

3.2.3 Parking and Traffic

There are approximately 120 residences located in South Rossdale situated along three north–south running streets (100 Street, 100A Street, and 101 Streets NW)(Appendix I; Figure 2). The neighbourhood is transected by four east-west running avenues (94 to 97 Avenues NW). There is also a six-building, multi-family development located at the very north end of the neighbourhood, bounded to the south by 97 Avenue NW, to the east by 100 Street, and by to the north by 98 Avenue NW at the approach to the James MacDonald Bridge.

Information obtained from the 2012 City of Edmonton Municipal Census for the entire Rossdale community indicated a population of 819 residents with 475 total residential dwellings. Of the total residents, approximately 58% or 473 residents worked either full or part time, and of those residents, approximately 324 used personal vehicles to get to and from their places of employment.

South Rossdale can be accessed via 96 Avenue NW from Rossdale Road northbound or 104 Street southbound, and by 101 Street NW off 97 Avenue NW eastbound (Appendix I; Figure 2). With the Site located at 94 Avenue NW and 101 Street NW, access is via 101 Street or 100A Street NW. Egress from the Study Area is via 101 Street NW to 97 Avenue eastbound and via 96 Avenue NW to Rossdale Road northbound or 104 Street NW southbound. North Rossdale can be accessed via 100 Street NW under the James MacDonald Bridge. Rossdale Road can be accessed by 100 Street NW northbound, or by 98 Avenue NW westbound.

The parking capacity of the paved portion of the Study Area is approximately 30 vehicles, mostly to the north of the building. There is space for two vehicles to the south of the building. Access to the boat launch is east of the station. There is a level, unimproved surface immediately north of the paved parking lot along the northern property line, with a surface area of approximately 18 m x 55 m. Off-site parking along either 101 Street NW or 94 Avenue NW is restricted.

A review of Rossdale traffic data (City of Edmonton, unpublished data) and historical air photos indicates light vehicular volume in the vicinity of the Study Area relative to traffic volumes on the main arterial corridors around South Rossdale (Rossdale Road, 104 Street NW, and 97 Avenue NW). The traffic data were collected at the intersection of Rossdale Road – 104 Street NW (City of

Edmonton Site Number 100040) for the period from 6:30 am to 6:30 pm on November 9, 2011, approximately 780 m west by road from the Study Area. Total vehicular volume for the 12 hour period was 12,867 vehicles. Peak hour volumes (7:25 am to 8:25 am and 4:35 pm to 5:35 pm) totaled 3284 vehicles, or 25.5% of the total volume. Data were also collected from 97 Avenue NW, west of 105 Street NW (City of Edmonton Site Number 100172) for the 24 hour period of August 29, 2012. Total vehicular volume for the point of monitoring was 26,841 vehicles. Peak hour volumes (7:30 am to 8:30 am and 4:10 pm to 5:10 pm) totaled 4638 vehicles, or 17.3% of the total volume.

Based on residential frontage and proximity to recreation areas, Fire Station 3 is considered to be the most comparable station for the study of existing conditions at a fire station operating in a residential community. Located at 11226 – 76 Avenue NW, Station 3 is surrounded by predominantly residential development, and also includes an elementary/junior high school, small businesses, and is two blocks east of the McKernan – Belgravia LRT station. Similar to Station 21, Station 3 is located 1.5 blocks from the nearest major arterial roadways (109 Street to the east). The station is three blocks from 114 Street to the west. While the frontage may be similar, the roadway right-of-way and carriage way widths of the access streets for Station 3 (76 Avenue) and Station 21 (101 Street) are dissimilar. Between 94 Avenue and 96 Avenue, 101 Street is 9.1 m wide with approximately 7.5 m of right-of-way on either side of the road. Between 114 Street and 109 Street, 76 Avenue is varies between approximately 11 and 14 m with about 8 m of right-of-way on either side. However, while the distance between property boundaries and the road is greater along 76 Avenue, the distance between traffic on the road and the fronts of homes is similar in both neighbourhoods (approximately 9-15 m). In addition, parking is permitted only on the south side of 76 Avenue and on the east side of 101 Street. Therefore, eastbound trucks on 76 Avenue are traveling adjacent to houses at approximately the same distance as trucks traveling north on 101 Street. The parking constraints are the same at both locations with parking allowed on one side of the roadway. Emergency vehicle call-out statistics from 2012 indicated 3,086 service related requests were received, and of those, 1,373 were requests for Rescue services. Fire Rescue Services maintains a log of citizen complaints related to station operation and there is no record of any complaints related to the operation of Station 3.

In the City overall, accidents involving fire and rescue vehicles averaged 5.1 incidents/month from 2008 to 2012. During this time, there have been no recorded instances of any vehicular accidents involving Fire Rescue units and pedestrians during station egress or upon return at any of the Fire Rescue Services stations in Edmonton.

3.2.4 Noise

Based on the site reconnaissance, it is expected that the main contributors to ambient noise in the Rossdale Community are the water treatment plant located immediately to the west of the Study Area, and the traffic along the main arterial roadways. River rescues and on-river training sessions using the rescue boat would contribute occasional noise to the river environment. Events held at the baseball stadium would also contribute noise to the Rossdale community.

Since a noise analysis was not conducted in the Study Area as part of this assessment, further study is planned. The baseline noise levels of the community will be established through a noise measurement and modeling study prior to the reactivation of the station and any construction activities at the station.

3.2.5 Odour

An odour analysis was not conducted in the Study Area. It is expected that the main contributor to ambient odour in the Study Area is the water treatment plant located immediately to the west of the Study Area.

3.2.6 Aesthetics

The Study Area which, other than for a few trees, some ornamental shrubs, and some areas covered by lawn, is mostly covered by asphalt or the building structure of Station 21. South of the Study Area around the boat launch and along the river to the east, there is a thin riparian zone. There are also trees outside the north side of the Study Area fence between the site and the community. The EPCOR property and facility is located to the west of the site. Trees and a fence block the view of the site from the river. The existing boat launch is visible from the river. There is currently limited lighting at the site.

3.2.7 Archeological and Historic Resources

Twice a year, Alberta Culture provides a *Listing of Historic Resources* (HRMB 2013) that identifies lands containing or that are believed to contain historic resources, including primarily archaeological and palaeontological sites, Aboriginal traditional use sites of a historic resource nature, and historic structures. The listing provides industry and other developers with advance notification of possible historic resource constraints by section of land, as per the Legal Land Descriptions of the Alberta Township Survey.

Properties in the listing are assigned a Historic Resource Value (HRV) ranging from 1 to 5. The highest level of protection (HRV 1) is afforded to lands that have been designated under the *Historical Resources Act* as Provincial Historic Resources. An HRV of 1 is also used to identify World Heritage Sites and lands owned by Alberta Culture for historic resource protection and promotion purposes. Other HRVs are defined as:

- HRV 2: designated under the Act as a Municipal or Registered Historic Resource.
- HRV 3: contains a significant historic resource that will likely require avoidance.
- HRV 4: contains a historic resource that may require avoidance.
- HRV 5: believed to contain a historic resource.

According to the Listing of Historic Resources (March 2013 Edition), the Study Area is located in lands that have been assigned HRV notations of 5 for palaeontological (p), 4 for cultural (c), 1 and 5 for historical (h), and 3 and 5 for archaeological (a) resources (Appendix I; Figure 5). The 5(p) notation is

due to the fact that the proposed development is located within a High Palaeontological Resource Sensitivity Zone, and the 4(c) notation is due to a Traditional Use Site being located in the vicinity. The 1(h), 5 (h) and 3(a) notations are due to the fact that the proposed development is located within the Rossdale Site (FjPi-63) area. FjPi-63 is a multicomponent site that includes Pre-contact Period and Aboriginal occupations from ca. 7000 BP to AD 1800.

From 1801 to 1899 the Rossdale area served as the location for various fur trade occupations and associated structures including, Edmonton House/Fort Augustus II, Edmonton House/Fort Augustus IV, and Edmonton House V. During the fur trade occupations, the area was used for agricultural/ grazing activities and included a burial ground that was in use from 1801 to 1871. From 1899 to 1909 South Rossdale was used as an exhibition ground. The area also contained a sawmill from 1900 to 1915. From the early twentieth century to the present day, South Rossdale has consisted of a power plant (1902 to present), water and sewage treatment facilities (1903 to present), residential developments (1913 to present), and an emergency response department (1950s to present) (Saxberg et al. 2003). The 5(a) notations are due to the proposed development's proximity to sites FjPi-109 and FjPj-4, 6, and 110. FjPi-109 is the Skunk Hollow Dump, whereas FjPj-4 is the site where Fort Edmonton V was located between 1830 and 1915. FjPj-6 is the Kinsmen Field House site, which is a multicomponent Pre-contact and Historic Period campsite. FjPj-110 is a campsite/industrial feature.

Additionally, there are 10 historical resource sites (FiPj-34, 44, 45, 162, 166; FjPj-25, 26, 27, 35, 63) and two historic coal mine related structures (48491, 48496) located within the same sections of land as, but outside of, the Study Area. These sites consist of two historic features, a burial, a campsite, an industrial feature, a scatter (>10)/campsite, a scatter (>10)/ settlement, a scatter (>10)/workshop, structural remains, and a transportation feature. These sites will not be affected by the proposed activities in the Study Area.

There are an additional 13 historic resource sites (FiPj-31, 32, 33, 36, 48, 49, 72, 74, 75, 94, 98, 167; FjPj-64) as well as four historic coal mine related structures ((5933, 48501, 54016, 54530) located in sections adjacent to the sections in which the Study Area is located. These sites are located well away from the Study Area, and will not be affected.

There have been a large number of previously permitted, ground disturbing projects conducted in the Rossdale area (FiPj-63) (U of A 1967, CRM 280, U of A 1973, U of A 1977, 77-047, CRM 221 / 79-A, 81-044, 89-001, 93-036, 98-129; 99-025, 99-120; 00-062, 01-019, 01-118, 01-184, 02-040; 03-001, 04-018, 04-158, 05-005, 05-161, 06-362, 07-135, 08-356, 09-108, 09-188, 09-212, 10-004, 11-108, 12-010, 12-046). These projects unearthed historical items, including a project conducted under Permit 01-184 in the immediate vicinity the Station 21 building. Under this project, six backhoe tests and two small excavation blocks were excavated within 10 m to 90 m of the building. These subsurface investigations did produce confirmatory results, but all materials recovered dated from the twentieth century, and were assessed to be of limited historical significance (Saxberg et al. 2003).

Additionally, 18 permitted projects have been conducted in the same sections (76-075, 77-038, 85-037, 07-124, 09-030, 79-110, 93-061, 94-030, 95-032, 94-068, 01-086, 06-015, 09-017, 11-125, 11-249, 12-031, 12-135) and four in adjacent sections (89-078, 98-150, 02-040, 12-130) to the Study Area. These projects have unearthed historical items in the area.

A detailed historical resources document is available under a separate cover[1].

[1] Bison. 2013. Justification for Historical Resources Act Requirments: City of Edmonton – Fire Rescue Services Station 21 River Rescue Facility Repurposing Project. Prepared for Klohn Crippen Berger Ltd. by Bison Historical Services Ltd.

4 POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATIONS

4.1 Assessment Methods

The potential environmental effects of the proposed repurposing of Station 21 were assessed based on a review of existing information, a project description supplied by the Client, and a site visit conducted in April 2013. The assessment was focused on the effects of the proposed operational case relative to existing conditions through the use of Evaluation Criteria (Table 6; Appendix V). The significance of the effects was assessed using the following five criteria:

- Direction describes if there is a net benefit, net loss or no change as result of the proposed redevelopment. The direction was classified as either a positive, neutral or negative effect.

- Geographic Extent describes the area within which there may be an effect. The effects of the proposed repurposing were classified as local if the effects were considered to be site-specific or regional if the effects reached beyond the Study Area.

- Magnitude describes the severity of the potential effects. Magnitude was classified as negligible (no discernible effect), low (a measurable effect that will not lead to detectable changes), medium (a measurable effect is possible, but will not lead to detectable changes), or high (a measurable effect that will lead to perceivable changes).

- Duration describes how long a potential effect could occur. Duration was classified as short-term, medium-term, or long-term. A short-term effect persists for the construction period only. A medium-term effect persists for construction and operation phase, but not beyond the life of the project. A long-term effect persists beyond decommissioning of the site.

- Permanence describes the potential for the recovery or reversibility of an effect. Permanence was classified as effects that are reversible in the short-term (within one year), reversible in the medium-term (one to ten years), reversible in the long-term (greater than ten years) or irreversible (permanent).

The integration of the various criteria ratings resulted in a final determination of whether or not a potential effect would be significant or not significant.

4.2 Effects Assessment

4.2.1 Topography

The proposed repurposing of Station 21 is not anticipated to alter the topography within the Study Area. Therefore, no significant environmental effect with respect to topography is predicted.

4.2.2 Geology

The proposed repurposing of Station 21 is not anticipated to alter the geology within the Study Area as no ground disturbance is required. Therefore, no significant environmental effect with respect to geology is predicted.

4.2.3 Hydrology and Hydrogeology

The proposed repurposing of Station 21 is not anticipated to alter the existing hydrology and hydrogeology within the Study Area as no ground disturbance is required. Therefore, the 1:25 year and 1:100 year flood risks of the Study Area will remain unchanged and no significant environmental effect with respect to hydrology and hydrogeology is predicted.

4.2.4 Soil

The proposed repurposing of Station 21 is not anticipated to alter the existing soils within the Study Area as no ground disturbance is required. The footprint of the station and asphalt apron within the Study Area will remain unchanged. Therefore, no significant environmental effect with respect to soils is predicted.

4.2.5 Vegetation

The proposed repurposing of Station 21 will not require the removal of the trees and shrubs located in the Study Area and no alterations of the landscaping around the Study Area have been proposed. Therefore, no significant negative environmental effect with respect to vegetation is predicted. The potential allocation of the area north of the Study Area to park area would be considered a positive benefit of the Project.

4.2.6 Wildlife

As noted above, the proposed repurposing of Station 21 will not require the removal of the trees and shrubs located in the Study Area; therefore, the availability of the limited wildlife habitat in the Study Area is not expected to be reduced. Fire Rescue Services will affix two bat boxes to large trees along the east boundary of the Study Area. These boxes will create additional roosting habitat and protective cover for bats, many of which are provincially or federally listed.

Disturbance of wildlife and direct mortality of wildlife due to the refurbishment of the building or grounds is not expected. Therefore, no significant negative environmental effect with respect to wildlife is predicted.

4.2.7 Land Use

The proposed repurposing of Station 21 is consistent with land use objectives for the site as described in the Rossdale Area Redevelopment Plan.

As noted earlier, Station 21 zoning (i.e., Zone A) allows Protective and Emergency Services as a discretionary use. The 2011 West Rossdale amendment to the original plan contains direct reference in Section 3.3 to the possibility that Station 21 might be repurposed. Therefore an amendment to the

Rossdale ARP would not be required prior to applying for a Development Application and no significant negative effect on land use is anticipated.

4.2.8 Parking and Traffic

No short-term or long-term effects on parking are expected. The capacity of the parking area in the Study Area is expected to be sufficient, thus not affecting parking opportunities for resident vehicles on the City streets.

The inbound traffic from Station 6 is expected to significantly decrease with the housing of a permanent crew at Station 21. However, the operation of Station 21 will be associated with a net increase in traffic. Rescue, personal, and supply vehicle traffic are expected to add to the traffic in the neighbourhood. The traffic along 101 Street between 94 Avenue and 98 Avenue has not been quantified, though the traffic is predicted to be less than what is known to occur on the major thoroughfares in Rossdale. However, while an increase is predicted, the less than one call per day for the Rescue Truck (or other specialized equipment), the weekly vehicle movements associated with a shift change, and the occasional supply vehicle traveling to the station, are not expected to add a significant amount of traffic to 101 Street.

The City of Edmonton estimates that the rescue truck would be dispatched from the site approximately 250 to 300 times per year which would result in 500 to 600 truck movements. This projection is based on the number of times a year the Station 1 Rescue Truck is not available and another unit from a different station needs to be deployed. Under the current scenario with the fire truck coming from another station for river rescues, there were 126 truck movements to and from the station in 2013. Unless a back-up crew is dispatched to Station 21 to replace an already deployed crew, the vehicle movements from another station would no longer occur as the crew would be based at the site.

Based on 2012 Rescue Truck dispatch frequency data from Station 1, the call volume of a support Rescue Truck is not expected to significantly change over the course of the year on a month to month basis (Appendix I; Figure 6); nor does the call volume significantly differ by day of the week (Appendix I; Figure 7)(City of Edmonton, unpublished data). The only variability projected to occur is during the day where the peak call-out hours occur from 11 am to 9 pm (Appendix I; Figure 8). The 12 am to 7 am time period is where the least number of call-outs is projected to occur. Parking is confined within the Study Area. Based on the above information and data, a significant effect to parking or traffic is not anticipated.

4.2.9 Noise and Odour

Siren noises of approximately 120 dB at the truck will be associated with the Rescue Truck as it leaves the South Rossdale neighbourhood. This noise would be noticeable but would be of short duration and occur mostly during the day. Of the downtown calls that required additional rescue truck support, approximately 75 per cent occur within the hours of 8 am and 10 pm (City of Edmonton, unpublished data).

Attenuation of the noise would be expected the greater the distance from the truck. The attenuation of noise levels into the neighbourhood would be confirmed through a proposed noise modeling study. The current disturbance of incoming vehicles with sirens for River Rescue emergencies will no longer occur if the crew is housed at Station 21.

The repurposing of the station will be in compliance with the City of Edmonton Community Standards Bylaw (14600). Any construction activity on the exterior of the building or on the station's grounds that causes noise greater than 65 dB will be confined to 7 am and 10 pm from Monday to Saturday, and between 9 am to 7 pm on Sundays and holidays. Any activity outside of these temporal boundaries cannot cause noise that exceeds 50 dB.

It is recognized that there will be an increase in the occurrence of short duration siren use. However, based on the relatively low frequencies of support dispatches, the short duration of the siren use during egress from the neighbourhood, and attenuation of the siren noise through the neighbourhood, a significant effect to the community in terms of noise is not anticipated.

Existing conditions with respect to odours are not anticipated to change. The water treatment plant is expected to remain the dominant contributor to the ambient odours of the community. Though the proportion of Fire Rescue personnel that smoke is very small, a smoking policy will be instituted to mitigate potential odours of second-hand smoke.

4.2.10 Aesthetics

The proposed repurposing of Station 21 is not anticipated to alter the aesthetics within the Study Area as the footprint of the Station will not be expanded. Therefore, no significant effect with respect to aesthetics is anticipated.

