Moose Mountain Trails Conceptual Scheme

Bylaw C-7319-2013

Adopted June 24, 2014

ROCKY VIEW COUNTY
Cultivating Communities

ROCKY VIEW COUNTY
Cultivating Communities

BYLAW C-7319-2013

A Bylaw of Rocky View County pursuant to Division 12 of Part 17 of the Municipal Government Act to amend Bylaw C-6260-2006, known as the "Greater Bragg Creek Area Structure Plan" and adopt a Conceptual Scheme known as the "Moose Mountain Trails Conceptual Scheme"

The Council of Rocky View County enacts as follows:

PART I - TITLE

This bylaw shall be known as Bylaw C-7319-2013

PART II - DEFINITIONS

In this bylaw the definitions and terms shall have the meanings given to them in Land Use Bylaw C-4841-97 and the Municipal Government Act.

PART III – EFFECT OF BYLAW

THAT Bylaw C-6260-2006, known as the "Greater Bragg Creek Area Structure Plan", be amended in accordance with the amendments contained in Schedule 'A', attached to and forming part of the Bylaw; and

THAT the "Moose Mountain Trails Conceptual Scheme" be adopted to provide a framework for subsequent redesignation, subdivision and development within a portion of NW-8-23-5-W5M, consisting of an area of approximately ± 8.09 hectares (± 20.00 acres), as defined in Schedule 'B' attached to and forming part of this Bylaw; and

PART IV – TRANSITIONAL

Bylaw C-7319-2013 is passed when it receives third reading, and is signed by the Reeve/Deputy Reeve and the Municipal Clerk, as per Section 189 of the *Municipal Government Act*.

Division: 1
File: 03908017 – 2012-RV-102

PUBLIC HEARING WAS HELD IN COUNCIL this	*24th*	*day of*	*June, 2014*
READ A FIRST TIME IN COUNCIL this	24th	day of	June, 2014
READ A SECOND TIME IN COUNCIL this	24th	day of	June, 2014
UNANIMOUS PERMISSION FOR THIRD READING	*24th*	*day of*	*June, 2014*
READ A THIRD TIME IN COUNCIL this	24th	day of	June, 2014

_____
Reeve

_____
CAO or Designate

_____
Date Bylaw Signed

SCHEDULE 'A'
FORMING PART OF BYLAW C-7319-2013

Schedule of Amendments to Bylaw C-6260-2006:

1. Amend the Table of Contents by adding a reference to Appendix D and numbering accordingly:

    14.0 APPENDIX D –

        ADOPTED CONCEPTUAL SCHEMES

        14.1 Moose Mountain Trails Conceptual Scheme

2. Attach the Moose Mountain Trails Conceptual Scheme as defined in Schedule 'B' attached to and forming part of this Bylaw

SCHEDULE 'B'

FORMING PART OF BYLAW C-7319-2013

A Conceptual Scheme affecting the area within a portion of NW-8-23-5-W5M consisting of an area approximately± 8.09 hectares(± 20.00 acres), herein referred to as the "Moose Mountain Trails Conceptual Scheme"

Moose Mountain Trails

Conceptual Scheme

NW-8-23-5-W5M

Prepared for:

Gunnar and Norma Berg
1039 Fairfield Road
Victoria, B.C. V8V 3A5

Prepared and Submitted by:

Rolf Berg
6740 Silverview Drive N.W.
Calgary, Alberta T3B 3K8

In association with

Eric Jensen, BSc
Wildlife ID, Rangeland Management

Susanne McElroy R.P.F.
Artemis Environment Ltd.

Robert P. Strom, R.E.T., P.Tech(Eng.), PL(Eng.)
Strom Engineering Inc.

Prepared at the request and as a requirement of:

Rocky View County
911-32nd Avenue N.E.
Calgary, AB T2E 6X6

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Table of Exhibits

Bibliography

Biophysical Assessment, October 17, 2011
Eric Jensen, Environment & Conservation, Banff, Alberta

Phase 1 Groundwater Report, January 14, 2013
Robert Strom, Strom Engineering Inc., Turner Valley, Alberta

Preliminary Storm Water Management Proposal, February 7, 2014
Robert Strom, Strom Engineering Inc., Turner Valley, Alberta

Preface

Moose Mountain Trails is a proposed community located in the West Rocky View corridor. The 20 acre site borders Kananaskis Country and Township Road 232. The site is an important resource within Rocky View County and the Bragg Creek community.

The Limited Scope Conceptual Scheme (CS) has been prepared to conform to the goals and policies of the approved Greater Bragg Creek Area Structure Plan (GBCASP). The approved ASP provides for residential development within this area. The ASP encourages development with consideration to contextual confines.

The Moose Mountain Trails Conceptual Scheme incorporates a single 20 acre landholding held by Gunnar and Norma Berg since 1973. The Conceptual Scheme proposes to create a minimal disturbance to existing vegetation/wildlife and is designed to maintain the character of the existing community.

The planning process for Moose Mountain Trails first involved the meshing of the landowner's vision with the guidelines of the approved Bragg Creek ASP. Meetings were held with other landowners near the proposed plan area to obtain support and participation. Planning concepts and studies evolved with the assistance of Rocky View and Bragg Creek stakeholders. A public open house meeting was hosted on June 15, 2012 to share draft development concepts with stakeholders in the West Bragg Creek area. Technical studies including an Environmental Field Report and a Phase 1 Ground Water Report were completed and changes were made to the conceptual scheme in response to technical and public review.

The following components summarize the key features of the plan:

- Four (4) infill housing lots ranging from 4 to 6 acres in size
- Individual groundwater wells and private sewage treatment systems
- Conformity to the Greater Bragg Creek Area Structure Plan (GBCASP)
- Bragg Creek community support

1.0 Introduction

1.1 History

The Plan Area is recognized as a largely untouched, natural area that has been carefully managed by the current owners for over 38 years. With this consideration, it is intended that any development would create a minimal disturbance to the existing natural environment. This includes maintaining the existing beauty and integrity of the natural environment, acknowledging habitat and water conservation, protecting environmentally sensitive areas, and maintaining plant and wildlife species including:

- aspen forests
- mixed wood forests
- pine forests
- white spruce forests
- lowland shrub/muskeg complexes
- native grasslands
- riparian assemblages
- undisturbed areas near water

This Conceptual Scheme has been prepared as a requirement of the GBCASP. The components of this plan reflect the guidance provided in Council's motion of February 1, 2011, requesting the preparation of a Limited Scope Conceptual Scheme. (Exhibit 1 – Transmittal of Decision).

1.2 Purpose of the Conceptual Scheme

The Moose Mountain Trails Conceptual Scheme provides guidance and support for the re-designation and subsequent subdivision of the subject lands. The Plan Area is located at NW-8-23-5-W5M as shown in Exhibit 2. The conceptual scheme provides a policy framework to address the land use issues identified in the GBCASP.

1.3 Conceptual Scheme Objectives

The objectives of the Moose Mountain Trails CS are as follows:

- Establish the appropriateness of the Plan Area for re-designation and subdivision for residential use.
- Describe all lands contained within the Conceptual Scheme Area
- Present a Conceptual Scheme that addresses existing development constraints within the GBCASP context including proposed subdivision boundaries, utilities, access, and environmentally sensitive areas to be protected.

February 2, 2011
Rolf Berg
6740 Silverview Drive NW
Calgary, AB
T3B 3K8

RE: Transmittal of Decision
Proposed Redesignation of a portion of NW-8-23-5-W5M

File No. 2010-RV-210 - 03908017

At its meeting of Tuesday February 1. 2011, Council of Rocky View County passed the following motion in regard to your redesignation file:

Council request the Applicants pay the fee prescribed in the Master Rates Bylaw and prepare a Limited Scope Conceptual Scheme applying to the ± 8.09 hectares (±20 acres) subject lands, to be adopted by Bylaw, as a prerequisite to Council considering further redesignation and subdivision applications within the subject lands. As part of the Conceptual Scheme. the Applicants shall conduct at least one Open House prior to first reading of the adopting Bylaw. The Plan should be prepared in a format satisfactory to the Municipality and shall include, but not be limited to the following:

a) A biophysical assessment performed on the ± 8.09 hectares (± 20 acres) subject lands that identify:
- *the current vegetative biodiversity amongst the major plant communities of the site with respect to area and age class composition, as they existed, and were recorded, in the Alberta Vegetation Inventory (AVI) in 2001;*
- *a simulation of the future vegetative biodiversity that shall exist at the completion of development, with an aim to not reduce the current biodiversity to any less than 50% or increase it to more than 200% of the range that exists at the time of development;*
- *riparian areas associated with all watercourses and wetlands;*
- *existing wildlife movement corridors and mechanisms to protect them from and integrate them with the proposed development; and*
- *areas with development constraints due to steeper or unstable slopes;*
- *identification of all lands to be dedicated including, but not limited to, public utility lots, municipal reserves, and if required, environmental reserves;*
- *provision of open areas for the purposes of habitat preservation, protection of wildlife movement corridors, land use compatibility buffers, archaeological or historical sites, regional best management practices, transportation interfaces and/or community trail system alignments. The physical location of these areas within the subdivision should address relationships and linkages with lands beyond the subject lands in order to promote integrated connections between development areas;*
- *a biophysical assessment should also be based on the extensive biological inventory for the natural area directly adjacent and the drainage study available in the County Wetland Study.*

b) A Master Drainage Plan and/or Site Implementation Plan including possible alternatives for best management practices for storm water management applied to the ± 8.09 hectares (Iv 20 acres)subject lands.
c) The Applicant shall conduct at least one Open House prior to first reading of the accepting bylaw.
d) Provision of an access management plan.
e) Provision for construction of portions of the identified community trail system within the proposed development.

Should you have any questions or concerns, please contact David Yee at 403-520-3957 for assistance and quote the file number noted above.

Sincerely.

David Wyatt
Acting Manager, Development Planning

cc: Gunnar and Norma Berg

Exhibit 1 - February 2, 2011 Transmittal of Decision

2.0 Conceptual Scheme Planning Area

2.1 Description of Conceptual Scheme Planning Area

The Moose Mountain Trails Conceptual Scheme Plan Area comprises a single Development Cell area of ± 8.09 hectares (± 20 acres) and is located within Division 1 of Rocky View County.

Plan Area	Legal Description	Area (Acres)	Area (Hectares)
Moose Mountain Trails Development	NW-8-23-5-W5M	20.00	8.09

Conceptual Scheme Policy: Conceptual Scheme Planning Area.

Policy 2.1.1 Policies contained in the Conceptual Scheme shall apply to the "Plan Area" identified in Exhibits 3 and 4.

Conceptual Scheme Policy: Development of the Plan Area

At completion, the Moose Mountain Trails Conceptual Scheme Plan Area will contain four (4) residential lots ranging in size between 4 and 6 acres each.

Policy 2.1.2 Redesignation and subdivision of the subject lands shall conform with the policies of this conceptual scheme.

2.2 Description of Current Land Use within the Plan Area

A mix of country residential and general agricultural land uses characterize the community in which the Plan Area is located. Lands immediately east of the Plan Area have developed in a similar fashion; a similar ± 20 acre parcel has been sub-divided into four (4) ± 5 acre parcels. All four parcels share a common access. The Moose Mountain Trails subdivision shall be consistent and compatible with existing developments within the Greater Bragg Creek area.

