Pembina NGL Corporation

Description of
Redwater Facility Rail Yard Expansion Project
Redwater, Alberta

Prepared by:
Pembina NGL Corporation

Prepared for:
Canadian Environmental Assessment Agency

July 2016

TABLE OF CONTENTS

List of Tables

List of Figures

Acronyms

AER	Alberta Energy Regulator
AEP	Alberta Environment and Parks
CEAA 2012	*Canadian Environmental Assessment Act* 2012
CN	Canadian National
EPEA	*Environmental Protection Enhancement Act*
GHG	Greenhouse Gas
LPG	Liquid Petroleum Gas
NCIA	Northeast Capital Industrial Association
NGL	Natural Gas Liquids
NSR	North Saskatchewan River
NWR	NorthWest Refinery
RFS	Redwater Fractionation and Storage
RNMP	Regional Noise Management Plan
UCO	Unconverted oil

1.0 GENERAL INFORMATION AND CONTACTS

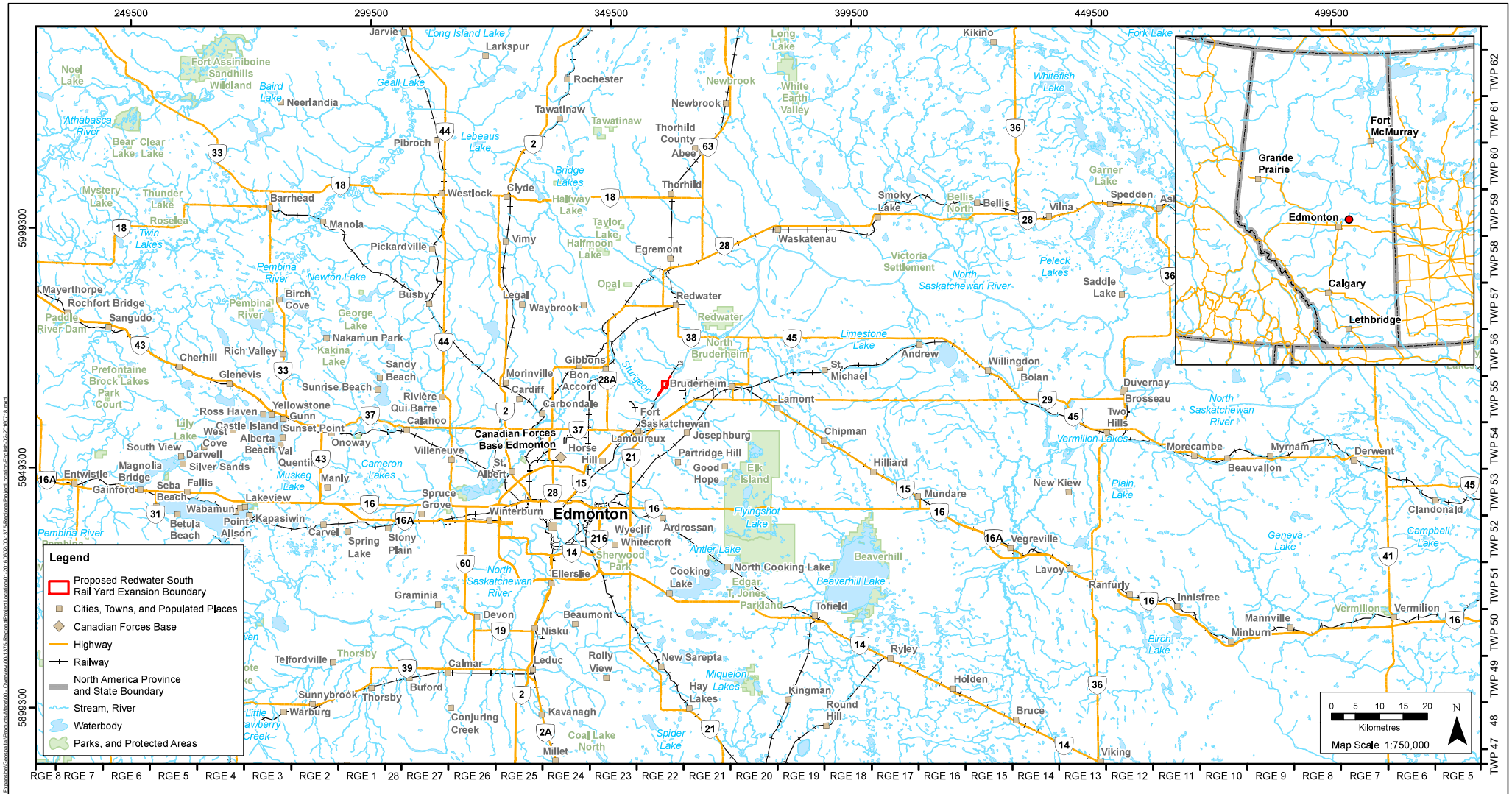
1.1 Name, Nature and Location of the Project

Pembina NGL Corporation (Pembina), a wholly-owned subsidiary of Pembina Pipeline Corporation, currently operates the Redwater Fractionation and Storage (RFS) Facility located near Redwater, Alberta, in Section 1, Township 56, Range 22, West of the Fourth Meridian (1-56-22 W4M) within Sturgeon County (Figure 1). RFS is approved in Alberta under the *Environmental Protection and Enhancement Act* (EPEA) Approval No. 9995-02-00 (as amended).

Pembina is proposing to expand an existing rail yard at RFS (the Project; Figure 1), which will include some new rail, and the addition of three (3) stormwater ponds. The majority of the Project will be sited on lands previously zoned for heavy industrial use while a small portion is currently zoned as Agricultural Heartland. The purpose of the Project is to facilitate the existing RFS operations by providing additional rail capacity. The Project will allow for increased efficiency in handling of rail car volumes as well as being able to safely operate within the constraints of new federal railway regulations.

The Project will involve the construction of approximately 36 km of new track and the realignment (for the use of this Project defined as *changes in the direction or changes in the track's elevation to match with the new yard configuration*) of approximately 9 km of existing track. As part of Project construction, approximately 6 km of existing track will be salvaged and subsequently re-used for new track alignment. The Project will be constructed on previously disturbed freehold land, with the majority of the rail constructed adjacent to existing tracks. Figure 2 provides the site plan for the Project. Figures 3 through 3.9 provide the plot plan for the Project.

Three stormwater collection ponds will be constructed as part of the Project to capture on-site stormwater (Stormwater Ponds 1-3 in Figures 2, 3 and 3.3). These ponds will be connected to a new Sturgeon County outfall structure, which will be discharging to the North Saskatchewan River (NSR). The outfall structure will be constructed by Pembina on behalf of Sturgeon County as part of a regional stormwater management program developed by Sturgeon County. Sturgeon County will own, operate and maintain the stormwater outfall, however, due to the Projects' ability to impact the outfall system, Pembina has been actively working with the Sturgeon County on design and regulatory aspects, including the Projects' relationship to the outfall system. Further detail of the outfall system and the Projects relationship are outlined in sections 1.4, 2.3.1, 2.4.2 and 5.1.6.



Pembina Redwater South Rail Yard Expansion
Township 56 and 55-20 W4M
Regional Project Location

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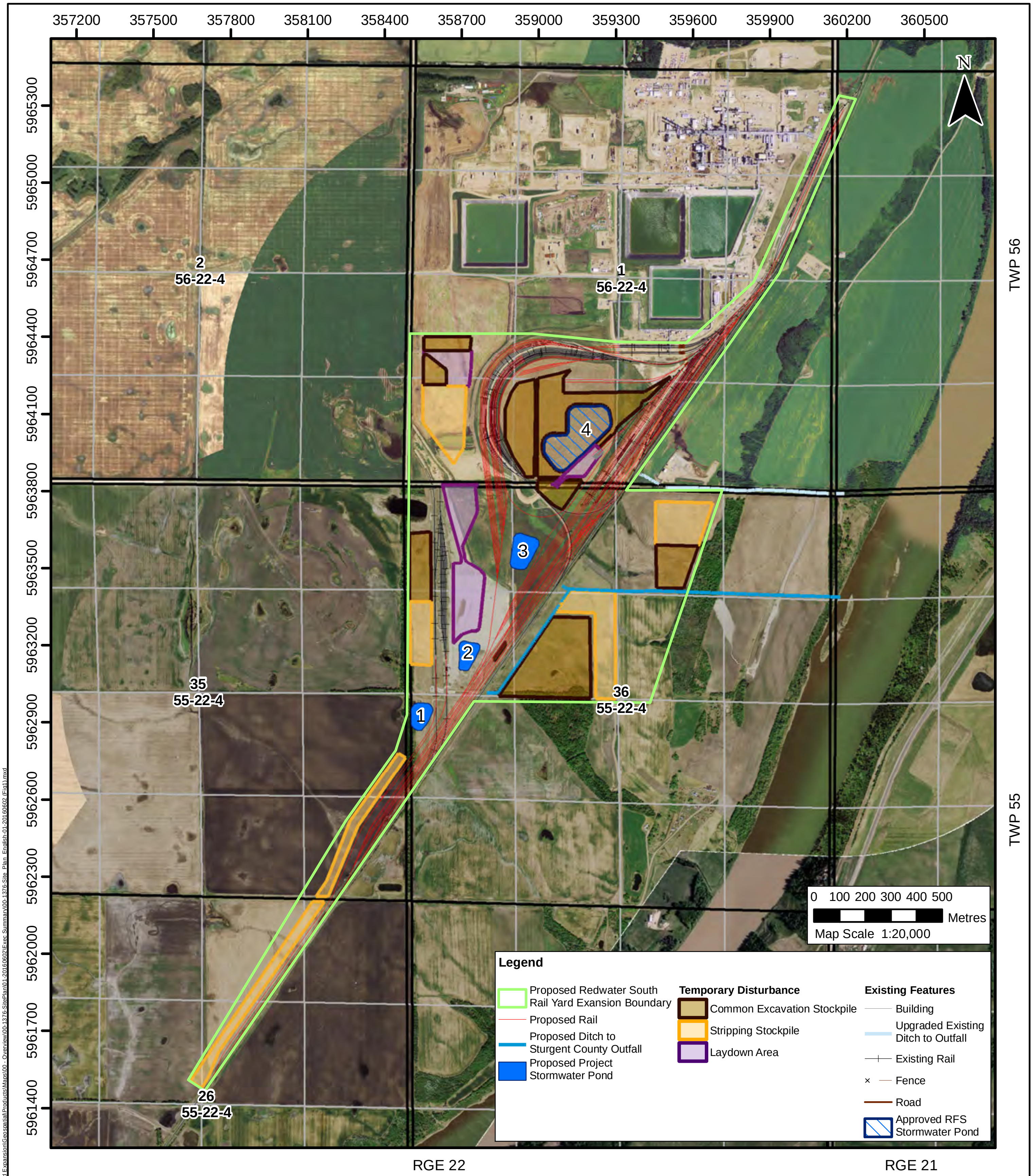
Figure Number	1	IEL Project Number	16415

Revision	Date	Created by
00	20 MAY 2016	IY
01	02 JUN 2016	IY
02	18 JUL 2016	MEG

Source: CanVec, Alberta Parks, and GeoBase

Projection: NAD 1983 UTM Zone 12N
When printed on 11" X 17" sheets, scale is 1:750,000



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Pembina Redwater South Rail Yard Expansion
Township 56 and 55-20 W4M
Site Plan

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Projection: NAD 1983 UTM Zone 12N
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Figure Number	2	IEL Project Number	16415

Imagery: Valtus imagery (2013) and ESRI Aerial Basemap

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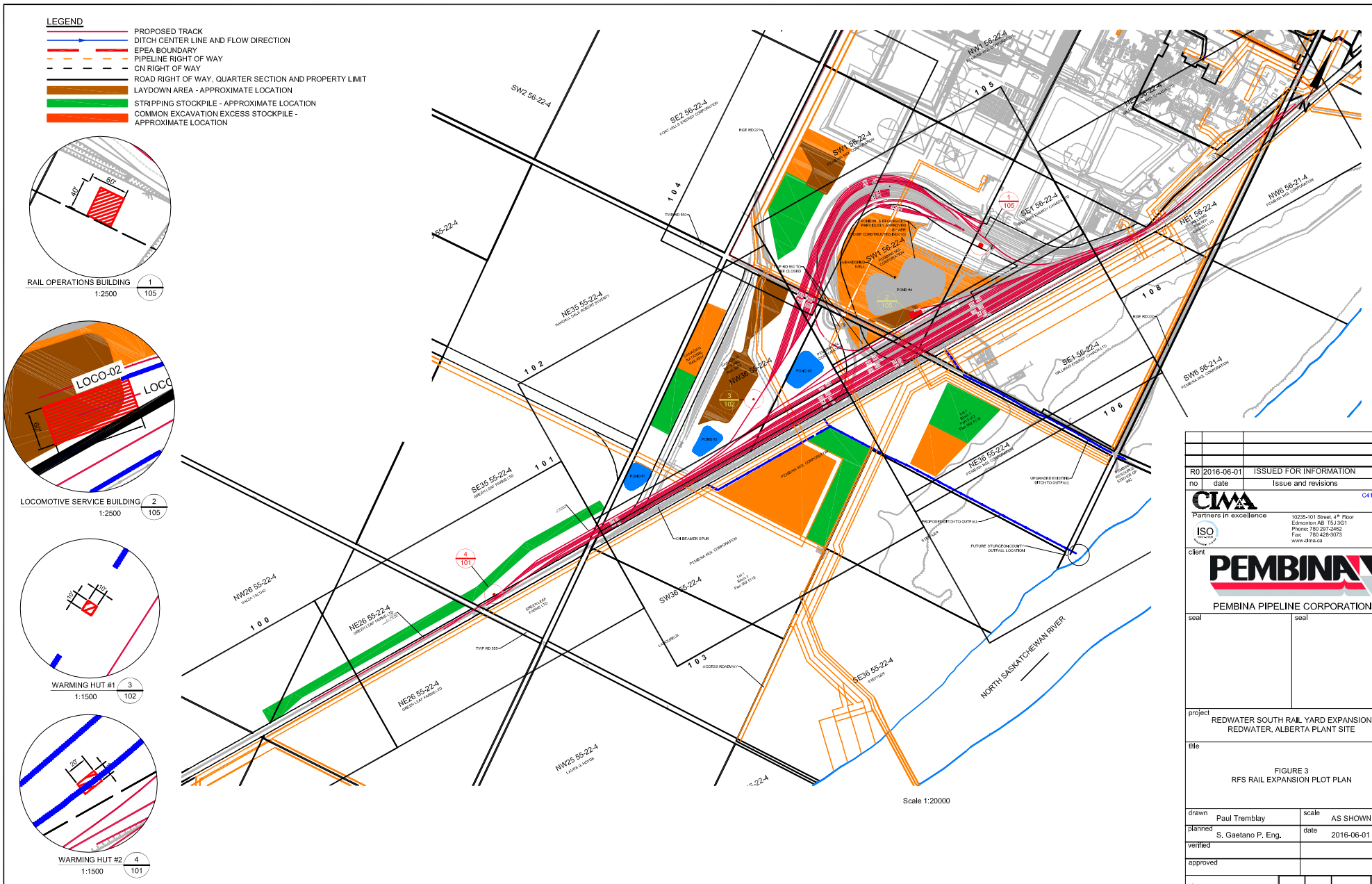
01	2 JUN 2016	IY
02	18 JUL 2016	IY



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project
REDWATER SOUTH RAIL YARD EXPANSION
REDWATER, ALBERTA PLANT SITE

title
FIGURE 3
RFS RAIL EXPANSION PLOT PLAN

drawn	Paul Tremblay	scale	AS SHOWN
planned	S. Gaetano P. Eng.	date	2016-06-01
verified			
approved			

project no.	phase	dep.	sheet	rev.
C41002B	PF	PT	001	R0

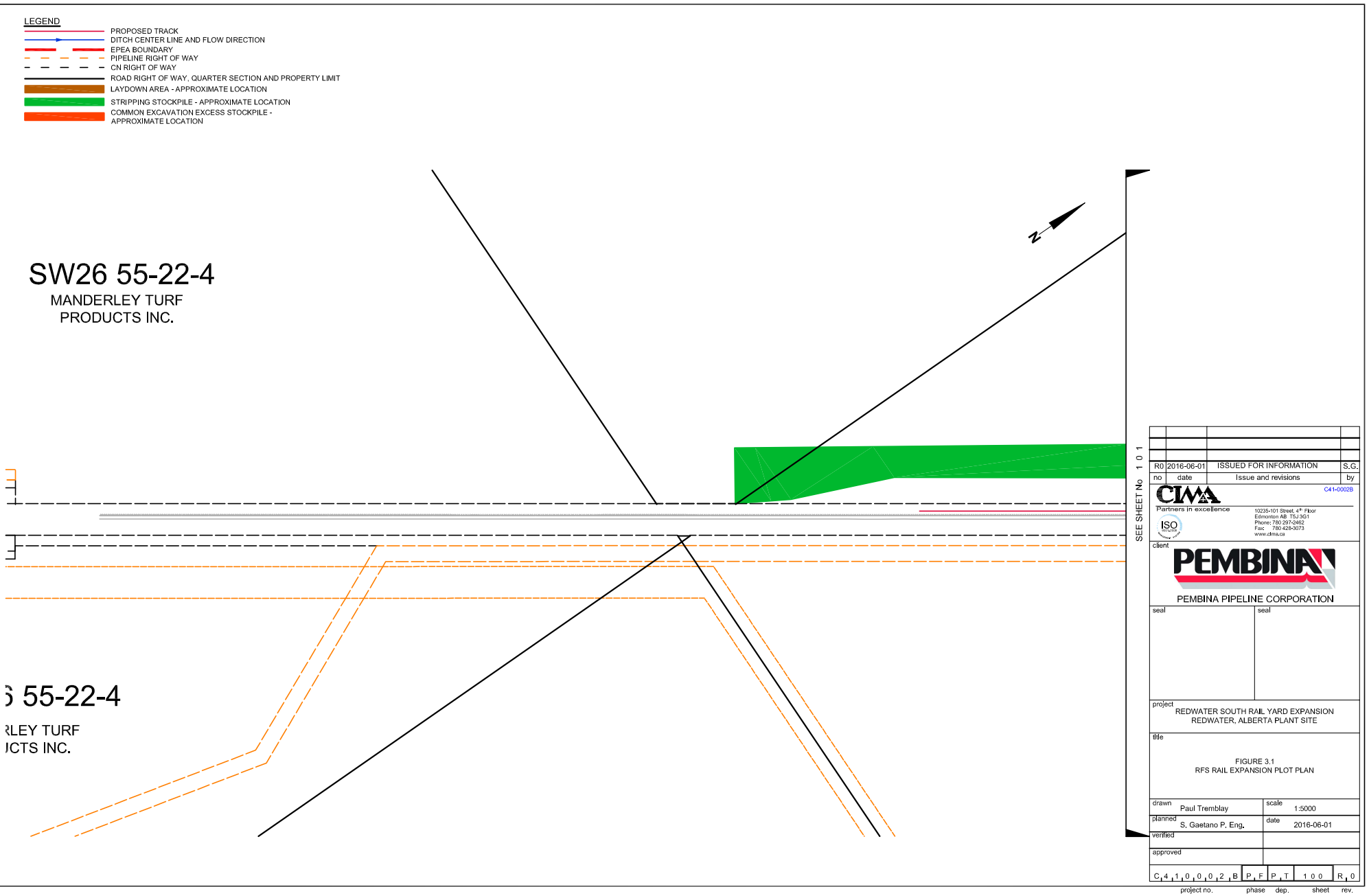

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FIGURE 3.1
RFS RAIL EXPANSION PLOT PLAN

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planned	S. Gaetano P. Eng.	date	2016-06-01
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project no.	phase	dep.	sheet	rev.
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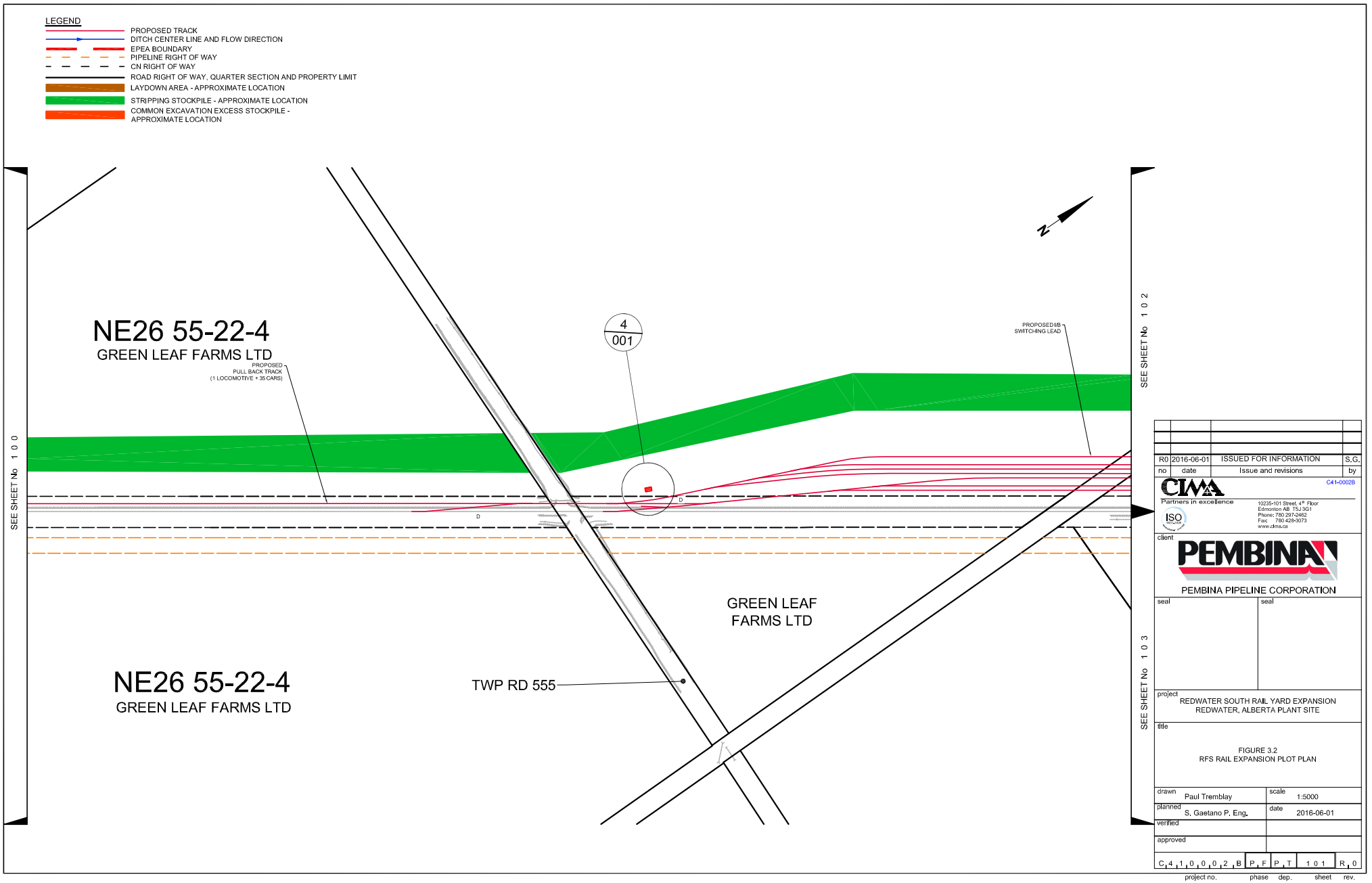

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FIGURE 3.2
RFS RAIL EXPANSION PLOT PLAN

