


From: [Candace Vanin](#)
To: [Legislative Services](#); [Kaitlyn Luster](#)
Subject: Bylaw C-8562-2024-1014-532
Date: Thursday, August 29, 2024 4:27:13 PM
Attachments: [Sutherland letter to RVC re Prairie Gateway C-8562-2024-1014-532.pdf](#)

Hi Planning Services staff,

On behalf of my father, Gary Sutherland, land owner of 16-23-28-W4, within the proposed Prairie Gateway ASP, please see attached.

This submission is intended for the Sept 11/24 special meeting of council.

Thank you.

Candace Vanin
Rocky View County


Mr. Gary Sutherland
283218 Twp Rd 232
Rocky View, Alberta
T1X 0K7

August 29, 2024

Rocky View County
262075 Rocky View Point
Rocky View County, AB
T4A 0X2

Attention: Legislative Services

Dear Sir/Madam:

Re: [Bylaw C-8562-2024-1014-532](#)

Upon review of the revised Prairie Gateway ASP [July 2024] and City of Calgary-Rocky View County Intermunicipal Development Plan, I would like to express the following concerns with this ASP and the IDP amendments proposed:

Prairie Gateway ASP [July 2024]

Pg. 12 Plan Area Context – correction – The Plan area is 4.0 km east of the Stoney Trail Ring Road [not 1.5km]

Pg. 24 Rail Served Policy Area – suggest addition of:

General Policy

10.03 Railed Served Development shall comply with Guidelines for New Development in Proximity to Railway Operations [source: FCM-Railway Association of Canada 2013]

Pg 40 Natural & Historic Environment

Policies – Wetlands

This section of the ASP is based on the Waterbodies Permanence Assessment technical report Feb 2024. Based on new information provided at the May 28/24 open house and the June 19/24 Shepard Community meeting, the project team told us that the Waterbodies Permanence Assessment technical report would be revised. The original report did not acknowledge the Environmental Screening Assessment [Tannas 2020] completed on the same lands for the original/former RVC Shepard Industrial ASP. Tannas assessed wetlands and the presence of the historic drainage ditch constructed in 1955 that serves as an drainage outlet for the westernmost catchment areas of the ASP. It flows out through the NW corner of the ASP and then flows west 200-400m into the Shepard Wetland complex.

I do not support approval of the ASP until the Waterbodies Permanence Assessment technical report is revised with this new and accurate information. Subsequently the Prairie Gateway ASP will be amended with the new information from the technical report.

Rocky View County
Page 2

Policies – Other – suggest addition of:

Top Soil Removal/Deposition: The Prairie Gateway ASP area encompasses over 2,000 acres of agricultural land with historic drainage and salinity/alkali concerns.

Stripping, grading, topsoil removal, storage and topsoil deposition will comply with approved bylaws and policies so as not to impair/impede drainage patterns and future development or cause risks to soil/water quality.

Pg. 54 – Water Servicing – suggest addition of:

19.07 b. May consider additional infrastructure design, capacity and engineering in order to service the hamlet of Shepard.

Pg. 56 – Map 10: Water Servicing – suggest addition of:

Show the hamlet of Shepard on the map.

Show the Shepard Business Park on the map.

Pg. 59 – Stormwater

This section of the ASP is based on the Master Drainage Plan technical report Feb 2024.

The project team based much of their analysis on information provided by the City of Calgary's East Calgary Regional Drainage Study Phase 1. The analysis in the East Calgary Drainage study was incomplete, considering only 30% of the existing, actively contributing wetlands/waterbodies in the City of Calgary's Shepard Industrial ASP [2013] area, which impacts the NW area of the ASP. This omission is a serious oversight and was brought to the attention of the project team on May 28th and June 19th public meetings. We were told there would be a revised Master Drainage Plan. Options and proposed drainage systems/storm trunks are incorrect. Budget implications of excessively longer, deeper storm trunks, in the wrong location will be huge.

To date, all drainage and stormwater management analysis has been a desk-top exercise.

I do not support approval of the ASP until the Master Drainage Plan technical report is revised with improved and accurate information. Subsequently the Prairie Gateway ASP will be amended with the new information from the revised Master Drainage Plan.

City of Calgary- Rocky View County IDP Amendments:

The edits to the IDP and other statutory plans repeatedly focus on collaboration and joint planning.

I thought the purpose of any IDP is supposed to be joint planning and collaboration between two municipalities, and I don't understand why the Prairie Gateway ASP area has been removed from the map showing the priority growth regions.

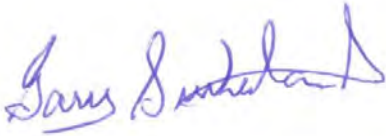
An explanation of this would be appreciated.

Rocky View County
Page 3

Thank you for your consideration of the above information and suggestions.

I can be reached at [REDACTED] anytime if you have questions or need additional information. Thank you for your consideration of this written submission and I look forward to discussing this further with RVC administration.

Yours truly,



Gary Sutherland

Cc: Kaitlyn Luster, Planner, Rocky View County
Candace Vanin

Micah Nakonechny

From: Jamie Coulter <jcoulter@naiadvent.com>
Sent: Monday, August 26, 2024 1:01 PM
To: Legislative Services; Kaitlyn Luster
Subject: Bylaw C-8562-2024-1014-532
Attachments: NAI Global - Letter of Support for Prairie Gateway Aug 26, 2024.pdf

Good Afternoon,

Please see attached letter of support for the Prairie Gateway ASP and the Bylaw referenced in the subject line. NAI Global Commercial Real Estate Services strongly recommends this project proceeds. We appreciate you taking our opinion into account when deciding on the project.

Regards,

Jamie Coulter, SIOR | Vice President/Partner
3633 8th Street SE, Calgary, Alberta T2G 4Y9
jcoulter@naiadvent.com

Office 403 984 9812
Mobile 403 835 1535

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August 26, 2024

Rocky View County
262075 Rocky View Point
Rocky View County, AB
T4A 0X2

City of Calgary
800 Macleod Trail SE
Calgary, AB
T2G 2M3

Attention: Administration and Council Members

Re: Prairie Gateway Area Structure Plan (ASP)
Bylaw C-8562-2024-1014-532

I am writing to express my strong support for the Prairie Gateway Area Structure Plan, a development that stands to offer substantial economic benefits to both the City of Calgary and Rockyview County. This initiative represents a forward-thinking approach to regional growth, leveraging key geographical and economic advantages that will benefit the broader community for years to come.

Calgary's strategic location on the CANAMEX corridor is a critical factor that enhances the economic viability of the Prairie Gateway project. The CPKC rail line is the **ONLY** rail transportation route that connects Canada, the United States, and Mexico, the CANAMEX corridor positions Calgary as a **key** logistics hub for North America. The Prairie Gateway development will capitalize on this by enhancing the city's ability to serve as a vital link in the continental supply chain. This will attract investment from companies looking to optimize their distribution networks, thereby increasing the flow of goods through Calgary and supporting local businesses. Companies want transportation options, they want rail to truck and truck to rail and this project provides those options.

In my substantial experience in the logistics industry, I have seen how the development of large intermodal rail parks has consistently proven to be an economic catalyst in other

regions across North America. For instance, places like Kansas City and Alliance, Texas, have seen significant economic growth as a result of similar projects. These areas have attracted numerous businesses that rely on efficient rail and road transport, leading to the creation of thriving industrial parks and boosting the local tax base. The Prairie Gateway Area can replicate these successes, positioning Calgary and Rockyview County as leaders in modern logistics and transportation infrastructure.

In conclusion, the Prairie Gateway Area Structure Plan is a transformative project that offers wide-ranging benefits. It will create jobs, attract investment, and capitalize on Calgary's strategic location along the CANAMEX corridor. I strongly urge all stakeholders to support this initiative and help realize the economic potential it represents for our region.

Regards,

A handwritten signature in black ink that reads "Steve Pastor". The signature is written in a cursive, flowing style.

Steve Pastor
Vice President
Global Supply Chain & Ports/Rail Logistics/Consultant
NAI Global Industrial Chairperson for the Americas
195 North Street, Suite 100
Teterboro, NJ

Micah Nakonechny

From: BANKS, Robert (Standard General Calgary) <rob.banks@standardgeneral.ca>
Sent: Saturday, August 24, 2024 6:28 PM
To: Kaitlyn Luster; Maclean, Sean
Cc: Legislative Services
Subject: Prairie Gateway Area Structure Plan
Attachments: Prairie Gateway Area Structure Plan (ASP).pdf

Good Day,

Please find attached Standard General's letter of support for the Prairie Gateway Area Structure Plan to be included with the Council packages for first and second readings the second week of September.

Sincerely,

Rob Banks



A COLAS COMPANY

**Rob Banks**

Vice President, Colas Western Canada Inc.
STANDARD GENERAL CALGARY
M: +1 (403) 816-2376

9660 Enterprise Way SE, Calgary AB T3S 0A1

www.standardgeneralcalgary.ca



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A **COLAS** COMPANY

August 19th, 2024

Rocky View County
262075 Rocky View Point
Rocky View County, AB
T4A 0X2

City of Calgary
800 Macleod Trail SE
Calgary, AB
T2G 2M3

Attention: Administration and Council Members

Re: Prairie Gateway Area Structure Plan (ASP)

Please accept this letter of support from Standard General Calgary, A Division of Colas Western Canada Inc., regarding the proposed Prairie Gateway ASP. We firmly believe that this ASP will introduce significant development and employment opportunities by leveraging proximity to the Canadian Pacific Kansas City (CPKC) rail line and CANAMEX corridor. It is evident that there are notable benefits that substantiate the need for this ASP within the greater Calgary Municipal Region, including regional economic growth and shared servicing.

Enhancing Business Growth and Affordability

Standard General is prominent road and community builder serving Calgary and the region for over 80 years. In preparation to better serve future market growth and infrastructure needs, Standard General intends to expand our aggregate distribution, recycling depot, and hot-mix asphalt manufacturing capacity. To this end, we need space, proximity, and in particular rail logistics to bring in resources from afar to maximize economy of scale.

Better Utilization of Municipal Services and Access

Standard General is currently located within the Shepard Business Park which was annexed into the City of Calgary in 2007 and has been without further improvement. This ASP will expedite the delivery of much needed supporting service infrastructure like water, sanitary, storm mains, and other city services to fill in development gaps within the southeast quadrant.

.../2

Page 2

Fostering Sustainability

Standard General has a corporate global mandate to reduce 30% of emissions from all our activities by 2030. To help achieve this business sustainability goal and reduce our supply chain carbon footprint, investing in rail access is an environmentally responsible alternative to currently pure trucking on roads.

In whole, Standard General agrees with, and supports, the proposed Prairie Gateway ASP. We believe that this ASP will enhance both the City of Calgary and the Rocky View County regional competitive advantage, along with providing opportunities for economic growth.

Please feel free to contact us if you require additional information. We are looking forward to your response.

Thank you in advance for your consideration.

Regards,



Rob Banks
Vice President, Colas Western Canada Inc.
STANDARD GENERAL CALGARY
M: +1 (403) 816-2376
9660 Enterprise Way SE
Calgary, AB T3S 0A1
Rob.Banks@standardgeneral.ca

Micah Nakonechny

From: james thomson [REDACTED]
Sent: Thursday, August 29, 2024 2:14 PM
To: Legislative Services
Subject: Bylaw c-8562-2024-1014-532 & c-8563

Follow Up Flag: Follow up
Flag Status: Completed

August 29/2024

Dear Council

I am submitting my concerns regarding the Prairie Gateway ASP and the inter municipal plans associated.

I have lands nearby to the proposed ASP both in the City and County. Prairie Gateway is likely to be advantageous to me. I also have friends with lands in and immediately adjacent to the ASP at both western and eastern edges. My concern is the cursory review of the surface water ramifications and those will be significant. Desktop analysis is insufficient. Once the ASP is approved Rocky View County will lose leverage. There are farmers with many decades of daily observations on how water moves in the area. That knowledge should not be marginalized to desktop analysis. The ASP area is large and the topography will be altered substantially. There will be losers and those losers will be land owners in Rocky View. An independent comprehensive analysis of surface water today and post build out is needed before momentum is such that excuses will be made that the development is just too far along. The proponent, the City of Calgary and the CPR collectively have the resources to do this right to begin with.

I have for more than 25 years been directly involved in or observing interactions between the City and Rocky View over stormwater and wetlands etc , there have been notable instances. The accommodation has always been for Rocky View to make. In all cases the collateral damage has been to residents and landowners in Rocky View. The political cost has always been in Rocky View. Always !

Sincerely, James Thomson
S11 T23 R27 W4

[REDACTED]

Micah Nakonechny

From: Jim Harriman [REDACTED]
Sent: Thursday, August 29, 2024 3:13 PM
To: Legislative Services
Subject: Written comments for Sept 11th.
Attachments: Presentation Draft.pdf #2.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Attention: Legislative Service

Please find attached my written comments, for Jim Harriaman to address the Public Hearing re Bylaw C-8562-2024 -1014-532, at or after 9:00 a.m. September 11,2024.

Regards
Jim Harriman

Please confirm receipt of this e-mail

PUBLIC HEARING: Bylaw C-862-2024 – 1014-532
September 11, 2024

Thank you for the opportunity to address the hearing:

I represent the landowners of 3 families that own 403.44 acres of land on the south side of CPKC Rail mainline directly across from Prairie Gateway ASP and CPKC Rail Land.

Land Portion of the SW/NW-3-23-28 W4M, NE/NW-3-23-28 W4M and Sw-2-23-28 W4M:

The Landowners requests that the County while amending the Rocky View County / City of Calgary Intermunicipal Development Plan (IDP); consider amending the plan to designate our 403.44 acres as “Rail Land” or “Rail Infrastructure”.

Background: When the Landowners sold land north of the mainline to CP Rail the deal also included a siding/ link agreement for our groups land south of the CP Rail mainline. CPKC Rail supports our 403 acres of land to become a major part of the “Railway Logistics Hub”.

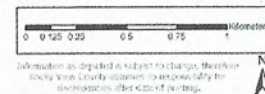
In the Future: Prairie Gateway Lands will become a major part of the “Rail Logistics Hub” and will require off site rail car services, staging and marshalling services. Should these services be at a Private Rail Terminal across from the CPKC mainline, or have their rail car shuttled back to Calgary and increase not decrease rail traffic in the City of Calgary?