4.2.11 Archaeological and Historic Resources

A Historical Resources review was conducted by Bison Historical Services Ltd. Aerial photographs, in conjunction with the proposed projects plans, indicate that the repurposing will not affect any previously identified historical resources. The planned minor refurbishments will not include any ground disturbance. No mitigation is required for the Project and the Project is not anticipated to have a significant effect with respect to archaeology and historic resources. On the basis of this review, *Historical Resources Act* (HRA) clearance to construct the project was recommended by Bison Historical Services Ltd., and a clearance application was submitted to Alberta Culture. While historical clearance is anticipated, the final clearance documentation is currently pending from Alberta Culture.

4.2.12 Human Health and Safety

Firefighters are given extensive training in driving and operating their vehicles to ensure they can respond to emergencies quickly without compromising the safety of anyone else, particularly in the residential areas they service. As noted earlier, vehicular accidents involving Fire Rescue averaged 5.1 incidents/month from 2008 to 2012. There were no recorded instances of any vehicular accidents involving Fire Rescue units and pedestrians either during station egress or upon return. This includes Station 3 which is situated adjacent to an elementary / junior high school and 1.5 residential blocks

from an arterial roadway. The reactivation of Station 21 for support services is expected to have a lower probability of being involved in incidents than the full service Station 3.

5 COST ANALYSIS

A detailed economic assessment was not included as part of the scope of this EISA. However, a high level estimate of the costs associated with the rehabilitation of Station 21 was provided by the City. The costs associated with the remediation of the contaminated soil and groundwater located on the Study Area was also considered by the City.

Based on the estimated service life spans of various building components (Appendix V; Stantec 2012), the cost to rehabilitate Station 21 was approximated at $3.75M, including projected escalation (City of Edmonton, unpublished data). The estimate includes the cost of updating the delineation the contamination on the Study Area. Based on existing limited delineation and 10-year old contamination data, a rough estimate of the remediation costs for the site was estimated to be approximately $1.5M (KCB 2013). Finally, the annual operating cost of an on-site crew is estimated at between $2.6M and $3M.

6 PUBLIC CONSULTATION AND ENGAGEMENT

Calder Bateman Communications continues to conduct the public consultation and engagement for the Project. The consultation timeline and a summary of the activities as reported by Calder Bateman Communications under a separate cover[2] are provided below.

May 2nd, 2012 – Chief Ken Block met with the Rossdale Community League Executive (RCLE) to discuss the concerns around re-commissioning Station 21. At this meeting, the RCLE was informed that a community consultation and research process, comprised of a telephone survey with the community as well as focus groups, would be undertaken in the coming months to assess Rossdale residents' concerns and attitudes toward a re-commissioning the site for limited use.

May 7th, 2012 – A letter from Chief Block was mailed to all households in Rossdale informing them of the consultation efforts in the community conducted concerning the possible re-commissioning of Station 21, and provided a timeline for all consultation activity. The letter also invited written feedback from residents and provided an email address for those submissions.

May 15th, 2012 – A second letter was mailed to all households in Rossdale reminding residents of the telephone survey and providing them with details that allow them to call email Leger to make arrangements to take the survey if they were not home when Leger called.

May 15th – 28th, 2012 – The telephone survey was conducted with Rossdale residents. Leger Marketing was hired to complete the survey. Calls to approximately 450 households yielded 86 responses, with 55% of residents supporting the re-purposing and 35% of residents opposed.

June 19th – 20th – Three focus groups of approximately 5-9 Rossdale residents each were conducted at Leger Marketing's offices. Focus group participants were selected from residents who expressed interest during the telephone survey in being part of the groups. One focus group favored residents close to Station 21, the second was comprised of community members who have lived in Rossdale for more than 20 years, and the third group was a general group mixing residency tenure and location within Rossdale. Leger's full report detailing the focus groups is attached to this summary.

August 20th, 2012 – Chief Ken Block and Community Services GM Linda Cochrane present to the City of Edmonton Community Services Committee with an update on the proposed purposing of Station 21.

December 2012 – A letter is mailed to the RCLE informing them that, pursuant to City of Edmonton bylaws, FRS is undertaking location reviews at various sites for a future river rescue facility, providing timelines for these reviews and outlining how and when the RCLE will be involved and updated. The letter indicated that a broader range of sites beyond just Station 21 would be assessed for their suitability as a river rescue site. A commitment was made that the process would be as transparent as possible.

[2] Calder Bateman. 2013. Public Consultation and Engagement. City of Edmonton Fire Rescue Services Repurposing of Station 21. Prepared for the City of Edmonton by Calder Bateman Communications.

February 25th, 2013 – A letter is sent to the RCLE updating them about a change in the review timeline outlined in the December 2012 letter and proposing a mid-April meeting with the RCLE to go over the findings of these site location reviews by consultation Klohn Crippen Berger (KCB).

April 17th, 2013 – Chief Ken Block meets with the RCLE to provide full copies of the KCB report ranking possible site locations. KCB was present to provide additional comments and to answer questions regarding their work. A timeline for the completion of the studies and a final recommendation City Council was also discussed.

April 19th, 2013 – Letters from Chief Ken Block detailing the findings of site location study (and where material concerning Station 21 can be found on the city website), the timeline for moving forward to a final recommendation and a telephone number to provide feedback are delivered to households in Rossdale.

May 7th, 2013 – Chief Ken Block responds to a letter from RCLE President Lynn Parish containing a critique of the KCB site location study report and concerns with the April 19th letter delivered to the Rossdale community.

May 30th, 2013- A meeting with the RCLE to provide copies of and to discuss the findings of the EISA and site location study being conducted around Station 21 and a review of the recommendation Fire Rescue Services intends to make on the basis of the findings and community consultation.

June 6th, 2013 – Open house was held for Rossdale residents to allow provide information about the site location process, the justification for the final recommendation of Fire Rescue Services, and how a repurposed fire station might affect the community.

The specific topics covered at the open house included:

- Responding to Emergencies
- Being a Good Neighbor
- River Rescue
- The Site Selection Process

While attendees the shared a wide variety of perspectives and experiences relating to Station 21, they generally fell into one of three groups:

- Rossdale residents that indicated they were supportive of repurposing the station, even if they had specific concerns about how that might change the character of the neighborhood. The majority of attendees belonged to this group.
- Residents that did not state a clear preference and are still in the process of capturing specific information about the implications of the repurposing.
- A vocal minority of residents who are opposed to the repurposing of Station 21.

The main concerns and expectations included:

- Concern around possible increasing use of Station 21
- Roadway concerns on 101st street
- Benefit of Having Emergency Responders in Rossdale
- Disturbances from Lights and Sirens
- General Acceptance of the Need for River Rescue vs. the Rescue Truck
- Questions Around the Site Selection Process
- Historic Concerns Around the Site

Most of those in attendance were supportive of the proposed repurposing of Station 21 though the concerns raised by residents need to be taken into consideration.

June 25th, 2013 - City of Edmonton Community Services Committee non-statutory public hearing.

July 3rd or July 17th, 2013 – City Council to consider final recommendation of Fire Rescue Services.

7 CONCLUSIONS AND RECOMMENDATIONS

Based on a reconnaissance site visit, existing information, and a project description provided by the Client, the potential effects of the repurposing of Station 21 including stationing staff for river rescue and support Fire Rescue Services are considered to be not significant.

The biophysical elements of topography, geology, hydrology, soils, vegetation, and wildlife are not expected to be negatively affected by the rehabilitation of the station building or the asphalt apron around the building. Similarly, the ongoing operation of Station 21 is not expected to significantly affect the biophysical elements.

With respect to land use, the repurposing of Station 21 falls within acceptable guidelines and policy under the NSRVARP and the Rossdale ARP. Parking and traffic, noise and odours, aesthetics, and human health and safety are not expected to significantly change from existing conditions. Following the submission of the HRO, the decision for clearance from Alberta Culture is pending.

It is likely that the greatest socio-environment concern for the repurposing of Station 21 will be of the increased disruption due to emergency dispatches and the possibility incidents involving collisions with a responding Rescue Truck. However, the review of the operation data of Station 3 (University Station), which currently has four and a half times as many dispatches of a Rescue Truck compared to the predicted calls for the truck housed at Station 21 (approximately 1400 to 300 respectively), and over 10 times the number of calls overall (approximately 4200 to 300 respectively), indicates the function of Station 3 has been incorporated in to the daily function of the McKernan neighbourhood. No incidents involving pedestrians have been recorded at Station 3. Therefore, the probability is predicted to be lower in South Rossdale due to the lower frequency of dispatches from Station 21 relative to Station 3. Noise disruption will occur due to sirens while emergency vehicles leave the South Rossdale neighbourhood; however, the noise would be short duration and occur mostly during the day. The frequency of siren use is expected to be approximately less that 10% of that in the residential neighbourhood surrounding Station 3.

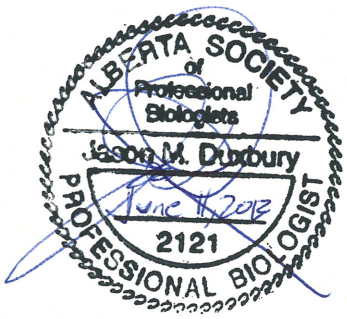
Based on the assessment of the Project as per the guidance of the NSRVARP, the repurposing of Station 21 can proceed with due care. The addition of bat boxes and a commitment to conduct a noise study are demonstrations of the Client's intent to be good neighbours in the Rossdale Community. The repurposing of Station 21 expected to have negligible to no effects to the natural environment of the NSRV. Thus, the station could be deemed an essential development in the River Valley and not be in conflict with the principles of the NSRVARP.

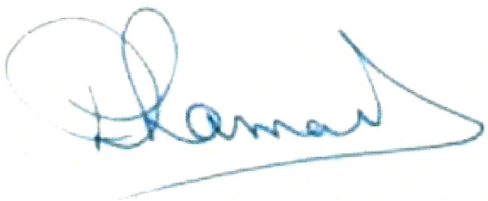
8 CLOSING

This submission is an instrument of service of Klohn Crippen Berger Ltd. This submission has been prepared for the exclusive use of the City of Edmonton, Community Services for the specific application to the Site Location EISA. The report's contents may not be relied upon by any other party without the express written permission of Klohn Crippen Berger. In this report, Klohn Crippen Berger has endeavored to comply with generally-accepted professional practice common to the local area. Klohn Crippen Berger makes no warranty, express or implied.

Yours truly,

KLOHN CRIPPEN BERGER LTD.





Jason Duxbury, PhD, P.Biol.
Biophysical Lead

Debra Lamash
Director, Socio-Environmental Group

JD: JT

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APPENDIX I

Figures

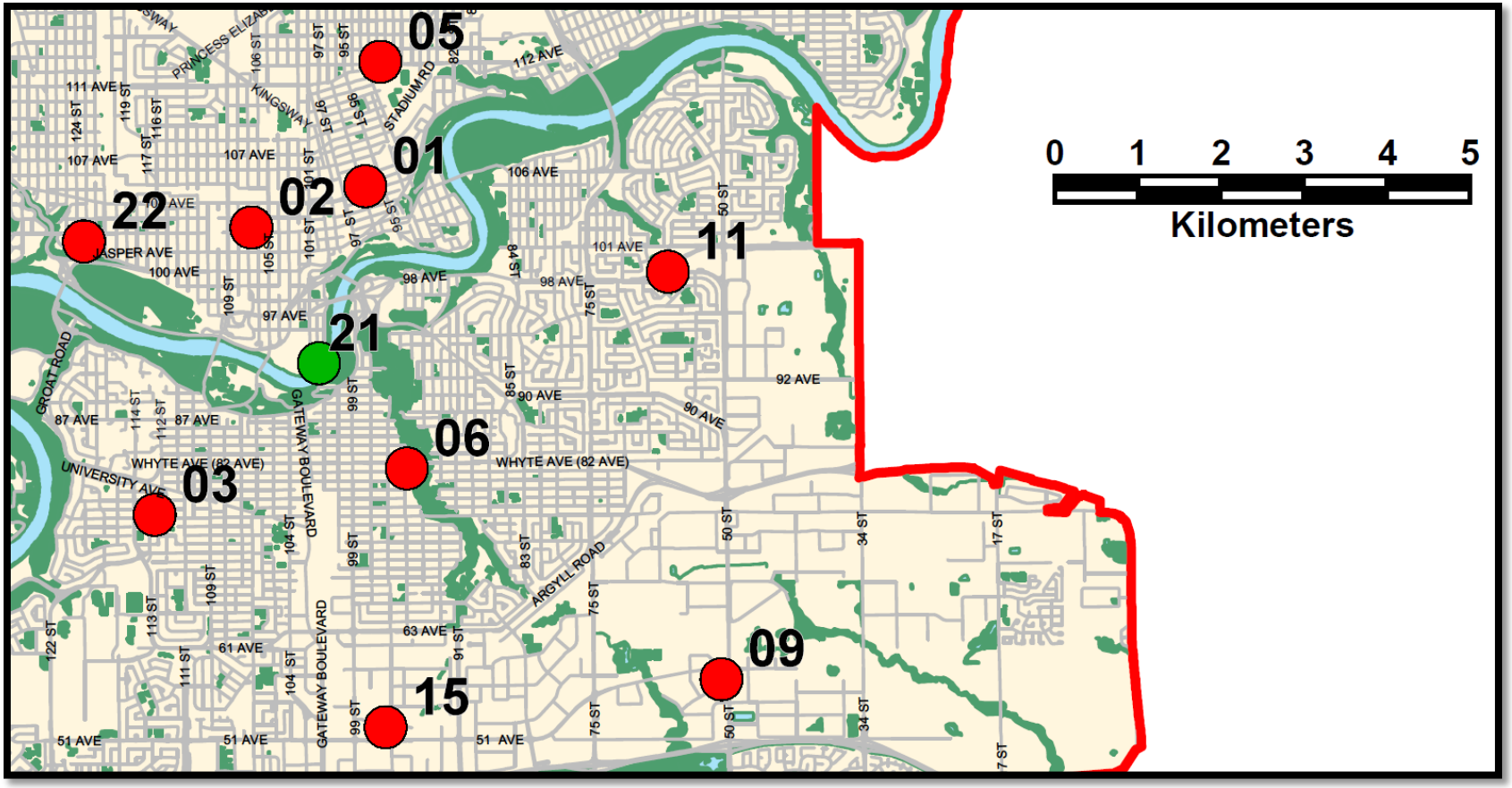


Figure 1. General location of Station 21 relative to other station locations in Edmonton, Alberta. (City of Edmonton, unpublished map)

Figure 2. Location of Station 21 (in red) in South Rossdale, Edmonton, Alberta. (Google Imagery)

Figure 3. Route between Station 6 and Station 21. (City of Edmonton, unpublished map)

Figure 4. Station 21 Study Area (in red). (Google Imagery)

Figure 5. Historical resources overview reference map (Map provided by Bison Historical Services Ltd.)

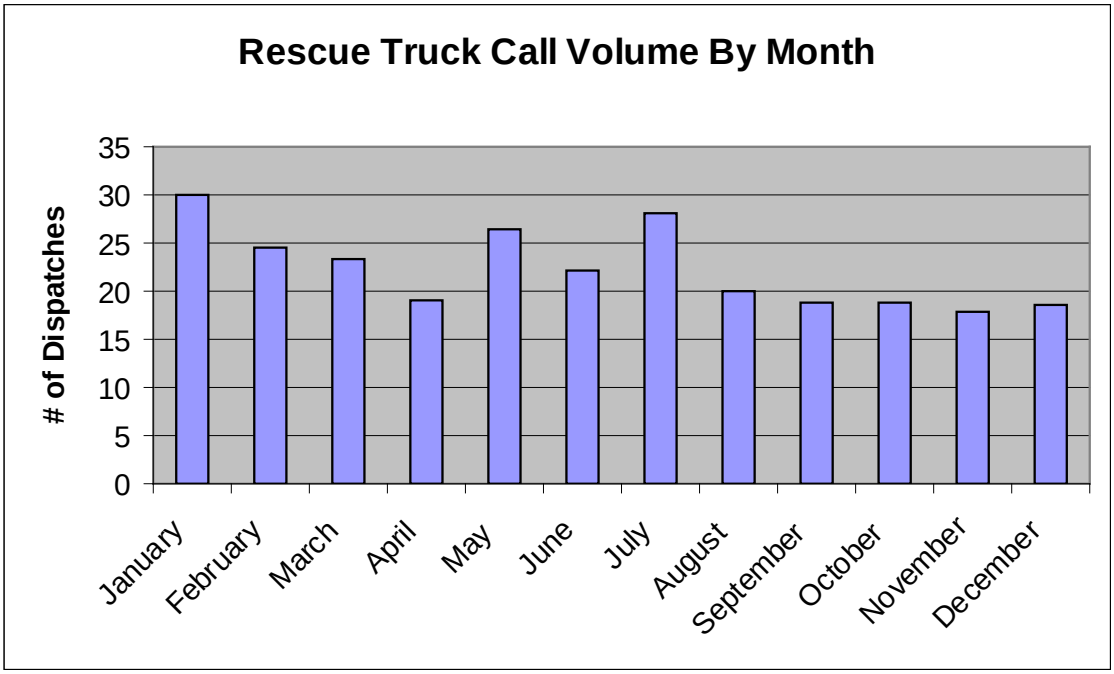


Figure 6. Estimated daily dispatches of a Rescue Truck in support of Station 1. (City of Edmonton unpublished data)

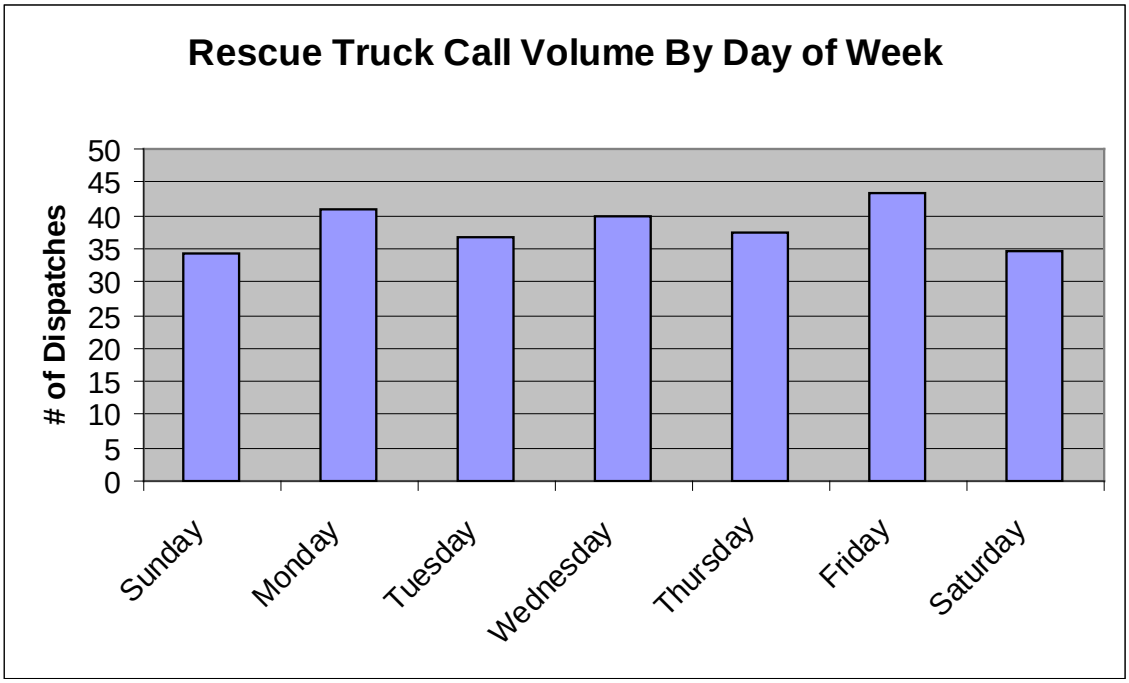


Figure 7. Estimated daily dispatches of a Rescue Truck in support of Station 1. (City of Edmonton unpublished data)

