Water/Environment

J.R. Simplot Company

Portage Batter Project Notice of Alteration

Prepared by:

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Project Number:

60343084

Date:

June, 2015

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AECOM: 2012-01-06

Simplot FOOD GROUP

SIMPLOT CANADA (II) LIMITED
P.O. Box 1180
Portage la Prairie, MB, R1N 3J9

204 857 1400 Business
204 857 1499 Fax

June 22, 2015

Ms. Tracey Braun, Director
Environmental Assessment and Licensing
Manitoba Conservation
123 Main Street, Suite 160
Winnipeg, MB R3C 1A5

Re: Notice of alteration to Environment Act Licence No. 2518 R7

Dear Ms. Braun,

Please find enclosed, details pertaining to a proposed plant expansion, installation of a batter application system and associated equipment capable of producing battered potato products at the Simplot Canada potato processing plant in Portage la Prairie. The expansion will give Simplot the operational flexibility to meet increasing market demand for battered potato products.

As required by *The Environment Act* (Manitoba), any alteration to a licensed development with an environmental impact must be reviewed and approved by Manitoba Conservation. To facilitate this review, Simplot worked with AECOM Canada Ltd. to assess the overall environmental impacts associated with the proposed alteration. The summary of this evaluation can be found in the enclosed Notice of Alteration (NOA) proposal. This proposal has been developed consistent with Manitoba Conservation and Water Stewardship's Information Bulletin *"Environment Act Proposal Report Guidelines"* and *"Alterations to Developments with Environment Act Licences"*.

A significant level of effort was invested in assessing potential impacts on air emissions and waste water. Based on the assessment, there are not expected to be any significant impacts to ambient air quality from the proposed alteration to the Facility, especially given the location of the portage facility and absence of sensitive receptors. Similarly, changes to the wastewater effluent will be minor and do not require any amendments to the existing license.

Impacts on other environmental components were also assessed to be negligible to minor.

Therefore, considering the implementation of the mitigation measures, design features, and standard operating procedures, the proposed expansion is not expected to result in a significant environmental impact.

Please accept this submission for consideration of Simplot's application for an amendment to our existing *Environment Act* Licence (EAL) No. 2518 R7.

If you have any further questions or require more information I can be reached at 204-857-1401.

Sincerely,

Audrey Comte

Unit Director

Cc: Tyler Kneeshaw, Environment Officer – Portage la Prairie

Enc. Batter Project Proposal

Distribution List

# of Hard Copies	PDF Required	Association / Company Name
4	Yes	Manitoba Conservation and Water Stewardship
2	Yes	J.R. Simplot Company

Revision Log

Revision #	Revised By	Date	Issue / Revision Description

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Executive Summary

This *Environment Act* Proposal (EAP) report contains the information described in Conservation and Water Stewardship's (CWS) Information Bulletin "*Environment Act Proposal Report Guidelines*" and "*Alterations to Developments with Environment Act Licences*". It is submitted for consideration of Simplot's application for an amendment to their existing *Environment Act* Licence (EAL) No. 2518 R7.

Simplot proposes to add a batter application system to their existing potato processing facility in Portage la Prairie, MB. The project will include a minor expansion of the existing facility building as well as ancillary additions to existing equipment and processes. All additions will be made within property currently owned and occupied by Simplot since 2001.

The purpose of installing a batter application system is to provide Simplot the operational capability to meet increasing market demand for battered potato products. Currently, the Portage facility produces conventional french fry products (Production Line 1) and pre-formed products (Production Line 2). To accommodate the batter application system, an additional building space will be constructed on the north side of the processing plant. The new building area will allow for unloading and storage of ingredients (batter and other ingredients), batter handling and mixing equipment, batter application system and a new two-stage cooking oil frying system. Once the new frying system is commissioned, the existing Line 1 fryer will be decommissioned and the new two-stage fryer will be used for both conventional and batter products alternately.

Environmental effects for the proposed upgrades have been assessed as follows:

Topography

Construction of the proposed Batter Application System building addition will have minimal changes to the topography. It appears that the area of the proposed additions is relatively level, therefore it is anticipated that minimal clearing and grading will be required.

Air and Noise

With respect to exhaust emissions, it is anticipated that a maximum of 20 construction vehicles will access public roads in the vicinity of Simplot which will be temporary during construction. With the implementation of measures such as maintaining vehicles and equipment in proper working order and vehicle idling kept to a minimum, the effects of exhaust emissions is assessed to be negligible.

Overall, there are not expected to be any significant impacts to ambient air quality from the proposed alteration to the Facility, especially given the location of the portage facility and absence of sensitive receptors. Modelled ambient concentrations of CO, SO_2, NO_x (24-hour and annual) and odour are all expected to be below the MAAQC. For 1-hour NO_x, there are no changes predicted from the baseline. For $PM_{2.5}$ and PM_{10}, the installation of a wet electrostatic precipitator (WESP) to control L1 & L2 fryer and L1 dryer emissions is expected to reduce particulate matter concentrations by over 50% of the baseline.

As discussed with CWS staff, VOC emission rates have been evaluated because VOCs are a precursor to ozone formation. However, because ozone is a reactive air pollutant influenced by sunlight in the presence of NO_x, it is typically not included in modeling scenarios. There are no significant sources of VOCs at the Portage facility nor was it included in the original 2001 EIA. In addition, the Project will not alter combustion sources which emit VOCs, so there will be no expected increase.

With respect to noise during construction and operation, the noise levels at the Project Site are not expected to be high enough to cause significant disturbance in the Project Area. With the implementation of measures such as limiting construction hours, providing hearing protection to workers/employees as required and properly maintaining vehicles and equipment are expected to mitigate potential adverse effects. Therefore, the effect of noise is assessed to be insignificant.

Soil

With respect to soil compaction, mixing, and erosion during construction, the implementation of mitigation measures identified in this assessment is anticipated to mitigate any potential soil compaction/mixing effects. Therefore, it is anticipated that the residual effect on soil is assessed to be negligible.

Water and Wastewater

In our opinion, the proposed alterations will not result in significant changes to fresh water consumption at the facility. Changes to wastewater flows and loadings will also be minor and therefore do not require any amendments to the existing licence.

There are not expected to be any concerns related to exceeding annual daily average limits and maximum daily limits for total flow, COD, BOD, TKN or TP as specified in Simplot's existing EAL #2518 or the Industrial Services Agreement with the City and Rural Municipality of Portage la Prairie. With regards to TSS loading a review of wastewater monitoring data indicates the facility may periodically exceed licence limits (1 occurrence in 1135 data points reviewed – January 2009 to April 2013).

In the event a maximum day limit is exceeded, Simplot's EAL #2518 triggers regulatory reporting and corrective action to occur. Simplot has worked diligently to maintain operational control of industrial wastewater treatment processes, readily notified officials during excursions from wastewater discharge limits and demonstrated a commitment to promptly address shortcomings in wastewater treatment processes. Therefore, in our opinion the proposed alterations will not result in any significant changes to the effluent and subsequently do not require any amendments to the existing license.

Groundwater

All water to be utilized at the processing plant will be supplied by an existing utility water line from the City of Portage la Prairie water supply system. As no supply wells will be constructed on the property to withdraw or utilize groundwater form the area for this project, impacts to groundwater from the development are assessed to be insignificant.

Protected and Other Flora Species

As the Project Site does not contain native vegetation and consists primarily of manicured lawn and agricultural row crops, the residual effects on flora are assessed to be negligible.

Protected and Other Fauna Species

No habitat of specific or critical value to wildlife is anticipated to be at the Project Site based on site conditions and limited field observations. Due to the lack of native vegetation at the Project Site because the proposed construction area mainly consists of manicured lawns and agricultural row crops; it is unlikely this area will provide suitable habitat for any SARA species that may be found in the general project region. For these reasons, the residual effect on fauna is assessed to be insignificant.

Protected Areas

With respect to protected areas, the closest protected area is located approximately 4 km (2.5 mi) from the Project Site therefore, residual effects on protected areas are assessed to be insignificant.

Heritage Resources

In 2001, prior to processing plant construction Quaternary Consultants Ltd. conducted a field investigation at the project location. No archaeological sites were recorded on the Project Site during this investigation. The nearest recorded site was approximately 1.5 km north of the western edge of the development site. As such, no historic resources are anticipated to be encountered during construction.

Aesthetics

During construction, good housekeeping practices will be implemented on the Project Site including inspecting the Project Site on a regular basis for loose waste and debris and storing waste and debris in proper bins prior to removal from the site. Therefore, the overall impact on aesthetics as a result of the proposed project is assessed to be reversible and insignificant.

Overall Summary

The addition of a batter application system at Simplot Canada's Portage la Prairie facility is consistent and complimentary to the existing potato processing plant and will not result in a significant departure from activities performed at the location over the past 12 years. Considering the implementation of the proposed mitigation measures, design features, standard operating procedures, current industrial agreements, existing environmental licence conditions and the social and ecological context of each environmental component, the cumulative residual environmental effects of the proposed expansion are expected to negligible in magnitude. The measures described to mitigate the risk of occurrence of accidents and malfunctions are deemed to be appropriate in mitigating such risks. Therefore, it is our opinion that based on the available information and documented assumptions, the overall potential adverse effects of the proposed project will be minor and insignificant.

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1. Introduction

1.1 Project Overview

J.R Simplot (Simplot) proposes to add a batter application system to their existing potato processing facility in Portage la Prairie, MB. The project will include a minor expansion of the existing facility building as well as ancillary additions to existing equipment and processes. All additions will be made within property currently owned and occupied by Simplot since 2001.

Figure 01 shows the general location of the proposed project in Manitoba and **Figure 02** shows the existing general layout of the facility. **Figure 03** shows the proposed project in relation to the existing facility.

The existing facility ("Portage facility") annually produces more than 160 million kilograms (353 million pounds) of frozen french fries and formed potato products. The Portage facility began operations in 2003 serving large quick-service-restaurant chains and other U.S. customers. In order to accommodate future expansion the facility was initially constructed to readily facilitate a doubling in production weight.

The purpose of installing a batter application system is to provide Simplot the operational capability to meet increasing market demand for battered potato products. Currently, the Portage facility produces conventional french fry products (Production Line 1) and pre-formed products (Production Line 2). To accommodate the batter application system, an additional building space will be constructed adjacent to the existing Line 1 dryer and fryer (**Figure 03**). The new building area will allow for unloading and storage of ingredients (batter and other ingredients), batter handling and mixing equipment, batter application system, new two-stage cooking oil frying system and product refrigeration (freeze) tunnel. Once the new frying system is commissioned, the existing Line 1 fryer will be abandoned in place and the new two-stage fryer will be used for both conventional and batter products alternately.

This Notice of Alteration (NOA) has been prepared by AECOM Canada Ltd. on behalf of Simplot in accordance with Conservation and Water Stewardship's (CWS) Information Bulletin "*Environment Act Proposal Report Guidelines*" and "*Alterations to Developments with Environment Act Licences*". It is submitted for consideration of Simplot's application for an amendment to their existing *Environment Act* Licence (EAL) No. 2518 R7.

1.2 Proponent Contact Information

Name of Project	Portage Batter Project
Name of Proponent	J.R. Simplot Company
Address of Proponent	P.O. Box 1180; Portage La Prairie, MB; R1N 3J9
Principal Contact Person(s) for the NOA	**David Huck, MNRM** Environmental Engineering Manager 999 W Main St, Ste 1400; Boise, ID; 83702 Ph: (208) 780-7519 Email: david.huck@simplot.com
	Scott Kaufman Project Engineer 16768 Simplot Blvd; Caldwell, ID; 83607 Ph: (208) 780-4732 Email: scott.kaufman@simplot.com

1.3 Company Profile

Simplot was started in 1929 by J.R. Simplot, who grew the business from a one-man farming operation into a food and agribusiness empire. Headquartered in Boise, Idaho, the company has major operations in the U.S., Canada, Mexico, Australia, New Zealand and China. Simplot is one of the world's largest frozen potato processors producing the first commercially viable frozen french fries in the 1940s. Beyond potato processing the JR Simplot Company is engaged in a number of businesses including frozen vegetable processing, farming, livestock feed production, fertilizer manufacturing, beef cattle feedlots, mining, ranching, plant sciences and other enterprises related to agriculture. Simplot products are marketed in more than 40 countries worldwide.

1.4 Land Ownership and Property Rights

The proposed project will be constructed on property owned by Simplot since 2003. Recently a portion of the property was sold to a private co-op grower for potato storage. **Figure 02** shows the area now owned by Simplot.

1.5 Regulatory Framework

Simplot's Portage facility is considered a Class 1 Development as per the Classes of Development Regulation under *The Environment Act* (Manitoba). The Portage facility operates in accordance with EAL No. 2518 R7, originally issued in March 2002 and most recently revised in October 2012.

The proposed upgrades at the Portage facility are not listed on the *Regulations Designating Physical Activities* under the *Canadian Environmental Assessment Act,* 2012, and as such, no federal environmental assessment requirements are anticipated.

Additional environmental permits held by Simplot for the operation of the Portage facility include:

- Industrial Services Agreement b/w City & Rural Municipality of Portage la Prairie and Simplot Canada (July 30, 2002).
- Manitoba Hazardous Waste Generation Registration # MBG10150.
- Manitoba Conservation and Water Stewardship Class III Wastewater Treatment Facility # 2013-001

1.6 Previous Alterations

Since the original *Environment Act* submission in 2001, prepared by AECOM (formerly Earth Tech (Canada) Inc.), the Portage facility has progressively made improvements to the potato processing facility and industrial wastewater pre-treatment system. Since 2001, several NOAs have been approved under EAL No. 2518 R7. The NOAs were all considered minor alterations by CWS and are outlined below.

- September 2002: Wastewater treatment plant change from proposed earthen basin to above ground bolted steel tank for sulfide oxidation.
- September 2009: Revision of minimum internal LRAR operating temperature from 25°C to 20°C
- October 2009: Inclusion of biodiesel feedstock as acceptable use of waste cooking oil materials.
- November 2010: Installation of belt filter press (BFP) and associated equipment for management of suspended solids from potato wash plant.
- May 2012: Expansion of rail yard for frozen warehouse.
- September 2012: Inclusion of ingredient for manufactured road dust suppressant as an acceptable use for waste cooking oil materials

- January 2013: Installation of new potato processing equipment (PEF units).

2. Project Description

2.1 Overview

The Portage facility currently has two production lines: Line 1 for conventional cut frozen french fries and Line 2 for pre-formed frozen product (*e.g.,* hashbrown patties). Simplot is proposing to add a batter application system to the existing conventional french fry production line at their Portage facility. The proposed modifications to the production line will increase Simplot's manufacturing capabilities to better service markets with battered potato products. The proposed project includes construction of additional building space and will result in a modest increase in several aspects of the operation including onsite trucking, water use, energy use, air emissions, and wastewater production. Simplot strives to sustainably produce the highest quality product to meet customer specifications while minimizing the resources consumption (*e.g.,* water, oil, energy) and waste generation.

A brief summary of the existing production process at the facility are illustrated in **Figure 04 and 05** and outlined in the sections below.

2.2 Production Weight

The Portage facility annually produces an average 160 million kilograms (353 million pounds) of frozen french fries and formed potato products. The facility operates an average 280 days per year producing approximately 572,000 kilograms (1.26 million pounds) of potato products per day. The facility operates 24 hours per day with periodic breaks for sanitation and maintenance activities.

The Portage facility was initially designed to accommodate a second phase (Phase II), which would ultimately result in a doubling of the production weight. The proposed batter application project is independent of the Phase II development, and there are no plans in the foreseeable future to begin Phase II.

2.3 Existing Production Process

This section outlines the existing production process at the Portage facility.

2.3.1 Receiving

Potatoes pass through a dirt eliminator to remove dry loose soil before entering the storage bins in the potato receiving area. The potatoes are conveyed from the receiving bins by water flumes through cleaning processes where tare material (rocks, vines, organic and foreign materials) is removed. The potatoes are then washed to remove any remaining soil and conveyed into the potato manufacturing process. .

The dry dirt and tare materials removed during the receiving process are conveyed into temporary storage bins in the potato receiving area. Both materials are removed from the facility daily and temporarily staged at an area near the sulphide oxidation tanks prior to final disposal via land application or other use approved in the *Environment Act* Licence (EAL) No. 2518 (**Section 2.5**).

Wastewater from the raw receiving area wash plant contains silt removed from the surface of the potatoes. This water is treated through the silt clarification system to remove the suspended soil particles before water is recycled back to the receiving area water plant. The recycled water represents approximately 95 percent of the total flume water flow. The remaining five percent of the treated silt water is wasted to the sewage collection system for eventual treatment at the City of Portage la Prairie (City) Water Pollution Control Facility (WPCF). Thickened solids from the silt clarifier system are further treated through a BFP. The recovered BFP cake (waste soil) is also temporarily staged alongside waste materials recovered from the raw receiving area. Solids recovered by the BFP are then used by area construction companies and landscapers as a source of clean fill (**Section 2.5.2**).