Map 5: Land Use Strategy



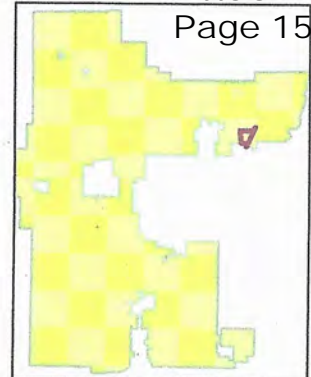
Map 5: Land Use Strategy

- ASP Boundary
- Rail Served Policy Area
- Railway Land
- Railway
- Land Use**
- Industrial

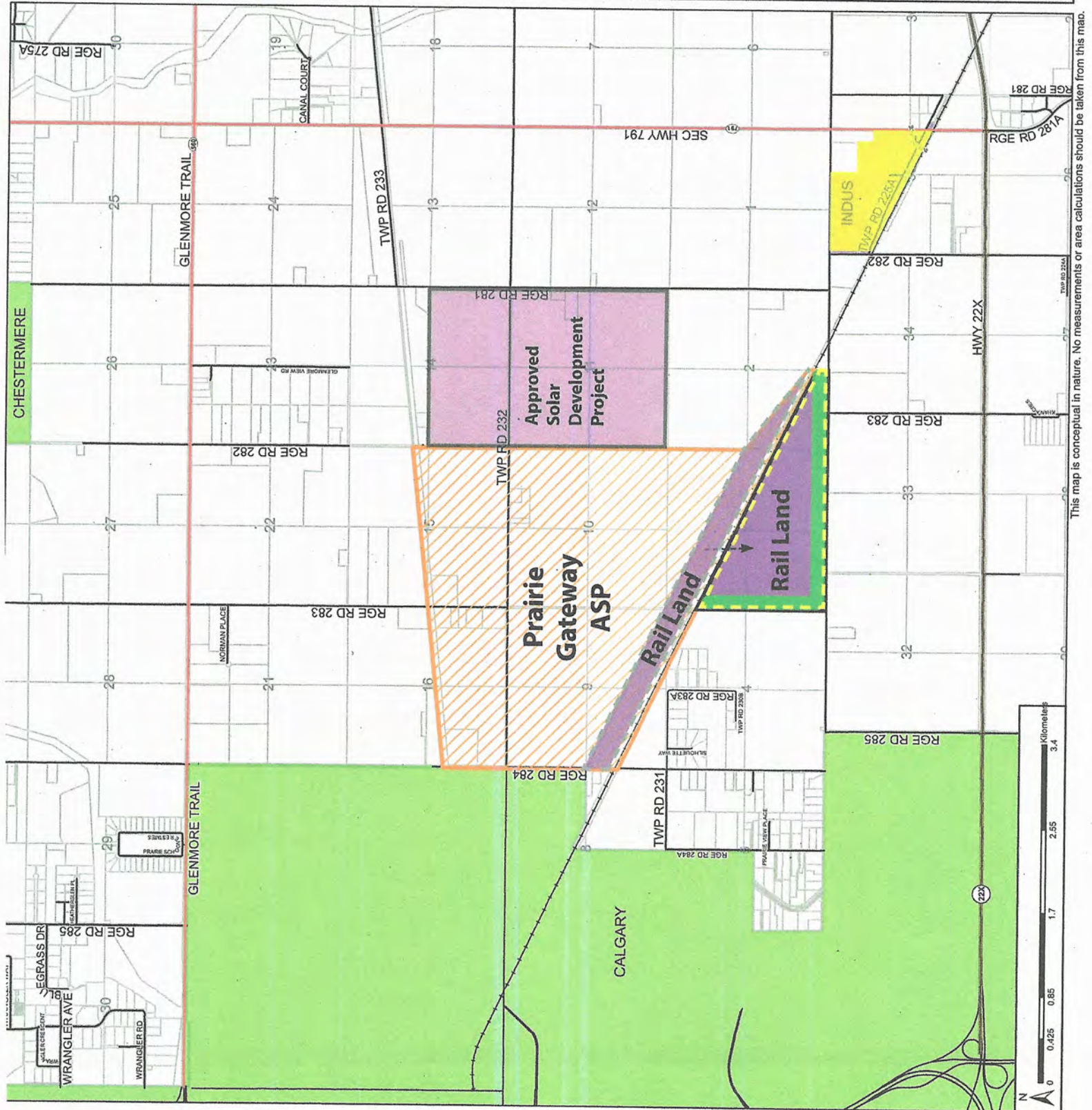


FUTURE RAIL & INDUSTRIAL LAND

-  Prairie Gateway ASP Boundary
-  Rail Land
-  Homestead Land Equity Holdings / proposed rail marshalling yard
-  Buffer/Berm zone



Information as depicted is subject to change, therefore Rocky View County assumes no responsibility for discrepancies after date of printing.



This map is conceptual in nature. No measurements or area calculations should be taken from this map.

The Landowners of the 403 acres support Prairie Gateway moving forward:

The ASP and IDP are an excellent opportunity for the County and the Calgary Region to develop rail- served industrial Land. There is a major missing piece not in the plan that will result in an inefficient development.

“A Rail Marshalling Yard”

It is not cost- effective for Shepard Development Corp. to sell or provide valuable serviced land for marshalling yard infrastructure, and would not result in a high tax assessment. CPKC doesn't want to provide it because they want to see if private industry will provide this necessary rail infrastructure and service.

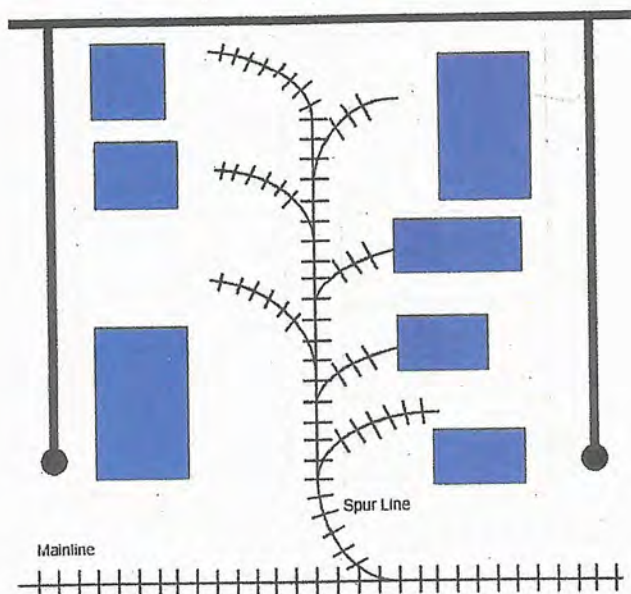
Currently trains are staged and marshalled in the City of Calgary, which is extremely inefficient. **Where are rail cars going to stage & marshalled onto trains?**

Our landowner group has 403 acres of land south of mainline with support from CPKC and Cando Rail Terminals Ltd, for this land to become a “Rail Marshalling Yard”. Prairie Gateway “rail –serviced- industrial lands” to be a success will need efficient, offsite rail marshalling and services in the area. Prairie Gateway has not shown this very necessary rail infrastructure anywhere in its plans.

We highly recommend that the County consider amending the IDP and the ASP to allow for the 403 acres of adjacent lands to be rail infrastructure / marshalling yard.

Objectives

- Prioritize effective and efficient rail served development in the Rail Served Policy Area.

Figure 1: Conceptual Diagram of Rail Served Development

22 | Rocky View County | Prairie Gateway Area Structure Plan

Rail Services supporting Prairie Gateway Rail Car Traffic.

CPKC Rail works with a number of independent rail service providers.

Prairie Gateway's rail infrastructure, link track and rail sidings will most likely be provided and operate by an independent Rail Service provider, not CPKC Rail. The basic services will require Industrial Switching on site and staging, marshalling and Train Assembly of site.

The development of a "multi-purpose rail terminal" by an independent rail service provider on the 403 acres south of CPKC mainline would be very synergic with Prairie Gateway's Development and operation. Also enhancing CPKC Rail overall regional rail operation and reduce rail traffic in the City of Calgary.



Jon Harman
Director of Business Development

427 W. 12th Street
Kansas City, MO 64105
United States

C 612-867-8396
Jon.Harman@cpkcr.com

November 9, 2023

Dear Jim Harriman
Homestead Land Equity Corporation
335 Parkview Crescent SE
Calgary, AB T2J 4N8 Canada
Email: [REDACTED]

Re: CP Letter of Support for Potential Facility near Indus, AB

Dear Mr. Harriman,

The intent of this letter is to acknowledge the discussions CPKC has had with Jim Harriman, Homestead Equity Corp. (335 Parkview Crescent SE, Calgary, AB T2J 4N8 Canada) and Norman Fodness, in particular as it relates to a potential rail-served facility near Indus, AB.

Please accept this letter as an expression of support for such a project, as conceptually discussed to CPKC. CPKC looks forward to our continued conversations on developing private siding that meets CPKC's engineering design requirements to service and support this business. This facility as conceptually proposed, with efficient and effective rail access will provide additional market access for goods to be shipped and received via CPKC's broad reaching rail network into and from Alberta.

CPKC, where possible, looks forward to assisting your organization in moving this project forward.

Sincerely,

Jon Harman

Jon Harman
Director of Business Development
CPKC



Unit 400 – 740 Rosser Avenue
Brandon, MB R7A 0K9

February 13, 2024

Jim Harriman
Homestead Land Equity Corporation
335 Parkview Crescent SE
Calgary, AB T2J 4N8 Canada

Sent via email: [REDACTED]

Re: Cando Rail & Terminals Letter of Support for Potential Facility near Indus, AB

Dear Jim,

Cando Rail & Terminals Ltd (“Cando”) wishes to acknowledge the discussions we’ve had with you and the information you’ve shared with us regarding your rail-served development land near Indus, Alberta. We understand that Homestead Land Equity Corporation is undertaking initial site investigations and has engaged a Registered Professional Planner to lead development of an Area Structure Plan (“ASP”) for roughly 403 acres that you hope to have rezoned to “Direct Control - Rail Terminal”.

Cando is supportive of your Rail Logistics Hub concept. Forward thinking transportation and logistics planning will aid regional economic development and can only help as you build support for your ASP in Rocky View County. Your proposed facility will provide additional market access for Alberta-made products and an entry point for international investment. Cando looks forward to continued conversations with you and a potential site visit in the second half of 2024.

Please continue to reach out with further project updates.

Sincerely,

A handwritten signature in black ink that reads 'Mike'.

Mike Richard
Director, Property & Business Development
Cando Rail & Terminals Ltd.



Platinum member

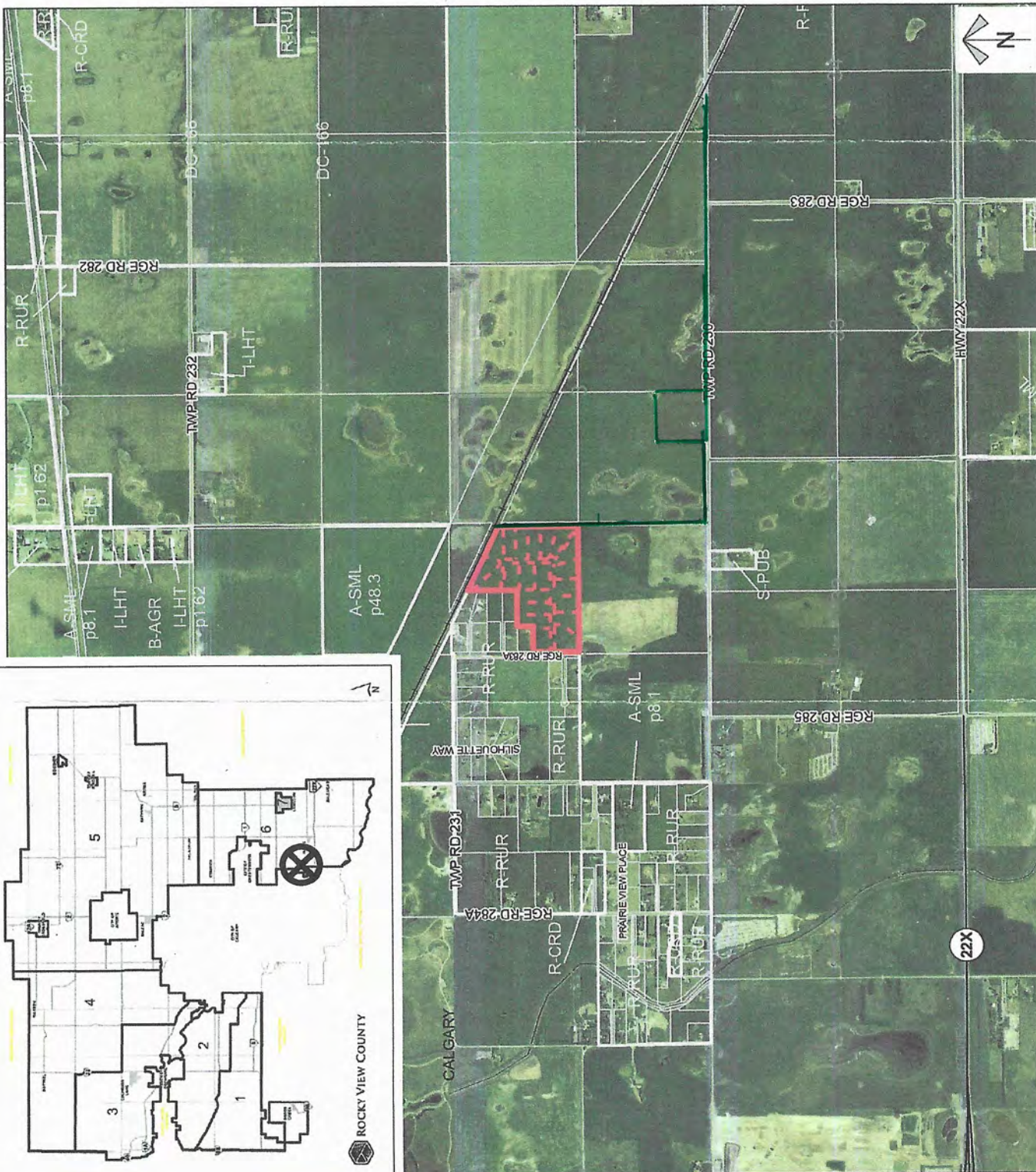
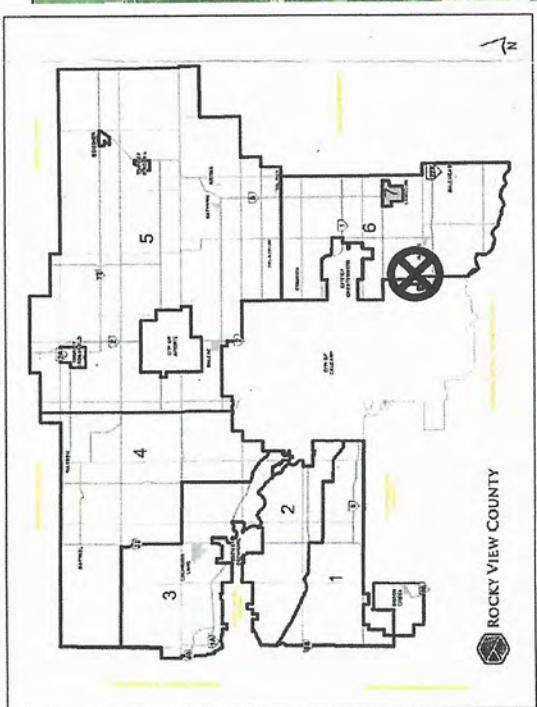