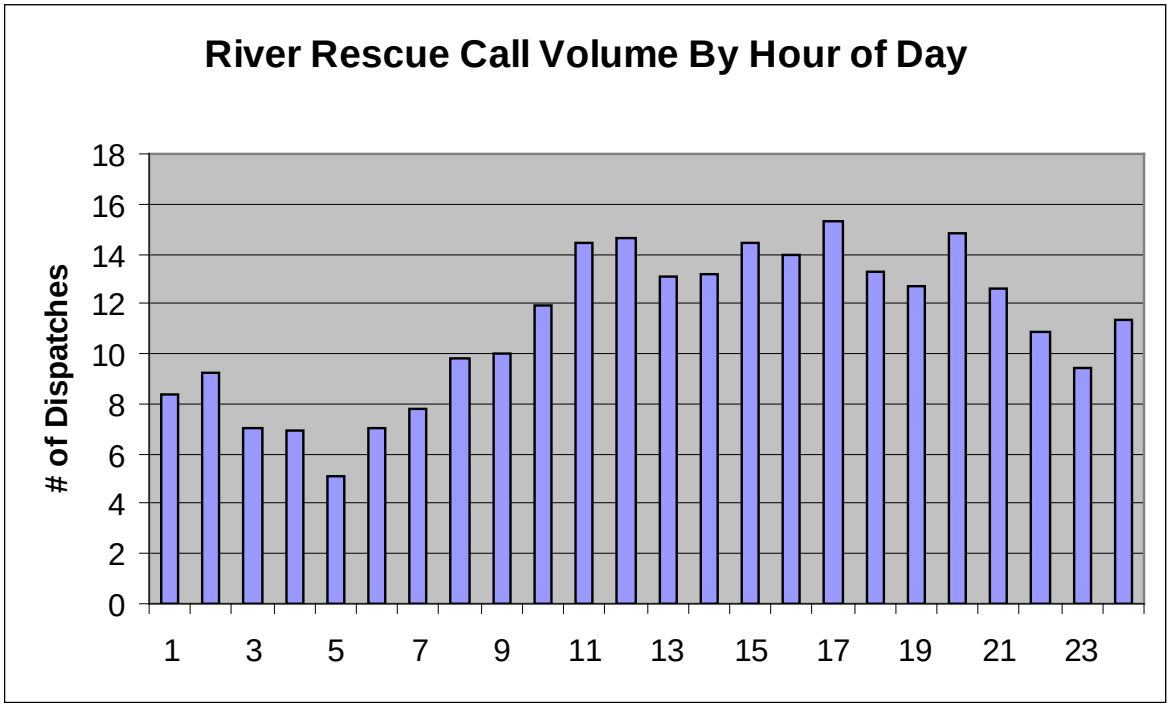


Figure 8. Estimated hourly dispatches of a Rescue Truck in support of Station 1. (City of Edmonton unpublished data)

APPENDIX II

EISA Terms of Reference

Klohn Crippen Berger

April 26, 2013

City of Edmonton
Suite 6000, 10250 – 101 Street
Edmonton, Alberta
T5J 3P4

Garth Clyburn
Principal Planner

Dear Mr. Clyburn:

Terms of Reference for Environmental Impact Assessment
Proposed Station 21 Reactivation of Station as Support Services
Fire and Rescue Services, City of Edmonton

On behalf of the City of Edmonton's, Fire and Rescue Services and Community Services, Klohn Crippen Berger Ltd. (KCB) is pleased to provide you with this Terms of Reference (TOR) for an Environmental Impact Assessment (EIA) for the proposed reactivation (the Project) of Station 21 (the Site) for support fire and rescue services and river rescue services. We provide these TOR for your review and comment.

The reactivation and operation of the Site does not require Fire and Rescue Services (FRS) to expand the current footprint of the station located at the south end of the Rossdale Community. The Project does require some modifications to existing buildings. Unconfirmed plans at this time include the possible contraction of the current yard.

Given the nature of the Project, effects to biophysical elements (native soils, vegetation and wildlife) and archaeological and historic resources are not expected and, as a result, site-specific studies (e.g., rare plant surveys, wildlife habitat assessments, detailed soil surveys, Historical Resource Impact Assessment, etc.) are not proposed. The existing environment will be described and evaluated based on a spring field reconnaissance (snow free), existing databases, EIAs previously conducted within the boundaries of the North Saskatchewan River Valley Area Redevelopment Plan (Bylaw 7188), an environmental site assessment conducted on site in 2001 by EBA (supplemented by subsequent water monitoring data), and an Historical Overview Assessment. The assessment will be based on a project description provided by FRS and a site selection evaluation study conducted prior to the assessment.

Although effects on the natural environment and archaeological and historic resources are not anticipated, Project operations may affect certain socio-economic features. Specifically, the Project will result in an increase in traffic as well as an increase in noise and activity at the Site.

Potential project effects will still be reviewed and assessed for all of the above elements even if no effects are predicted.

Mitigation measures will be proposed to eliminate or reduce the predicted Project effects associated with reactivation of the Site. Potential mitigation measures may include (but are not limited to):

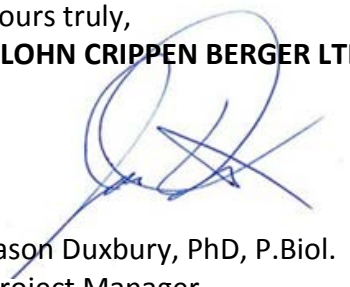
- Spill prevention and response
- Application of Best Management Practices
- Application of the City of Edmonton's Enviso, Environmental Management System
- Waste management
- Construction scheduling

We acknowledge that public consultation is a requirement of the EIA. Public engagement took place on April 17, 2012, August 17, 2012 and on April 17, 2013.

A draft table of contents for the EIA report is available in Attachment 1 for your review. A draft report will be available for circulation by May 3, 2013. We request access to any relevant literature pertaining to the Site or past environmental reports that may have been submitted to the City of Edmonton in order to complete the EIA on time.

We look forward to discussing this study with you further. If you require any additional information, please do not hesitate to contact Jason Duxbury at 780-733-4586 or by email at jduxbury@klohn.com.

Yours truly,
KLOHN CRIPPEN BERGER LTD.



Jason Duxbury, PhD, P.Biol.
Project Manager

JD:jt

Attachment: Proposed Table of Contents

Proposed Table of Contents

1 INTRODUCTION

2 STUDY OVERVIEW
2.1 Study Objectives
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2.3 Study Process and Methodology

3 PROJECT DESCRIPTION
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4 EXISTING ENVIRONMENT
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5 ENVIORNMENTAL ASSESSMENT AND MITIGATION STRATEGIES
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5.2.5 Air and Odour
5.2.6 Aesthetics

Appendices

APPENDIX III

Photos

Photo 1: Aerial view of the north side of Station 21 (taken from training tower that has since been removed)

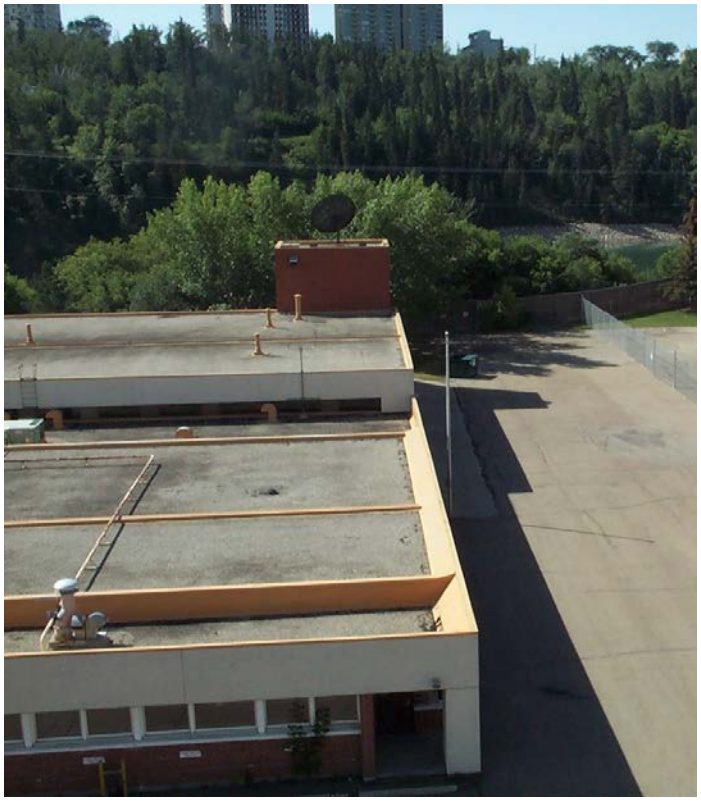

Photo 2: Aerial view of the west side of Station 21 (taken from training tower that has since been removed)

Photo 3: Aerial view of the north-east corner of the Station 21 property (taken from training tower that has since been removed)

Photo 4: East side of Station 21 property

Photo 5: East side of Station 21 property

Photo 6: South-east corner of Station 21 at the location of the fueling station

Photo 7: South end of the Station 21 property

APPENDIX IV

Tables

Table 1: Plant Species of Concern

Common Name[1]	Scientific Name	Provincial Rank
Creeping Ancylid	*Ferrissia rivularis*	SU
Fallacious Screw Moss	*Didymodon Fallax*	S2
False Dragonhead	*Physostegia Ledinghamii*	S2
Flat-topped White Aster	*Aster Unbellatus*	S2
Hobomok Skipper	*Poanes Hobomok*	S2
Moss	*Rhodobryum ontariense*	S2
Moss	*Entodon concinnus*	S2
Moss	*Bryum algovicum*	S2
Moss	*Callicladium Haldanianum*	S1
Moss	*Pohlia Atropurpurea*	S1
Seaside Sedge	*Carex incurviformis var. incurviformis*	S2
Smooth Sweet Cicely	*Osmorhiza longistylis*	S2
White Adder's-Mouth	*Malaxis Monophylla*	S2

1. Compiled from the Alberta Information Conservation Management System (ACIMS 2013) and Kin Park EIA (2011)

Table 2: Amphibian and Reptile Species

Common Name	Scientific Name	Provincial Status (ASRD 2010)	Federal Status SARA (SARAPR 2013)
Boreal Chorus Frog	*Pseudacris Maculata*	Secure	Unlisted
Canadian Toad	*Bufo hemiophyrys*	**May be at Risk**	Not at Risk
Northern Leopard Frog	*Rana Pipiens*	**At Risk**	**Special Concern**
Red-sided Garter Snake	*Thamnophis sirtalis*	**Sensitive**	Not At Risk
Tiger Salamander	*Ambystoma tigrinum*	Secure	Not At Risk
Western Toad	*Bufo Boreas*	**Sensitive**	**Special Concern**
Wood Frog	*Rana Sylvatica*	Secure	Unlisted

1. Compiled from FWMIS (2013) and Kin Park EIA (2011)

Table 3: Potential breeding bird species in the Study Area and adjacent riparian habitat.

ABMI[1] and Kin Park[2]	CBC[3]	Scientific Name	Provincial Status[4]	Federal Status[5]
Alder Flycatcher		*Empidonax alnorum*	Secure	Not at Risk
American Coot		*Fulica americana*	Secure	Not at Risk
American Crow	**American Crow**	***Corvus brachyrhynchos***	**Secure**	**Not at Risk**
American Goldfinch	American Goldfinch	*Carduelis tristis*	Secure	Not at Risk
American Kestrel	**American Kestrel**	***Falco sparverius***	**Sensitive**	**Not at Risk**
American Redstart		*Setophaga ruticilla*	Secure	Not at Risk
American Robin	**American Robin**	***Turdus migratorius***	**Secure**	**Not at Risk**
American Wigeon		*Anas americana*	Secure	Not at Risk
Baltimore Oriole		*Icterus galbula*	**Sensitive**	Not at Risk
Black-and-white Warbler		*Mniotilta varia*	Secure	Not at Risk
Black-billed Magpie	**Black-billed Magpie**	***Pica hudsonia***	**Secure**	**Not at Risk**
Black-capped Chickadee	**Black-capped Chickadee**	***Poecile atricapillus***	**Secure**	**Not at Risk**
Blue Jay	**Blue Jay**	***Cyanocitta cristata***	**Secure**	**Not at Risk**
Blue-headed Vireo		*Vireo solitarius*	Secure	Not at Risk
Brown-headed Cowbird		***Molothrus ater***	**Secure**	**Not at Risk**

ABMI[1] and Kin Park[2]	CBC[3]	Scientific Name	Provincial Status[4]	Federal Status[5]
Bufflehead	Bufflehead	*Bucephala albeola*	Secure	Not at Risk
Canada Goose	**Canada Goose**	***Branta canadensis***	**Secure**	**Not at Risk**
Cedar Waxwing	**Cedar Waxwing**	***Bombycilla cedrorum***	**Secure**	**Not at Risk**
Chipping Sparrow		***Spizella passerina***	**Secure**	**Not at Risk**
Clay-colored Sparrow		***Spizella pallida***	**Secure**	**Not at Risk**
Common Goldeneye	Common Goldeneye	*Bucephala clangula*	Secure	Not at Risk
Common Grackle		***Quiscalus quiscula***	**Secure**	**Not at Risk**
Common Nighthawk		***Chordeiles minor***	**Sensitive**	**Threatened**
Common Raven	**Common Raven**	***Corvus corax***	**Secure**	**Not at Risk**
Common Yellowthroat		***Geothlypis trichas***	**Sensitive**	**Not at Risk**
Cooper's Hawk	Cooper's Hawk	*Accipiter cooperii*	Secure	Not at Risk
Dark-eyed Junco	**Dark-eyed Junco**	***Junco hyemalis***	**Secure**	**Not at Risk**
Downy Woodpecker	**Downy Woodpecker**	***Picoides pubescens***	**Secure**	**Not at Risk**
Eastern Kingbird		*Tyrannus tyrannus*	Secure	Not at Risk
Eastern Phoebe		***Sayornis phoebe***	**Sensitive**	**Not at Risk**
European Starling	**European Starling**	***Sturnus vulgaris***	**Exotic/Alien**	**Not at Risk**
Gadwall		*Anas strepera*	Secure	Not at Risk
Gray Catbird		*Dumetella carolinensis*	Secure	Not at Risk
Gray Partridge	Gray Partridge	*Perdix perdix*	Exotic/Alien	Not at Risk
Great Horned Owl	**Great Horned Owl**	***Bubo virginianus***	**Secure**	**Not at Risk**
Hairy Woodpecker	**Hairy Woodpecker**	***Picoides villosus***	**Secure**	**Not at Risk**
	House Finch	***Carpodacus mexicanus***	**Secure**	**Not at Risk**
House Sparrow	**House Sparrow**	***Passer domesticus***	**Exotic/Alien**	**Not at Risk**
House Wren		*Troglodytes aedon*	Secure	Not at Risk
Le Conte's Sparrow		*Ammodramus leconteii*	Secure	Not at Risk
Least Flycatcher		***Empidonax minimus***	**Sensitive**	**Not at Risk**
Lesser Scaup	**Lesser Scaup**	***Aythya affinis***	**Sensitive**	**Not at Risk**
Lincoln's Sparrow		*Melospiza lincolnii*	Secure	Not at Risk
Mallard	Mallard	*Anas platyrhynchos*	Secure	Not at Risk
Northern Flicker	**Northern Flicker**	***Colaptes auratus***	**Secure**	**Not at Risk**
Northern Pintail		*Anas acuta*	Sensitive	Not at Risk
Northern Shoveler	Northern Shoveler	*Anas clypeata*	Secure	Not at Risk
Red-breasted Nuthatch	**Red-breasted Nuthatch**	***Sitta canadensis***	**Secure**	**Not at Risk**
Red-eyed Vireo		***Vireo olivaceus***	**Secure**	**Not at Risk**
Ring-necked Pheasant		*Phasianus colchicus*	Exotic/Alien	Not at Risk
Rock Pigeon	**Rock Pigeon**	***Columba livia***	**Exotic/Alien**	**Not at Risk**
Rose-breasted Grosbeak		***Pheucticus ludovicianus***	**Secure**	**Not at Risk**
Ruby-throated Hummingbird		***Archilochus colubris***	**Secure**	**Not at Risk**
Ruffed Grouse	Ruffed Grouse	*Bonasa umbellus*	Secure	Not at Risk
Savannah Sparrow		***Passerculus sandwichensis***	**Secure**	**Not at Risk**
Sharp-shinned Hawk	Sharp-shinned Hawk	*Accipiter striatus*	Secure	Not at Risk
Song Sparrow		*Melospiza melodia*	Secure	Not at Risk
Tree Swallow		*Tachycineta bicolor*	Secure	Not at Risk
Western Wood-Pewee		***Contopus sordidulus***	**Sensitive**	**Not at Risk**
White-breasted Nuthatch	**White-breasted Nuthatch**	***Sitta carolinensis***	**Secure**	**Not at Risk**
White-throated Sparrow	White-throated Sparrow	*Zonotrichia albicollis*	Secure	Not at Risk
Yellow Warbler		*Dendroica petechia*	Secure	Not at Risk
Yellow-bellied Sapsucker	**Yellow-bellied Sapsucker**	***Sphyrapicus varius***	**Secure**	**Not at Risk**
Yellow-rumped Warbler		*Dendroica coronata*	Secure	Not at Risk

1. ABMI (2013); 2. KCB (2011); 3. NAS (2013); 4. ASRD (2010); 5. SARAPR (2013)

Note: Species that could theoretically breed within the Study Area are denoted in bold text