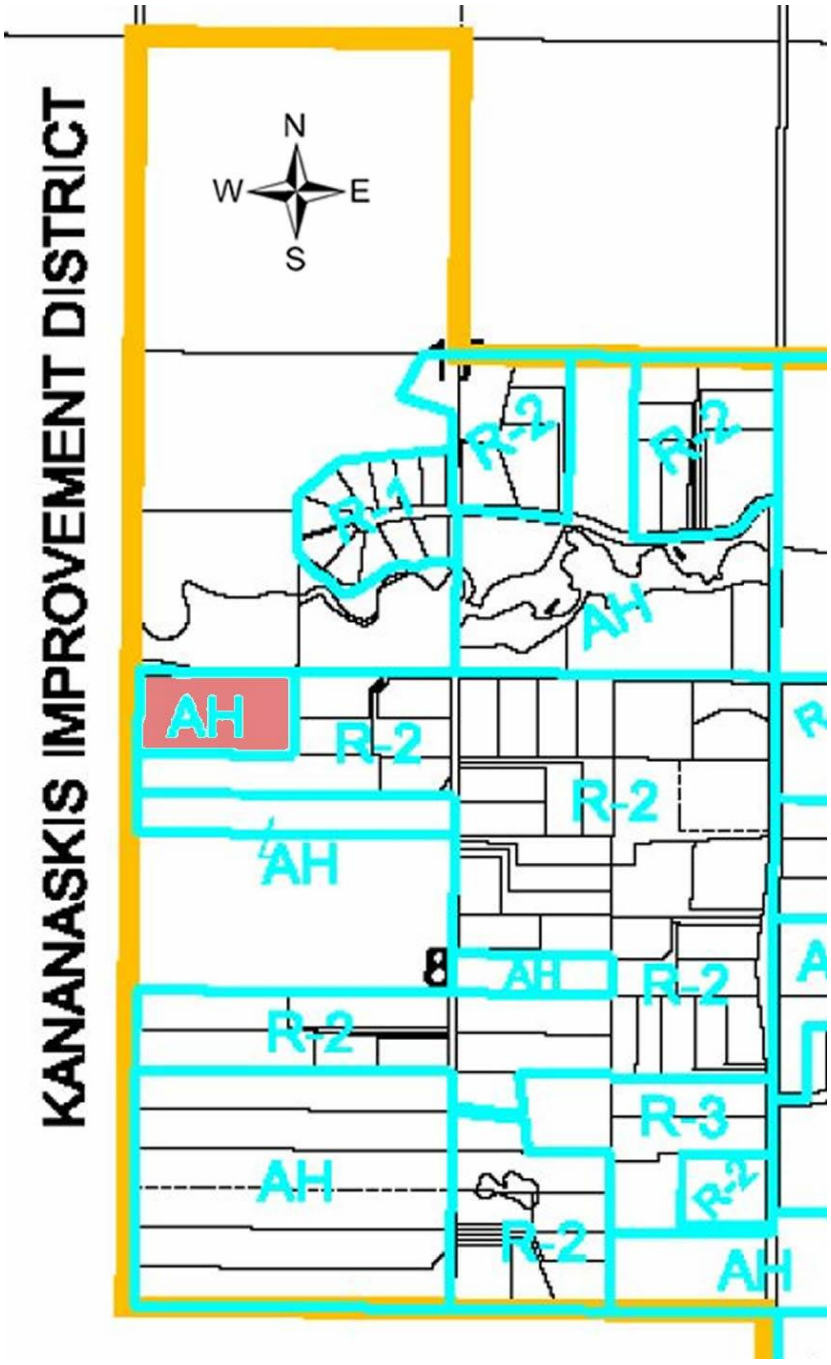

Exhibit 2 - Current and Surrounding Land Use Districts

Identifies the land use districts adjacent, and in proximity, to the plan area at the time of preparation of the conceptual scheme.

3.0 Physical Site Features

An understanding of the physical characteristics of the Plan Area is an important consideration in the preparation of the appropriate subdivision and development concept.

3.1 Terrain

The character of the Plan Area includes low hills and a number of seasonally wet areas that retain water during the spring and early summer months. These areas drain primarily towards lower-lying areas to both the east and west.

In support of the Conceptual scheme, an Environmental Field Report was prepared by Eric Jenson, BSc to assess pre-existing landscape data to determine biophysical characteristics, existence of any species of concern, and to identify any issues that would be of concern with respect to a future subdivision (critical habitat, wildlife corridors, etc.).

The Moose Mountain Trails CS Planning Area contains no significant topographical features that shall hinder its subdivision and development as proposed.

Conceptual Scheme Policy: Terrain

Policy 3.1.1 All future land use scenarios shall proceed in a fashion that results in minimal disturbance to the existing terrain and vegetation.

Policy 3.1.2 Alterations in the existing terrain of the Planning Area shall proceed in accordance with an approved Storm Water Management Plan at time of subdivision.

3.2 Environmental Considerations

Results of a Environmental Field Assessment performed by Eric Jensen is presented in the document entitled *Environmental Field Report NE-8-23-5-W5M Berg Family Property Redesignation Proposal – October 17, 2011.* Wetland and riparian areas have been identified (see Exhibit 4) and shall be protected through appropriate mechanisms (e.g. environmental reserve easement) at the time of subdivision.

Policy 3.2.1 Appropriate mechanisms, such as environmental reserve easement or restrictive covenant, shall be implemented at time of subdivision to protect wetland and riparian areas from development.

3.3 Historical Use of the Site

There are no known historical or archaeological resource sites identified in the vicinity of the Plan Area. The character and agricultural history of the land does not support the likelihood of such resources being found of the property.

Alberta Community Development was contacted and asked to provide direction regarding the potential for any historical or archaeological resources. None were identified.

3.4 Existing Structures

There are no existing permanent structures contained with the Plan Area.

4.0 Land Use Concept

4.1 Land Use Design

This Conceptual Scheme has been prepared in accordance with the objectives and policies of the GBCASP and Rocky View County. Development shall maintain minimal disruption to the existing physical characteristics of the plan area with the objective of building a sustainable residential community at a scale appropriate and sensitive to the community.

Exhibit 4 outlines the Conceptual Subdivision Design for the Plan Area. The Subdivision and Development Concept is comprised of a single Development Cell that is compatible with land uses adjacent, and in proximity, to the Planning Area. It will be a residential community design which restricts development in environmentally sensitive areas to respond to the natural characteristics of the Planning Area.

Exhibit 3 - Arial View of the Plan Area

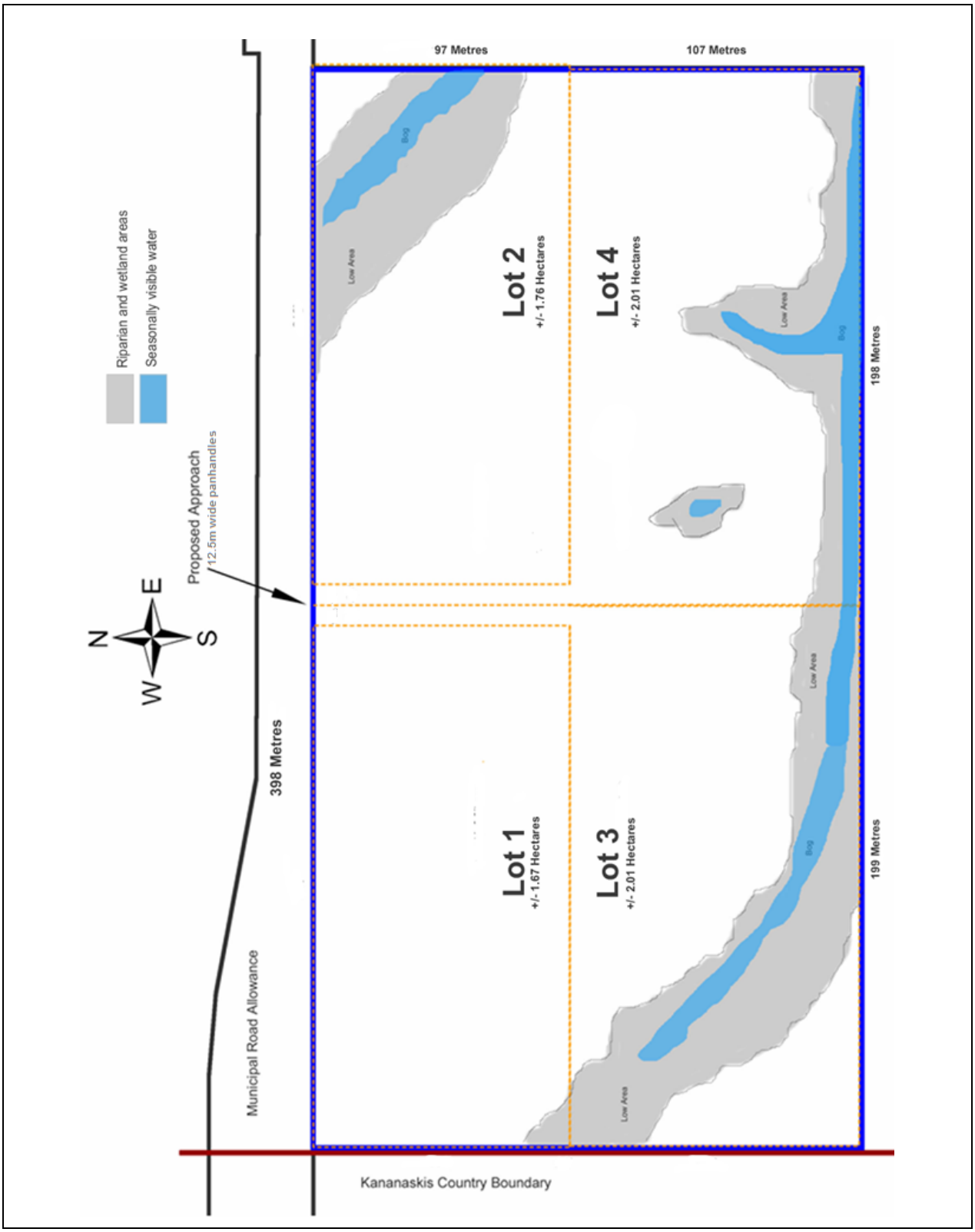

Exhibit 4 - Environmentally Sensitive Areas

5.0 Subdivision and Development Concept

Residential development proposed for the Development Cell shall be comprised of single family dwellings. Wherever possible, development will follow low impact development methods.

Conceptual Scheme Policy: General Subdivision Design

Policy 5.0.1 Proposals for the subdivision of land within the Planning Area shall be consistent with subdivision design of *Exhibit 5 – Subdivision and Development Concept.*

Conceptual Scheme Policy: Lot Size

Policy 5.0.2 The minimum parcel size shall be 4 acres.

5.1 Access

The Planning Area is directly accessible to the Rocky View County municipal road network via Township Road 232. Each parcel shall have direct access from Township Road 232 via a shared approach and private driveways. Development of all accesses will proceed in a manner that minimizes environmental impact.

Policy 5.1.1 The proposed parcels shall be accessed by a mutual approach from Township Road 232 which shall be protected by Access Right-of-Way Plan and an associated Easement Agreement at time of subdivision.

Policy 5.1.2 Access point to Township Road 232 shall support two-way traffic to 85,000 lbs. and comply with engineering requirements for emergency vehicle access.