Location & Context

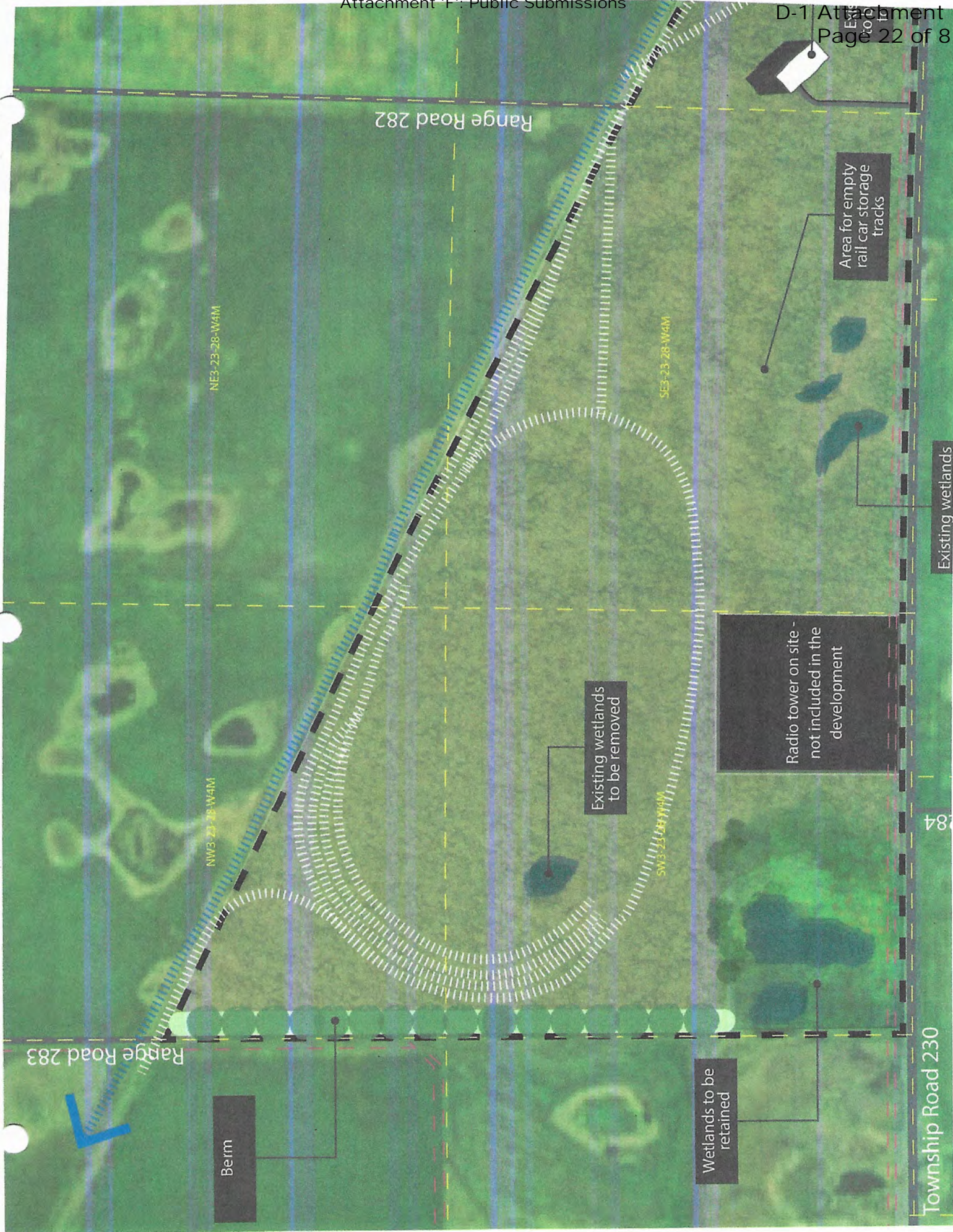
Redesignation Proposal

To redesignate the subject lands from Agricultural, General District (A-GEN) to Residential, Rural District (R-RUR) in order to facilitate future subdivision.

Division: 6
Roll: 03304035
File: PL20220190
Printed: Nov 14, 2022
Legal: A portion of NE-04-23-28-W04M



AGENCY	COMMENTS
FortisAlberta	No concerns.
Telus Communications	No objection.
Adjacent Municipality	
The City of Calgary	The City of Calgary Administration cannot support the redesignation of this parcel with the intent to subdivide. It is our opinion that this application is not in line with the objectives and intent of the Rocky View/Calgary Intermunicipal Development Plan.
Other External Agencies	
Canada Post	Requirement for centralized Community Mail Boxes.
Canadian Pacific Railway	<p>Thank you for the recent notice respecting the captioned development proposal in the vicinity of Canadian Pacific Railway Company. The safety and welfare of residents can be adversely affected by rail operations and CP is not in favour of residential uses that are not compatible with rail operations. CP freight trains operate 24/7 and schedules/volumes are subject to change. CP's approach to development in the vicinity of rail operations is encapsulated by the recommended guidelines developed through collaboration between the Railway Association of Canada and the Federation of Canadian Municipalities. The 2013 Proximity Guidelines can be found at the following website address: http://www.proximityissues.ca/.</p> <p>CP recommends that the below condition be inserted in all property and tenancy agreements and offers of purchase and sale for all dwelling units in the proposed building(s):</p> <p>"Canadian Pacific Railway and/or its assigns or successors in interest has or have a railway right-of-way and/or yard located adjacent to the subject land hereof with operations conducted 24 hours a day, 7 days a week, including the shunting of trains and the idling of locomotives. There may be alterations to, or expansions of, the railway facilities and/or operations in the future, which alterations or expansions may affect the living environment of the residents in the vicinity. Notwithstanding the inclusion of any noise and/or vibration attenuating measures in the design of the development and individual dwellings, Canadian Pacific Railway will not be responsible for complaints or claims arising from the use of its facilities and/or its operations on, over, or under the aforesaid right-of-way and/or yard."</p> <p>Should the captioned development proposal receive approval, CP respectfully requests that the recommended guidelines be followed.</p>



Range Road 282

NE3-23-28-W4M

SE3-23-28-W4M

Area for empty rail car storage tracks

Existing wetlands

Radio tower on site - not included in the development

Existing wetlands to be removed

NW3-23-28-W4M

SW3-23-28-W4M

84

Range Road 283

Berm

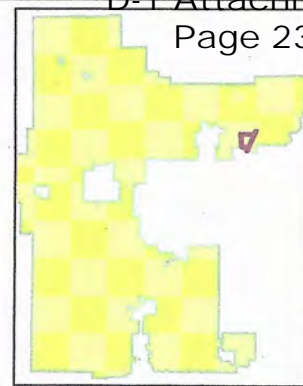
Wetlands to be retained

Township Road 230

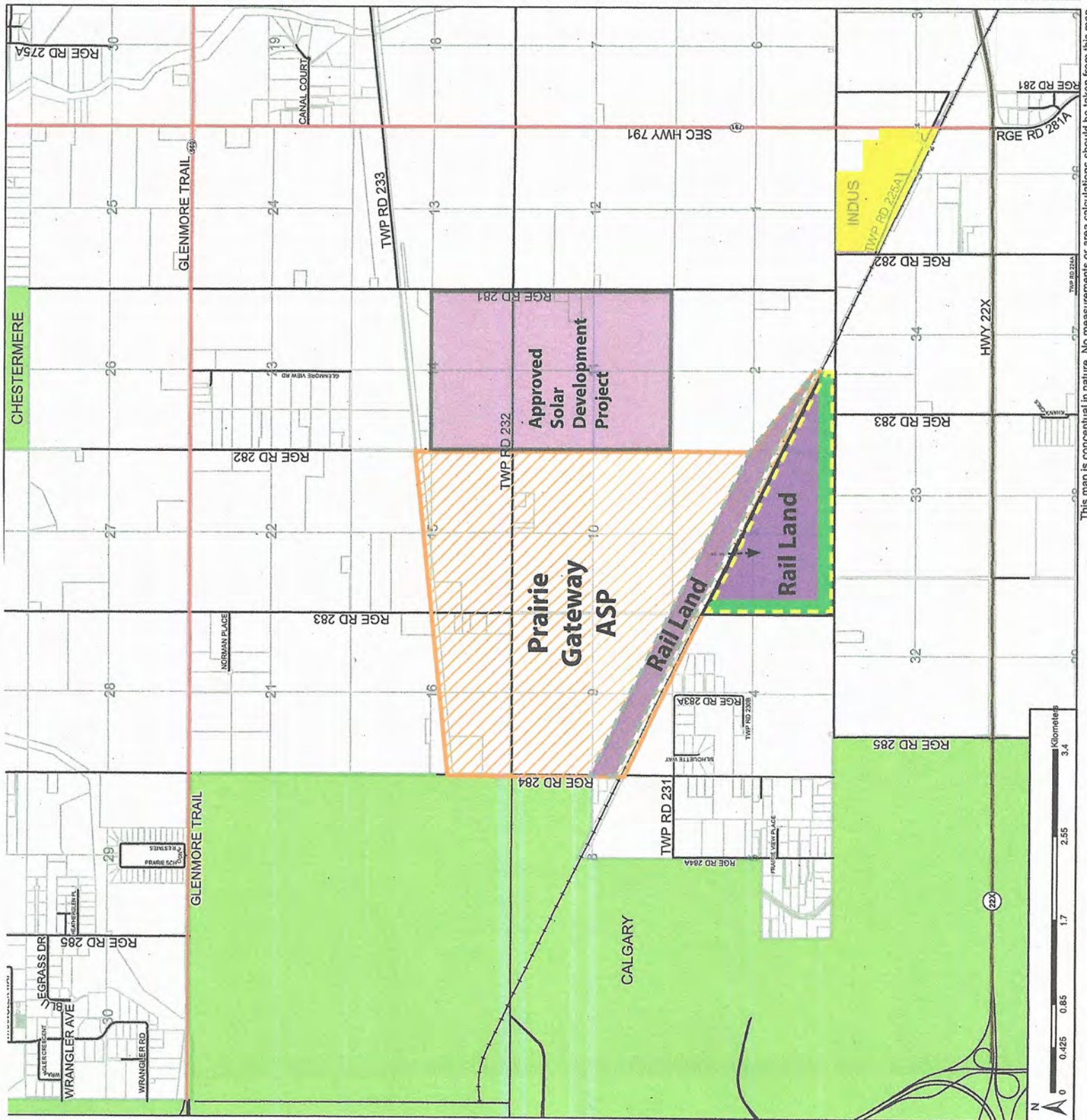


FUTURE RAIL & INDUSTRIAL LAND

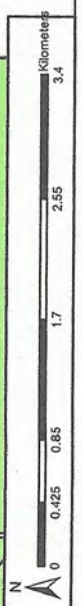
-  Prairie Gateway ASP Boundary
-  Rail Land
-  Homestead Land Equity Holdings / proposed rail marshalling yard
-  Buffer/Berm zone



Information as depicted is subject to change, therefore Rocky View County assumes no responsibility for discrepancies after date of printing.



This map is conceptual in nature. No measurements or area calculations should be taken from this map.



From: [Al Merlo](#)
To: [Reeve General Mailbox](#)
Cc: [Kaitlyn Luster](#); [REDACTED]; [Rob Bondi](#); [Al Merlo](#)
Subject: Special Council Meeting on September 11, 2024
Date: August 29, 2024 2:54:39 PM
Attachments: [RVC Notice of Special Council Meeting 2024 0911.pdf](#)
[Wetland Impact Assessment-Am Jade Co.-Shepard-June 21-12.pdf](#)
[HAB-TECH - Shepard-Southwell Trapp BIA Aug-2011.pdf](#)

Hello Reeve Kissel:

We are the owners of Cell A DC 130, legal description SW 16-23-28-W4M Lot 2 Cell A Plan 1310527. We would like the following to be included in the agenda for consideration at the Special Council Meeting on September 11, 2024 (Notice attached) in Council Chambers at the County Hall located at 262075 Rocky View Point.

We would like to add the following to the Prairie Gateway Area Structure Plan Process:

- Page 12 in the Draft ASP; Please clarify what “Interim uses” means regarding our parcels?
- Page 15 Policy 6.01 in the Draft ASP should be removed. It is an unworkable provision
- Wetlands Policy 14.03 in the Draft ASP should be removed or include reference to the lands South of TWP 232 as well
- Other Policy 14.11 and 14.12 should be removed or include references to lands south of TWP 232 as well
- Map 8 MUST be altered on our property. We have mapped the wetlands on our parcels, paid Acreage Assessments and entered into an agreement relating to Wetland Mitigation. This plan cannot alter that.
- Please explain why Stantec's preferred Option (Option 1) for Stormwater discharge through the NW portion of the plan area is ignored by this Draft ASP?
- Section 21 in general, and Map 12 specifically, should be modified to identify Stantec’s Option 1 Storm solution as the recommended solution. Other solutions such as those currently shown in the plan should be identified as alternative options to be investigated.
- We previously completed upgrades to RR 284 within the intermunicipal planning area. This ASP and future planning approvals in both the County and City need to recognize these improvements and charge Boundary Recoveries in our favour for any future development adjacent to or benefiting from our past improvement. The County has agreed to this, the City of Calgary needs to do the same
- Our existing DC Land Use Bylaw 130 includes lands within and directly to the north of this plan area. How do the County and City propose to reconcile altering policy through this ASP on only a portion of our ByLaw area?
- Stantec MDP May 13, 2024 Figure 3.7 “Existing Conditions Overland Flow Paths” and 2024 3.2.11 "Existing Boundary Conditions” are incorrect, current overland flow is through a Federal ditch that flows to the west under RR284 in the NW corner of Cell A. The mapping should be corrected to reflect this

We would also like the two attached documents included in any notes or materials provided to the participants of the Special Council Meeting. The wetlands contained in the lands of DC130 were mapped and approved in 2012 as a condition of our subdivision and land use approval by the MD of Rocky View:

- 1). Wetland Impact Assessment; John L. Kansas, M.Sc., P.Biol. January 12, 2012
- 2). HAB-TECH Environmental Ltd. Biophysical Impact Assessment August 2011

Thank you,

Al Merlo
AM JADE CO.
<http://amjade.com>
403-703-7964
9720 68 Street SE
Calgary, AB T2C 4Z8



619-18th Avenue NW
Calgary, Alberta Canada
T2M 0T9
403.282.1616

BIOPHYSICAL IMPACT ASSESSMENT

**Am Jade Co. Inc. Shepard property
Lots 1 and 2**

Prepared for:

**Am Jade Co. Inc. and Southwell Trapp and Associates Ltd.
Calgary, Alberta**

Prepared by:

**Javier G. Vargas, M.Sc., P.Biol.
John L. Kansas, M.Sc., P.Biol.**

HAB-TECH Environmental Ltd.



