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RC BioSolutions Ltd.

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Rocky View County

Environmental Screening Report and Wildlife Habitat Modelling

Bragg Creek Area Structure Plan Hamlet Review

Prepared for:
Rocky View County

Project number:
25003

April 2025

DISTRIBUTION:

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Submitted To:

Rocky View County

Dalia Wang, Planner II (Policy), Planning
262075 Rocky View Point | Rocky View County | AB | T4A 0X2

Submitted By:

RC BioSolutions Ltd.

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April 2025

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April 1, 2025

Dalia Wang, Planner II (Policy), Planning
262075 Rocky View Point
Rocky View County, Calgary, AB
T2E 8J6

Dear Dalia Wang:

Project No: **25003**

Regarding: **Rocky View County - Environmental Screening Report and Wildlife Habitat Modelling – Bragg Creek Area Structure Plan Hamlet Review**

At the request of Rocky View County, RC BioSolutions Ltd. has completed an Environmental Screening Report and Wildlife Habitat Modelling for the Bragg Creek Area Structure Plan Hamlet Review Boundary.

If you have any questions or comments regarding the report, please contact our office at your convenience.

Sincerely,
RC BioSolutions Ltd.

Krista Bird, Ph.D., P.Biol.
Senior Wildlife Biologist and Regulatory Specialist
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1 Project Description

1.1 Purpose and Scope

RC BioSolutions Ltd. (RC Bio) was contracted by Rocky View County to provide an Environmental Screening Report and Wildlife Habitat Modelling for the Bragg Creek Area Structure Plan (ASP) area (Figure 1). The purpose of this Environmental Screening is to complete desktop level investigations, determine the existing environmental conditions of the area, and to assess potential and actual environmental impacts that may occur as a result of disturbance based on the type and scope of the proposed development. We have also been requested to complete wildlife habitat modelling to determine areas with high wildlife potential and wildlife habitat corridors that should be protected. This report is also meant to address the Regional Evaluation Framework (REF) policy surrounding Environmentally Sensitive Areas. The intention of the Environmentally Sensitive Area policies is to identify and mitigate the effects of development on larger patterns of ecosystem functions and services (i.e. regionally significant natural area components).

The existing Bragg Creek ASP is being reviewed due to changes in the community and planning framework (Rocky View County 2015). Additionally, the existing Bragg Creek ASP is 18 years old and the area has undergone significant changes since the previous ASP was developed. The County has completed Phase 1 (project initiation and background analysis) of the process for updating the Bragg Creek ASP and is scheduling fall 2025 for the release of the draft ASP document (Rocky View County 2024a and 2024b). All plans should comply with the *Municipal Government Act*.