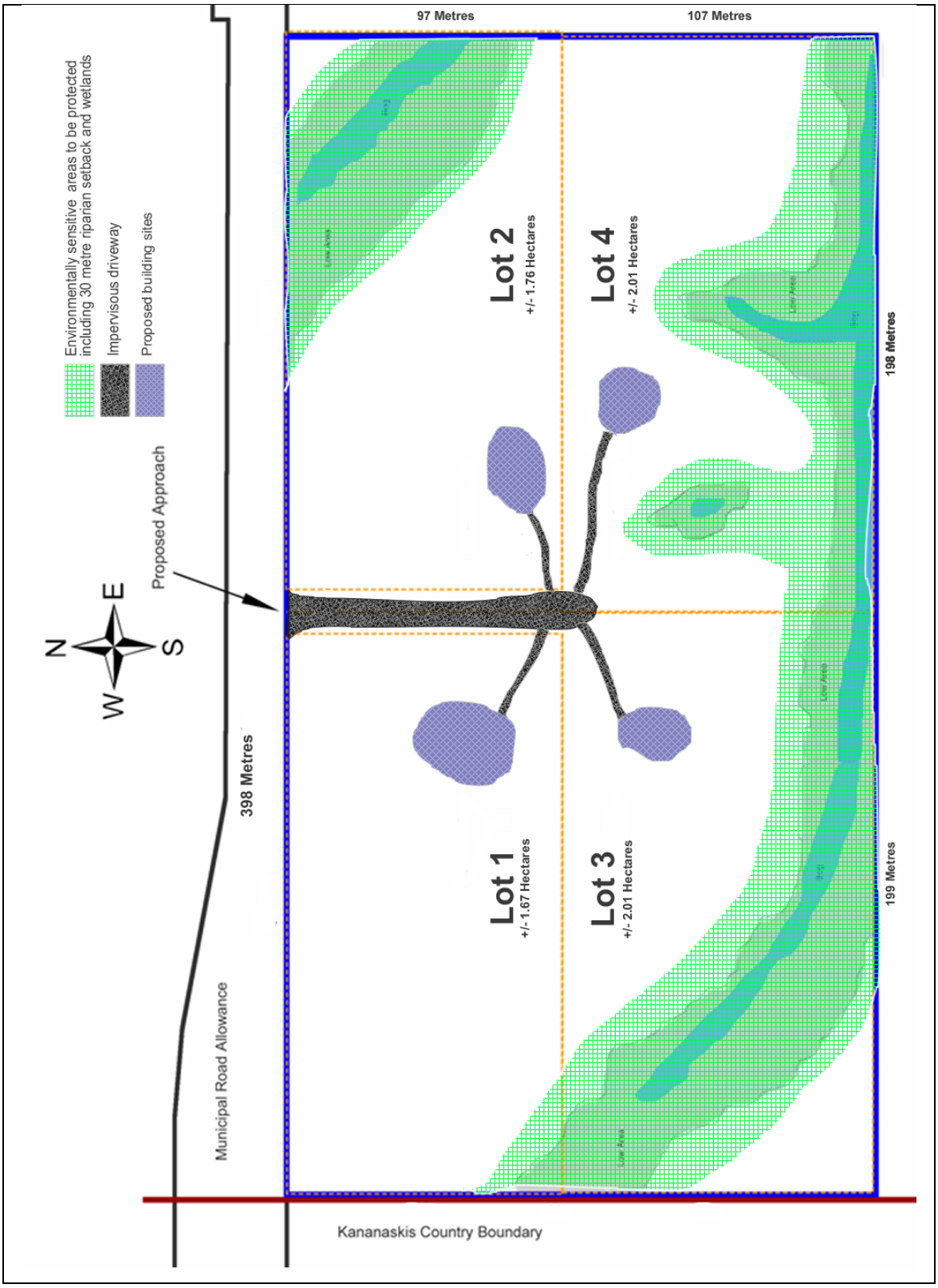

Exhibit 5 - Subdivision and Development Concept

6.0 Development Concept

6.1 Suitability to Accommodate Development

The Plan Area currently has a natural existing typography that will allow for development with minimal disturbance to existing vegetation with a minimal amount of grading (ground disturbance). The proposed (road) access is in an area of higher elevation that is dry (minimal stormwater issues) and will provide access to all four lots while keeping a maximum distance from both riparian and wetland areas. This plan results in providing a development area (almost a cluster) with centralized access and utility corridor that is away from environmentally sensitive areas (riparian and wetlands). (NOTE: this approach keeps the environmental impact to a minimum, the development cost lower, and results in a *more* clustered building area that was encouraged by several local residents)

Conceptual Scheme Policy: Building Envelope

Policy 6.1.1 Subdivision applications shall identify an appropriate building location, in general accordance with Exhibit 5 of the conceptual scheme.

6.2 Preservation of the Natural Environment

Wherever possible, low-impact development methodologies shall be employed to retain native vegetation. The environmentally sensitive areas indicated on Exhibit 5 shall be protected, wherever possible, through the use of appropriate mechanisms including, but not limited to; environmental reserve, environmental reserve easement, or restrictive covenant.

Policy 6.2.1 Impervious surfaces shall be encouraged wherever possible.

Policy 6.2.2 At time of subdivision, appropriate mechanisms shall be defined to protect environmentally sensitive areas and implement the subdivision plan as identified in Exhibit 5.

6.3 Population Density

At full build-out, the CS shall feature four dwellings with a population of approximately four to twenty people. This could be expanded if Accessory Dwelling Units (ADUs) were approved on the parcels. The net impact on existing transportation networks is considered minimal.

6.4 Open Areas

The scope of this project does not necessitate open areas. Connections to the adjacent Kananaskis Country trail network through informal trails and natural wildlife corridors can be maintained.

6.6 General Site Design and Landscaping

Low-impact site development methodologies shall be encouraged to preserve the existing environment.

Policy 6.6.1 At least 65% of native vegetation will be retained, 10% maximum impervious surfaces, and 0% effective impervious surfaces are permitted on each proposed parcel.

7.0 Recreation

7.1 Trails and Pedestrian Pathways

The proposed subdivision presents the option for Municipal Reserve land to link new and existing pathways from the Bragg Creek community trail system into the Kananaskis Country network. Existing trail networks are located at the North-East corner of the Plan Area as well as (unofficially) along the North boundary. Consultation with representatives from the Greater Bragg Creek Trails Association (GBCTA) revealed that there was no significant interest in locating any public trails within the Plan Area. A pathway has been proposed on the North side of TWP Road 232 which has a good fit with the topography and existing trail concept.

8.0 Utility Servicing Strategy

This section describes the proposed servicing for water, wastewater, and storm water.

Exhibit 6 - Southeast Corner of Plan Area – natural spring water source

8.1 Water Supply

The Plan Area is located in an area that has a significant amount of water flowing from a natural spring near the Southeast corner *(see Exhibit 6).* Water from this spring flows East - West, and (seasonally) North (see *Exhibit 3 – Plan Area Arial Photo*). Homeowners in the neighboring subdivision to the east report no problems acquiring potable well water from their wells.

- Groundwater (well water) is expected to be the potable water source
- A Phase 1 Groundwater Report was performed (January 2013) by Strom Engineering Inc. and supports the feasibility of four (4) wells in the Plan Area
- A Phase 2 Groundwater Report will be performed at future subdivision stage
- A total of four (4) private wells would be developed as part of the subdivision process

Conceptual Scheme Policy: Potable Water

Policy 8.1.1 Each new lot shall be serviced by individual groundwater wells, in accordance with Alberta Environment requirements and County Servicing Standards, to the satisfaction of the County.

8.2 Sanitary Sewer

Sanitary sewer development within the Moose Mountain Trails Planning Area shall be serviced through individual septic field systems. The appropriate Private Sewage Treatment System (PSTS) assessment shall be prepared in support of the subdivision application.

Conceptual Scheme Policy: Wastewater Management

Policy 8.2.1 Each new lot shall be serviced by an individual private sewage treatment system, in accordance with County Servicing Standards.

Policy 8.2.2 A Level 4 Private Sewage Treatment System Assessment shall be submitted at time of subdivision application, in accordance with County Servicing Standards.

9.0 Storm Water Management Strategy

Low Impact Development (LID) storm water management methods shall be utilized to avoid issues of flooding, erosion, and nutrient loading and contamination of surrounding water bodies. Following Best Management Practices shall ensure that storm water drainage systems are properly designed and maintained. The storm water that the Plan Area shall be required to manage may include water that is generated outside of its boundaries. The objective of this development is to provide a plan that does not alter any existing drainage patterns.

The most notable natural water source is generated by an artesian spring located beyond the Southeast boundary. Water from this source is diverted along the South boundary to the east and west.

Conceptual Scheme Policy: Storm Water Management Strategy

Policy 9.0.1 All new development shall address the implementation of Best Management Practices for water quality in accordance with the adopted Bragg Creek Master Drainage Plan and in accordance with the County Servicing Standards, to the satisfaction of the County.

Policy 9.0.2 A site-specific Stormwater Management Plan shall be prepared in accordance with the Bragg Creek Master Drainage Plan, at time of subdivision.

Policy 9.0.3 Storm water shall be managed in accordance with the approved Storm Water Management Policy and in accordance with the County Servicing Standards, to the satisfaction of the County at time of subdivision.

Storm Water Management Plan Process

*Discussions with a number of Engineering firms have led to the development of the following approach to create a **Storm Water Management Strategy** that would develop into a **Storm Water Management Plan** that would be formalized at time of subdivision.*

1. *High level analysis of the Plan Area*
    a. *Analyze boundary conditions from a grading perspective to develop an understanding for pre-development run-on and run-off conditions*
    b. *Review of existing County AutoCAD data*
    c. *Collection and review of pertinent information related to the proposed residential buildings and ancillary impervious surfaces to set a base for storm water hydrologic modeling and storm water management design.*
    d. *Review of Bragg Creek Master Drainage Plan to determine storm water management requirements.*

2. *Topographical data collection using either Lidar imaging or data that could be collected from a field inspection and County contour data.*

3. *Storm water analysis and design in an AutoCAD format including: location plan, existing conditions drainage plan, proposed storm water management plan*
    a. *Storm water modeling would be based on the site layout and impervious coverage of the site to determine the pre-development and post-development flow from the site using PCSWMM Professional hydrologic model.*
    b. *Review specific requirements with County engineering department*
    c. *Consider potential septic field locations for consideration of the impact to the storm water management design*
    d. *Design of storm water management system to manage post development flows from proposed residential building and ancillary impervious surfaces. This would include: vegetated swales, storm water impoundments, and emergency spill locations.*

4. *Completion of the formal Storm Water Management Plan*

Exhibit 7 - Storm Water Management Plan Process

10.0 Community Considerations

10.1 Public Consultation – Open House

Consultation with affected property owners within the Planning Area and other adjacent affected parties within the Bragg Creek Area community have occurred during the preparation of this Limited Scope Conceptual Scheme. This consultation involved direct communication with affected parties and an open house held June 5, 2012 in the residence of Rolf Berg. Seven people attended the open house.

Moose Mountain Trails Open House

An Open House was held at the Plan Area site on June 15, 2012 from 4 to 8 pm.

In preparation for the Open House, an invitation was posted in the Rocky View Weekly for three weeks prior to the Open House date. In addition, an Open House circulation was distributed by Rocky View County.

The Open House was attended by 7 people.

Topics of discussion at the Open House focused around:

1. *Proposed subdivision plan - physical division details*
2. *Protection of environmentally sensitive areas*
3. *Potential building sites*
4. *Enforcement of new and existing development restrictions*
5. *Intentions for keeping or selling lots after subdivision*

NOTE: Several of the participants were keen on having the Plan Area developed in a condominium-style format where homes would be "clustered" together in smaller lots and a larger area shared in common ownership. This idea was considered, but the current proposal was determined to be more suited to a small subdivision.

Exhibit 8 - Moose Mountain Trails Open House

10.2 Public Consultation – Web Site

In an effort to facilitate the involvement of the entire Bragg Creek Community, the web site: www.moosemountaintrails.com was created. This web site has been kept current; providing information relevant to the redesignation and subdivision applications.

