

Executive Summary

McElhanney Consulting Services Ltd. (McElhanney) was retained by the Ministry of Central Services (the Client) to conduct a Phase I Environmental Site Assessment (Phase I ESA) for the Valley View Centre and surrounding property located at 7th Avenue SW, Moose Jaw, SK (the Site). A comprehensive review of historical records was completed for the Site and surrounding adjacent properties. Visual observations were made of land at and adjacent to the Site.

The Site is comprised of five land parcels south of Moose Jaw, Saskatchewan. The majority of the Site is bounded by 7th Avenue to the west, agricultural land to the south, a drainage channel followed by a Ministry of Highways and Infrastructure facility to the east and the Moose Jaw River to the north. A small portion of the Site (Parcel 105701497) is located immediately east of Highway 2, and south of the Moose Jaw River, approximately 700 m northeast of the main portion of the Site. The Site is currently used as a group home centre in the process of decommissioning and includes numerous buildings and facilities on the Site.

It is McElhanney's opinion that, based on the findings of this Phase I ESA, historical activities present a potential risk of impacting environmental media at the Site and further environmental investigation is warranted. Sampling is not completed as part of a Phase I ESA and therefore, the presence/absence of contaminants of potential concern (COPC) could not be confirmed. Based on our assessment of the Site, the following areas of potential environmental concern (APEC) were identified that require further investigation and are presented in the below [Table A](#). The activity required to confirm the COPC is presented.

Table A. Areas of Potential Environmental Concern

Areas of Potential Concern (APEC)	Contaminants of Potential Concern (COPC)	Applied Risk	Confirmation Activity
Former Spill Location	Hydrocarbons	Moderate	A Phase II ESA is required to determine the presence/absence of potential impacts associated with residual impacts.
Former Landfarm	Hydrocarbons	Moderate	A Phase II ESA is required to determine the presence/absence of potential impacts associated with residual impacts.
Current ASTs	Hydrocarbons	Moderate	A Phase II ESA is required to determine the presence/absence of potential impacts associated with residual impacts.
Former Dry Cleaner	Volatile Organic Compounds	Moderate	A Phase II ESA is required to determine the presence/absence of potential impacts associated with residual impacts.
Incinerator	Metals	Moderate	A Phase II ESA is required to determine the presence/absence of potential impacts associated with residual impacts.
Hazardous Building Materials	Asbestos, Mould, PCBs, Mercury	Moderate	Asbestos was identified at the Site during previous investigations and historic reports were made available. Additional hazardous

Executive Summary

McElhanney Ltd. (McElhanney) was retained by the Ministry of Central Services (the Client) to conduct a Phase II Environmental Site Assessment (Phase II ESA) for the Valley View Centre and surrounding property located at 7th Avenue SW, Moose Jaw, SK (the Site). The Phase II ESA was completed in general accordance with the Canadian Standards Association Guidelines Z769-00 (2013) and in response to recommendations from the Phase I Environmental Site Assessment completed by McElhanney on October 31, 2019.

A Phase II Environmental Site Assessment (Phase II ESA) was recommended to quantitatively assess soil, and groundwater conditions at the identified Areas of Potential Environmental Concern (APEC). Based on the assessment of the Site, the following APECs were considered to present moderate environmental risk to the Site and were selected to be assessed during the Phase II ESA.

Table A. Areas of Potential Environmental Concern to be Assessed during the Phase II ESA

Areas of Potential Concern (APEC)	Contaminants of Potential Concern (COPC)	Applied Risk
Former Spill Location	Hydrocarbons	Moderate
Former Land farm	Hydrocarbons	Moderate
Current ASTs	Hydrocarbons	Moderate
Former Dry Cleaner	Volatile Organic Compounds	Moderate
Incinerator	Metals	Moderate

The purpose of the Phase II ESA was to identify the presence/absence of Contaminants of Potential Concern (COPCs) associated with these areas at the Site.

McElhanney completed a drilling program on October 23, 2019, during which a total of seven boreholes were advanced to a maximum depth of 12 metres below grade surface (m BGS). A total of thirteen soil samples were submitted for select laboratory analysis of Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), petroleum hydrocarbons fractions 1 to 4 (PHC F1-F4), polychlorinated biphenyls (PCBs), metals and volatile organic compounds (VOCs). Samples for laboratory submission were selected based on the field screening, field observations and discretion of the assessor.

Indications of water bearing formations were only identified within one of the boreholes advanced at the Site; as such, only one borehole was completed as a groundwater monitoring well. Groundwater samples were collected on November 6, 2019, and submitted for laboratory analysis of BTEX, PHC F1-F4, VOCs, total and dissolved metals and polycyclic aromatic hydrocarbons (PAHs).

Comparing the analytical results to the Saskatchewan Environmental Quality Guidelines (SEQG), the following exceedances were identified:

- Soil:
 - Sulphur;
 - Benzene;
 - Ethylbenzene;
 - PHC F2;

- PHC F3;
- PHC F4;
- Trichloroethene; and
- Molybdenum;
- Groundwater:
 - Total Dissolved Solids;
 - Chloride;
 - Sodium;
 - Sulphate;
 - Nitrite;
 - F2;
 - Cadmium;
 - Manganese;
 - Selenium;
 - Uranium;
 - Benz(a)pyrene;
 - Benzo(a)anthracene;
 - Phenanthrene;
 - Pyrene; and
 - Quinoline.

The NCSCS Pre-Screening Checklist was completed as a result of the identified impacts to soils and groundwater. The Site was given a Grade D rating and a score of 54.0; therefore, the Site would fall into Class 2 – medium priority for action. The NCSCS score had a certainty percentage of 81%, indicating more information is required.

Given the information available at the time of this report, McElhanney provides the following conclusions:

- Metals (molybdenum) and hydrocarbon impacts were identified within the soils in proximity to the former spill location; additionally, groundwater in this area identified metal and hydrocarbon impacts.
- Trichloroethene impacts were identified within the soils in proximity to the former dry cleaner location.
- Elevated sulphur concentrations above applicable criteria were identified within several background locations and ranged from 1,000 mg/kg to 4,000 mg/kg.

During this investigation McElhanney utilized Tier 1 Endpoints to be protective of future land uses. The Tier 1 Endpoints are the most stringent and do not assume elimination of any potential receptor pathways. However, it is McElhanney's opinion that the potable groundwater pathway is not viable at the Site. Using Tier 2 Endpoints the potable groundwater pathway can be eliminated pursuant to the Saskatchewan Endpoint Selection Standard section 16(a). It states that the potable groundwater pathway can be eliminated should the impacted site be within a city, there are no withdrawal wells within 500 m and all property owners are compelled to connect to the municipal potable water distribution system.

By doing so, the concentrations of trichloroethene identified in APEC 4 near the former dry cleaner do not exceed the applied criteria in soils, as well as, concentrations of total dissolved solids, sodium and manganese do not exceed the applied criteria in groundwater. The remaining impacts are localized to the former spill location.

Based on this investigation, McElhanney recommends the following:

- A supplemental Phase II ESA be completed at the former spill location to delineate metal and hydrocarbon impacts observed during this Phase II ESA. Vertical delineation and horizontal delineation to the east has been achieved, however, it is unclear how far these impacts have spread to the north, south and west.

- Apply an administrative control to the land title to ensure future drinking water wells are not installed within 500 m of the impacts associated with the Former Dry Cleaner.

This Executive Summary is to be read in conjunction with and is subject to the same limitations as the remainder of this report.

Full copies of the McElhanney ESA Reports are available upon request.