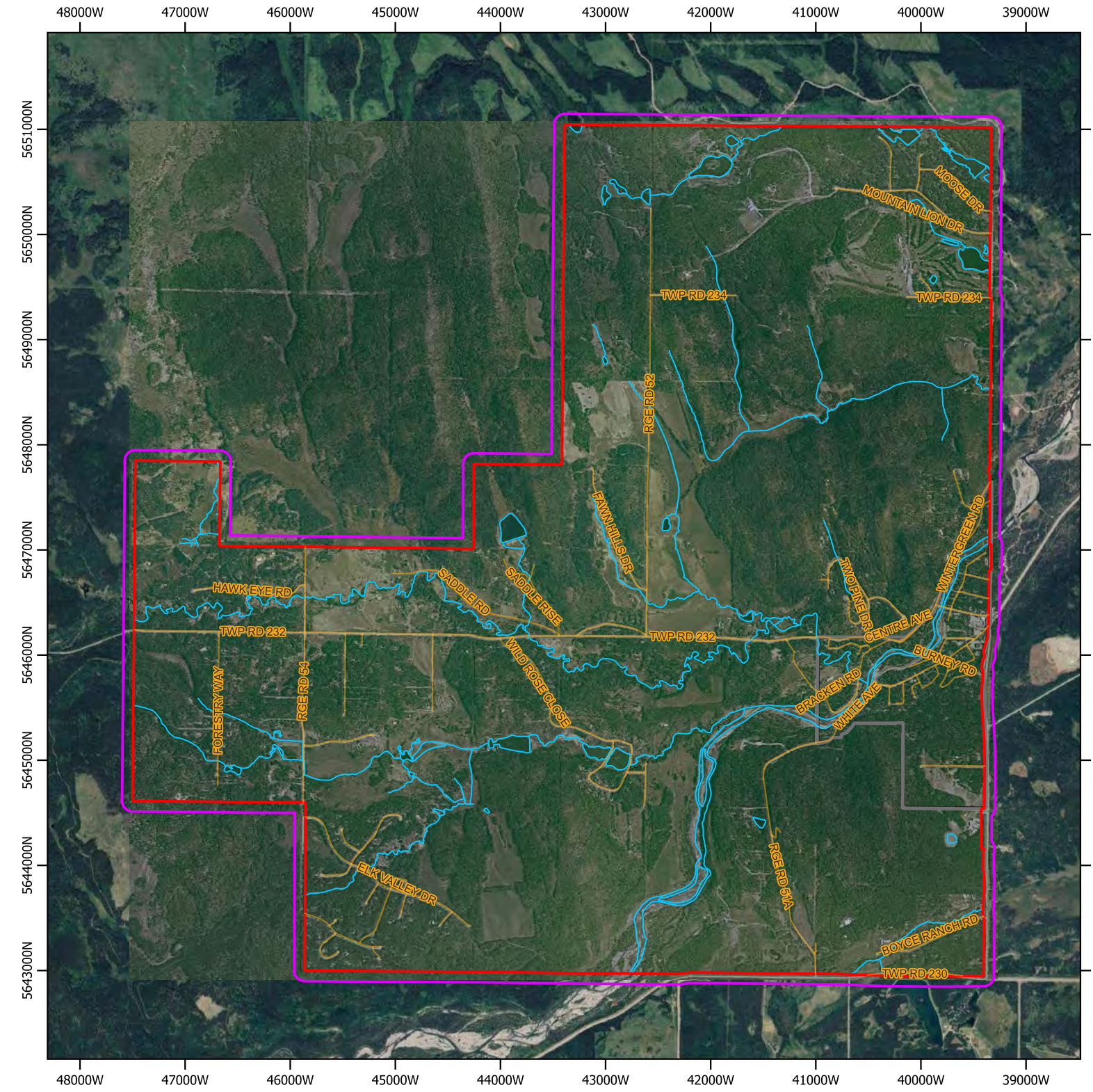
As per regional policies, Environmentally Sensitive Areas are defined as “key natural area components of the regional landscape, providing essential ecosystem functions and services. These functions and services include flood mitigation, drinking water supply, maintenance of regional biodiversity, preservation and connectivity of unique habitats and landscapes, and provision of culturally and economically valued resources and opportunities.” Environmentally Sensitive Areas should commit to the following:

- Maintain the provision of water quality and quantity and provide protection against drought and flood events. Includes water courses, water bodies, and riparian areas.
- Provide habitat for identified local species of interest, designated species of conservation concern (SCC), or identified focal species groups.
- Provide rare, unique or biologically diverse ecosystems or unique landforms.
- Contribute to other important Ecosystems Services or functions at the local scale.
- Include provincial Environmentally Significant Areas.

For the purposes of this report, we will not use the abbreviation “ESA” for Environmentally Sensitive Areas because the provincial Environmentally Significant Areas uses the same acronym. As such, we will not use “ESA” for either environmentally significant areas or environmentally sensitive areas to avoid confusion and will use the full name in every instance.

1.2 Location and Size

The project is located in Bragg Creek, which is approximately 30 km west of Calgary and 25 km south of Cochrane, in Rocky View County, Alberta. The project area is approximately 4,775.94 hectares (ha) in size and falls fully or in partly within 73 quarter sections (Figure 1). A 100 m buffer has been added to the Bragg Creek ASP area for all desktop searches. This makes the study area a total of 5,118.78 ha.



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

Rocky View County

Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Rocky View County Aerial Imagery 2024 and ©2025 Google Maps Satellite Imagery - Map Data: © Maxar Technologies

Bragg Creek Area Structure Plan Hamlet Reivew Boundary

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 05 Mar 2025
Project #: 25003

Figure No.
 # 1

2 Biophysical Inventory

2.1 Land Use

The current land use of the project footprint is residential, commercial, recreational, and agricultural (Rocky View County 2016). As per the Greater Bragg Creek ASP (Rocky View County 2016), Bragg Creek has predominantly developed as a mix of residential, country residential, agricultural, and recreational community. Business land use is scattered throughout the boundary, with the Wintergreen Golf & Country Club and the Our Lady Queen of Peace Ranch Camp in the north, Stone Creek Gardens in the south, and various guest ranches throughout the area. Recreational land use is concentrated in the southeast portion of the ASP boundary in the Bragg Creek Provincial Park, and there are multiple Provincial Recreation Areas surrounding the ASP boundary. Agricultural land use is also scattered throughout the area, with much of it being relatively undeveloped (Rocky View County 2016).