Moose Mountain Trails Web Site

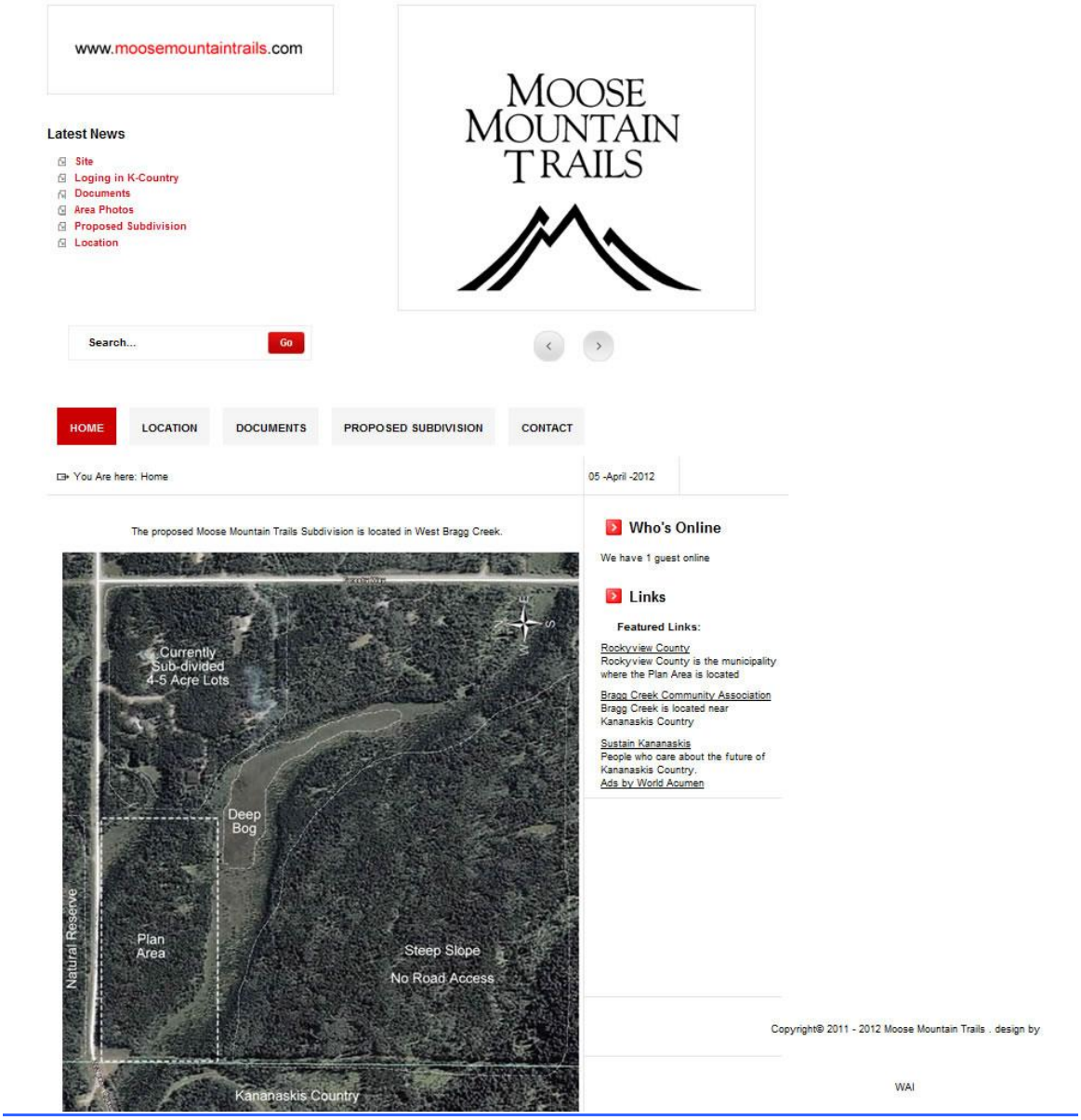

Exhibit 9 - Moose Mountain Trails Web Site www.moosemountaintrails.com

11.0 Conceptual Scheme Implementation

This Conceptual Scheme is in conformity to the GBCASP and will be adopted by amending it into the Area Structure Plan, as per the policies of the GBCASP.

Subdivision of the Planning Area is guided by the policies herein and implemented through conditions of subdivision approval by Rocky View County

Conceptual Scheme Policies: Implementation

Policy 11.0.1 Pursuant to the provisions of the GBCASP, this Conceptual Scheme shall be appended to the GBCASP Plan.

Policy 11.0.2 The policies of this Conceptual Scheme shall be implemented through the redesignation and subdivision approval processes.

Eric JENSEN
BSc University of Alberta 2004
Environmental and Conservation Sciences
Wildlife ID, Rangeland Management Specialization
Box 206/#401-410 Buffalo Street
Banff Alberta, T1L 1A3
ekjensen@mycanopy.net
403 763 0290

Rocky View County-Planning Services
911-32 Avenue NE
Calgary Alberta
T2E 6X6

March 5, 2012

To whom it may concern:

Re: BERG family subdivision proposal; Rocky View County, (NW 8-23-5 W5M) site visit summary

With respect to the noted subdivision proposal, the BERG family commissioned a site visit summary of said land, with respect to assessing site characteristics as applicable to the Rocky View County re-designation process. This cover letter will briefly delineate the scope, source data and methodology used for the site visit.

SCOPE: This site visit summary sought to assess pre-existing landscape data for the area, followed with a site visit on Sept 28, 2011 to confirm said biophysical characteristics and assess (where possible) if species of concern exist in the area in addition to identifying any issues that may be of concern with respect to any subdivision proposal (critical habitat, wildlife corridors etc.).

SOURCE DATA: The bulk of source information was acquired from Alberta Sustainable Resource Development including Vegetation Inventories, Ecological Landscape Classifications and Critical habitat/species data. Other peer reviewed studies and public documents were sourced as required and referenced accordingly.

METHODOLOGY: ArcGIS was employed to interpret the aforementioned data, including analysis of acquired imagery and topographic information. Methods used during the site visit included GPS confirmation of area boundaries and perimeter habitat/wildlife activity assessments. This was followed with a series of transects through the area to detect notable species, wildlife activity and followed with specific explorations of located game trails and investigations of other areas that denoted specific wildlife activity.

SUMMARY: The brief summary portion of this site visit summary will simply review the noted findings, specific to the site characteristics as they may relate to the proposal at hand.

If any further information is required, please feel free to contact me at any time.

Sincerely, Eric JENSEN

SITE VISIT SUMMARY
NE 8-23-5 W5M
BERG FAMILY PROPERTY REDESIGNATION PROPOSAL

Produced By Eric JENSEN
BSc Environmental and Conservation Sciences
March 5, 2012

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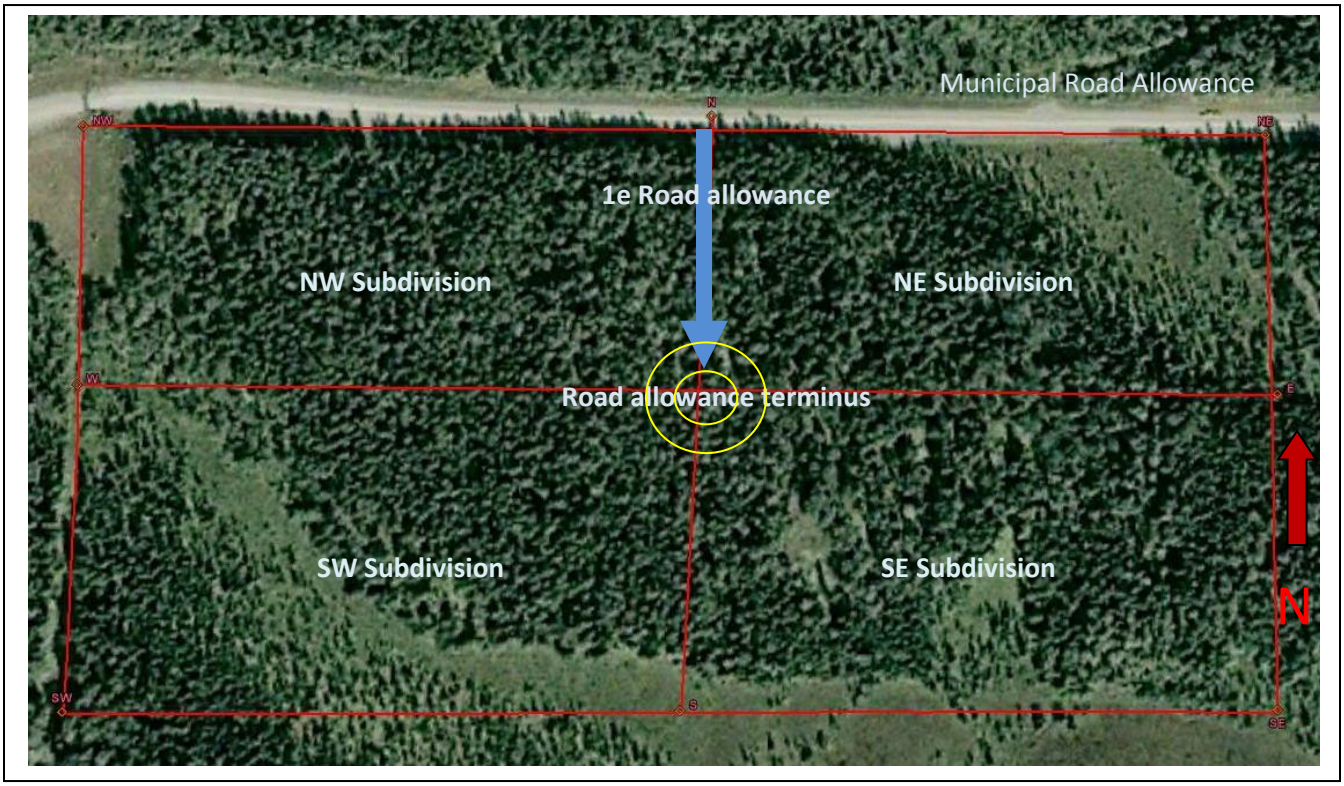
APPENDICES

1.0 AREA OF INTEREST

The primary area of interest is the NW corner of the quarter section (LSD's 13 and 14), legal land Location NW 8-23-5 W5M. However given the close proximity of said property to Provincial Lands (western border of property) and other largely untouched areas, consideration was given to overall landscape contiguity as it affects ungulate movement, carnivore activity and aquatic species.

Figure 1.0-General area overview with proposed subdivision areas



2.0 REDESIGNATION PROPOSAL REVIEW

For reference purposes and in order to guide the landscape assessment efforts, a brief review of the proposed project is required. It is understood that the re-designation proposal has been described as follows:

"Our intention is to subdivide this one (1) 20 acre lot into four (4) 5 acre lots in a manner that is consistent with the Bragg Creek Area Structure Plan and in a context that is consistent with adjacent land and the character of the area." (BERG, 2011)

During the site visit Sept 28, 2011 the noted area boundary markers and markings were located and confirmed. Overall site size and allowances for access right of ways generally confirmed as described in the re-designation proposal and briefly described in Figure 1.

3.0 LANDFORMS AND TOPOGRAPHY-GENERAL

Prior to presenting the findings of the vegetation overview, a description of the specific landforms on site is required to narrow the scope of investigation; allowing for more specific analysis of species.

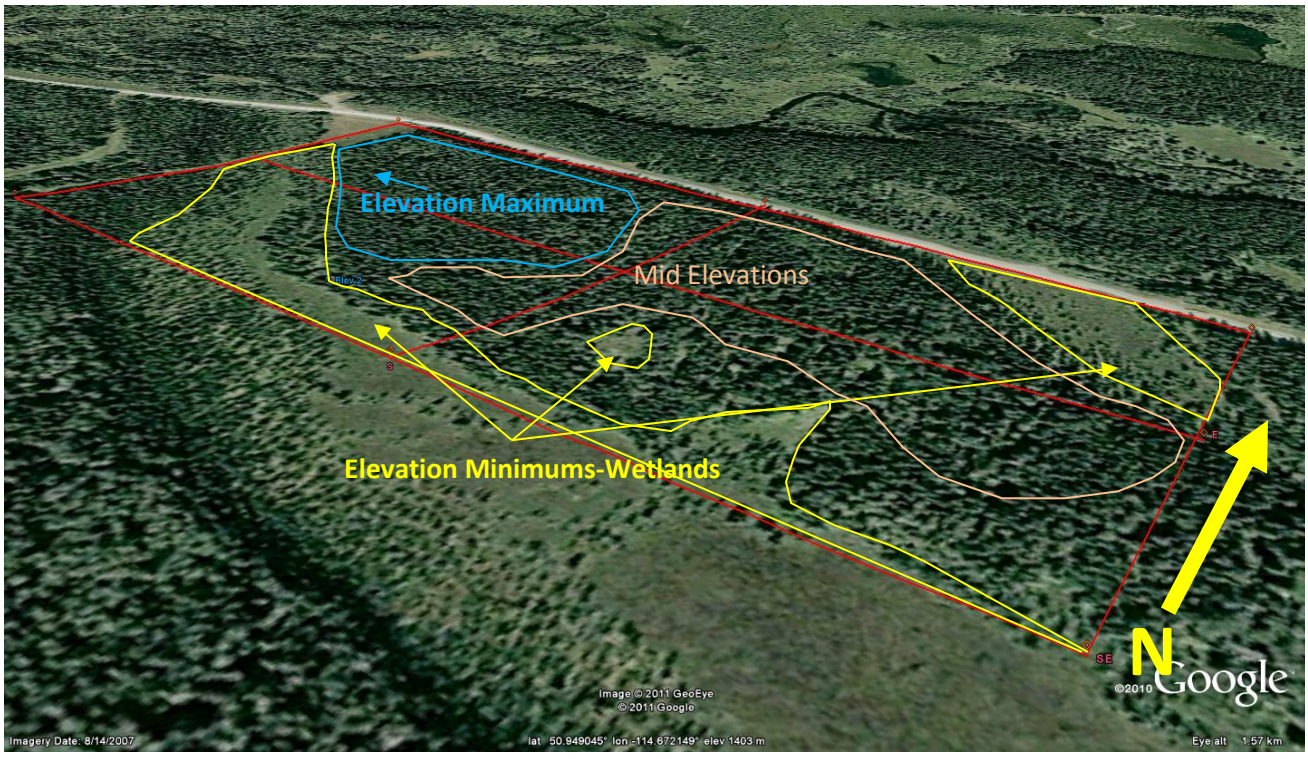
In conjunction with on site observations and analysis of GPS information, the parcel of land in question may be described as follows (see figure 2 for graphic representation):

The high point of land in the parcel exists in the northwest portion, approximately 3 metres above the wetland area that dominates the southern portion of the area. Upon moving southeast from this high point, the terrain slopes down very close to the wetland area near the division of west and east sectors, with further depressions and wetland areas located within the southeast and northeast subdivision areas.