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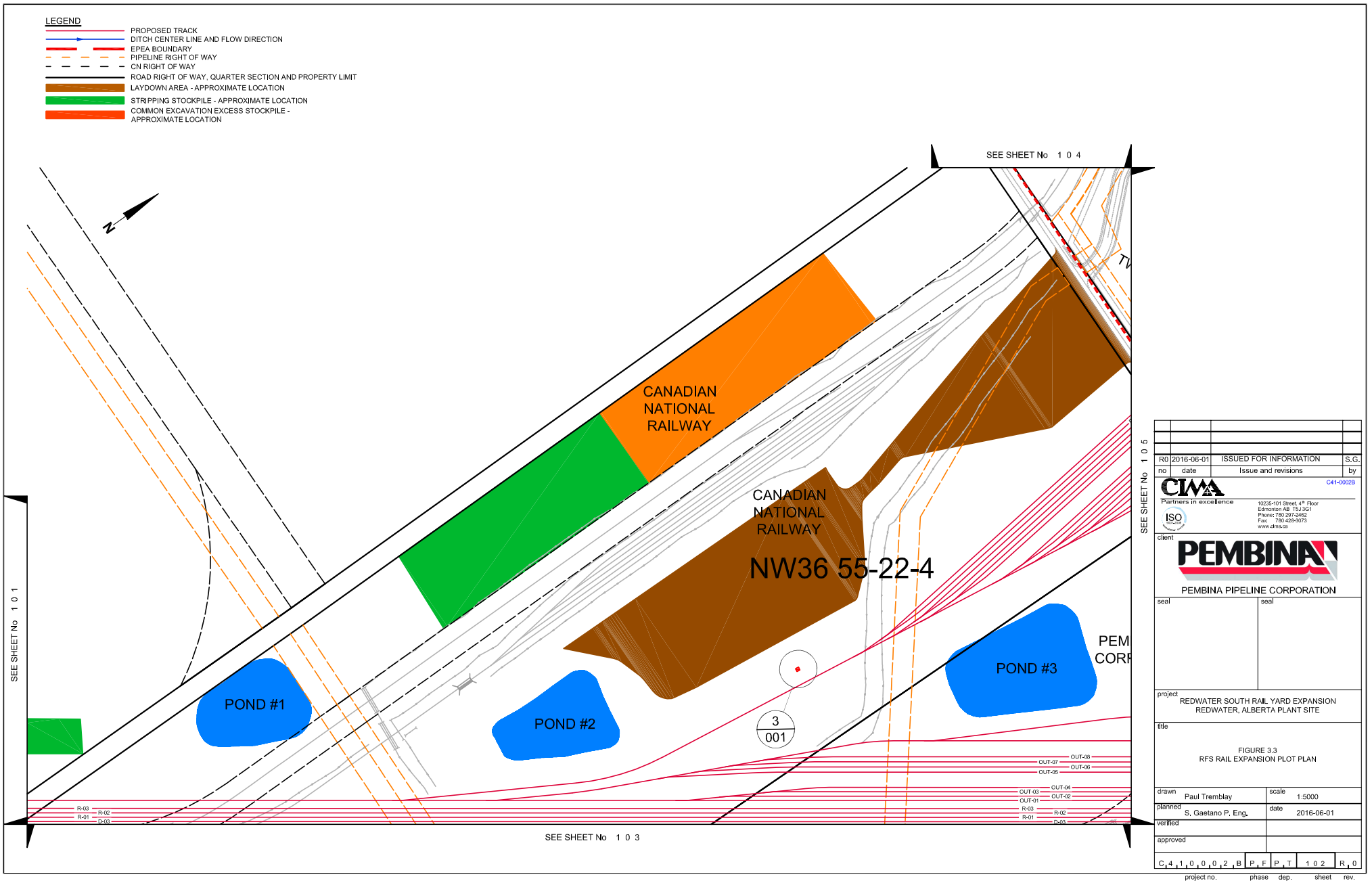

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FIGURE 3.3
RFS RAIL EXPANSION PLOT PLAN

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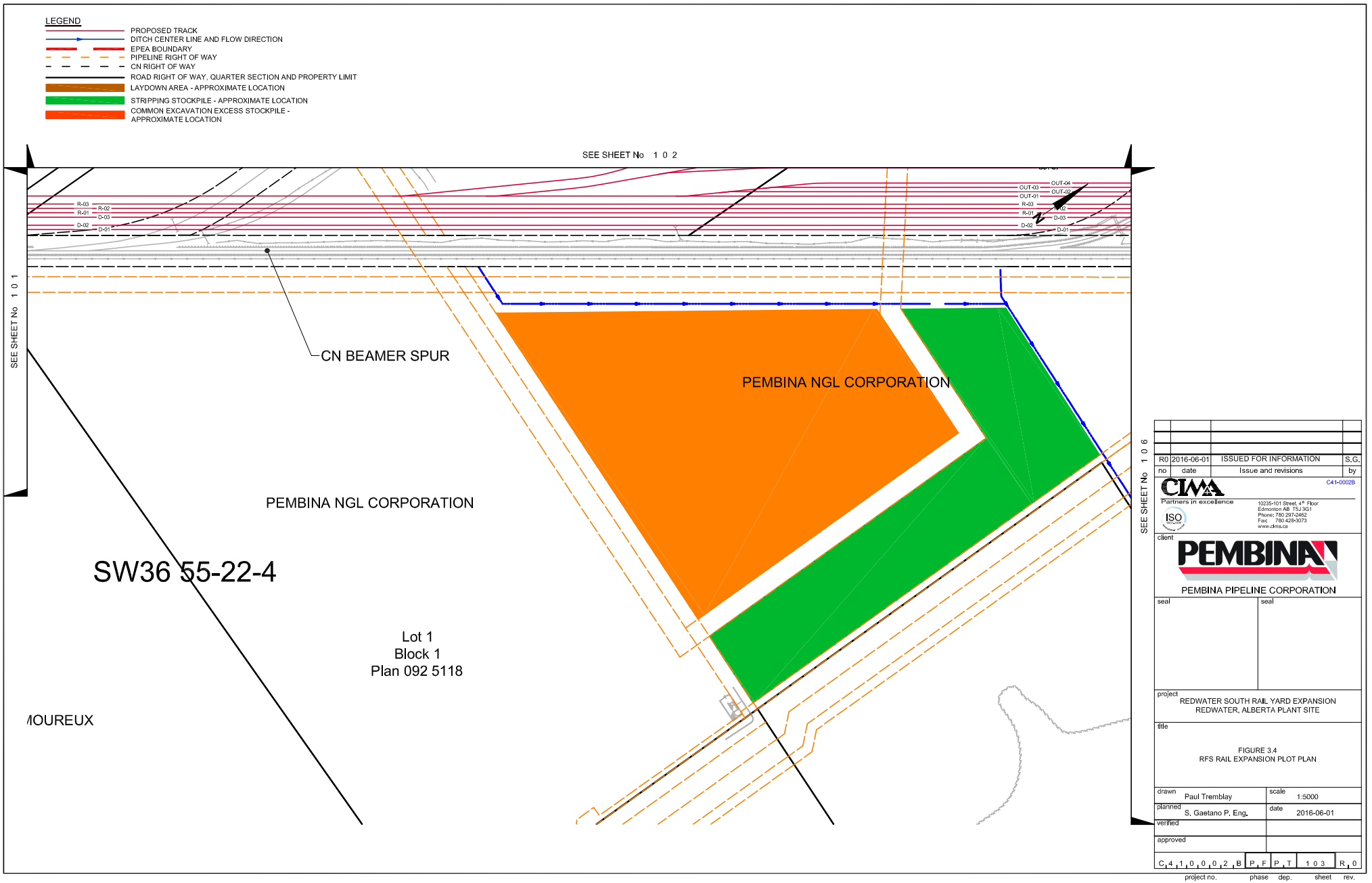

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FIGURE 3.4
RFS RAIL EXPANSION PLOT PLAN

drawn	Paul Tremblay	scale	1:5000
planned	S. Gaetano P. Eng.	date	2016-06-01
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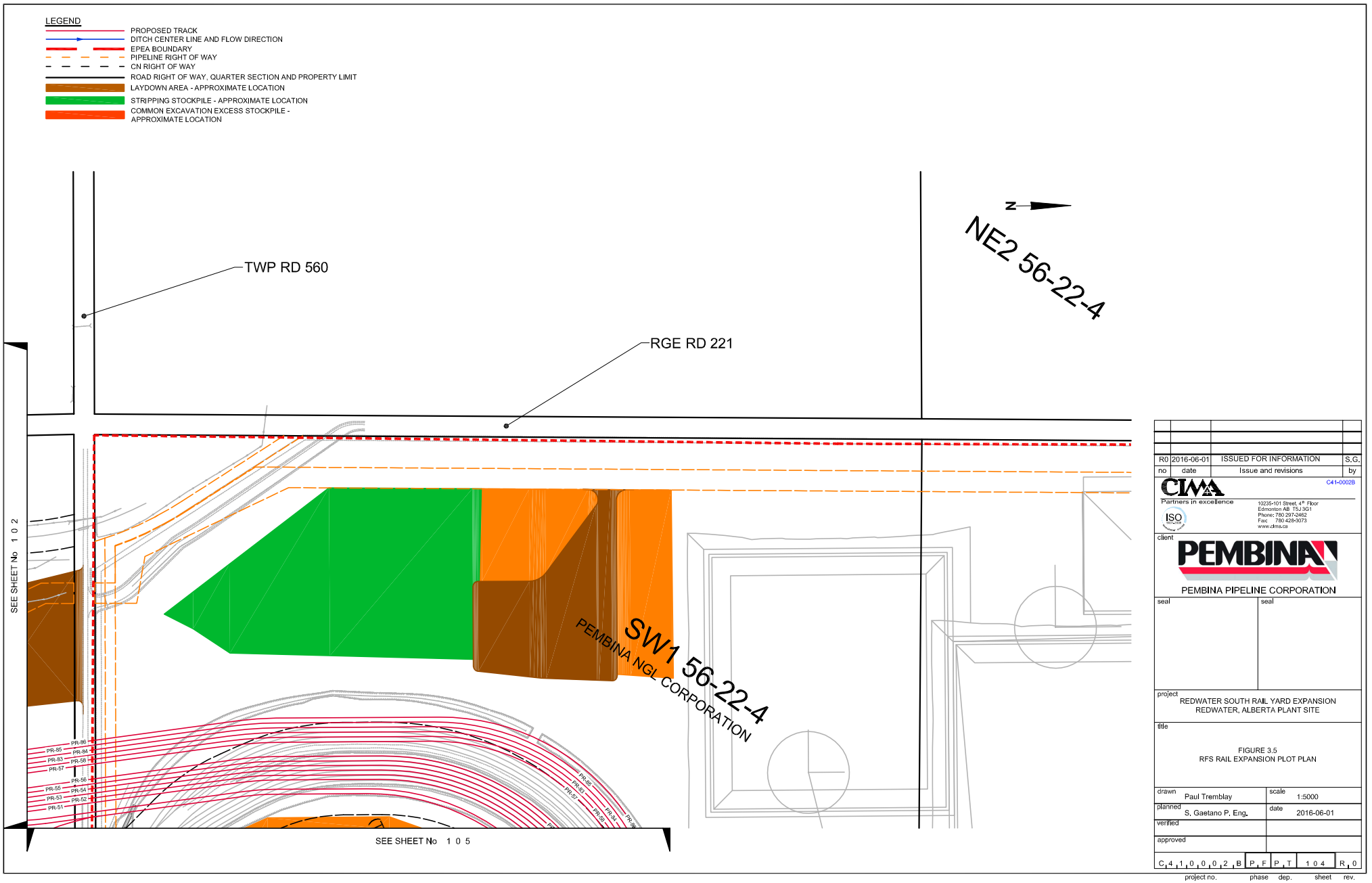

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FIGURE 3.5
RFS RAIL EXPANSION PLOT PLAN

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planned	S. Gaetano P. Eng.	date	2016-06-01
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project no.	phase	dep.	sheet	rev.
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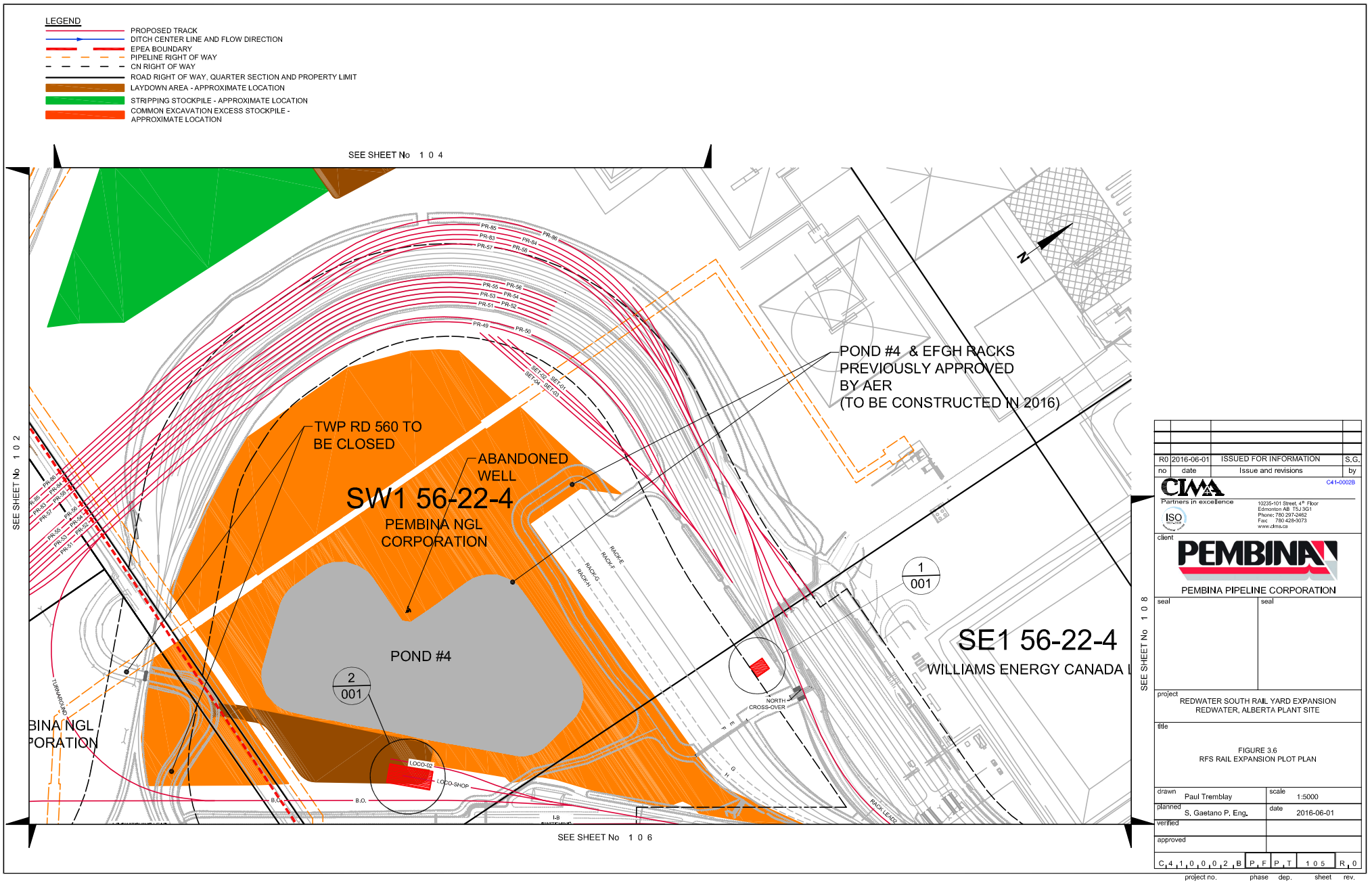

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title: FIGURE 3.6
RFS RAIL EXPANSION PLOT PLAN

drawn	Paul Tremblay	scale	1:5000
planned	S. Gaetano P. Eng.	date	2016-06-01
verified			
approved			

project no.	phase	dep.	sheet	rev.
C41002B	PF	PT	105	R0

LEGEND

- PROPOSED TRACK
- DITCH CENTER LINE AND FLOW DIRECTION
- EPEA BOUNDARY
- PIPELINE RIGHT OF WAY
- CN RIGHT OF WAY
- ROAD RIGHT OF WAY, QUARTER SECTION AND PROPERTY LIMIT
- LAYDOWN AREA - APPROXIMATE LOCATION
- STRIPPING STOCKPILE - APPROXIMATE LOCATION
- COMMON EXCAVATION EXCESS STOCKPILE - APPROXIMATE LOCATION

SEE SHEET No 1 0 5

SEE SHEET No 1 0 3

SEE SHEET No 1 0 8

SEE SHEET No 1 0 7

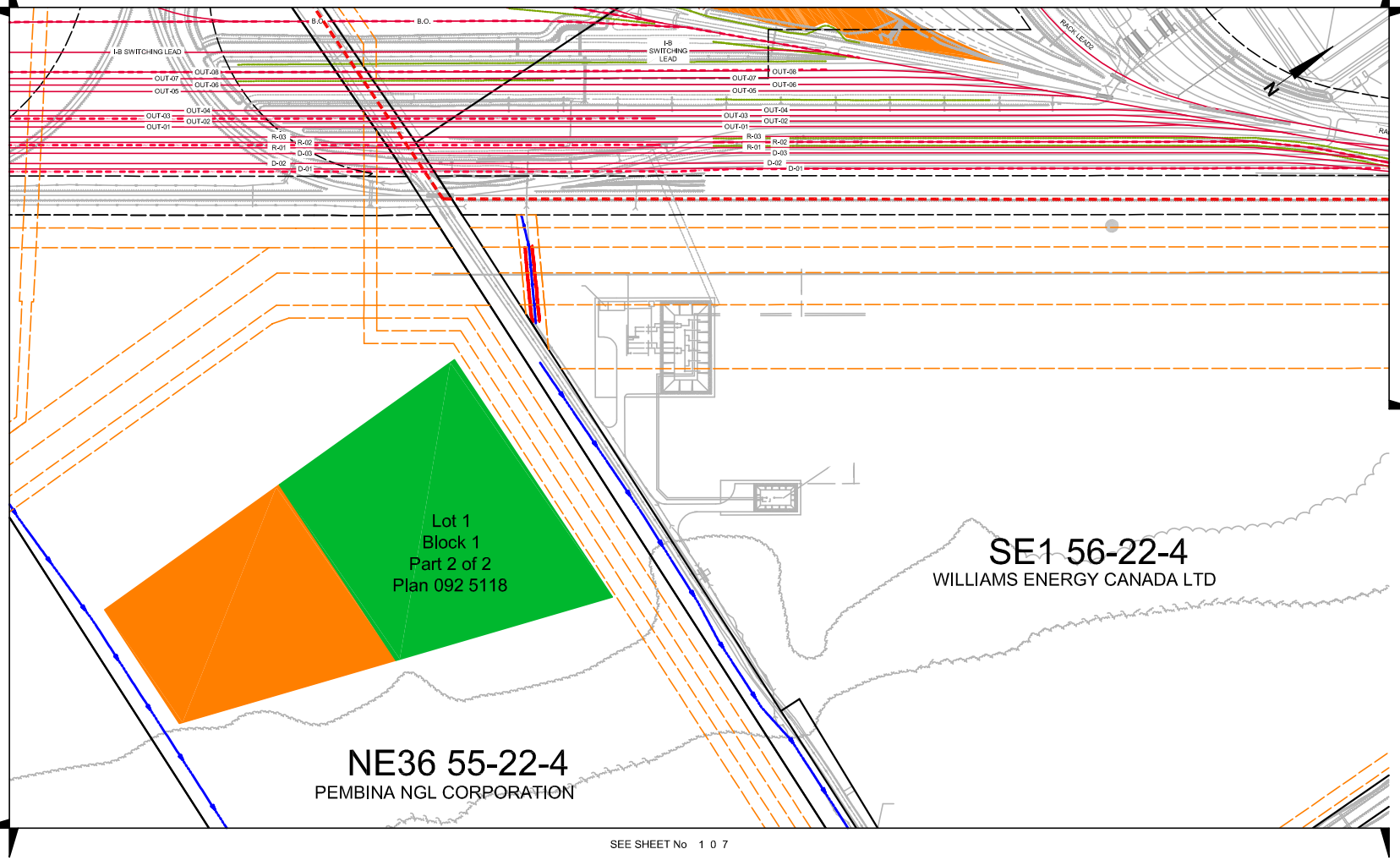

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FIGURE 3.7
RFS RAIL EXPANSION PLOT PLAN

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project no.	phase	dep.	sheet	rev.
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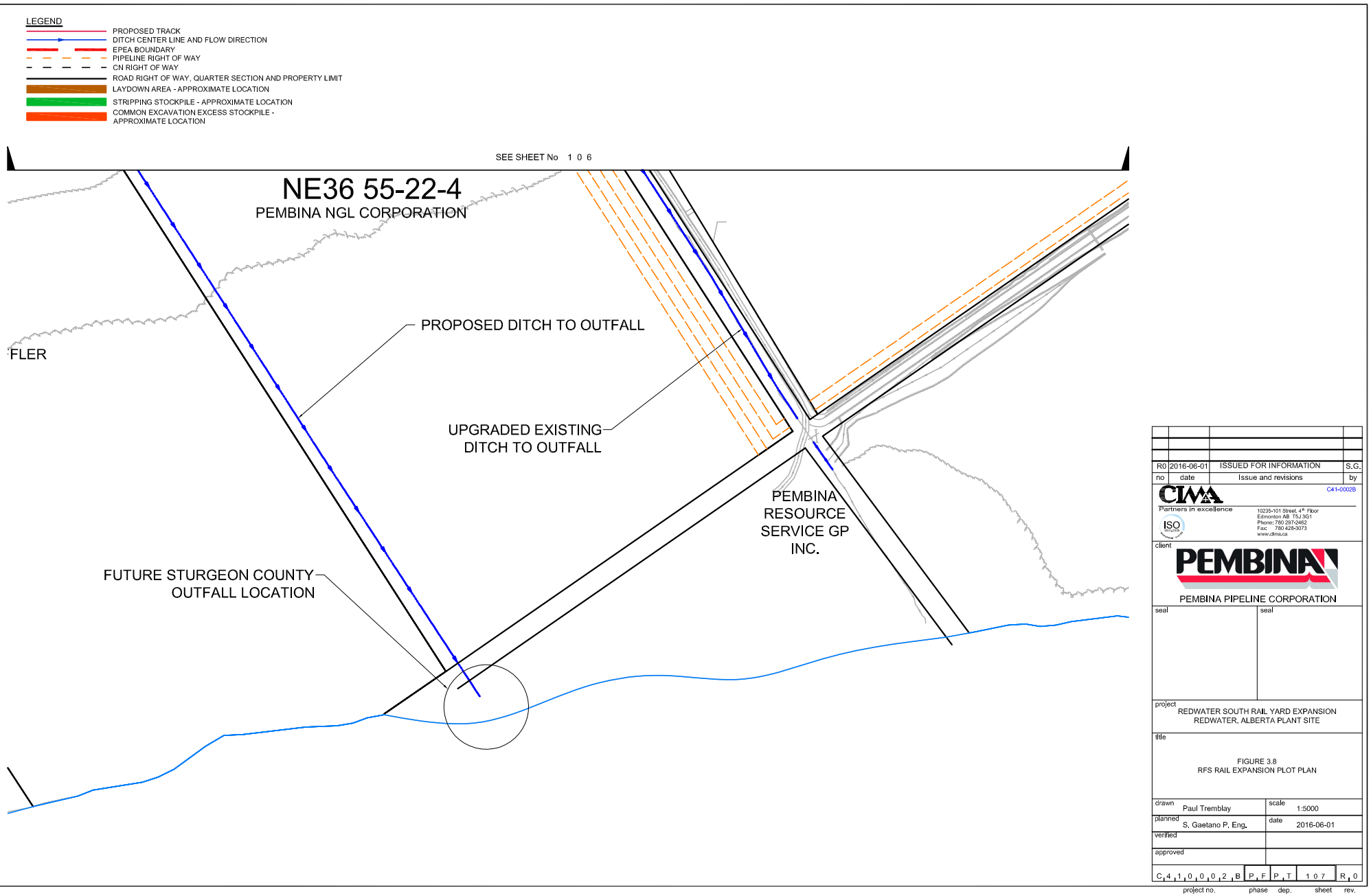

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FIGURE 3.8
RFS RAIL EXPANSION PLOT PLAN

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planned	S. Gaetano P. Eng.	date	2016-06-01
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approved			

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project no.	phase	dep.	sheet	rev.