2.3.2 Peeling and Trimming

The whole potatoes are steam-peeled and scrubbed to remove the peel. The peel materials are discharged into the white water floor gutter system. Following the peeling process, potatoes are optically sorted for quality and trimmed to remove undesirable portions of the potato. Rejected potatoes and trim waste are also discharged to the white water floor gutter system. The white water system which is segregated from the potato wash plant system in the raw receiving area collects all wastewater generated in the wet processing end of the facility. Wastewater discharged from the potato processing system is described as is the white water stream, which includes primarily insoluble and soluble waste potato materials including peel, whole potatoes, starch, and rejected potato materials. Once discharged from the potato manufacturing system, white water is pumped to a screening area. The rotary screens remove insoluble potato waste which is collected for livestock feed in a temporary storage bin. White water including soluble potato materials is discharged to a white water surge tank. A portion of this water is returned to the potato processing plant to rinse floor flumes and remove waste potato materials. The majority of the wastewater including the soluble waste materials is discharged to the low rate anaerobic reactor (LRAR) for treatment (**Section 2.5.1**).

2.3.3 Cutting and Defect Sorting

Peeled potatoes are cut into french fries in the Line 1 wet processing area. A portion of the water from the cutting area undergoes a starch recovery step and is recirculated back into the system and fresh water is constantly added. A portion of the water from the starch recovery step is sent to the white water floor gutter system. Short and thin potato pieces are sent to the pre-form line (Line 2). Defects, excess or unusable pieces are sent to the livestock feed bins.

2.3.4 Blanching and Drying

The cut french fries and pre-form potato pieces are immersed in separate hot water baths (blanched) following cutting to remove excess sugars and prevent discolouration of the potato product. Water from these vessels is continuously refreshed to prevent the build-up of sugar or starch in the blancher water. The waste blancher water is discharged to the white water floor gutter system. The fries and pre-form potato pieces are then dried with heated air to remove excess surface moisture prior to the fryer (Line 1) or preform shredder (Line 2). The air for the Line 1 dryer is heated by natural gas burners while Line 2 utilizes steam for drying. The moist exhaust air from both dryers passes through a heat recovery system prior to being discharged to the atmosphere.

2.3.5 Forming, Frying and Freezing

On Line 2, the potato pieces are shredded, mixed with spices, and sent to a former unit where they are shaped into the desired configuration. The next processing step for both lines is to partially cook (parfry) the products in hot cooking oil. Once parfried, excess oil is recovered from the fries and preformed product that are then pre-cooled and quick-frozen in large ammonia refrigerated freeze tunnels. All recovered cooking oil is returned to the fryer system for reuse. Hot exhaust air discharged from the fryer system passes through a heat recovery system and horizontal mist eliminator to remove oil particles prior to release to the atmosphere (**Section 2.5.3**).

During the frying process small potato particles (crumb) accumulate in the cooking oil. This material is continuously removed from the oil by the use of screens and filters. Waste crumb material is then discharged to a floor gutter system. The wastewater collected from the floor sumps in the areas of the plant exposed to cooking oil are directed to an oily wastewater system for additional treatment. This system includes a rotary screen that separates crumb material which is temporarily collected in bins and sent out daily for use as a livestock feed product. Screened oily wastewater is then directed to a dissolved air floatation (DAF) system to remove remaining oil materials. The oily concentrate recovered from the DAF is collected in a storage tank and disposed of following the allowable uses outlined in the *Environment Act* Licence (for e.g., use as a biodiesel feed stock, commercially produced road dust suppressant ingredient, or shipped to USA for further refining and use as livestock feed ingredient). With the cooking oil materials removed, wastewater discharged from the DAF system is directed to the LRAR for further treatment (**Section 2.5.1**).

2.3.6 Packaging and Storing

Following the freezing step finished potato products are screened a final time to remove small or broken fry strips and then directed to automated bagging and packaging equipment. Finished cased goods are then sorted and stacked on pallets for subsequent storage in the freezer warehouse. Finished goods are distributed to various markets by both truck and rail shipments. All waste potato products generated in this part of the facility through final screening or spillage from broken bags is recovered for livestock feed.

2.4 Production Inputs

2.4.1 Raw Materials Use

The greatest volume of raw material used at the Portage facility is potatoes. Under current operation, approximately 36,000 kg/hr (80,000 lbs/hr) or 1,080 tonnes per day (1.6 million lbs/d) arrive at site. Approximately 24 trucks deliver potatoes over a 20-hour period (from 0400 h to 2400 h) on an average production day. Potatoes are delivered to the site on an as needed basis and are processed shortly after delivery. There is no on-site storage of potatoes; potatoes are delivered directly from the farmers and/or suppliers to the Portage facility. Potato storages constructed immediately east of the processing plant are independently owned and operated by area potato growers. Simplot periodically receives potato deliveries from this location which is owned, operated, and all wastes managed by a third party.

Cooking oil for the fryers is delivered by rail car or truck. Indoor storage is provided by five storage tanks, with total onsite capacity of approximately 539 m^3 (129,000 gallons). New cooking oil is stored in three tanks and used oil in two smaller tanks. The storage area in which the tanks are located provides spill containment with sufficient capacity to retain 110 percent of the largest one tank volume. Spill containment is also provided at the rail and truck unloading areas to facilitate any cleanup as required.

Food grade chemicals are utilized for facility sanitation and maintenance purposes at the Portage facility. Chemicals are stored in a room designed to mitigate risk of spills. Process cleaning chemicals are utilized during normal plant operations with process equipment cleaned internally on a regular sanitation schedule. Residues from these materials used during cleaning procedures are rinsed to the floor gutter system during the cleaning process and are ultimately discharged to the LRAR for treatment (**Section 2.5.1**.)

The manufacturing process requires the use of minimal amounts of food safe processing aids and ingredients such as Sodium Acid PyrophosPhate (SAPP) and dextrose which are added to the potato process to meet customer quality expectations. Spices and ingredients are similarly added to the preform products before shaping and prior to the preform fryer. Small amounts of these materials are rinsed from process equipment during facility clean up and are directed to the LRAR for wastewater treatment.

2.4.2 Water Use

Average daily water consumption at the plant is 4,165 m^3/d (1.1 million gallons/d). Water is used in the production areas throughout the Portage facility as well as for employee consumption and use. Where possible, process water is reused by recirculating within processing steps and in the production areas, as described in **Section 2.3**.

The plant is periodically shut down to facilitate plant cleaning and maintenance. The clean-up water is directed to the LRAR. Since the majority of the cleaning solutions are alkaline or sanitizing agents, the digester treatment system is operated in in such a manner as to prevent reactor upsets due the addition of sanitation chemicals. Currently, the plant is shut down periodically for regularly scheduled sanitation shifts.

2.4.3 Chemical Materials Use

Five groups of chemicals are received at the plant: refrigerants, cleaning agents, boiler water treatment chemicals, cooling water treatment chemicals, and waste treatment chemicals.

Ammonia, used as a refrigerant to support the freeze tunnels and frozen warehouse areas, is the most abundant chemical present at the Portage facility. The refrigerant system contains approximately 27,200 kg (60,000 lbs) of anhydrous ammonia. By design, the ammonia refrigeration plant is a closed loop system. As such, very little ammonia is lost from the system, limiting the need for deliveries to replace lost material. Other hazardous chemicals used in the ancillary processes, such as corrosion inhibitors, antimicrobial agents, defoamers, and cleaners, are commonly used in the food industry and are stored in the specifically designed chemical storage rooms.

As the majority of mobile equipment at the facility is battery powered, liquid fuel use and onsite storage is kept to a minimum. Diesel is used for some larger mobile equipment and is supplied on an as needed basis by a third party contractor via a mobile filler truck.

2.4.4 Energy Use

There are three main energy sources used on site: electricity, natural gas, and biogas. The sections below present the existing energy use at the facility.

Electricity

An underground hydro power feed enters the south side of the facility at the MCC/electrical room. Electricity is used predominantly for process and ancillary equipment, motors, and lighting.

According to powerhouse meter readings, the existing electrical demand peaks at around 8,300 kVA while electrical consumption is approximately 41,600,000 kWh per year.

Natural Gas

A 150 mm (6 in) underground gas pipe enters the south side of the facility near the boiler room. Natural gas is used in the steam boiler, process dryers and heating, ventilation, and air conditioning (HVAC) equipment. The steam boiler is one English Boiler rated at 80,000 lbs/hr steam output which generates steam for frying, drying, and process heating. HVAC includes roof top units and make-up air units that provide heating and tempered ventilation to the facility.

The existing metered natural gas usage is approximately 515,000,000 cubic feet per year (CF/year). **Table 1** shows the breakdown at each metered area.

Table 1. Existing Natural Gas Consumption

Metered Area	Details (CF/year)	Percentage of Total
Boiler	350,000,000	68%
Dryer	45,000,000	8%
HVAC	120,000,000	24%
TOTAL	515,000,000	100%

Biogas

Under EAL No. 2518 R7, Simplot is required to collect biogas generated at the LRAR for use as energy source at the Portage facility. The license allows for flaring of excess or non-required biogas (i.e., during shutdowns and maintenance) to the atmosphere. Biogas is used to supplement natural gas use at the boiler.

Existing average metered biogas usage at the boiler is approximately 95,300,000 CF/year. Due to a lower methane content in biogas compared to natural gas, the heating value of biogas is 60% that of natural gas. As such, biogas would offset about 57,000,000 CF/year of natural gas or 12.8%.

2.5 Waste Disposal

This section outlines the wastes produced at the site, including wastewater, air emissions, and solid waste.

2.5.1 Liquid Wastes

Water is used and extensively recycled throughout the Simplot potato processing plant. Water which is no longer recycled is discharged from the potato processing plant to a variety of pre-treatment processes prior to discharge to the City of Portage Poplar Bluff Industrial Park pump station and collection system for further treatment at the WPCF. Simplot's onsite wastewater treatment processes were designed with sufficient capacity for expanded (Phase II) development and a portion of this capacity will be utilized to support the proposed project.

The waste streams at the facility are separated according to the nature of the wastewater and the appropriate pre-treatment method for each source. The wastewater generated within the plant consists of five wastewater streams which are as follows:

1. *Sanitary Wastewater*: Sanitary wastewater originates from the washroom facilities and lunchroom sinks. This wastewater does not receive pre-treatment prior to discharge to the City WPCF. The daily flow is approximately 50 m^3/d (13,200 gallons/d). A separate sanitary waste line runs from the Simplot site to the pumping station to maintain separation from the potato process wastewater.

2. *Receiving Area Silt Wastewater Stream*: The potatoes are conveyed to the storage bins by a dry system designed to remove loose soil. The potatoes are then conveyed from the receiving area storage bins by a water flume. Remaining adhered dirt is loosened while soaking in the flume and remains in the flume water. Rocks and vines are removed as the flow passes through a rock trap and are stored for application to non-cultivated agriculture land. While a large portion of this water is recycled, a portion is bled off. This waste

flume water is screened, and passed through a gravitation separator (swirl tank) and silt clarifier. The majority of the overflow from the silt clarifier is recycled back to the wash plant for reuse. The remainder is discharged to a second clarifier where coagulants are added to increase silt removal from the wash plant wastewater. Overflow from this clarifier is discharged to the City WPCF. Thickened solids from both clarifiers are passed through a BFP. Recovered solids are managed as described in **Section 2.3.1**. Filtered wastewater is returned to the second clarifier and discharged to the City WPCF. The average daily flow through this system is approximately 500 m^3/d (132,000 gallons/d).

3. *White Water Wastewater Stream*: This stream includes the wastewater originating from the peeling, cutting, and blanching areas of the plant. The wastewater contains primarily potato particles, starch, and sugars. This wastewater stream is collected through the floor gutter system and directed to the white water pump pits and pumped to a rotary screening system. The solids, including a portion of the peel fiber is removed by a wedge wire internally fed drum screen and directed to the livestock feed bins. The screened white water stream runs to a surge tank to ensure normalized digester flows. A portion of the white water from the surge tank is recycled back to the production plant to flush floor trenches. The remaining white water passes through a direct steam injection effluent heater (to heat effluent if required) and is discharged to the LRAR. An annual daily average of approximately 3,200 m^3/d (845,000 gallons/d) effluent from the white water system is pumped to the LRAR. The LRAR provides anaerobic treatment of the liquid portion of the waste streams after the screens and DAF unit and provides storage, reduction, digestion, and stabilization of the potato processing wastewater streams. The LRAR is designed for an average day flow of 9,100 m^3/d (2.4 million gallons/d). Following anaerobic digester the LRAR effluent is further treated to reduce the sulphide levels. Sulphides are oxidized in the sulphide oxidation facility using diffused aeration equipment. While sized for an expanded Phase II facility of 4,200 m^3 (148,322 ft^3), as currently used, the oxidation system has a 29.5 hour average hydraulic retention time. Two positive displacement blowers provide the required air flow for the system.

4. *Oily Wastewater Stream*: The oily wastewater stream originates from the plant areas where cooking oil is used and stored. These areas include the fryer rooms, tank farms, DAF room sump, and oily concentrate recovered from the horizontal mist eliminators installed on the fryer exhaust system. All collected oily wastewater is processed through a DAF unit. The oily concentrate is recovered in the DAF and collected for use as a biodiesel feed stock, commercially produced road dust suppressant ingredient, or shipped to USA for further refining and use as livestock feed ingredient disposal as discussed in **Section 2.3.5**. The settled solids from the DAF unit are recovered and added to the livestock feed. The clarified wastewater is combined with the white water and conveyed to the LRAR for further treatment. The annual average oily wastewater flow to the LRAR is approximately 200 m^3/d (53,000 gallons/d), sized for a maximum day flow of 545 m^3/d (144,000 gallons/d).

5. *Storm Water*: Storm water that can come in contact with cooking oil materials from roof top areas near fryer stacks is collected and discharged to the LRAR for treatment. Storm water drains located on the facility grounds are regularly inspected for debris and maintained with permanent vegetative cover to minimize soil erosion. Should a release of chemical or oil materials occur at the facility all drainage outfalls are equipped with control gates and structures to control contaminated water onsite until proper clean up can occur. Surface runoff is the only water which is released directly into the environment from the facility

The existing liquid waste generated at the Portage facility is provided below in **Table 2**.

Table 2. Existing Liquid Waste Generated at Portage Facility

Waste Stream	Annual or Daily Average Production m^3/d (gallons/d)	Treatment/Disposal
Sanitary Wastewater	50 (13,200)	No onsite treatment, discharged to City WPCF for treatment.
Receiving Area Silt Wastewater	500 (132,000)	Wastewater subject to advanced solids removal through clarification and BFP.
White Water	3,200 (845,000)	Including Oily Water, White water is pretreated by the LRAR and sulphide oxidation facility prior to transfer to and treatment at City's WPCF.
Oily Water	200 (52,800)	Oil removed by dissolved air flotation then treated by LRAR and sulphide oxidation. Waste oil is recovered for a variety of approved beneficial uses.
Storm Water	Varies	Storm water which comes in contact with processing equipment (rooftop areas) is directed to Oily Water waste stream.

2.5.2 Solid Wastes

Simplot generates waste soils from two sources in the Portage facility: tare materials and BFP cake. Tare materials consist of dry soil, rocks, and plant materials that are separated from the raw potatoes in the Receiving Area. BFP cake is soil from the washing area that has been chemically treated and mechanically compressed to remove excess water and reduce the facility's suspended solids loading to the City WPCF. Waste soils are land applied on Simplot property or picked up by a local construction company as clean fill, in accordance with the conditions of EAL No. 2518. A report documenting Simplot's waste soil management practices is submitted annually to Manitoba Conservation and Water Stewardship. Biosolids are also generated at the Portage facility through the accumulation of organic sludge solids resulting from the anaerobic wastewater treatment process (**Section 2.5**). In order to maintain a sustainable biomass level within their anaerobic digester, Simplot conducts a semi-annual biosolids wasting procedure which involves removing biosolids based on the LRAR biosolids inventory.

General plant garbage consists primarily of cafeteria refuse, soiled cardboard/paper, damaged pallets, and other typical office wastes. Where possible, materials that are recyclable (paper, cardboard, used lubricant oils, scrap metal, etc.) are segregated and disposed of by a commercial contractor. A local contractor also transports the remaining non-recyclable wastes to the Poplar Point Landfill Facility.

All waste potato materials are collected throughout the plant process and transported to a local cattle feeding operation as livestock feed on a daily basis.

2.5.3 Air Emissions

Air emissions from the facility come from combustion of natural gas/biogas, dryers, and the processing equipment. The following are the existing primary air emission sources:

- Fryers (2);
- Dryers (2);
- Boiler (1);
- Biogas flare (1), and

- Building area heaters.

Minor and incidental emission sources have been evaluated but excluded from modelling, because they have been deemed negligible or not measureable. These include:

- Fugitive dust from on-site roadways;
- Exhaust from transport trucks on site;
- Various fugitive building exhaust points;
- Vapours of solvents, maintenance chemicals, and adhesives from the packaging area;
- Blancher exhaust (primarily water vapour);
- Peeler exhaust (primarily water vapour);
- Cooling tower (primarily water vapour);
- Sulphide oxidation system;
- Incidental emissions from fueling of vehicles;
- Welding/grinding associated with construction or maintenance repairs of the processing plant;
- Fugitive emissions from storage tanks and vessels for facility chemicals such as sodium hydroxide, magnesium hydroxide, and various sanitary cleansers; and,
- Fugitive ammonia leaks from the refrigeration system.