The majority of the landscape northward from the wetland towards the municipal road allowance is comprised of moderately rolling terrain, whereas the area southwards obviously continues as a wetland area. In the very southwest corner of the parcel, despite an increase in elevation the decreased exposure to sunlight has encourages a stunted section of moisture and shade tolerant forest/plant communities.

With respect to the surficial presentation of soils (apart from the noted wetland areas), the soils throughout the parcel present as well drained and moderately enriched depending on specific vegetation cover. Transitions between wetland areas and other soil types are demarcated sharply; with small transitional areas.

Figure 2.0-Landforms general, elevation gradations



4.0 DOCUMENTED VEGETATION

With the specific characteristics of the site identified, it is possible to continue with the academic query regarding the land classification of the area. As indicated by AB SRD AVI data, the area in question resides within the **Lower Foothills Natural Sub Region of** the Foothills Region (AB SRD,2011,2006,2005)(Environment Canada, 1995). As defined in the data, the plant communities and landform characteristics applicable to this particular site are expected to include the following. (AB SRD, 2011,2006,2005)(Kershaw et al 2001)

4.1 Upland Areas

'Forests on upland sites within the Lower Foothills Natural Subregion are typically deciduous or mixedwood with aspen (Populus tremuloides), balsam poplar (Populus balsimifera), whitebirch (Betula paperyfera), lodgepole pine (Pinus contorta), white spruce (Picea glauca) and blackspruce (Picea mariana) as common associates'. Further specifics r.e. expected woody and understory species include buffaloberry (*Sheperdia canadensis*), white meadowsweet (*Spiraea betulifolia*), ground juniper (*Juniperus communis*), prickly rose (*Rosa acicularis*), labrador tea (*Ledum groenlandicum*), bunchberry (*Cornus Canadensis*), twinflower (*Linnaea borealis*) and fireweed (*Epilobium angustifolia*). (AB SRD,2011,2006,2005)

4.2 Wetland areas

'Mainly vegetated by stunted black spruce (Picea mariana) and tamarack (Larix laricina) or shrub-graminoid (Salix spp., Betula spp. Carex spp., Poa spp. Phleum spp., Calamagrostis spp.) communities.'Other moisture dependant species include bog cranberry (*Vaccinium vitis-idaea*), stair step moss (*Hylocomium splendens*), schrebers moss (*Plerozium schreberi*) and knights plume (*Ptilium crista-castrensis*). (AB SRD,2011,2006,2005)

4.3 Species Composition/Transition Areas

'*The boundary between the Lower and Upper Foothills Natural Subregions is reasonably well defined by a change in dominance from mixedwood and deciduous stands on all aspects in the Lower Foothills Natural Subregion to conifer-dominated forests in the Upper Foothills Natural Subregion.'*. (AB SRD,2011,2006,2005)

4.4 Species of special concern

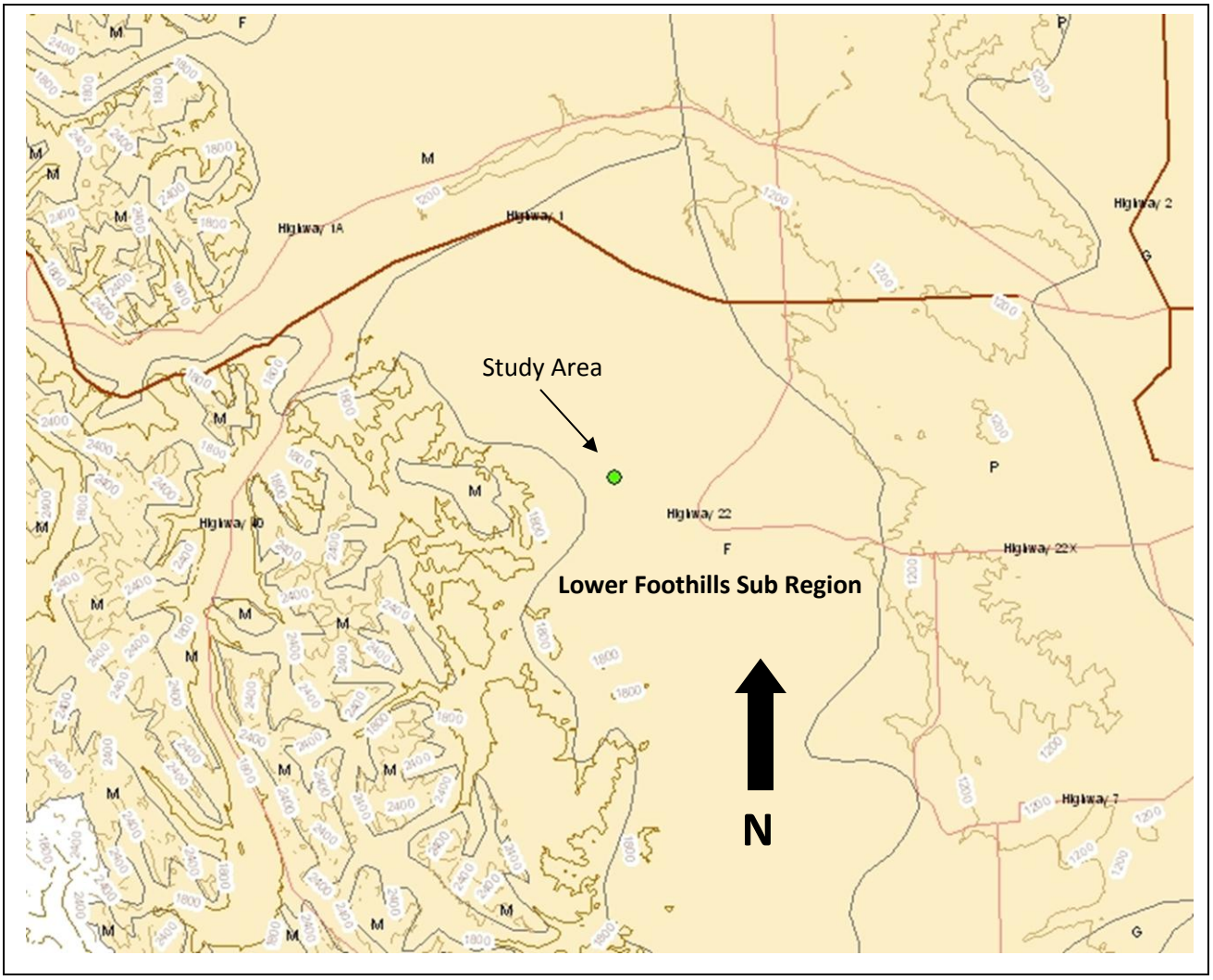
Although 80 species of vascular plants that occur in the Foothills region are considered rare, only 4 species thereof have a distribution strictly limited to the Foothills region (Kershaw 2001). These species include; Wood Anemone (*Anemone quinquefolia*), Northern Oak Fern (*Gymnocarpium jessoense*), Western white lettuce (*Prenanthes alata*) and Small Twisted Stalk (*Streptopus streptopoides*). Additional species of interest (although sharing distribution in Boreal regions) include Goldthread (*Coptis trifolia*), Northern Beech Fern (*Phegopteris connectilis*) and Rose mandarin (*Streptopus roseus*). (Kershaw et al 2001)

4.5 Topography/Geology/Soils

Sandstone and Mudstone bedrock strata underlie the Lower Foothills Sub Region, with medium textured weakly calcareous glacial till creating the topography of the Sub Region.

With respect to the site specifics of this assessment; at higher elevations under deciduous canopies, Orthic Gray Luvisols are expected, while in pockets of dense conifer cover Brunisolic Gray Luvisols are anticipated. Lastly, in lower areas Gleysols and Organic soils dominate. (AB SRD,2011,2006,2005)

Figure 3-Alberta Sustainable Resource Development Eco districts map, Lower foothills (AB SRD 2011)



5.0 Observed Vegetation

During the site visit of Sept 28, 2011 the assessment area was transited several times, with varied methodology in order to sample the area both randomly and in metered fashion. The primary survey included travelling the boundary area, sampling vegetation and monitoring for signs of wildlife activity crossing boundary markers and cut lines. Subsequent transects within the area further sought to identify localized habitat and vegetation types, while noting observable species as defined in the Vegetation Inventory.

Predominant vegetation identified in upland areas was congruent with the literature review; however a few ancilliary common/expected understory and shrub species were also encountered. Examples include green alder (*Alnus crispa*), low bush cranberry (*Viburnum edule*), star flowered false solomon's seal (*Smilicina stellata*), bearberry (*Arctostaphylos uva-ursi*) and red osier dogwood (*Cornus stolonifera*).

Wetland areas revealed species as expected in addition to several other common wetland species such as bog birch (*Betula glandulosa*), swamp birch (*Betula pumila var. glandulifera*), common horsetail (*Equisetum arvense*) and various willow species (*Salix spp.*). Furthermore, throughout wetland areas and suitable pockets within the study area, various graminoid (grass) species were found, including northern reed grass (*Calamagrostis inexpansa*) and marsh reed grass (*Calamagrostis canadensis*).

The overall composition of the area revealed well established healthy vegetation demarcated by varied growing conditions. No prohibitive factors regarding established vegetation are believed to exist, i.e. the spatial distribution and density of the common species found within upland and lowland areas are robust.

6.0 Documented Wildlife Activity

While the habitat diversity in the lower foothills sub region (resulting from variable topography) inherently supports numerous species, none of the species to be discussed are strictly limited in range to the Lower Foothills. However, it is essential to note that due to the transitional nature of the Lower Foothills (as it resides between other natural regions) species diversity is high, yet without being critical to the bulk of species .(AB SRD, 2011,2006,2005) Species of concern will be summarized separately in section 6.2.