August 2011

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EXECUTIVE SUMMARY

HAB-TECH Environmental Ltd. (HAB-TECH) was commissioned in June 2011 by Southwell Trapp & Associates Ltd. on behalf of Am Jade Co. Inc. to conduct the terrestrial and wetland ecological components of a Biophysical Impact Assessment (BIA) for a 22.4-ha land area located in the SW quarter of Section 16-23-28w4 (i.e. Lots 1 and 2 - Appendix 1), M.D. of Rocky View. These lands are herein referred to as the Shepard lands. All of the Shepard lands occur within Foothills Fescue Subregion of the Grassland Natural Region (Natural Regions Committee 2006).

The vast majority (90.9%) of the Shepard lands comprise habitats with low ecological significance. Development of these lands will not result in a significant negative effect on wildlife or vegetation in the study area. Habitats with moderate ecological significance account for 2.04-ha or 9.1% of the Shepard lands. These habitats include: a semi-permanent wetland class IV, a seasonal wetland class III, and a temporal wetland class II. Loss of moderate ecological significance habitats is considered significant in the local context (i.e. inside the study area). Areas with high ecological significance at the habitat/local level do not occur in the property.

One rare plant species (*Gratiola neglecta*) was found in wetlands #3 and #4: This species is considered rare in Alberta, but is not federally listed. It is recommended that construction of these two wetlands be avoided. If avoidance is not feasible then transplanting of the largest rare plant population located in wetland #3 (including topsoil) should be considered.

Three bird species at risk were detected during field visits: Swainson's hawk, sora, and northern pintail. These species are currently listed as "sensitive" by the province of Alberta but are not designated as species at risk federally. In order to mitigate impacts on those three species it is recommended that wetlands #3 and #4 be preserved as they are, or as part of any proposed Stormwater Management Plan. If avoidance is not possible, then construction activities should be limited to times outside of the peak breeding and nesting season (May-July). This will ensure compliance with the Migratory Birds Convention Act. If land clearing is completed in August, a nest search should be done before the clearing of the wetlands.

The six wetlands on the property are considered uncommon and important in a regional context. Effects on any of the six wetlands within the Shepard lands will require minimization and/or compensation of impacts (see the Provincial Wetland Restoration/Compensation Guide – Alberta Environment 2007). Approval to construct within the wetlands must be completed through Alberta Environment under the Alberta Water Act (Government of Alberta 1996). Impact and function assessments for each wetland will be required as part of any wetland compensation agreement.

1.0 INTRODUCTION

HAB-TECH Environmental Ltd. (HAB-TECH) was commissioned in June 2011 by Southwell Trapp & Associates Ltd. on behalf of Am Jade Co. Inc. to conduct the terrestrial and wetland ecological components of a Biophysical Impact Assessment (BIA) for a 22.4-ha land area (the Shepard lands) located in the SW quarter of Section 16-23-28w4 (i.e. Lots 1 and 2 - Appendix 1), M.D. of Rocky View. Specific tasks of the assessment included the following;

Information review:

- locating and compiling previous ecological inventory, assessment and planning reports and information relevant to the subject lands; and,
- scientific literature review as appropriate.

Habitat supply assessment:

- field site reconnaissance to classify habitat types and land use characteristics with specific focus on native plants; and,
- classify and map habitat types and soils on the subject lands.

Ecological significance assessment at the habitat level:

- assess the floristic and structural diversity and the native habitat integrity of each mapped habitat type.
- assess the suitability of each habitat type for vertebrate species at risk; and,
- assess the potential of each habitat type to harbor rare plants and plant communities.

Ecological significance assessment at the regional/landscape level:

- assess the regional habitat rarity of each of the habitats present in the property;
- assess habitat fragmentation levels in and adjacent to the property; and,
- assess the potential of the property as a wildlife movement route.

Impact assessment:

- assess the potential effects of land development on habitat and landscape level attributes of the property.

2.0 METHODS

2.1 Review of Regional Ecological Information Sources

A number of inventory, assessment and planning sources were obtained and reviewed in order to assess the local and regional ecological significance of the subject lands. The following specific documents were referenced:

- Alberta Natural Heritage Information Center Rare Plant Tracking Lists (Gould 2006) and Ecological Community Tracking List (Allen 2009).
- The City of Calgary's Natural Area Management Plan (Calgary Parks and Recreation 1994).
- Calgary Urban Parks Program biophysical assessments (GAIA et al. 1993).
- Biophysical inventory and analysis of three environmentally sensitive areas within the Calgary Restricted Development Area (RDA) (Strong and Kansas 1984).
- Ecodistricts of Alberta – Summary of Biophysical Attributes (Strong and Thompson 1995).
- Biophysical and land use inventory and analysis of Nose Hill Park (Sentar 1993).
- Soil survey of the Calgary urban perimeter (MacMillan 1987).
- Range plant communities and range health assessment guidelines for the Foothills Fescue Natural Subregion of Alberta (Adams et al. 2003).
- City of Calgary Wetland Conservation Plan (City of Calgary 2004).
- City of Calgary Open Space Plan. (City of Calgary 2003)

2.2 Habitat Supply Assessment

Site visits to classify and map the habitats occurring on the property and to assess terrestrial and wetland ecological aspects were completed on July 12 and 21, 2011. The Shepard lands were visited on foot and notes concerning vegetation and wildlife habitat were taken. Information included vegetation associations and structure based on dominant vascular plants. Photographs were taken of representative habitat types. Habitats were mapped on a 1:2,000 scale color aerial photograph. Wetland boundary delineation was completed using a hand-held GPS set on track mode.

2.3 Ecological Significance Assessment at the Habitat/Local Level

A comprehensive assessment of the local ecological significance of each habitat type identified and mapped in the property was carried out taking into consideration the following five ecological factors:

- Floristic diversity of habitat types;
- Structural diversity of habitat types;
- Native habitat integrity based on a subjective assessment of the current level of disturbance;
- Wildlife habitat suitability for vertebrate species at risk; and,
- Potential of habitat types to support rare plants.

The five ecological significance factors were rated as high, medium or low for each habitat type based on scientific literature and consultant reports, first-hand knowledge from site visits, and the authors' understanding of wildlife and habitat values in the region.

2.3.1 Vegetation Composition and Structure Analyses

The floristic and structural diversity of habitat types were subjectively rated as high, medium or low using plant species richness measurements conducted for related habitat types within and adjacent the City of Calgary (Sentar 1993; Collister and Kansas 2004; Charlebois and Kansas 2008).

2.3.2 Disturbance/Native Habitat Integrity Assessment

The amount of current human disturbance within habitat types was subjectively rated as high, medium or low based on evidence of human use (agricultural clearing, buildings, roads, etc.) and the proportion of habitat that supported introduced (non-native) plant species. Areas with high levels of human disturbance and high proportions of introduced plant species were considered to have low levels of native habitat integrity.

2.3.3 Rare Plant Assessment

The rare plant assessment followed two steps. First, a list of potential rare plants and habitat associations was developed; and second, a rare plant field survey was completed. More detailed description of these two steps follows.

Rare Plant Species Occurrence and Habitat Affiliations

A literature review was conducted to identify rare plants and plant associations that could occur in and adjacent to the Shepard lands. Primary sources of information used to develop a list of potential rare plants and associated habitats included Packer and Bradley (1984), Wallis (1987), Sentar (1993), the Alberta Natural Heritage Information Centre's Rare Plant Tracking Lists (Kemper 2009), and the Alberta Conservation Information Management System's (ACIMS) Ecological Community Tracking List (Allen 2010). In addition, a rare plant element occurrence report for the Shepard land was requested (ACIMS, 2011). Habitat affiliations of the rare plants with potential to occur in the study area were determined when sufficient information was available (Moss 1983; Johnson et al. 1995, Kershaw et al. 2001).

The Nature Conservancy established a method to determine the level of rarity of rare and endangered plant species. A rank is assigned to each plant based on the status codes described below and also taking into consideration a specific geographic scale, which can be global (G) when looking at the status of a plant throughout its entire range, national (N) when interested in the plant species status in a country (e.g. Canada), or sub-national (S) when the area of interest is a province (e.g. Alberta).

Status Codes

- 1: critically imperiled due to extreme rarity (5 or fewer occurrences)
- 2: imperiled because of rarity (6 to 20 occurrences)
- 3: rare or uncommon (21 to 100 occurrences)
- 4: apparently secure (> 100 occurrences)
- 5: abundant and demonstrably secure (> 100 occurrences)

F: falsely reported
 H: known historically, may be rediscover
 P: potentially present, expected in the province but not yet discovered
 Q: questionable taxonomic rank
 R: reported but without persuasive documentation to either accepting or rejecting the report
 U: uncertain status, more information is needed
 X: apparently extinct or extirpated, not expected to be rediscovered
 ? : no information is available, or the number of occurrences estimated
 GNR SNR: unranked or under review
 GH SH: conservation status not applicable (includes exotic species)
 T₁ : rank for a subspecific taxon
 G? or S? not yet ranked

Rare Plant Survey

A rare plant survey of the Shepard lands was conducted on July 12, 2011 to determine the presence of vascular plant species listed to be of conservation concern, endangered or threatened according to the Alberta Conservation Information Management System's (ACIMS) and/or the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). In order to ensure an effective and scientific survey of the area we followed the Guidelines for Rare Plant Surveys proposed by the Alberta Native Plant Council.

To accurately locate portions of the study area with highest likelihood of harboring rare plants, a 1:2,000 scale aerial photo for the property was reviewed and used for orientation in the field. During the field visit an initial search was conducted around the periphery of each wetland and fallow fields. The initial search was followed by an intensive "hands and knees" ground survey in order to inspect for small and less conspicuous species.

Habitats/wetlands harboring rare plants were rated as high for rare plant habitat, and habitats/wetlands where no rare plants were found were rated as low.

2.3.4 Vertebrate Species at Risk Habitat Suitability Assessment

Wildlife habitat suitability assessment was completed following two steps. First, a vertebrate species at risk occurrence and status list was generated; and second, the suitability of each habitat type was rated for each species on the list and then compiled into a single rating for each habitat type. Detailed methods associated with each of the two steps follows.

Wildlife Species Occurrence and Status

A list detailing the status and abundance of vertebrate wildlife species known, or expected to be resident during some portion of the year within the study area was developed using local, regional and provincial references (Semenchuk 1992; Russell and Bauer 2000; Smith 1993; Pattie and Fisher 1999), and the authors' experience. From this list, vertebrate species at risk were identified based on recent regulatory status documents (COSEWIC 2010; AEP 2000, 2001, 2005; SARA 2005). Status and abundance definitions are presented below and at-risk definitions in Table 1.

Status

S	summer resident, migrates out of study area for the winter
W	winter resident, present only during late fall, winter and early spring
R	permanent resident, present year-round although not necessarily active during winter
M	migrant, passes through area during spring and/or fall, not normally resident at any time of the year
T	transient, expected to occur only in passing, not normally resident at any time of the year

Abundance

C	common, detected whenever suitable habitat is investigated during an appropriate season
U	uncommon, detected often, but not always, whenever suitable habitat is investigated during an appropriate season
S	scarce, detected occasionally, but not usually, even when suitable habitat is investigated during an appropriate season
R	rare, unexpected but could occur in any given year, would not generally be considered a regular component of the study area fauna

The Alberta Fisheries and Wildlife Management Information System (FWMIS, 2011) was consulted to obtain information concerning historical reports of wildlife species at risk in the vicinity of the study area.

Wildlife Habitat Suitability Ratings

The suitability of each habitat occurring on the property was assessed for all vertebrate species at risk based on scientific literature and consultant reports, first-hand knowledge resulting from the reconnaissance site visits, and the authors' knowledge of wildlife-habitat relationships in the region. The following 3-class rating system was used.

Low:	The habitat type may be used by the wildlife species in question; however, use is limited to travel, resting, loafing or opportunistic feeding and/or breeding. The habitat type contributes minimally to population viability of the species.
Moderate:	The habitat type is used by the species for feeding and/or breeding, but is of sub-optimal quality relative to other habitats. The habitat type may contribute significantly to population viability of the species but only during periods of low environmental stress.

High: The habitat type is an important habitat of the species for feeding and/or breeding. The habitat type contributes significantly to population viability.

Individual species ratings were used to develop a composite rating of wildlife habitat significance per each habitat type occurring in the property.

2.4 Ecological Significance Assessment at the Landscape/Regional Level

The ecological significance of the property at the landscape/regional level was assessed using three factors:

- Regional habitat rarity;
- Existing habitat fragmentation; and,
- Wildlife movement route potential.

Each factor was evaluated separately with evaluations based on scientific literature and consultant reports, site visits, and the authors' knowledge of ecologically important habitats in the region.

2.4.1 Regional Habitat Rarity

Regional habitat rarity was assessed based on a review of other studies conducted in the greater Calgary region. The habitat type classification system from the Calgary Natural Areas Management Plan (Calgary Parks and Recreation 1994) was followed for the purpose of regional habitat supply comparison. The total area of each mapped habitat type in the property was summarized using a GIS (Geographic Information System). The significance (rarity) of habitat types found on the property was assessed against the supply of similar habitat types in the Calgary region. The Calgary Urban Parks Project ecological inventory and assessment (GAIA 1993) provided land areas of habitat types associated with the Bow, Elbow and Nose Creek valleys. Other studies that have quantified habitat supply in the Calgary area are Nose Hill Park (Sentar 1993) and the Calgary Restricted Development area (Strong and Kansas 1984).

2.4.2 Fragmentation and Wildlife Movement Routes

The property was evaluated in terms of its ecological significance as a part of a larger ecological system. Key aspects of this assessment were fragmentation and wildlife movement corridor potential.