LEGEND

- PROPOSED TRACK
- DITCH CENTER LINE AND FLOW DIRECTION
- EPEA BOUNDARY
- PIPELINE RIGHT OF WAY
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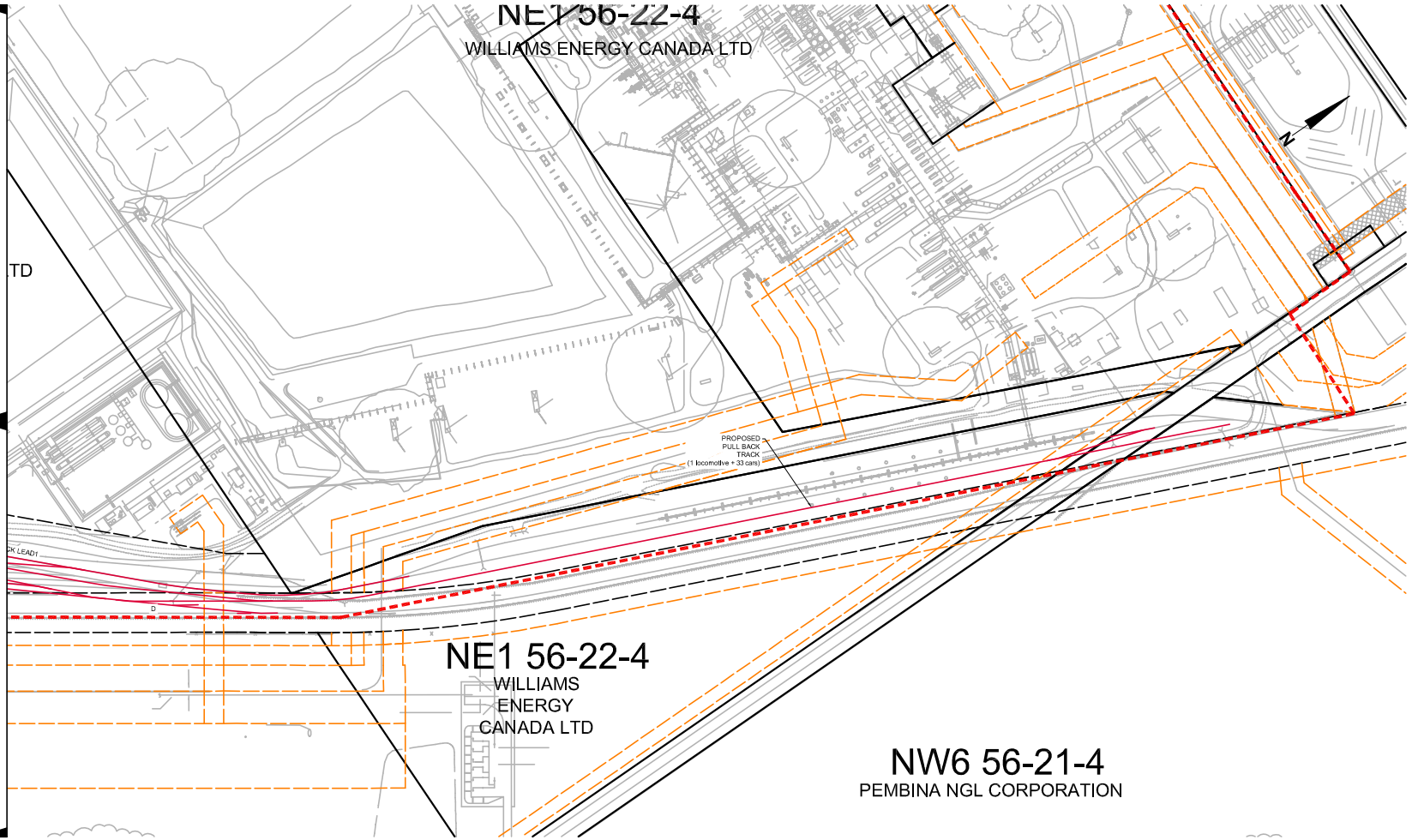

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FIGURE 3.9
RFS RAIL EXPANSION PLOT PLAN

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project no.	phase	dep.	sheet	rev.
C41000028	PF	PT	108	R0

1.2 Proponent Contact Information

Name of the Project

Pembina Redwater Fractionation and Storage (RFS) Facility Rail Yard Expansion

Name of the Proponent

Pembina NGL Corporation

Address of the Proponent

Main Office
4000, 585 8th Avenue S.W.
Calgary, Alberta T2P 1G1

RFS Site
Box 459
Redwater, Alberta TOA 2W0

CEO or Equivalent

Mr. Brad Kohlsmith
Senior Manager, Engineering
Natural Gas Liquids Business Unit
1.403.231.2372
bkohlsmith@pembina.com
Pembina NGL Corporation
4000, 585 8th Avenue S.W.
Calgary, Alberta T2P 1G1

Principal Contact for Project Description

Ms. Sarah Penny
Specialist, Environment
1.403.233.4520
spenny@pembina.com
Pembina Pipeline Corporation
4000, 585 8th Avenue S.W.
Calgary, Alberta T2P 1G1

1.3 Jurisdictions That Were Consulted

Pembina has had ongoing consultation activities associated with RFS operations in the form of open houses and community associations meetings. In March 2015, Pembina notified stakeholders of this Project via notification packages to landowners, residents, occupants, industry, local authorities, and municipalities, located within a radius of 1.6 km of the RFS site. This radius was selected to be consistent with the Alberta Energy Regulator (AER) Directive 056 notification radius, thus similar for other infrastructure at RFS. The Project was also presented at Life in the Heartland's Public Information Night in Redwater, Alberta on October 21, 2015.

Agencies and parties that were notified and/or consulted as part of the Provincial and Municipal approvals processes include:

- AER;
- Sturgeon County;
- Alberta Culture;
- Alberta Environment and Parks (AEP);
- Industrial Landowners and Operators; and
- Area Landowners and Residents.

The following Aboriginal groups were notified, as per the Canadian Environmental Assessment Agency's (CEAA) direction, of the Project. Details on this notification can be found in section 6.

Table 1: Aborginal Groups

Aboriginal Groups
Alexander First Nation
Alexis Nakota Sioux Nation
Beaver Lake Cree Nation
Blood Tribe
Buffalo Lake Métis Settlement
Chipewyan Prairie Dene Nation
Enoch Cree Nation
Ermineskin Cree Nation
Foothills Ojibway First Nation
Fort McMurray First Nation
Gunn Métis Local #55
Kikino Métis Settlement
Louis Bull Tribe
Métis Nation of Alberta - Region 1
Métis Nation of Alberta - Region 2
Métis Nation of Alberta - Region 4

Montana First Nation
Paul First Nation
Piikani Nation
Saddle Lake Cree Nation
Samson Cree Nation
Siksika Nation
Stoney Nation (including Bearspaw, Chiniki and Wesley First Nations)
Tsuut'ina Nation
Whitefish Lake First Nation #128

1.4 Environmental Assessment and Regulatory Requirements

In addition to the required submission of this Project Description to the Canadian Environmental Assessment Agency on behalf of the *Canadian Environmental Assessment Act,* 2012 (CEAA 2012), the Project is also subject to other regulatory requirements from federal, provincial and municipal jurisdictions. Those considered included:

Federal

- *Fisheries Act*
    - The *Fisheries Act* focuses on conservation and protection of fish habitat essential to sustaining freshwater and marine fish species.
    - Pembina has been communicating with Sturgeon County regarding the outfall structure being developed as part of the Sturgeon County stormwater management program. The outfall is to be approved by the Department of Fisheries and Oceans (DFO) due to having activities below the low water mark and effluents entering the North Saskatchewan River (NSR). Sturgeon County will apply for approval, own, operate and maintain the stormwater outfall. The outfall structure will be constructed by Pembina on behalf of Sturgeon County and due to the Projects' ability to impact the outfall system, Pembina has been actively working with the Sturgeon County on the design and regulatory aspects, including the Projects' relationship to the outfall system. Further detail of the outfall system and the Projects relationship are outlined in sections 2.3.1, 2.4.2 and 5.1.6.
- *Migratory Birds Convention Act,* 1994 (MBCA, 1994)
    - The MBCA, 1994 strictly prohibits the harming of migratory birds and the disturbance or destruction of their nests and eggs.
- *Species at Risk Act* (SARA)
    - SARA listed species must not be harmed by the construction, operation, or decommissioning of Project works. It is illegal to kill, harm, harass, capture, or take in any way any species listed under the SARA.
- *Railway Safety Act*
    - See below under Provincial "*Alberta Railway Act."*
- *Transportation of Dangerous Goods Act*
    - See below under Provincial "*Alberta Railway Act."*

Provincial

The Project is not considered an energy resource activity (as defined in the *Responsible Energy Development Act* Section 1(1)(i/j); as such, Alberta Environment and Parks (AEP) has authority over any of the Project's *Environmental Protection and Enhancement Act* (EPEA) and the *Water Act* requirements that occur outside of the upstream RFS, AER and EPEA approved lands.

- EPEA
    - The Project has overlap with an existing Pembina project regulated by the AER under the EPEA (Approval No. 9995-02-00, as amended). Notification of the portion of the Project to be located within EPEA lands was submitted to the AER on August 17, 2015. This notification highlighted the Project and its inclusion under EPEA within the existing EPEA Approved lands.
    - The Project is an activity as defined within the EPEA Schedule of Activities, Section 9 (1), due to the need for a *Water Act* approval for wetland disturbance. Approval was received on July 5th, 2016 (Approval No. 00380751-00-00).
    - The Project is not included as an activity identified in Schedule 1 (Divisions 1, 2, and 3) of the EPEA Activities Designation Regulation; no industrial approval is required.
    - The Project is not a mandatory or exempted activity, as defined within the EPEA Environmental Assessment (Mandatory and Exempted Activities) Regulation. No provincial Environmental Impact Assessment (EIA) is required.
    - The EPEA Division 1 on Releases of Substances Generally, Section 110(1) requires the Project to report any release of substance to the environment.
    - The three stormwater management ponds associated with the Project will require an EPEA registration. The registration application was submitted in June 2016 and is currently under review.
- Alberta Environment and Park
    - Pembina has been communicating with Sturgeon County regarding the outfall structure being developed as part of the Sturgeon County stormwater management program. The outfall is to be approved by Alberta Environment and Parks (AEP) under the *Water Act* Codes of Practice. Sturgeon County will apply for approval, own, operate and maintain the stormwater outfall. The outfall structure will be constructed by Pembina on behalf of Sturgeon County and due to the Projects' ability to impact the outfall system, Pembina has been actively working with the Sturgeon County on the design and regulatory aspects, including the Projects' relationship to the outfall system. Further detail of the outfall system and the Projects relationship are outlined in sections 2.3.1, 2.4.2 and 5.1.6.
- *Public Lands / Water Act* Joint Application to AEP for wetland disturbance
    - The Project is anticipated to impact wetlands; a Joint Application (*Public Lands Act and Water Act* to AEP) is required.
    - The impacted wetlands have been deemed as not Crown-claimable (triggering the *Public Lands Act)* as per discussions with AEP in April 2016.
    - The application has been submitted to AEP for *Water Act* approval for Pembina to provide wetland compensation for the loss resulting from the Project. Approval was received on July 5th, 2016 (Approval No. 00380751-00-00).
- Directive 056 License to AER
    - The Project is not a petroleum industry energy development as defined in the Directive; no license is required. However, the Project occurs in the same area of an existing facility, which is

licenced through Directive 56. The Project was mentioned as a part of the Direction 56 notification package as additional information sent out for the existing RFS facility when it was being planned.

- *Alberta Railway Act* Industrial Operating Certificate
    - This Project will require an approval under the *Railway (Alberta) Act* to allow for the construction and operation of the additional rail lines.
    - The *Alberta Railway Act* includes federal requirements within Transport Canada's *Transportation of Dangerous Goods Act* and the *Railway Safety Act*.
- *Historical Resources Act* (HRA) Clearance from ACT
    - Alberta Culture provided *Historical Resource Act* Clearance for the stormwater management and entire Project scope on February 3, 2016 and February 12, 2016, respectively.

Municipal

- Sturgeon County
    - A Development Permit Application has been submitted to Sturgeon County to receive approval for the construction of the additional rail lines by the local governing municipality.
    - Pembina will work with the County to obtain road use agreements and establish emergency response planning.

1.5 Regional Environmental Studies

There have been no environmental studies conducted as per Section 73 and 74 of CEAA 2012, in the Project's region. The Project is part of Sturgeon County located within the Alberta Industrial Heartland and the Capital Region (a group of 24 municipalities including Sturgeon County), which is an area zoned for heavy industrial use. A number of regional environmental frameworks were created and officially adopted in 2007 to guide decision making in the region focusing on cumulative effects management. The existing frameworks are as follows:

Water Management Framework

The Water Management Framework for the Industrial Heartland and Capital Region includes the reach of the NSR from the town of Devon to the Pakan bridge water quality station, as these are directly impacted by municipal and industrial effluent discharge. This Framework provides a regional phased solution (until 2041) to address water quantity and quality issues in the defined area. Three water management conditions defining threshold were defined and are applied to water quantity and quality parameters to determine level of management required.

Industrial Heartland Regional Noise Management Plan

The Industrial Heartland Regional Noise Management Plan (RNMP), which sets guidelines for development to ensure compliance with the RNMP's standards (which include AER Directive 038). In this part of the province, the AER determined that traditional noise management practices are not practical due to the high concentration of industrial activity in the Industrial Heartland. Noise compliance in the region is verified through the RNMP, which is jointly developed by the AER and the Northeast Capital Industrial Association (NCIA).

Air Quality Management Framework

The Air Quality Management Framework (the Framework), which is comprised of municipalities, industry, non-governmental organizations, airsheds and federal and provincial governments. The Framework focuses on the following main contaminants of concern: nitrogen dioxide, sulphur dioxide, fine particulate matter and ground level ozone. The Framework defines four ambient air quality levels for each contaminant and sets management actions to avoid reaching upper thresholds. Pembina also partakes in the Fort Air Partnership, which actively monitors air quality within the Industrial Heartland.

Capital Region Growth Plan

The Capital Region Growth Plan (Capital Region Board, 2009) has six main themes, one of which is to protect the environment. Specifically, it provides a framework for the protection of agricultural lands and to minimize impact of development on regional watersheds and airsheds.

Since 2007, regional environmental studies have been completed through the aforementioned frameworks and plans to investigate environmental elements such as wetlands, groundwater, and water quality, amongst others.

The Project is also located partly within the boundaries of another existing Pembina project, which is regulated by the AER under EPEA, and current EPEA Approval requires Pembina to complete various environmental studies including air emission monitoring and reporting, industrial wastewater monitoring and reporting, waste management monitoring and reporting, groundwater monitoring and reporting, and soil monitoring and reporting. This data and analysis is reported to the AER on an annual basis. Environmental studies have been completed in support of provincial applications, which have included vegetation, wildlife, hydrology, aquatics and historical resources.

2.0 PROJECT INFORMATION

2.1 General Description

As mentioned, this Project is being developed to support existing Pembina RFS operations, and other projects that have previously received approval and are under construction. These such operations include the following:

- RFS Existing – Pembina Fractionation Site that is currently operational. The Project will connect to an existing yard that will be extended and/or realigned as part of this Project (Figure 3, 3.4, 3.6 and 3.7). The Pembina RFS facility receives NGLs via pipeline and fractionates them into spec products such as ethane, propane, butane and condensates. These products are then loaded onto railcars or trucks via existing racks and shipped to market.
- NWR (Northwest Refinery) Diesel – Pembina is providing the rail for the NWR Diesel project, located northwest of the Project. Pembina is not manufacturing or producing diesel as the diesel will come from NWR via pipeline and will be stored appropriately at the existing RFS site until it is loaded into rail cars at the existing RFS site. There is no storage associated with the Project. Storage associated with the NWR diesel is located at the RFS site and is currently under construction.
- RFS II – Pembina Fractionation site that has been approved under EPEA, constructed and is under operation and located to the north of the existing RFS site.

- RFS 3 – Pembina Fractionation site that has been approved under EPEA, and is currently under construction.

The Project's purpose is to accept empty rail cars and organize rail cars that have been filled at the existing RFS facility into trains. At which point, Canadian National Rail (CN) will take them off site to their respective destinations. The Project would increase product distribution design from approximately 184 cars per day to peak of approximately 260 cars per day. Diesel and biodiesel would be added to the current product slate of ethane, propane, butane alky feed, and propylene. Condensate, which is currently being unloaded at the RFS site, will be removed as a rail product at the end of 2016.

The majority of the Project will be constructed on Pembina-owned land (pending final land acquisition). Pembina will be responsible for the construction, operation, and decommissioning of all tracks associated with this Project. Pembina will maintain the classification yard portion of the Project, and CN will maintain the six departure and receiving tracks, with the exception of snow removal and vegetation control, which will be Pembina's responsibility. However, Pembina is responsible for construction, operation and decommissioning of the track located.

There are no loading or transloading facilities associated with this Project. Pembina has existing, operating loading facilities and some currently under construction associated with other projects outside of the scope of this Project Description, which have previously been approved by regulators.

Overall the Project would involve the construction of approximately 36 km of track and the realignment (changes in the direction or changes in the track's elevation to match up with the new yard configuration) of approximately 9 km of existing track. The departure and receiving tracks (the first six linear tracks parallel to the CN Beamer spur) and the classification yard portion of the Project (all remaining tracks) are included as the approximately 36 km of track. As part of this build, approximately 6 km of existing track will be salvaged and re-used in the construction of new track. The Project will be constructed on previously disturbed freehold land, with the majority of the rail constructed adjacent to existing tracks.

Additional Project activities include the construction of three surface water control ponds connecting to the planned Sturgeon County outfall structure, the relocation of subsurface utilities as required and the installation of one new at-grade road/rail crossing at Township Road 555.

2.2 Regulations Designating Physical Activities

In the *Regulations Designating Physical Activities* Section 2, Subsection 25b of the Schedule the following provision that describes the Project as a designated activity:

> *The construction, operation, decommissioning and abandonment of a new railway yard with seven or more yard tracks or a total track length of 20 km or more.*

The Project includes the construction of approximately 36 km of new track and therefore is classified as a designated activity according to CEAA 2012 regulations.

2.3 Components and Activities

2.3.1 Physical Works associated with the Project

Additional Rail

There will not be transloading stations associated with this rail. The Project would include construction of the following:

- Approximately 36 km of new track and the realignment of approximately 9 km of the currently existing track, this includes;
    - Repurposing, extension and realignment of the 10 existing condensate loop tracks into inbound classification[1] yard tracks;
    - 4 additional in-bound classification yard tracks in the existing condensate loop (14 tracks total);
    - 4 new set-out tracks[2];
    - 2 new pull-back[3] tracks;
    - Locomotive storage[4] and one bad order track[5];
    - 1 turn around wye[6];
    - The repurposing, and extension of the existing 14 Liquid Petroleum Gas yard tracks into:
        - 6 receiving/departure tracks; and
        - 8 outbound classification yard tracks;
    - Leads, turnouts and cross-overs connecting various parts of the yards or tracks described above.

Site Grading and Stormwater Management

Site preparation consists of topsoil stripping, construction of railway grades using common excavation material, placing of granular sub-ballast, ballast and other granular material. Several temporary laydown areas and stockpile areas will be constructed as part of the Project; these are shown on Figures 2, 3, 3.1 and 3.7.

The stormwater management system will include the addition and modification of ditches, culverts, sub-drains, stormwater pipes and catch basins linked to three new stormwater ponds to capture on-site stormwater and release at a rate equivalent to existing undeveloped conditions. These ponds will be connected to a new Sturgeon County outfall structure via a network of ditches and culverts before discharging stormwater to the NSR (Figure 3.4, 3.7 and 3.8). Table 2 provides a summary of the stormwater pond runoff design volumes for this Project. Further details on stormwater discharge and the outfall can be found in sections 2.4.2 and 5.1.6.

[1] Inbound classification – organizing cars for transfer to loading racks
[2] Set out tracks – storage of cars of commodities that do not move as frequently
[3] Pull back – facilitates trains within the yard to pull a series of cars out of classification yard tracks and then onto receiving/departure tracks
[4] Short track to park locomotiveslocomotors so that they are not in the active yard
[5] Bad order track – storage of off spec cars until a suitable customer destination can be found
[6] Turnaround wye – loop track that allows a locomotive to turn around and operate in the opposite direction

The outfall structure will be constructed as part of a regional stormwater management program being developed by Sturgeon County, to be approved by AEP. The County outfall structure is not part of the Project, but due to the influence the Project could have on the stormwater system Pembina has been working closely with the County to make sure the outfall design is properly planned and is regulatory approved in a sufficient manner to handle the impacts associate with the Project, which is within the catchment area in which the County's outfall system would support.

Table 2: Stormwater Runoff Pond Size

Flow through ponds, 1:100 year storm event	Storage volume at high water level (m^3)
Pond #1	10,300
Pond #2	15,300
Pond #3	22,800
TOTAL	48,400

Utilities

- Permanent electrical power for proposed buildings, indoor and outdoor lighting and cameras.
- Potable water and sanitary services will be provided via tanks.
- Data connections will be provided from the existing plant using above and/or below ground cabling.

Buildings

- Railway Operations Building
    - Single storey building for management and supervisory staff, including offices, lunch room, and washrooms.
- Warming Huts
    - Two single storey buildings to allow field staff to shelter from weather on breaks, use the washroom, and obtain switch lists and other data without travelling back to the Railway Operations Building.
- Railway Maintenance Building
    - Building with space for repairs and maintenance to one locomotive including an overhead crane and space for storage of spare parts.

Other Functional Elements

- Lighting and Operations Cameras
    - Pole mounted fixtures to illuminate the yard area.
    - Pole mounted cameras to view yard operations from the Rail Operations Building.
- Automatic Equipment Identification (AEI) Readers and Track Scale
    - AEI readers to read equipment tags on railway cars as they enter, and at certain locations within the facility.
    - Track scale to calculate weight of select inbound railway cars.
- Utility Crossings

  - A number of buried pipelines may require relocation or protection (thicker wall pipe, casing, or protection slabs). The scope of this work will depend on the utility operator requirements.
  - A high voltage AltaLink transmission line will be relocated.
- Security and Fencing
  - Fencing and access control will be provided to limit access to the yard, where feasible, to the stormwater management ponds.
  - CCTV cameras will be installed to provide video surveillance of the yard.

Temporary Facilities during Construction

- Modular Offices
  - A number of temporary modular office facilities are required for security, engineering and construction management team, and construction contractors.
- Toilet Facilities
  - Several self-contained toilet facilities will be provided on-site for use.
- Power
  - During construction, power to temporary facilities will be provided via generator or temporary line connections.

2.3.2 Anticipated Size and Capacity

The Project would increase design product distribution from approximately 184 cars per day to peak of approximately 260 cars per day. Products being transported would include the addition of diesel and biodiesel to the current product stream of ethane, propane, butane alky feed, propylene and condensate. The disturbance area of the Project is approximately 52 ha.

2.3.3 Size and Nature of Expansion

The Project is not an expansion under the *Regulations Designating Physical Activities.*

2.3.4 Incidental Physical Activities

Incidental physical activities resulting from the Project are the expansion of the at-grade road/rail crossing at Township Road 555, the relocation of an AltaLink high voltage transmission line and the Project's connection to the proposed Sturgeon County outfall structure. Details on these incidental physical activities are described below:

Road/Rail Crossing at Township Road 555

- Nature of Activity
  Due to rail infrastructure proposed with the Project an expansion to the existing road/rail crossing will be undertaken. This activity is complementary to the Projects construction as it allows for the continued use of Township Rd 555 once the additional rail infrastructure is in place. The crossing will allow both the Project and the existing transportation infrastructure to exist and operate in a safe manner.

- Care and Control

The care and control of the crossing is split amongst Pembina, CN and Sturgeon County. Crossing approval will be completed by CN through an application to Sturgeon County who is the road authority for the crossing. CN's Signals Division is responsible for the generation of the crossing design and Pembina will manage the construction of the crossing once approved.

- Nature of Third Party Relationship
  The road/rail crossing is being undertaken as a split responsibility between Pembina, CN and Sturgeon County as outlined above under Care and Control. The nature of the relationship between Pembina and CN for the Project is described in more detail in section 2.1. Sturgeon County's relation to the Project and proponent is the Project is being placed on land within Sturgeon County.

- Activity Benefit
  This activity is a benefit to the Sturgeon County's transportation infrastructure, the local community's access and safety and the Project's ability to connect rail infrastructure. For more detail see section 1.4.

- Related Federal and/or Provincial Regulatory Requirements
  Construction of new at-grade railway crossings require agreement from the affected railways and adherence to the following federal and provincial guidelines and standards:

Federal

- *Canada Railway Safety Act*
- *Notice of Railway Works Regulations*

Provincial

- *Industrial Railway Regulation*
- *Alberta Railway Safety Act*

Relocation of AltaLink High Voltage Transmission Line

- Nature of Activity
  Due to the location of infrastructure related to the Project a high voltage AltaLink transmission line will be relocated to complement the Projects design requirements.

- Care and Control
  All aspects including but not limited to regulatory, consultation and construction is the responsibility of AltaLink.

- Nature of Third Party Relationship
  AltaLink is the owner of the transmission line requiring relocation. The Project has influence on the current location and the new location for a portion of the transmission line.

- Activity Benefit
  Relocation of the transmission line benefits both the Project and AltaLink as it will allow for the operation of the Project, CN mainline activities and the transmission line going forward.

- Related Federal and/or Provincial Regulatory Requirements
  All aspects of regulatory requirements and permitting are the responsibility of AltaLink.

Proposed Sturgeon County Outfall Structure

- Nature of Activity
  A new Sturgeon County outfall structure, which will be discharging to the North Saskatchewan River. The outfall is part of a regional stormwater management program developed by Sturgeon County. Due to the Projects' ability to impact the outfall system and Pembina's working relationship with Sturgeon County regarding the outfall project it has been included as an incidental activity. The Project's stormwater ponds will be connected to Sturgeon County's outfall structure via a network of ditches and culverts. More details regarding stormwater management are present section 2.3.1.

- Care and Control
  The outfall structure will be constructed by Pembina on behalf of Sturgeon County who will own, operate and maintain the stormwater outfall, however, due to the Projects' ability to impact the outfall system, Pembina has been actively working with the Sturgeon County on design and regulatory aspects, including the Projects' relationship to the outfall system. Further detail of the outfall system and the Projects relationship are outlined in sections 1.4, 2.3.1, 2.4.2 and 5.1.6.