A Draft Land Use Strategy is currently being developed for public review (Rocky View County 2024a).

2.2 Biological Resources

2.2.1 Natural Subregion

The project is located within the Montane Natural Subregion of Alberta and is near Foothills Parkland to the northeast and Subalpine to the southwest. This Natural Subregion is unique due to its complex vegetation patterns and is therefore split into three districts, of which the Bragg Creek ASP boundary falls within the Southern and Central Mountain Valley District (Natural Regions Committee 2006). The historically dominant mixed forests consist of lodgepole pine, Douglas fir, aspen, and white spruce, with an understory of bearberry, Canada buffaloberry, hairy wild rye, and pine reed grass. Grasslands containing mountain rough fescue, bluebunch fescue, and Parry oatgrass also occur in the region on moderately dry south-facing slopes.

The land use surrounding the site consists of outdoor recreation and natural resource extraction activities throughout the Kananaskis Improvement District to the west and south of the project area, provincially owned grazing lease land to the north, and the Tsuut'ina Nation Reserve #145 to the east (Rocky View County 2016).

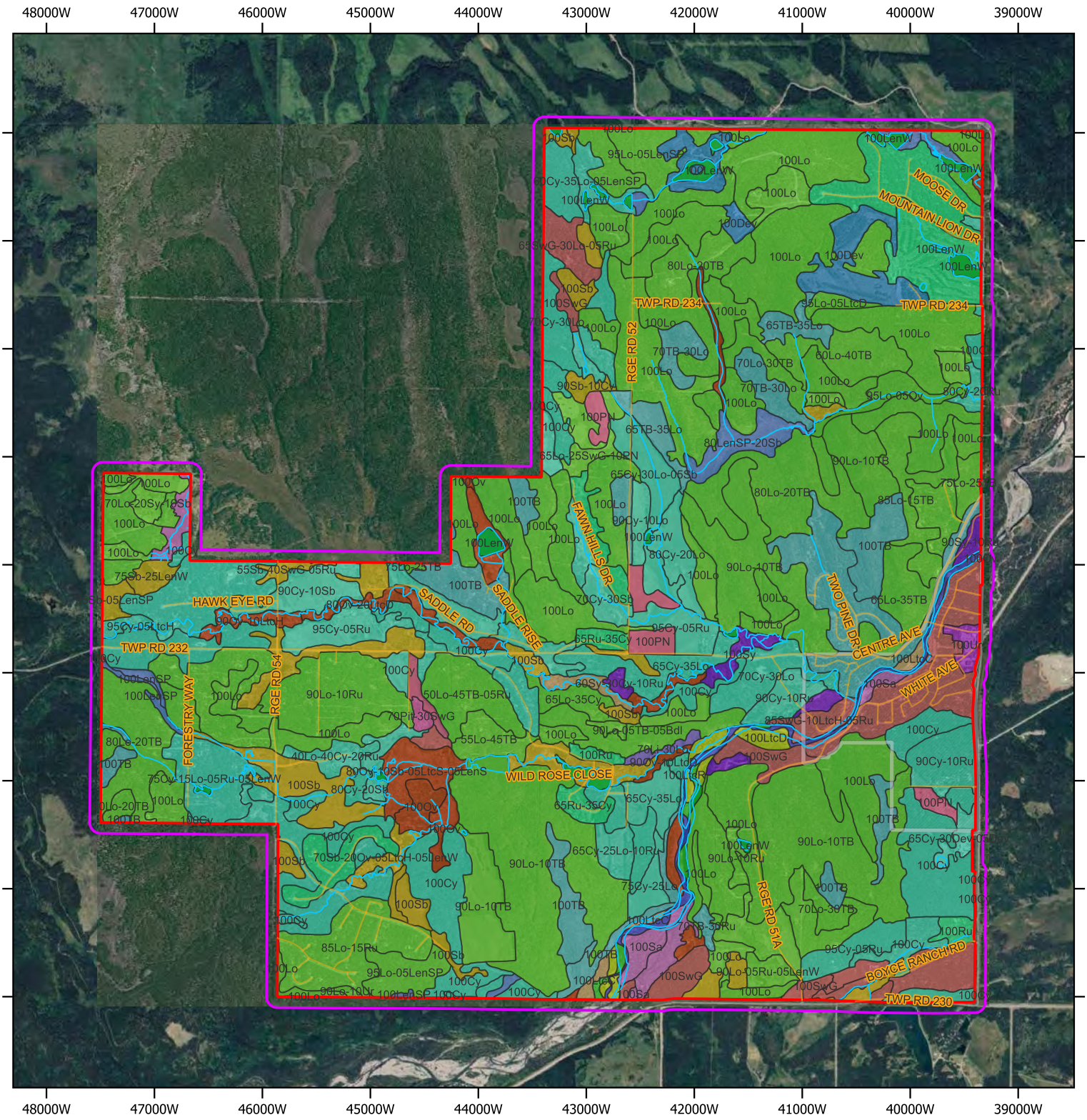
2.2.2 Vegetation – Plant Community Composition