Table 4: Potential Mammal Species in the North Saskatchewan River Valley

Common Name[1]	Scientific Name	Provincial Status[2]	Federal Status[3]
American Mink	*Mustela vison*	Secure	Not at Risk
Arctic Shrew	*Sorex arcticus*	Secure	Not at Risk
Beaver	*Castor canadensis*	Secure	Not at Risk
Big Brown Bat	***Eptesicus fuscus***	**Secure**	**Not at Risk**
Black Bear	*Ursus americanus*	Secure	Not at Risk
Common Porcupine	*Erethizon dorsatum*	Secure	Not a Risk
Common Water Shrew	*Sorex palustris*	Secure	Not at Risk
Coyote	*Canis latrans*	Secure	Not at Risk
Deer Mouse	***Peromyscus maniculatus***	**Secure**	**Not at Risk**
Dusky Shrew	*Sorex monticolus*	Secure	Not at Risk
Hoary Bat	*Lasiurus cinereus*	**Sensitive**	Undetermined
House Mouse	***Mus musculus***	**Exotic**	**Not at Risk**
Least Chipmunk	*Tamias minimus*	Secure	Not at Risk
Least Weasel	*Mustela nivalis*	Secure	Not at Risk
Little Brown Myotis	*Myotis lucifugus*	Secure	Not at Risk[4]
Long-tailed Weasel	*Mustela frenata*	**May Be At Risk**	Not at Risk
Masked Shrew	*Sorex cinereus*	Secure	Not at risk
Meadow Jumping Mouse	*Zapus hudsonius*	Secure	Not at Risk
Meadow Vole	*Microtis pennsylvanicus*	Secure	Not at Risk
Moose	*Alces alces*	Secure	Not at Risk
Mule Deer	*Odocoileus hemionus*	Secure	Not at Risk
Muskrat	*Ondatra zibethicus*	Secure	Not at Risk
Northern Flying Squirrel	*Glaucomys sabrinus*	Secure	Not at Risk
Northern Long-Eared Bat	*Myotis septentrionalis*	**May Be At Risk**	Not at Risk
Pygmy Shrew	*Sorex hoyi*	Secure	Not at Risk
Red Fox	*Vulpes vulpes*	Secure	Not at Risk
Red Squirrel	*Tamiasciurus hudsonicus*	Secure	Not a Risk
Richardson's Ground Squirrel	*Spermophilus richardsonii*	Secure	Not at Risk
Short-tailed Weasel	*Mustela erminea*	Secure	Not at Risk
Silver-haired Bat	*Lasionycteris noctivagans*	**Sensitive**	Not at Risk
Snowshoe Hare	*Lepus americanus*	Secure	Not at Risk
Southern Red-backed Vole	*Clethrionomys gapperi*	Secure	Not at Risk
Striped Skunk	*Mephitis mephitis*	Secure	Not at Risk
Thirteen-lined Ground Squirrel	*Spermophilus tridcemlineatus*	Undetermined	Not at Risk
Western Jumping Mouse	*Zapus princeps*	Secure	Not at Risk
White-tailed Deer	*Odocoileus virginianus*	Secure	Not at Risk
White-tailed Rabbit	*Lepus townsendii*	Secure	Not at Risk
Woodchuck	*Marmota monax*	Secure	Not at Risk

1. Compiled from COE (2008), FWMIS (2013), KCB (2011), ABMI (2012); 2. ASRD (2010); 3. SARAPR (2013); 4. Listed as Endangered by COSEWIC

Note: Species that could theoretically breed within the Study Area are denoted in bold text

Table 5: North Saskatchewan River Fish Species Observed Within a 3km Radius of Study Area (FWMIS 2013)

Common Name	Scientific Name	Provincial Status[1]	Federal Status[2]
Brook Stickleback	*Culaea inconstans*	Secure	Not at Risk
Burbot	*Lota lota*	Secure	Not at Risk
Emerald Shiner	*Notropis atherinoides*	secure	Not at Risk
Fathead Minnow	*Pimephales promelas*	secure	Not at Risk
Goldeye	*Hiodon alosoides*	secure	Not at Risk
Lake Sturgeon	*Rhinichthys cataractae*	**Threatened**	No Status[3]
Longnose Sucker	*Catostomus catostomus*	secure	Not at Risk
Mooneye	*Hiodon tergisus*	secure	Not at Risk
Mountain Whitefish	*Prosopium williamsoni*	secure	Not at Risk
Northern Pike	*Esox Lucius*	secure	Not at Risk
Shorthead Redhorse	*Moxostoma macrolepidotum*	secure	Not at Risk
Spoonhead Sculpin	*Cottus ricei*	**May be at risk**	Not at Risk
Spottail Shiner	*Notropis hudsonius*	secure	Not at Risk
Trout-Perch	*Percopsis omiscomaycus*	secure	Not at Risk
Walleye	*Sander Vitreum*	secure	Not at Risk
White Sucker	*Catostomus commersoni*	secure	Not at Risk
Yellow Perch	*Perca flavescens*	secure	Not at Risk
Additional Species Known to Occur in the North Saskatchewan River[4]			
Finescale Dace	*Phoxinus neogaeus*	Secure	Not at Risk
Flathead Chub	*Platygobio gracilis*	Secure	Not at Risk
Iowa Darter	*Etheostoma exile*	Secure	Not at Risk
Lake Chub	*Couesius plumbeus*	Secure	Not at Risk
Lake Whitefish	*Coregonus clupeaformis*	Secure	Not at Risk
Northern Redbelly Dace	*Phoxinus eos*	**Sensitive**	Not at Risk
Pearl Dace	*Margariscus margarita*	Secure	Not at Risk
Quillback	*Carpiodes cyprinus*	Secure	Not at Risk
River Shiner	*Notropis blennius*	Secure	Not at Risk
Sauger	*Sander canadense*	**Sensitive**	Not at Risk
Silver Redhorse	*Moxostoma anisurum*	Secure	Not at Risk

1.Alberta *Wildlife Act*; 2. SARAPR (2013); 3. Listed as Endangered by COSEWIC; 4. Compiled from: Alberta Environment (1984); Nelson and Paetz, (1992); FWMIS (2013)

Table 6. Effects criteria analysis matrix

Environmental Discipline	Project Activity and Potential Impacts	Evaluation Criteria for Assessing Potential Environmental Effects					Significant Environmental Effect	Mitigation
		Direction	Geographic Extent	Magnitude	Duration	Permanence		
Topography	Site repurpsoing impacts on topography	N	S	N	N/A	N/A	No	None required
Geology	Site repurposing impacts on geology	N	S	N	N/A	N/A	No	None required
Hydrology and Hydrogeology	Site repurposing impacts on hydrology and hydrogeology	N	S	N	N/A	N/A	No	None required
Soil	Site repurposing impacts on soils	N	S	N	N/A	N/A	No	None required
Vegetation	Site repurposing impacts on vegetation	N	S	N	S	N/A	No	None required
Wildlife	Site repurposing impacts on habitat availability	P	S	L	M	L	No	Addition of bat roosting habitat
	Site repurposing impacts on wildlife disturbance	N	S	N	S	S	No	None required
	Site repurposing impacts on wildlife mortality	N	S	N	S	N/A	No	None required
	Site operation impacts on wildlife disturbance	N	S	N	M	S	No	None required
Land Use	Site repurpsing impacts to changes in land use	N	S	N	S	S	No	None required
	Site operation impacts to changes in land use	N	S	N	M	S	No	None required
Parking and Traffic	Site repurposing impacts on parking and traffic	N	S	N	S	S	No	None required
	Site operation impacts on parking and traffic	N	S	N	M	S	No	None required
Noise	Site repurposing impacts on noise and odour	N	S	N	S	S	No	Adherence to Bylaw 14600 during any refurbishment to the exterior
	Site operation impacts on noise and odour	N	S	H	S	N/A	No	Siren to be used while vehicle is moving. Egress out of South Rossdale will be expedient with due care. "Good neighbour" policy for non-dispatched traffic
Odour	Site repurposing impacts on noise and odour	N	S	N	S	S	No	None required
	Site operation impacts on noise and odour	N	S	N	M	S	No	None required
Aesthetics	Site repurposing impacts on aesthetics	N	S	N	S	S	No	None required
	Site operation impacts on aesthetics	N	S	N	M	S	No	None required
Archaeological and Historic Resources	Site repurposing impacts on archaeological and historic resources	N	S	N	N/A	N/A	No	None required
Human Health and Safety	Site repurposing impacts on human health and safety	N	S	N	S	N/A	No	None required
	Site operation impacts on human health and safety	N	S	N	M	N/A	No	None required

KEY

Direction:
Describes if there is a net benefit, net loss or no change to the environment as result of the proposed redevelopment.

P = Positive
N = Neutral
X = Negative

Geographic Extent:
The area within which the environment may be affected.

S = Site-specific
R = Regional if the effects reached beyond the Study Area.

Magnitude:
The severity of the potential effects.

N = Negligible - no discernible effect on the environment
L = Low - a measurable effect that will not lead to detectable changes in the environment
M = Medium - a measurable effect is possible, but will not lead to detectable changes in the environment
H = High - a measurable effect that will lead to perceivable changes to the environment

Duration:
How long a potential effect could occur.

S = A short-term effect persists for the construction period only
M = A medium-term effect persists for construction and operation phases, but not beyond the life of the project
L = A long-term effect persists beyond decommissioning of the site.
N/A = Not Applicable

Permanence:
The potential for the recovery or reversibility of an effect.

S = Short-term (within one year)
M = Reversible in the medium-term (one to ten years)
L = Reversible in the long-term (greater than ten years)
P = Permanent
N/A = Not Applicable

APPENDIX V

Reference Reports

FIR121 - FIRE STATION #21- RIVERVALLEY OPERATIONS CENTRE

9315 – 101 Street NW

Edmonton, Alberta

FINAL REPORT
October 12, 2012

Project Number: 123710418

Introduction

Stantec Consulting Ltd. (Stantec) was commissioned by the City of Edmonton to conduct a Building Condition Assessment at the Fire Station #21 located at 9315 – 101 Street NW.

The purpose of the assessment was to visually review and obtain information relative to the current condition of the facility (herein referred to as the "Site" or "Property"), and to establish requirements with respect to maintenance, repair, and capital replacement.

Scope of Work

The scope of our work for the Building Condition Assessment included the following:

- A site visit, including a generalist visual review of building components and site improvements, collection of pertinent data, and recording of observations related to the physical conditions at the Site
- Interviews with maintenance personnel and/or site management and representatives (where available) to obtain information relevant to the site improvements and building components
- Identify and financially quantify (in present dollar values) recapitalization work that will be required in 2032 and sooner, or items requiring immediate attention or repair due to deferred maintenance or which represent a potential safety concern
- Preparation of a technical report, including an overall summary of the assessment findings, a description of building and site components identified at the facility, and photographs of salient observations made during the assessment

The review of the Site was based on a visual walk-through review of the visible and accessible components of the Property, buildings and related structures. The roof surfaces, interior and exterior wall finishes, and floor and ceiling finishes of the on-site buildings and related structures were visually assessed to check their condition and to identify physical deficiencies where observed. The assessment did not include an intrusive investigation of wall assemblies, ceiling cavities, or any other enclosures/assemblies. No physical tests were conducted and no samples of building materials were collected to substantiate observations made, or for any other reason.

The review of mechanical, electrical, and fire & life safety systems at the Property included discussions with the site representative and a review of pertinent maintenance records that were made available. A visual walk-through assessment of the mechanical, electrical, and fire & life safety systems was conducted to determine the type of systems present, age, and aesthetic condition. No physical tests were conducted on these systems.

A detailed evaluation of the property development's compliance with national and/or provincial Building Codes and Fire Codes (as well as local/municipal by-laws, etc.) is not part of the scope of this assessment. The existing buildings and related structures are assumed to have been reviewed and approved by local authorities at the time of construction and/or subsequent renovations and inspections.

Methodology

The assessment of the on-site buildings and site improvements was performed using methods and procedures that are consistent with standard commercial and customary practice as outlined in the American Society for Testing and Materials (ASTM) Standard E2018-08 “Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process”.

Where applicable, the following systems were reviewed as part of our assessment:

- Site Components
- Building Structures
- Roofing
- Building Exteriors
- Building Interiors
- Mechanical Systems
- Electrical Systems
- Fire and Life Safety Systems

Element Condition Rating

The systems described above were broken down into base-building components, based on the Uniformat II Elemental Classification system (defined further on page iv), and were given a corresponding location, description and a value for their Remaining Service Life (RSL), in years. Each component was also assigned a condition letter rating that ranges between A – Very Good to F – Critical, to describe its overall condition, and relates directly to a component’s RSL. The letter rating scale is described in further detail below:

Component Ratings Table

Condition Rating	Performance
A - Excellent	Component is new / state of the art and meets present and foreseeable requirements.
B - Good	Component is performing well and meets all present requirements. Minor deterioration or negligible deficiencies.
C - Acceptable	Component currently meets present requirements, but there are some deterioration and minor deficiencies. Average operating/maintenance costs.

Condition Rating	Performance
D - Marginal	Component currently meets minimum requirements, has extensive deficiencies that may contribute to above average operating maintenance costs.
F - Critical	Component represents an unacceptable, unhealthy, or unsafe condition (high risk of injury) requiring immediate attention in order to ensure continued access, use and safety of staff and public.

Events

An event is provided for components where they are found to contain deficiencies or deferred maintenance. Lifecycle events are also provided where a component has realized its Expected Useful Life (EUL). Only events that have a total cost over $1,000 have been included in this report. Events below this cost threshold are considered to be handled as part of routine maintenance.

For the executive summary, events have been grouped into one of the following three categories:

1. Immediate events: This category includes recommended events for elements that have a condition rating that is “F”, and require action to prevent further deterioration to the element, to prevent possible injury due to an unsafe condition, and/or to remedy a possible code violation. The work is recommended to be completed in 2012.

2. Deferred maintenance events: This category includes recommended events for elements that have a condition rating that is “D”, where physical damage or deferred maintenance was observed / reported or is expected to recur, and requires action to restore element performance. The work is recommended to be completed between 2013 and 2015.

3. Lifecycle events: This category includes recommended events for elements that have a condition rating that is “A”, “B” or “C”, where the element has already exceeded or will exceed its EUL in 2015 or sooner, and may require replacement to maintain element performance. No event descriptions have been provided in the executive summary for lifecycle events. Event details have been provided in the “Opinion of probable cost table.” The work is recommended to be completed in 2015 (where replacement is expected in 2015 or sooner). Lifecycle events occurring between 2016 and 2032 have been recorded in the year they are expected to occur.

ASTM defines a physical deficiency as a conspicuous defect or significant deferred maintenance of a site's material systems, components, or equipment as observed during the site assessor's walk-through site visit. Included within this definition are material systems, components, or equipment that are approaching, have reached, or have exceeded their typical EUL or whose RSL should not be relied upon in view of actual or effective age, abuse, excessive wear and tear, exposure to the elements, lack of proper or routine maintenance, etc. This definition specifically excludes deficiencies that may be remedied with routine maintenance, miscellaneous minor repairs, normal operating maintenance, etc., and excludes conditions that generally do not constitute a material physical deficiency of the site.

The EUL of building components and site improvements was used to determine an event year, based on their reported age or RSL. Where this information was unavailable, the age and RSL of building components and site improvements was estimated based on their overall reported or observed condition.

The EUL of building components and site improvements is mainly a function of the quality of materials used, manufacturing and installation, as well as the degree of maintenance afforded to the component, and local weather conditions. Also, the realization of a component's EUL does not necessarily constitute its replacement. Risk, including safety or the cost of damage to the asset and its use, was considered in estimating the RSL and the schedule for major repairs or replacements.

Some components have been assumed to have "indefinite" life expectancy as compared to the relative life of other components (e.g., building structure, domestic plumbing and electrical systems). From time to time localized repairs may be required due to deterioration or vandalism, which are assumed to be handled as part of ongoing maintenance. In some instances, a provisionary cost has been applied to a component in order to provide for foreseeable future repairs for which an actual cost cannot be applied at this time.

Uniformat II Elemental Classification System

Uniformat II is a format for classifying building elements and related site work. Elements are major components common to most buildings, and usually perform a given function, regardless of the design specification, construction method, or materials used. Using Uniformat II ensures consistency in the economic evaluation of building projects over time and from project to project, and it enhances project management and reporting at all stages of the building life cycle (planning, programming, design, construction, operations, and disposal).

Other Uniformat II benefits include providing a standardized format for collecting and analyzing historical data to use in estimating and budgeting future projects; providing a checklist for the cost estimation process as well as the creativity phase of the value engineering job plan; providing a basis for training in cost estimation; facilitating communications among members of a project team regarding the scope of work and costs in each discipline; and establishing a database for automated cost estimating.

Additional information on the Uniformat II Elemental Classification System may be found at the following web link: http://fire.nist.gov./bfrlpubs/build99/art080.html.

Opinions of Probable Cost

Our opinions of probable replacement costs which correspond with recommended events are based on unit rates published by Means Publishing, combined with local experience gained by Stantec. Event costs are expressed as “order of magnitude” (+/- 20%). The quantities associated with each event have been estimated during the site visit and do not represent exact measurements or quantities. At the time of replacement, specific “scope of work” statements and quotations should be determined and budgetary items revised to reflect actual expenditures.

The opinions of probable cost described in this report are expressed in current value dollars, and do not account for inflation where future events have been prescribed. Soft costs have been applied to each event cost, and include 15% for contractor overhead and profit, a 10% contingency allowance, and 15% for consultant design fees.

Stantec recommends that all maintenance contracts and operating cost information be reviewed in conjunction with the opinions of probable costs presented in this report.

Limitations

Exclusive Use

This report, including its information and opinions, has been prepared for the exclusive and sole use of the Fire Station #21 located at 9315 – 101 Street NW in the City of Edmonton.

Reliance Purposes

This report shall not be relied upon for any purpose other than intended for the City of Edmonton within the scope of services negotiated between Stantec Consulting Ltd. (Stantec) and the City of Edmonton without the express prior written consent of Stantec.

Third Party Reliance

This report may not be relied upon by any other person or entity without the express written consent of Stantec and the City of Edmonton. Any reliance on this report by a third party, any decisions that a third party makes based on this report, or any use at all of this report by a third party without the prior written consent of Stantec is the sole responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this report.

Distribution

No party shall distribute this report, in its final form or in draft form, or any portion or copy thereof without the express written permission of Stantec, except that the City of Edmonton may make copies of this report as are reasonable for its own use and consistent with the intended purposes of this report.

Cost Opinions

Any opinions of probable costs expressed in this report are partially based on consultation with industry-recognized publications on probable costs for materials and labour. While Stantec uses information available to us combined with our judgment and past experience, the specific rationale and conditions forming the basis of contractors' bids, material or equipment pricing are beyond our knowledge and control. Stantec can therefore not be held responsible if the final costs vary from these opinions of probable cost.

As well, any opinions of probable costs are intended for global budgeting purposes only. The scope of work and the actual costs of the work recommended can only be determined after a detailed examination of the site element in question, understanding of the site restrictions, understanding of the effects on the ongoing operations of the site/buildings, definition of the construction schedule, and preparation of tender documents. Stantec expressly waives any responsibilities for the effects of any action taken as a result of these endeavors unless Stantec is specifically advised of prior to, and participate in the action, at which time, Stantec's responsibility will be negotiated.

Physical Limitations to Scope

Stantec's work did not include intrusive testing/investigation, destructive testing, testing of life safety systems or quantitative testing. As such, any recommendations and opinions of probable costs associated with these recommendations, as presented in this report, are based on walk-through non-invasive observations of the parts of the buildings which were readily accessible during a visual review. Conditions may exist that are not as per the general condition of the system being observed and reported in this report.