2.5 Project Impact Assessment

The incremental effects of the development of the Shepard lands and their significance were determined, described and assessed. Assessments were based on the current ecological significance of the property at the habitat/local and landscape/regional levels. No project footprint or outline/concept plans were available at the time this report was prepared.

3.0 ECOLOGICAL DESCRIPTION AND ASSESSMENT

3.1 Ecological Region, Landforms, and Soils

The Shepard lands occur within the Foothills Fescue Subregion of the Grassland Natural Region (Natural Regions Committee 2006). This ecological zone occurs as a narrow band between the Mixedgrass Subregion and the Foothills Parkland Subregion. Topography is subdued and characterized by morainal, glaciolacustrine and outwash surficial deposits along the lower flanks of the Foothills Geologic Belt. In undisturbed conditions Foothills Fescue vegetation is dominated by native grasslands including Rough Fescue (*Festuca scabrella*), Idaho Fescue (*Festuca idahoensis*), Parry's Oatgrass (*Danthonia parryi*) and Intermediate Oatgrass (*Danthonia intermedia*). According to mapping by Strong and Thompson (1995), the entire Shepard area occurs within the Delacouer Ecodistrict. This Ecodistrict is characterized by:

- 70% grassland (includes cultivated and pasture) vegetation on undulating (0% to 0.5%) morainal plain with moderately well drained, loam-textured black chernozem soils;
- 20% grassland (includes cultivated and pasture) on undulating (0.5% to 2.5%) morainal plain with moderately well drained, silty loam-textured black chernozem soils; and
- 10% grassland (includes cultivated and pasture) vegetation on rolling (6.0% to 9.0%), morainal deposits with well drained, sandy loam-textured dark brown chernozem soils.

As of the mid-1990s approximately 90% of the Delacouer Ecodistrict had been cleared for agricultural production (Strong and Thompson 1995).

Three different soil units were mapped by AGRASID in the study area including: one Delacour (DEL7), and two Balzac (BZC1 and BZC4) soils (Figure 1). DEL7 soils cover 10.7-ha or 48.0% of the property. DEL7 soils are characterized by well drained Black Chernozems developed on fine loamy till. BZC1 soils occupy 1.2-ha (5.4%) of the property and are characterized by poorly drained saline Humic Gleysols in lower ground water discharge areas. The parental material is fine clayey recent lacustrine overlying till, and the landform is level to depressional. BZC4 soils encompass 10.4-ha (46.6%) of the property. These soils are a variable mix of poorly drained saline Humic Gleysols, well drained Black Chernozems and well to imperfectly drained Solodized Solonetz. The parental material is a thin discontinuous fine clayey recent lacustrine overlying till, and the landform is undulating to depressional.

3.2 Vegetation and Habitat Supply

Only two habitat types were found in the study area - Cultivated agricultural (CA) and Wetlands (W) (Figure 2). The six wetlands occurring in the study area were further classified using the Stewart and Kantrud (1971) wetland classification system. The ecological characteristics of each of the habitat types occurring on the Shepard lands are described below including their land area supply.

Cultivated Agricultural (CA)

Cultivated fields comprise the majority (20.2-ha or 90.3%) of the study area (Photo 1 – Appendix 1). The cultivated field located in the north-eastern portion of Lot 2 has been left fallow and is characterized by stubble crop interspersed with a diverse group of non-native (weedy) species such as summer cypress (*Kochia scoparia*), Canada thistle (*Cirsium arvense*), sow thistle

(*Sonchus arvensis*), stink weed (*Thlaspi arvense*), flixweed (*Descurainia sophia*), sheperd's-purse (*Capsella bursa-pastoris*), prickly lettuce (*Lactuca serriola*), dandelion (*Taraxacum officinale*), lamb's quarters (*Chenopodium album*), and wild buckwheat (*Polygonum convolvulus*). Foxtail barley (*Hordeum jubatum*) is a native species that was also abundant in the study area. This is not surprising since foxtail barley is a weedy native species common on roadsides, waste ground, and open fields (Tannas 2003). In wetter areas of the fallow field some additional hydrophytic plant species were found including: few-flowered rush (*Juncus confusus*), rough cinquefoil (*Potentilla norvegica*), mudwort (*Limosella aquatica*) and northern willow-herb (*Epilobium ciliatum*) (Photo 2 – Appendix 1).

Wetlands (W)

Six wetlands were identified, mapped, and classified using the Steward and Kantrud wetland classification system (Stewart and Kantrud 1971) (Figure 2). Wetlands account for 2.2-ha or 9.5% of the study area. Wetland # 3 (Figure 2) is a semi-permanent wetland (Class IV); wetland #4 is a seasonal wetland (Class III); and wetlands #1, 2, 5, and 6 are temporal wetlands (Class II). Description of these wetlands follows:

Semi-permanent Wetland (Class IV)

A single semi-permanent wetland (Class IV) was present in the property (i.e. wetland #3) occupying 0.51-ha or 2.3% of the study area. This wetland is characterized by deep marsh vegetation in the deepest portion of the wetland (Photo 3 – Appendix 1) dominated by common cattail (*Typha latifolia*). Common duckweed (*Lemna minor*) and water-buttercup (*Ranunculus sp.*) are also common in the deep marsh zone. The shallow marsh zone of this wetland is dominated by slough grass (*Beckmannia syzigachne*), creeping spike-rush (*Eleocharis palustris*), needle spike-rush (*E. acicularis*), and reed canary grass (*Phalaris arundinacea*). Common meadow species interspersed within the shallow marsh zone were: alkali grass (*Puccinellia nuttalliana*), fowl bluegrass (*Poa palustris*) and foxtail barley. Other species found were: slender wheat grass (*Agropyron trachycaulum*), short-awned foxtail (*Alopecurus aequalis*), wild mint (*Mentha arvensis*), and Canada thistle. The outer ring of this wetland has been tilled.

Seasonal Wetland (Class III)

Wetland #4 is a seasonal wetland (Class III) characterized by shallow marsh vegetation in the deepest portion of the wetland. It occupies 1.05-ha or 4.7% of the study area. Awned sedge (*Carex atherodes*) and slough grass dominate the shallow marsh zone with sporadic common cattail plants. Alkali grass and foxtail barley dominate the wet-meadow portion of the wetland (Photo 4 – Appendix 1). The outer ring of the wetland has been tilled and was dominated by fallow crops, foxtail barley and alkali grass.

Temporal Wetland (Class II)

Wetlands #1, 2, 5, and 6 are temporal wetlands (Class II) characterized by wet meadow vegetation in the deepest portion of the wetlands. Wetland #1 covers 0.47-ha or 2.1% of the study area and is dominated by alkali grass, salt grass (*Distichlis stricta*) and foxtail barley. Other native species present were: celery-leaved buttercup (*Ranunculus sceleratus*), rough cinquefoil (*Potentilla norvegica*) and toad rush (*Juncus bufonius*). Non-native species commonly found in this wetland were: lamb's quarters, Canada thistle, sow thistle, dandelion, smooth brome (*Bromus inermis*), white sweet clover (*Melilotus alba*), yellow sweet clover (*M. officinalis*), and quackgrass (*Agropyron repens*). This wetland has been disturbed in the past by excavation and

dirt movement (Photo 5 – Appendix 1). Wetlands #2 (Photo 6 – Appendix 1), #5 (Photo 7 – Appendix 1), and #6 (Photo 8 – Appendix 1) occupy 0.03-ha or 0.14%, 0.04-ha or 0.16%, and 0.08-ha or 0.34% of the study area, respectively. These three wetlands have been completely tilled in the past and were characterized by a high percent cover (>50%) of bare ground. Alkali grass was the dominant species. Foxtail barley, short-awned foxtail and the introduced summer cypress were common in wetlands #5 and 6.

Extensive and long-term agricultural tillage has significantly affected wetland occurrence and native integrity in the study area.

3.3 Ecological Significance Assessment at the Habitat/Local Level

An assessment of each of the five ecological significance factors is provided below in the context of mapped habitat types on the Shepard lands. Ratings were based in large part on field measurements by HAB-TECH staff from the same or very similar habitat types in other studies conducted within the Calgary region.

3.3.1 Floristic Diversity

A fundamental principle of conservation biology is to protect sites that support high levels of local “species richness” (the number of organisms present in an area) (Council on Environmental Quality 1993; Noss 1993). Ecosystems that support a high level of diversity of plant species tend to be structurally diverse and productive (Meffe et al. 1997). These areas in turn support a wide variety and abundance of insect and animal forms.

Habitats that support the highest plant species diversity in the Calgary region are seepage tall willow, native grasslands, moist mixed-woods and aspen and balsam poplar forests. The lowest levels of plant diversity are generally found in non-native grasslands, disturbed sites, low shrubland and dry tall shrubland habitat types (Sentar 1993; Collister and Kansas 2004; Charlebois and Kansas 2008). None of the habitats that support high levels of plant species diversity occur on the Shepard lands. Cultivated Agricultural fields were rated as having low floristic diversity as were the temporal wetlands # 2, 5, and 6). Outer rings of wetlands #2, #3 and 4 have been tilled, hence their natural floristic diversity has been reduced. As a result, these three wetlands were rated as having moderate floristic diversity.

3.3.2 Structural Diversity

The structural complexity of an ecological community is positively correlated with the diversity of animal life (Meffe et al. 1997). This is especially true for vertebrate wildlife species that require unique and variable reproductive, forage and cover opportunities or “niches” for survival and reproduction. Short (1986) explained the disproportionate importance of vertical vegetation structure in prairie and rangeland environments where such habitats area in limited supply:

“Rangeland habitats that provide only a few layers of habitat have a limited volume of space within which wildlife species can find niches. More niches are potentially available as more layers of habitat occur in cover types, so more wildlife species potentially are supported by more structurally diverse habitats.”

Other studies conducted in similar environments within the greater Calgary region have shown that habitats with the highest structural diversity indices are forest types such as aspen and balsam poplar forests (Sentar 1993; Collister and Kansas 2004; Charlebois and Kansas 2008). Non-native grasslands, disturbed areas and low shrub communities support low structural diversity and lesser use by wildlife as primary habitat. Since there were no tree or tall shrub patches in the study area, there are no habitat types rated as having high structural diversity. The semi-permanent wetland (wetland # 3), the seasonal wetland (wetland #4), and the temporal wetland (wetland #1) were rated as having moderate vegetation structural diversity. Because wetlands # 2, 5, and 6 have been completely tilled in the past they support only one layer of vegetation and a high cover of bare ground. As such they were rated as having low structural diversity.

3.3.3 Disturbance/Native Habitat Integrity Assessment

Invasion of native habitats by non-indigenous or “introduced” species of plants can result in a loss of native plant species, changes in community structure and function, and alterations in the physical structure of the system (Drake *et al.* 1989). Human land use and associated interruption of native ecological processes is normally the cause of plant species invasions (Mooney and Drake 1986). Habitat loss, non-native species invasion from cultivated fields and waste lands are the main disturbance factors observed on and adjacent to the Shepard property. Because of the high level of overall land disturbance, none of the habitat types on the property were rated as having a high level of native habitat integrity. The semi-permanent wetland (wetland # 3), the seasonal wetland (wetland #4), and the temporal wetland (wetland #1) were rated as having moderate native habitat integrity.

3.3.4 Rare Plants Assessment

According to the information provided by the Alberta Conservation Information Management System (ACIMS 2011), no rare plant occurrences have been recorded to date within or in the immediate vicinity of the property. It is important to note however that the absence of records could simply indicate that very few inventories/surveys have been completed in this area. Table 2 provides a list of rare plant species with the greatest potential of occurring in the study area. We reviewed the ACIMS Preliminary Ecological Community Tracking List (Allen 2010) to determine the potential for occurrence of rare plant communities representative of the Foothills Fescue natural subregion. Taking into consideration the degree of disturbance of the property, there is limited potential for rare plant communities in the property.

A field visit was conducted to search for rare plants and rare plant communities in the study area. The areas searched for rare plants are shown in Figure 3. No rare plant communities were found at the time of the visit and one rare plant species (*Gratiola neglecta*) was found in the outer portions of wetlands #3 and #4 (Figure 3). *G. neglecta* was found growing on areas of bare and wet ground together with foxtail barley, needle spike-rush and slough grass. In wetland #3 this rare species was found growing in clumps between coordinates 299007E/5648981N and 298967E/5649033N (Figure 3). The average density of plants in this section of wetland #3 was 11.7/m² at the time of sampling. In wetland 4 *G. neglecta* was also found in clumps centered around 299159E/5648939N. The average density of plants was 3.6/ m² at the time of sampling. In general, the areas where *Gratiola neglecta* was growing had been previously tilled. It also was observed that the density of this species decreased when other species such as foxtail barley increased in density.

Table 3 provides an overall list of the 42 common vascular plant species encountered during the field survey: 28 of them (67%) were native species, while the remaining 14 species (33%) were exotic or non-native.

3.3.5 Wildlife Species at Risk and Habitat Suitability Assessment

Based on habitat requirements and known distributional ranges, 33 vertebrate species at risk have potential to occur within the Shepard property. These species are listed in Table 4 and include twenty-five bird species, two mammal species, three amphibian species, and three reptile species. A search of the Alberta Fish and Wildlife Management Information System (FWMIS, 2011) data base yielded historical observations of black-necked stilt, burrowing owl, horned grebe, western grebe, northern harrier, northern pintail, short-eared owl, sora, Swainson's hawk and Canadian toad in the general vicinity of the study area. None of those observations occurred directly inside the Shepard lands.

Twenty different bird species were detected during the field visits (Table 5) of which three species are at risk including: Swainson's hawk, sora, and northern pintail. These species are currently listed as "sensitive" by the province of Alberta and are not designated as species at risk federally.

The suitability of each habitat type for each potentially occurring vertebrate species at risk (Table 6) was rated using reference literature, first-hand knowledge gained from field visits and the authors' expertise. Wetlands #3 (semi-permanent wetland class IV) and wetland #4 (seasonal wetland class III) were considered to have the highest relative suitability to harbor wildlife species at risk in the study area, while wetlands #1, 2, 5, and 6 (temporal wetlands class II) were rated as moderate. Cultivated Agricultural fields (CA) were rated as having low potential to harbor species at risk since their limited native integrity does not fulfill species habitat requirements.