2.2.2.1 Methodology

The Grassland Vegetation Inventory (GVI) database (Government of Alberta 2011), Annual Crop Inventory from 2022 (Agriculture and Agri-Food Canada 2022), and Land-use/Land-cover (LULC) Classification of Alberta (Chowdhury 2021) were utilized to determine vegetation/habitat types. Because there can be multiple GVI site types per polygon, the percent of polygon feature within the dataset was used to calculate an approximate area of each site type. Since the ACI and LULC are both raster data, pixel counts of each habitat type were used to estimate area.

2.2.2.2 Results

According to the GVI, the project area (including 100 m buffer) is primarily composed of loamy (45.36% of total area), clayey (20.67%), and thin breaks (8.85%) GVI site types. A total of 24 GVI categories occur within the project area and 100 m buffer (Table 1; Figure 2). The GVI data set for the majority of this area was last updated September 2019, so any changes to the landscape since that time have not been captured.



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Grassland Vegetation Inventory (GVI)

- Clayey
- Developed
- Lentic (Open Water)
- Lentic (Semi-Permanent to Permanent)
- Limy
- Loamy
- Lotic (Coniferous)
- Lotic (Deciduous)
- Lotic (Herbaceous)
- Lotic (River)
- Overflow
- Pits
- Rural
- Sand
- Sandy
- Shallow to Gravel
- Subirrigated
- Tame Pasture or Hay (Non-irrigated)
- Thin Breaks
- Urban

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

Rocky View County Aerial Imagery 2024 and ©2025 Google Maps Satellite Imagery - Map Data: © Maxar Technologies

Rocky View County

Environmental Screening Report and Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Vegetation Types from Grassland Vegetation Inventory (GVI)

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 05 Mar 2025
Project #: 25003

Figure No.
 # 2

Table 1 – GVI categories present within the project area and 100 m buffer.