Opinions of probable costs presented in this report are also based on information received during interviews with site representatives, operations and/or maintenance staff. Stantec cannot be held responsible for incorrect information received during the interview process. Should additional information become available with respect to the condition of the buildings and/or site elements, Stantec requests that this information be brought to our attention so that Stantec may reassess the conclusions presented herein.

Assessments

No legal surveys, soil tests, geotechnical assessments, detailed barrier-free compliance assessments, seismic assessments, detailed engineering calculations, or quantity surveying compilations have been made. No responsibility, therefore, is assumed concerning these matters. Stantec did not design or construct the buildings or related structures and therefore will not be held responsible for the impact of any design or construction defects, whether or not described in this report. No guarantee or warranty, expressed or implied, with respect to the Property, building components, building systems, property systems, or any other physical aspect of the Property is made.

Standard of Care

The assessments outlined in this report generally captured conditions that existed at the time of the site visit. Stantec's opinions and recommendations presented in this report are rendered in accordance with generally accepted professional standards for like services under like circumstances for similar locales. The opinions and recommendations are not to be construed as a warranty or guarantee regarding existing or future physical conditions or regarding compliance of systems/components and procedures/operations with the various regulating codes, standards, regulations, ordinances, etc.

Facility Description

Fire Station #21 is located south of the intersection between 101 Street NW and 94th Avenue NW. The facility is a one-storey structure with basement mechanical room. The interior spaces consist of the apparatus floor, lounge/kitchen area, offices/meeting rooms, dorm, and washrooms located throughout the complex. The facility was reportedly utilized as a training centre originally; however it is now utilized primarily for storage purposes (City water rescue vehicles/equipment). The facility includes a partially paved/gravel parking lot located adjacent the main/north elevation. Landscaped areas are located on the south portion of the site. The facility was reportedly constructed in 1980 and contains a footprint area of approximately 1,875 square meters (m^2).

Building Systems

The following sections describe building systems and components identified at the facility, along with a summary of deficiencies encountered during the assessment.

BUILDING STRUCTURE

The building foundation within the basement portion of the site building consists of cast-in-place concrete walls and slab-on-grade floor. The main floor construction atop the basement portion of the building consists of a composite floor slab (concrete poured within steel decking) supported by Open Web Steel Joists (OWSJ's). The remaining portions of the building are believed to consist of concrete pad and strip footings below slab-on-grade floors.

The majority of the above grade building structure was concealed by interior and exterior finishes. Where exposed, the above grade structural frame of the building appears to consist of a combination of load bearing concrete block masonry and steel framing (beams, columns and OWSJ's) supporting steel roof decking.

There is no structural related work recommended during the evaluation period for the building structure.

Overall, the facility's structural components appeared to be in good condition.

BUILDING EXTERIOR

The building exterior walls are finished with a combination of brick veneer masonry and sprayed on exposed aggregate (finish appears to be quartz stone). Exterior windows consist of fixed and operable (awning style) Insulating Glass (IG) units within aluminum frames. The exterior doors consist of both IG and Single Glazed (SG) units within aluminum doors and frames. Five automated overhead doors facilitate the vehicle access into the apparatus floor.

The majority of the building's roof is comprised primarily of conventional Built-Up asphalt Roof (BUR) assemblies. A section atop the northeast portion of the building is comprised of an Inverted Roof Membrane Assembly (IRMA). Due to snow accumulation atop the roof system during the assessment, observations were severely limited.

Recommended work to address other noted deficiencies includes the following:

- The BUR and IRMA roof systems are original to construction and have surpassed their maximum EUL. Therefore, funds need to be allocated for budgeted replacement of the roof systems.

- The main entrance storefront doors have surpassed their maximum EUL. Therefore, it is recommended that funds be allocated for budgeted replacement within the next three years.

- The overhead doors serving the apparatus floor area have surpassed their maximum EUL. Funds should be budgeted for the lifecycle replacement of the doors within the next three years.

- The exterior windows are original to construction and will surpass their maximum EUL. Funds should be allocated for the lifecycle replacement of the windows within the next 8 years.

Overall, the facility's exterior finishes are in acceptable condition.

BUILDING INTERIOR

The majority of the partition walls within the facility consist of a combination of gypsum board paneling installed on steel studs and finished concrete block masonry.

Interior doors consist of a combination of hinged hollow metal doors and wood doors within metal frames.

Walls are mainly painted gypsum boards and concrete block masonry with some rooms utilizing wall coverings (wall paper) and brick veneer masonry. Ceramic tile wall finish is provided within the washrooms.

Floor finishes are a combination of ceramic/vinyl floor tiles, sheet/tile vinyl flooring, carpet and epoxy coated concrete floor finishes.

Suspended acoustic tile ceilings are provided in the majority of the facility, with the exception of the apparatus floor and mechanical/electrical rooms where the roof/floor structure is exposed. Painted gypsum board finishes are provided within the washrooms.

As it was reported that the classroom/kitchen/office areas are no longer used, upgrades to the interior finishes are not required. However, recommended work to address noted deficiencies includes the following:

- Investigate the cause/repair the deteriorated interior paint finishes within the stairwell leading to the basement level of the site building (possible former roof leak).

- Re-paint the concrete block around the man door in the apparatus room.

- Re-paint the concrete stairs leading down to the basement mechanical room.

- Repairs to the epoxy floor coating within the apparatus floor area.

- Replace portions of the vinyl wall covering as the component is nearing its EUL.

- The ceramic wall tiles within the washrooms, ceramic floor tiles, vinyl sheet and tile flooring, and sheet carpet flooring are all nearing their EUL and exhibit deterioration typical of their age. An allowance for replacement of the interior finishes has been carried over the next 10-18 years.

Overall, the facility's interior components are in acceptable condition.

MECHANICAL SYSTEMS

The heating/cooling systems are comprised of one rooftop condensing unit, one Make-Up Air (MUA) unit installed atop the roof, one gas fired forced air furnace, and two gas fired hydronic boilers. Supplemental heating is supplied by 7 gas fired suspended unit heaters in the apparatus floor area and electric heaters located within vestibule entrance areas.

Domestic cold water is supplied by the city. Domestic hot water is provided by two domestic hot water tanks with one tank located in a utility room and the other tank located in the basement mechanical room.

Portable fire extinguishers are strategically located throughout the building.

There is no related work recommended during the evaluation period for the mechanical systems.

Overall, the facility's mechanical components are in acceptable condition.

ELECTRICAL SYSTEMS

Power to the Site building is fed from the utility underground service to the main switchboard which is installed in the utility room. Interior lighting in the facility is primarily provided by ceiling surface and suspended mounted fluorescent fixtures. Fixtures have fluorescent T12 tubes and compact lamps. Exterior lighting consists of wall mounted high pressure sodium fixtures.

The building is monitored by a fire alarm system with smoke and heat detectors throughout the building. The electrical panel is installed in the utility room. The building also possesses a natural gas fired powered emergency generator which is also located in the mechanical/electrical room.

There is no related work recommended during the evaluation period for the electrical systems.

Overall, the facility's electrical components are in acceptable condition.

SITE IMPROVEMENTS

The site compound includes an asphalt-paved parking lot and access driveway which are located on the north and west portions of the site. There is also an access driveway located on the east elevation of the building for vehicle fueling and access to the apparatus floor area. Soft landscaping is located adjacent to the east and south elevations of the building.

There is no site related work recommended during the evaluation period, except those which are part of the regular maintenance, however recommended work to address noted deficiencies includes the following:

- Lineal cracking and limited deterioration of asphalt paved surfaces was observed during the evaluation. It is recommended that an allowance be carried for periodic repairs where required until lifecycle replacement can be completed, as the asphalt has surpassed its maximum EUL.

Overall, the facility's site components are in acceptable condition.

Summary of Costs

The following table provides a roll-up of opinions of probable cost identified during the Building Condition Assessment, separated by building system, to address deficiencies presented in the preceding sections outlined above. The costs exclude deficiencies that may be addressed as routine maintenance, and do not include applicable taxes.

Cost Summary Table

Building System	Immediate Repair Costs	Deferred Maintenance Costs	Lifecycle Replacment Costs																
	Year 2012	Years 2013 – 2014	Year 2015	Year 2016	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027	Year 2028	Year 2029	Year 2030	Year 2031	Year 2032
Building Structure																				
Building Exteriors		$8,000	$313,700					$72,000												
Building Interiors		$16,750	$65,500				$27,500	$39,500	$64,000				$15,000					$43,000		
Mechanical Systems	$4,000		$133,300					$17,000		$4,800					$29,000			$112,000		
Electrical Systems			$156,000					$70,000										$25,000		
Site Improvements			$65,000				$31,000		$14,000											
TOTALS	**$4,000**	**$24,750**	**$733,500**	**$0**	**$0**	**$0**	**$58,500**	**$198,500**	**$78,000**	**$4,800**	**$0**	**$0**	**$15,000**	**$0**	**$0**	**$0**	**$0**	**$180,000**	**$0**	**$0**

There are a number of building components that will reach the end of their life expectancy within the next 20 years. These components are primarily building exteriors, interiors, mechanical systems and electrical systems. The core structural elements are in acceptable condition and not anticipated for replacement during this time frame. Throughout a buildings lifecycle there are many components that will require replacement due to age and deterioration. This is expected for any building. Rather than building a brand new building every 30 years most components are renewed. Many of these components may be renewed 2 to 4 times before the building reaches the end of its life. If these systems are not maintained or replaced the building may become unusable. A facility is most likely to be replaced when the structural elements are approaching the end of their expected life. In the case of Fire Station 21 the building is approximately 32 years old. Renewing the components within the facility is part of the required maintenance to having a building life of 75 to 100 years. By replacing the suggested components combined with proper preventative maintenance it is anticipated the building should be functional for another 32 years before many of the same renewal items may need to be completed. At that point the building will be 65-70 years old and a detailed study of renew or build new should be conducted.

The following section provides a tabular description and assessment of building and property elements encountered at the Site, and corresponding opinions of probable cost to correct noted physical deficiencies or to replace base-building elements and site improvements that have exceeded, or will realize their theoretical design life on or before 2032.

Also included are photographs of salient observations made during the site visit, which pertain to noted physical deficiencies.

Stantec

FIR121 - FIRE STATION #21
9315 – 101 Street NW

Building Condition Assessment & Opinions of Probable Cost

FIR121 - Fire Station #21

SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
S1 STRUCTURAL								
A10 Foundations								
A1010 Standard Foundations*								
A1010 Standard Foundations*	Building Structure	B	Original Building	No structural drawings were available at the time of assessment, however it is believed that the foundation system of the building consists of cast-in-place concrete walls and slab-on-grade floor within the basement portion of the building. The remaining portions of the building are believed to consist of concrete pad and strip footings supporting slab-on-grade floors.	1980	68	$ -	*
A1030 Slab on Grade*								
A1030 Slab on Grade*	Building Structure	B	Original Building	No structural drawings were available at the time of assessment. It is believed that most of the main floor substructure consists of a floating concrete slab-on-grade system. The Apparatus Floor area is believed to be comprised of a structural slab-on-grade system supported by concrete grade beams and anchored to the perimeter foundation walls. No major cracks, spalling or other damages were observed.	1980	68	$ -	*
A20 Basement Construction								
A2020 Basement Walls (& Crawl Space)*								
A2020.01.01 Cast-in-place Concrete: Basement Wall	Building Structure	B	Original Building	No structural drawings were available at the time of assessment. However, the concrete foundation walls within the basement mechanical room were visible during the assessment. No major cracking, deterioration or other damages were observed.	1980	68		*
B10 Superstructure								
B1010 Floor Construction								
B1010.01 Floor Structural Frame (Building Frame)*	Building Structure	B	Original Building	The majority of the building structure was concealed by interior and exterior finishes. Where exposed, the above grade structural system appears to consist of a combination of load bearing concrete block masonry and steel structure (beams, columns and open web steel joists) supporting steel roof decking. No major concerns were observed or reported.	1980	68		*

FIR121 - Fire Station #21

SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
B1020 Roof Construction								
B1020.01 Roof Structural Frame*	Building Structure	B	Original Building	No structural drawings were available at the time of assessment. Where exposed the structural frame of the roof consists of open web steel joists supporting corrugated metal roof decking. No major concerns were observed or reported.	1980	68		*
S2 ENVELOPE								
B20 Exterior Enclosures								
B2010 Exterior Walls								
B2010.01.02.01 Brick Masonry: Ext. Wall Skin*	Building Perimeter	A	Original Building	The majority of the exterior walls are covered with brick veneer. No cracks, spalling, or other deficiencies were observed.	1980	43		*
B2010.01.99 Other Exterior Wall Skin*	Building Perimeter	A	Original Building	The exterior walls are finished with a stone finish (appears to be quartz) and is assumed to be applied in a manner consistent with stucco. No deficiencies were observed.	1980	28		*
B2010.02.03.04 Glass Masonry Units (Glass Block)	Building Perimeter	B	Original Building	A small portion of the exterior walls (on the Northwest corner of the building) consists of glass block masonry. No deficiencies were observed.	1980	43		*
B2010.01.11 Joint Sealers (caulking): Ext. Wall**	Building Perimeter	B	Original Building	Sealants were installed around the window openings throughout the exterior walls. The sealants were observed to be fairly new, and in good condition. A maintenance allowance should be carried for future replacement as sealants fail.	2000	2	$ 3,000	2013
B2010.09.03 Siding Panels:Soffits	Building Perimeter	A	Original Building	Corrugated/perforated metal is installed along the soffits throughout the exterior. No deterioration was observed or reported. A repair allowance has been carried for isolated replacement where required.	1980	2	$ 5,000	2013
B2020 Exterior Windows								
B2020.01.01.02 Aluminum Windows (Glass & Frame)**	Building Perimeter	C	Original Building	The windows consist of both fixed and operable (awning type) insulating glazed units (IGU's) set in aluminum frames. No major concerns were observed or reported, however a lifecycle replacement is anticipated as the units are nearing the end of their EUL.	1980	8	$ 72,000	2020

FIR121 - Fire Station #21

SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
B2030 Exterior Doors								
B2030.01.02 Steel-Framed Storefronts: Doors**	Building Perimeter	C	Original Building	The main entrances consist of storefront doors (complete with IGU's) in metal frames. No major concerns were observed or reported, however a lifecycle replacement is anticipated as the units are nearing the end of their EUL.	1980	3	$ 6,500	2015
B2030.01.02 Steel-Framed Storefronts: Doors**	Building Perimeter	C	Original Building	Secondary entrances and vestibules consist of storefront doors (complete with single glazing) in metal frames. No major concerns were observed or reported, however a lifecycle replacement is anticipated as the units are nearing the end of their EUL.	1980	3	$ 16,500	2015
B2030.02 Exterior Utility Doors**	Building Perimeter	C	Original Building	A hollow metal exterior door set in metal framing is located at the entrance adjacent to the overhead doors in the apparatus area. No major concerns were observed or reported.	1980	3	$ 900	2015
B2030.03 Large Exterior Special Doors (Overhead)*	Building Perimeter	C	Original Building	There is one insulated sectional vinyl overhead door and four metal sectional (complete with single glazed units) overhead doors with electronic door operators providing access to the apparatus floor area. No problems or deficiencies were observed or reported. However, the units have surpassed (or exceeded) their expected useful life so an allowance for lifecycle replacement has been provided	1980	3	$ 30,600	2015
B30 Roofing								
B3010 Roof Coverings								
B3010.04.01 Built-up Bituminous Roofing (Asphalt & Gravel)**	Building Rooftop	C	Original Building	The majority of the roofing system atop the building consists of a Built-Up asphalt Roof (BUR) assembly. A conclusive assessment could not be performed due to the snow covered conditions encountered. A lifecycle replacement event is anticipated as the roofing system has achieved its maximum EUL.	1980	3	$ 219,400	2015

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
B3010.04.08 Membrane Roofing (Inverted/ Protected)**	Building Rooftop	C	Original Building	A small portion of the roofing system (the northeast corner of the building) consists of a Inverted Roof Membrane Assembly (IRMA). A conclusive assessment could not be performed due to the snow covered conditions encountered. No problems or deficiencies were observed or reported however, the units have surpassed (or exceeded) their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 37,300	2015
B3020 Roof Openings								
B3020.02 Other Roofing Openings (Hatch, Vent, etc)*	Building Rooftop	C	Original Building	Access to the roof system is provided by a roof hatch located in a mechanical room adjacent to the apparatus floor.	1980		$ 2,500	2015
S3 INTERIOR								
C10 Interior Construction								
C1010 Partitions								
C1010.01.03 Unit Masonry Assemblies: Partitions*	Building Interior	B	Original Building	Most of the wall partitions within the building are comprised of concrete block masonry. No deficiencies (such as cracks, spalled areas or loose joint mortar) was observed or reported.	1980	68		*
C1010.05 Interior Windows*	Building Interior	C	Original Building	Interior windows located in the offices adjacent to the apparatus room consist of glazing units in painted steel frames. No major concerns were observed or reported, however a lifecycle replacement is anticipated as the units are nearing the end of their EUL.	1980	18	$ 8,000	2030
C1020 Interior Doors								
C1020.01 Interior Swinging Doors (& Hardware)*	Building Interior	C	Original Building	Painted wood and metal hinged doors, installed within painted metal frames are provided throughout the interior of the building. No major deficiencies were observed.	1980	28		*
C1030 Fittings								
C1030.01 Visual Display Boards**	Building Interior	C	Original Building	White boards are located within the individual classrooms located throughout the building. No problems or deficiencies were observed or reported however, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 13,500	2015

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
C1030.02 Fabricated Compartments(Toilets/Showers)**	Washrooms	C	Original Building	Painted metal toilet partitions are provided in all the washrooms. No problems or deficiencies were observed or reported however, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 11,600	2015
C1030.10 Lockers**	Building Interior	C	Original Building	Prefinished metal lockers are installed in the washrooms and in within the apparatus floor area. No problems or deficiencies were observed or reported however, the units have surpassed (or exceeded) their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 28,400	2015
C1030.14 Toilet, Bath, and Laundry Accessories*	Washrooms	C	Original Building	The accessories include metal toilet paper holders, paper towel dispensers, soap dispensers and mirrors. No problems or deficiencies were observed or reported however, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 3,000	2015
C20 Stairs (and Ramps)								
C2010 Stair Construction*								
C2010.01 Cast-In-Place Concrete Stair Construction	Building Interior	C	Original Building	Stairs leading to the basement mechanical room consist of cast-in-place concrete. No major deficiencies were observed, however the stairs are nearing their maximum EUL and exhibiting small amounts of deterioration. Therefore an allowance for repairs has been carried within the report.	1980	3	$ 4,500	2015
C2020 Stair Finishes								
C2020.10 Stair Painting	Building Interior	D	Original Building	The stairs leading to the basement mechanical room are painted and exhibiting some deterioration. Repainting of the stairs is recommended within the next 3 years.	1980	1	$ 750	2013
C30 Interior Finishes								
C3010 Wall Finishes								
C3010.02 Wall Paneling**	Building Interior	C	Original Building	Vinyl wall paneling is provided within classrooms and hallways. No major concerns were observed or reported, however a lifecycle replacement is anticipated as the wall paneling is nearing the end of their EUL.	1980	8	$ 32,000	2020