6.1 Documented Species Diversity-General

With respect to bird species expected to be present at the study site in particular (deciduous/conifer upland mix with adjacent distinctive wetland complex); avian species include the Boreal Chickadee, Spruce Grouse, Ruby-crowned Kinglet, American Robin, White-Winged Crossbill, Dark-Eyed Junco, Yellow-Rumped Warbler, Ruffed Grouse, Warbling Vireo, Black-Capped Chickadee, Lincoln's Sparrow, Tennessee Warbler, Yellow-Bellied Sapsucker, Rose-Breasted Grosbeak, Purple Finch, Varied Thrush, Bald Eagle, Golden Eagle, Northern Goshawk, Barred Owl, Northern Pygmy Owl, Prairie falcon, Sprague's Pipit and Loggerhead Shrike are all possible. Similarly, in wetland areas the Lesser Yellowlegs, Common Snipe, Barrow's Goldeneye, and Trumpeter swan have the possibility of being present, alongside amphibian species including Boreal Toad, Western Toad, Northern Leopard Frog, Wood Frog and Long Toed Salamander (*N.B. Summary table of Latin names for all possible wildlife present listed in appendix A*). (AB SRD, 2011,2006,2005)

Similarly, the highly productive and variable landscape of the Lower Foothills supports and abundance of small mammals; including Red Squirrel, Snowshoe Hare, Deer Mouse, Meadow Vole and Southern Red-Backed Vole as examples. Furthermore, the occurrence of all manner of ungulate species and related carnivore species is expected including Elk, White Tailed Deer, Mule Deer , Moose, Black Bear, Coyote, Cougar, Lynx, Red Fox and even and the possibility of Grizzly Bear, Gray Wolf and Wolverine. (AB SRD, 2011,2006,2005)

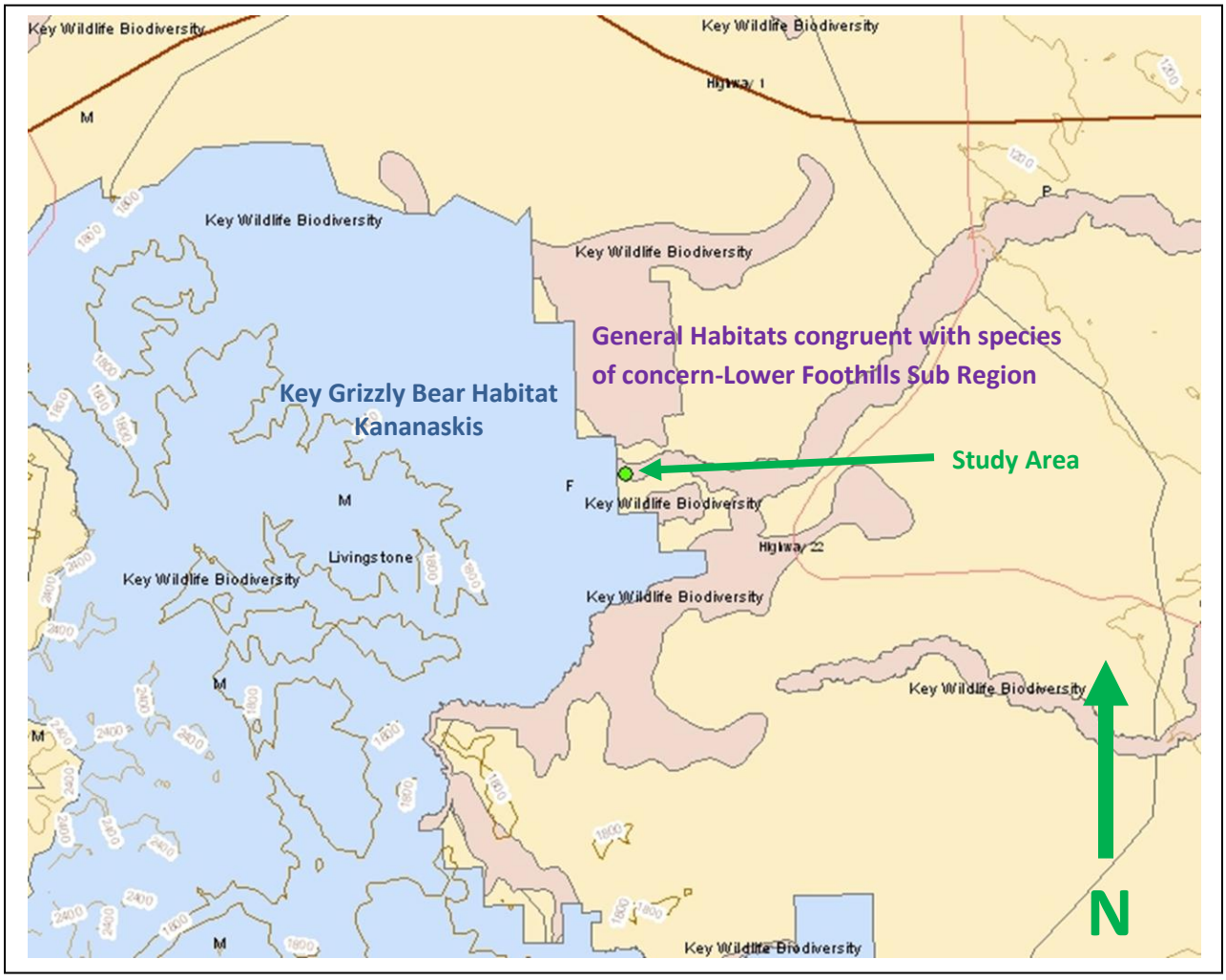
6.2 Documented Species of concern

From the aforementioned species lists, several are listed with Special Status; as delineated by various authorities, (Alberta SRD, COSEWIC etc) both concurrently and in some cases individually as defined by region. The specific status if each species listed is highly variable, details of which are available within the referenced information. For the purpose of this assessment, the intent was to direct identification efforts during the site visit, to assist with detection of stated species.

As such, species of concern in the Lower Foothills Sub Region include Grizzly bear, Wolverine, Caribou, Trumpeter Swan, Northern Leopard Frog, Short-Eared Owl, Cougar, Canada Lynx, Bald Eagle, Golden Eagle, Northern Goshawk, Barred Owl, Northern Pygmy Owl, Prairie Falcon, Harlequin Duck, Sprague's Pipit, Loggerhead Shrike, Western Toad, and Long-Toed Salamander. (AB SRD, 2011,2006,2005)

With respect to designated protected areas and habitats for noted species outside of the study area, several sanctioned protected areas exist in order to protect primary habitats. For example in Figure 4, areas demarcated with blue indicate special protection for Grizzly bear habitat within Kananaskis. Nonetheless, as identified here; measures must be taken to account for any possibility for the presence of species of concern, regardless of the low relative probability thereof. (AB SRD, 2011,2006,2005)

Figure 4-General Wildlife Biodiversity/Habitat ranking for Bragg Creek area (AB SRD 2011)



7.0 Observed Wildlife/Activity

The site visit of Sept 28, 2011 occurred under mild conditions of 12-15 degrees C with no precipitation. Deciduous canopy cover was still largely intact, despite onset of fall conditions. Ground cover still enjoyed suitable growing conditions, with only standing grass presenting as cured. As such, these conditions ameliorated the ability to detect wildlife activity and movement patterns.

The area was travelled on foot thoroughly both with random and metered techniques (a summary of results represented in figure 5). Descriptions of the findings are as follows.

7.1 Observed Bird Activity

Noted bird activity was minimal; observations limited to Black-Capped Chickadees, Redpolls, Pine Siskins and Corvids (Ravens, Crows). These observations were made primarily by audio detection of birdsong. As expected, due to the season the overall volume of avian species was low; in order to achieve a broader assessment, repeated surveys throughout the year would be required. Nonetheless, in this instance of assessment no conspicuous nests or evidence of avian 'residences' were located both in upland forested areas and in the wetland. Similarly, no evidence of past avian predatory activity congruent with Raptor predation behaviour was found (kill sites-fur/feathers, droppings-pellets, small mammal carcasses-location indicative of predation, etc.).

7.2 Observed Small Mammal Activity

As expected, evidence of an active small mammal population was found. With the lush and complex nature of the area vegetation especially in the wetland complex, numerous transit pathways and signs of activity were noted (grass furrows/tunnels, Lagomorph droppings etc). However, with the exception of Red Squirrels, no observations of other small mammals (mice, voles etc) occurred.

7.3 Observed Large Mammal Activity

With respect to large mammals, the area survey revealed evidence of significant activity, including a web of game trails transiting the area; predominantly along the northern edge of the wetland area (as expected; with good cover, good access to resources). The effect of these trails allows transit of the area undetected primarily along a west-east axis, some deviations occur in order to utilize low lying areas and the sloping topography for undetected travel to the NE and SE out of the study area. Analysis of the wildlife using these trails revealed primarily White Tailed Deer as indicated by print marks, droppings and evidence left from a predatory event. No activity sign of Moose or Elk was detected during the survey. Lastly, while Mule Deer activity is presumed in the area, it was not specifically found in this instance.

7.4 Observed Carnivore Activity

The only possible predatory evidence located was in the form of White tailed Deer forelimb, located adjacent to one of the more significant game trails. However the presence of this evidence was not associated with a specific kill site (evidence of struggle, further detritus, hair etc). In this case the forelimb was likely scavenged from another location and transported to this site by Coyote or other scavenger. With respect to signs of any other type of significant predator (Cougar, Bear etc) no evidence was found during the assessment. Figure 5 summarizes the findings of these activities.

7.5 Observed Aquatic Species/Amphibians

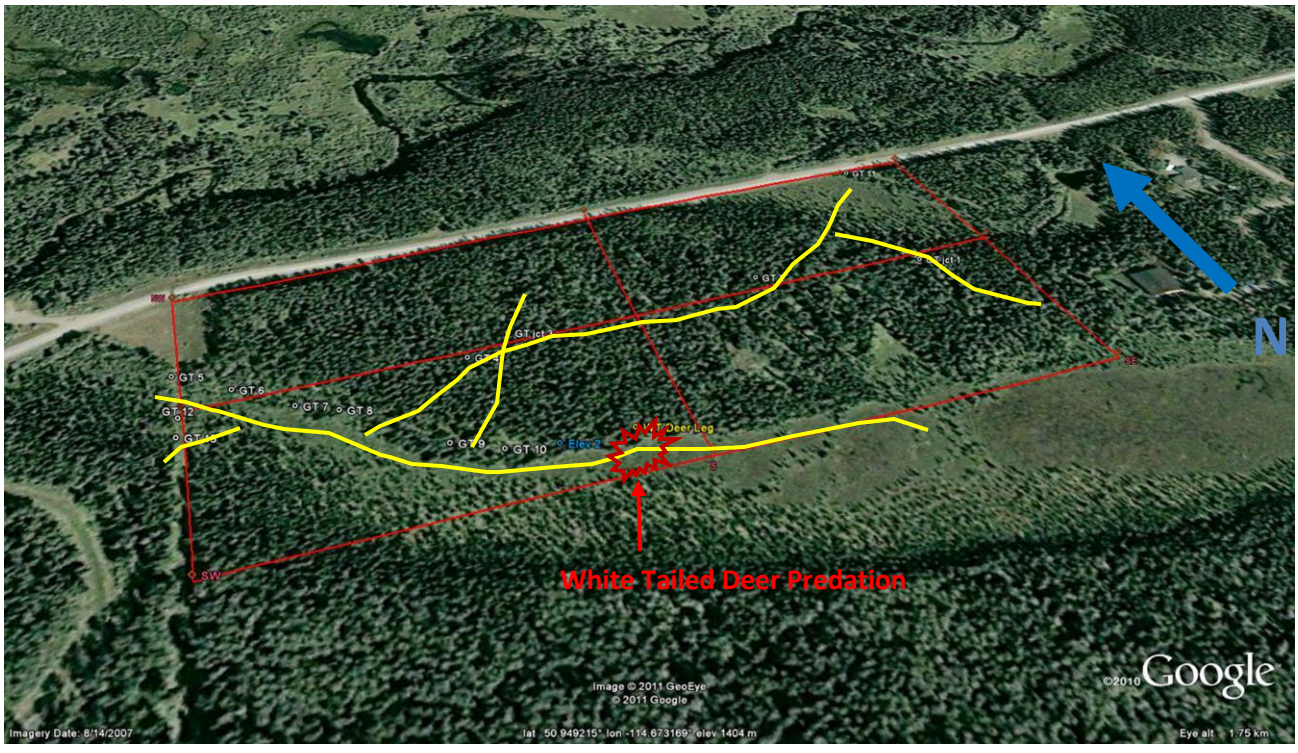
The patrol of wetland areas revealed terrain dominated with significant organic soils; saturated with moisture yet without presenting any obvious standing water. During spring and/or high volume precipitation events it is understood that this basin would indeed hold standing water and hence increase the suitability for amphibians. During this particular assessment however, a thorough patrol of this area did not reveal any amphibian species or evidence thereof (no audio detection, no suitable aquatic resources for breeding etc). In the case of the assumed seasonal presence of amphibians in this area, it is presumed that local populations are able to travel to more suitable locations, off property as dictated by conditions.