3.3.6 Habitat Type Significance Assessment at the Habitat/Local Level

Habitat types on the Shepard lands were rated for the five ecological factors discussed in Sections above (Table 7). These ratings describe the local overall significance of the habitat types present within the study area. None of the habitat types mapped on the Shepard land were rated as highly significant for more than two ecological factors. Wetland #4 (seasonal wetland class III) and wetland #3 (semi-permanent wetland class IV) were rated as high for two of the five ecological factors (i.e. rare plant and wildlife species at risk potential) and moderate for the remaining three factors. These habitat types were rated as having an overall ecological significance of moderate at the habitat/local level. Wetland #1 (temporal wetland class II) was also rated as having a moderate overall ecological significance since it was rated as moderate for four of the five ecological factors. Wetlands #2, 5, and 6 rated low for four of the five ecological factors, while Cultivated Agricultural field (CA) was rated low for all of the five ecological factors. As a result, Wetlands #2, 5, and 6 and cultivated lands were rated as having an overall ecological significance of low at the habitat/local level.

3.4 Ecological Significance Assessment at the Landscape/Regional Level

Assessments of the property's regional habitat rarity, fragmentation, and wildlife movement potential are discussed below in the context of landscape-level ecological attributes occurring on and adjacent to the Shepard property.

3.4.1 Habitat Type Rarity Assessment

Conservation of an appropriate supply of native vegetation and habitat is a cornerstone of conservation biology and is generally considered to be the primary management tool for the protection of biological diversity (Meffe et al. 1997). Native habitats considered to be in short supply (rare) in a regional context are considered to be more significant than abundant habitats in the context of preserving landscape diversity and the plant and animal species that these landscapes support (Noss 1993; Council on Environmental Quality 1993; Noss and Cooperrider 1994).

In a regional context the least common habitats found within the study area are the wetlands. As a result, all six wetlands found in the study area were rated as having high habitat rarity.

3.4.2 Habitat Fragmentation Assessment

Habitat fragmentation occurs in two principal ways: reduction of the total amount of a habitat type in a landscape, and apportionment of the remaining habitat into smaller more isolated habitats (Meffe et al. 1997). Human settlement in urban and country residential areas routinely results in a patchwork of small isolated natural areas within a matrix of developed land (Adams and Dove 1989). Habitat loss and fragmentation has already significantly occurred in and around the Shepard property. This is reflected by the high proportion of cultivated agricultural fields occurring on the property (90.3%). Habitat fragmentation levels within and adjacent to the property are rated as high.

3.4.3 Wildlife Movement Potential

Wildlife corridors are defined as "linear landscape features that facilitate the biologically effective transport of animals between larger patches of habitat to accommodate daily, seasonal and dispersal movements" (Paquet et al. 1994.). Protection of routes for wildlife movement is important in order to provide safe travel opportunities between important habitats and to facilitate dispersal and population exchanges. Since significant habitat fragmentation has already taken place in the vicinity of the property, the study area is not considered as an important wildlife movement corridor. This effect is compounded by the lack of meaningful amounts of hiding cover (trees, shrubs) on the property.

4.0 IMPACT ASSESSMENT AND RECOMMENDATIONS

This section of the report addresses the implications of development of the Shepard lands from an ecological impact perspective. No project footprint or outline/concept plans were available at the time this report was prepared. As such the following impact assessment assumes full development of the property. This is a worst-case impact scenario and has potential to be mitigated through avoidance and best practices. Some suggestions for mitigation are provided in this section.

4.1 Impact Assessment at the Habitat/Local Level

A total of 20.3-ha or 90.9% of the property has been significantly disturbed by past land use practices. Cultivated agricultural and tilled temporal wetlands #2, 5, and 6 have low ecological significance at the habitat/local level. Development of those lands will not result in significant negative effects on wildlife or vegetation in the study area.

The remaining 2.04-ha or 9.1% of the property is represented by three wetlands: a semi-permanent wetland class IV (wetland #3); a seasonal wetland class III (wetland #4); and a temporal wetland class II (i.e. wetland #1). These wetlands were rated as having moderate ecological significance at the habitat/local level. Loss of these wetlands would represent a significant impact in the local context. The impact of full development is rated as significant because these three wetlands have the potential to support several provincially listed wildlife species, two of them (i.e. wetland #3 and #4) supported a rare plant species, and they are the primary source of biological diversity on the property. .

4.1.1 Potential Mitigation Measures

One rare plant species (*Gratiola neglecta*) was found in association with wetlands #3 and #4. This species is considered rare in Alberta, but is not federally listed. Even though there is no legislation protecting this species in Alberta, it is recommended that construction of these two wetlands be avoided. If avoidance is not feasible then transplanting of the largest population located in wetland #3 (including topsoil) should be considered. A suitable transplant site would need to be found, preferably in similar habitat/soils on the property. Rare plant communities were not found on the property; hence no further mitigation is required to offset construction effects on this aspect of wetland vegetation.

Three bird species at risk were recorded during field visits of the property: Swainson's hawk, northern pintail, and sora. Preferred habitat for Swainson's hawk is not common in the study area, however, suitable habitat does exist within the powerline right-of-way that divides lots 1 and 2. Mitigation can be addressed through timing of construction activities in areas adjacent to the powerline outside of the peak breeding season (May-July). Impacts of development on this species should be minimal.

Northern pintails inhabit shallow bodies of water of varying size. They nest mainly near water but are often found some distance away from water bodies in dense vegetation or on exposed prairie sites (Godfrey 1976; Fisher and Acorn 1998). The single individual recorded was a lone male and it is likely that this was a transient bird. However, wetlands #3 and #4 do provide high habitat quality for this species. As a result it is recommended that these wetlands be preserved as they are, or as part of any proposed Stormwater Management Plan. If avoidance is not possible, then construction activities should be limited to times outside of the peak breeding season (May-July). Impacts of development on this species assuming successful mitigation should be minimal.

Sora habitat commonly includes wetlands with abundant cattails, bulrushes, sedges, and grasses within a matrix of shallow and deep water (Fisher and Acorn 1998; Semencheck 2007). The semi-permanent wetland (wetland #3) supplies good habitat quality for this species. As such it is recommended that this wetland be preserved as it is, or as part of any proposed Stormwater Management Plan. If avoidance is not possible, then construction activities should be limited to times outside of the peak breeding season (May-July). Impacts of development on this species should be minimal assuming successful mitigation.

Limiting construction activities to periods outside the peak breeding season (i.e. May-July) will also comply with the Migratory Birds Convention Act.

4.2 Impact Assessment at the Landscape/Regional Level

The six wetlands on the property are considered uncommon and important in a regional context and an approval from Alberta Environment will be needed prior to construction under the Alberta Water Act (Government of Alberta 1996). The Water Act requires....

“...that an approval be obtained before undertaking a construction activity in a wetland. A construction activity includes but is not limited to disturbing, altering, infilling or draining a wetland.”

Effects on the 6 wetlands on the Shepard lands will require minimization and/or compensation of impacts (see the Provincial Wetland Restoration/Compensation Guide – Alberta Environment 2007).

Given its ex-urban/agricultural character the effects of habitat fragmentation have already largely occurred in, and around, the Shepard lands. The relatively limited and fragmented supply of native vegetation (~10% of the study area) with potential to be directly affected minimizes the magnitude of regional fragmentation resulting from development of the Shepard lands. The presence of agriculture, road development and residential/light industrial development, in the local area impairs the value of the Shepard lands as part of a regional movement corridor. The Shepard lands support minimal security cover for mammals and as such do not offer substantive movement opportunities.

5.0 SUMMARY AND CONCLUSIONS

5.1 Habitat/Local Level

- The majority of the property is comprised of habitats with low ecological significance (20.3-ha or 90.9% of the property). Development of these previously disturbed lands will not result in a significant negative effect on wildlife or vegetation in the study area. Habitats with moderate ecological significance account for 2.04-ha or 9.1% of the property. These habitats include: a semi-permanent wetland class IV (wetland #3); a seasonal wetland class III (wetland #4); and a temporal wetland class II (i.e. wetland #1). Loss of moderate ecological significance habitats is considered significant in the local context (i.e. inside the study area). Areas with high ecological significance at the habitat/local level do not occur within the property.
- One rare plant species (*Gratiola neglecta*) was found in wetlands #3 and #4 during field surveys. This species is considered rare in Alberta, but is not federally listed. It is recommended that construction of these two wetlands be avoided. If avoidance is not feasible then transplanting of the largest rare plant population located in wetland #3 (including topsoil) should be considered.
- In order to mitigate impacts on the bird species at risk detected on the property and to comply with the Migratory Birds Convention Act it is recommended that wetlands #3 and #4 be preserved as they are, or as part of any proposed Stormwater Management Plan. If avoidance is not possible, then construction activities should be limited to times outside of the peak breeding and nesting season (May-July). If land clearing is completed in August, a nest search should be done before clearing of the wetlands.

5.2 Landscape/Regional Level

- The six wetlands on the property are considered uncommon in a regional context. Effects on any of the six wetlands on the Shepard lands will require minimization and/or compensation of impacts (see the Provincial Wetland Restoration/Compensation Guide – Alberta Environment 2007). Approval to construct within the wetlands must be completed in compliance with Alberta Environment under the Alberta Water Act (Government of Alberta 1996). Impact and function assessments for each wetland will be required as part of any wetland compensation agreement.
- Existing land clearing on an around the Shepard lands has resulted in significant habitat fragmentation effects. As such many native habitats and sensitive species have already been significantly impacted. The relatively high proportion (>90%) of disturbed/cleared habitat dampens additional development contributing significantly to regional habitat fragmentation.

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FIGURES



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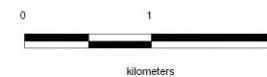
Figure 1. Soils of the Shepard Lands

Legend

— Soil Type

Soil Types

SOIL_UNIT	SOIL_SERIES	Hectares
BZC1	Balzac	1.2
BZC4	Balzac	10.4
DEL7	Delacour	10.7



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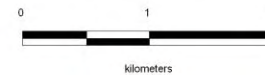
Figure 2. Habitat of the Shepard Lands

Legend

— Wetlands

Habitat Types

WL_Code	ID	Description	Hectares
W2	W#1	Temporal Wetland - Class 2	0.473
W2	W#2	Temporal Wetland - Class 2	0.032
W4	W#3	Semi-permanent Wetland - Class 4	0.513
W3	W#4	Seasonal Wetland - Class 3	1.052
W2	W#5	Temporal Wetland - Class 2	0.035
W2	W#6	Temporal Wetland - Class 2	0.076
CA	CA	Cultivated Agricultural	20.200



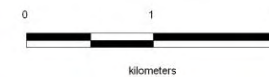
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Figure 3. Rare plants of the Shepard Lands

Legend

- Rare plant Survey Route
- Rare Plant Location (*Gratiola Neglecta*)
- Wetland



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TABLES

Table 1. At Risk Definitions
(AEP 2000; AEP 2001; AEP 2005; COSEWIC 2009; SARA 2005)

Alberta Environmental Protection (AEP)

General Status

At Risk – any species known to be “At Risk” after formal detailed status assessment and designation as “Endangered” or “Threatened” in Alberta

May Be At Risk – any species that “May Be At Risk” of extirpation or extinction, and is therefore a candidate for detailed risk assessment.

Sensitive – any species that is not at risk of extinction or extirpation but may require special attention or protection to prevent it from becoming at risk.

Endangered Species Conservation Committee

Endangered – a species facing imminent extirpation or extinction.

Threatened – a species likely to become endangered if limiting factors are not reversed.

Special Concern – a species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.

Data Deficient – a species for which there is insufficient scientific information to support status designation.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

Endangered - a species facing imminent extirpation or extinction.

Threatened - a species likely to become endangered if limiting factors are not reversed.

Special Concern - a species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.

Not at Risk - a species that has been evaluated and found to be not at risk.

Indeterminate - a species for which there is insufficient scientific information to support status designation.

Table 2 Potential rare plant species for the Shepard study area

Species scientific name	Species common name	Rank
<i>Amaranthus californicus</i>	Californian amaranth	S1S2
<i>Rorippa curvipes</i>	yellow cress	SU
<i>Rorippa tenerrima</i>	slender cress	S1S2
<i>Rorippa curvipes var. truncata</i>	blunt-leaved yellow cress	S1S2
<i>Ellisia nyctelea</i>	waterpod	S2
<i>Ranunculus glaberrimus</i>	early buttercup	S2S3
<i>Potentilla finitima</i>	sandhills cinquefoil	S1
<i>Gratiola neglecta</i>	clammy hedge-hyssop	S2
<i>Veronica catenata</i>	water speedwell	S2S3
<i>Elodea bifoliata</i>	two-leaved waterweed	S2
<i>Iris missouriensis</i>	western blue flag	S2
<i>Sisyrinchium septentrionale</i>	pale blue-eyed grass	S3
<i>Allium geyeri</i>	Geyer's onion	S2
<i>Muhlenbergia racemosa</i>	marsh muhly	S2
<i>Sphenopholis obtusata</i>	prairie wedge grass	S2
<i>Ruppia cirrhosa</i>	widgeon-grass	S1

Table 3 Plant species encountered during rare plant survey

Scientific name	Common name	Family	Origin
<i>Alopecurus aequalis</i>	short-awned foxtail	Poaceae	Native
<i>Artemisia absinthium</i>	absinthe wormwood	Asteraceae	Exotic
<i>Artemisia ludoviciana</i>	prairie sagewort	Asteraceae	Native
<i>Atriplex argentea</i>	silver saltbush	Chenopodiaceae	Native
<i>Beckmannia syzigachne</i>	slough grass	Poaceae	Native
<i>Bromus inermis</i> ssp. <i>inermis</i>	smooth brome	Poaceae	Exotic
<i>Capsella bursa-pastoris</i>	shepherd's-purse	Brassicaceae	Exotic
<i>Carex atherodes</i>	awned sedge	Cyperaceae	Native
<i>Chenopodium album</i>	lamb's-quarters	Chenopodiaceae	Exotic
<i>Chenopodium pratericola</i>	goosefoot	Chenopodiaceae	Native
<i>Crepis runcinata</i>	scapose hawk's-beard	Asteraceae	Native
<i>Descurainia sophia</i>	flixweed	Brassicaceae	Exotic
<i>Distichlis stricta</i>	salt grass	Poaceae	Native
<i>Eleocharis acicularis</i>	needle spike-rush	Cyperaceae	Native
<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	slender wheat grass	Poaceae	Native
<i>Epilobium ciliatum</i>	northern willowherb	Onagraceae	Native
<i>Glyceria striata</i>	fowl manna grass	Poaceae	Native
<i>Gratiola neglecta</i>	clammy hedge-hyssop	Scrophulariaceae	Native
<i>Hordeum jubatum</i>	foxtail barley	Poaceae	Native
<i>Iva axillaris</i>	povertyweed	Asteraceae	Native
<i>Juncus bufonius</i>	toad rush	Juncaceae	Native
<i>Kochia scoparia</i>	summer-cypress	Chenopodiaceae	Exotic
<i>Lactuca serriola</i>	prickly lettuce	Asteraceae	Exotic
<i>Lepidium bourgeauanum</i>	western pepper-grass	Brassicaceae	Native
<i>Limosella aquatica</i>	mudwort	Scrophulariaceae	Native
<i>Matricaria recutita</i>	wild chamomile	Asteraceae	Exotic
<i>Neslia paniculata</i>	ball mustard	Brassicaceae	Exotic
<i>Phalaris arundinacea</i>	reed canary grass	Poaceae	Native
<i>Poa compressa</i>	Canada bluegrass	Poaceae	Exotic
<i>Poa pratensis</i>	Kentucky bluegrass	Poaceae	Native
<i>Polygonum hydropiper</i>	Marshpepper Smartweed	Polygonaceae	Exotic
<i>Polygonum ramosissimum</i>	bushy knotweed	Polygonaceae	Native
<i>Potentilla norvegica</i>	rough cinquefoil	Rosaceae	Native
<i>Puccinellia nuttalliana</i>	Nuttall's salt-meadow grass	Poaceae	Native
<i>Ranunculus sceleratus</i>	celery-leaved buttercup	Ranunculaceae	Native
<i>Salicornia rubra</i>	samphire	Chenopodiaceae	Native
<i>Scirpus paludosus</i>	prairie bulrush	Cyperaceae	Native
<i>Sonchus arvensis</i>	perennial sow-thistle	Asteraceae	Exotic
<i>Taraxacum officinale</i>	common dandelion	Asteraceae	Exotic
<i>Thlaspi arvense</i>	stinkweed	Brassicaceae	Exotic
<i>Typha latifolia</i>	common cattail	Typhaceae	Native
<i>Veronica peregrina</i>	hairy speedwell	Scrophulariaceae	Native