- Nature of Third Party Relationship
  The Project has ability to influence Sturgeon County's regional stormwater management program and outflow structure. This is why a relationship has been created between Pembina Sturgeon County to actively work on design and regulatory aspects of the outfall.

- Activity Benefit
  There is benefit to both Pembina and Sturgeon County as a result of the regional stormwater management program and outflow structure being linked to the Project. Both parties gain better efficiencies and control over stormwater management abilities. Sturgeon County also receives support through the construction, design and regulatory aspects of the Project.

- Related Federal and/or Provincial Regulatory Requirements
  Regulatory requirements related to the outfall structure are presented in details in section 1.4.

2.4 Emissions, Discharges and Waste

2.4.1 Air Emissions

The Fort Air Partnership (FAP) is responsible for the maintenance and operation of an ambient air quality monitoring network in the Industrial Heartland, within which the Project will occur and where Pembina's existing RFS facility is located. The data collected from approximately 65 passive and continuous monitoring stations located within the FAP boundaries is compared against Ambient Air Quality Objectives (AAQO) set by AEP, and is reported to the applicable regulatory bodies if objectives are exceeded. Data is also made available for public viewing on the FAP's website.

As an industry member in the region, Pembina supports the FAP both financially to ensure continued operation, and with representation on the FAP's Technical Working Group. The continued operation and maintenance of the FAP monitoring network is also a condition of the EPEA Operating Approval for Pembina's RFS facility.

During the construction, decommissioning and reclamation phases of the Project, air emissions would include dust and emissions associated with the construction equipment. Dust reduction will be accomplished by use of water trucks. Construction power will be provided by diesel generators.

During operation, emission sources will include the diesel emissions from the locomotives and fugitive emissions from light duty vehicles.

Greenhouse Gas Emissions

The amount of greenhouse gas emissions associated with the Project operations and construction were estimated using activity-based fuel consumption rate and activity-specific average emission factors. The following equation illustrates the calculation methodology:

$$ER = 10^{-6} \times \sum_{i=1}^{n} EF_i \times FC_i$$

Where,

ER is the total greenhouse gas emission rates (t/y);
EF is the average emission factor for the activity type i (g/L fuel);
FC is the annual fuel consumption rate for activity type i (L/year);
n is the total different types of activities.

To allow for continued operation of the existing RFS rail system, a phased construction strategy will be implemented for the Project. During the three-year construction period, construction is expected to emit a total of 12,730 tonnes CO_{2e} to the atmosphere, which accounts for 0.0047% of the 2013 provincial GHG emissions, and 0.0018% of the 2013 national GHG emissions (Environment Canada, 2015a). The greenhouse gas emissions have been calculated for each construction phase. Table 3 provides a summary of the operational information for the construction equipment.

Table 3: Operation Proposed Construction Equipment for the Project

Phase Name	Equipment Type	Equipment Model	No. of Units	Construction Schedule	
				hrs/day	days/yr
South Yard and Stormwater Ponds	Excavators	Cat 349F	8	12	60
	Articulated trucks	Cat 740C	20	12	60
	Dozers	D6T	6	12	60
	Graders	Cat 14M	2	12	60
	Tractors	Cat450F	2	12	60

Phase Name	Equipment Type	Equipment Model	No. of Units	Construction Schedule	
				hrs/day	days/yr
	Packers	Cat 815F	4	12	60
	Skid steers	Cat 297D	2	12	60
	Wheel loaders	Cat 966M	3	12	60
	Service trucks	Cat CT660	10	12	60
	Highway low bed trucks	Cat CT660	2	12	60
	Gravel trucks	Cat CT660	4	12	60
	Hydrovac trucks	Cat CT660	2	12	60
	Generators	Cat C15	2	12	60
Inbound Classification Yard	Excavators	Cat 349F	4	12	45
	Articulated trucks	Cat 740C	8	12	45
	Dozers	D6T	3	12	45
	Grader	Cat 14M	1	12	45
	Tractor	Cat450F	1	12	45
	Packers	Cat 815F	2	12	45
	Skid steers	Cat 297D	2	12	45
	Wheel loaders	Cat 966M	2	12	45
	Service trucks	Cat CT660	5	12	45
	Highway low bed truck	Cat CT660	1	12	45
	Gravel trucks	Cat CT660	2	12	45
	Hydrovac truck	Cat CT660	1	12	45
	Generators	Cat C15	2	12	45
Outbound Classification Yard	Excavators	Cat 349F	4	12	65
	Articulated trucks	Cat 740C	6	12	65
	Dozers	D6T	4	12	65
	Grader	Cat 14M	1	12	65
	Wheel loaders	Cat 966M	3	12	65
	Skid steers	Cat 297D	2	12	65

Phase Name	Equipment Type	Equipment Model	No. of Units	Construction Schedule	
				hrs/day	days/yr
	Tractor	Cat450F	1	12	65
	Packers	Cat 815F	2	12	65
	Service trucks	Cat CT660	6	12	65
	Highway low bed trucks	Cat CT660	2	12	65
	Gravel trucks	Cat CT660	2	12	65
	Hydrovac truck	Cat CT660	1	12	65
	Generators	Cat C15	2	12	65

Table 4 provides the operational information for the Project and provides the basis for the greenhouse gas emissions calculations for full Project operations.

Table 4: Operation Information of the Project

Function		Locomotive			Service Time			Typical Fuel Consumption		Fuel Consumption Rate
		Model	No. of Units	Power	days /yr	Operating	Idling	Operating	Idling	
				hp		hr/day	hr/day	L/hr	L/hr	L/day/unit
On-site Pembina Switching	Inbound Switcher	RailServe LEAF	1	600	365	22	2	15.2	7.6	350
	ABCD Rack Switcher	RailServe LEAF	1	600	365	17	7	15.2	7.6	312
	LPG/EF Rack Switcher	RailServe LEAF	1	600	365	20	4	15.2	7.6	334
	Outbound Switcher	RailServe Dual LEAF	1	1200	365	13	2	32.2	15.2	449
Mainline Locomotive	CN Trains	SD70	3	4300	365	1.1	3.2	242.7	11.4	910

Table 5 provides the average emission factors published by Environment Canada on the National Inventory Report (Environment Canada, 2015a) for Energy Mobile Combustion Sources. The emission factors are used to estimate the greenhouse gas emissions associated with construction and operation of the Project.

Table 5: Average Greenhouse Gas Emission Factors Associated with the Energy Mobile Combustion Sources

Substances	Emission Factor (g/L Fuel) [a]			Application
	CO_2	CH_4	N_2O	
Off-road Diesel	2,663	0.15	1.1	Off-road Construction Equipment
On-road Heavy-duty Diesel Vehicles (HDDVs) – Moderate Control [b]	2,663	0.14	0.082	Highway Trucks for Construction Granular Delivery
Railway Diesel Train	2,663	0.15	1.1	Rail Switching Engines and Mainline Locomotive

Notes:

[a] Source: (Environment Canada, 2014).

[b] Lacking detailed information, emission factors for Moderate Control option is selected for the highway trucks used for the Project.

The mass emission rates of the greenhouse gas emissions associated with the Project construction activities are estimated and the results are presented in Table 6. During the three-year construction period, construction is expected to emit a total of 12,730 tonnes CO_{2e} to the atmosphere, which accounts for 0.0047% of the 2013 provincial GHG emissions, and 0.0018% of the 2013 national GHG emissions (Environment Canada, 2015a).

Table 6: Estimated Greenhouse Gas Emissions Associated with the Project Construction Activities

Phase Name	Equipment Type	Equipment Model	Engine Power [a]	No. of Units	Load Factor [b]	Fuel Consumption [c]	GHG Emission Rate			
			hp			(L/day/unit)	CO_2	CH_4	N_2O	CO_2e [d]
							t/y	t/y	t/y	t/y
South Yard and Stormwater Ponds	Excavators	Cat 349F	396	8	0.59	563.7	721	0.041	0.298	810
	Articulated trucks	Cat 740C	496	20	0.59	706.0	2256	0.127	0.932	2537
	Dozers	D6T	255	6	0.59	363.0	348	0.020	0.144	391
	Graders	Cat 14M	259	2	0.59	368.7	118	0.007	0.049	132
	Tractors	Cat450F	127	2	0.21	64.3	21	0.001	0.008	23
	Packers	Cat 815F	232	4	0.43	240.7	154	0.009	0.064	173
	Skid steers	Cat 297D	98	2	0.21	49.7	16	0.001	0.007	18
	Wheel loaders	Cat 966M	276	3	0.59	392.9	188	0.011	0.078	212
	Service trucks	Cat CT660	475	10	0.59	676.1	1080	0.061	0.446	1215
	Highway low bed trucks	Cat CT660	475	2	0.59	676.1	216	0.011	0.007	218
	Gravel trucks	Cat CT660	475	4	0.59	676.1	432	0.024	0.178	486
	Hydrovac trucks	Cat CT660	475	2	0.59	676.1	216	0.012	0.089	243
	Generators	Cat C15	580	2	0.43	601.7	192	0.011	0.079	216
Phase Subtotal							***5,958***	***0.33***	***2.38***	***6,675***
Inbound Classification Yard	Excavators	Cat 349F	396	4	0.59	563.7	270	0.015	0.112	304
	Articulated trucks	Cat 740C	496	8	0.59	706.0	677	0.038	0.280	761
	Dozers	D6T	255	3	0.59	363.0	130	0.007	0.054	147

Phase Name	Equipment Type	Equipment Model	Engine Power [a]	No. of Units	Load Factor [b]	Fuel Consumption [c]	GHG Emission Rate			
			hp			(L/day/unit)	CO_2	CH_4	N_2O	CO_2e [d]
							t/y	t/y	t/y	t/y
	Grader	Cat 14M	259	1	0.59	368.7	44	0.002	0.018	50
	Tractor	Cat450F	127	1	0.21	64.3	8	0.000	0.003	9
	Packers	Cat 815F	232	2	0.43	240.7	58	0.003	0.024	65
	Skid steers	Cat 297D	98	2	0.21	49.7	12	0.001	0.005	13
	Wheel loaders	Cat 966M	276	2	0.59	392.9	94	0.005	0.039	106
	Service trucks	Cat CT660	475	5	0.59	676.1	405	0.023	0.167	456
	Highway low bed truck	Cat CT660	475	1	0.59	676.1	81	0.004	0.002	82
	Gravel trucks	Cat CT660	475	2	0.59	676.1	162	0.009	0.067	182
	Hydrovac truck	Cat CT660	475	1	0.59	676.1	81	0.005	0.033	91
	Generators	Cat C15	580	2	0.43	601.7	144	0.008	0.060	162
Phase Subtotal							***2,167***	***0.12***	***0.86***	***2,427***
Outbound Classification Yard	Excavators	Cat 349F	396	4	0.59	563.7	390	0.022	0.161	439
	Articulated trucks	Cat 740C	496	6	0.59	706.0	733	0.041	0.303	825
	Dozers	D6T	255	4	0.59	363.0	251	0.014	0.104	283
	Grader	Cat 14M	259	1	0.59	368.7	64	0.004	0.026	72
	Wheel loaders	Cat 966M	276	3	0.59	392.9	204	0.011	0.084	229
	Skid steers	Cat 297D	98	2	0.21	49.7	17	0.001	0.007	19

Phase Name	Equipment Type	Equipment Model	Engine Power [a]	No. of Units	Load Factor [b]	Fuel Consumption [c]	GHG Emission Rate			
			hp			(L/day/unit)	CO_2	CH_4	N_2O	CO_2e [d]
							t/y	t/y	t/y	t/y
	Tractor	Cat450F	127	1	0.21	64.3	11	0.001	0.005	13
	Packers	Cat 815F	232	2	0.43	240.7	83	0.005	0.034	94
	Service trucks	Cat CT660	475	6	0.59	676.1	702	0.040	0.290	790
	Highway low bed trucks	Cat CT660	475	2	0.59	676.1	234	0.012	0.007	237
	Gravel trucks	Cat CT660	475	2	0.59	676.1	234	0.013	0.097	263
	Hydrovac truck	Cat CT660	475	1	0.59	676.1	117	0.007	0.048	132
	Generators	Cat C15	580	2	0.43	601.7	208	0.012	0.086	234
Phase Subtotal							***3,250***	***0.18***	***1.25***	***3,628***
Total for Phases							**11,374**	**0.64**	**4.50**	**12,730**
Alberta 2013 GHG Total (t CO_2e) [e]										**270,000,000**
Canada 2013 GHG Total (t CO_2e) [e]										**726,000,000**
Percentage of Provincial 2013 GHG Total										**0.0047%**
Percentage of National 2013 GHG Total										**0.0018%**

Notes:

[a] Engine power values are obtained from Caterpillar website (www.cat.com). Skid steer model Cat 297D is not available on Caterpillar website, and the power rating is assumed to be the same as model Cat 272D. The power rating of model Cat CT660 ranges between 365 and 475 hp. For conservative purpose, the power rating of model Cat CT660 is assumed to be 475 hp. The power rating of model Cat CT15 ranges between 475 and 580 hp. For conservative purpose, the power rating of model Cat CT15 is assumed to be 580 hp. No model number is provided by Pembina for service trucks and welding trucks. Stantec assumed the model number of Cat CT660 for both trucks.

[b] Typical load factor values for non-road engines recommended by U.S. EPA (U.S. EPA, 2010) are used in emissions calculation.

[c] Fuel consumption rate were calculated based on the equipment power rating, assumed diesel engine efficiency of 35%, the load factor, and a typical diesel fuel LHV of 137,000 but/gallon.

[d] The greenhouse gas emissions were estimated based on GWP of 1 for CO_2, 25 for CH_4, and 298 for N_2O (Environment Canada, 2015b).

[e] Source: (Environment Canada, 2015a).

The mass emission rates of the greenhouse gas emissions associated with the Project operation activities are estimated and the results are presented in Table 6.

Once in operation, the Project is expected to emit 4,564 tonnes CO_{2e} annually to the atmosphere, which accounts for 0.0017% of the 2013 provincial GHG emissions, and 0.0006% of the 2013 national GHG emissions (Environment Canada, 2015a).

Table 7: Estimated Greenhouse Gas Emissions Associated with the Project Operation Activities at RFS

Function		Locomotive		Fuel Consumption Rate	GHG Emission Rates			
		Model	No. of Units		CO_2	CH_4	N_2O	CO_2e [b]
				L/day/unit	t/y	t/y	t/y	t/y
Rail Switching Engines	Inbound Switcher	RailServe LEAF[1]	1	350	340	0.02	0.14	382
	LPG Rack Switcher	RailServe LEAF	1	312	303	0.02	0.13	341
	LPG/EF Switcher	RailServe LEAF	1	334	325	0.02	0.13	366
	Outbound Switcher	RailServe Dual LEAF	1	449	436	0.02	0.18	491
Mainline Locomotive	CN Trains	SD70	3	910	2,655	0.15	1.10	2,985
Total					**4,059**	**0.23**	**1.68**	**4,564**
Alberta 2013 GHG Total (t CO_2e) [a]								**270,000,000**
Canada 2013 GHG Total (t CO_2e) [a]								**726,000,000**
Percentage of Provincial 2013 GHG Total								**0.0017%**
Percentage of National 2013 GHG Total								**0.0006%**

Notes:

[a] Source: (Environment Canada, 2015a).

[b] The greenhouse gas emissions were estimated based on GWP of 1 for CO_2, 25 for CH_4, and 298 for N_2O (Environment Canada, 2015b).

2.4.2 Liquid Discharges

The only anticipated liquid discharges associated with the Project are stormwater runoff. Management of stormwater runoff within the development area of the Project will occur during all three Project life cycle phases: construction, operations and decommissioning/reclamation. Runoff during Project construction will be managed with a runoff collection system in place for existing facilities and the addition of temporary runoff collection ditches.

During operations, stormwater runoff will be captured before release to the environment by three stormwater retention ponds proposed as part of the Project (Stormwater Ponds 1-3, Figures 2, 3 and 3.3). Runoff from the Project area north of the allowance for Township Road 560 will be captured by the RFS stormwater pond (Pond #4 Figure 2, 3 and 3.6).

Runoff from the remaining Project area, south of the Township 560 Road allowance, will be collected by the three other planned stormwater ponds. These ponds (Stormwater Ponds #1, #2, and #3 in Figures 2 and 3, and 3.3) are included in the Project description. Project and adjacent existing facility operations in this catchment area are such that they are not expected to adversely affect the quality of runoff aside from increased suspended solids. The stormwater management ponds will have a combined retention capacity of approximately 48,400 m^3 and were designed to manage the runoff expected from a 1:100 year storm event (SamEng, 2016). The purpose of the ponds is to allow the suspended solids to settle, improving the quality of captured runoff before it is discharged to the environment in accordance with Alberta Municipal Stormwater Guidelines of 85% particulate removal >75 um. As there will be no transloading, or railcar washing, loading, or maintenance in the Project area and no spills or leaks of products are expected from normal operations that would cause an adverse effect to runoff captured and discharged.

Railcars on tracks in the Project may be carrying ethane, propane, butane, condensates, diesel, biodiesel, unconverted oil (UCO), or olefinic products from adjacent facilities. Pembina has developed an emergency response plan to mitigate environmental impacts in the event of upset conditions causing an accidental spill. Each of the stormwater management ponds has a discharge control structure at the outlet, which can be closed in the event of upset conditions. If spilled fluids are captured by the runoff management system, or if stormwater runoff becomes affected by the spill, the captured fluids can be contained and tested before appropriate disposal.

The ponds will drain via a network of ditches and culverts before discharging the clarified runoff to the NSR. The conveyance of drainage from Pembina lands and the outfall structure at the NSR are owned by Sturgeon County, and are therefore not included in this Project. Pembina has worked closely with the County regarding regulatory approval and design of the outfall structure as stormwater from the Project will move through the outfall and ultimately to the NSR. This included Advisian (2016) completing a fisheries assessment in the area for the proposed County Outfall. This assessment concluded the stormwater runoff generated from the Project and discharging through a ditching system to the County outfall has low potential for aquatic impacts. Details of this assessment are described in Section 5.1.6 Aquatics. The outfall will also be subject to approval through the DFO due to having activities below the low water mark and effluents entering the NSR. It will also need approval provincially by AEP through the *Water Act* and follow the Water: Codes of Practice.

As there is no wastewater produced from the Project, there are no other liquid discharges.

2.4.3 Types of Waste and Waste Management

During construction, operations, decommissioning and reclamation, the Project will generate both recyclable and non-recyclable waste. Overall, waste management will be integrated into the existing Pembina RFS waste management program and procedures, which is regulated under Pembina's existing EPEA approval. All waste streams will be contained and disposed of according to the Alberta *EPEA Waste Control Regulation* (Alberta Regulation 192/1996) and the requirements for each specific waste as classified in the *Alberta User Guide for Waste Managers* (Alberta Environmental Protection). Recyclable material will be separated into various containers and removed from RFS for recycling by a licensed third-party supplier. Non-recyclable domestic waste will be stored on-site prior to being transported to an approved landfill by a licensed third-party supplier. Table 8 contains a summary of the expected waste streams associated with the Project and the applicable waste management method.

Table 8: Information of Construction Equipment for the Project

Type of Waste	Waste Management Method
Domestic Waste	Licensed Third-Party Supplier
Recyclable Waste	Licensed Third-Party Supplier; Various recycling companies based on the recyclable material (paper, metal, cardboard, plastic etc.)
Hazardous Waste	Licensed Third-Party Supplier; Limited amounts are expected (creosote rail ties, used oil, batteries); applicable approved disposal site
Septic Waste	Licensed Third-Part Supplier; applicable approved disposal site

2.5 Estimated Schedule and Main Activities

The main activities related to the Project consist of five phases: Pre-Construction, Construction, Operation, Decommissioning/Reclamation and Abandonment. Table 9 provides the Project timeline. These dates are subject to change based on regulatory approval timing, procurement of materials and current economic status.

Table 9: Estimated Project Schedule

Project Phase	Estimated Schedule
Pre-Construction	Q2 2016 – Q3 2016
Construction	Q3 2016 – Q3 2018
Operations	Q3 2017 – 2042
Decommissioning/Reclamation	2042 – 2047
Abandonment	2048

To allow for continued operation of the existing rail facility at RFS, the Project will be constructed in several Phases (Table 10).

Table 10: Construction Phases Schedule

Project Phase	Estimated Start Date
South Yard and Stormwater Ponds	August 2016*
Inbound Classification Yard	July 2017
Outbound Classification Yard	May 2018

*pending regulatory approval

During the various project phases Pembina will be required to maintain regulatory approvals including various monitoring and reporting requirements.

2.5.1 Pre-Construction

Pre-construction activities will include land clearing, soil salvage and site grading.

Land Clearing

The area required for the Project contains little to no standing timber but any vegetation will be removed, with the majority of the vegetation consisting of shrubs and grasses. No merchantable timber exists on site therefore no timber salvage is required. Woody vegetation will be chipped into mulch that can be used for future reclamation.

Soil Salvage

Soil salvage activities will be in accordance with applicable provincial and municipal regulatory requirements including the separate salvaging and storage of topsoil and subsoil. Topsoil and subsoil that has been salvaged will be stored within the RFS site. Soil salvage will be completed in accordance with all relevant standards and soil handling activities will be monitored closely to limit any soil losses due to erosion and poor management/handling practices. Subsoil and topsoil will be replaced in areas that are not occupied by permanent approved features.

Grading

Following soil salvaging the site will be graded with various cut and fills including the initial excavation of the three surface water control ponds. The Project will require a similar grade to the existing rail infrastructure and grading will be completed to meet design requirements.

2.5.2 Construction

As part of the construction activities Pembina will continue to comply with the *Alberta Weed Control Act* by enforcing the requirement that all construction equipment arriving on the Project site is free of mud, vegetation and seeds to help limit the opportunity for noxious weeds to establish on site. Ongoing monitoring will occur during and post construction to identify areas of concern and apply appropriate mitigation.

Construction Support

Project access roads will be constructed during the grading of the site and will be built on the rail subgrade within the rail track disturbance area without compromising safety. Construction laydown areas will be required for the construction of the Project to store building materials, equipment, fabrication and office space. These laydown areas will be established within the Project area on previously disturbed land to limit the overall rail yard disturbance area. Subsurface infrastructure will be installed prior to track installation to avoid future re-handling of material.

Rail Subgrade

Once the site has been graded and surveyed in accordance to the engineered design drawings the rail track subgrade construction can begin. This subgrade is made up of 12 inches of sub-ballast which consists of 3 inch minus pit run granular material.

Rail Installation

Track material will be continuously arriving on site where it will be sorted and stored in the designated laydown area. The various components of the Project will be ongoing at the same time to increase

construction efficiency. Track will be constructed directly on the previously installed sub-ballast. Upon completion of the "skeletonized track" the track is flooded with railway ballast (2" minus heavily fractured rock), then lifted, lined and tamped to final alignment and elevation.

Rail Removal

The existing Condensate Wye will be removed. The land in which this rail line was located on will be reclaimed in accordance with applicable provincial regulatory requirements if it is determined that the land is not required for future rail yard use. Track materials will be salvaged and re-used in the construction of new track when practical.

2.5.3 Operation

The Project will enter service under staged construction with commissioning, testing, and operation ongoing to allow continual transportation of product. An operating plan has been completed for each operational phase. The expected Project life is 30 years.

The majority of the Project will be constructed on Pembina-owned land (pending final land acquisition). Pembina is responsible for construction, operation and decommissioning of the Project track located within the CN right-of-way. Pembina will maintain the classification yard portion of the Project, and CN will maintain the six departure and receiving tracks, with the exception of snow removal and vegetation control, which will be Pembina's responsibility.

There are no loading or transloading facilities associated with this Project. Pembina has existing, operating loading facilities and some currently under construction associated with projects outside of the scope of this Project Description, which have previously been approved by regulators.

The Pembina RFS facility receives NGLs via pipeline and fractionates them into spec products such as ethane, propane, butane and condensates. These products are then loaded onto railcars or trucks via existing tracks and shipped to market.

It is forecasted that when the Project is completed in 2018, pending all necessary regulatory approvals, the yard will handle 260 cars per day, which will be made up of approximately 195 cars per day carrying Williams/Pembina products and 65 cars per day NWR products. Additionally, there will be an average of three visits per day by CN. CN will drop empty cars on the track, and pick up assembled trains off of the departure track in the same visit. The Pembina rail contractor will organize rail cars in the classification yard according to the commodity the car will carry. The rail car will subsequently be moved from the classification yard, in Project area, over to the loading tracks. Following loading, the cars will return to the classification yard where Pembina rail contractor will organize the full cars into assembled trains for pick up by CN.