VOC emission rates have been evaluated because VOCs are a precursor to ozone formation. However, because ozone is a reactive air pollutant influenced by sunlight in the presence of NO_x, it is typically not included in modeling scenarios. Furthermore, there are no significant sources of VOCs at the Portage facility nor was it included in the original 2001 EIA.

The boiler is fueled with a combination of natural gas and biogas generated in the low rate anaerobic reactor (LRAR) process. Biogas is used as a natural gas supplement. Emissions from the boiler are normal products of natural gas combustion, although sulphur content in biogas is higher than natural gas which results in higher SO_2 emissions. Any biogas not consumed in the facility's steam boiler is flared to reduce emissions. Combustion of natural gas and biogas at the facility is the source of CO and NO_2 emitted from the facility. The fryers and dryers are the major sources of PM to atmosphere, with a small amount from all of the other sources. The fryers are also the primary source of odour released from the Facility. The fryer lines are currently equipped with a mist eliminator that provides some mitigation of odours from the frying process.

2.5.4 Summary of By-Products and Wastes

A summary of the volumes and treatment of current by-product and waste generated at the Portage facility can be found in **Table 3**.

Table 3. By-products and Waste Generated at Current Portage Facility

Waste Stream	Annual or Daily Average Production	Treatment/Disposal
Sanitary Wastewater	50 m^3/d	No onsite treatment, discharged to City WPCF for treatment.
Receiving Area Silt Wastewater	500 m^3/d	Wastewater subject to advanced solids removal through clarification and BFP.
White Water	3,200 m^3/d (845,000 gallon/d)	Pretreated by the LRAR and sulphide oxidation facility prior to transfer to and treatment at City's WPCF.
Oily Water	200 m^3/d	Oil removed by DAF then treated by LRAR and sulphide oxidation. Waste oil is recovered for a variety of approved beneficial uses.
Tare Materials	1,385 tonnes	Returned to non-productive agricultural land on Simplot property
Dry Dirt and Silt Concentrate	2,329 tonnes	Applied to Simplot property or used as clean fill by a local construction company.
Potato Culls and Peels	25,000 tonnes	Livestock feed delivered daily to local cattle farmers.
LRAR Biosolids	222 tonnes	Subsurface injection to agricultural land.
General Plant Waste	250 tonnes	Poplar Point Landfill Facility landfill
Recycled Materials	510 tonnes	3rd party recycling contractors

2.6 Proposed Alterations

In order to meet growing market demands for battered french fry product, Simplot proposes to install new batter application and frying systems to an existing french fry production line at their Portage facility. This will require a minor building expansion and equipment upgrades to the production process, with subsequent changes in the production and waste inputs and outputs. All proposed work will be within the existing Simplot property boundaries. The sections below present the proposed changes.

2.6.1 Facility Expansion

The existing building is 19,974 m^2 (215,000 ft^2). In order to accommodate the proposed Project components, an approximately 3,305 m^2 (35,575 ft^2) addition will be installed on the north side of the existing facility (**Figure 03**). To accommodate the building expansion, the facility's north side access road and two fire hydrants will be relocated approximately 10 m (33 ft) further north of their existing locations.

2.6.2 Alterations to Production Processes

In order to meet growing market demands for battered french fry product, Simplot proposes to install a new batter applicator, a two-stage fryer, and ammonia-refrigerated freeze tunnel to an existing french fry production line at their Portage facility. As illustrated on **Figure 05**, french fries exiting the existing Line 1 dryer will pass through the new batter application system and into the new two-stage fryer. Post frying, all french fry strips will pass through new freeze tunnel system. Following the freezing step, potato products will return to the existing frozen grading and packaging systems.

When not in operation the batter application system will simply act as a conveyor from the Line 1 dryer to the new 2 stage fryer, allowing the facility to operate in a manner consistent with current production practices. While running battered products, the batter applicator will coat dried potato strips with the appropriate amount of batter material prior to completing the frying process.

2.6.2.1 Abandoning of Existing Line 1 Fryer and L1 Freeze Tunnel

Following project completion, the existing Line 1 fryer and freeze tunnel will be cleaned consistent with plant sanitation practices and abandoned in place, pending future manufacturing considerations. Should a decision be made at a future date to remove process equipment and related systems, any items not fit for resale or reuse at other processing facilities will be subject to disposal. Disposed materials will be segregated where possible with the majority of materials recovered for recycling (eg. metals). Any remaining materials will be disposed of in accordance with Manitoba waste management regulations through approved waste management contractors and facilities (eg. Portage la Prairie Regional Landfill).

2.6.2.2 Batter Applicator

Batter ingredients will be metered, mixed, and pumped to the new batter applicator system, located in the building addition. Dried potato strips exiting the Line 1 dryer will be mechanically coated with the batter material. Excess batter will be recovered before potato strips are conveyed into the new two-stage fryer. The batter applicator system will be periodically drained and cleaned depending on production sanitation requirements. Waste batter materials will be directed to the white water system for waste treatment in the facility’s LRAR.

2.6.2.3 Two-Stage Fryer

In order to accommodate the new batter products, a new two-stage fryer will be installed in the building addition. The new fryer will be used, alternately for both batter and non-batter products. The fryer is divided into two separate heated oil stages. The first oil stage will be the “light fry” in order to set the batter onto the french fry. The second will be the “cooking fry”, where the products will be partially cooked.

The new cooking oil recovery equipment, installed adjacent to the new two-stage fryer, will recover excess oil from the products similar to the equipment on the existing fryer process. Recovered oil will be recirculated back to the fryers, after passing through a filtration system to remove crumbs and/or excess batter.

Each stage of the new fryer will be installed with a dedicated oil recovery and filtration system. Oil will pass through the filter system, removing crumbs (which will be collected for livestock feed prior to entering the oily water system), and recirculating oil either back into the fryer system. Floor gutters in this area, similar to existing fryer areas, will contain a modest amount of cooking oil and will be directed to the oily water sump pit and conveyed to the oily water pre-treatment system (**Section 2.5.1**).

The new two-stage fryer will be equipped with an exhaust heat recovery system, where heat from the fryer exhaust will be used to preheat water for hot water use elsewhere in the plant. Additional fryer exhaust pollution control equipment will be installed to meet the local air discharge permit requirements (**Section 2.6.5.3)**.

2.6.2.4 Freeze Tunnel

A new ammonia refrigerated freeze tunnel will be installed post fryer to freeze potato products for packaging and storage. While the freeze tunnel is a contiguous system, similar to the existing L1 freeze tunnel, the length of the tunnel is subdivided into separate refrigeration zones. The first stage, called the precool section, occurs after the potato products exit the fryer. Operated at a slightly warmer temperature, the precool section is followed by a longer and colder freezer section. The freeze tunnel is operated in this fashion to maintain food quality.

The freeze tunnel system will be periodically cleaned and flushed with hot water depending on production sanitation requirements. As the precool section is the first to encounter fried potato products, cooking oil can accumulate in this area during plant operations. Wastewater from this section of the freeze tunnel is segregated from the rest of the freeze tunnel and is directed to the DAF system to recover oily residue prior to onsite treatment in the LRAR. Wastewater generated during sanitation cycles in the freezer section of the freeze tunnel will be directed to the white water system where residue potato material is screened out for livestock feed. Wastewater from the freezer section is then directed to the LRAR for onsite wastewater treatment.

2.6.2.5 Batter Area Truck Unloading Facility

An additional dry goods truck unloading area will be constructed as part the building expansion to receive beer, batter, and ingredients associated with the new battered potato products. These ingredients include de-alcoholised beer, batter ingredients, and premixed dry ingredients. It is estimated that four trucks would arrive over a 10 hour period (from 0700 to 1600) on an average production day. Delivered ingredients and materials will be unloaded using forklifts and delivered to the new refrigerated batter storage area.

2.6.2.6 Batter Storage Area

A new refrigerated batter storage area will be installed adjacent to the new truck unloading area, to store the ingredients required for the new production line.

2.6.2.7 Oil Storage

A used oil tank will be installed in the facility's existing oil tank farm to store the additional used oil anticipated as a result of this proposed project. This used oil tank will have a storage capacity of 25 m^3 (6,600 gallon) and be installed adjacent to the existing used oil tanks.

2.6.2.8 Ammonia Condenser and Compressor

An additional ammonia condenser and compressor will be installed to accommodate the additional production rate and new refrigerated storage area. They will be installed adjacent to existing condensers and compressors in the existing refrigeration/utilities shop.

2.6.3 Production Rate

Currently, the Portage facility has an annual average production rate of 146 million kg (322 million lbs) on Line 1 and 14 million kg (31 million lbs) on Line 2. Once the project is fully operational Simplot anticipates a marginal production increase due to improved operating efficiencies associated with the project and an increased operating schedule to meet market demands. **Table 4** shows existing and proposed average and peak annual potato production rate for the Portage facility. Actual annual production rates will vary due to planned product mix, market demand, and most notably the scheduled number of production days during the fiscal year. Simplot currently operates the potato processing facility between 280 - 282 days annually. Following installation of the proposed batter application system, Simplot anticipates operating the facility between 300 – 320 days annually.

Table 4. Annual Potato Production Rate

Line	Existing Average Production millions kg (lbs)	Existing Peak Production millions kg (lbs)	Proposed Average Production millions kg (lbs)	Proposed Peak Production millions kg (lbs)
1. Main Fry Line	146 (322)	178 (392)	156 (343)	179 (396)
2. Preform Line	14 (31)	19 (41)	15 (32)	21 (46)
3. Batter Fry Line	0	0	22 (48)	27 (59)
TOTAL	**160 (353)**	**197 (433)**	**193 (423)**	**227 (501)**

With the anticipated increase in production rate at the Portage facility, the proposed alterations will result in changes to input annual material consumption rates, increased traffic rates, liquid and solid waste generation, (presented in the following sections).

2.6.4 Production Inputs

2.6.4.1 Raw Materials Use

While there is no anticipated change in the daily volume of potatoes processed at the Portage facility as a result of the proposed project, the anticipated increased in potato plant production run days will result in additional annual truck traffic associated with raw potato deliveries.

Additional storage for oil will be installed as part of this proposed project (**Section 2.6.2.7**). However, the cooking oil used for the new fryer will be the same as is used in the existing processing facility.

Cooking oil for the fryers is delivered by rail car or truck. Indoor storage will be provided by the existing five storage tanks. An additional 25 m^3 (6,600 gallon) used cooking oil storage tank will be installed in the existing facility tank farm to support the new fryer process. The storage area in which all cooking oil tanks are located provides spill containment with sufficient capacity to retain 110 percent of one tank volume. This containment capacity will be retained following installation of the new used oil storage tank. Spill containment is also provided at the rail and truck unloading areas to facilitate any cleanup as required.

Food grade chemicals are utilized for facility sanitation and maintenance purposes at the Portage facility. These chemicals are stored in a controlled access room designed to retain any accidental spills. Process cleaning chemicals are utilized during normal plant operations with process equipment cleaned internally on a regular sanitation schedule. Residues from these materials used during cleaning procedures are rinsed to the floor gutter system during the cleaning process and are ultimately discharged to the LRAR for treatment (**Section 2.5.1**.). Simplot does not anticipate new food grade chemicals will be required due to the proposed project.

The manufacturing process requires the use of minimal amounts of food safe processing aids and ingredients which are added to the potato process to meet customer quality expectations. New food ingredients are expected to support the batter application system. These ingredients include denatured beer, starch and flour based batter products, and premixed battered ingredients. These materials will be stored in a newly constructed batter area dry storage facility. Small amounts of these materials would be rinsed from process equipment during facility clean up and are directed to the LRAR for wastewater treatment.

During the construction phase of the proposed project, materials required may include, but are not limited to, pipes, concrete, steel, rebar, survey tape, spray paint cans, flooring, gravel, fill, fuel, and other materials. Raw materials, such as gravel, fill, and asphalt will be required for site works. Most construction materials will be brought in from other sites. Waste materials from the construction phase of the project will be managed consistent with Manitoba regulations and Simplot waste management practices.

2.6.4.2 Water Use

The installation of new equipment associated with the batter application system will result in a minor increase in the amount of fresh water used during plant operations. Average daily water consumption during plant operations is currently 4,165 m^3/d (1,100,000gallons/d). The proposed additional water use required for the proposed project is 417 m^3/d (110,000 gallons/d).

This is well within the plant's approved capacity from the City, and represents a 10% increase in overall fresh water consumption. While, the facility is currently permitted by the EAL No. 2518 and the Industrial Services Agreement with the City and RM of Portage la Prairie to discharge an annual daily average of 5,403 m^3/d (1.4 million gallons/d) of wastewater, a moderate portion of the proposed increase in water consumption will be utilized in the process, and will not enter the wastewater stream. The upgraded project is therefore not expected to exceed the licence parameters for water flow.

During construction, it is anticipated that potable water and portable toilets will be brought in by the construction company for their needs. Portable toilets will be supplied by licenced dealers and disposed for treatment properly. Therefore, they will impose no additional water demand on the Portage facility. There are no additional employment opportunities anticipated as a result of the proposed alterations resulting in no long-term changes in domestic water consumption at the Portage facility are anticipated.

2.6.4.3 Chemical Materials Use

An additional ammonia condenser and compressor will be installed to accommodate the new process equipment and refrigerated storage area. However, additional inventory of anhydrous ammonia will not be required to support this equipment. The current refrigeration system contains an inventory of approximately 27,000 kg (60,000 lbs) of ammonia.

2.6.4.4 Energy Use

The proposed facility alterations will result in changes to the existing energy usage for electricity, natural gas, and biogas. The next few sections will review the changes to energy usage due to the proposed alterations.

Electricity

The net electrical loading changes for the project are summarized in **Table** 5. Electrical demand is estimated to increase by 1,618 kVA bringing the total to around 9,900 kVA which is equivalent to a 19.3% increase in electrical load. Assuming a similar percent increase to the electrical consumption, the new consumption will be approximately 49,600,000 kWh per year.

Table 5. Proposed Electrical Consumption

Description	Load Change (kVA)
Boiler area additions	142
Batter process equipment	167
Non-batter process equipment	859
Refrigeration equipment	668
Existing frying equipment removed	-218
TOTAL	1,618

Natural Gas

The changes to natural gas consumption for the boiler, dryer, and HVAC equipment are as follows.

- Boiler: Total run days of potato production are anticipated to increase and resulting in a corresponding increase in annual steam use. **Table 3** shows existing and proposed annual average and maximum potato production rates. Comparison of pre and post project production rates identifies a potential average production increase of 15.8%. It is estimated steam consumption will also increase by the same percentage and add an additional 55,000,000 CF/year of natural gas consumption.

- Dryer: Similar to increases in boiler use, the natural gas dryer energy consumption will also be estimated to be increased by 15.8% which will result in an additional 7,000,000 CF/year of natural gas consumption.

- HVAC: The newly constructed batter application and two stage fryer area is expected to be heated utilizing waste heat from the frying system which will not increase the amount of natural gas used to heat the facility.

Table 6 shows a summary of the natural gas usage increase. The final natural gas consumption will be 577,000,000 CF/year which represents about a 12% increase.

Table 6. Natural Gas Consumption After Proposed Alterations

Metered Area	Existing (CF/year)	Percent Increase	Increase (CF/year)	After Alterations (CF/year)
Boiler	350,000,000	15.8%	55,000,000	405,000,000
Dryer	45,000,000	15.8%	7,000,000	52,000,000
HVAC	120,000,000	0	0	120,000,000
TOTAL	515,000,000	12%	62,000,000	577,000,000

Biogas

Since biogas is a by-product of process waste digestion, an increase in biogas is expected to be proportionate to loading of COD materials to the LRAR treatment process. Based on a review of wastewater loading data at Simplot potato processing facilities operating a batter application system, COD levels are expected to increase by 5 - 10%. As a result, biogas generation is expected to increase proportionally during batter system run days; also increasing by 5 - 10%. Including a conservative estimate of a 10% increase in biogas generation, this will result in a total biogas consumption of 104,830,000 CF/year at the facility boiler.

2.6.5 Waste Disposal

There are no anticipated changes to the treatment process (including disposal) of liquid and solid wastes at the Portage facility as a result of the proposed alterations. However, there are anticipated changes to the quality of wastewater and the quantity of biosolids generated as a result of the new production process. These changes are anticipated to occur only during the production of the batter products.

2.6.5.1 Liquid Waste

Wastewater discharged from the facility is currently analyzed daily by the City of Portage la Prairie WPCF laboratory for total flow, total suspended solids (TSS), biological oxygen demand (BOD), chemical oxygen demand (COD), total phosphorus (TP), & total Kjeldahl nitrogen (TKN). Annual average daily limits and maximum daily limits for each of these parameters are established in Simplot's EAL #2518.