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
C3010.06.01 Ceramic Tile	Washrooms	C	Original Building	Ceramic tile wall finish is provided within washrooms. No major concerns were observed or reported, however a lifecycle replacement is anticipated as the ceramic tile is nearing the end of their EUL.	1980	7	$ 27,500	2019
C3010.11 Interior Wall Painting*	Building Interior	D	Original Building	Generally the interior wall surfaces throughout the facility (gypsum board and concrete block masonry). The paint finish was in fair condition overall however there were some deteriorated areas observed within the stairwell and adjacent to the exterior man door within the apparatus floor area. An allowance has been carried for repair of these areas and periodic repairs.	1980	1	$ 7,500	2013
C3010.14 Other Wall Finishes*	Building Interior	A	Original Building	Brick masonry was observed within the main entrance and various rooms. No major deficiencies were observed or reported.	1980	43		*
C3020 Floor Finishes								
C3020.01 Concrete Floor Finishes	Mechanical Rooms	C	Original Building	Concrete floor finishes (unpainted) are provided within the mechanical rooms. No major concerns were observed or reported.	1980	18		*
C3020.01.01 Epoxy Concrete Floor Finishes*	Apparatus Floor	C	Original Building	Epoxy floor finishes are provided within the apparatus floor area. Some minor deterioration was observed, and therefore an allowance has been carried for repair where required.	1980	1	$ 8,500	2013
C3020.02.01 Ceramic Tile	Building Interior	B	Original Building	Ceramic tile flooring is located throughout the building (hallways, main entrance, washrooms, etc). No major concerns were observed or reported, however a lifecycle replacement is anticipated as the ceramic tile achieves its EUL.	1980	18	$ 35,000	2030
C3020.07.01 Resilient Tile Flooring	Building Interior	B	Original Building	Vinyl floor tiles are located throughout the hallways and office areas. No major deficiencies were observed or reported.	1980	13	$ 15,000	2025
C3020.08.02 Sheet Carpet	Building Interior	B	Original Building	Carpeting is located throughout the classroom portions of the building. No problems or deficiencies were observed or reported however, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided.	1980	9	$ 64,000	2021
C3020.07.02 Resilient Sheet Flooring	Building Interior	B	Original Building	Sheet vinyl flooring was observed within the kitchen area of the building. No major deficiencies were observed or reported.	1980	8	$ 7,500	2020

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
C3030 Ceiling Finishes								
C3030.06 Acoustic Ceiling Treatment (Susp.T-Bar)**	Building Interior	C	Original Building	The majority of the ceiling spaces are finished with suspended ceiling assemblies (complete with lay-in tiles). Some tiles were damaged and removed requiring replacement. Overall the tiles are in fair condition, however an allowance has been carried for periodic replacement.	1980	3	$ 4,500	2015
S4 MECHANICAL								
D20 PLUMBING								
D2010 Plumbing Fixtures								
D2010.01 Water Closets	Washrooms	C	Original Building	The washrooms include vitreous china water closets. No problems or deficiencies were observed or reported however, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 18,500	2015
D2010.02 Urinals	Washrooms	C	Original Building	The men's washrooms include vitreous china urinals. No problems or deficiencies were observed or reported however, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 6,200	2015
D2010.04 Sinks**	Washrooms	C	Original Building	Washrooms include steel sinks with a baked enamel finish. No problems or deficiencies were observed or reported however, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 9,400	2015
D2010.04 Sinks**	Washrooms	C	Original Building	Stainless steel sinks are installed within the kitchens. No problems or deficiencies were observed or reported however, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 3,000	2015
D2020 Domestic Water Distribution								
D2020.01 Water Supply Piping Systems	Building Interior	C	Original Building	Copper piping distributes the domestic hot and cold water throughout the building. No major concerns were observed or reported, however a lifecycle replacement is anticipated as the copper piping nears the end of its EUL.	1980	18	$ 80,000	2030

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
D2020.02.06 Domestic Water Heaters**	Mechanical Room	B	Original Building	A 90 Gal natural-gas-fired hot water heater is installed in the mechanical room adjacent to the apparatus floor area. The hot water heater was manufactured by A.O. Smith in approximately 1994 and has a heating capacity of 108,000 BTU/H.	1994	3	$ 3,100	2015
D2020.02.06 Domestic Water Heaters**	Mechanical Room	C	Original Building	A 41 Gal natural-gas-fired hot water heater is installed in the basement mechanical room. The hot water heater was manufactured by John Wood in 1994 and has a heating capacity of 46,000 BTU/H.	1994	3	$ 1,800	2015
D2030 Sanitary Waste								
D2030.02.04 Floor Drains*	Apparatus Floor, Washrooms, Mechanical Rooms	C	Original Building	Floor drains are found throughout the building in washrooms, shower rooms, etc. Steel grate drains are located in the Apparatus floor area. No major concerns were observed or reported.	1980	18		*
D2040 Rain Water Drainage								
D2040.02.04 Roof Drains*	Building Rooftop	C	Original Building	Cast iron roof drains with cast iron domes are found throughout the various roof areas. No major concerns were observed or reported, however a lifecycle replacement is anticipated as the roof drains near the end of their EUL.	1980	18	$ 12,000	2030
D2040.01 Rain Water Drainage Piping Systems*	Building Interior	C	Original Building	Cast iron rain water leaders direct the roof storm water to the underground collection system which is connected to the municipal storm sewer system.No major concerns were observed or reported, however a lifecycle replacement is anticipated as the drainage piping achieves its EUL.	1980	18	$ 20,000	2030
D30 Heating Ventilating and Air Conditioning (HVAC)								
D3010 Energy Supply								
D3010.02 Gas Supply Systems*	Site Grounds	C	Original Building	High pressure gas enter the building on the north elevation into the mechanical room through a 2" regulator and meter with gas pump.	1980	18		*
D3020 Heat Generation								
D3020.02.01 Heating Boilers and Accessories: H.W.**	Mechanical Room	C	Original Building	Two natural gas-fired boilers (Teledyne Laars Canada) provides the heating water for the buildings hot water heating system. (no identification tags were present on the units to identify heating capacities).	1980	3	$ 48,800	2015

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
D3020.03.01 Furnaces**	Mechanical Room	C	Original Building	A natural gas fired furnace is installed in the mechanical room. The unit was manufactured by Flame-Master and appeared to be original to construction. No problems or deficiencies were observed or reported however, the unit has surpassed its expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 3,700	2015
D3040 HVAC Distribution (Distribution Systems)								
D3040.01.01 Air Handling Units: Air Distribution**	Building Interior	C	Original Building	A makeup air unit is located on the roof of the building. No problems or deficiencies were observed or reported however, the unit has surpassed its expected useful life so an allowance for lifecycle replacement has been provided. In addition, a gas monitoring system is recommended for installation within the apparatus floor area.	1980	3	$ 28,400	2015
D3040.03.01 Hot Water Distribution Systems**	Building Interior	B	Original Building	Cast iron piping distributes the hot water heating around the building. Generally the piping was concealed by interior finishes and insulations, therefore a conclusive assessment couldn't be performed. No major concerns were observed or reported, however a lifecycle replacement is anticipated as the distribution piping achieves its EUL.	1980	8	$ 17,000	2020
D3050 Terminal and Packaged Units								
D3050.01.03 Packaged Terminal Air Conditioning Units*	Building Interior	B	Original Building	There is one roof top mounted air conditioning unit manufactured by York in 1992 with an input capacity of 120,000 BTU/H. No concerns were reported or observed during the evaluation.	1992	10	$ 4,800	2022
D3050.05.06 Unit Heaters**	Building Interior	A	Original Building	Five Modine natural gas fired suspended unit heaters are installed in the Apparatus floor area. The units appear to be new (approx 2-3 years of age).	2009	27	$ 22,500	2039
D3050.05.06 Unit Heaters**	Building Interior	A	Original Building	One Lennox natural gas fired suspended unit heater is installed in the Apparatus floor area. The unit appears to be new (approx 2-3 years of age).	2009	27	$ 6,700	2039
D3050.05.06 Unit Heaters**	Building Interior	C	Original Building	One Engineered Air natural gas fired suspended unit heater is installed in the Apparatus floor area. No problems or deficiencies were observed or reported however, the unit has surpassed its expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 5,400	2015

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
D3050.05.02 Fan Coil Units**	Building Interior	D	Original Building	A suspended hot water unit heater is installed in the basement mechanical room. No problems or deficiencies were observed or reported however, the unit has surpassed its expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 3,000	2015
D3060 HVAC Instrumentation and Controls								
D3060.02.01 Electric and Electronic Controls**	Building Interior	C	Original Building	Wall mounted thermostats control the heating systems in the building. No major concerns were observed or reported. No problems or deficiencies were observed or reported. However, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided	1980	3	$ 2,000	2015
D3060.05 Other HVAC Instrumentation and Controls*	Building Interior	F	Original Building	Various automobiles are routinely run inside the building. Although there are provisions made for ventilation of exhaust fumes, it is recommended that a study be completed to confirm that the ventilation systems in place are functioning as designed and that the design is adequate for current usage. An allowance is provided in the Capital Replacement Plan for this purpose.	2012	0	$ 4,000	2012
D40 Fire Protection								
D4010 Sprinklers: Fire Protection*								
D4010.01 Wet-Pipe Fire Sprinkler Systems	Building Interior	C	Original Building	The building possesses a wet sprinkler system which services every room within the facility. No major concerns were observed or reported, however an allowance for repairs/partial replacement has been allocated for the sprinkler system as the system achieves its EUL.	1980	15	$ 15,000	2027
D4030 Fire Protection Specialties								
D4030.01 Fire Extinguisher, Cabinets and Accessories*	Building Interior	B	Original Building	Wall mounted fire extinguishers within cabinets are located throughout the building. The units are annually inspected by an outside specialized contractor. An allowance for replacement of the fire extinguishers has been carried as the units achieve their EUL.	1980	15	$ 14,000	2027
S5 ELECTRICAL								
D50 Electrical								
D5010 Electrical Service and Distribution								
D5010.03 Main Electrical Switchboards (Main Distribution)**	Building Interior	C	Original Building	The main electrical breaker for the facility (rated 600 Amps. 120/240 Volts) is installed within the mechanical/electrical room. An allowance for replacement of the main distribution panel has been provided as the component nears its EUL.	1980	8	$ 15,000	2020

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
D5010.03.07 Enclosed Switches and Circuit Breakers	Building Interior	C	Original Building	Various electrical distribution panels are located throughout the facility and are apparently original to construction. No major deficiencies were observed or reported. An allowance for replacement of the seconary distribution panels has been provided as the component nears its EUL.	1980	8	$ 20,000	2020

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
D5020 Lighting and Branch Wiring								
D5020.01 Electrical Branch Wiring*	Building Interior	C	Original Building	Branch wiring is a combination of conduits and cables. The active wiring is estimated to be original to construction (1980). An allowance for repair and partial replacement of the branch wiring has been carried as the wiring nears its EUL.	1980	18	$ 25,000	2030
D5020.02.02.02 Interior Florescent Fixtures**	Building Interior	C	Original Building	Fluorescent T12 tubes and bulbs in various fixtures provide lighting throughout the building. No major deficiencies were observed or reported however, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 60,000	2015
D5020.02.03.01 Emergency Lighting Built-in*	Building Interior	B	Original Building	Ceiling mounted emergency lights are located in various rooms/hallways. The ceiling mounted units are tied in with the emergency exit signage. An allowance for replacement of the emergency lights has been carried as the lights achieve their EUL.	1990	8	$ 20,000	2020
D5020.02.03.03 Exit Signs*	Building Interior	B	Original Building	Ceiling mounted exit signage are located throughout various hallways. A replacement allowance has been provided for the exit signs as they achieve their EUL.	1990	8	$ 15,000	2020
D5020.03.01.04 Exterior H.P. Sodium Fixtures*	Building Exterior	C	Original Building	Wall mounted exterior light fixtures are provided with high pressure sodium lamps. No major deficiencies were observed or reported however, the units have surpassed their expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 20,000	2015
D5030 Communications and Security								
D5030.01 Detection and Fire Alarm**	Building Interior	C	Original Building	A complete fire alarm system including smoke/heat detectors, alarms bells connected to a fire control panel (System 3) located in the main entrance vestibule is installed within the building. No major deficiencies were observed or reported however, the unit has surpassed its expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 21,000	2015
D5090 Other Electrical Systems								

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
D5090.02 Packaged Engine Generator Systems (Emergency Power System)**		C	Original Building	A natural gas fueled emergency generator and its accessories are installed in the mechanical/electrical room. No major deficiencies were observed or reported however, the unit has surpassed its expected useful life so an allowance for lifecycle replacement has been provided. Consideration should be given to providing a generator that will work from an alternative fuel source, as per the 2006 ABC, i.e. diesel, propane or a dedicated natural gas feed.	1980	3	$ 55,000	2015
S6 EQUIPMENT, FURNISHINGS AND SPECIAL CONSTRUCTION								
E1030 Vehicular Equipment								
E1030.01.02 Fuel Dispensing Equipment	Site Grounds	C	N/A	A vehicle refueling pump with associated tank is located on the southeast portion of the site. The equipment is original to construction. No major deficiencies were observed or reported however, the unit has surpassed its expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 35,000	2015
S7 SITE								
G20 Site Improvements								
G2010 Roadways								
G2010.04 Rigid Roadway Pavement (Concrete)**	Site Grounds	B	N/A	Concrete ramps built in front of the overhead doors allows vehicle access into the apparatus floor area. Minor cracking was observed. No major concerns were reported. As the concrete was observed to be in fairly good condition, only general annual maintenance is required. An allowance for repairs and partial replacement has been provided.	1980	9	$ 14,000	2021
G2010.02.02 Flexible Pavement Roadway (Asphalt)**	Site Grounds	C	N/A	An asphalt paved driveway facilitate the vehicle access into the parking lot from the north portion of the site. The surface was mostly covered with snow therefore a conclusive assessment couldn't be performed. No major deficiencies were observed or reported however, the asphalt has surpassed its expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 25,000	2015

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SAP No.	System/Area	Rating	Building Section	Description/Comments/Concerns	Year Installed	RSL	Estimated Cost	Event Year
G2020 Parking Lots								
G2020.02.01 Aggregate Parking Lots (Gravel)*	Site Grounds	C	N/A	It was reported that a gravel surfaced parking area is located along the north portion of the site. The area was covered with snow therefore a conclusive assessment couldn't be performed. No major concerns were reported. An allowance has been carried for repairs where required (add gravel fill).	1980	3	$ 5,000	2015
G2020.02.02 Flexible Paving Parking Lots(Asphalt)**	Site Grounds	C	N/A	An asphalt paved parking area is located on the north elevation of the site building. The surface was mostly covered with snow therefore a conclusive assessment couldn't be performed. No major deficiencies were observed or reported however, the asphalt has surpassed its expected useful life so an allowance for lifecycle replacement has been provided.	1980	3	$ 35,000	2015
G2040 Site Development								
G2040.02.01 Chain Link Fences and Gates*	Site Grounds	B	N/A	Chain link fence with gates is located along the perimeter of the site. The fencing is in good condition with no major concerns observed or reported. However an allowance for repairs/partial replacement has been provided as the fencing nears its EUL.	1980	7	$ 24,500	2019
G2040.02.05 Wood Fences and Gates**	Site Grounds	B	N/A	Wood fencing is located along the north, east and south elevations (adjacent to the chain link fencing). The fencing is in good condition with no major concerns observed or reported. However an allowance for repairs/partial replacement has been provided as the fencing nears its EUL.	1980	7	$ 6,500	2019
G2040.08 Flagpoles*	Site Grounds	C	N/A	A metal flagpole is located adjacent to the west elevation of the site building. No concerns were observed or reported.	1980	20		*
G2050 Landscaping								
G2050.05 Trees, Plants and Ground Covers*	Site Grounds	B	N/A	Soft landscaping, which consists of trees and shrubs located along the site perimeter on the east and south elevations. No major concerns related to the landscaping were observed or reported.	1980	68		*

Site Photographs

C3010.11 – Interior Wall Painting
Location – Stairwell To Basement
Component – Deteriorated Finish
Deficiency – Study & Repair

C3010.11 – Interior Wall Painting
Location – Apparatus Floor
Component – Deteriorated Finish
Deficiency – Study & Repair

G2010.02.02 –Flexible Pavement Roadway (Asphalt)
Location – Access Lane (West Elevation)
Component – Asphalt Surfacing
Deficiency – Deteriorated & Past Maximum EUL

City of Edmonton

Asbestos Survey Report

River Valley Operations Centre (old) (RIV115)

9315 101 Street NW, Edmonton, Alberta

Prepared for:

The City of Edmonton
Corporate Services Department
Materials Management
Room 800, Chancery Hall
3 Sir Winston Churchill Square
Edmonton, Alberta T5J 2C3

DST File No.: BEED011318

July 6, 2010

DST Consulting Engineers Inc.
11810 Kingsway Avenue, Edmonton, Alberta T5G 0X5
Tel: (780) 454-2120 Fax: (780) 454-2150 edmonton@dstgroup.com

Executive Summary

DST Consulting Engineers Inc. was retained by the City of Edmonton to conduct asbestos surveys for various municipal buildings. The goal of this program is to identify and document Asbestos-Containing Materials (ACMs) within select buildings, and to provide recommendations for the management, repair or removal of identified ACMs.

DST performed an asbestos survey of the River Valley Operations Centre (old) (RIV115) on April 23, 2010.

Laboratory analysis confirmed the following materials in the building contain asbestos:

- Drywall Joint Compound (found throughout the facility)
- 12"x12" Vinyl Floor Tile - Red (found in the storage room (Rm.4), lunch room (Rm.28), janitors room (Rm.32), storage (Rm.35) and storage (Rm.36))
- 12"x12" Vinyl Floor Tile - Grey (found in the stairwell (Rm.38))
- Pipe Parging Insulation (found in the storage room (Rm.39), storage room (Rm.43), apparatus floor (Rm.47), mechanical room (Rm.53) and men's washroom (Rm.54))
- 2'x4' Ceiling Tile - Pinhole pattern (found in the side entrance (Rm.27))

The following material must be assumed to contain asbestos unless samples are collected:

- Bell and spigot joint packing associated with cast iron waste/drain pipes (found in the corridor (Rm. 29))

Laboratory analysis confirmed the following materials in the building do not contain asbestos:

- Wall Plaster
- Textured Plaster Ceiling Finish
- 2'x4' Ceiling Tile - Pinhole and Long Fissure
- Wall Board Mastic
- Tar Paper on ceiling deck

All ACMs were in good condition at the time of the site visit.