7.6 Observed Species of Concern

Upon assessment of the general area characteristics, the likelihood of encountering several of the noted species was deemed to be negligible due to lack of necessary habitats. Species such as Trumpeter Swan, Harlequin duck and several amphibian species (Northern Leopard Frog, Western Toad, Long-Toed Salamander) and avian water based species would be very unlikely within the assessed habitat due to lack of sufficient and suitable aquatic resources.

With respect to the remaining species of concern (Grizzly Bear, Wolverine, Short-Eared Owl, Cougar, Canada Lynx, Bald Eagle, Golden Eagle, Northern Goshawk, Barred Owl, Northern Pygmy Owl, Prairie Falcon, Sprague's Pipit and Loggerhead Shrike), no evidence was found during the assessment that these species were or had been on site. Observational methods included audio monitoring (for avian species), monitoring for sign (prints, diggings, kill sites) and for the necessary/optimal resources required for said species to occur; none of which were definitively located during the survey.

Figure 5- Observed Wildlife Activity, Game Trails and Predation Evidence

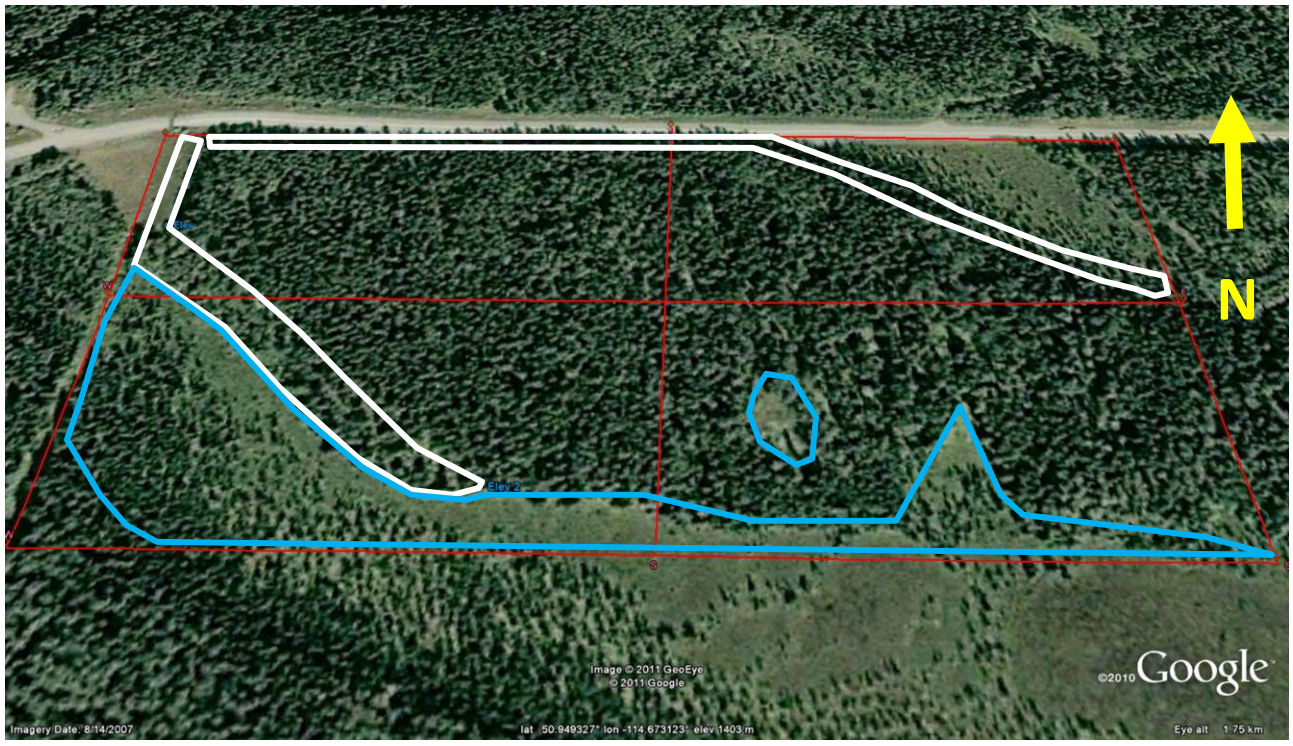


8.0 Aquatics/Hydrology Local

As described throughout this assessment, the presence of a significant wetland area (shaded blue- figure 6) represents an important component of the localized environment, both in character of the area and as it would affect any development initiatives. As described in the re-designation proposal; development on wetland areas and significantly sloped areas (shaded white- figure 6) is not advisable or desirable. The character and fragility of organic soils in conjunction with associated slopes (subject to erosion) is not congruent with development.

With respect to the scale of this issue relative to this area in question; the overall area of terrain affected is approximated in figure 6. In general terms, the NW portion of the study area has the least amount of area affected by wetlands, but the greatest portion affected by slopes. Inversely, the SW portion of the study area has a short section of steep terrain sloping southward to the wetland; which comprises approximately 25% of the SW parcel. The SE portion of the study area is characterized by the greatest spatial diversity of landforms; with the entire southern edge bordering the main wetland, adjacent to rolling and diverse terrain northwards, yet still punctuated with two well defined wetland areas within the parcel. Lastly, in the NE portion, the significant wetland in the NE corner annexes an otherwise accessible area of high ground adjacent to the road allowance, the remaining landscape within this parcel is rolling terrain dominated at the east end by Conifer and moving to Mixed Wood further southwest.

Figure 6-General Approximation of slope and wetland areas



8.1 Aquatics and Hydrology General

Respecting the larger scale Hydrology issues of the assessment; the area in question resides within the Elbow River Watershed but does not directly affect the Elbow River Alluvial Aquifer. As defined by the Elbow River

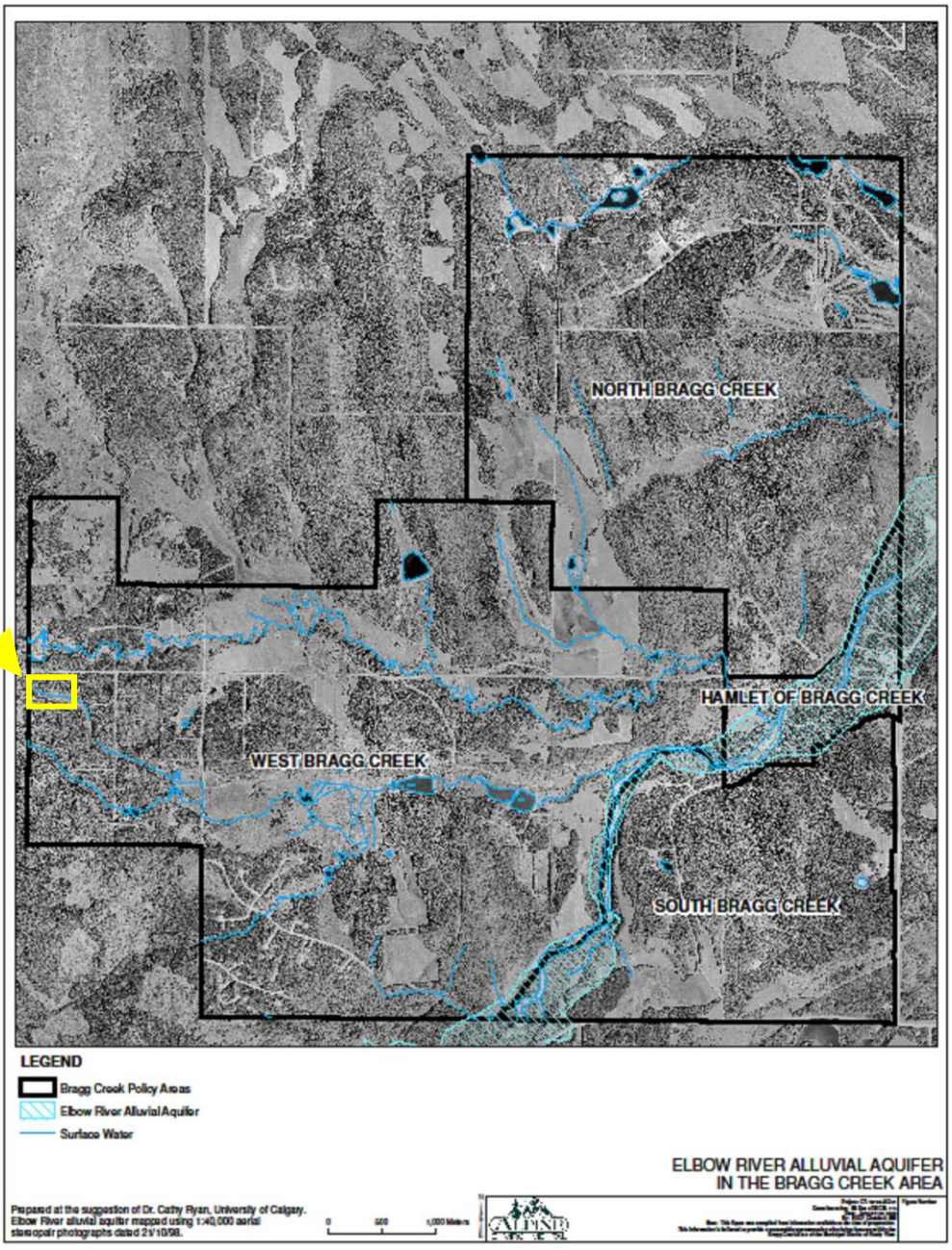
Watershed Partnership: '*The Elbow River alluvial aquifer refers to the shallow, unconfined aquifer made of gravel and sand', 'It represents just over 5% of the entire land area of the Elbow watershed', ' Groundwater from the alluvial aquifer flows into the river and river water flows into the aquifer. There is considerable groundwater - surface water interaction along the Elbow River.'*(ERWP 2011)

Specific to the area of study (as delineated in Figure 7), the proposed development area does not exist within the boundaries of the Elbow River Alluvial Aquifer, however the area does have good drainage patterns that contribute to noted surface waters and overall runoff; as does the Hamlet of Bragg Creek and surrounding developments & subdivisions that are similar in nature and scale to that which is proposed. Based on the existing water quality/development guidelines already in place; it may be reasonable to infer that sufficient mitigations may be employed in the development process to protect water quality in the area in despite distant proximity issues related to the Elbow River Alluvial Aquifer.

Figure 7

Elbow River Alluvial Aquifer in the Bragg Creek Area

(ERWP 2011)



9.0 Summary

It is the intent of this site visit summary to consider the totality of influences on the character and integrity of the landscape at present. With this information it may be possible for an analysis of the proposed re-designation scheme to occur; with respect to how the proposed development may change the character of the area and if such changes may be deemed appropriate.

With respect to the documented and observed vegetation, no species of special concern were located during the assessment. Furthermore, the spatial variability and age structure of plant communities within the parcel were as described in the land classification data.

Upon investigation of the documented and observed wildlife, no species of special concern (or indicators thereof) were located during this assessment. That is not to say that species of special concern may not occur at different times of year or during travel/migrations. Further information to this end would require extended observational work; such as winter wildlife tracking, seasonal bird surveys and regular observational regimes. Specific to observed wildlife movement and activity, the area revealed several well traveled game trails existing in wetland and slope affected areas.

In consideration of the landform characteristics; various sections of the area (approximately 15-20%) have been identified as fragile wetlands or with slope/erosion concerns. Respecting the protection of these areas, the spatial arrangement of these areas is such that their protection/isolation is reasonably inherent (no need for access/transit to adjacent lands southwards).