Table 4. Vertebrates species at risk with potential to be residents within the Shepard study area.							
Common Name	Scientific Name	Status	Abundance	At Risk Designations			
				Alberta	COSEWIC	Schedule	SARA
Birds							
American Green-winged Teal	<i>Anas crecca</i>	S	U	Sensitive			
Northern Pintail	<i>Anas acuta</i>	S	U	Sensitive			
Lesser Scaup	<i>Aythya affinis</i>	S	U	Sensitive			
Great Blue Heron	<i>Ardea herodias</i>	S	U	Sensitive			
American Bittern	<i>Botaurus lentiginosus</i>	S	S	Sensitive			
Black-necked Stilt	<i>Himantopus mexicanus</i>	S	S	Sensitive			
Long-billed Curlew	<i>Numenius americanus</i>	S	S	Sensitive	Special Concern	Schedule 1	Special Concern
Piping Plover	<i>Charadrius melodus</i>	S	S	At Risk	Endangered	Schedule 1	Endangered
Sora	<i>Porzana carolina</i>	S	U	Sensitive			
Pied-billed Grebe	<i>Podilymbus podiceps</i>	S	U	Sensitive			
Horned Grebe	<i>Podiceps auritus</i>	S	U	Sensitive	Special Concern	No schedule	No Status
Western Grebe	<i>Aechmophorus occidentalis</i>	S	U	Sensitive			
Burrowing Owl	<i>Athene cucularia</i>	S	S	At Risk	Endangered	Schedule 1	Endangered
Short-eared Owl	<i>Asio flammeus</i>	R	S	May be at Risk	Special Concern	Schedule 3	Special Concern
Ferruginous Hawk	<i>Buteo regalis</i>	S	S	At Risk	Threatened	Schedule 3	Special Concern
Northern Harrier	<i>Circus cyaneus</i>	S	U	Sensitive	Not at risk		
Swainson's Hawk	<i>Buteo swainsoni</i>	S	U	Sensitive			
Prairie Falcon	<i>Falco mexicanus</i>	S	S	Sensitive	Not at risk		
Common Nighthawk	<i>Chordeiles minor</i>	S	U	Sensitive	Threatened	No schedule	No Status
Barn Swallow	<i>Hirundo rustica</i>	S	U	Sensitive			
Common Yellowthroat	<i>Geothlypis trichas</i>	S	U	Sensitive			
Sprague's Pipit	<i>Anthus spragueii</i>	S	U	Sensitive	Threatened	Schedule 1	Threatened
Baird's Sparrow	<i>Ammodramus bairdii</i>	S	U	May be at Risk	Not at risk		
Brewer's Sparrow	<i>Spizella breweri</i>	S	R	Sensitive			
Bobolink	<i>Dolichonyx oryzivorus</i>	S	S	Sensitive			
Mammals							
Long-tailed Weasel	<i>Mustela frenata</i>	R	U	May Be At Risk			
American Badger	<i>Taxidea taxus</i>	R	S	Sensitive			
Reptiles and Amphibians							
Plains Spadefoot	<i>Spea bombifrons</i>	R	S	May be at risk	Not at risk		
Canadian Toad	<i>Bufo hemiophrys</i>	R	S	May be at risk	Not at risk		
Northern Leopard Frog	<i>Rana pipiens</i>	R	S	At Risk	Threatened	Schedule 1	Special Concern
Wandering Garter Snake	<i>Thamnophis elegans</i>	R	U	Sensitive			
Plains Gartersnake	<i>Thamnophis radix</i>	R	U	Sensitive			
Red-sided Garter Snake	<i>Thamnophis sirtalis</i>	R	U	Sensitive			

Table 5 Incidental Bird Species Detected During Field Visits	
Alphabetical Order	
Common Name	Scientific Name
Black-billed Magpie	<i>Pica hudsonia</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Clay-colored Sparrow	<i>Spizella pallida</i>
Common Raven	<i>Corvus Corax</i>
Common Snipe	<i>Gallinago gallinago</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Franklin's Gull	<i>Larus pipixcan</i>
Gadwall	<i>Anas strepera</i>
Killdeer	<i>Charadrius vociferus</i>
LeConte's Sparrow	<i>Ammodramus leconteii</i>
Mallard	<i>Anas platyrhynchos</i>
Nelson's Sharp-tailed Sparrow	<i>Ammodramus nelsoni</i>
Northern Pintail	<i>Anas acuta</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Sora	<i>Porzana carolina</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>

Table 6. Habitat ratings for species at risk in the Shepard Study Area

Common Species Name	Cultivated Agricultural	Wetlands		
		Wetland #3	Wetland #4	Wetland #1,2,5, and 6
American Green-winged Teal	L	H	H	M
Northern Pintail	L	H	H	M
Lesser Scaup	L	H	H	M
Great Blue Heron	L	M	L	L
American Bittern	L	H	M	M
Black-necked Stilt	L	M	M	M
Long-billed Curlew	M	L	L	L
Piping Plover	L	L	L	L
Sora	L	H	M	M
Pied-billed Grebe	L	H	M	M
Horned Grebe	L	H	M	M
Western Grebe	L	H	M	M
Burrowing Owl	L	L	L	L
Short-eared Owl	L	L	M	M
Ferruginous Hawk	L	L	L	L
Northern Harrier	M	H	H	M
Swainson's Hawk	M	L	L	L
Prairie Falcon	L	L	L	L
Common Nighthawk	L	L	L	L
Barn Swallow	L	H	H	M
Common Yellowthroat	L	M	L	L
Sprague's Pipit	L	L	L	L
Baird's Sparrow	L	L	L	L
Brewer's Sparrow	L	L	L	L
Bobolink	L	L	L	L
Long-tailed Weasel	L	L	L	L
American Badger	L	L	L	L
Plains Spadefoot	L	M	M	M
Canadian Toad	L	M	M	M
Northern Leopard Frog	L	M	M	M
Wandering Garter Snake	L	M	M	M
Plains Gartersnake	L	M	M	M
Red-sided Garter Snake	L	M	M	M
Total number of species rated H	0	10	5	0
Total number of species rated M	3	9	13	18
Total number of species rated L	30	14	15	15

Criteria	Habitat Type						
	CA	W#1	W#2	W#3	W#4	W#5	W#6
Floristic Diversity	L	M	L	M	M	L	L
Structural Diversity	L	M	L	M	M	L	L
Native Habitat Integrity	L	M	L	M	M	L	L
Rare Plant Potential	L	L	L	H	H	L	L
Wildlife Species at Risk Potential	L	M	M	H	H	M	M
Total number of criteria rated H	0	0	0	2	2	0	0
Total number of criteria rated M	0	4	1	3	3	1	1
Total number of criteria rated L	5	1	4	0	0	4	4
Overall Relative Habitat Significance	L	M	L	M	M	L	L
<i>L = Low, M = Moderate, H = High</i>							

APPENDIX 1

Site Photographs



Photo 1. Cultivated Agricultural fields occupy the majority of the study area



Photo 2. Fallow field located in the north-eastern portion of Lot 2.



Photo 3. Wetland #3 - a semi-permanent wetland (Class IV)



Photo 4. Wetland #4 - a seasonal wetland (Class III)



Photo 5. Wetland #1 - a temporal wetland (Class II)



Photo 6. Wetland #2 - a tilled temporal wetland (Class II)



Photo 7. Wetland #5 - a tilled temporal wetland (Class II).



Photo 8. Wetland #6 - a tilled temporal wetland (Class II)

Wetland Impact Assessment

Prepared by: John L. Kansas, *M.Sc., P.Biol.*
(on behalf of Am Jade Co. Inc.)

Date of assessment: January 12, 2012

Wetland Characteristics:

Water body name: Am Jade Co. Inc. Shepard Property Lots 1 and 2

Wetland area: Six (6) wetlands totalling 2.18 hectares (5.4 acres)
Location: SW quarter of Section 16-23-28w4

The planned development is a light industrial/storage facility on agricultural land. The subject property is located 8 km northwest of Indus and immediately east of the City of Calgary in the Shepard community. The overall property is 22.4 hectares (55.4 acres) and is comprised of two adjacent lots found north and south of the Canadian Pacific Railway line (Figure 1). The dominant land use on and adjacent to the property is agricultural annual crop production.

Six wetlands occur on the subject lands and total 2.18 hectares or 9.5% of the property. These wetlands range in size from 0.03 to 1.05 ha. All wetlands were classified using the Stewart and Kantrud (1971) classification system. Wetlands include one semi-permanent wetland (Class IV; 0.51 ha); one seasonal wetland (Class III; 1.05 ha); and four temporal wetlands (Class II; 0.62 ha). All wetlands on the property have been subjected to intensive and long-term cultivation/tilling. Over the past 58 years, the land has been annually cultivated and farmed on a rotation of cereal grains and oilseeds with only approximately five years of summer fallow since 1953. All six wetlands will be fully displaced by the proposed development. No riparian habitats occur on the site.

Contributing drainage area: approximately 24.6 hectares

Existing Wetland Supply

Stewart and Kantrud Wetland Classification:

Class I Ephemeral ponds:	NONE
Class II Temporal ponds:	4 wetlands totalling 0.62 ha
Class III Seasonal ponds and lakes:	1 wetland – 1.05 ha
Class IV Semi-permanent ponds and lakes:	1 wetland – 0.51 ha
Class V Permanent ponds and lakes:	NONE
Class VI Alkali ponds and lakes:	NONE
Class VII Fen (alkaline bog) ponds:	NONE

Riparian Area:

NONE

Surrounding land use:

Natural	NO
Cropland	YES
Hay	YES
Pasture	YES
Industrial	YES
Residential	Two farmsteads to the north (Figure 1)
Other	Range Road 204 (gravel) to the west (Figure 1)

Referenced site photos attached: Yes No

Historical aerial photos attached: Yes No

Site Observations:

Waterfowl: Site visits to assess terrestrial and wetland ecological aspects of the property were completed on July 12 and 21, 2011. Detected waterfowl included single individuals of mallard, gadwall and northern pintail.

Wetland dependent wildlife: Other wetland dependant species observed during site field surveys on July 12 and 21 included: common snipe, Franklin's gull, killdeer, red-winged blackbird, sora, and yellow-headed blackbird.

Upland Fauna: Upland fauna observed on or in the immediate vicinity of the property's wetlands included: black-billed magpie, clay-coloured sparrow, common raven, eastern kingbird, LeConte's sparrow, Nelson's sharp-tailed sparrow, red-tailed hawk, Swainson's hawk, tree swallow,

Rare/endangered species: Northern pintail, Swainson's hawk and sora are wildlife species that are currently listed as "sensitive" by the province of Alberta. The remaining bird species are "secure" and are highly adaptable and resilient generalists. None of the 3 provincially-listed bird species are listed federally (COSEWIC or SARA). Rare plant surveys were conducted of the property on July 12 and 21, 2011. No rare plant communities were found at the time of the visit and one rare plant species (*Gratiola neglecta*) was found in the outer portions of wetlands #3 and #4 (Figure 2). The average density of plants in wetland #3 was 11.7/m² and in wetland 4 was 3.6/ m². In general, the areas where *Gratiola neglecta* was growing had been previously tilled. A plan for restoring individuals of this species to suitable habitat will be developed and implemented prior to construction. No SARA listed plant species were observed.

Other (Plants): A total of 42 common vascular plant species were encountered during the field survey: 28 of them (67%) were native species, while the remaining 14 species (33%) were exotic or non-native. The relatively high proportion of non-native plants reflects the disturbed (agricultural) nature of the property.

Existing Wetland Function (Benefits):

The values of existing (pre-development) wetland function for hydrological, biological/ecological and socio-economic factors are rated below. Ratings are based on field surveys conducted on July 12 and 21, 2011, the Biophysical Impact Assessment (BIA) conducted for the property (Vargas and Kansas 2011), the stormwater management plan for the property (LGN Consulting 2011), and the experience and regional wetland knowledge of the author of this Wetland Impact Assessment. Ratings are presented separately for the Class II (temporary), Class 3 (seasonal) and Class 4 (semi-permanent) wetlands. Wetland structure and composition of the 4 Class 2 wetlands are very similar and as such were rated as a group.

The status or value of each wetland function was rated based on six classes (Very High, High, Moderate, Low, Very Low/None, and Unknown). A brief description of each rating class follows.

<i>Very High (VH)</i>	The function is intact and resembles the functionality of an undisturbed wetland. Surrounding areas have not been altered.
<i>High (H)</i>	The function remains intact or barely altered. There is no evidence of disturbance in the wetland; however some disturbance in the surrounding areas may be present.
<i>Moderate (M)</i>	There are some elements associated with the function that have been disturbed however the function is still present. There might be some evidence of disturbance inside the wetland. The surrounding areas present moderate to high disturbance.
<i>Low (L)</i>	There are some elements associated with the function that have been highly disturbed to the extent of affecting the functionality of the wetland. There is some evidence of high disturbance inside the wetland.
<i>Very Low/None (VL)</i>	The majority of elements associated with the function has been highly disturbed or removed compromising the integrity of the function.
<i>Unknown (U)</i>	Is used when there are not data or knowledge available to confirm or reject the particular function in the wetland.