Details regarding the specific locations and quantities of ACMs, their accessibility, condition, and recommendations for abatement or ongoing management are provided in the full report and associated appendices.

Building exteriors were excluded from the scope of work for this project.

Recommendations are also made for the overall long term management of asbestos within the building.

City of Edmonton Asbestos Survey Report

River Valley Operations Centre (old) (RIV115)

9315 101 Street NW, Edmonton, Alberta

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Appendix B Database of Asbestos-Containing Materials

Appendix C Laboratory Certificates of Analysis

Appendix D Sample Location Plans

1.0 Introduction

DST Consulting Engineers Inc. was retained by the City of Edmonton to conduct asbestos surveys for various municipal buildings. The goal of this program is to identify and document Asbestos-Containing Materials (ACMs) within select buildings, and to provide recommendations for the management, repair or removal of identified ACMs.

1.1. Scope of Work

The two primary objectives of this project are to:

1. Identify asbestos-containing building materials in each building, along with their condition and any required remedial action; and
2. Prepare reports identifying the location and condition of the materials, recommendations for abatement, and provide survey results in a database format accessible by internet.

The major tasks of the survey program were to:

- Conduct ACM surveys of each building;
- Collect and analyze samples of suspected ACMs; and
- Provide a report summarizing the findings and recommendations for each building including:
  - results of laboratory analysis;
  - digital photographs illustrating the location and current condition of representative ACMs (principally those for which high priority recommendations are provided);
  - floor plans illustrating the general location of ACMs and samples collected;
  - recommendations for the remediation of poor/fair condition ACMs; and
  - a web-accessible database of ACMs in the buildings surveyed.

Results of the asbestos survey are documented in individual reports for each building surveyed.

1.2. Background Information

Asbestos is a naturally occurring form of fibrous silicate minerals. Asbestos has historically been added to a wide variety of building materials due to several beneficial properties, such as durability, flexibility, high tensile strength, and resistance to heat, wear and corrosion. Examples of building materials that may contain asbestos include, but are not limited to: spray-on or trowel-applied fireproofing and acoustic plaster, drywall joint compound, thermal insulation, gaskets, flooring, ceiling tiles, roofing, coatings, cement products (transite), and various other miscellaneous materials.

ACMs are commonly divided into two types, friable and non-friable. Friable materials can be easily crushed by hand pressure and readily release fibres when disturbed. Friable materials include such things as thermal insulation on pipes and other mechanical equipment, and spray-applied fireproofing. Non-friable materials generally release fibres when they are cut or shaped, and include such products as floor tiles, intact hard plaster finishes, and asbestos cement products. Some non-friable materials may become friable when damaged, such as by water infiltration or weathering.

Asbestos fibres can become airborne when ACMs are disturbed. Inhalation of airborne asbestos fibres in significant quantities poses health risks and can cause asbestosis (a scarring of the lungs which makes breathing difficult), mesothelioma (a rare cancer of the lining of the chest or abdominal cavity) or lung cancer.

1.3. Regulatory Requirements

In Alberta, asbestos-containing building materials are regulated by the following regulations and guidance documents: the Alberta Occupational Health and Safety Act and Code, the Alberta Environmental Protection and Enhancement Act and Waste Control Regulation, and the Alberta Asbestos Abatement Manual published by the Workplace Health and Safety division of Alberta Employment and Immigration.

If work is being carried out that may disturb ACMs and cause the release of asbestos fibres, these materials must be removed, enclosed or encapsulated. If a building or part of a building is being demolished, ACMs must first be removed.

In Alberta, ACMs are considered materials with 1% or more of asbestos by weight. Materials containing less than 1 percent asbestos by weight are not considered ACMs requiring specialized handling, removal and disposal practices, unless their disturbance may release asbestos fibres to the air in a concentration exceeding the Occupational Exposure Limit (e.g. vermiculite).

The Alberta Asbestos Abatement Manual is used as a guide for determining compliance with the Occupational Health and Safety Act in the Province of Alberta, with respect to work involving ACMs. It provides basic information on asbestos, its health hazards, and requirements for worker protection, safe work practices, and the basic principles to follow for the safe abatement of ACMs.

The disposal of hazardous wastes is regulated by Alberta Environment. Alberta Environment has published "Guidelines for the Disposal of Asbestos Waste". In the guidelines, asbestos waste is defined as "a waste containing more than 1 percent asbestos by weight". An overview of the Transportation of Dangerous Goods Regulation's requirements for the shipment of asbestos waste is also included. Although asbestos waste does not require a manifest, a shipping document must accompany the waste to the landfill.

2.0 Survey Methodology

2.1. Survey and Sampling Methodology

The objective of the building surveys was to complete an inspection of the interior building components (e.g. mechanical systems, floors, ceilings and walls) within each room that were accessible using non-destructive techniques.

The inspection team performed the following tasks:

- completed an ACM survey sheet for each room or group of similar rooms within each building;
- evaluated the suspected ACM building materials (e.g. condition, accessibility, and friability);
- collected bulk material samples for laboratory analysis to determine asbestos content of materials suspected to contain asbestos. Bulk material samples were not collected where sampling would have caused excessive damage or posed a potential safety concern to building occupants and/or the public;
- prepared floor plans showing the location of rooms surveyed and samples collected; and
- photographed typical ACMs in the building.

Bulk samples of suspected asbestos-containing materials collected by DST during the site investigation were analyzed for their asbestos content at Steve Moody Micro Services Inc. (Steve Moody). The bulk samples were analyzed using a combination of dispersion staining and polarised light microscopy (PLM). This analytical method complies with the United States Environmental Protection Agency (U.S. EPA) Method 600/R-93/116 dated July, 1993. Steve Moody is certified under the National Institute of Science and Technology's National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos bulk sample analysis (NVLAP No. 102056).

Materials that appeared visibly similar and were likely installed during a similar time period were assigned to the same sample series. Each sample series was assigned a number, followed by a letter for each sample in the series (e.g. 01A). In most cases, if a material was found to contain asbestos, then the laboratory was instructed not to analyse any further similar samples within that sample series.

Photographs of typical ACMs are provided in Appendix A.

Details regarding the location of ACMs, condition quantity and general recommendations can be found in the database provided in Appendix B, and in the associated on-line database.

Laboratory certificates of analysis are presented in Appendix C.

Sample locations are indicated on floor plans in Appendix D. A different coloured symbol was used to mark positive and negative samples. Samples that were collected but not analysed were not marked on the plans.

2.2. Building Material Condition Assessment

The condition of suspected ACMs was assessed using the following criteria:

GOOD Condition – Material is completely encapsulated (covered by a jacketing material) and/or shows no signs or evidence of damage or deterioration. No asbestos-containing material is exposed. Includes conditions where the encapsulating material may have minor surface damage (i.e., scuffed or stained), but has not been penetrated (i.e., ripped, torn or punctured). No missing material is evident.

FAIR Condition – Minor damage or penetration of the encapsulating material (i.e., cut, ripped or torn), or trowelled friable ACM that has never been covered or jacketed. Small amount of ACM is visible; however the material has not experienced any major deterioration or damage. The extent of missing ACM should be minor or none.

POOR Condition – Original encapsulating or jacketing material is missing or has been damaged (i.e., large cuts or rips). ACM is exposed and the amount of missing material is moderate to severe.

DEBRIS – Presence of fallen ACM material is noted separately from the conditions Good, Fair and Poor. Debris includes major damage to ACMs, which has resulted in ACM that has fallen and is no longer attached to the original substrate.

3.0 Findings

3.1. Survey Results

DST performed an asbestos survey of the River Valley Operations Centre (old) (RIV115) on April 23, 2010.

The following friable materials were confirmed to contain asbestos through laboratory sample analysis:

- Pipe Parging Insulation (found in the storage room (Rm.39), storage room (Rm.43), apparatus floor (Rm.47), mechanical room (Rm.53) and men's washroom (Rm.54))
- 2'x4' Ceiling Tile - Pinhole pattern (found in the side entrance (Rm.27))

The following non-friable materials were confirmed to contain asbestos through laboratory sample analysis:

- Drywall Joint Compound (found throughout the facility)
- 12"x12" Vinyl Floor Tile - Red (found in the storage room (Rm.4), lunch room (Rm.28), janitors room (Rm.32), storage (Rm.35) and storage (Rm.36))
- 12"x12" Vinyl Floor Tile - Grey (found in the stairwell (Rm.38))

The following material must be assumed to contain asbestos unless samples are collected:

- Bell and spigot joint packing associated with cast iron waste/drain pipes (found in the corridor (Rm. 29))

Laboratory analysis confirmed the following materials in the building do not contain asbestos:

- Wall Plaster
- Textured Plaster Ceiling Finish
- 2'x4' Ceiling Tile - Pinhole and Long Fissure
- Wall Board Mastic
- Tar Paper on ceiling deck

All ACMs were in good condition at the time of the site visit.

The bell and spigot packing associated with cast iron piping must be assumed to contain asbestos. Samples could not be collected while maintaining the integrity of the bell and spigot seal on cast iron fittings. The piping was found in the Corridor (Rm. 29) but could be found in other rooms and hidden in wall cavities.

Rooms 48 and 52 on the attached floor plan were not accessible at the time of the site visit.

Although every attempt was made to look above ceilings and into wall cavity hatches, some ACMs may be concealed and not observed at the time of the survey. Should any previously unidentified suspect ACMs be encountered as part of future work, these materials are to be treated as ACMs and handled accordingly, unless sampling proves otherwise. Materials that have not been analyzed, but that are visibly similar to other materials identified as

asbestos-containing, must be considered asbestos-containing unless proven otherwise by laboratory analysis.

Old floor finishes under current floor finishes were examined and sampled where accessible. Old floor finishes may exist under current finishes in other locations not noted, but these finishes may not have been accessible or visible at the time of the site visit. If additional old floor finishes are encountered during future work, these materials should be assumed to contain asbestos unless laboratory sampling proves otherwise.

4.0 Conclusions and Recommendations

The following friable materials were confirmed to contain asbestos through laboratory sample analysis:

- Pipe Parging Insulation (found in the storage room (Rm.39), storage room (Rm.43), apparatus floor (Rm.47), mechanical room (Rm.53) and men's washroom (Rm.54))
- 2'x4' Ceiling Tile - Pinhole pattern (found in the side entrance (Rm.27))

The following non-friable materials were confirmed to contain asbestos through laboratory sample analysis:

- Drywall Joint Compound (found throughout the facility)
- 12"x12" Vinyl Floor Tile - Red (found in the storage room (Rm.4), lunch room (Rm.28), janitors room (Rm.32), storage (Rm.35) and storage (Rm.36))
- 12"x12" Vinyl Floor Tile - Grey (found in the stairwell (Rm.38))

The following material must be assumed to contain asbestos unless samples are collected:

- Bell and spigot joint packing associated with cast iron waste/drain pipes (found in the corridor (Rm. 29))

Laboratory analysis confirmed the following materials in the building do not contain asbestos:

- Wall Plaster
- Textured Plaster Ceiling Finish
- 2'x4' Ceiling Tile - Pinhole and Long Fissure
- Wall Board Mastic
- Tar Paper on ceiling deck

The following recommendations apply to all observed ACMs and suspected ACMs:

- Materials must be maintained in good condition;
- Materials should be surveyed annually to ensure their condition has not deteriorated;
- An asbestos management plan should be developed for facilities with asbestos-containing building materials;
- Appropriate work procedures and precautionary measures must be used, as outlined in the Alberta Asbestos Abatement Manual, when performing work that may disturb ACMs or suspected ACMs;
- If ACMs or suspected ACMs become damaged and worker exposure to the material is likely to occur, the damaged material must be repaired or removed following work procedures outlined in the Alberta Asbestos abatement Manual.

5.0 Limitations of Report

This report is intended for client use only. Any use of this document by a third party, or any reliance on or decisions made based on the findings described in this report, are the sole responsibility of such third parties, and DST Consulting Engineers Inc. accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions conducted based on this report. No other warranties are implied or expressed.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the Client. The sampling program included the collection and analysis of bulk material samples with a frequency compliant with current regulatory standards. There is a practical limitation on the number of bulk samples collected and analyzed in any building. This requires the surveyor to extrapolate observations and analytical results between sample collection locations. The uncertainty, and inherent risk, associated with this necessity increases with the distance between sampling locations. The survey did not include selective demolition of floors, floor finishes, ceilings, or walls to examine concealed conditions. Similarly, window caulking and/or roofing materials may not have been subjected to destructive sampling if it was concluded that this may compromise the integrity of the building envelope components. Note, however, that no scope of work, no matter how exhaustive, can identify all potential contaminants. This report therefore cannot warranty that all conditions on or off the site are represented by those identified at specific locations.

Any recommendations and conclusions provided that are based on conditions or assumptions reported herein will inherently include any uncertainty associated with those conditions or assumptions.

Note also that standards, guidelines and practices related to environmental investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any comments given in this report on potential abatement problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all of the factors that may affect construction, clean-up methods and/or costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

Any results from an analytical laboratory or other subcontractor reported herein have been carried out by others, and DST Consulting Engineers Inc. cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.

6.0 Closure

We trust the information herein meets your requirements. Should you have any questions, please do not hesitate to contact the undersigned.

For DST Consulting Engineers Inc.

Kyle Ulvang, H.B.Sc
Report Author

Robert Galdins, B.Sc.
Sector Head, Edmonton Building Environments

Appendix A

Photographs

Photo 1: Suspect asbestos-containing Bell and spigot joint packing associated with cast iron waste/drain pipes (found in the corridor (Rm. 29).

Photo 3: Asbestos-containing 12"x12" vinyl floor tile (Red) as found in the lunch room (Rm.28).

Photo 4: Asbestos-containing drywall joint compound as found in the corridor (Rm. 29).

Photo 5: Asbestos-containing 2'x4' ceiling tile (pinhole pattern) as found in the side entrance (Rm. 27).

Photo 6: Asbestos-containing 2'x4' ceiling tile (pinhole pattern) as found in the side entrance (Rm. 27).

Photo 7: Asbestos-containing pipe parging insulation as found in the apparatus floor (Rm. 47).

Photo 8: Asbestos-containing pipe parging insulation as found in the mechanical room (Rm. 53).

Appendix B

Database of Asbestos-Containing Materials

Level	Spl#	Building Design	Material Description	Comments	Photo	Visible	Friable?	Qty		Cond'n	AC	PC	Reccommendation
Structure No :		**RIV115**	**Civic address(Structure name) :**			**River Valley Operations Centre**							
Room :	16	Office											
Main		Wall	Drywall Joint Compound			N		50.00	ft2	G	A		
Room :	28	Storage Room											
Main		Floor	12"x12" Vinyl Floor Tile (Red)			N		500.00	ft2	G	A		
Main		Wall	Drywall Joint Compound			N		600.00	ft2	G	A		
Room :	32	Janitor Closet											
Main		Floor	12"x12" Vinyl Floor Tile (Red)			N		20.00	ft2	G	A		
Main		Wall	Drywall Joint Compound			N		70.00	ft2	G	A		
Main		Ceiling	Drywall Joint Compound			N		20.00	ft2	G	C		
Room :	21	Rear Entrance											
Main		Ceiling	Drywall Joint Compound			N		80.00	ft2	G	C		

Level	Spl#	Building Design	Material Description	Comments	Photo	Visible	Friable?	Qty		Cond'n	AC	PC	Reccommendation
Main		Wall	Drywall Joint Compound				N	200.00	ft2	G	A		
Room : 2		Lobby											
Main		Wall	Drywall Joint Compound				N	20.00	ft2	G	A		
Room : 24		Storage											
Main		Wall	Drywall Joint Compound				N	250.00	ft2	G	A		
Room : 37		Projection Room											
Main		Wall	Drywall Joint Compound				N	200.00	ft2	G	A		
Room : 22		Sim. room											
Main		Wall	Drywall Joint Compound				N	800.00	ft2	G	A		
Room : 43		Storage											
Main		Equipment	Pipe Parging Cement				Y	3.00	elbo	G	C		
Room : 39		Storage											
Main		Equipment	Pipe Parging Cement				Y	12.00	elbo	G	C		
Room : 27		Side Entrance											

Level	Spl#	Building Design	Material Description	Comments	Photo	Visible	Friable?	Qty		Cond'n	AC	PC	Reccommendation
Main		Ceiling	2'x4' Ceiling Tile (Pinhole and Long Fissure				Y	64.00	ft2	G	C		
Main		Wall	Drywall Joint Compound				N	240.00	ft2	G	A		
Room : 1		Main Entrance											
Main		Wall	Drywall Joint Compound				N	50.00	ft2	G	A		
Room : 29		Corridor											
Main		Equipment	Drain Pipe Joint Caulking				Y	1.00	pipe	G	A		
Room : 54		Men's Washroom											
Main		Equipment	Pipe Parging Cement				Y	1,500.0	elbo	G	C		
Room : 47		Garage											
Main		Equipment	Pipe Parging Cement				Y	37.00	elbo	G	A/C		
Room : 29		Corridor											
Main		Wall	Drywall Joint Compound				N	1,200.0	ft2	G	A		
Room : 38		Stairwell											
Main		Wall	Drywall Joint Compound				N	250.00	ft2	G	A		

Level	Spl#	Building Design	Material Description	Comments	Photo	Visible	Friable?	Qty		Cond'n	AC	PC	Reccommendation
Main		Ceiling	Drywall Joint Compound				N	100.00	ft2	G	C		
Main		Floor	12"x12" Vinyl Floor Tile (Grey)				N	90.00	ft2	G	A		
Room : 53		Mechanical Room											
Main		Equipment	Pipe Parging Cement				Y	15.00	elbo	G	A/C		
Room : 34		Men's Washroom											
Main		Wall	Drywall Joint Compound				N	300.00	ft2	G	A		
Main		Ceiling	Drywall Joint Compound				N	200.00	ft2	G	C		
Room : 33		Women's Washroom											
Main		Wall	Drywall Joint Compound				N	90.00	ft2	G	A		
Main		Ceiling	Drywall Joint Compound				N	60.00	ft2	G	C		
Room : 4		Storage											
Main		Wall	Drywall Joint Compound				N	50.00	ft2	G	A		
Main		Floor	12"x12" Vinyl Floor Tile (Red)				N	50.00	ft2	G	A		

Level	Spl#	Building Design	Material Description	Comments	Photo	Visible	Friable?	Qty		Cond'n	AC	PC	Reccommendation
Room :	18	Kitchen											
Main		Wall	Drywall Joint Compound				N	200.00	ft2	G	A		
Room :	35	Storage											
Main		Floor	12"x12" Vinyl Floor Tile (Red)				N	200.00	ft2	G	A		
Main		Wall	Drywall Joint Compound				N	600.00	ft2	G	A		
Room :	23	Storage											
Main		Wall	Drywall Joint Compound				N	60.00	ft2	G	A		
Room :	19	Men's Washroom											
Main		Ceiling	Drywall Joint Compound				N	110.00	ft2	G	C		
Main		Wall	Drywall Joint Compound				N	400.00	ft2	G	A		
Room :	36	Storage											
Main		Wall	Drywall Joint Compound				N	200.00	ft2	G	A		
Main		Floor	12"x12" Vinyl Floor Tile (Red)				N	100.00	ft2	G	A		
Room :	20	Corridor											