Pembina is currently a participant of the Emergency Response Assistance Canada (ERAC) program. This requires Transport Canada approval of the Facilities Emergency Response Assistance Plan (ERAP). In January 2016, Transport Canada issued Pembina a 3-year interim approval for the transportation of UN1203 Gasoline, UN1267 Petroleum Crude Oil, UN1268 Petroleum Distillates and UN3295 Liquid Hydrocarbons by Rail. The ERAP was developed to meet the following objectives:

- To provide trained and qualified people through the selection process and training standard.
- To maintain quality equipment by ensuring that Response Teams adhere to the equipment standard.
- To allow responders to deal effectively with an LPG emergency. This is achieved through knowledge of Management, Preparedness and Operations policies and guidelines in the Plan.
- To measure the performance and improve each aspect of the Plan's operation. This is achieved through the Quality Management System.

2.5.4 Decommissioning and Reclamation

At the time the rail yard is no longer required for everyday operations at the RFS site the decommissioning phase will commence. During this time, utilities would be disconnected and surface infrastructure would be removed or recycled to various approved third-party licensed facilities. Salvaging, recycling or re-using materials is Pembina's preferred decommissioning method, if these options exist. Following the removal of surface infrastructure, subsurface infrastructure can be removed.

If and when remediation activities are completed, the rail yard will be regraded in an effort to blend with adjacent lands and to allow for natural drainage to occur. Stockpiled subsoil and topsoil will be replaced throughout the site and vegetation will be re-established as per provincial regulatory requirements and approved end land use plans.

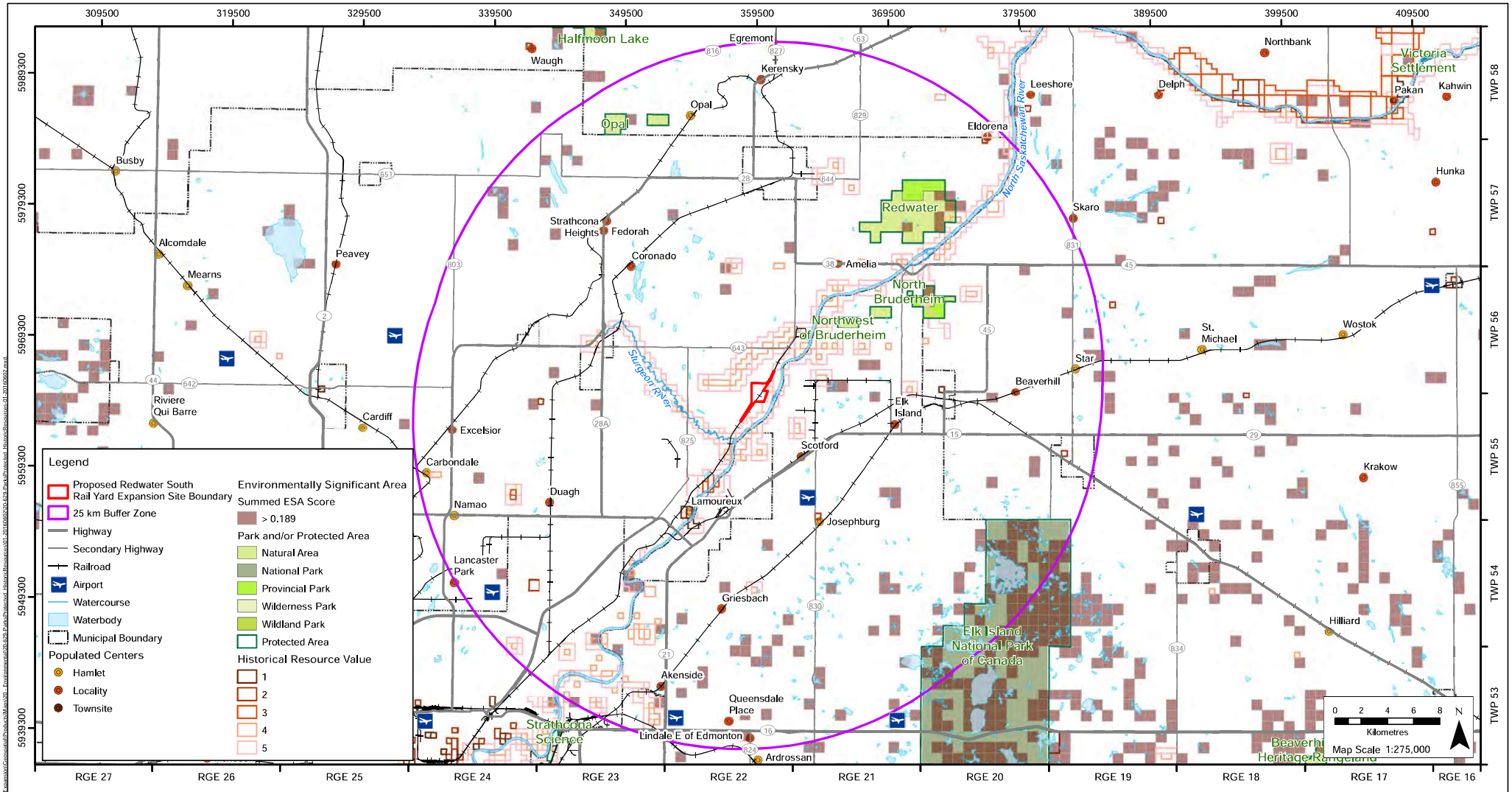
The portion of the Project that falls within lands contained by the current EPEA Approval will require to be reclaimed as per outlined in the EPEA reclamation plan and subsequent approval. The Project lands that are outside of the current EPEA approved lands will be reclaimed to equivalent land capability. End land use for the rail yard will remain as heavy industrial use or as amended by Sturgeon County.

3.0 PROJECT LOCATION

3.1 Site Coordinates

The Project is related to the existing RFS facility located in Sturgeon County southwest of Redwater, Alberta (Figure 4). The disturbance area of the Project is approximately 52 ha. Coordinates from the middle of the Project are as follows:

Latitude N 53° 48’ 21.9”
Longitude W 113° 08’ 23.9”



PEMBINA

Pembina Redwater South Rail Yard Expansion
Township 56 and 55-20 W4M
Parks, Protected Areas, and Historical Resources

Integrated Environments
Planning • Integration • Management

Projection: NAD 83 UTM Zone 12N
When printed on 11" X 17" sheets, scale is 1:275,000

Figure Number	4	IEL Project Number	16415

Revision	Date	Created by
01	20 MAY 2016	IY
00	02 JUN 2016	IY

Sources: Parks: AltaLIS 2008; Hydrology: AltaLIS 2014; Railroad: Natural Resources Canada 2013; Highways, Municipal Boundary, Hamlets, Populated Area: AltaLIS 2015

Document Path: U:\Projects\16415 Pembina Redwater South Rail Yard Expansion\Geospatial\Products\Maps\20 - Environmental\20-629-ParksProtected_HistoricResources\01-20160602\20-629-ParksProtected_HistoricResources-01-20160602.mxd

3.2 Site Plot Plan

Figures 3 through 3.9 contain the Project plot plan. The Project plot plan also shows existing infrastructure related to the current RFS site.

3.3 Site Map of the Project Relative to Environmental Features

Figures 1, 2, 4, and 5 displays the Project relative to nearby:

- Watercourses and waterbodies;
- Major and secondary roads;
- Railway lines;
- Airports;
- Wildlife Habitat and Sensitive Areas;
- First Nation Reserves; and
- Industrial Heartland Boundaries.
- Parks, Protected Areas and Historical Resources

3.4 Site Photographs

Appendix A contains site photographs of the proposed Project area.

3.5 Proximity of the Project to Identified Receptors

3.5.1 Permanent, Seasonal or Temporary Residences

The nearest permanent residence to the Project is approximately 1.4 km to the south. There are no residences on adjacent properties.

3.5.2 Cities, Towns and Hamlets

- The hamlet of Josephburg is approximately 9 kms south east of the Project
- The city of Fort Saskatchewan is approximately 10 kms south of the Project
- The town of Gibbons, Alberta is approximately 12 kms west of the Project
- The town of Bruderheim is approximately 13 kms east of the Project
- The Hamlet of Redwater is approximately 15 kms north of the Project

3.5.3 Traditional Territory of Aboriginal Groups

The Project is located entirely within Treaty 6 and within Métis Nation of Alberta Region 4 (Figure 3). However, Aboriginal groups in Treaty 6, 7 and 8 who may have asserted Traditional territory[7] in the Project area have been notified. The Project is also within Métis Nation of Alberta Region 4. This group was notified and a full list

[7] Traditional territory is understood as an area in which the lands and resources are currently being used for Traditional purposes by Aboriginal people (adapted from GoA, 2010).

of notified groups was provided in Section 1.3. Potential impacts to the Traditional territory of Aboriginal groups is discussed in section 5.4 *Potential Environmental Effects to Aboriginal Peoples Related to the Project.*

3.5.4 Federal Designated Lands

The Project is not located within federal designated lands. Elk Island National Park is located approximately 25 km to the southeast of the Project. The Enoch Cree Nation reserve lands are located 48 kms from the Project.

The Canadian Forces Base in Edmonton is located approximately 26 kms south east of the Project.

3.6 Land and Water Use

3.6.1 Zoning Designation

The Project is located with Alberta's Industrial Heartland and is within Sturgeon County where the majority of the land is zoned for heavy industrial use and a small portion is zoned Agricultural Heartland.

3.6.2 Legal Land Description

The Project will be located within portions of:

- NE 26 – 55 – 22 W4M;
- SE 35 – 55 – 22 W4M;
- SW 36 – 55 – 22 W4M;
- NW 36 – 55 – 22 W4M;
- SW 1 – 56 – 22 W4M;
- SE 1 – 56 – 22 W4M;
- NE 1 – 56 – 22 W4M; and
- NW 6 – 56 – 21 W4M.

Pembina owns the majority of the land, including the related surface and mineral rights, which are required for the Project except for the following. Figures 3 through 3.9 provides details on the land ownership listed below:

- NE 26 – 55 – 22 W4M → Green Leaf Farms Ltd.;
- SE 35 – 55 – 22 W4M → Green Leaf Farms Ltd.;
- NW 36 – 55 – 22 W4M → CN;
- SE 1 – 56 – 22 W4M → Williams Energy Canada Ltd.; and
- NE 1 – 56 – 21 W4M → Williams Energy Canada Ltd.

Pembina has notified the landowners and is working through a land broker to purchase private lands or arrange for a land swap. These discussions are at varying stages respectively and will be in place prior to construction.

The majority of the Project will be constructed on Pembina-owned land (pending final land acquisition). Pembina will be responsible for the construction, operation, and decommissioning of all tracks associated with this Project. Pembina will maintain the classification yard portion of the Project, and CN will maintain the six departure and receiving tracks, with the exception of snow removal and vegetation control, which will be

Pembina's responsibility. However, Pembina is responsible for construction, operation and decommissioning of the track located. Pembina will provide CN an easement on Pembina land for the six departure and receiving tracks.

3.6.3 Applicable Land Use, Water Use (including groundwater), Resource Management and Conservation Plans

The Project is located within Alberta's Industrial Heartland within Sturgeon County where the majority of the rail yard expansion is zoned for Heavy Industrial Use, with a small portion zoned as Agricultural Heartland. Adjacent land uses include a mix of heavy industry and agriculture.

The Project falls under the Sturgeon County Alberta's Industrial Heartland Area Structure Plan (ASP) Bylaw No 1118/07. As part of Sturgeon County's Municipal Development Plan (Bylaw 1313/13, April 22, 2014) and Land Use Bylaw 819/96 the existing and proposed sites for the rail yard are zoned for Heavy Industrial Use and Agricultural Heartland. Proper planning of new development in Sturgeon County's Industrial Heartland ASP area is strategically important to help the County achieve its goal of diversifying its economic base and creating more intensive value-added employment opportunities. The ASP has several goals including: encouraging major industrial employment for the Capital Region; encouraging corporate industry to invest in the County's social, cultural and environmental initiatives; complying with Federal and Provincial regulations in an effort to maintain safe communities and natural environments; facilitating and accommodating the growth of Alberta's energy sector, which contributes to the overall viability of Sturgeon County's future; and ensuring efficient infrastructure networks to accommodate a wide range of heavy industrial needs.

Sturgeon County's ASP provides guidance on future industrial growth with five policy areas which include: Environmental, Heavy Industrial, Heartland Agricultural, Heartland Industrial Service Center and Agricultural.

All guidelines for this Policy Area were considered during the Projects development application process to Sturgeon County.

The Project is also within the North Saskatchewan land use planning region defined by AEP. The North Saskatchewan Regional Plan is currently not complete. Phase 1 consultation (with "the Regional Advisory Council, First Nations and Métis groups, stakeholders, municipalities and the public") is complete. Regional Advisory Council is preparing Recommendation to Government report. (AEP, 2016).

3.6.4 Traditional Lands

The location of Aboriginal communities in the Project has been identified 3.5.2. The Project falls entirely within the 582 km^2 of Alberta's Industrial Heartland. Some of the land has been previously disturbed for agricultural purposes, while other parcels are currently being used as a railway yard.

Due to the existing infrastructure and heavy industrial development, access to the NSR from the west bank, where the Project will be located, will be no more impeded by the Project than it currently is. The Project will

not obstruct the river or its usage. Considering the private ownership[8] and the existing level of industrial development immediately surrounding the Project, it is not anticipated that the Project will impact traditional lands[9], or water and/or lands where traditional land use[10] is exercised. Pembina has ownership data for each parcel of land. According to this data the lands have been privately owned for varying lengths of time ranging from 1963 to 1987.

Pembina notified Aboriginal groups who may have asserted Traditional territory in the Project area. To date through ongoing consultation, Pembina has not yet received any claim to traditional land or impacts to traditional land use. This is further discussed in Section 6 of this document.

[8] Pembina has ownership data for each parcel of land. According to this data the lands have been privately owned for varying lengths of time ranging from 1963 to 1987.

[9] Lands used by Aboriginal groups or individuals for purposes such as burial grounds, gathering sites, and historic or ceremonial locations, and existing constitutionally protected rights to hunt, trap and fish. Does not include proprietary interests in the land (GoA, 2010).

[10] Activities involving the harvest of traditional resources such as hunting and trapping, fishing, gathering medicinal plants and travelling to engage in these activities (GoA, 2010).

4.0 FEDERAL INVOLVEMENT – FINANCIAL SUPPORT, LANDS AND LEGISLATIVE REQUIREMENTS

4.1 Federal Financial Support

No proposed or anticipated federal financial support that federal authorities are, or may be, providing are required to support the carrying out the Project.

4.2 Federal Lands

There are no federal lands required in support of the Project.

4.3 Federal Regulatory Requirements

There are no additional federal regulatory requirements associated with this Project.

5.0 ENVIRONMENTAL EFFECTS

5.1 Physical and Biological Setting

As previously mentioned, the Project is located within Alberta's Industrial Heartland within Sturgeon County where the majority of the Project is zoned for Heavy Industrial Use, with a small portion zoned as Agricultural Heartland. Adjacent land uses include a mix of heavy industry and agriculture. The NSR is located approximately 1.0 km to the east of the Project.

5.1.1 Soil

The Project area is comprised of approximately half disturbed and half undisturbed land. Landscapes vary from cultivated agricultural fields to heavily industrialized developments consisting of gravel pads, gravel piles, existing rail lines, existing access roads and current disturbances related to pipeline installation. Undisturbed land is comprised of moderately fine textured Rego Black Chernozems that are found primarily in the southwest corner of the Project and Orthic Black Chernozems along the north boundary of the proposed footprint. The disturbed areas would be of similar soil quality based on predominantly the Peace Hills soil series (AGRASID, 2015). The majority of the Project has a low reclamation suitability rating due to the stoniness, low pH and inherent soil characteristics for water holding capacity.

Land use is heavy industrial and Pembina has been and will continue to practice all applicable topsoil and subsoil salvage and conservation techniques in an effort to reclaim soil conditions to an equivalent capability once operations cease.

5.1.2 Vegetation and Wetlands

The Project is within the Boreal Forest Natural Region and the Dry Mixedwood subregion of Alberta. Roughly half of the proposed Project has been previously disturbed and the undisturbed areas consist of cultivated land. No tree cover exists in the Project area. Agronomic perennial crops are found on the cultivated lands and limited vegetation is found within the disturbed areas including clover, slough grass, Kentucky bluegrass, wire rush and common cattails. One temporary graminoid marsh, with an area of 0.39 hectares, was field verified and an application has been submitted to AEP for *Water Act* approval for Pembina to provide wetland compensation for the loss resulting from the Project. Water Act Approval No. 00380751-00-00 was obtained on July 5, 2016.

Presence of invasive species was identified in areas of disturbance and consisted of perennial sow thistle and Canada thistle. Pembina has a weed management policy for all of their sites and continues to address any noxious weed issues with the appropriate actions in order to mitigate weed occurrences.

No federally or provincially listed vegetation species were observed on Project area. At the end of the operational life of the Project, Pembina will develop a reclamation plan in accordance with the applicable legislation and regulations at the time decommissioning and reclamation activities are to take place. The plan will be reflective of local end land use objectives and adjacent land use. Vegetation cover will be re-established with provincial regulator approved certified weed free seed mix in an effort to achieve equivalent land capability.

5.1.3 Hydrology

No Class A – C waterbodies intersect the Project area. The closest waterbody is the NSR (Class C), located approximately 1.0 km to the east of the project. The NSR is one of the largest watersheds in Alberta with a total drainage area of approximately 131,800 km^2 and an effective drainage area of 68,800 km^2. RFS and the Project are part of many regional plans providing various frameworks for managing the North Saskatchewan watershed to minimize industrial impacts. Regional plans that provide guidance for the protection of the watershed include: Water Management Framework for the Industrial Heartland, Northeast Capital Industrial Association and the North Saskatchewan River Regional Plan.

The construction and operation of the Project does not require any surface water withdrawals. The three surface water control ponds are designed to limit local erosion and ensure water quality to minimize sediment load discharge. These ponds are being constructed to remove 85% of particles 75 µm or greater (Alberta Environment, 2001) and to handle a 1:100 year storm event per the Alberta (Alberta Environmental Protection, 1999), as per Alberta stormwater management guidelines.

5.1.4 Hydrogeology

The uppermost bedrock unit in the region consists of sandstones, siltstones, and shales of the Belly River Formation (Stein, 1976). Regionally, groundwater yields from fractured and weathered bedrock units is sufficient for it to be considered a modest groundwater resource. Roughly parallel to, and underlying, the modern-day NSR is the Beverly Channel, a pre-glacial buried valley. The sands and gravels of the Beverly Channel create high-yield (up to 7.6 L/s) and important regional aquifers, and are often hydraulically connected to the NSR.

There are eight water well records for the area within or immediately adjacent to the project footprint. Seven records were for exploratory boreholes or abandoned wells. One record was for a domestic and stock well, drilled in 1929 (located in 4-55-22-W4M) to a total depth of 64 m. Information regarding lithology and completion interval were unavailable. The presence and continued use of the domestic well has not been field verified.

Surficial deposits in the Project area are expected to consist of low-permeability silty clay till deposits, which may be fractured in the upper 8 m. Underlying the till may be a variable thickness of preglacial alluvium, consisting of clay, silt and sand. Fine-grained deposits are expected to range in thickness from less than 10 m to over 20 m in the Project area.

Based on lithology from a water-well drilling report (1420181), surficial deposits in the floodplain along the NSR are expected to consist of several metres of sand and gravel. These sediments would underlie the final stretches of the stormwater ditches before discharge to the River.

Groundwater flow within surficial deposits is generally southeast, towards the River. However, at the north end of the Project, shallow groundwater flows north towards a local drainage feature.

The Project is not expected to cause an adverse environmental effect on the quantity of groundwater in local resources, as no groundwater is going to be extracted and there is no major subsurface work associated with the Project.

As there will be no railcar washing, loading, or maintenance in the Project area, no spills or leaks of products are expected from normal operations. Pembina has best-management-practices for handling petroleum products and wastes to prevent instances of leaks and spills, including routine equipment inspections, use of vehicle spill kits, policy to immediately address any leaks, and proper waste and chemical identification and disposal. If leaks or small spills do occur, the fine-grained surficial sediments are of sufficient thickness and impermeability to offer protection to underlying groundwater resources. Pembina has developed an emergency response plan to mitigate environmental impacts in the event of upset conditions causing an accidental spill. The existing aspects of RFS, surrounding and north of the proposed Project, are currently monitored for groundwater conditions per EPEA Approval No. 9995-02-00 (as amended). Since much of the Project is within areas currently monitored, any unnoticed Project releases in those areas will be detected by the groundwater monitoring program.

Changes to groundwater quantity from the stormwater management facility is expected to be negligible. The ponds will be clay-lined, which will impede infiltration and prevent the ponds from being significant groundwater recharge areas. Considering surficial sediments are also fine-grained, the low infiltration rates from the ponds are not expected to reduce the natural groundwater recharge rates for the Project area.

Negative effects to the quality of groundwater resources are not expected from the stormwater management facility proposed as part of the Project. Stormwater draining to the three ponds is expected to carry suspended sediment, but not otherwise be adversely affected by the proposed Project activity under normal operating conditions. The suspended sediment will settle out and collect in the ponds, and will not infiltrate to groundwater resources.

5.1.5 Wildlife

The Project is located adjacent to, and partially within a Provincial Key Wildlife and Biodiversity Zone (KWBZ) which runs along the NSR (Figure 5). An environmental site assessment completed for the proposed Project (Stantec 2015) characterized habitat as lacking significant native vegetation cover, surrounded by large expanses of disturbance and ongoing industrial activity. The Project footprint is generally considered to be of low quality for wildlife. Small areas of grass and weeds as well as a narrow strip of windrow trees would be capable of providing nesting and foraging habitat for birds, as well as providing cover and foraging habitat for some mammal species. Existing ephemeral wetlands may provide breeding habitat for some amphibian species in wet years. The Project is not within any federal wildlife areas or reserves.

A desktop review identified 47 mammal species, 189 bird species, 6 amphibian species, and 2 reptile species that have geographic ranges overlapping with the Project area (Appendix B) (Federation of Alberta Naturalists 2007; Smith 1993; Russel and Bauer 2008). Based on the habitat preferences of those species, it is anticipated that 103 wildlife species may use patches of available habitat within the Project area to satisfy certain life requisites on a seasonal or year-round basis (Appendix B).

The Project will result in a small amount of direct habitat loss due to the construction of new railway tracks and associated infrastructure. Sensory disturbances during construction and operation will lead to indirect habitat loss for wildlife in areas proximal to the Project. The high amount of existing disturbance and altered landscape has likely already reduced the habitat effectiveness for many wildlife species in the area. The proposed Project and associated components, are not likely to significantly contribute to wildlife habitat loss in the area, and therefore adverse effects are not anticipated.

A small amount of the Project area falls within a KWBZ associated with the NSR, intended to protect ungulate winter habitat and maintain movement corridors along the river. The Project is located above the river valley, with the footprint falling within an industrial development area, and is not expected to reduce wildlife's ability to use habitat within the KWBZ or impact wildlife movement within the zone.

The Project is not anticipated to significantly contribute to local wildlife mortality. Although new rail lines and some road construction are part of the planned activities, existing rail infrastructure, roads and industrial development have likely already reduced local wildlife use, in turn lowering wildlife encounters and mortality risks. If wildlife is observed during construction and operation of the proposed project, mitigation will be developed to reduce the likelihood of mortality as a result of project activities where required.

5.1.6 Aquatics

No Class A to C waterbodies intersects the Project. The closest waterbody is the NSR (Class C), located approximately 1.0 km to the east of the project.

Advisian (2016) completed a fisheries assessment in the area for the proposed County Outfall. The assessment was based on the Fish and Wildlife Management Information System (FWMIS). The Fish and Wildlife Division of the AEP deemed that there was sufficient information to determine likely fish presence within the potentially affected reach portion of the NSR (Advisian, 2016). Advisian's (2016) review of the FWMS identified a total of 36 fish present in the NSR, of which 20 were confirmed to be present within a 5 Km radius of the proposed outfall project area (Table 11).

Over 1000 fish surveys have taken place within 5 km of the Project (FWIMT, 2015). Survey sites were located for the majority on the NSR, Astotin Creek and unnamed tributaries. Surveys resulted in the identification of 20 different species including: longnose dace, pearl dace, brook stickleback, fathead minnow, quillback, lakechub, emerald shiner, shorthead redhorse, silver redhorse, longnose sucker, white sucker, sauger, trout-perch, walleye, goldeye, mooneye, mountain whitefish, northern pike, sturgeon and burbot. However, a fisheries assessment completed in the area of the proposed County outfall reported that downstream of the outfall the immediate receiving habitat does not provide suitable spawning habitat for fish known to inhabit this reach of the NSR. Therefore, the stormwater runoff generated from the Project and discharging through a ditching system to the County outfall has low potential for aquatic impacts.