Lastly, the aquatic and hydrologic resources of the assessed area include wetland areas containing seasonal runoff and underground sources, which contributes to the overall character of the associated watershed. Specific interaction of the wetland onsite does not occur with the Elbow River Alluvial Aquifer, as indicated by existing data/research.

10.0 References

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A Field Guide to Mammal Tracking in North America, 1986. Halfpenny, J., Biesiot, E.

BERG, R. 2011-Rocky View County Planning Services Application for Redesignation

APPENDIX A-Potential Vertebrate Wildlife Species, compiled from listed references. This tabulation is not exhaustive, and is intended as reference only for species mentioned in text of report.

AMPHIBIANS	
Long-toed Salamander	Ambystoma macrodactylum
Boreal Chorus Frog	Pseudacris maculata
Northern Leopard Frog	Rana pipiens
Wood Frog	Rana sylvatica
BIRDS	
Black-billed Magpie	Pica hudsonia
American Crow	Corvus brachyrhynchos
Common Raven	Corvus corax
Black-capped Chickadee	Poecile atricapilla
Brown Creeper	Certhia americana
Bald Eagle	Haliaeetus leucocephalus
Northern Goshawk	Accipiter gentilis
Red-tailed Hawk	Buteo jamaicensis
Golden Eagle	Aquila chrysaetos
Ruffed Grouse	Bonasa umbellus
Northern Pygmy-owl	Glaucidium gnoma
Barred Owl	Strix varia
Northern Saw-whet Owl	Aegolius acadicus
Yellow-bellied Sapsucker	Sphyrapicus varius
Varied Thrush	Ixoreus naevius
Warbling Vireo	Vireo gilvus
Dark-eyed Junco	Junco hyemalis
Purple Finch	Carpodacus purpureus
White-winged Crossbill	Loxia leucoptera
Common Redpoll	Carduelis flammea
Pine Siskin	Carduelis pinus
MAMMALS	
Snowshoe Hare	Lepus americanus
Red Squirrel	Tamiasciurus hudsonicus
Beaver	Castor canadensis
Deer Mouse	Peromyscus maniculatus
Meadow Vole	Microtus pennsylvanicus
Coyote	Canis latrans
Gray Wolf	Canis lupus
Red Fox	Vulpes vulpes
Black Bear	Ursus americanus
Grizzly Bear	Ursus arctos
Cougar	Felis concolor
Canada Lynx	Lynx canadensis
Wapiti	Cervus elaphus
Mule Deer	Odocoileus hemionus
White-tailed Deer	Odocoileus virginianus
Moose	Alces alces

Strom Engineering Inc.
P.O. Box 825,
Turner Valley, Alberta T0L 2A0
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Email: stromltd@telus.net

Date: February 7, 2014
File: S-98-00

Rocky View County
c/o Mr. Rolf Berg
"Hand Delivered"

To Whom It May Concern,
Re: The Berg Property Preliminary Stormwater Management Proposal See Figures 1 & 2 Attached

The 2 areas to be addressed in this advisement of intent regarding stormwater are quantity and quantity thereof.

Quantity – the Guiding Principle
To ensure that the pre and post drainage from the site is the same and is released from the site at the same rates as they are now.

Quality – the Guiding Principle
Water quality remains the same as now found on the site.

Because these are country residential lots or similar little lot grading will be done. The grading that is to be accomplished as foreseen will be road / driveway access, grading for a house to be constructed and surrounding grounds. All this will be taken into consideration for post development analysis for stormwater.

The site consists of a trapped low on site, and low muskeg / wet areas on the south and northeast of the property. Any stormwater from development will be dealt with in the environmentally sensitive areas either on site in the case of the trapped low or upstream from the low areas on the south and northeast of the parcel. Primary consideration will be the quality and quantity of the water according to our guiding principles.

Drainage to the west and out to the road will be considered in terms of volume and where it is possible a stormwater management pond with a controlled release will be examined. Any water quality issues will be part of that examination.

Any drainage considerations on the lots will be taken into advisement on a lot by lot basis with a view to the whole stormwater management for the site.

Best management practices will be taken into consideration with major and minor systems reviewed.

If there are any questions please call Rob Strom at 403-888-8088 or email at stromltd@telus.net.

Thank you.

Your truly,
Strom Engineering Inc.

Robert P. Strom, R.E.T., P.Tech(Eng.), P.L.(Eng.)

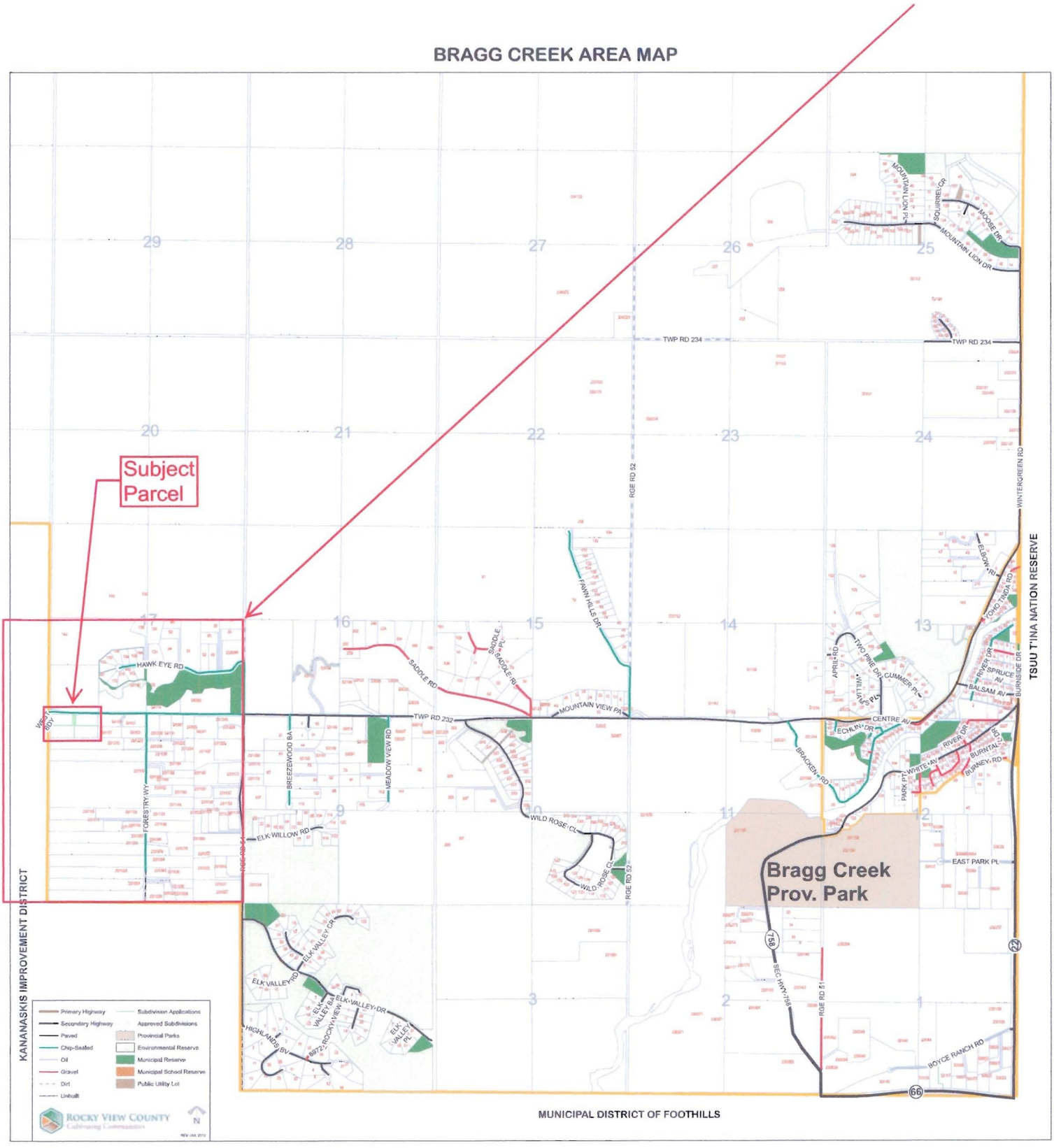
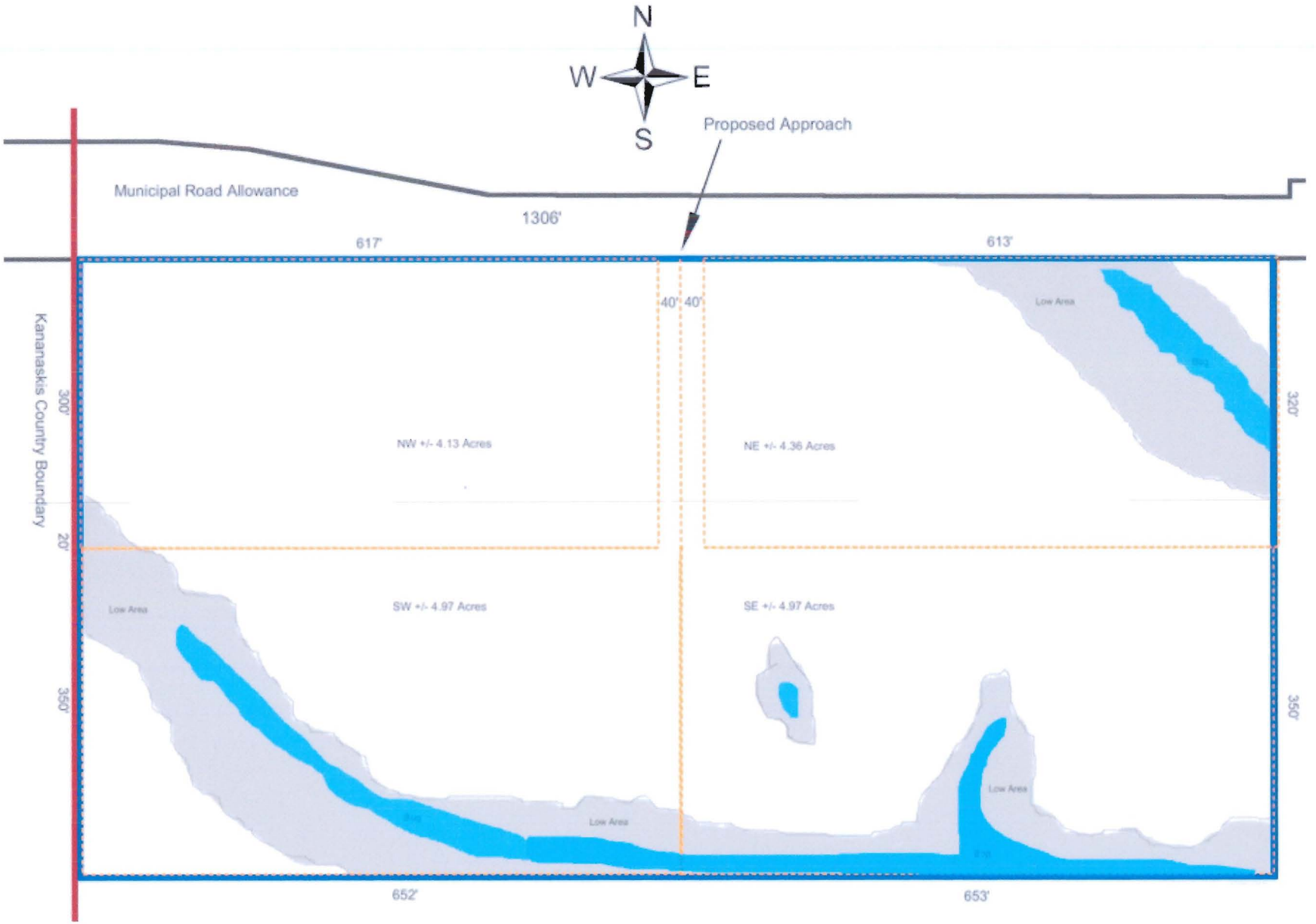


Figure 1 - Report Area Map



Proposed Layout

Figure 2 - Site Plan in the NW of the NW 8 23-5 W5M