The operation of the batter application system and supporting equipment is expected to create minor changes to the characteristics of both wastewater flows and quality discharged from facility. As previously discussed in Section 2.5.1, during initial plant construction Simplot's wastewater treatment system was built to accommodate wastewater flows and loads associated with a much larger production facility at some point in the future. Due to this built-in capacity, Simplot's wastewater treatment system is readily able to manage the minor increases to wastewater flows and loads associated with operation of the batter application system.

Since Simplot's wastewater treatment system is able to handle increases to loads and flows, an evaluation was required to determine if the facility could continue to meet discharge limits specified in the current EAL #2518 once the batter system becomes operational. To provide a baseline for evaluating the impact to wastewater flows and loadings of the proposed facility expansion, wastewater monitoring data from both the City of Portage la Prairie WPCF laboratory and Simplot's internal wastewater sampling program was utilized.

Newly installed water using equipment associated with the proposed project is expected to increase freshwater flows by 10% from current average day conditions when the batter application system is in operation. A 10% increase in freshwater use is expected to result in a corresponding increase in process wastewater process flows of 10%. Based on historical wastewater flows to the LRAR, the wastewater system can be operated to accommodate the minor increase in flows from the process plant during average day situations without requiring any changes to the existing license conditions or industrial services agreement with the City.

To evaluate the impacts to wastewater quality from the proposed batter application system, historical wastewater records from the period of January 2009 through March 2013 were used to establish a facility baseline. Wastewater records from after March 2013 to present day were not used in the analysis due to periodic LRAR upsets that have occurred since April 2013. Simplot has indicated that operational difficulties observed during LRAR upsets are not indicative of normal treatment conditions and are expected to improve in the future due to several operational changes currently in practice. Therefore inclusion of this data in the analysis of baseline wastewater conditions would provide unreliable estimates of performance from batter application system operation and is not reflective of true wastewater treatment capabilities.

While wastewater data from April 2013 to present has not been included in the evaluation for this report, Simplot has completed several operational changes independent of this proposed project to assist in providing a more robust wastewater treatment process at the facility. The ultimate expectation of these operational changes is to improve the reliability of LRAR treatment process. These operational changes include the following:

- The use of polymers inside the LRAR to assist with biological performance and settling solids during episodes of treatment upset.
- Improved water conservation in the production facility resulting in less wastewater and increased treatment retention times.
- Installation of direct steam injection process plant effluent heater to regulate LRAR operating temperatures within optimal range for bacterial growth.

In addition to the operational improvements mentioned above, Simplot installed a BFP on the receiving area silt wastewater stream in August 2012 which has resulted in a significant decrease to the facility TSS max day exceedances. The impact of the BFP and solids dewatering system was also considered in the future forecasting of the facility TSS daily loads.

Based on the wastewater impact evaluation, the average annual expected values for each parameter are all projected to be within current licence conditions. This is summarized in the following table.

Table 7. Wastewater Annual Average Projections

Annual Average			
Parameter	**Current**	**Expected Future**	**Licence Parameter**
Flow m^3/d (gallon/d)	3,950 (1.0 million)	4,400 (1.2 million)	5,400 (1.4 million)
COD kg/d (lbs/d)	1,300 (2,866)	2,500 (5,512)	3,861 (8,512)
BOD	300 (662)	400 (882)	1,588 (3500)
TSS kg/d (lbs/d)	1,000 (2,205)	1,100 (2,425)	1,349 (2,974)
TKN kg/d (lbs/d)	600 (1,323)	600 (1,323)	889 (1,960)
TP kg/d (lbs/d)	200 (441)	200 (441)	246 (542)

Maximum daily wastewater values are provided in the following table.

Table 8. Wastewater Maximum Day Projections

Maximum Day			
Parameter	**Current**	**Expected Future**	**Licence Parameter**
Flow m^3/d (gallon/d)	6,800 (1.8 million)	6,800 (1.8 million)	6,900 (1.82 million)
COD kg/d (lbs/d)	6,000 (13,228)	7,300 (16,094)	7,544 (16,632)
BOD kg/d (lbs/d)	1,400 (3,086)	2,200 (4,850)	3,478 (7,668)
TSS kg/d (lbs/d)	4,500 (9,921)	4,500 (9,921)	3,618 (7,976)
TKN kg/d (lbs/d)	1,200 (2,646)	1,300 (2,866)	1,326 (2,923)
TP kg/d (lbs/d)	300 (661)	300 (661)	338 (745)

2.6.6 Traffic

The increase in the types and number of vehicles anticipated as a result of the proposed project is summarized in **Table 9**.

Table 9. Anticipated Traffic Changes (per 24-hr period) at Portage Facility as a Result of Proposed Project

Parameter	Current (vehicles/day)	Proposed (vehicles/day)	Additional (vehicles/day)
Potato Truck Traffic	24	24	0
Employee Traffic	120	120	0
Rail Traffic (rail car moving)	3	4	1
Dry Supply Unloading Traffic	3	7	4
Frozen Goods Transport	15	18	3
Waste Hauling	8	8	0
Construction/Contractor Traffic	2	20 (temporary)	18

The number and types of construction equipment required for the proposed project is summarized in **Table 10**.

Table 10. Anticipated Construction Equipment Required for the Proposed Project

Type of Equipment	Number Required (vehicles/day)	Duration of Use (months)
Excavator	2	1 months
Cement Truck	4	1
Crew Vehicles	15	6
Forklift	1	6
Equipment Delivery	3	3

2.7 Project Scheduling

It is desired that new production line be commissioned in early 2016. Construction of the proposed building would need to start in the summer of 2015, with substantial completion in fall 2015. Equipment installation would occur in early winter of 2015. A summary of the proposed project phases and schedule is presented in **Table 11**.

Table 11. Project Phases and Proposed Scheduling

Project Phases and Activity	Proposed Schedule (subject to the results of Regulatory review)
CONSTRUCTION	**2015 – 2016**
Preparing Construction Site (Clearing vegetation, installing/moving utilities)	August 2015
Bringing Materials and Equipment to Site (excavating, hauling, stockpiling, storing fuels)	August 2015
Constructing New Building and Associated Facilities (erecting building, installing equipment, grading, backfilling)	August 2015 - December 2015
Installation of Equipment and Upgrading Support Infrastructure at Portage facility	November 2015 – March 2016
OPERATION	**2016 – 2066**
Transporting and Handling Materials	March 2016 – 2066
Processing Potatoes in New Production Line (receiving batter ingredients, applying batter to cut french fries, frying batter products)	March 2016 – 2066
Handling Process Wastes (treating white and oily water, recycling process water, managing biosolids)	March 2016 – 2066
Maintaining Equipment and Supporting Infrastructure	March 2016 – 2066 (as required)

Project Phases and Activity	Proposed Schedule (subject to the results of Regulatory review)
CLOSURE	**2066 – 2068**
Removing Building, Foundation, and Site Refuse	2066 – 2068
Testing, Removing, and Remediating any Contaminated Soils	2066 – 2068
Re-Grading and Contouring	2066 – 2068
Re-Vegetating Disturbed Areas	2066 – 2068

2.8 Decommissioning and Demolition

The design life of the plant is at least 50 years and it is anticipated that with building maintenance over the life of the plant, the plant could be in existence for more than 50 years. Regardless of when the plant is decommissioned, a decommissioning plan will be completed and approved by the appropriate regulatory authority and in accordance with the applicable legislation at that time.

3. Scope of the Assessment

To assess the potential environmental impact of the proposed addition of a batter application system to Simplot's existing potato processing facility, spatial and temporal boundaries were defined as follows:

3.1 Temporal Boundaries

The temporal boundaries of the assessment are divided as follows:

- Construction Phase – Construction July 2015 to March 2016.
- Operation Phase – March 2016 to 2066 (as required)
- Decommissioning Phase – There are currently no plans to decommission the Simplot plant. When the Project Site needs to be decommissioned at some point in the future, a site decommissioning plan will be filed with appropriate regulators prior to decommissioning.

3.2 Spatial Boundaries

Spatial boundaries used for the assessment are described below. However, where specifically noted, the boundaries may be adjusted to suit the Environmental Component (EC) or Social Component (SC) affected.

- **Project Site**: includes all areas subject to direct disturbance as a result of the project and includes the Simplot facility itself.
- **Project Area**: is a 3 km (1.9 mi) radius surrounding the Project Site, intended to account for the potential effects of the Project immediately outside of the Project Site. The majority of the information used to describe the existing environment is focused on the Project Area.
- **Project Region**: is a 10 km (6.2 mi) radius beyond the Project Site, intended to account for the maximum spatial extent of potential impacts of the Project.

The Project Region and Project Area are shown in **Figure 06** and **Figure 07**, respectively.

3.3 Environmental and Social Components

This environmental assessment considers changes to the environment caused by the project, as well as any consequential socio-economic implications. The Environmental Components (ECs) and Social Components (SCs) were selected following the guidance provided in Manitoba Conservation's Information Bulletin, "*Environment Act* Proposal Report Guidelines". SCs include components of the socio-economic environment that may be affected by a change in the environment as a result of the project.

The potential interaction between project components and ECs and SCs are identified in **Table 12**. Potential interactions were identified based on the professional judgement of the assessor combined with assumed implementation of standard environmentally responsible construction techniques and operating procedures in the course of project construction, operation and closure. Potential interactions identified in **Table 12** are assessed in **Section 5**. Mitigation measures and residual effects are also described in **Section 5**.

Table 12: Identification of Potential Environmental/Social Component Interactions with the Project

	Environmental Components								Social Components[2]		
	Topography	Air and Noise	Climate	Soil	Surface Water & Aquatic Resources	Groundwater	Vegetation	Wildlife	Protected Areas (Land Use)	Heritage Resources	Aesthetics
B											
Site Clearing, Excavation and Compaction for new Batter Application System building addition and Roadway alteration	X	X	X	X			X	X			
Transportation and Stockpiling of Materials and Equipment	X	X	X	X			X	X			
Construction of new Batter Application System Building		X	X								X
Installation of Batter Application System equipment		X	X								
Waste Disposal		X	X								X
Site Restoration	X	X	X	X							X
Operation Phase											
Simplot Operation and Maintenance		X	X								

Notes
1. x = identified potential interaction
2. only indirect interactions with SCs as a result of an direct project/EC interactions were considered

4. Existing Environment

The Simplot facility is located within the Rural Municipality (RM) of Portage la Prairie, less than 4 km (2.5 mi) west of the City of Portage la Prairie, Manitoba. The property is bordered by the Trans-Canada Highway to the north, the Portage Diversion to the east, the Canadian Pacific Railway mainline to the south, and a municipal road (Simplot Road) to the west. The Assiniboine River is located approximately 4.3 km (2.7 mi) to the southeast of the Simplot facility.

The following sections provide information regarding the existing environment within the study area. Information was gathered via desktop review and a site visit on March 31, 2015.

4.1 Physical Environment

4.1.1 Climate

The Portage la Prairie meteorological station measures precipitation while the Brandon meteorological station measures temperature and wind speed and direction. The Brandon and Portage la Prairie areas have similar land use and since temperature and wind speed may be affected by surrounding land use, the Brandon meteorological station was used to obtain climate statistics relevant to the Project Area. **Table 13** shows the monthly climate normal data relevant to the project area.

Table 13. Climate Data for Portage la Prairie, Manitoba (1981-2010)
Latitude 49º 57' N Longitude 98º 16' W Elevation 259.10 m
And Brandon, Manitoba (1981-2010)
Latitude 49º 54' N Longitude 99º 57' W Elevation 409.40 m

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Code
Daily Average Temperature (°C)[1]	-16.6	-13.6	-6.2	4.0	10.6	15.9	18.5	17.7	11.8	4.1	-5.6	-14.0	2.2	A
Precipitation (mm)[2]	21.3	16.2	25.7	28.3	58.4	90.0	78.	68.3	50.1	43.2	25.8	26.8	532.4	C
Average Wind Speed (km/h)[1]	15.3	15.0	15.1	15.9	16.8	14.9	12.3	13.2	14.7	15.4	14.8	15.0	14.9	A
Most Frequent Wind Direction[1]	W	W	W	NE	NE	W	W	W	W	W	W	W	W	A

Notes:
Data obtained from Environment Canada, Portage la Prairie CDA meteorological station (2015a) and Brandon A meteorological station (2015b).
"A": World Meteorological Organization (WMO) "3 and 5 rule" (i.e. no more than 3 consecutive and no more than 5 total missing for either temperature or precipitation) between 1971 and 2000.
``C: at least 20 years
1. Brandon A meteorological station.
2. Portage la Prairie meteorological station.

The Portage la Prairie area is described as experiencing a continental climate. The MacGregor Ecodistrict, within which the Project is located, is the warmest subdivision of the Grassland Transition Ecoclimatic Region in southern Manitoba. The average growing season is 182 days and the number of growing degree-days is about 1,700 (Smith *et al.*, 1998). The area receives 532 mm of precipitation per year, with 415.6 mm as rainfall and 118.5 cm as snow (Environment Canada, 2015b). The annual daily average temperature at the Brandon meteorological station was 2.2°C, ranging from -17°C (January) to 18°C (July). Extreme temperatures range from -46°C to 38.5°C (**Table 14**).

Table 14. Additional Weather Parameters

Parameter	Value
Extreme Maximum Temperature (°C)[1]	38.5 (Aug 6, 1988)
Extreme Minimum Temperature (°C)[1]	-45.6 (Jan 7, 1966)
Extreme Daily Rainfall (mm)[2]	137.0 (Aug 16, 1985)
Extreme Daily Snowfall (cm)[2]	29.0 (Oct 30, 1971)

Notes:
Data obtained from Environment Canada, Portage la Prairie CDA meteorological station (2015a) and Brandon A meteorological station (2015b).
1. Brandon A meteorological station.
2. Portage la Prairie meteorological station.

4.1.2 Ambient Air Quality

Existing background air quality information is important to appropriately assess the overall impact of the Facility. The background concentrations of the modelled parameters were obtained from the nearest sources that have available data. The locations of the data sources include Brandon, Manitoba (approximately 120 km west of the Facility), and Winnipeg, Manitoba (approximately 85 km east of the Facility). The background conditions at the applicable averaging periods over a period of 5 years from 2010 to 2014 are summarized in **Table 15** and compared to the *Manitoba Ambient Air Quality Criteria (AAQC)* including the Maximum Tolerable Level ("MTL"), Maximum Acceptable Level ("MAL"), and the Maximum Desirable Level ("MDL") where applicable.

Table 15. Ambient Background Air Quality

Pollutant	Data Source Location	Units of Measurement	Averaging Period	Ambient Background Air Quality	Manitoba AAQC		
					MTL Concentration	MAL Concentration	MDL Concentration
$PM_{2.5}$	Brandon, Manitoba	µg/m³ [1]	24 hour 90th percentile[2]	10.6		30	
PM_{10}	Brandon, Manitoba	µg/m³ [1]	24 hour 90th percentile[2]	37.3		50	
CO	Winnipeg, Manitoba	mg/m³	1 hour maximum 8 hour maximum	2.93 1.86	20	35 15	15 6
NO_2	Brandon, Manitoba	µg/m³	1 hour 90th percentile[2] 24 hour 90th percentile[2] Annual Mean	23.3 20.5 9.7	1000	400 200 100	60
SO_2	Winnipeg, Manitoba	µg/m³	1 hour maximum 24 hour maximum Annual mean	53.6 8.5 0.0	800	900 300 60	450 150 30
Odours		Odour units	3 minutes	None assumed		Residential :2 Industrial: 7	<1.0 (less than odour threshold)

Notes:

[1] Assuming that PM_{10} is reported at standard temperature and pressure.

[2] The 90th percentile for 1-hr and 24-hr averaging periods for PM and NOx were applied to the background concentrations for consistency with the guidance from the Manitoba Conservation and Water in the 2001 EIA.

Current baseline emissions were modelled based on the emission rates and design criteria summarized in **Appendix A.** Current baseline emissions represent the existing air dispersion of the Facility prior to the proposed alteration. The following are the current air emission sources:

- Fryers (2);
- Dryers (2);
- Boiler (1);
- Biogas flare (1); and
- Building area heaters.

All of the maximum concentrations for all averaging periods, for all parameters, are predicted to occur within 20 meters of the property boundary. The maximum concentrations are expected to occur during the night time, under stable conditions and very light winds. **Table 16** and **Table 17** include the maximum concentrations for the existing Facility.

Isopleths showing the distribution of predicted concentrations over the study area for all contaminants and averaging periods are included in **Appendix A**.

For modelling purposes, CO, NO_x, and SO_2 were selected as they are the by-products of fuel combustion from the dryers, boilers, flare and building heating system.

VOC emission rates have been evaluated because VOCs are a precursor to ozone formation. However, because ozone is a reactive air pollutant influenced by sunlight in the presence of NO_x, it is typically not included in modeling scenarios. There are no significant sources of VOCs at the Portage facility nor was it included in the original 2001 EIA. In addition, the Project will not alter combustion sources which emit VOCs, so there will be no expected increase.

PM_{10} was selected to best represent particulate matter emissions from the development. As a part of the original environmental assessment (EA) conducted in 2001, the proponent was advised by Ms. Jean Van Dusen, P. Eng. of MCWS to model PM_{10} rather than total suspended particulate (TSP) as it was considered to be the parameter of concern.