Table 11: Species reported in the North Saskatchewan River

Fish Type	Species	Scientific Name	Abbreviation	Special Listing
Sport Fish	Brook trout	*Salvelinus fontinalis*	BKTR	
Sport Fish	Brown trout	*Salmo trutta*	BNTR	
Sport Fish	Bull trout	*Salvelinus confluentus*	BLTR	Threatened (AB), Threatened (COSEWIC)*
Sport Fish	Burbot	*Lota lota*	BURB[0]	

Sport Fish	Cutthroat trout	*Oncorhynchus clarkii*	CTTR	
Sport Fish	Goldeye	*Hiodon alosoides*	GOLD[0]	
Sport Fish	Lake sturgeon	*Acipenser filvescens*	LKST[0]	Threatened (AB), Endangered (COSEWIC)*
Sport Fish	Lake trout	*Salvelinus namaycush*	LKTR	Sensitive (AB)*
Sport Fish	Mooneye	*Hiodon tergisus*	MOON[0]	
Sport Fish	Mountain whitefish	*Prosopium williamsoni*	MNWH[0]	
Sport Fish	Northern pike	*Esox lucius*	NRPK[0]	
Sport Fish	Rainbow trout	*Oncorhynchus mykiss*	RNTR	
Sport Fish	Sauger	*Sander canadensis*	SAUG[0]	Sensitive (AB)*
Sport Fish	Walleye	*Sander vitreus*	WALL[0]	
Sport Fish	Yellow perch	*Perca flavescens*	YLPR	
Coarse Fish	Longnose sucker	*Catostomus catostomus*	LNSC[0]	
Coarse Fish	Mountain sucker	*Catostomus platyrhynchus*	MNSC	
Coarse Fish	Quillback	*Carpoides cyprninus*	QUIL[0]	
Coarse Fish	Shorthead redhorse	*Moxostoma macrolepidotum*	SHRD[0]	
Coarse Fish	Silver Redhorse	*Moxostoma anisurum*	SLRD[0]	
Coarse Fish	White sucker	*Catastomus comersonii*	WHSC[0]	

Forage Fish	Brook stickleback	*Culaea inconstans*	BRST[0]	
Forage Fish	Emerald shiner	*Notropus atherinoides*	EMSH[0]	
Forage Fish	Flathead minnow	*Pimephales promelas*	FTMN[0]	
Forage Fish	Finescale dace	*Phoxinus neogaeus*	FNDC	
Forage Fish	Flathead chub	*Platygobio gracilis*	FLCH	
Forage Fish	Iowa darter	*Etheostoma exile*	IWDR	
Forage Fish	Lake chub	*Couesius plumbeus*	LKCH	
Forage Fish	Longnose dace	*Rhinichthys cataractae*	LNDC[0]	
Forage Fish	Northern redbelly dace	*Phoxinus eos*	NRDC	Sensitive (AB)*
Forage Fish	Pearl dace	*Margariscus margarita*	PRDC	
Forage Fish	River shiner	*Notropis blennius*	RVSH[0]	
Forage Fish	Slimy sculpin	*Cottus cognatus*	SLSC	
Forage Fish	Spottail shiner	*Notropis hudsonius*	SPSH[0]	
Forage Fish	Trout-perch	*Percopsis omiscomaycus*	TRPR[0]	

[0] Local pressure (5 km radius)

*Species at risk under Species at Risk-Alberta Wildlife Act (AB) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

The stormwater runoff generated from the Project and discharging through a ditching system to the County proposed outfall has low potential for aquatic impacts (Yue, Fang, & Ulrich, 2016). Advisian's (2016) assessment completed in the area reported that the immediate receiving habitat, downstream of the proposed outfall, does not provide suitable spawning habitat for fish known to inhabit this reach of the NSR. Given that the outfall is designed for surface water drainage, it is expected that flows will be highest during spring runoff and rainfall events, which coincide with the trends of elevated flow and turbidity in the NSR.

Suspended sediment will be reduced by the Project's stormwater management ponds, which are designed to remove 85% of suspended sediment (>75 µm), reducing the concentration of sediment that may be transported into the NSR (Yue et al., 2016). Remaining sediment is expected to settle out quickly and not affect clean gravel and cobble substrate observed farther downstream (Advisian, 2016). Also, since the outfall flow will be small relative to that in the NSR at any time, it will not result in a considerable increase in turbidity or flow in the NSR or the local side-channel.

While stormwater draining to the three ponds is expected to carry suspended sediment, they are not expected to be otherwise adversely affected by the proposed Project activity under normal operating conditions. As there will be no railcar washing, loading, or maintenance in the Project area, no spills or leaks of products are expected from normal operations. Pembina has best-management-practices for handling petroleum products and wastes to prevent instances of leaks and spills, including routine equipment inspections, use of vehicle spill kits, policy to immediately address any leaks, and proper waste and chemical identification and disposal. Pembina has developed an emergency response plan to mitigate environmental impacts in the event of upset conditions causing an accidental spill.

5.1.7 Air

Construction of the Project is anticipated to contribute to local and temporary increases in dust and exhaust emissions. Project operations emissions are expected to include typical diesel locomotive operational emissions; these have the potential to impact local air quality only.

GHG emissions from both Project construction and operations are anticipated to be negligible compared to industrial practices in the Project vicinity and Provincial emissions (Section 2.4.1).

Due to the Project's geographical location, it is part of the Capital Region Air Quality Management Framework (the Framework), which is comprised of municipalities, industry, non-governmental organizations, airsheds and federal and provincial governments. The main contaminants of concern the Framework focuses on include: nitrogen dioxide, sulphur dioxide, fine particulate matter and ground level ozone.

The Project is also located within the FAP airshed, which actively monitors air quality within the Industrial Heartland. In 2014, FAP performed both continuous and passive monitoring near the location of the Project. The Bruderheim community monitoring station, which operated for a total of 8443 hours out of a possible 8760 hours in 2014, recorded a "Low Risk" Air Quality Health Index rating 95.45% of the time and a "Moderate Risk" rating 4.5% of the time. At no point in 2014 was a "High Risk" rating recorded (2015 values are not yet available).

The nearest FAP continuous monitoring station to the Project is the Redwater Industrial station, located northeast of the Project near Agrium's Redwater facility. The station is a designated EPEA compliance station, intended to monitor local industrial emissions from the nearby emitters. The station monitors for sulphur dioxide (SO_2), nitrogen dioxide (NO_2), oxides of nitrogen (NO_X), nitric oxide (NO), ammonia (NH_3), respirable particulate matter ($PM_{2.5}$) and various meteorological parameters such as wind speed, wind direction and temperature. Measured exceedances of SO_2 and $PM_{2.5}$ occurred during 2014, and all were attributed to localized emissions from nearby industries or from forest fires.

In consideration of the regional air quality data, industrial zoning of the Project, and similar operations in the Project vicinity, air emissions due to Project operations are not expected to impact regional air quality and no adverse effects on air quality due to the Project are anticipated. FAP continues to monitor air quality in the region encompassing the Project.

5.1.8 Noise

The Industrial Heartland, including the proposed Project is subject to the Regional Noise Management Plan (RNMP). The AER determined that traditional noise management practices are not practical due to the high concentration of industrial activity in the Industrial Heartland. Noise compliance in the region is verified through the RNMP which is jointly developed by the AER and the Northeast Capital Industrial Association. During the life of the Project noise will be emitted from construction machinery, the locomotives and rail cars as well as associated light duty vehicles.

The Noise Impact Assessment for the Project, performed by Stantec in March, 2016, identified the noise sources associated with the Project as well as the nearby receptors of concern. The study determined the baseline sound levels at the nearby receptors to be between 47.5 and 56.8 dBA daytime and 44.4 to 55.2 dBA night-time. The expected noise levels due to the project are expected to increase the baseline sound levels at the receptors by between 0.0 and 0.3 dBA, which is considered “no net increase” and therefore compliant with the AER’s Directive 038: Noise Control (Stantec, 2016). The RFS site will continue to comply with RNMP objectives by applying best practices for noise management and performing compliance noise monitoring as directed by the NCIA.

5.1.9 Archaeological

In accordance with the Alberta *Historical Resources Act* a historical resource desktop review of the Historic Resources Management Branch database, as part of the provincial Department of Culture and Tourism, was completed for the Project site and no Historical Resource Value notations or historical resources were identified. Clearance for the Project has been obtained.

If a historic resource is encountered during the construction and or operation of the Project, Pembina will stop activities in the area and contact Alberta Culture and Tourism. Pembina will work with Alberta Culture and Tourism to develop an appropriate mitigation plan based on the historical resource found.

5.2 Potential Changes to the Environment Related to the Project

5.2.1 Fish and Fish Habitat (*Fisheries Act*)

No adverse effect on fish, or fish habitat due to the Project are anticipated (see Section 5.1.6 *Aquatics*).

The Federal Government, through DFO, has developed a number of Pathways-of-Effects (PoE) models and Measures to Avoid Causing Harm to Fish and Fish Habitat to assist proponents (DFO, 2013). A PoE was conducted for the proposed County outfall location in support of the County’s regulatory applications (Advisian, 2016). The PoE assessment did not identify any residual effects if measures to avoid harm are followed during construction of the outfall. While the proposed outfall is not exempt from DFO review given that the proposed design includes riprap placement below the high water mark of the NSR, the self-

assessment results did not identify any residual effects. Advisian (2016) concluded that the County's proposed outfall is unlikely to result in serious harm to fish that are a part of or support a commercial, recreational, or aboriginal fishery.

5.2.2 Marine Plants (*Fisheries Act*)

The Project is not located in an area where marine plants occur and therefore no marine plants will be effected by this project.

5.2.3 Migratory Birds (Migratory Birds Convention Act, 1994)

The Project is located in bird nesting Zone B4 with a restricted activity period (RAP) of mid-April to end of August. If vegetation clearing activities fall within the RAP, a bird nest survey will be conducted to ensure nests and young are protected as required by the *Migratory Bird Convention Act, 1994*. If nests are found within the construction area, the qualified biologist will provide appropriate setbacks from the nest to avoid disturbance until such time as the young have fully fledged.

A desktop assessment found that 153 species covered under the *Migratory Birds Convention Act,* (MCBA) (GOC 1994) have ranges that overlap with the Project area (see Appendix C) (Federation of Alberta Naturalists 2007). Based on species habitat preferences and those found in the Project area, it is anticipated that 41 species may use the area (see Appendix D) (Federation of Alberta Naturalists 2007).

A breeding bird point count survey was conducted on June 24, 2015 for the RFS facility to the Canadian Diluent Hub Pipeline Project (IEL 2015), a pipeline within the southern portion of the Project area**.**

The following bird species were detected:

- American crow (*Corvus brachyrhynchos*);
- American goldfinch (*Carduelis tristis*);
- American robin (*Turdus migratorius*);
- Brown-headed cowbird (*Molothrus ater*);
- Clay-colored sparrow (*Spizella pallida*);
- House wren (*Troglodytes aedon*);
- Le Conte's sparrow (*Ammodramus leconteii*);
- Red-breasted nuthatch (*Sitta canadensis*);
- Savannah sparrow (*Passerculus sandwichensis*);
- Song sparrow (*Melospiza melodia*);
- White-throated sparrow (*Zonotrichia albicollis*); and
- Yellow warbler (*Dendroica petechia*).

The area is characterized by active agricultural lands, with some small patches of forest and existing industrial developments. The high amount of existing disturbance and altered landscape has likely reduced the habitat effectiveness for many migratory birds in the area. The proposed Project and associated components, are not likely to significantly affect migratory birds or their habitat and therefore adverse effects on migratory birds are not anticipated.

Mitigation will be put in place to reduce any attraction to storm water ponds created as a result of the Project, specifically to address the unlikely exposure to potential contaminants. Vegetation management and removal will be initiated as required along the perimeter of the ponds to reduce the likelihood of birds using the area. Other deterrents will be put in place should migratory birds including waterfowl be observed using the ponds during periods of water retention. Pembina owns and operates several large brine ponds at the adjacent RFS facility, and there have been no reported incidents involving birds. The total area of those ponds is approximately 271,058 m2 (~67 acres).

5.2.4 Species at Risk Act

A desktop assessment identified 20 federally listed species, 13 of which are SARA listed (GOC 2016) (see Table 12) that have ranges which overlap the project area (Federation of Alberta Naturalists 2007; Smith 1993; Russel and Bauer 2008).

Table 12: Federally Listed Species that have Ranges that Overlap with the Project Area

Common Name	Scientific Name	COSEWIC Status	SARA Schedule	SARA Status
American Badger	*Taxidea taxus*	Special Concern	No Schedule	No Status
Bank swallow	*Riparia riparia*	Threatened	No Schedule	No Status
Barn swallow	*Hirundo rustica*	Threatened	No Schedule	No Status
Bobolink	*Dolichonyx oryzivorus*	Threatened	No Schedule	No Status
Canada warbler	*Wilsonia canadensis*	Threatened	Schedule 1	Threatened
Common nighthawk	*Chordeiles minor*	Threatened	Schedule 1	Threatened
Horned grebe	*Podiceps auritus*	Special Concern	No Schedule	No Status
Little brown myotis	*Myotis lucifugus*	Endangered	Schedule 1	Endangered
Loggerhead shrike	*Lanius ludovicianus*	Threatened	Schedule 1	Threatened
Northern leopard frog	*Rana pipiens*	Special Concern	Schedule 1	Special Concern
Northern myotis	*Myotis septentrionalis*	Endangered	Schedule 1	Endangered
Olive-sided flycatcher	*Contopus cooperi*	Threatened	Schedule 1	Threatened
Peregrine falcon	*Falco peregrinus*	Special Concern	Schedule 1	Special Concern
Rusty blackbird	*Euphagus carolinus*	Special Concern	Schedule 1	Special Concern
Short-eared owl	*Asio flammeus*	Special Concern	Schedule 1	Special Concern
Sprague's pipit	*Anthus spragueii*	Threatened	Schedule 1	Threatened
Tiger salamander	*Ambystoma mavortium*	Special Concern	No Schedule	No Status
Western grebe	*Aechmophorus occidentalis*	Special Concern	No schedule	No Status
Western toad	*Anaxyrus boreas*	Non-active	Schedule 1	Special Concern
Yellow rail	*Coturnicops noveboracensis*	Special Concern	Schedule 1	Special Concern

Based on habitat preferences, there is potential for 11 federally listed species, 7 of which are SARA listed (GOC 2016; Federation of Alberta Naturalists 2007; Smith 1993; Russel and Bauer 2008) to use habitat in the project area (see Table 13) however, these habitats are generally highly disturbed and considered to be of low quality for these species.

Table 13: Federally Listed Species Possibly Occurring within the Project Area Based on Habitat Preference

Common Name	Scientific Name	COSEWIC Status	SARA Schedule	SARA Schedule
American Badger	*Taxidea taxus*	Special Concern	No Schedule	No Status
Barn swallow	*Hirundo rustica*	Threatened	No Schedule	No Status
Bobolink	*Dolichonyx oryzivorus*	Threatened	No Schedule	No Status
Common nighthawk	*Chordeiles minor*	Threatened	Schedule 1	Threatened
Little brown myotis	*Myotis lucifugus*	Endangered	Schedule 1	Endangered
Northern myotis	*Myotis septentrionalis*	Endangered	Schedule 1	Endangered
Northern leopard frog	*Rana pipiens*	Special Concern	Schedule 1	Special Concern
Short-eared owl	*Asio flammeus*	Special Concern	Schedule 1	Special Concern
Sprague's pipit	*Anthus spragueii*	Threatened	Schedule 1	Threatened
Tiger salamander	*Ambystoma mavortium*	Special Concern	No Schedule	No Status
Western toad	*Anaxyrus boreas*	Non-active	Schedule 1	Special Concern

5.3 Potential Environmental Effects to Federal Lands Related to the Project

The closest federal property is Elk Island National Park, located approximately 25 km to the east – southeast. During the construction and operation of the Project no associated negative affects to Elk Island National Park or any other federal land in the region is expected. There are no First Nations reserve lands within 10 km of the Project and the closest First Nation Reserve or settlement is located approximately 48 km south west.

There are no changes to federal lands anticipated during the construction or operations of the Project. In particular, the Project will not produce local air and noise effects to Elk Island National Park (approximately 25 km to the east – southeast of the Project) or any other federal land.

There are no potential effects to any province other than Alberta or another country other than Canada.

5.4 Potential Environmental Effects to Aboriginal Peoples Related to the Project

Effects on Aboriginal Peoples due to changes in the biophysical and socio-economic environment are not anticipated, considering the following reasons:

- The Project is located within Alberta's Industrial Heartland, within Sturgeon County, and the majority of the project area is zoned Heavy Industrial Use with a small portion zoned as Agricultural Heartland;
- The majority of the land to be used for the Project is owned by Pembina. Pembina is working on land acquisitions with the landowners of the other parcels that are not privately owned by Pembina, allowing the development to occur;
- The land to be used for the Project has been privately owned for decades[11]; and
- The degree of existing long-term industrial development immediately surrounding the Project

[11] Pembina has ownership data for each parcel of land. According to this data the lands have been privately owned for varying lengths of time ranging from 1963 to 1987.

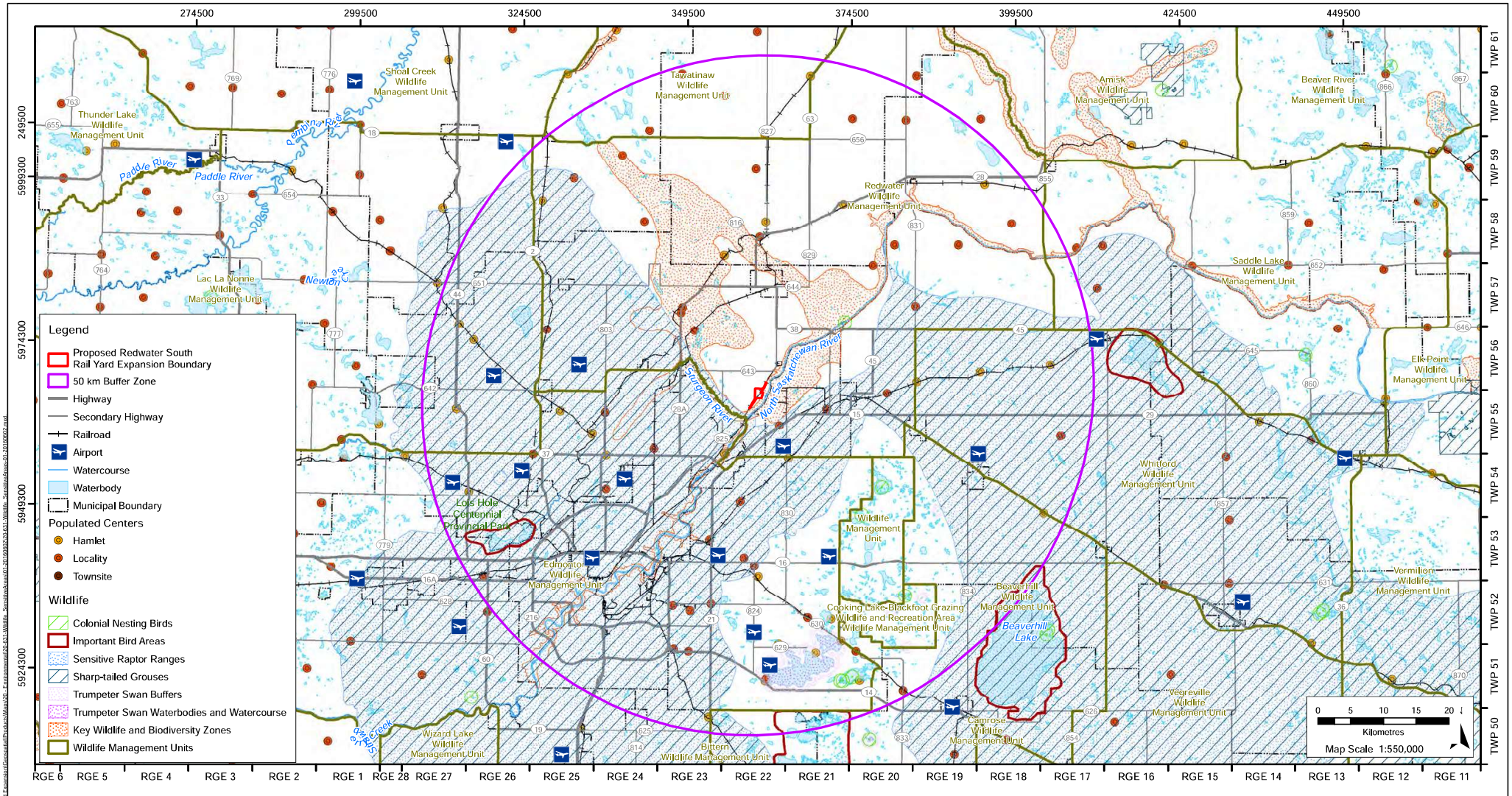
Based on the outcome of assessments on potential environmental effects associated with this Project (see section 5 of this report and associated references) it is not anticipated that Aboriginal Peoples' health will be effected.

The socio-economic conditions of Aboriginal peoples could be positively impacted by the Project as Pembina seeks to engage Aboriginal contractors and businesses in their developments; for this Project specifically, an Aboriginal business has already been sourced to facilitate Project planning and development.

Any physical and cultural heritage, and the current use of lands and resources for traditional purposes, are not anticipated to be effected by the Project considering the degree of heavy industrial development immediately surrounding the Project site, and pre-disturbance and/or cultivation of the Project site itself. Based on the private ownership of the Project site, long-term existing development surrounding the site, pre-disturbance and/or cultivation of the site, it is not anticipated that the site is currently being used for traditional purposes.

Additionally, it is not anticipated that the Project will impact any structure, site or thing that is of historical, archaeological, paleontological or architectural significance as the Project was granted clearance from Alberta Culture and Tourism under the Historical Resources Act (HRA) for the stormwater management and rail expansion areas on February 3, 2016 and February 12, 2016, respectively. The Project does not contain any HRV listings indicating potential historical resource concerns. It is not anticipated there would be any effects on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

However, any potential effects to Aboriginal Peoples not yet considered by Pembina may be identified as an outcome of the Aboriginal Consultaiton Plan outlined in section 6.4 *Consultation Plan*, at which time Pembina will work to mitigate effects where feasible.



Pembina Redwater South Rail Yard Expansion
Township 56 and 55-20 W4M
Wildlife and Sensitive Areas

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Projection: NAD 83 UTM Zone 12N
When printed on 11" X 17" sheets, scale is 1:550,000

Figure Number	5	IEL Project Number	16415

Revision	Date	Created by
00	20 MAY 2016	IY
01	02 JUN 2016	IY

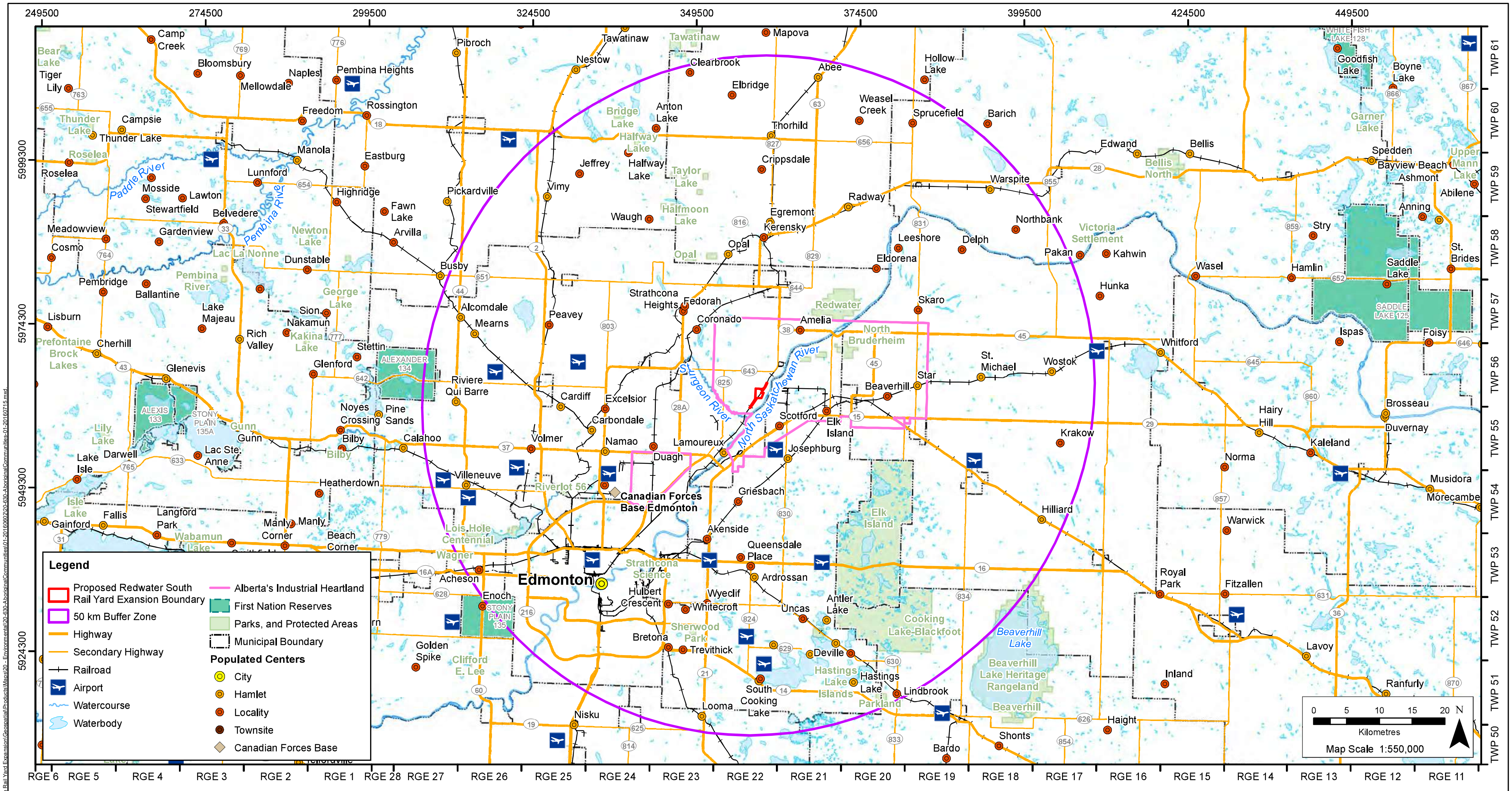
Sources: Parks: AltaLIS 2008; Hydrology: AltaLIS 2014; Railroad: Natural Resources Canada 2013; Highways, Municipal Boundary, Hamlets, Populated Area: AltaLIS 2015

6.0 PROPONENT ENGAGEMENT AND CONSULTATION WITH ABORIGINAL GROUPS

This Project will take place on freehold land located within the Alberta Industrial Heartland (Figure 5). Considering the level of long-term heavy industrial development immediately surrounding the Project, it is not anticipated the Project will impact any Aboriginal groups' asserted traditional territory or traditional land uses in the Project area. However, Pembina notified Aboriginal groups who may have asserted Traditional territory in the Project area, and to date throughout ongoing consultation has not yet received any claim to traditional land or impacts to traditional land use. Pembina is committed to addressing any concerns surrounding the Project and should a federal regulatory requirement be identified Pembina will engage in the appropriate level of consultation.