Hydrological Function

Seven wetland hydrological functions were considered. Wetland function ratings are shown in brackets beside the function.

- wetlands as contributor to recharge of water supply aquifers; (CL 2: M; CL3: M; CL4:M)
- wetlands as flood protection; (CL2: L;CL3: M: CL4:M)
- wetlands providing erosion control; (CL2: L: CL3:L; CL4: L)
- wetlands as usable surface water; (CL2: L: CL3:L: CL 4:L)
- wetlands for storage of agricultural run-off; (CL 2: M: CL 3: M; CL4: H)
- wetlands as containment of toxics: surface run-off/discharge flow; (CL 2:M: CL 3: M; CL4: M)
- wetlands for sediment flow stabilization (CL2: L: CL3:L; CL4: L).

Low to moderate hydrological function ratings result primarily from small wetland size, relatively low water permanence, and effects of surrounding agricultural lands.

Biological/Ecological Function

Six biological/ecological wetland functions were evaluated. Wetland function ratings are shown in brackets beside the function:

- habitat for migratory birds; (CL 2: VL; CL3: L: CL4: L)
- habitat for amphibians and reptiles; (CL 2: VL; CL 3: L: CL4: L)
- habitat for vertebrate species at risk; (CL 2: L; CL3: L: CL4: L)
- potential to support rare plants; (CL 2: VL; CL3: M: CL4: M)
- support of plant species diversity; (CL 2: L; CL3: L: CL4: M)
- support of vegetation structural diversity. (CL 2: VL; CL3: L: CL4: M)

Very low to moderate biological/ecological function ratings result primarily from small wetland size, relatively low water permanence, and from cumulative habitat fragmentation effects from agricultural land clearing and transportation development. Seasonally appropriate field surveys in July 2011 indicate overall very low to moderate biological/ecological function. Site photographs including all wetlands are provided in Appendix 1.

Socio-Economic Function

Eleven wetland socio-economic functions were evaluated. Wetland function ratings are shown in brackets beside the function:

- wetlands for sightseeing; (CL 2: VL; CL3: L: CL4: L)
- wetlands as contributor to visual diversity of landscape; (CL 2: VL; CL3: L: CL4: L)
- wetlands for recreational opportunities; (CL 2: VL; CL3: VL: CL4: VL)
- wetlands for education and nature interpretation; (CL 2: VL; CL3: VL: CL4: VL)
- accessibility to public; (CL 2: VL; CL3: VL: CL4: L)
- contribution to crop irrigation; (CL 2: VL; CL3: L: CL4: L)
- wetlands for commercial use; (CL 2: VL; CL3: VL: CL4: VL)
- wetlands for tourism; (CL 2: VL; CL3: L: CL4: L)
- wetlands as source of domestic water supply; (CL 2: VL; CL3: VL: CL4: L)
- wetlands as water for industry; (CL 2: VL; CL3: VL: CL4: L)

The wetlands on the Shepard property are not openly accessible to the public. The existing wetlands are small and except for a short period in spring do not support standing water or significant nesting or staging of wetland dependant wildlife. As such numerous socio-economic values including sightseeing, recreational opportunities, education and nature interpretation, accessibility to public, commercial use, and tourism were rated as very low to low.

Proposed Development/Mitigation Plan:

Proposed Development – Background/Need

This proposed light industrial/storage development consists of an outdoor storage area (~50%), site building area (~20%), loading/staging/driveway (~15%), and storm pond/landscaping (~15%). The nature and scope of the proposed development is consistent with land use zonation in Rocky View County.

Project Design Features

All stormwater will be managed and retained on site. Most of the stormwater will evaporate or be used for landscaped irrigation. Two storm ponds will be constructed in the approximate locations shown in Figure 3. The proposed stormwater facilities in conjunction with the irrigation of grassed areas have sufficient capacity to provide a zero discharge to the proposed development. The stormwater management plan meets Rocky View County objectives while embracing and showcasing Best Management Practices in stormwater management (LGN Consulting Engineering Ltd. 2011).

Mitigation Plan

All wetlands lie within the footprint of the proposed development and as such will be removed. Best management practices including bio-swales will be employed on site. Off-site mitigation includes compensation, as proposed below.

Assessment of Wetland Impacts:

Figure 4 provides the proposed site development layout concept. It is apparent from this plan that all 6 wetlands existing on the property will be removed. In terms of regional wetland supply the removal of these 6 wetlands represents a minor impact. Partial mitigation of this impact will be achieved by designing permanent bioswales, using native plant materials to the extent feasible. Mitigation through compensation is proposed.

Compensation Proposal:

Mitigation through avoidance or mitigation/minimization of impacts is not feasible or desired in this instance. As such the proponent seeks to enter into a compensation agreement with a wetland restoration agent. In this regard Ducks Unlimited has been contacted. The following information was sent to Mr. Craig Bishop – Mitigation Services Coordinator) on January 26, 2012:

Name of Applicant: Am Jade Co. Inc.
Mailing Address: 9720 - 68 Street SE
Calgary, Alberta
T2C 4Z8
Signing Authority: Alan Merlo
Development Name: Shepard Property Lots 1 and 2
Legal Land: SW quarter of Section 16-23-28w4
Area of Impact: 2.18 hectares
Wetland classification: Class 2 – Temporal (n=4); Class 3 - Seasonal (n=1)
Class 4 – Semi-Permanent (n=1)
Associated watershed: Bow River

It is expected that AM Jade Co. will pay compensation to offset the wetland damage the project is expected to cause. AM Jade Co. has initiated entry into an agreement with Ducks Unlimited to deliver the restoration within protocols dictated by Alberta Environment's Wetland Compensation guide.

Literature Cited

Vargas, J.G. and J.L. Kansas 2011. Biophysical Impact Assessment – AM Jade Co. Inc. Shepard Property Lots 1 and 2. Prep. for AM Jade Co. Inc. and Southwell Trap and Associates by HAB-TECH Environmental Ltd. Calgary. 24pp.

LGN Consulting Engineering Ltd. 2011. Shepard Industrial Site Stormwater Management Plan – SB# 2207-RV-193/03316002. Prep. for AM Jade Co. Inc. by LGN Consulting Engineering Ltd. 8 pp.

Stewart R.E. and H.A. Kantrud 1971. Classification of natural ponds and lakes in the glaciated prairie region. Bureau of Sport Fisheries and Wildlife, United States Department of the Interior. Research Publication No. 92. 57 pp.

FIGURES



Figure 1. AM Jade Co. inc. Shepard Property and Wetlands.

Figure 2. Habitat of the Shepard Lands

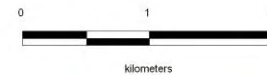
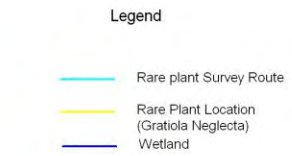


Produced by Rich Ashton, Aug, 2011
Ref# H-F_453_08-11



Figure 2. Rare plants associated with wetlands - AM Jade Co. inc. Shepard Property.

Figure 3. Rare plants of the Shepard Lands



Produced by Rich Ashton, Aug, 2011
Ref# H-F_454_08-11

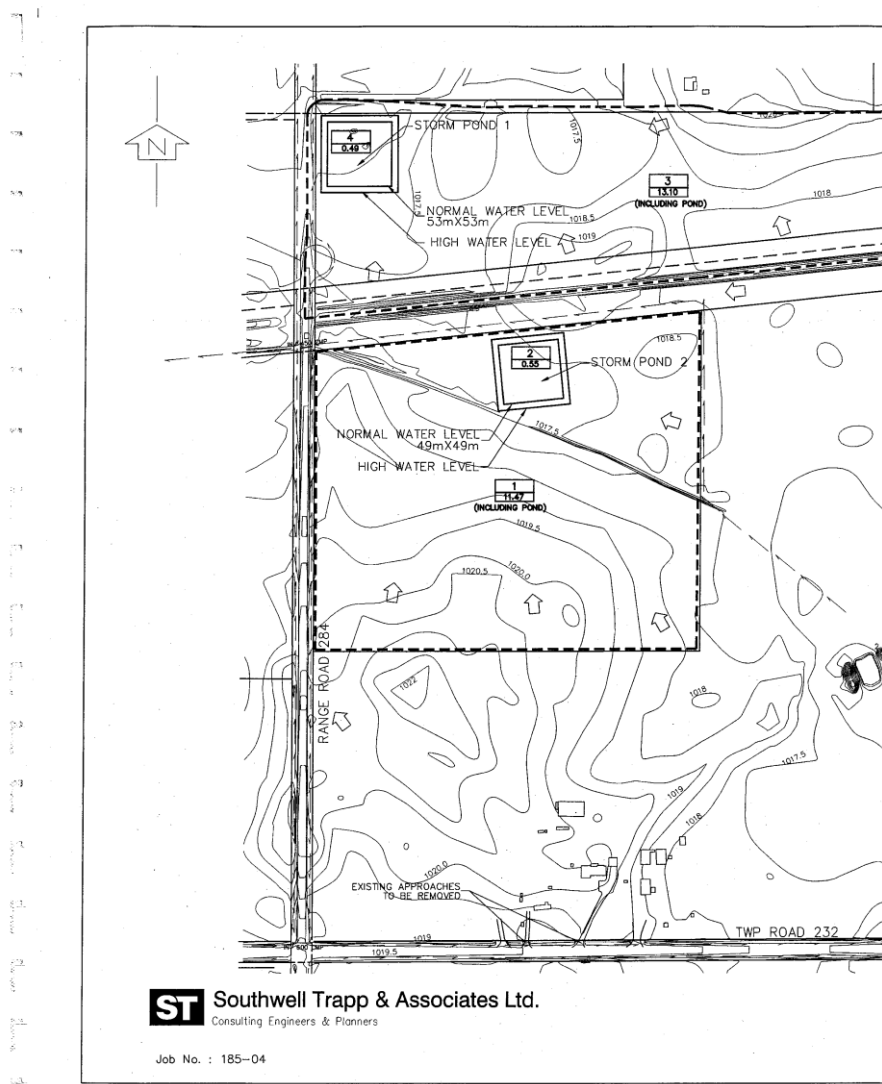


Figure 3. Proposed Storm pond locations - AM Jade Co. inc. Shepard Property.

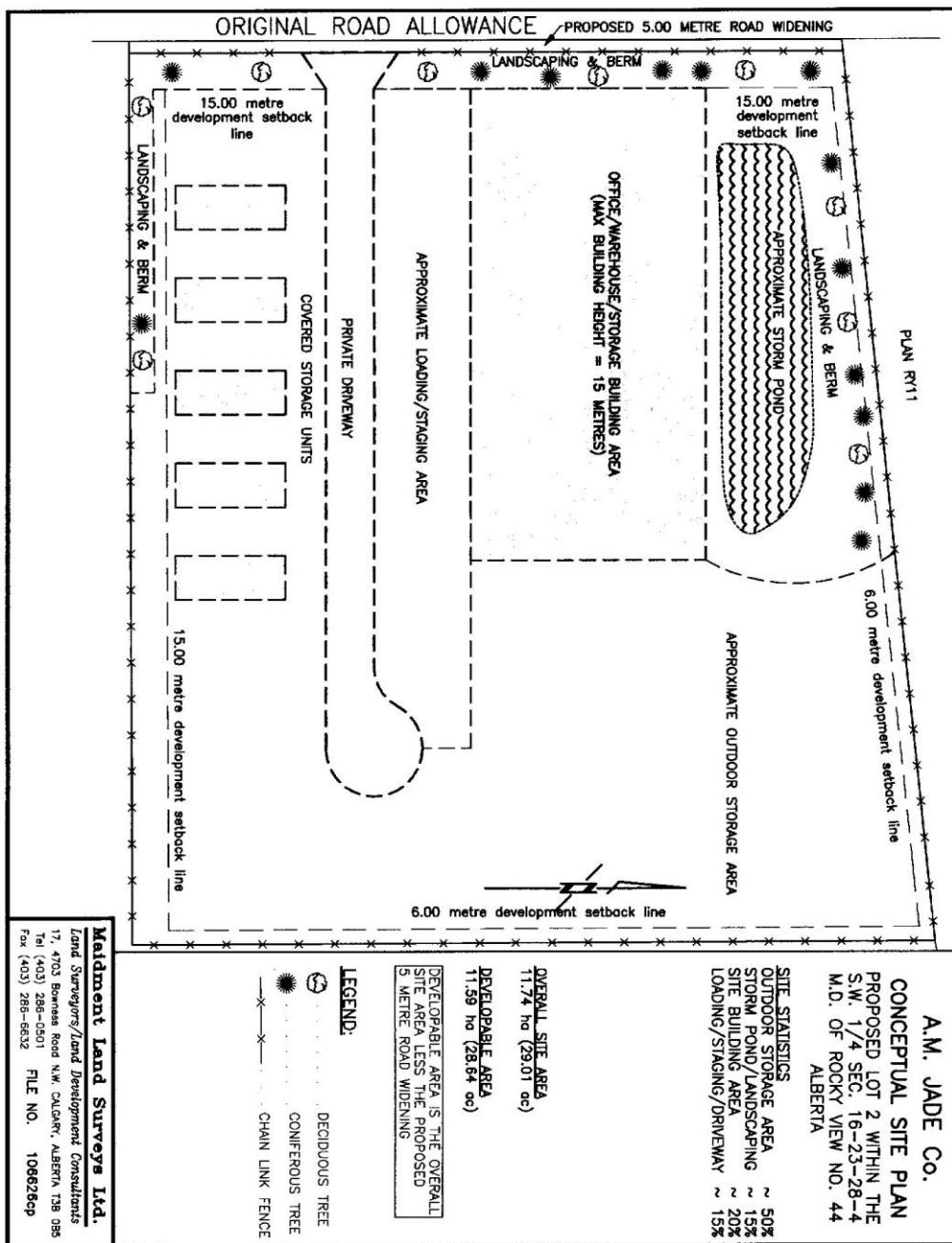


Figure 4. Concept Site Plan – Lot 1 – AM Jade Co. Inc. Shepard Property.

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Site Photographs



Photo 1. Cultivated Agricultural fields occupy the majority of the study area



Photo 2. Fallow field located in the north-eastern portion of Lot 2.



Photo 3. Wetland #3 - a semi-permanent wetland (Class IV)



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Photo 8. Wetland #6 - a tilled temporal wetland (Class II)