Level	Spl#	Building Design	Material Description	Comments	Photo	Visible	Friable?	Qty		Cond'n	AC	PC	Reccommendation
Main		Wall	Drywall Joint Compound				N	250.00	ft2	G	A		
Room : 25		Main Classroom											
Main		Wall	Drywall Joint Compound				N	240.00	ft2	G	A		
Room : 31		Dorm											
Main		Wall	Drywall Joint Compound				N	100.00	ft2	G	A		
Main		Wall	Drywall Joint Compound				N	600.00	ft2	G	A		

Number of Rows: 43

Appendix C

Laboratory Certificates of Analysis

PLM Summary Report

Steve Moody Micro Services, LLC
2051 Valley View Lane
Farmers Branch, TX 75234 Phone: (972) 241-8460

NVLAP Lab No. 102056
TDSHS License No. 30-0084

Client : DST Consulting Engineers Inc - Edmonton, AB
Project : COE Survey, RIV115
Project # : BE-ED-011318 Sample Date : Not Provided
Identification : Asbestos, Bulk Sample Analysis
Test Method : Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 600 / R-93 / 116

Lab Job No. : 10B-04784
Report Date : 05/25/2010

On 5/21/2010, forty two (42) bulk material samples were submitted by Everett Stuckless of DST Consulting Engineers Inc - Edmonton, AB for asbestos analysis by PLM/DS. The PLM Detail Report is attached; additional information may be found therein. The results are summarized below:

Sample Number	Client Sample Description / Location	Asbestos Content
RIV115-01A	Drywall Joint Compound	None Detected - Joint Compound
RIV115-01B	Drywall Joint Compound	2% Chrysotile - Joint Compound
RIV115-01C	Drywall Joint Compound	Not Analyzed - Positive Stop
RIV115-01D	Drywall Joint Compound	Not Analyzed - Positive Stop
RIV115-01E	Drywall Joint Compound	Not Analyzed - Positive Stop
RIV115-01F	Drywall Joint Compound	Not Analyzed - Positive Stop
RIV115-01G	Drywall Joint Compound	Not Analyzed - Positive Stop
RIV115-02A	Plaster	None Detected - Grey Plaster None Detected - White Plaster
RIV115-02B	Plaster	None Detected - Grey Plaster None Detected - White Plaster
RIV115-02C	Plaster	None Detected - Grey Plaster None Detected - White Plaster
RIV115-03A	12" x 12" Vinyl Floor Tile (Red)	3% Chrysotile - Floor Tile None Detected - Yellow Mastic None Detected - Black Mastic
RIV115-03B	12" x 12" Vinyl Floor Tile (Red)	Not Analyzed - Positive Stop
RIV115-03C	12" x 12" Vinyl Floor Tile (Red)	Not Analyzed - Positive Stop
RIV115-03D	12" x 12" Vinyl Floor Tile (Red)	Not Analyzed - Positive Stop
RIV115-03E	12" x 12" Vinyl Floor Tile (Red)	Not Analyzed - Positive Stop
RIV115-04A	12" x 12" Vinyl Floor Tile (Grey)	5% Chrysotile - Floor Tile None Detected - Black Mastic
RIV115-04B	12" x 12" Vinyl Floor Tile (Grey)	Not Analyzed - Positive Stop
RIV115-04C	12" x 12" Vinyl Floor Tile (Grey)	Not Analyzed - Positive Stop

PLM Summary Report

Steve Moody Micro Services, LLC
2051 Valley View Lane
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Client : DST Consulting Engineers Inc - Edmonton, AB
Project : COE Survey, RIV115
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Identification : Asbestos, Bulk Sample Analysis
Test Method : Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 600 / R-93 / 116

Lab Job No. : 10B-04784
Report Date : 05/25/2010

On 5/21/2010, forty two (42) bulk material samples were submitted by Everett Stuckless of DST Consulting Engineers Inc - Edmonton, AB for asbestos analysis by PLM/DS. The PLM Detail Report is attached; additional information may be found therein. The results are summarized below:

Sample Number	Client Sample Description / Location	Asbestos Content
RIV115-05A	Pipe Parging Insulation	None Detected - Thermal Insulation
RIV115-05B	Pipe Parging Insulation	65% Chrysotile - Thermal Insulation
RIV115-05C	Pipe Parging Insulation	Not Analyzed - Positive Stop
RIV115-05D	Pipe Parging Insulation	Not Analyzed - Positive Stop
RIV115-05E	Pipe Parging Insulation	Not Analyzed - Positive Stop
RIV115-06A	Texture Coat	None Detected - Texture
RIV115-06B	Texture Coat	None Detected - Texture
RIV115-06C	Texture Coat	None Detected - Texture
RIV115-07A	2' x 4' Ceiling Tile (Pinhole and Long Fissure)	None Detected - Acoustic Tile
RIV115-07B	2' x 4' Ceiling Tile (Pinhole and Long Fissure)	None Detected - Acoustic Tile
RIV115-07C	2' x 4' Ceiling Tile (Pinhole and Long Fissure)	None Detected - Acoustic Tile
RIV115-07D	2' x 4' Ceiling Tile (Pinhole and Long Fissure)	None Detected - Acoustic Tile
RIV115-07E	2' x 4' Ceiling Tile (Pinhole and Long Fissure)	None Detected - Acoustic Tile
RIV115-07F	2' x 4' Ceiling Tile (Pinhole and Long Fissure)	None Detected - Acoustic Tile
RIV115-07G	2' x 4' Ceiling Tile (Pinhole and Long Fissure)	None Detected - Acoustic Tile
RIV115-08A	Mastic	None Detected - Brown Mastic
RIV115-08B	Mastic	None Detected - Brown Mastic
RIV115-08C	Mastic	None Detected - Brown Mastic
RIV115-09A	2' x 4' Ceiling Tile (Pinhole Only)	2% Chrysotile - Acoustic Tile
RIV115-09B	2' x 4' Ceiling Tile (Pinhole Only)	Not Analyzed - Positive Stop
RIV115-09C	2' x 4' Ceiling Tile (Pinhole Only)	Not Analyzed - Positive Stop
RIV115-10A	Tar Paper	None Detected - Paper / Tar

PLM Summary Report

Steve Moody Micro Services, LLC
2051 Valley View Lane
Farmers Branch, TX 75234 Phone: (972) 241-8460

NVLAP Lab No. 102056
TDSHS License No. 30-0084

Client : DST Consulting Engineers Inc - Edmonton, AB
Project : COE Survey, RIV115
Project # : BE-ED-011318 Sample Date : Not Provided
Identification : Asbestos, Bulk Sample Analysis
Test Method : Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 600 / R-93 / 116

Lab Job No. : 10B-04784
Report Date : 05/25/2010

On 5/21/2010, forty two (42) bulk material samples were submitted by Everett Stuckless of DST Consulting Engineers Inc - Edmonton, AB for asbestos analysis by PLM/DS. The PLM Detail Report is attached; additional information may be found therein. The results are summarized below:

Sample Number	Client Sample Description / Location	Asbestos Content
RIV115-10B	Tar Paper	None Detected - Paper / Tar
RIV115-10C	Tar Paper	None Detected - Paper / Tar

These samples were analyzed by layers. Quantification, unless otherwise noted, is performed by calibrated visual estimate. Results may not be reproduced except in full. This test report relates only to the samples tested. These test results do not imply endorsement by NVLAP or any agency of the U.S. Government. Accredited by the National Voluntary Laboratory Accreditation Program for Bulk Asbestos Fiber Analysis under Lab Code 102056.

Analyst(s): Robert W. Miracle
Lab Manager : Bruce Crabb
Lab Director : Steve Moody

Approved Signatory : Bruce Crabb
Approved Signatory : Steve Moody

Thank you for choosing Steve Moody Micro Services

Steve Moody Micro Services, LLC
2051 Valley View Lane
Farmers Branch, TX 75234 Phone: (972) 241-8460

PLM Detail Report

Supplement to PLM Summary Report

NVLAP Lab No. 102056
TDSHS License No. 30-0084

Client : DST Consulting Engineers Inc - Edmonton, AB
Project : COE Survey, RIV115
Project # : BE-ED-011318

Lab Job No. : 10B-04784
Report Date : 05/25/2010

Sample Number	Layer	% Of Sample	Components	% of Layer	Analysis Date	Analyst
RIV115-01A	Joint Compound (White)	100%	Calcite / Talc / Binders	100%	05/24	RM
RIV115-01B	Joint Compound (White)	100%	Chrysotile	2%	05/24	RM
			Calcite / Talc / Binders	98%		
RIV115-01C	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-01D	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-01E	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-01F	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-01G	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-02A	Grey Plaster (Grey)	85%	Aggregate	65%	05/24	RM
			Calcite / Binders	35%		
	White Plaster (White)	15%	Calcite / Binders	100%		
RIV115-02B	Grey Plaster (Grey)	85%	Aggregate	65%	05/24	RM
			Calcite / Binders	35%		
	White Plaster (White)	15%	Calcite / Binders	100%		
RIV115-02C	Grey Plaster (Grey)	85%	Aggregate	65%	05/24	RM
			Calcite / Binders	35%		
	White Plaster (White)	15%	Calcite / Binders	100%		
RIV115-03A	Floor Tile (Red)	96%	Chrysotile	3%	05/24	RM
			Calcite / Vinyl Binders	97%		
	Yellow Mastic (Yellow)	2%	Glue Binders	100%		
	Black Mastic (Black)	2%	Tar Binders	100%		
RIV115-03B	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-03C	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-03D	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-03E	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-04A	Floor Tile (Grey)	100%	Chrysotile	5%	05/24	RM
			Calcite / Vinyl Binders	95%		
	Black Mastic (Black)	<1%	Tar Binders	100%		

Steve Moody Micro Services, LLC
2051 Valley View Lane
Farmers Branch, TX 75234 Phone: (972) 241-8460

PLM Detail Report

Supplement to PLM Summary Report

NVLAP Lab No. 102056
TDSHS License No. 30-0084

Client : DST Consulting Engineers Inc - Edmonton, AB
Project : COE Survey, RIV115
Project # : BE-ED-011318

Lab Job No. : 10B-04784
Report Date : 05/25/2010

Sample Number	Layer	% Of Sample	Components	% of Layer	Analysis Date	Analyst
RIV115-04B	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-04C	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-05A	Thermal Insulation (Light Grey)	100%	Mineral Wool Fibers	20%	05/24	RM
			Binders / Fillers	80%		
RIV115-05B	Thermal Insulation (Grey)	100%	Chrysotile	65%	05/24	RM
			Binders / Fillers	35%		
RIV115-05C	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-05D	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-05E	Not Analyzed - Positive Stop	100%			05/24	RM
RIV115-06A	Texture (White)	100%	Aggregate	25%	05/24	RM
			Calcite / Talc / Binders	75%		
RIV115-06B	Texture (White)	100%	Aggregate	25%	05/24	RM
			Calcite / Talc / Binders	75%		
RIV115-06C	Texture (White)	100%	Aggregate	25%	05/24	RM
			Calcite / Talc / Binders	75%		
RIV115-07A	Acoustic Tile (Light Grey)	100%	Cellulose Fibers	50%	05/24	RM
			Mineral Wool Fibers	30%		
			Perlite	20%		
RIV115-07B	Acoustic Tile (Light Grey)	100%	Cellulose Fibers	50%	05/24	RM
			Mineral Wool Fibers	30%		
			Perlite	20%		
RIV115-07C	Acoustic Tile (Light Grey)	100%	Cellulose Fibers	50%	05/24	RM
			Mineral Wool Fibers	30%		
			Perlite	20%		
RIV115-07D	Acoustic Tile (Light Grey)	100%	Cellulose Fibers	50%	05/24	RM
			Mineral Wool Fibers	30%		
			Perlite	20%		

Steve Moody Micro Services, LLC
2051 Valley View Lane
Farmers Branch, TX 75234 Phone: (972) 241-8460

PLM Detail Report

Supplement to PLM Summary Report

NVLAP Lab No. 102056
TDSHS License No. 30-0084

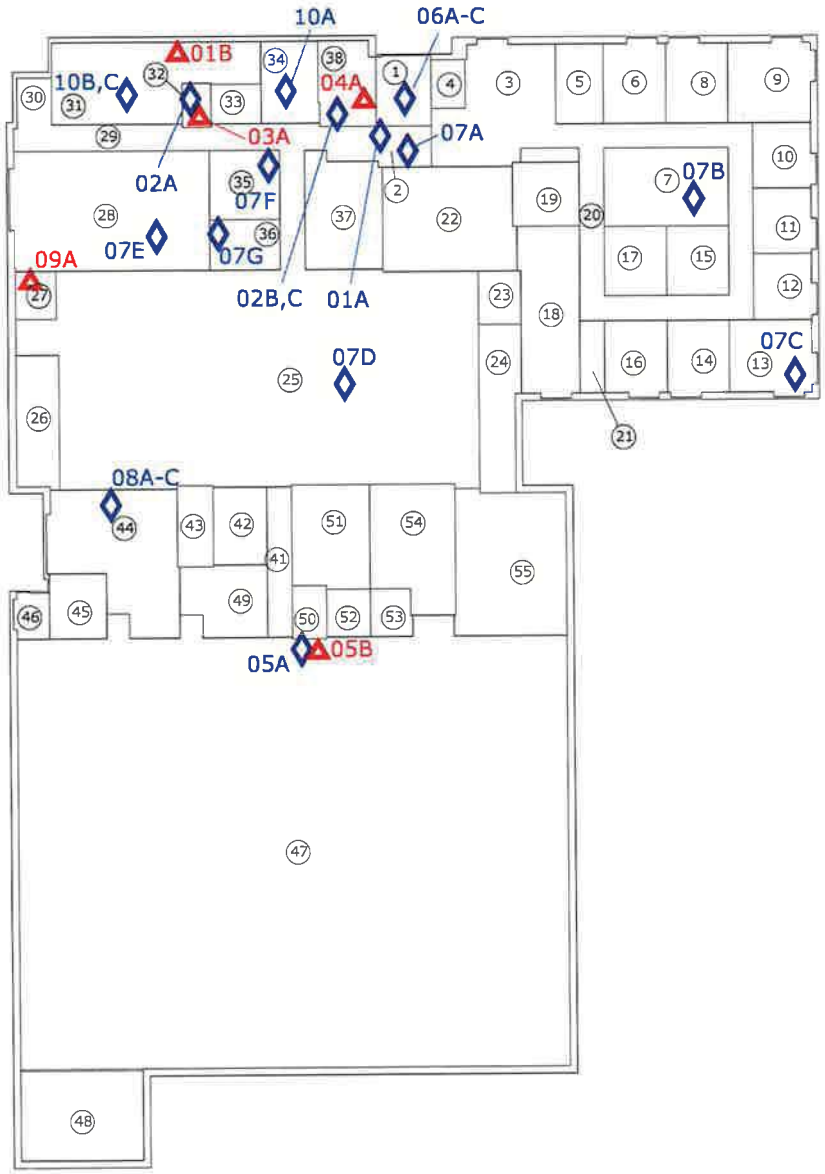
Client : DST Consulting Engineers Inc - Edmonton, AB
Project : COE Survey, RIV115
Project # : BE-ED-011318

Lab Job No. : 10B-04784
Report Date : 05/25/2010

Sample Number	Layer	% Of Sample	Components	% of Layer	Analysis Date	Analyst
RIV115-07E	Acoustic Tile (Light Grey)	100%	Cellulose Fibers	50%	05/24	RM
			Mineral Wool Fibers	30%		
			Perlite	20%		
RIV115-07F	Acoustic Tile (Light Grey)	100%	Cellulose Fibers	50%	05/24	RM
			Mineral Wool Fibers	30%		
			Perlite	20%		
RIV115-07G	Acoustic Tile (Light Grey)	100%	Cellulose Fibers	50%	05/24	RM
			Mineral Wool Fibers	30%		
			Perlite	20%		
RIV115-08A	Brown Mastic (Brown)	100%	Glue Binders	100%	05/25	RM
RIV115-08B	Brown Mastic (Brown)	100%	Glue Binders	100%	05/25	RM
RIV115-08C	Brown Mastic (Brown)	100%	Glue Binders	100%	05/25	RM
RIV115-09A	Acoustic Tile (Light Grey)	100%	Chrysotile	2%	05/25	RM
			Mineral Wool Fibers	73%		
			Cellulose Fibers	25%		
RIV115-09B	Not Analyzed - Positive Stop	100%			05/25	RM
RIV115-09C	Not Analyzed - Positive Stop	100%			05/25	RM
RIV115-10A	Paper / Tar (Tan / Black)	100%	Cellulose Fibers	95%	05/25	RM
			Tar Binders	5%		
RIV115-10B	Paper / Tar (Tan / Black)	100%	Cellulose Fibers	95%	05/25	RM
			Tar Binders	5%		
RIV115-10C	Paper / Tar (Tan / Black)	100%	Cellulose Fibers	95%	05/25	RM
			Tar Binders	5%		

Appendix D

Floor Plans



DST CONSULTING ENGINEERS
11810 KINGSWAY AVE.
EDMONTON, ALBERTA T5G 0X5
PHONE: (780) 454-2120 FAX: (780) 454-2150
E-mail: edmonton@dstgroup.com

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ASSOCIATED TECHNICAL REPORT.
2. DO NOT SCALE DRAWING.
3. ALL SAMPLE IDENTIFIERS ARE PREFIXED WITH THE NUMBER 'RIV115-' WHICH WAS LEFT OUT FOR DRAWING CLARITY.
4. BASE DRAWING PROVIDED BY CLIENT.

LEGEND:

- 01A-C — APPROXIMATE POSITIVE ASBESTOS SAMPLE LOCATION, AS APPLICABLE
- 01A-C — APPROXIMATE NEGATIVE ASBESTOS SAMPLE LOCATION, AS APPLICABLE
- (1) — SURVEY LOCATION REFERENCE

REV	DATE	ISSUE	APPROVAL
0	14/06/10	ORIGINAL	R.G.

PROJECT TITLE

CITY OF EDMONTON
ASBESTOS MATERIAL SURVEY
EDMONTON, ALBERTA

DRAWING TITLE

SAMPLE LOCATION PLAN
RIVER VALLEY OPERATIONS CENTRE
(OLD) (RIV115)
9315 101 STREET NW
GROUND LEVEL

DESIGNED BY: R.G.	SCALE: NTS
DRAWN BY: V.C.	DATE: June 2010
APPROVED BY: R.G.	PROJECT NO.: BE-ED-011318

FIGURE 1