6.1 List of Aboriginal Groups Notified about the Project

The Project is located entirely within Treaty 6 and within Métis Nation of Alberta Region 4. However, Aboriginal groups in Treaty 6, 7 and 8 who may have asserted Traditional territory in the Project area have been notified. These groups are listed in Table 14.



Pembina Redwater South Rail Yard Expansion
Township 56 and 55-20 W4M
Aboriginal Communities and Industrial Heartland

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When printed on 11" X 17" sheets, scale is 1:550,000

Figure Number	6	IEL Project Number	16415

Revision	Date	Created by
00	20 MAY 2016	IY
01	18 JUL 2016	IY

Sources: Parks: AltaLIS 2008; Hydrology: AltaLIS 2014; Railroad: Natural Resources Canada 2013; Highways, Municipal Boundary, Hamlets, Populated Area: AltaLIS 2015

Table 14: Potentially Interested Aboriginal Groups identified by CEAA

Aboriginal Groups
Alexander First Nation
Alexis Nakota Sioux Nation
Beaver Lake Cree Nation
Blood Tribe
Buffalo Lake Métis Settlement
Chipewyan Prairie Dene Nation
Enoch Cree Nation
Ermineskin Cree Nation
Foothills Ojibway First Nation
Fort McMurray First Nation
Gunn Métis Local #55
Kikino Métis Settlement
Louis Bull Tribe
Métis Nation of Alberta - Region 1
Métis Nation of Alberta - Region 2
Métis Nation of Alberta - Region 4
Montana First Nation
Paul First Nation
Piikani Nation
Saddle Lake Cree Nation
Samson Cree Nation
Siksika Nation
Stoney Nation (including Bearspaw, Chiniki and Wesley First Nations)
Tsuut'ina Nation
Whitefish Lake First Nation #128

6.2 Description of Aboriginal Engagement or Consultation Activities

On April 21, 2015, notification letters were sent to the list of Aboriginal Groups in Table 14, by registered mail. The notifications provided information about the Project, including location, and the opportunity to comment on the Project. Contact information of the Aboriginal groups notified can be found in Appendix E.

Responses received by Aboriginal groups are being managed by Pembina's Aboriginal relations team. Feedback from Aboriginal groups is being, and will continue to be, documented in a record of consultation (ROC) and shared with the Project team to ensure comments, concerns and feedback from Aboriginal groups is considered.

6.3 Comments and Concerns Expressed by Aboriginal Groups

Responses to the notifications were received by Tsuut'ina Nation, Samson Cree Nation, Piikani Nation, and Stoney Nakoda Nation. Pembina's Aboriginal relations team had initial phone calls and subsequently met with these groups, to discuss the Project and provide further information as to Project location and Project details. Pembina has also spoken with, and organized a meeting with Ermineskin Cree Nation. Pembina commits to continue to meet with Aboriginal groups to ensure meaningful engagement, and is organizing site visits as requested. At this time no concerns have been expressed. Communication with groups will be ongoing.

6.4 Consultation Plan

If it is determined that Consultation with Aboriginal groups is required, by Federal or Provincial regulatory bodies, Pembina has developed a Consultation Plan to ensure that open and meaningful communication and engagement is established between all involved parties. The Aboriginal Consultation Plan outlines the processes and approaches used to collect and share information, as well as the feedback mechanism for input to be meaningfully considered, inform the Project, and then be shared back to interested groups. Consultation will commence as soon as possible, after notification of necessity by the regulatory body, prior to Project construction. The consultation schedule will be developed with input from regulators and Aboriginal communities.

Where feasible, information, with the Aboriginal community and any other parties identified by the community who would have an interest in the Project, will be shared primarily by telephone, in-person meetings, and via email. Notifications will be sent out by registered mail and documents would include any policy information related to the Project of interest to the community, and or individual. Additionally, email, telephone and the Pembina website will be used to ensure that information is accessible to any interested parties.

Through open communication and meaningful consultation, Pembina will collect feedback and assess the needs and requests of the Aboriginal community, for information, engagement, consultation, and possible accommodation where applicable. Pembina will take all concerns raised in discussions into consideration and work to identify appropriate approaches to address such matters. The appropriate approach will vary and may include (but not be limited to) providing additional information, undertaking necessary studies, and potential modification to the Project design, where feasible.

Pembina is maintaining a record of consultation, which includes a record of documentation issued and information shared, as well as feedback received through all forms of communication. This record will also include the approaches identified to address comments or concerns raised during engagement and consultation with Aboriginal communities.

7.0 CONSULTATION WITH THE PUBLIC AND OTHER PARTIES

Consultation has been, and continues to be conducted with stakeholders in an effort to provide RFS site information as well as responding to concerns and questions. Consultation with neighboring industry, provincial regulators, Sturgeon County officials and any other stakeholders will continue throughout the life of the RFS site, which includes the proposed Project. Any questions, concerns or feedback received at the RFS site resulting from ongoing consultation will be assessed and addressed in a manner that is fair for all parties involved. Records of any consultation related activities are retained to document the open dialogue the RFS site has with stakeholders, and to manage any commitments or agreements that should develop based on these discussions.

7.1 Comments and Concerns Expressed by Stakeholders

Pembina has contacted the AER to notify them of the Project within current EPEA regulated lands. In addition, Pembina has been in contact with AEP, as well as, Sturgeon County.

Sturgeon County has been contacted and a Development Permit Application has been submitted. To date, all discussions related to the Project with Sturgeon County officials have been positive, and the County is generally in favour of the Project; a letter of support for the Project is currently being developed by the County.

Feedback from the Sturgeon County included the feedback of landowners in the county. General comments received to date include the following:

- A request from the county that Pembina provide the county with a high level cost estimate for this type of improvement as there was a request for a separated crossing (under pass or over pass) be constructed at the rail crossing and township road 555. Pembina is assessing this possibility;
- A request for information regarding the buildings associated with the project including foundation plans, floor plans, elevations and cross-sections of proposed structures. Pembina will provide the requested information that is currently available;
- Comment from the county that the abandoned well will need clearance before construction of the storm pond is approved. Pembina will get clearance for the abandoned well;
- A request from a landowner that the trees along range road 221 be protected where possible due to the potential of nesting Great Horned Owls in the trees. Pembina has enlisted wildlife specialists to advise on the situation;
- Comment that prior to any grading, topsoil should be stripped and stockpiled. Pembina is assessing this possibility; and
- Notification that a road use agreement will be required as a condition of the development permit approval. Pembina will obtain a road use agreement.

Concerns heard by landowners within the County, and the associated mitigation measures include the following:

- A landowner located 2 miles from the Project stated that trains intermittently block access to and from his property; concern was expressed that the project would increase the amount of trains, therefor

increasing the potential of idle trains blocking access to his property. The trains accessing and departing the Project should not be idle on the tracks given the nature of the Project as a storage facility. The Project's purpose is to provide storage for rail cars, which could reduce the need for trains to be idle.

- Concern that the Project will contribute to increased noise levels. Pembina is addressing this by adhering to the Regional Noise Management Plan, and does not anticipate the incremental additional noise will be perceivable given the Project's location in a heavily industrialized area;

Pembina is currently assessing and addressing the above comments and are in varying stages of response as outlined; consultation with these stakeholders will be ongoing. In addition to the notification package, neighboring industry partners and disposition holders will be contacted regarding the Project when securing third-party crossing agreements.

7.2 Ongoing or Proposed Stakeholder Consultation

As mentioned above, consultation has been and continues to be conducted with stakeholders in an effort to provide information about the Project, as well as respond to concerns and questions. Although, not required by the AER Directive 56, a notification package was sent to local surrounding stakeholders (those within 1.5 km of the Project as per AER Directive 56) and other interested parties, such as neighboring industry.

Consultation with CN and Sturgeon County has been ongoing and both parties are well aware of the project and have also been involved in providing various levels of input.

Pembina and CN hold weekly update meetings to create an opportunity to provide feedback; these inputs range in nature from design to conceptualization. Pembina has and will continue to contact local industry regarding pipeline and utility crossing agreements for the numerous components of the Project.

Responses received by stakeholders are being recorded by Project team members. Feedback will be documented in a record of consultation (ROC) and shared with the Project team to ensure comments, concerns and feedback from stakeholders is considered.

7.3 Consultation with Other Jurisdictions

Consultation with other jurisdictions that have environmental assessment or regulatory decisions to make with respect to the Project include:

- Sturgeon County; Planning and Development Department → Development Permit;
- AER → notification under the current EPEA Approval for the activities on the RFS site;
- Alberta Transportation and the local emergency response agency → in relation to obtaining approval under the *Railway (Alberta) Act*;
- AEP → in relation to the *Alberta Water Act* and its association to the site wetlands and the surface water control ponds; and

Pembina has begun the consultation and approval processes to obtain the above listed required approvals. To date the following updates can be provided:

- Sturgeon County has been very receptive to the Project and discussions are ongoing in an effort to obtain a Development Permit (expected in June 2016);
- AER was notified under EPEA Approval 9995-02-00 was submitted to the AER on August 17, 2015 in order to allow for the development of the Project;
- The Provincial *Railway (Alberta) Act* notice of construction is scheduled for submission in Q2 of 2016; and
- Applications under the *Water Act* for any affected wetland, was submitted to the AEP and an Approval was obtained on July 5, 2016; a *Water Act* Approval for the surface water control ponds is required as these structures (requirements of Sturgeon County's Development Permit) will temporarily divert the natural flow of water in an effort to help control local erosion.

All necessary approvals will be obtained prior to the start of construction activities.

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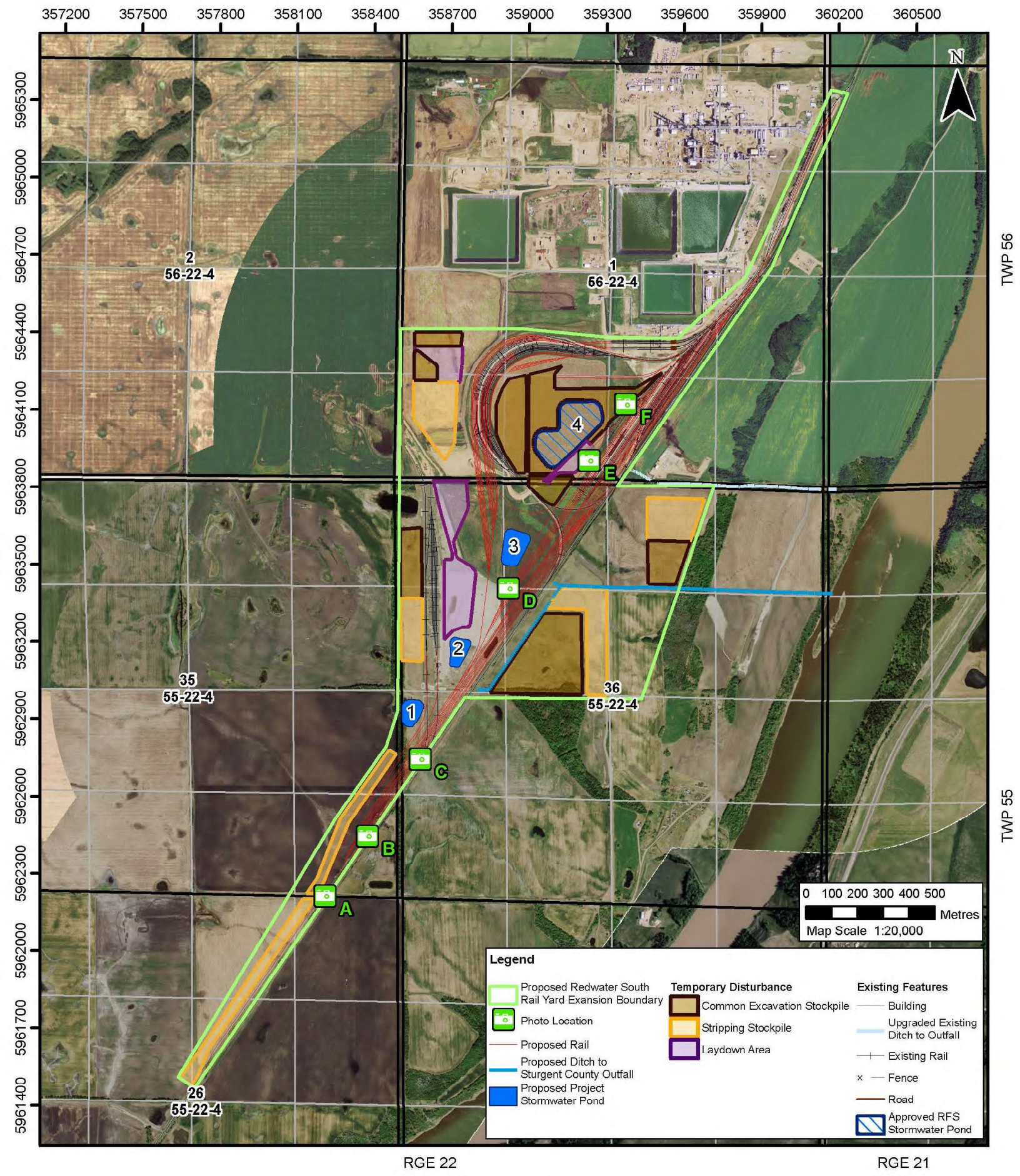
APPENDIX A: SITE PHOTOGRAPHS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RGE 21
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0 100 200 300 400 500
Metres
Map Scale 1:20,000
Legend
Proposed Redwater South Rail Yard Exansion Boundary
Photo Location
Proposed Rail
Proposed Ditch to Sturgent County Outfall
Proposed Project Stormwater Pond
Temporary Disturbance
Common Excavation Stockpile
Stripping Stockpile
Laydown Area
Existing Features
Building
Upgraded Existing Ditch to Outfall
Existing Rail
Fence
Road
Approved RFS Stormwater Pond

Photograph A - facing Northeast

Photograph B - facing Northeast

Photograph C - facing Northeast

Photograph D - facing Northeast

Photograph E - facing West

Photograph F - facing Southwest

APPENDIX B: TERRESTRIAL WILDLIFE SPECIES THAT HAVE RANGES WHICH OVERLAP WITH THE PROJECT AREA

Common Name	Scientific Name	Suitable Habitat Within Project Area	– GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
Mammals						
Arctic shrew	*Sorex arcticus*		Secure			
American Badger	*Taxidea taxus*	✓	Sensitive	Special Concern	No Schedule	No Status
American beaver	*Castor canadensis*		Secure			
American mink	*Mustela vison*		Secure			
Big brown bat	*Epesicus fuscus*	✓	Secure			
Canada lynx	*Lynx canadensis*		Sensitive	Not at Risk		
Common porcupine	*Erethizon dorsatum*	✓	Secure			
Coyote	*Canis latrans*	✓	Secure			
Deer mouse	*Peromyscus maniculatus*	✓	Secure			
Dusky (montane) shrew	*Sorex monticolus*	✓	Secure			
Heather vole	*Phenacomys intermedius*	✓	Secure			
Hoary bat	*Lasiurus cinereus*	✓	Sensitive			
Eastern Red Bat	*Lasiurus borealis*	✓	Sensitive			
Franklin's ground squirrel	*Spermophilus franklinii*	✓	Undetermined			
Least weasel	*Mustela nivalis*	✓	Secure			
Little brown myotis	*Myotis lucifugus*	✓	Secure	Endangered	Schedule 1	Endangered
Least chipmunk	*Tanias minimus*	✓	Secure			
Long eared myotis	*Myotis evotis*	✓	Secure			
Long-legged myotis	*Myotis volans*	✓	Undetermined			
Long-tailed weasel	*Mustela frenata*	✓	May be at Risk			
Masked shrew	*Sorex cinereus*	✓	Secure			

[12] 2010 General Status of Alberta Wild Species (Alberta Environment and Parks, 2016)

[13] Committee on the Status of Endangered Species (GOC, 2016)

[14] Species at Risk Public Registry. Schedule 1 (GOC, 2016).

[15] Species at Risk Public Registry. (GOC, 2016).

Common Name	Scientific Name	Suitable Habitat Within Project Area	–GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
Meadow jumping mouse	*Zapus hudsonius*	✓	Secure			
Meadow vole	*Microtus pennsylvanicus*	✓	Secure			
Moose	*Alces americanus*	✓	Secure			
Mule deer	*Odocoileus hemionus*	✓	Secure			
Muskrat	*Ondatra zibethicus*		Secure			
Northern bog lemming	*Synaptomys borealis*	✓	Secure			
Northern flying squirrel	*Glaucomys sabrinus*		Secure			
Northern myotis	*Myotis septentrionalis*	✓	May be at Risk	Endangered	Schedule 1	Endangered
Northern pocket gopher	*Thomomys talpoides*	✓	Secure			
Prairie shrew	*Sorex haydeni*	✓	Secure			
Prairie vole	*Microtus ochrogaster*	✓	Secure			
Pygmy shrew	*Sorex hoyi*	✓	Secure			
Raccoon	*Procyon lotor*	✓	Secure			
Red Fox	*Vulpesvulpes*	✓	Secure			
Red squirrel	*Tamiasciurus hudsonicus*	✓	Secure			
Richardson's ground squirrel	*Spermophilus richardsonni*	✓	secure			
Short-tailed weasel	*Mustela erminea*	✓	Secure			
Silver-haired bat	*Lasionyceteris noctivagans*	✓	Sensitive			
Snowshoe hare	*Lepus americanus*	✓	Secure			
Southern red-backed vole	*Clethrionomys gapperi*	✓	Secure			
Striped skunk	*Mephitis mephitis*	✓	Secure			
Thirteen-lined ground squirrel	*Spermophilus tridecemlineatus*	✓	Undetermined			
Water shrew	*Sorex palustris*	✓	Secure			
White-tailed deer	*Odocoileus virginianus*	✓	Secure			

Common Name	Scientific Name	Suitable Habitat Within Project Area	– GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
White-tailed jackrabbit	*Lepus townsendii*	✓	Secure			
Woodchuck	*Marmota monax*	✓	Secure			
Amphibians						
Boreal chorus frog	*Pseudacris maculata*	✓	Secure			
Canadian toad	*Bufo hemiophrys*	✓	May be at Risk			
Northern leopard frog	*Rana pipiens*	✓	At Risk	Special Concern	Schedule 1	Special Concern
Tiger salamander	*Ambystoma mavortium*	✓	Secure	Special Concern	No Schedule	No Status
Western toad	*Anaxyrus boreas*	✓	Sensitive	Non-active	Schedule 1	Special Concern
Wood frog	*Rana sylvatica*	✓	Secure			
Reptiles						
Plains garter snake	*Thamnophis radix*	✓	Sensitive			
Red-sided garter snake	*Thanmophis sirtalis*	✓	Sensitive			
Birds						
Alder flycatcher	*Empidonax alnorum*	✓	*Secure*			
American avocet	*Recurvirostra americana*		*Secure*			
American bittern	*Botaurus lentiginosus*		*Sensitive*			
American coot	*Fulica americana*		*Secure*	*Not at Risk*		
American crow	*Corus brachyrrhynchos*	✓	*Secure*			
American goldfinch	*Carduelis tristis*		*Secure*			
American green-winged teal	*Anas crecca*		*Sensitive*			
American kestrel	*Falco columbarius*	✓	*Sensitive*			
American redstart	*Setophaga ruticilla*		*Secure*			
American robin	*Turdus migratorius*	✓	*Secure*			

Common Name	Scientific Name	Suitable Habitat Within Project Area	–GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
American three-toed woodpecker	*Picoides dorsalis*		*Secure*			
American white pelican	*Pelecanus erythrorhyncynchos*		*Sensitive*	*Not at Risk*		
American wigeon	*Anas americana*		*Secure*			
Bald eagle	*Haliaeetus leucocephalus*		*Sensitive*	*Not at Risk*		
Baltimore oriole	*Icterus galbula*		*Sensitive*			
Bank swallow	*Riparia riparia*		*Secure*	*Threatened*	*No Schedule*	*No Status*
Barn swallow	*Hirundo rustica*	✓	*Secure*	*Threatened*	*No Schedule*	*No Status*
Barred owl	*Strix varia*		*Sensitive*			
Barrow's goldeneye	*Bucephala islandica*		*Secure*			
Belted kingfisher	*Ceryle alcyon*		*Secure*			
Black tern	*Chlidonias niger*		*Sensitive*	*Not at Risk*		
Black-and-white warbler	*Mniotilta varia*		*Secure*			
Black-billed cuckoo	*Coccyzus erthropthalmus*		Undetermined			
Black-billed magpie	*Pica hudsonia*	✓	*Secure*			
Black-capped chickadee	*Poecile atricapillus*	✓	*Secure*			
Black-crowned night-heron	*Nycticorax nycticorax*		*Sensitive*			
Blackpoll warbler	*Dendroica striata*		*Secure*			
Blue jay	*Cyanoncitta cristata*	✓	*Secure*			
Blue-headed vireo	*Vireo solitaries*		*Secure*			
Blue-winged teal	*Anas discors*		*Secure*			
Bobolink	*Dolichonyx oryzivorus*	✓	*Sensitive*	*Threatened*	*No Schedule*	*No Status*
Bonaparte's gull	*Larus philadelphia*		*Secure*			
Boreal chickadee	*Poecile hudsonica*	✓	*Secure*			
Brewer's blackbird	*Euphagus cyanocephalus*	✓	*Secure*			

Common Name	Scientific Name	Suitable Habitat Within Project Area	– GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
Broad-winged hawk	*Buteo platypterus*		*Sensitive*			
Brown creeper	*Certhia Americana*		*Sensitive*			
Brown thrasher	*Toxostoma rufum*	✓	*Secure*			
Brown-headed cowbird	*Molothrus ater*	✓	*Secure*			
Bufflehead	*Bucephala albeola*		*Secure*			
California gull	*Larus californicus*		*Secure*			
Canada goose	*Branta canadensis*		*Secure*			
Canada warbler	*Wilsonia canadensis*		*Sensitive*	*Threatened*	*Schedule 1*	*Threatened*
Canvasback	*Aythya valisineria*		*Secure*			
Cape may warbler	*Dendroica tigrina*		*Sensitive*			
Cedar waxwing	*Bombycilla cedrorum*		*Secure*			
Chipping sparrow	*Spizella passerine*	✓	*Secure*			
Cinnamon teal	*Anas cyanoptera*		Secure			
Clay-colored sparrow	*Spizella pallida*	✓	*Secure*			
Cliff swallow	*Petrochelidon pyrrhonota*		*Secure*			
Common goldeneye	*Bucephala clangula*		*Secure*			
Common grackle	*Quiscalus quiscula*		*Secure*			
Common loon	*Gavia immer*		*Secure*	*Not at Risk*		
Common merganser	*Mergus merganser*		*Secure*			
Common nighthawk	*Chordeiles minor*	✓	*Sensitive*	*Threatened*	*Schedule 1*	*Threatened*
Common raven	*Corvus corax*		*Secure*			
Common Redpoll	*Carduelis flammea*	✓	*Secure*			
Common tern	*Sterna hirundo*		*Secure*	*Not at Risk*		
Common yellowthroat	*Geothlypis trichas*		*Sensitive*			