Emissions of $PM_{2.5}$ also were not modelled in the original EA. $PM_{2.5}$ emissions for the proposed alteration cannot be accurately quantified because stack test data was unavailable and other sources for emission factors do not address $PM_{2.5}$. Simplot's processes that potentially emit $PM_{2.5}$ create a wet stack environment. Methods requiring in-stack cyclone separators and filters cannot be used on wet sources of emissions. As a result, Simplot has assumed that both $PM_{2.5}$ and PM_{10} emissions are equal to TSP emissions based on data collected by third party stack testers at other Simplot facilities. While this approach may lead to overly conservative estimates of $PM_{2.5}$; any data quantifying $PM_{2.5}$ emissions would otherwise be speculative.

As the NO_x emission rate was known, NO_2 was modelled as NO_x and compared to the NO_2 threshold. This is a conservative estimate and assumes that all NO_X is converted to NO_2 in the atmosphere.

Table 16. Maximum Predicted Concentrations for Baseline on Receptor Grid

Pollutant	Units	Averaging Period	Maximum Modelled Concentration (including Background)	Maximum Concentration Location	% of MTL	% of MAL	% of MDL
$PM_{2.5}$	µg/m^3	24 hour	Max: 155.4 Ave: 128.3	Max: 543371.3, 5535950 Ave: 543391.3, 5535950		Max: 518% Ave: 428%	
PM_{10}	µg/m^3	24 hour	Max: 182.1 Ave: 155.0	Max: 543371.3, 5535950 Ave: 543391.3, 5535950		Max: 364% Ave: 310%	
CO	mg/m^3	1 hour 8 hour	3.63 2.09	543631.3, 5535730 543631.3, 5535730	10%	10% 14%	24% 35%
NO_2	µg/m^3	1 hour 24 hour Annual	826 265 34.4	543631.3, 5535730 543631.3, 5535750 543631.3, 5535710	83%	206% 132% 34%	57%
SO_2	µg/m^3	1 hour 24 hour Annual	650 255 32.1	543711.31,5535630 543731.3, 5535610 543731.3, 5535630	32%	72% 85% 54%	144% 170% 107%
Odours	Odour units	3 minutes	3.59	543351.3, 5535970		51%	359%

Table 17: Maximum Predicted Concentrations for Baseline at Discrete Receptors

Contaminant			Nearest Residence		Dakota Tipi First Nation	
Pollutant	**Units**	**Averaging Period**	**Maximum Modelled Concentration (including Background)**	**% of MAL**	**Maximum Modelled Concentration (including Background)**	**% of MAL**
$PM_{2.5}$	µg/m^3	24 hour	Max: 34.6 Ave: 30.3	Max: 115% Ave: 101%	Max: 15.9 Ave: 14.9	Max: 53% Ave: 50%
PM_{10}	µg/m^3	24 hour	Max: 61.3 Ave: 57.0	Max: 123% Ave: 114%	Max: 42.6 Ave: 41.6	Max: 85% Ave: 83%
CO	mg/m^3	1 hour 8 hour	3.15 1.92	9% 13%	3.02 1.88	9% 13%
NO_2	µg/m^3	1 hour 24 hour Annual	141 30.5 10.2	35% 15% 10%	40.7 23.3 9.81	10% 15% 10%
SO_2	µg/m^3	1 hour 24 hour Annual	180 26.0 0.53	20% 9% <1%	42.7 11.9 0.210	5% 4% <1%
Odours	Odour units	3 minutes	0.89	13%	0.230	3%

4.1.3 Topography

The site is located within the Lake Manitoba Plain Ecoregion. The topography of the Project Region can be generally described as smooth, level to gently sloping lowland lacustrine and alluvial plain (Smith, *et al.*, 1998). The topography of the Project Area varies from approximately 270 metres above sea level (masl) 1.5 km (0.9 mi) south of the site to 260 masl across the northeast portion of the property. The Project Site itself varies in elevation from 261 masl in the southwest corner, falling to 258 masl in the northeast corner.

4.1.4 Geology

The area around Portage la Prairie was contained within the Lake Agassiz basin. As a result, the Project Region is characterized by silt, clay, gravel, and alluvial fans and deposits. The Portage la Prairie fan, resulting from late stage deposition of the Assiniboine River, is discontinuous and includes sand deposits, silt in natural levees, and backswamps. The facility is located on lacustrine silt and clay deposited in deep basins of Lake Agassiz.

The underlying bedrock geology in the vicinity of the proposed site is composed mostly of shales, sandstones, and siltstones of the Jurassic Period from the Mesozoic Era (approximately 208 million years ago). These include red agrillaceous dolomitic siltstone and sandstone of the Amaranth Formation; limestone, dolomite, and shale of the Reston Formation; and sandstone, shale, and limestone of the Melita Formation (Geological Survey of Canada, 1987).

4.1.5 Soil

The soils in the MacGregor Ecodistrict are generally imperfectly drained Gleyed Rego Black Chernozems and local areas of poorly drains Gleysolic soils are fairly common (Smith *et al.*, 1998). High water tables are prevalent, created by a shallow clay substrate that impedes internal drainage (Smith *et al.*, 1998).

Six soil associations (Ehrlich *et al.,* 1957) are found in the Project Area. The predominant soil association is the Burnside association, followed by the Red River and the Portage soil associations. The Gladstone and Agassiz soil associations located in the northwest portion of the property and the Almasippi association located along the southern part of the study area. Burnside, Red River, Portage, and Gladstone associations are described as clay and sandy loam to silty clay, and the Almasippi and Agassiz associations are described as sand to fine sandy loam.

Soil in the Project Area is considered capable of sustained use for cultivated field crops. The land capability for agriculture within the study area varies from areas with moderate to very severe limitations (Canada Land Inventory, 1966). The area including the proposed plant site is classed as soils with moderate limitations that restrict the range of crops or require moderate conservation practices due to excess water.

4.1.6 Groundwater

According to the aquifer maps of southern Manitoba, groundwater aquifers are found in the bedrock in the vicinity of the Project Region. These aquifers are generally very salty, with total dissolved solids concentrations ranging between 5,000 mg/L and 100,000 mg/L, and as a result are not a significant water source (Rutulis, 1986a).

Shallow groundwater aquifers may also be found in the vicinity of the Project Region, within lenses of sand and gravel. The depth of the shallow groundwater aquifers ranges from a few meters to more than 100 m and typically produce well yields between 0.1 L/s and 10 L/s. Generally, groundwater quality within the shallow groundwater aquifers ranges from very poor to excellent (Rutulis, 1986b).

4.1.7 Extent of Groundwater Use

A review of the Groundwater Information Network (2015) online mapping service indicated 33 groundwater wells in the Project Area. According to the groundwater well records, 14 were registered as production wells, 14 were registered as test wells and five were registered as observation wells (Groundwater Information Network, 2014). Of the production wells, 12 were identified as domestic use, one as domestic and livestock, and one as domestic and other.

The majority of the production wells in the 3 km (1.9 mi) radius of the Project Site (12 of 14) are intended for domestic water use. The depth from the ground surface to the perforated well section in which groundwater can enter the production groundwater wells within a 3 km radius of the Project Site ranged from approximately 2.4 metres below ground surface (m bgs) (7.9 feet below the ground surface (f bgs)) to 8.8 m bgs (28.9 f bgs).

The closest groundwater production wells to the Project Site are located south of the Project Site. These three registered groundwater wells are designated as domestic production. According to the groundwater well logs, the soils at these groundwater wells consist primarily of clay ranging in thickness of 2.3 m (7.5 ft) to 3.6 m (11.8 ft) and occurring anywhere from the ground surface to a maximum depth of 9 m bgs. Sand is present at these groundwater wells, below a layer of clay, in thickness ranging from 1.2 m (3.9 ft) to 1.8 m (5.9 ft).

4.2 Hydrology

The Project Site is located in the Rat Creek drainage basin and the facility is within 7.0 km (4.3 mi) of Deep Creek, a major tributary of the Whitemud River. Drainage from the site flows northward through various drains rather than flowing south to the Assiniboine River.

A second order provincial drain runs south to north adjacent to the east side of the Project Site, eventually forming the Mount Pleasant Drain that flows northward. A municipal drain runs south to north adjacent to the west side of the site to flow into the Mount Pleasant Drain 0.5 km (0.3 mi) north of the site. The combined drain then flows into Deep Creek, a tributary of Rat Creek, which flows northward into the Whitemud River. The Whitemud River winds its way north and eventually drains into Lake Manitoba.

4.3 Aquatic Environment

Milani (2013) identified the drains within the Project Area as Class E habitat. Class E habitats do not support direct fish habitat which generally includes ephemeral watercourses that typically have insufficient flow volume or flow duration to allow fish to complete one or more of their life processes. There is no specific habitat characterization or fish community information available for any watercourse within the Project Area.

Within the Project Region, there are several sampling sites visited by Milani (2013) along Rat Creek, Deep Creek, Mount Pleasant Drain, and an unnamed tributary to Rat Creek. Northern Pike, White Sucker, Brook Stickleback, Finescale Dace, and Northern Redbelly Dace were captured in the Project Area from those locations. Habitat was assessed as a Class A or B habitat in Rat Creek and Class B in Mount Pleasant Drain. In general, each site (where fishing effort was expended) was rated on twelve instream and riparian zone habitat conditions. Each habitat condition was given a score from 0 to 20 (with lower score representing poorer habitat) and scores across all conditions were summed to calculate the habitat assessment score at each site. Habitat assessment scores at locations within the Rat Creek watershed, within the Project Region, ranged from 77 (marginal habitat) to 143 (sub-optimal habitat).

The adjacent Assiniboine River drainage (a portion of which is within the Project Region) hosts a diversity of fish species and aquatic habitats. The Assiniboine River provides year-round habitat for a number of aquatic species. Stewart and Watkinson (2004) listed 57 species, representing 16 families, as having been documented in the Assiniboine River Watershed. The majority of the fish are classified as cool water species while Lake Whitefish is a cold water species. Instream vegetation varies spatially and temporally based on season, bottom substrate, and flow conditions. No commercial fishing occurs on the Assiniboine River, with no subsistence fishing in the vicinity of the Project Site.

4.4 Terrestrial Environment

4.4.1 Flora

Smith *et al.* (1998) classified the study area to be part of the McGregor Ecodistrict, within the Lake Manitoba Plain Ecoregion, within the Prairie Ecozone, which comprises groves of trembling aspen and balsam poplar on Black Chernozemic soils. The vegetation in the McGregor Ecodistrict has been heavily altered by cultivation and only small areas of undeveloped, native vegetation remains. Native vegetation consists of tall prairie grasses, meadow grasses, and sedges. Willow, Trembling Aspen, and Balsam Poplar with associated shrubs such as Saskatoon, Silverberry, Snowberries, and Red-Osier Dogwood are interspersed throughout the ecoregion (Smith *et al.*, 1998).

4.4.2 Fauna

The Project Area is primarily cultivated agricultural cropland. Wildlife species commonly found in the area reflect the existing land use and are largely restricted to species that have adapted to human activities. Key wildlife species expected to occur near the facility include ungulates (deer), carnivores (Coyote, Fox, and Weasel), small mammals (Jackrabbit, Snowshoe Hare, and mice), owls, songbirds, and waterfowl.

4.5 Protected Areas

The Province operates two parks within the project region – the Yellow Quill Wayside Park, approximately 4 km (2.5 mi) from the Project Site, and the Portage Spillway Provincial Park, approximately 4.5 km (2.8 mi) from the Project Site.

The closest protected area to the Project Site is the Portage Sandhills Wildlife Management Area (WMA), located approximately 14.5 km (9 mi) south of the Project Site. The Portage Sandhills Wildlife Management Area is an area of sand dunes covered in mixed-grass prairie and aspen-oak forest. White-tailed Deer, Sharptail Grouse, Ruffled Grouse, Gray Partridge, Wild Turkey, Coyote, Red Fox, Cooper's Hawk, Kestrels, Black-billed Cuckoo, Canadian Toad, Prickly-pear Cactus, Skeleton Weed, Big Bluestem, Blue Grama Grass, Sunflower, Three-flowered Aven, Prairie Rose, and Hairy Golden Aster are all present in the Portage Sandhills Wildlife Management Area (Manitoba Conservation and Water Stewardship, 2015b).

The Delta Marsh WMA is second closest, located approximately 18 km (11.2 mi) north of the Project Site. The Delta Marsh WMA is a large freshwater marsh approximately 25,000 ha (61,776 acre) in size and consists of marsh, pastures, grasslands (containing Manitoba maple and aspen-oak forests), sand-treed area, and deep waters. Wildlife species found in the Delta Marsh WMA are White-tailed Deer, Sharptail Grouse, Coyote, Sandhill Crane, 25 species of warblers (including Golden-winged, Clack-throated, Blue and Work-eating), Western Grebe, Piping Plover, Sandpipers, White Pelican, waterfowl (including Canvasbacks, Blue-winged Teal, mallards, gadwalls), Great Blue Heron, hawks, Short-eared Owl, Great Horned Owl, swans, geese, and Leopard Frog. (Manitoba Conservation and Water Stewardship, 2015b)

Within the Rural Municipality (RM) of Portage la Prairie, there is a Prairie Farm Rehabilitation Administration (PFRA) Community Pasture and RM Conservation Land, located approximately 20 km (15.5 mi) and 17 km (10.6 mi), respectively, northeast of the Project Site. (Lombard North Group, 2008)

4.6 Protected Species

To identify species at risk that have the potential to occur in the Project Region, the Manitoba Conservation Data Centre (MB CDC), Occurrence of Species by Ecoregion was examined (MB CDC, 2013). The species listed on the MB CDC were cross-referenced with Schedule 1 of the Federal *Species at Risk Act* (SARA) (Government of Canada, 2015) and the *Manitoba Endangered Species Act* (MESA) (Manitoba Conservation and Water Stewardship, Wildlife Branch, 2015a) to determine the provincially listed rare or sensitive species with the ecoregion. Distribution maps and habitat requirements were examined to determine the likelihood of occurrence of federally and/or provincially listed species in the Project Region. The results of the annual surveys conducted by MB CDC were also examined to identify surveys for protected species in the vicinity of the Project Region; the most recent survey results available were from 2012 at the time of this assessment. No field surveys were conducted to confirm the presence of protected species for this Project.

Based on this search, there is potential for 19 listed species to occur in the Project Region (**Table 18**).

Table 18. Federally and Provincially Listed Species that May Occur in the Project Region

Species	SARA Status	MESA Status	Environmental Considerations	Likelihood of Occurrence in Project Region
Invertebrate Animal				
Dakota Skipper *Hesperia dacotae*	Endangered	Threatened	• Found in native tall-grass prairies that feature bluestem grasses and plants such as smooth camas, harebell, black-eyed Susan, and wood lily (nectar sources). [1]	**Low**: one of two remaining population centres approximately 40 km (24.9 mi) north of the Project Region and is associated with vegetation within the ecoregion
Mapleleaf Mussel *Quadrula quadrula*	Endangered	Endangered	• Found in medium to large rivers with slow to moderate currents and firmly packed substrate of sand, coarse gravel or clay/mud. [1]	**High**: populations exist in the Assiniboine River, within the Project Region (however, the Project Region is in another watershed).
Vascular Plant				
Rough Purple False-Foxglove *Agalinis aspera*	Endangered	Endangered	• Found in wet meadows that are generally at risk due to drainage or heavy grazing (pastures) on alkaline soils with patches of bare stony soil and limestone gravel. [1]	**Moderate**: populations are present in the RM of Portage la Prairie, the nearest is in the PFRA community pasture, 20 km (12.4 mi) northeast of the Project Site
Gattinger's Agalinis *Agalinis gattingeri*	Endangered	Endangered	• Preference for dry prairie, open wetlands, roadsides, glades, bluffs and alvars. [1]	**Moderate**: one known population occurs near Poplar Point, approximately 20 km (12.4 mi) northeast of the Project Site.
Hackberry *Celtis occidentalis*	Not Ranked	Threatened	• Found in dry prairie habitats with sandy soils. [2]	**Low**: prefer sandy hill ridges, the nearest population is at the south end of Lake Manitoba, 10 km (6.2 mi) north of the Project Region.
Small White Lady's-Slipper *Cypripedium candidum*	Endangered	Endangered	• Found in calcareous prairie openings in wooded grasslands, or on more open, south-facing slopes. [3]	**Moderate**: occurs in the southern Interlake region, within 20 km (12.4 mi) of the Project Site.
Vertebrate Animal				
Sprague's Pipit *Anthus spragueii*	Threatened	Threatened	• Prefer native vegetation of intermediate height and density in areas where habitats are lightly to moderately grazed or where fires periodically remove vegetation. [1]	**Moderate**: eastern edge of breeding habitat range overlaps with Project Region, nearest observation over 20 km (12.4 mi) south of Project Region.
Short-eared Owl *Asio flammeus*	Special Concern	Threatened	• Found in a variety of open habitats including grasslands, peat bogs, marshes, sand-sage concentrations and old pastures. [1] • Occasionally breeds in agricultural fields. [1] • Prefers nesting sites in dense grasslands, as well as tundra with areas of small willows. [1]	**High**: historically common breeders, particularly in the area of Portage la Prairie but are now erratic breeders in the southern portion of the province.
Whip-poor-will *Caprimulgus vociferus*	Threatened	Threatened	• Breeding preference in pine and oak based semi-open forests with clearings or forests that are regenerating. [1] • May feed in shrubby pastures or wetlands with perches. [1] • Overwinters in mixed coniferous-broadleaved forests. [1]	**High**: breeding resident range overlaps with Project Region but only possible breeding sites have been identified within 20 km (12.4 mi) of the Project Region.

Species	SARA Status	MESA Status	Environmental Considerations	Likelihood of Occurrence in Project Region
Chimney Swift *Chaetura pelagica*	Threatened	Threatened	• Mainly associated with urban and rural areas where the birds can find chimneys to use as nesting and resting sites. [1] • A small portion of the population is likely to still use hollow trees for nesting. [1]	**High**: breeding areas have been recorded in the Portage la Prairie area.
Common Snapping Turtle *Chelydra serpentina serpentina*	Special Concern	Not Ranked	• Generally found in dry, open grasslands and breed primarily in temporary wetlands or edges of some permanent or semi-permanent wetlands. [1] • These shallow, clear pools are often found in imperfectly drained, sandy areas in grasslands, pastures, ditches or agricultural fields and range in size from large wetlands to small puddles. [1]	**Low**: populations exist in the lower reaches of the Assiniboine River (> 50 km (31.1 mi) away), and historically within the Project Region (however, the Project Region is in another watershed).
Common Nighthawk *Chordeiles minor*	Threatened	Threatened	• In Manitoba, found south of the treeline and inhabits mixed and coniferous forests. [1] • Nests in a wide range of open, vegetation-free habitats including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores and river banks. [1]	**Moderate**: breeding habitat covers most of Manitoba, no observations of nesting sites within 50 km (31.1 mi) of the Project Region.
Yellow Rail *Coturnicops noveboracensis*	Special Concern	Not Ranked	• Found in marshes dominated by sedges, true grasses and rushes with little to no standing water. [1] • Also found in damp fields and meadows, on floodplains of rivers and streams. [1]	**Moderate**: breeding range overlaps with Project Region, occurrences are concentrated in the Boreal Plains and Aspen Parkland ecoregions.
Northern Prairie Skink *Eumeces septentrionalis*	Endangered	Endangered	• Inhabits mixed-grass prairies with sandy soil. [1]	**Low**: isolated population near Carberry Sandhills, approximately 50 km (31.1 mi) west of the Project Region
Peregrine Falcon *Falco peregrinus anatum*	Special Concern	Endangered	• Range of habitats but suitable nest sites are patchily distributed. [4]	**Low**: disjunct population approximately 40 km (24.9 mi) east of Project Region
Least Bittern *Ixobrychus exilis*	Threatened	Endangered	• Found strictly in marshes dominated by emergent vegetation surrounded by open water and stable water levels. [1] • Prefers to breed in cattail-dominated marshes, but can also be found in areas of other robust emergent plants and shrubby swamps. [1]	**High**: breeding range overlaps with Project Region, observations east and west of the RM of Portage la Prairie.
Northern Leopard Frog *Lithobates pipiens*	Special Concern	Not Ranked	• Overwinter in well-oxygenated water bodies that do not freeze to the bottom, including streams, creeks, rivers, deep lakes and ponds. [1] • Breeds in pools, ponds, marshes, lakes and slow-moving streams and creeks that are typically located in an open area with abundant vegetation and no fish. [1] • Summer in moist upland meadows and native prairie, riparian areas and ponds. [1]	**High**: range of species overlaps with Project Region, likely habitat within the Project Region

Species	SARA Status	MESA Status	Environmental Considerations	Likelihood of Occurrence in Project Region
Red-headed Woodpecker *Melanerpes erythrocephalus*	Threatened	Threatened	• Found in a variety of habitat including open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, along beaver ponds and brooks. [1] • Nests are usually found in dead or dying trees but can also make nests in dead branches of live trees. [1]	**High**: species range overlaps with Project Region, likely habitat within the Project Region.
Golden-winged Warbler *Vermivora chrysoptera*	Threatened	Threatened	• Found in regeneration zones where young shrubs grow, surrounded by mature forest. [1] • Prefer public utility right-of-ways, the edges of fields, areas where logging has recently occurred, beaver ponds and burned-out or intermittently cultivated areas. [1] • Nests are built on the ground in areas of herbaceous plants and low bushes. [1]	**Moderate**: breeding range overlaps with Project Region, no recent occurrences of nesting sites within 60 km (37.3 mi) of Project Region.

Sources:
1. Species at Risk Public Registry (Government of Canada, 2015).
2. Rare Species Survey of the Manitoba Conservation Data Centre (Manitoba Conservation Data Centre, 2013).
3. Recovery Strategy for the Small White Lady's-slipper (Cypripedium candidum) in Canada (Government of Canada, 2015)
4. COSEWIC Assessment and Status Report on the Peregrine Falcon in Canada (COSWIC, 2011).

4.6.1 Migratory Birds

In the Lake Manitoba Ecoregion, waterfowl are common and are protected and included in Article I of the *Migratory Birds Convention Act*. The SARA bird species (pipts, swifts, bitterns, woodpeckers, and warblers) identified above are identified as long distance migrants.

4.7 Heritage Resources

An Archaeological Impact Assessment was conducted in 2001 by Quaternary Consultants Ltd. as part of the original environmental assessment (Earth Tech Inc., 2001). Following this field investigation, no archaeological sites were recorded on the Project Site, the nearest recorded site was approximately 1.5 km (0.9 mi) north of the western edge of the development site. No additional heritage investigations were conducted for the development of this NOA.

4.8 Socio-Economic Environment

4.8.1 Land Use

The majority of the Project Region falls within the RM of Portage la Prairie. Land use in the Project Region and Project Area are governed by the Portage la Prairie Development Plan and Zoning By-laws. Land use categories within the Project Region include:

- **Agricultural**: is the predominant designation of land in the RM within 10 km of the Simplot site. The primary focus of the current City of Portage la Prairie Development Plan is strengthening agriculture and agriculture-related activities. In particular, the Development Plan limits ad hoc rural residential development.
- **Designated Portage Reservoir**: runs north-south through the regional study area and lies just to the east of the Simplot site. This area includes the Portage Diversion, Portage spillway and Portage Reservoir.
- **Highway Commercial**: located along the Trans-Canada Highway that runs east-west through the regional study area.
- **Agro-Commercial**: adjacent to the City of Portage la Prairie, along Provincial Trunk Highway 1A.
- **Rural Residential**: small areas designated along the Trans-Canada Highway, east of the Simplot site.
- **Industrial**: areas have been designated immediately south of the Simplot site.

The Portage facility is located within the Poplar Bluff Industrial Park and is zoned as Agricultural Limited Zone (AL) as shown in Figure 08.

4.8.2 Municipal Services

Emergency services, including 911, are provided by the fire department and the Royal Canadian Mounted Police (RCMP) servicing the City and RM of Portage la Prairie. The Portage District General Hospital, medical clinics, personal care homes, dental clinics, pharmacies, massage therapists and physiotherapist are health care services available to the community. The City of Portage la Prairie offers a full complement of services ranging from industrial, commercial, and recreational businesses.

The City's water treatment plant (WTP) treats raw Assiniboine River water. Potable water is supplied to approximately 20,000 residents in the City and RM of Portage la Prairie, Cartier Regional and Yellow Head Regional Water Systems. The largest consumers of water include the City of Portage la Prairie, McCain Foods Ltd., and Simplot Potato Producers (City of Portage la Prairie, 2015a). The City's Water Pollution Control Facility (WPCF) is located downstream from the WTP and treats municipal and industrial wastes.

The City offers curbside household waste collection services and a voluntary green box recyclable collection program along with a recycling depot, composting/yard waste site, periodic curbside yard waste collection services, tree disposal, and paint and waste oil recycling. The Portage la Prairie Regional Landfill, located northeast of the City of Portage la Prairie is a Class 1 waste disposal facility serving the City and RM of Portage la Prairie and two First Nations communities (City of Portage la Prairie, 2015b).

4.8.3 Transportation and Traffic

The City of Portage la Prairie is serviced by two major highways (the Trans-Canada Highway and the Yellowhead Highway), the Canadian Pacific Railway, the Canadian National Railway and the Southport Airport 3 km (1.9 mi) south of the City of Portage la Prairie. The City of Portage la Prairie is also serviced by Canada Greyhound Bus lines.

The major roads within the Project Area are Provincial Trunk Highway (PTH) 1 to the north and PTH 1A to the east. Within the Project Region, PTH 1A and Provincial Road (PR) 240 to the east and PTH 16 and PR 305 to the west. **Table 19** provides the Average Annual Daily Traffic (AADT) load for these major roads within the Project Area as measured by count stations reported by the Manitoba Highway Traffic Information System (MHTIS).

Table 19. AADT Counts for Major Roads in the Project Area (2013)

Road/Highway	Count Location	MHTIS	Eastbound AADT	Westbound AADT
Provincial Trunk Highway (PTH) #1	South of the junction of PTH #1 and PTH 1A	2042	4,390	4,600
	East of the intersection of PTH #1 and PTH 16	709	6,050	6,180
PTH # 1A	East of western junction with PTH #1.	2043	3,080	3,070

Source:
2013 Annual Average Daily Traffic on Provincial Trunk Highways and Provincial Roads (Manitoba Infrastructure and Transportation Traffic Engineering Branch, 2015).

4.8.4 Population Census and Economy

The RM of Portage la Prairie is the largest municipality in Manitoba with an area of approximately 2,238 km^2 (864.1 mi^2). The municipality is centrally located, with its western boundary about 97 km (60.3 mi) from Brandon and its eastern boundary about 48 km (29.8 mi) from Winnipeg. The RM surrounds the City of Portage la Prairie and the Assiniboine River runs west to east through the municipality.

According to the 2011 census, the City of Portage la Prairie had a population of 12,996 which is a 2.1% increase over the reported population of 12,728 in 2006. The median age of the residents is 40.8 years with 81.2% of the population aged 15 years or older. The approximate population of the City and RM of Portage la Prairie combined is 20,000 (Statistics Canada, 2012).

The main economic generator for the City of Portage la Prairie is the agricultural industry within the RM of Portage la Prairie. According to Statistics Canada (2012), the main crops grown in the RM of Portage la Prairie are canola, wheat, soybeans, oats, barley, and potatoes. Additional directly-related agricultural businesses are located in or around the City of Portage la Prairie.

4.8.5 First Nations

The nearest First Nation Communities to the Simplot Project Site are:

- Dakota Tipi First Nation No. 295 (located approximately 3 km (1.9 mi) southeast of the Project Site);
- Long Plain First Nation No. 287 (located approximately 7 km (4.3 mi) south of the Project Site); and,
- Dakota Plain No. 288 (located approximately 8 km (5.0 mi) southwest of the Project Site).

5. Environmental Effects Assessment and Mitigation Measures

5.1 Effects Assessment Methodology

This section contains the results of the environmental assessment.

Applying professional judgement and a thorough understanding of the components of the proposed project (outlined in **Section 2** of this application); AECOM determined the potential for physical and biological components to interact with project components (presented in **Table 12** above). The assessment includes any effects on social components resulting from residual adverse environmental effects. The assessment also takes into account mitigation measures that have been incorporated as design aspects in the proponent's proposed plan, as well as environmental protection practices and procedures included in the proponent's standard of operation.

Environmental effects that may be caused as a result of accidents and malfunctions are discussed separately in **Section 5.13**. Definitions of the terms used to guide the effects assessment are provided in **Table 20**.

Table 20. Factors and Definitions Considered in Assessing Environmental Effects

Project Phase:	Refers to the phase of the project as construction, operation or decommissioning.
Potential Effect:	Classification of the type of effects possible during a specific project phase.
Magnitude of Effect:	Refers to the estimated percentage of population or resource that may be affected by activities associated with the construction, operation and decommissioning of the proposed project. Where possible and practical, the population or resource base has been defined in quantitative or ordinal terms (e.g., hectares of soil types, units of habitat). Magnitude of effect has been classified as either less than (<) 1%, 1% to 10%, or greater than (>) 10% of the population or resource base. Where the magnitude of an effect has been defined as virtually immeasurable and represents a non-significant change from background in the population or resource, the effect is considered negligible. An exception to this is in terms of potential human health effects where, for example health issues due to water-borne diseases amounting to 1% of the population being affected would still be considered major.
Direction of Effect:	Refers to whether an effect on a population or a resource is considered to have a positive, adverse or neutral effect.
Duration of Effect:	Refers to the time it takes a population or resource to recover from the effect. If quantitative information was lacking, duration was identified as short-term (<1 year), moderate term (1 to 10 years) and long term (>10 years).
Frequency of Activity:	Refers to the number of times an activity occurs over the project phase, and is identified as once, rare, intermittent, or continuous.
Scope of Effect:	Refers to the geographical area potentially affected by the effect and was rated as Project Site, Project Area or Project Region as defined in **Section 4**. Where possible, quantitative estimates of the resource affected by the effect were provided.
Degree of Reversibility:	Refers to the extent an adverse effect is reversible or irreversible over a 10-year period.
Residual Effect:	A qualitative assessment of the residual effect remaining after employing mitigation measures in reducing the magnitude and/or the duration of the identified effect on the environment.

Magnitude of Effect	Direction of Effect	Duration of Effect	Frequency of Effect	Scope of Effect	Degree of Reversibility of Effect
Negligible (immeasurable)	Positive	Short term (< 1 year)	Once	Project Site	Reversible
Minor (<1%)	Adverse	Moderate (1 to 10 years)	Rare	Project Area	Irreversible
Moderate (1 to 10%)	Neutral	Long term (>10 years)	Intermittent	Project Region	
Major (>10%)			Continuous		

5.2 Topography

Sources of changes to site topography include activities such as clearing, grading, excavating or stockpiling materials. It appears that the area of the proposed Batter Application System building addition, and associated new road segment is relatively level, therefore it is anticipated that clearing and grading requirements will be minimal. Following project construction disturbed areas at the Portage facility subject to surface water erosion will be re-vegetative to minimize the effects of soil erosion.

Therefore, changes to topography during construction of the proposed project will be minimal and insignificant.

5.3 Air Quality and Noise

5.3.1 Dust

Sources of dust include activities such as clearing, grading, excavating, vehicle movement, and stockpiling materials. Air quality may be affected by dust and particulates with subsequent effects on human health (including respiratory issues) and vegetation (dust deposition). Dust occurs primarily during summer and fall, with greater likelihood for an increase in dust during dry and windy conditions.

To reduce dust generation at the Project Site, the following mitigation measures will be implemented:

- Material stockpile heights will be limited.
- The disturbed/exposed areas will be kept to a minimum.
- If required, dust suppression activities such as the use of approved dust control agents and/or water will be undertaken.

In our opinion, the mitigation measures proposed above are sufficient to mitigate any adverse effects due to dust during the construction, operation and decommissioning phases. Residual effects on air quality due to dust emissions are therefore assessed to be negligible.

5.3.2 Exhaust Emissions

During construction, exhaust emissions will be generated during delivery of materials to the site, laying the foundation for the Batter Application Building, erecting the building, and other operation of vehicles. These emissions could decrease the quality of the air by increasing the local concentration of carbon monoxide, carbon dioxide, particulate matter, and nitrogen oxides in the air with potential for subsequent effects on human health. During construction, a maximum of 20 construction vehicles (**Section 2.6.6**) will access public roads in the vicinity of Simplot, which will be temporary.

The following mitigation measures will be implemented to manage these construction-related exhaust emissions:

- Vehicles and equipment will be properly maintained.
- Vehicle idling will be kept to a minimum.

With the implementation of the mitigation measures proposed above, any adverse residual impact due to exhaust emissions during construction is anticipated to be negligible.

5.3.3 Air Emissions

An air dispersion model (**Appendix A**) was conducted to determine the current and proposed impacts of the Portage facility.

Air emissions were modelled to reflect the changes in equipment and emission rates based on the proposed emission rates and stack parameters included in **Appendix A**. Sources of air emissions post-alterations will be:

- Wet electrostatic precipitator (WESP) stack (1);
- Dryer stack (1);
- Boiler stack (1);
- Biogas flare stack (1); and

- Building area heaters.

As part of the proposed alteration, a wet electrostatic precipitator ("WESP") will be installed and will tie in the proposed batter line fryer stack, the existing Line 2 fryer stack, as well as the four existing dryer stacks from the Line 1 Dryer. The existing Line 1 Fryer stack will be abandoned in place. The WESP is a control device primarily designed for removal of particulate matter. The WESP is a Geoenergy E-Tube® with a design capacity of 68,500 ACFM.

Current emissions were presented in **Section 4.1.2**. Modelling results of the proposed alteration identifies that $PM_{2.5}$, PM_{10} and 1-hour NO_x maximum concentrations potentially exceed the MAL as shown in **Table 16**. Note that the 1-hour NO_2 is below the MTL and the 24-hour and annual averaging periods for NO_2 are both below the MALs. Isopleths of pollutant concentrations are included in **Appendix A**.