Common Name	Scientific Name	Suitable Habitat Within Project Area	–GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
Connecticut warbler	*Oporornis agilis*	✓	*Secure*			
Cooper's hawk	*Accipiter cooperii*		*Secure*			
Dark-eyed junco	*Junco hyemalis*	✓	*Secure*			
Double-crested cormorant	*Phalacrocorax auritus*		*Secure*	*Not at Risk*		
Downy woodpecker	*Picoides pubescens*	✓	*Secure*			
Eared grebe	*Podiceps nigricollis*		*Secure*			
Eastern kingbird	*Tyrannus tyrannus*	✓	*Secure*			
Eastern phoebe	*Sayornis phoebe*	✓	*Sensitive*			
European starling	*Sturnus vulgaris*		*Exotic*			
Evening grosbeak	*Coccothraustes vespertinus*		*Secure*			
Forster's tern	*Sterna forsteri*		*Sensitive*			
Fox sparrow	*Passerella iliaca*		*Secure*			
Franklin's gull	*Larus pipixcan*		*Secure*			
Gadwall	*Anas strepera*		*Secure*			
Golden eagle	*Aquila chrysaetos*		*Sensitive*	*Not at Risk*		
Golden-crowned kinglet	*Regulus satrapa*		*Secure*			
Gray catbird	*Dumetella carolinensis*	✓	*Secure*			
Gray jay	*Perisoreus canadensis*		*Secure*			
Gray partridge	*Perdix perdix*		*Exotic*			
Great blue heron	*Ardea herodias*		*Sensitive*			
Great crested flycatcher	*Myiarchus crinitus*	✓	*Sensitive*			
Great gray owl	*Strix nebulosa*		*Sensitive*			
Great horned owl	*Bubo virginianus*	✓	*Secure*			
Hairy woodpecker	*Picoides villosus*	✓	*Secure*			
Hermit thrush	*Catharus guttatus*	✓	*Secure*			
Herring gull	*Larus argentatus*		Secure			

Common Name	Scientific Name	Suitable Habitat Within Project Area	–GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
Hooded merganser	*Lophodytes cucullatus*		Secure			
Horned grebe	*Podiceps auritus*		*Sensitive*	*Special Concern*	*No Schedule*	*No Status*
Horned lark	*Eremophila alpestris*	✓	*Secure*			
House Finch	*Carpodacus mexicanus*	✓	*Secure*			
House sparrow	*Passer domesticus*	✓	*Exotic*			
House wren	*Troglodytes aedon*		*Secure*			
Killdeer	*Charadrius vociferus*	✓	*Secure*			
Le Conte's sparrow	*Ammodramus loconteii*	✓	*Secure*			
Least flycatcher	*Empidonax minimus*	✓	*Sensitive*			
Least sandpiper	*Calidris minutilla*		*Secure*			
Lesser scaup	*Aythya affinis*		*Sensitive*			
Lesser yellowlegs	*Tringa flavipes*		*Secure*			
Lincoln's sparrow	*Melospiza lincolnii*	✓	*Secure*			
Loggerhead shrike	*Lanius ludovicianus*		*Sensitive*	*Threatened*	*Schedule 1*	*Threatened*
Long-eared owl	*Asio ostus*		*Secure*			
Magnolia warbler	*Dendroica magnolia*		*Secure*			
Mallard	*Anas platyrhynchos*		*Secure*			
Marbled godwit	*Limosa fedoa*		*Secure*			
Marsh wren	*Cistothorus palustris*		*Secure*			
Merlin	*Falco columbarius*	✓	*Secure*			
Mountain bluebird	*Sialia currucoides*	✓	*Secure*			
Mourning dove	*Zenaida macroura*	✓	*Secure*			
Mourning warbler	*Oporornis Philadelphia*		*Secure*			

Common Name	Scientific Name	Suitable Habitat Within Project Area	–GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
Nelson's sharp-tailed sparrow	*Ammodramus nelsoni*		*Secure*	*Not at Risk*		
Northern flicker	*Colaptes auratus*	✓	*Secure*			
Northern goshawk	*Accipiter gentilis*		*Sensitive*	*Not at Risk*		
Northern harrier	*Circus cyaneus*	✓	*Sensitive*			
Northern hawk owl	*Surnia ulula*		*Sensitive*			
Northern pintail	*Anas acuta*		*Sensitive*			
Northern rough-winged swallow	*Stelgidopteryx serripennis*		*Secure*			
Northern saw-whet owl	*Aegolius acadicus*		*Secure*			
Northern shoveler	*Anas clypeata*		*Secure*			
Northern waterthrush	*Seiurus noveboracensis*		*Secure*			
Olive-sided flycatcher	*Contopus cooperi*		*May be at Risk*	*Threatened*	*Schedule 1*	*Threatened*
Orange-crowned warbler	*Vermivora celata*		*Secure*			
Osprey	*Pandion haliaetus*		*Sensitive*			
Ovenbird	*Seiurus aurocapilla*		*Secure*			
Palm warbler	*Dendroica palmarum*		*Secure*			
Peregrine falcon	*Falco peregrinus*		*At Risk*	*Special Concern*	*Schedule 1*	*Special Concern*
Philadelphia vireo	*Vireo philadelpicus*		*Secure*			
Pied-billed grebe	*Podilymbus podiceps*		*Sensitive*			
Pileated woodpecker	*Dryocopus pileatus*		*Sensitive*			
Pine Siskin	*Carduelis pinus*		*Secure*			
Purple finch	*Carpodacus purpureus*		*Secure*			
Purple martin	*Progne subis*		*Sensitive*			
Red-breasted merganser	*Mergus serrator*		*Secure*			

Common Name	Scientific Name	Suitable Habitat Within Project Area	–GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
Red-breasted nuthatch	*Sitta canadensis*	✓	*Secure*			
Red-eyed vireo	*Vireo olivaceus*		*Secure*			
Redhead	*Aythya americana*		*Secure*			
Red-necked grebe	*Podiceps grisegena*		*Secure*	*Not at Risk*		
Red-tailed hawk	*Buteo jamaicensis*	✓	*Secure*			
Red-winged blackbird	*Agelaius phoeniceus*		*Secure*			
Ring-billed gull	*Larus delawarensis*		*Secure*			
Ring-necked duck	*Aythya collaris*		*Secure*			
Ring-necked pheasant	*Phasianus colchicus*	✓	*Exotic*			
Rock pigeon	*Columba livia*	✓	*Exotic*			
Rose-breasted grosbeak	*Pheucticus ludovicianus*	✓	*Secure*			
Ruby-crowned kinglet	*Regulus calendula*		*Secure*			
Ruby-throated hummingbird	*Archilochus colubris*	✓	*Secure*			
Ruddy duck	*Oxyura jamaicensis*		*Secure*			
Ruffed grouse	*Bonasa umbellus*		*Secure*			
Rusty blackbird	*Euphagus carolinus*		*Sensitive*	*Special Concern*	*Schedule 1*	*Special Concern*
Sandhill crane	*Grus canadensis*		*Sensitive*			
Savannah sparrow	*Passerculus sandwichensis*	✓	*Secure*			
Say's phoebe	*Sayornis saya*	✓	*Secure*			
Sedge wren	*Cistothorus platensis*		*Sensitive*			
Sharp-shinned hawk	*Circus cyabeus*		*Secure*			
Sharp-tailed grouse	*Tympanuchus phasianellus*		*Sensitive*			
Short-billed dowitcher	*Limnodromus griseus*		*Undeter mined*			

Common Name	Scientific Name	Suitable Habitat Within Project Area	– GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
Short-eared owl	*Asio flammeus*	✓	*May Be At Risk*	*Special Concern*	*Schedule 1*	*Special Concern*
Solitary sandpiper	*Tringa solitaria*		*Secure*			
Song sparrow	*Melospiza meodia*	✓	*Secure*			
Sora	*Porzana carolina*		*Sensitive*			
Spotted sandpiper	*Actitis macularius*		*Secure*			
Sprague's pipit	*Anthus spragueii*	✓	*Sensitive*	*Threatened*	*Schedule 1*	*Threatened*
Spruce grouse	*Falcipennis canadensis*		*Secure*			
Swainson's hawk	*Buteo swainsoni*	✓	*Sensitive*			
Swainson's thrush	*Catharus ustulatus*		*Secure*			
Swamp sparrow	*Melospiza georgiana*		*Secure*			
Tennessee warbler	*Vermivora peregrine*		*Secure*			
Three-toed woodpecker	*Picoides dorsalis*		Secure			
Tree swallow	*Tachycineata bicolor*		*Secure*			
Trumpeter swan	*Cygnus buccinator*		*At Risk*	*Not at Risk*		
Upland sandpiper	*Bartramia longicauda*	✓	*Sensitive*			
Veery	*Catharus fuscescens*		*Secure*			
Vesper sparrow	*Pooecetes gramineus*	✓	*Secure*			
Virginia rail	*Rallus limicola*		*Undeter mined*			
Warbling vireo	*Vireo gilvus*		*Secure*			
Western grebe	*Aechmophorus occidentalis*		*Sensitive*	*Special Concern*	*No schedule*	*No Status*
Western meadowlark	*Surnella neglecta*	✓	*Secure*			
Western tanager	*Piranga ludoviciana*		*Sensitive*			

Common Name	Scientific Name	Suitable Habitat Within Project Area	– GSOAWS Status[12]	–COSEWIC Status[13]	SARA Schedule[14]	SARA Status[15]
Western wood-pewee	*Contopus sordidulus*		*Sensitive*			
White-breasted nuthatch	*Sitta carolinensis*		*Secure*			
White-throated sparrow	*Zonotrichia albicollis*		*Secure*			
White-winged crossbill	*Loxia leucoptera*		*Secure*			
White-winged scoter	*Melanitta fusca*		*Sensitive*			
Willet	*Tringa semipalmata*		*Secure*			
Wilson's phalarope	*Phalaropus tricolor*		*Secure*			
Wilson's snipe	*Gallinago delicata*		*Secure*			
Winter wren	*Troglodytes troglodytes*		*Secure*			
Yellow rail	*Coturnicops noveboracensis*		*Undetermined*	*Special Concern*	*Schedule 1*	*Special Concern*
Yellow-bellied flycatcher	*Certhia americana*		*Undetermined*			
Yellow-bellied sapsucker	*Sphyrapicus varius*		*Secure*			
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*		*Secure*			
Yellow-rumped warbler	*Dendroica coronate*		*Secure*			

APPENDIX C: BIRDS COVERED UNDER THE MCBA THAT HAVE RANGES WHICH OVERLAP WITH THE PROJECT AREA

Common Name	Scientific Name	COSEWIC Status	SARA Schedule	SARA Status
Alder flycatcher	*Empidonax alnorum*			
American avocet	*Recurvirostra americana*			
American bittern	*Botaurus lentiginosus*			
American coot	*Fulica americana*	Not at Risk		
American goldfinch	*Carduelis tristis*			
American redstart	*Setophaga ruticilla*			
American robin	*Turdus migratorius*			
American three-toed woodpecker	*Picoides dorsalis*			
American Wigeon	*Anas americana*			
Baltimore oriole	*Icterus galbula*			
Bank swallow	*Riparia riparia*	Threatened	No Schedule	No Status
Barn swallow	*Hirundo rustica*	Threatened	No Schedule	No Status
Barrow's goldeneye	*Bucephala islandica*			
Black tern	*Chlidonias niger*	Not at Risk		
Black-and-white warbler	*Mniotilta varia*			
Black-billed cuckoo	*Coccyzus erthropthalmus*			
Black-billed magpie	*Pica hudsonia*			
Black-capped chickadee	*Poecile atricapillus*			
Black-crowned night-heron	*Nycticorax nycticorax*			
Blackpoll warbler	*Dendroica striata*			
Blue-headed vireo	*Vireo solitaries*			
Blue-winged teal	*Anas discors*			
Bobolink	*Dolichonyx oryzivorus*	Threatened	No Schedule	No Status
Bonaparte's gull	*Larus philadelphia*			
Boreal chickadee	*Poecile hudsonica*			
Brewer's blackbird	*Euphagus cyanocephalus*			
Brown creeper	*Certhia Americana*			
Brown thrasher	*Toxostoma rufum*			
Bufflehead	*Bucephala albeola*			
California gull	*Larus californicus*			
Canada goose	*Branta canadensis*			
Canada warbler	*Wilsonia canadensis*	Threatened	Schedule 1	Threatened

Common Name	Scientific Name	COSEWIC Status	SARA Schedule	SARA Status
Canvasback	*Aythya valisineria*			
Cape may warbler	*Dendroica tigrina*			
Cedar waxwing	*Bombycilla cedrorum*			
Chipping sparrow	*Spizella passerine*			
Cinnamon teal	*Anas cyanoptera*			
Clay-colored sparrow	*Spizella pallida*			
Cliff swallow	*Petrochelidon pyrrhonota*			
Common goldeneye	*Bucephala clangula*			
Common loon	*Gavia immer*	Not at Risk		
Common merganser	*Mergus merganser*			
Common nighthawk	*Chordeiles minor*	Threatened	Schedule 1	Threatened
Common Redpoll	*Carduelis flammea*			
Common tern	*Sterna hirundo*	Not at Risk		
Common yellowthroat	*Geothlypis trichas*			
Connecticut warbler	*Oporornis agilis*			
Dark-eyed junco	*Junco hyemalis*			
Downy woodpecker	*Picoides pubescens*			
Eared grebe	*Podiceps nigricollis*			
Eastern kingbird	*Tyrannus tyrannus*			
Eastern phoebe	*Sayornis phoebe*			
Evening grosbeak	*Coccothraustes vespertinus*			
Forster's tern	*Sterna forsteri*			
Fox sparrow	*Passerella iliaca*			
Franklin's gull	*Larus pipixcan*			
Gadwall	*Anas strepera*			
Golden-crowned kinglet	*Regulus satrapa*			
Gray catbird	*Dumetella carolinensis*			
Gray jay	*Perisoreus canadensis*			
Great blue heron	*Ardea herodias*			
Great crested flycatcher	*Myiarchus crinitus*			
Green-winged teal	*Anas crecca*			
Hairy woodpecker	*Picoides villosus*			
Hermit thrush	*Catharus guttatus*			
Herring gull	*Larus argentatus*			
Hooded merganser	*Lophodytes cucullatus*			
Horned grebe	*Podiceps auritus*	Special Concern	No Schedule	No Status
Horned lark	*Eremophila alpestris*			

Common Name	Scientific Name	COSEWIC Status	SARA Schedule	SARA Status
House Finch	*Carpodacus mexicanus*			
House sparrow	*Passer domesticus*			
House wren	*Troglodytes aedon*			
Killdeer	*Charadrius vociferus*			
Le Conte's sparrow	*Ammodramus loconteii*			
Least flycatcher	*Empidonax minimus*			
Least sandpiper	*Calidris minutilla*			
Lesser scaup	*Aythya affinis*			
Lesser yellowlegs	*Tringa flavipes*			
Lincoln's sparrow	*Melospiza lincolnii*			
Loggerhead shrike	*Lanius ludovicianus*	Threatened	Schedule 1	Threatened
Magnolia warbler	*Dendroica magnolia*			
Mallard	*Anas platyrhynchos*			
Marbled godwit	*Limosa fedoa*			
Marsh wren	*Cistothorus palustris*			
Mountain bluebird	*Sialia currucoides*			
Mourning dove	*Zenaida macroura*			
Mourning warbler	*Oporornis Philadelphia*			
Nelson's sharp-tailed sparrow	*Ammodramus nelsoni*	Not at Risk		
Northern flicker	*Colaptes auratus*			
Northern pintail	*Anas acuta*			
Northern rough-winged swallow	*Stelgidopteryx serripennis*			
Northern shoveler	*Anas clypeata*			
Northern waterthrush	*Seiurus noveboracensis*			
Olive-sided flycatcher	*Contopus cooperi*	Threatened	Schedule 1	Threatened
Orange-crowned warbler	*Vermivora celata*			
Ovenbird	*Seiurus aurocapilla*			
Palm warbler	*Dendroica palmarum*			
Philadelphia vireo	*Vireo philadelpicus*			
Pied-billed grebe	*Podilymbus podiceps*			
Pileated woodpecker	*Dryocopus pileatus*			
Pine Siskin	*Carduelis pinus*			
Purple finch	*Carpodacus purpureus*			
Purple martin	*Progne subis*			
Red-breasted merganser	*Mergus serrator*			
Red-breasted nuthatch	*Sitta canadensis*			
Red-eyed vireo	*Vireo olivaceus*			

Common Name	Scientific Name	COSEWIC Status	SARA Schedule	SARA Status
Redhead	*Aythya americana*			
Red-necked grebe	*Podiceps grisegena*	Not at Risk		
Ring-billed gull	*Larus delawarensis*			
Ring-necked duck	*Aythya collaris*			
Rock pigeon	*Columba livia*			
Rose-breasted grosbeak	*Pheucticus ludovicianus*			
Ruby-crowned kinglet	*Regulus calendula*			
Ruby-throated hummingbird	*Archilochus colubris*			
Ruddy duck	*Oxyura jamaicensis*			
Sandhill crane	*Grus canadensis*			
Savannah sparrow	*Passerculus sandwichensis*			
Say's phoebe	*Sayornis saya*			
Sedge wren	*Cistothorus platensis*			
Short-billed dowitcher	*Limnodromus griseus*			
Solitary sandpiper	*Tringa solitaria*			
Song sparrow	*Melospiza meodia*			
Sora	*Porzana carolina*			
Spotted sandpiper	*Actitis macularius*			
Sprague's pipit	*Anthus spragueii*	Threatened	Schedule 1	Threatened
Swainson's thrush	*Catharus ustulatus*			
Swamp sparrow	*Melospiza georgiana*			
Tennessee warbler	*Vermivora peregrine*			
Three-toed woodpecker	*Picoides dorsalis*			
Tree swallow	*Tachycineata bicolor*			
Trumpeter swan	*Cygnus buccinator*	Not at Risk		
Upland sandpiper	*Bartramia longicauda*			
Veery	*Catharus fuscescens*			
Vesper sparrow	*Pooecetes gramineus*			
Virginia rail	*Rallus limicola*			
Warbling vireo	*Vireo gilvus*			
Western grebe	*Aechmophorus occidentalis*	Special Concern	No schedule	No Status
Western meadowlark	*Surnella neglecta*			
Western tanager	*Piranga ludoviciana*			
Western wood-pewee	*Contopus sordidulus*			
White-breasted nuthatch	*Sitta carolinensis*			

Common Name	Scientific Name	COSEWIC Status	SARA Schedule	SARA Status
White-throated sparrow	*Zonotrichia albicollis*			
White-winged crossbill	*Loxia leucoptera*			
White-winged scoter	*Melanitta fusca*			
Willet	*Tringa semipalmata*			
Wilson's phalarope	*Phalaropus tricolor*			
Wilson's snipe	*Gallinago delicata*			
Winter wren	*Troglodytes troglodytes*			
Yellow rail	*Coturnicops noveboracensis*	Special Concern	Schedule 1	Special Concern
Yellow-bellied flycatcher	*Certhia americana*			
Yellow-bellied sapsucker	*Sphyrapicus varius*			
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*			
Yellow-rumped warbler	*Dendroica coronate*			

APPENDIX D: LIST OF SPECIES COVERED UNDER THE MCBA THAT MAY BE FOUND IN THE PROJECT AREA BASED ON SPECIES HABITAT PREFERENCES AND RANGES

Common Name	Scientific Name	COSEWIC Status	SARA Schedule	SARA Status
Alder flycatcher	*Empidonax alnorum*			
American goldfinch	*Carduelis tristis*			
American robin	*Turdus migratorius*			
Barn swallow	*Hirundo rustica*	*Threatened*	*No Schedule*	*No Status*
Black-capped chickadee	*Poecile atricapillus*			
Bobolink	*Dolichonyx oryzivorus*	*Threatened*	*No Schedule*	*No Status*
Boreal chickadee	*Poecile hudsonica*			
Brown thrasher	*Toxostoma rufum*			
Chipping sparrow	*Spizella passerine*			
Clay-colored sparrow	*Spizella pallida*			
Common nighthawk	*Chordeiles minor*	*Threatened*	*Schedule 1*	*Threatened*
Common Redpoll	*Carduelis flammea*			
Connecticut warbler	*Oporornis agilis*			
Dark-eyed junco	*Junco hyemalis*			
Downy woodpecker	*Picoides pubescens*			
Eastern kingbird	*Tyrannus tyrannus*			
Eastern phoebe	*Sayornis phoebe*			
Gray catbird	*Dumetella carolinensis*			
Great crested flycatcher	*Myiarchus crinitus*			
Hairy woodpecker	*Picoides villosus*			
Hermit thrush	*Catharus guttatus*			
Horned lark	*Eremophila alpestris*			
House Finch	*Carpodacus mexicanus*			
House sparrow	*Passer domesticus*			
House wren	*Troglodytes aedon*			
Least flycatcher	*Empidonax minimus*			
Le Conte's sparrow	*Ammodramus loconteii*			
Lincoln's sparrow	*Melospiza lincolnii*			
Mountain bluebird	*Sialia currucoides*			
Mourning dove	*Zenaida macroura*			
Northern flicker	*Colaptes auratus*			
Orange-crowned warbler	*Vermivora celata*			
Rock pigeon	*Columba livia*			
Rose-breasted grosbeak	*Pheucticus ludovicianus*			

Common Name	Scientific Name	COSEWIC Status	SARA Schedule	SARA Status
Ruby-throated hummingbird	*Archilochus colubris*			
Say's phoebe	*Sayornis saya*			
Savannah sparrow	*Passerculus sandwichensis*			
Song sparrow	*Melospiza meodia*			
Sprague's pipit	*Anthus spragueii*	*Threatened*	*Schedule 1*	*Threatened*
Upland sandpiper	*Bartramia longicauda*			
Vesper sparrow	*Pooecetes gramineus*			
Western meadowlark	*Surnella neglecta*			

APPENDIX E: CONTACT INFORMATION FOR ABORIGINAL GROUPS

Name	Address/ Box	City, Province	Postal Code
Alexander First Nation Administration	Box 3419	Morinville, AB	T8R 1S3
Alexis Nakota Sioux Nation	PO Box 7	Glenevis, AB	T0E 0X0
Beaver Lake Cree Nation	PO Box 960	Lac La Biche, AB	T0A 2C0
Blood Tribe	PO Box 60	Standoff, AB	T0L 1Y0
Buffalo Lake Métis Settlement	17203, Buffalo Lake Drive	Caslan, AB	T0A 0R0
Chipewyan Prairie Dene First Nation	GD	Chard, AB	T0P 1G0
Enoch Cree Nation	PO Box 29	Enoch, AB	T7X 3Y3
Ermenskin First Nation	PO Box 219	Maskwacis, AB	T0C 1N0
Foothills Ojibway First Nation	51111, Highway 40, Lots A,B,C	Hinton, AB	T7Y 1X5
Fort McMurray First Nation	PO Box 6130	Fort McMurray, AB	T9H 4W1
Gunn Métis Local 55	PO Box 2057	Stoney Plain, AB	T7Z 1X6
Kikino Métis Settlement	GD	Kikino, AB	T0A 2B0
Louis Bull Tribe	PO Box 130	Maskwacis, AB	T0C 1N0
Métis Nation of Alberta, Region 1	10104 102 Ave	Lac La Biche, AB	T0A 2C0
Métis Nation of Alberta, Region 2	PO Box 6497	Bonnyville, AB	T9H 2H1
Métis Nation of Alberta, Region 4	11724, 95 Street	Edmonton, AB	T5G 1L9
Montana First Nation	PO Box 70	Maskwacis, AB	T0C 1N0
Paul First Nation	PO Box 89	Duffield, AB	T0E 0N0
Piikani Nation	PO Box 70	Brocket, AB	T0K 0H0
Saddle Lake Cree Nation	PO Box 100	Saddle Lake, AB	T0A 3T0
Samson Cree Nation	PO Box 159	Maskwacis, AB	T0C 1N0
Siksika Nation	PO Box 1100	Siksika, AB	T0J 3W0
Stoney Nation	PO Box 40	Morley, AB	T0L 1N0
Tsuut'ina Nation	9911 Chiila Boulevard	Tsuut'ina, AB	T2W 6H6
Whitefish Lake First Nation	PO Box 271	Goodfish Lake, AB	T0A 1R0