Table 21. Maximum Predicted Concentration for Proposed Alteration on Receptor Grid

Pollutant	Units	Averaging Period	Maximum Modelled Concentration (including Background)	Maximum Concentration Location	% of MTL	% of MAL	% of MDL	% of Baseline
$PM_{2.5}$	µg/m³	24 hour	Max: 57.2 Ave: 52.6	Max: 543691.3, 5535690 Ave: 543391.3, 5535950		Max: 191% Ave: 175%		Max: 37% Ave: 41%
PM_{10}	µg/m³	24 hour	Max: 84.0 Ave: 79.3	Max: 543691.3, 5535690 Ave: 543391.3, 5535950		Max: 168% Ave: 158%		Max: 46% Ave: 51%
CO	mg/m³	1 hour 8 hour	3.67 2.10	543631.3, 5535710 543631.3, 5535710	11%	10% 14%	24% 35%	101% 100%
NO_2	µg/m³	1 hour 24 hour Annual	840 145 25.0	543631.3, 5535730 543631.3, 5535690 543631.3, 5535690	84%	210% 72% 25%	42%	101% 55% 73%
SO_2	µg/m³	1 hour 24 hour Annual	677 254 32.0	543771.3, 5535610 543731.3, 5535610 543731.3, 5535630	32%	75% 85% 53%	151% 169% 107%	104% 100% 100%

The background concentration has a considerable impact on the cumulative concentrations. When taking the project itself into account only, the frequency of exceedance for PM_{10} and $PM_{2.5}$ drop considerably. There are no exceedances for PM_{10} and the frequency for $PM_{2.5}$ reduces to 14% under maximum production rates and 13% under average production rates.

To be conservative in the Air Quality Dispersion Modelling Report, the 20 m receptor spacing was implemented within 250 m of the Portage facility boundary.

The nearest receptors to the points of impingement are residential properties and businesses surrounding the facility. There are no sensitive receptors such as schools, daycares, hospitals, community centers or public recreation areas, as defined by *Draft Guidelines for Air Dispersion Modelling in Manitoba* within 5 km of the Facility boundary. Two discrete receptors were modelled including the nearest residential property (542316.1, 5536216) and the Dakota Tipi First Nation (543812, 5532624). As shown in **Table 22** below, concentrations at the discrete receptors show no exceedances for any of the contaminants.

Table 22. Maximum Predicted Concentration for Proposed Alteration at Discrete Receptors

Contaminant			Nearest Residence		Dakota Tipi First Nation	
Pollutant	**Units**	**Averaging Period**	**Maximum Modelled Concentration (including Background)**	**% of MAL**	**Maximum Modelled Concentration (including Background)**	**% of MAL**
$PM_{2.5}$	µg/m^3	24 hour	Max: 18.7 Ave: 18.0	Max: 62% Ave: 60%	Max: 12.1 Ave: 11.9	Max: 41% Ave: 40%
PM_{10}	µg/m^3	24 hour	Max: 45.4 Ave: 44.7	Max: 91% Ave: 89%	Max: 38.8 Ave: 38.6	Max: 77% Ave: 77%
CO	mg/m^3	1 hour 8 hour	3.16 1.93	9% 13%	3.03 1.88	9% 13%
NO_2	µg/m^3	1 hour 24 hour Annual	263 46.1 10.4	66% 23% 10%	133 31.5 10.1	33% 16% 10%
SO_2	µg/m^3	1 hour 24 hour Annual	232 26.0 0.530	26% 9% <1%	95.7 11.9 0.210	11% 4% <1%

As seen in **Table 22**, concentrations at discrete receptors show no exceedances for any of the contaminants.

Although NO_2 exceeds the 1-hr average MAL of 400 µg/m^3, it is below the 1-hr average MTL of 1,000 µg/m^3. The maximum predicted concentrations also occur within 20m of the property boundary. Concentrations at the nearest discrete receptors are well below the MAL.

The predicted maximum PM_{10} concentrations exceed the 24-hr average MAL of 50 µg/m^3 due to the high background ambient concentration of 37.3 µg/m^3. This already makes up 75% of the MAL. While the maximum cumulative predicted concentration of the property boundary is above the MAL, it occurs within 20m of the property boundary. It occurs in the area of former factory grounds sold to a private grower co-op for potato storage.

The predicted maximum $PM_{2.5}$ concentrations exceed the 24-hr average MAL of 30 µg/m^3 partially due to the high background ambient concentration of 10.3 µg/m^3. This already makes up 35% of the MAL. While the maximum cumulative predicted concentration is above the MAL at the same location as the PM_{10} maximum, the concentrations at the nearest residence and the Dakota Tipi First Nation are below the threshold (i.e. 62% and 40% respectively).

It is also important to note that the proposed alteration shows a 63% reduction in the maximum predicted $PM_{2.5}$ and a 54% reduction in PM_{10} concentration due to the addition of the WESP. The WESP will not only treat emissions from the proposed batter fryer line, but the existing Fryer 2 and Dryer 1 will also be connected. This increases the amount of overall $PM_{2.5}$ and PM_{10} mitigation at the Facility.

Additional details and isopleths are provided in **Appendix A**.

Overall, no significant impacts to ambient air quality from the proposed alteration at the Portage facility are expected, especially given the reasonably isolated location of the facility and the absence of sensitive receptors. Modelled ambient concentrations of CO, SO_2, NO_2 (24-hour and annual) and odour are all expected to be below the MAAQC. For 1-hour NO_2, there are no changes predicted from the baseline. For $PM_{2.5}$ and PM_{10}, predicted concentrations are expected to be reduced by over 50% of the baseline through the installation of the wet electrostatic precipitator.

5.3.4 Noise

An increase in noise levels at the Project Site could potentially affect people and wildlife in the surrounding area. Potential effects of noise on wildlife are discussed in **Section 5.8**.

Sources of noise during construction would be typical of heavy equipment such as graders, excavators, and haulage trucks. The closest residence is located approximately 1.3 km (0.8 mi) northeast of the Project Site, north of the Trans-Canada Highway. This receptor is too distant to be disturbed by everyday noise at the Project Site due to construction.

During the operation phase, sources of noise include the operation of the Batter Application System and truck delivery of batter product.

Some additional measures to mitigate noise are:

- Vehicles and equipment will be properly maintained.
- Provide hearing protection to workers/employees as required.

The mitigation measures listed above are judged to be sufficient to mitigate any potential noise-related effects on-site. Therefore, residual effects from noise are assessed to be insignificant.

5.4 Climate

Vehicle and equipment use and movement at the Project Site will be necessary during the construction phase. Vehicle and equipment movement will be required for various activities including clearing, transportation and stockpiling of materials, excavating, and compacting within the footprint of the proposed building expansion area.

Some vehicle and equipment emissions are greenhouse gases including carbon dioxide and nitrous oxides. Greenhouse gas emissions have the potential to affect climate through climate change. Effects on climate (greenhouse gas emissions) during construction will be mitigated with the implementation of the mitigation measures identified in **Section 5.3.2**.

With the implementation of the mitigation measures identified in **Section 5.3.2**, any adverse residual effects due to exhaust emissions during construction is anticipated to be negligible.

5.4.1 Greenhouse Gas Emissions

Greenhouse gases (GHG) are expected to be emitted from the development during both facility construction and batter application system operation. Sources of GHG emissions for the proposed project during construction are related to general vehicle movement at the Project Site and exhausts from diesel construction equipment (i.e. using equipment for grading, placing materials, etc.). The number and types of construction equipment required for the proposed project are summarized in **Section 2.6.6** (**Table 9**).

With the implementation of the mitigation measures identified in **Section 5.3.2**, any adverse residual impact due to exhaust emissions during construction are anticipated to be negligible.

During batter application system operations, GHGs are associated with natural gas combustion, anaerobic digestion, and motor vehicles. Project impacts to GHG emissions related to natural gas combustion are expected to be minor. A significant portion of natural gas use is expected to be offset by the consumption of biogas (generated from anaerobic digestion) in the boiler for energy recovery. Area heating for the expanded facility is expected to be accomplished through the use of waste heat recovery from production processes.

It is anticipated that the potato truck traffic will remain the same including employee traffic however, rail traffic, dry supply unloading traffic and frozen goods transport will increase by 1, 4, and 3 additional vehicles per day respectively. The most significant increase is in the dry supply unloading traffic from 3 vehicles/day to seven vehicles/day. Even with the large increase in dry supply delivery trucks, the overall potential impact of GHG emissions is anticipated to be minor. Overall, any potential adverse residual effects due to GHG emissions are anticipated to be negligible.

5.5 Soil

5.5.1 Soil Compaction and Mixing

As a result of incidental vehicle and equipment movement, along with grading, excavations and stockpiling of material at the Project Site during construction, there is the potential to cause soil compaction and mixing of soil horizons which may reduce available air and water storage and change the soil structure. Soil compaction also has the potential to change surface drainage patterns and reduce flora growth.

To reduce potential soil compaction and mixing of soil horizons at the Project Site, the following mitigation measures will be implemented:

- Construction equipment and vehicle movements will be limited to designated roads/pathways within and around work areas.
- Construction activities during periods of extensive precipitation/runoff will be limited.
- Disturbed/exposed areas will be kept to a minimum with site restoration occurring as soon as practical where required.
- Topsoil will be stripped and stockpiled on the Project Site for use in site restoration.
- The contractor will be responsible for the appropriate repair of any areas where equipment has compacted soils with the repairs including appropriate grading and site restoration (if required).

Also, the proposed expansion area is located in an area that has been previously disturbed due to the development of the existing Portage facility.

In our opinion, the mitigation measures proposed above are sufficient to mitigate potential adverse effects due to soil compaction and mixing the construction, operation and decommissioning phases. Residual effects on soils are therefore assessed to be negligible.

5.5.2 Soil Erosion

Soil may be lost during the construction phase due to erosion from wind and precipitation/runoff. Conditions favourable for erosion have the potential to occur during clearing, grading, excavation, stockpiling, site restoration, and movement of equipment on the Project Site. Erosion of soil and material stockpiles due to wind has the potential to cause subsequent effects on air quality (dust and particulate matter).

To mitigate potential soil erosion effects, mitigation measures described in **Section 5.3.1** will be implemented. In our opinion, the mitigation measures proposed are sufficient to mitigate any adverse effects due to soil erosion during the construction, operation and decommissioning phases. Residual effects on air quality are therefore assessed to be negligible.

5.6 Surface Water and Aquatic Resources

5.6.1 Aquatic Resources

As indicated in **Section 4.3**, there are no aquatic habitats within the Project Area that support fish which includes ephemeral watercourses that typically have insufficient flow volume or flow duration to allow fish to complete one or more of their life processes.

5.6.2 Liquid Waste

Additional wastewater generated during batter application system operation, is pretreated on-site via a DAF, LRAR and Sulfide Oxidation process prior to discharge into the City's wastewater collection system for further treatment. As indicated in **Table 7** of **Section 2.6.5.1**, the impact of the expansion on each of the wastewater streams is anticipated to be minor. The description of the impact to the waste streams is provided below:

- Sanitary wastewater – There are no expected changes to the sanitary wastewater stream.
- Receiving area silt wastewater – There are no anticipated changes to the receiving area silt wastewater stream.
- White Water Wastewater – There is an anticipated increase to this waste stream from the batter process including batter mixing, equipment washing, additional surface area for washing, and equipment general water use.
- Oily Wastewater – There is an anticipated flow increase to this wastewater stream from additional equipment, however the oil loading is expected to remain the same. With improved equipment technology, there is an increase to the expected oil recovery, which would result in less load to the wastewater system. Potato solids loading from this waste stream are expected to decrease due to improved dry crumb handling techniques.
- Contaminated storm water – There is no anticipated increase to this wastewater stream.

5.6.2.1 Evaluating Wastewater Flows

Effluent flows to the Poplar Bluff Lift station are a combination of sanitary, receiving area silt wastewater stream, and LRAR/Sulphide Oxidation tank effluent. Evaluation of expected impacts to facility wastewater flow was based on a 10% increase to historical average daily base flows due to additional water using equipment associated with the operation of the batter application system. When not operating the batter application system wastewater flows are expected to remain similar to current daily flows.

Anticipated increases to wastewater flows by waste stream are summarized in **Table 23** below.

Table 23. Anticipated Wastewater Flow Modifications (average day)

Wastewater Stream	Current m^3/d (gallon/d)	Proposed m^3/d (gallon/d)
Sanitary Wastewater	50 (13,200)	50 (13,200)
Receiving Area Silt Wastewater Stream	500 (132,000)	500 (132,000)
White Water	3,200 (845,000)	3,400 (898,000)
Oily Wastewater	200 (52,800)	400 (106,000)
Storm Water	Varies	Varies
Flow to DAF	200 (52,800)	400 (106,000)
Flow to LRAR and Sulfide Oxidation	3,400 (106,000)	3,800 (211,000)
Flow to City Collection System	3,950 (1.0 million)	4,350 (1.2 million)

5.6.2.2 Evaluating Wastewater Loading

Maximum Day COD

The LRAR is designed for a minimum 87% COD removal. Historically the LRAR has achieved an average of 96% COD removal efficiency. To conservatively estimate the impact of additional COD loading on facility wastewater effluent a 92% COD removal efficiency was used for calculations.

An estimate of the impact to annual daily average and maximum day COD loads was developed based on historical COD loading monitoring data (prior to April 2013) combined with a conservative estimate of increased COD loading attributable to the operation of the batter application system. COD loads to the LRAR are expected to marginally increase due to a small amount of batter products entering the wastewater stream. For the purposes of this evaluation 1% of total daily batter consumed in the facility is assumed to be discharged to the LRAR. This additional COD load was added to the historical peak observed value and the 92% COD removal efficiency was applied to determine LRAR peak COD loading contributions.

The annual daily average and maximum daily COD load from the LRAR value was added to observed COD loading from the silt system and sanitary waste streams to determine a maximum day COD load for the facility. This data is presented in **Table 24** below.

Maximum Day TSS

Historical monitoring data indicates the LRAR achieves an average of 97% TSS removal efficiency and 93% TSS removal efficiency during peak loading days. To calculate future removal efficiency post batter application system, a 95% TSS removal efficiency was used for average loading days and 92% TSS removal efficiency was used to calculate maximum day loads.

Impacts to the average daily loading to the LRAR associated with operating the batter application system was based on Simplot historical monitoring data up to April 1, 2013 plus a 10% increase to TSS total daily average load. A 10% increase in TSS average daily loading to the LRAR is consistent with monitoring data reported by other Simplot facilities operating batter application systems.

Impacts to maximum daily loading to the LRAR associated with operating the batter application system was based on Simplot historical monitoring data up to April 1, 2013 plus a 1% increase to TSS total daily maximum load. A 1% increase in TSS maximum daily loading to the LRAR is consistent with monitoring data reported by other Simplot facilities operating batter application systems.

The annual daily average and maximum daily TSS load from the LRAR was then added to observed TSS loading from the silt system and sanitary waste streams to determine the annual daily average and maximum day TSS load for the facility. This data is presented in **Table 24** below.

Based on AECOM's evaluation, there currently exists a minor potential for TSS values to exceed the maximum daily limit as specified within the existing Environment Act license. While no significant increase in TSS loading is anticipated during maximum day conditions, the potential to exceed the maximum daily limit persists after installing the batter application system.

Historical wastewater monitoring data (January 2009-April 1, 2013) indicates the facility has exceeded the maximum daily limit for TSS 13 days out of 1135 daily records (1.1% occurrence). Upon closer review of these events, 12 of 13 daily maximum exceedances have been attributed to excess solids originating from the receiving area silt wastewater stream. Following the installation of the BFP in 2012, the frequency of exceeding the maximum TSS load was reduced significantly. Disregarding the 12 maximum day TSS exceedances related to the silt system wastewater only 1 day in 1135 daily records (i.e. 0.1% occurrence) can be attributable to existing wastewater treatment systems.

TP

Pre-treatment systems at Simplot are not designed to remove phosphorus. Data from the City of Portage la Prairie (2009-April 1, 2013) was used to determine average and maximum values received at the Poplar Bluff Lift Station. A conservative estimate of an additional 2% loading was added to historical data based on wastewater monitoring data reported by other Simplot facilities operating batter application systems.

TN

Pre-treatment systems at Simplot are not designed to remove nitrogen. Data from the City of Portage la Prairie (2009-April 1, 2013) was used to find average and maximum values received at the Poplar Bluff Lift Station. A conservative estimate of an additional 2% loading was added to historical data based on wastewater monitoring data reported by other Simplot facilities operating batter application systems.

Anticipated increases to wastewater loading is summarized in Error! Reference source not found. below.

Table 24. Expected Increase to Wastewater Loading During Batter Application Run Days

Influent Parameter	Increased Loading to Simplot Wastewater Treatment Facility due to Expansion
TSS	Avg Day: Increase by 10% Max Day: increase by 1%
COD	Avg Day: increase by 230 kg/d Maximum Day: increase by 350 kg/d
TP	2%
TN	2%

As shown in **Table 25**, the average annual expected values for each parameter are all projected to be within the licence conditions.

Table 25. Wastewater Annual Average Projections

Annual Average			
Parameter	**Current**	**Expected Future**	**Licence Parameter**
Flow m^3/d (gallon/d)	3,950 (1.0 million)	4,400 (1.2 million)	5,400 (1.4 million)
COD kg/d (lbs/d)	1,300 (2,866)	2,500 (5,512)	3,861 (8,512)
BOD	300 (662)	400 (882)	1,588 (3500)
TSS kg/d (lbs/d)	1,000 (2,205)	1,100 (2,425)	1,349 (2,974)
TKN kg/d (lbs/d)	600 (1,323)	600 (1,323)	889 (1,960)
TP kg/d (lbs/d)	200 (441)	200 (441)	246 (542)

Maximum daily limits are provided in the following table.

Table 26. Wastewater Maximum Day Projections

Maximum Day			
Parameter	**Current**	**Expected Future**	**Licence Parameter**
Flow m^3/d (gallon/d)	6,800 (1.8 million)	6,800 (1.8 million)	6,900 (1.82 million)
COD kg/d (lbs/d)	6,000 (13,228)	7,300 (16,094)	7,544 (16,632)
BOD kg/d (lbs/d)	1,400 (3,086)	2,200 (4,850)	3,478 (7,668)
TSS kg/d (lbs/d)	4,500 (9,921)	4,500 (9,921)	3,618 (7,976)
TKN kg/d (lbs/d)	1,200 (2,646)	1,300 (2,866)	1,326 (2,923)
TP kg/d (lbs/d)	300 (661)	300 (661)	338 (745)

In summary once the batter application system is operational there are not expected to be any concerns related to exceeding annual daily average limits and maximum daily limits for total flow, COD, BOD, TKN or TP as specified in Simplot's existing EAL #2518 or the Industrial Services Agreement with the City and Rural Municipality of Portage la Prairie.

With regards to the annual daily average limit and maximum daily limit for TSS, while recent episodes of digester upset conditions have impacted wastewater performance, implementation of action plans to correct and control upset conditions are proving increasingly effective. Simplot has worked diligently to maintain operational control of industrial wastewater treatment processes and demonstrated a commitment to promptly address shortcomings in wastewater treatment processes. Therefore, in our opinion the proposed alterations will not result in any significant changes to the effluent and therefore do not require any amendments to the existing license.

5.6.3 Solid Waste

There are no anticipated changes in the treatment or disposal practices for waste soils and biosolids as a result of the proposed project. It is expected that the quantity of biosolids generated by the development may increase slightly due to higher strength wastewater coming from the potato processing plant. Chemical oxygen demand (COD) loading to the LRAR is anticipated to increase by as much as 5-10% on days when batter products are produced resulting in increased biomass growth. Higher volumes of biosolids produced during digestion will be stored in the anaerobic digester. Inventory levels of accumulated biosolids are regularly monitored and removed through the facility's land application program on an as needed basis (**Section 5.6.3**).

5.7 Energy Use

Table 27 shows a summary of electrical, natural gas and biogas before and after the proposed alternations.

Table 27. Energy Usage Summary

Equipment/Process	Existing	After Alterations	% Increase
Electrical Demand (kVA)	8,300	9,900	19.3%
Electrical Consumption (kWh/year)	41,600,000	49,600,000	19.3%
Natural Gas Consumption (CF/year)	515,000,000	577,000,000	14.6%
Biogas Consumption (CF/year)	95,300,000	104,830,000	10%

Based on the percent increases noted above (which are based on conservative numbers), it is our opinion that the overall increase in energy use is minor.

5.8 Groundwater

Simplot does not intend to construct supply wells on the property or to withdraw or utilize any encountered groundwater from the area for this Project. All water to be utilized at the processing plant will be supplied by an existing westerly extension from the City of Portage la Prairie water supply system.

5.9 Protected and Other Flora Species

As described in **Section 4.6,** there are no protected vascular plant species located at the Project Site however they may occur in the Project Region. Due to the distance to these potential species from the Project Site (**Table 18**), it is anticipated that no effects on protected vascular plant species are anticipated as a result of the proposed project.

Clearing and dust deposition are potential sources of effects on flora. To minimize the amount of disturbance to vegetation at the Project Site, the disturbed/exposed areas will be kept to a minimum with site restoration occurring as soon as practical where required.

As the Project Site does not contain native vegetation and consists primarily of manicured lawn or agricultural row crops, it is anticipated that no effects on native vegetation is anticipated as a result of the proposed project. Therefore, in our opinion the residual effects on flora are assessed to be negligible.

5.10 Protected and Other Fauna Species

Clearing (loss of habitat) and noise (disturbance) are potential sources of effects on fauna.

As indicated in **Section 4.6**, there is the potential that the Short-eared Owl and Chimney Swift may be found in the Portage la Prairie area, while the Least Bittern, Northern Leopard Frog, and Red-headed Woodpecker may be found within the Project Region. The Chimney Swift, Least Bittern, and Red-headed Woodpecker are protected and are included in Article I of the *Migratory Birds Convention Act* as long distance migrants.

However, due to the lack of native vegetation at the Project Site and that the proposed construction area mainly consists of manicured lawns, it is unlikely this area provides suitable habitat for the identified SARA species in **Table** 18 of **Section 4.6**. The area of the proposed project is also located next to a main access road for Simplot. For these reasons, in our opinion, the proposed project is not expected to have significant effects on any protected or other species.

5.11 Protected Areas

The construction and operation of the proposed project is not anticipated to affect nearby protected areas. Based on the distance to the Project Site as indicated in **Section 4.5**, no effects on protected areas are anticipated from the construction and operation of the proposed project.

5.12 Heritage Resources

As indicated in **Section 4.7**, as part of the 2001 assessment, Quaternary Consultants Ltd. conducted a field investigation and no archaeological sites were recorded on the Project Site. The nearest recorded site was approximately 1.5 km north of the western edge of the development site, which is not within the zone of physical disturbance for the proposed upgrades. Therefore, heritage resources are not expected to be impacted by the upgrades.

5.13 Aesthetics

The aesthetics of the Project Site are not anticipated to significantly change during the construction phase. There will be one new building addition (Batter Application System building) that will be visually similar to the existing building.

To maintain a clean, aesthetically pleasing Project Site, the following mitigation measures will be implemented:

- The Project Site will be inspected for loose waste and debris in order to maintain a clean Project Site on a regular basis.
- Waste and debris will be stored in bins and removed on a regular basis from the Project Site.

With the implementation of the above mitigation measures, the overall impact on aesthetics as a result of the proposed project is assessed to be insignificant.

5.14 Health and Safety

During construction and operation, there is potential for negative effects to worker and Project Site employee safety. Exposure to fuels, moving vehicles, construction equipment and pinch points could all negatively impact worker safety. In Manitoba, worker protection is provided through legislated standards, procedures and training under the *Workplace Safety and Health Act*. All contractors will be subject to site specific environmental, health and safety orientation for the construction phase of the proposed project. Existing environmental, health and safety programs at the facility will continue to be maintained and updated to accommodate all operational activities at the Project Site. A copy of Simplot's health and safety plans can be made available upon request.

The health and safety program will generally include the following;

- All construction will be carried out in accordance with the Workplace Safety and Health Act to minimize health and safety effects.
- Contractors will adhere to the requirements of applicable health and safety legislation and the site specific safety plan developed by the prime contractor or contractor as appropriate.
- All workers will confirm they have received appropriate training for activities being undertaken.
- All workers will wear appropriate PPE at all times, including hearing protection as required.
- Project Site employees to be kept aware of safety requirements and all on-site works to ensure worker safety.

With the above provisions in place, we do not expect health and safety as a result of the proposed upgrade, to be of any concern.

5.15 Accidents and Malfunctions

To prevent accidents and malfunctions, all phases of the proposed project will be conducted in accordance with applicable regulatory requirements and Simplot Canada's Crisis Management Plan. The following sections provide additional details on precautionary measures that are proposed to minimize the risk of occurrence for accidents and malfunctions.

5.15.1 Spills

During construction and operation, there is potential for environmental effects due to fuel and chemical spills. Accidents (including transportation accidents) could result in the accidental release of hazardous materials and/or equipment fluids. A number of potential environmental concerns are also associated with the accidental release of chemicals and fuels resulting from improper storage and handling procedures. These include effects on soil, vegetation and groundwater quality, degradation of air quality and a potential threat to human health and safety. Activities that may cause a spill are anticipated to occur rarely over the short term during the construction phase of the proposed project. Spills are expected to be predominantly contained to the Project Site. The magnitude of the spill effects are anticipated to range from negligible to moderate depending on the severity of a spill.

To prevent spills from occurring during project activities, the following procedures will be employed:

- All potentially hazardous products (if required on-site) will be stored in a pre-designated, safe, and secure product storage area(s) in accordance with applicable legislation.
- Storage and disposal of liquid wastes and filters from equipment maintenance, and any residual material from spill clean-up will be contained in an environmentally safe manner and in accordance with any existing regulations.
- Storage sites will be inspected periodically for compliance with the requirements.
- Refuelling of heavy equipment will adhere to proper procedures such as using a designated area defined by Simplot, with spill kits located at the refueling area, with preference to refuel off-site.
- On-site staff are trained in how to deal with spills, including knowledge of how to properly deploy site spill kit materials.
- Appropriate type and size of spill kits are available on-site.
- Service and minor repairs of equipment performed on-site will be performed by trained personnel.
- Any used oils or other hazardous liquids will be collected and disposed of according to provincial requirements.
- Vehicles and equipment will be maintained to minimize leaks. Regular inspections of hydraulic and fuel systems on machinery will be completed on a routine basis, when detected, leaks will be repaired immediately.

Adherence to standard environmental management practices will minimize the risks of accidental spills and adverse effects. This includes regular equipment inspection and maintenance to minimize the risk of fuel spills. In the event of an accidental spill, a regulatory report will be made to Environment Canada and Manitoba Conservation and Water Stewardship. Following a spill, measures will be taken immediately with a spill kit or suitable alternative to prevent migration of the spilled material. Recovery measures will be implemented as necessary in consultation with the appropriate provincial authorities. Following initial response, a remediation program will be undertaken if necessary with contaminated material appropriately managed (in accordance with federal and provincial regulations).

With the implementation of the above mitigation measures as necessary and assuming the implementation of safe work practices, the risk of spills is considered to be appropriately mitigated.

5.15.2 Fire/Explosions

During construction and operation, there exists the potential for fires at the Project Site involving mechanical equipment and fuels. Effects related to fires include, but are not limited to, harm to on-site personnel, equipment, and the potential release of contaminants and hazardous materials.

All precautions necessary will be taken to prevent fire hazards at the Project Site; these include, but are not limited to:

- All flammable waste will be removed on a regular basis and disposed of at an appropriate disposal site.
- Appropriate fire extinguisher(s) are be available on the Project Site. Such equipment will comply with and be maintained to, the manufacturers' standards.
- All on-site fire prevention/response equipment is checked on a routine basis, in accordance with local fire safety regulations, to ensure the equipment is in proper working order at all times.
- Greasy or oily rags or materials subject to spontaneous combustion are deposited and stored in appropriate receptacles. This material will be removed from the Project Site on a regular basis and be disposed of at an appropriate waste disposal facility.

With these mitigation measures employed and assuming the implementation of typical safe work practices, the risk of fires and explosions is considered to be appropriately mitigated.

6. Public Engagement

Simplot conducted five meetings either in person or over the phone with various stakeholders including commercial, construction, and private land owners located near the proposed project site. These meetings took place on May 20, 2015. Simplot provided an overview of the proposed project and answered any questions individuals had regarding the proposed project.

Overall, there were no concerns regarding the proposed project from the participants. There were also no follow-up questions/commitments required or explicit requests for information-sharing. Three questions were noted during these meetings regarding the size of the building expansion, managing dust during construction, and if the road *(i.e., the one north of the Simplot plant)* will be moved. No other questions were noted. A copy of the presented material is provided in **Appendix B**.

Simplot also met with technical staff from the City of Portage la Prairie Public Works Department on June 16th to review the proposed project and impacts on water consumption and wastewater impacts. City staff requested a summary of the project details presented in this report to discuss with City of Portage la Prairie City Council members at an upcoming council meeting.

7. Conclusions

The results of the effects assessment can be summarized as follows:

Topography

Construction of the proposed Batter Application System building addition will have minimal changes to the topography. It appears that the area of the proposed additions is relatively level, therefore it is anticipated that minimal clearing and grading will be required.

Air and Noise

With respect to exhaust emissions, it is anticipated that a maximum of 20 construction vehicles will access public roads in the vicinity of Simplot which will be temporary during construction. With the implementation of measures such as maintaining vehicles and equipment in proper working order and vehicle idling kept to a minimum, the effects of exhaust emissions is assessed to be negligible.

Overall, there are not expected to be any significant impacts to ambient air quality from the proposed alteration to the Facility, especially given the location of the Portage facility and absence of sensitive receptors. Modelled ambient concentrations of CO, SO2, NOx (24-hour and annual) and odour are all expected to be below the MAAQC. For 1-hour NOx, there are no changes predicted from the baseline. For PM2.5 and PM10, predicted concentrations are expected to be reduced by over 50% of the baseline.

With respect to noise during construction and operation, the noise levels at the Project Site are not expected to be high enough to cause significant disturbance in the Project Area. With the implementation of measures such as construction hours being limited as required to normal working hours, providing hearing protection to workers/employees as required and properly maintaining vehicles and equipment are expected to mitigate potential adverse effects. Therefore, the effect of noise is assessed to be insignificant.

Soil

With respect to soil compaction, mixing, and erosion during construction, the implementation of mitigation measures identified in this assessment is anticipated to mitigate any potential soil compaction/mixing effects. Therefore, it is anticipated that the residual effect on soil is assessed to be negligible.

Water and Wastewater

In our opinion, the proposed alterations will not result in significant changes to fresh water consumption at the facility. Changes to wastewater flows and loadings will also be minor and therefore do not require any amendments to the existing licence.

There are not expected to be any concerns related to exceeding annual daily average limits and maximum daily limits for total flow, COD, BOD, TKN or TP as specified in Simplot's existing EAL #2518 or the Industrial Services Agreement with the City and Rural Municipality of Portage la Prairie. With regards to TSS loading a review of wastewater monitoring data indicates the facility may periodically exceed licence limits (1 occurrence in 1135 data points reviewed – January 2009 to April 2013).

In the event a maximum day limit is exceeded, Simplot's EAL #2518 triggers regulatory reporting and corrective action to occur. Simplot has worked diligently to maintain operational control of industrial wastewater treatment processes, readily notified officials during excursions from wastewater discharge limits and demonstrated a commitment to promptly address shortcomings in wastewater treatment processes. Therefore, in our opinion the proposed alterations will not result in any significant changes to the effluent and subsequently do not require any amendments to the existing license.

Groundwater

All water to be utilized at the processing plant will be supplied by the existing water utility supply line from the City of Portage la Prairie water supply system. As no supply wells will be constructed on the property or to withdraw or utilize any encountered groundwater form the area for this project, impacts groundwater from the development is assessed to be insignificant.

Protected and Other Flora Species

As the Project Site does not contain native vegetation and consists primarily of manicured lawn and agricultural row crops, the residual effects on flora are assessed to be negligible.

Protected and Other Fauna Species

No habitat of specific or critical value to wildlife is anticipated to be at the Project Site based on site conditions and limited field observations. Due to the lack of native vegetation at the Project Site and that the proposed construction area mainly consists of manicured lawns and agricultural row crops, it is unlikely this area will provide suitable habitat for the identified SARA species in **Table 18** of **Section 4.6**. For these reasons, the residual effect on fauna is assessed to be insignificant.

Protected Areas

With respect to protected areas, the closest protected area is located approximately 4 km (2.5 mi) from the Project Site therefore, residual effects on protected areas are assessed to be insignificant.

Heritage Resources

As indicated in **Section 4.7**, as part of the 2001 assessment, Quaternary Consultants Ltd. conducted a field investigation and no archaeological sites were recorded on the Project Site. The nearest recorded site was approximately 1.5 km north of the western edge of the development site. As such, no historic resources are anticipated to be encountered during construction.

Aesthetics

During construction, good housekeeping practices will be implemented at the Project Site including inspecting the Project Site on a regular basis for loose waste and debris and storing waste and debris in proper bins prior to removal from the site. Therefore, the overall impact on aesthetics as a result of the proposed project is assessed to be reversible and insignificant.

Conclusions Summary

The addition of a batter application system at Simplot Canada's Portage la Prairie facility is consistent and complimentary to the existing potato processing plant and will not result in a significant departure from activities performed at the location over the past 12 years. Considering the implementation of the proposed mitigation measures, design features, standard operating procedures, current industrial agreements, existing environmental licence conditions and the social and ecological context of each environmental component, the cumulative residual environmental effects of the proposed expansion are expected to negligible in magnitude. The measures described to mitigate the risk of occurrence of accidents and malfunctions are deemed to be appropriate in mitigating such risks. Therefore, it is our opinion that based on the available information and documented assumptions, the overall potential adverse effects of the proposed project will be minor and insignificant.

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