GVI Category	Description[1]	Area/Percentage Occurring in Project Area and 100 m buffer
Badlands/Bedrock – BdL	Occurs on moderate to steep coulee or valley sides; also on eroded bedrock plains. This site type often occurs in association with Thin Breaks; Limy and Overflow. Nearly barren or barren lands, with significant exposures of soft rock, hard rock, or surficial geologic material. Includes steep valley walls.	1.76 ha (0.03%)
Clayey – Cy	Often associated with glaciolacustrine and lacustrine landforms. Includes clayey-textured soils like silty clay. Generally >40% clay.	1042.41 ha (20.67%)
Developed – Dev	The Developed site type represents man-made developments that are very difficult to return to crop, pasture, hay, or native/natural conditions. Developed site types do not include Urban or Rural developments. This site type includes both active and inactive operations.	77.09 ha (1.53%)
Lentic (Alkali) – LenA	Describes wetlands that hold surface water for variable time period ranging from a few weeks to several months. Vegetation cover is variable-to-none and there is a distinct salt (saline) crust.	0.01 ha (0.00%)
Lentic (Open Water) – LenW	Permanent open water areas typically larger than 1 ha. Bordering zones may include peripheral “deep marsh”, “shallow marsh”, “wet meadow”, “low prairie”, and “fen”. Lentic wetlands that are larger than 1 ha, but have open water zones smaller than 1 ha will be mapped as Lentic (semi-permanent to permanent). Typically, can be lakes, reservoirs, dugouts, or beaver ponds.	48.16 ha (0.95%)
Lentic (Seasonal) – LenS	Wetlands with surface water persisting more than 3 weeks. Water is normally gone by early July. Typically have lush vegetation due to a higher water table. Deepest parts are “shallow marsh” with peripheral areas potentially being “wet meadow” or “low prairie”. Typically have no salt crust.	2.53 ha (0.05%)
Lentic (Semi-Permanent to Permanent) – LenSP	Marshes and lakes where water persists throughout the year in most years, except during extreme drought. Dominated by “deep marsh” and “shallow marsh” zones with emergent vegetation (cattails & bulrushes). “Wet meadow” & “low prairie” zones are usually present. Isolated pockets of “fen” zones can occur. Sites are often adjacent to Lentic (Open Water).	59.41 ha (1.18%)
Limy – Li	Generally occur on water shedding slopes developed on glacial till (i.e. tops of hummocky knolls), and eroded side slopes, upper and crest positions of moderate to steep coulee or valley sides, but not including areas with bedrock exposures (i.e. Badlands/Bedrock and Thin Breaks sites). Occasionally found in relatively level glaciolacustrine deposits where a high water table prevents free lime from being leached down through the soil profile.	4.14 ha (0.08%)

GVI Category	Description[1]	Area/Percentage Occurring in Project Area and 100 m buffer
Loamy – Lo	Often associated with morainal landforms (undulated to hummocky terrain). Includes loam, silt loam, silt, clay loam, sandy clay loam, & silty clay loam soils. Relies on soils surveys for proper identification.	2288.20 ha (45.36%)
Lotic Coniferous – LtcC	Sites where coniferous trees are present and successfully reproducing and there are 25 or more trees per hectare or 10 or more trees per acre. Conifers are sometimes found on steep north-facing slopes outside the lotic zone. Confers growing on adjacent upland site types outside of the lotic zone would not be included as part of Lotic Coniferous.	18.95 ha (0.38%)
Lotic Deciduous – LtcD	Sites where deciduous trees other than Manitoba Maple or Aspen Poplar (i.e. Plains Cottonwood or Balsam Poplar) are present, are successfully reproducing, and have a combined canopy cover greater than 25%. Where Manitoba Maple and Aspen Poplar are present and successfully reproducing there should be more than 25 trees per ha or 10 or more trees per acre. Deciduous trees growing on adjacent upland site types would not be included as part of Lotic Deciduous.	25.06 ha (0.5%)
Lotic Herbaceous – LtcH	Any Lotic site that does not fit into Lotic River, Lotic Coniferous, Lotic Deciduous, and Lotic Shrub is classified as Lotic Herbaceous. This typically represents an area of graminoid and forb cover that can range from 0% to 100%.	16.63 ha (0.33%)
Lotic River – LtcR	Only used for the open water of rivers that are generally wider than 20 metres. This conforms to the double-line base features hydrography representing water-edge to water-edge. Islands within the river channel are not included. A Lotic River site type can also be used to represent a major canal greater than 20 metres wide and greater than 500 metres in length, which is an exception to the Native/Natural condition. Shoreline covers of trees, shrubs, herbaceous and/or non-vegetated can be included to Lotic River cover.	27.74 ha (0.55%)
Lotic Shrub - LtcS	A combined shrub canopy cover of at least 10% is required for the Lotic Shrub site type to apply. Shrubs growing on adjacent upland site types will not be included as part of Lotic Shrub.	4.08 ha (0.08%)
Overflow – Ov	Often occurs in valley bottoms in association with lotic site types and are typically below steeper valley slopes. Overflow sites are generally confined to fan-and-apron landscapes, but they can also occur in terraced settings near streams. Lotic sites commonly have more lush vegetation growth due to a high-water table and regular flooding in the riparian zone, while Overflow sites are typically higher and drier.	131.90 ha (2.61%)
Pits – Pit	Represent locations where vegetative cover and overburden are removed to create a significant non-natural landscape expression in order to extract surficial deposits (including both active and inactive	3.10 ha (0.06%)

GVI Category	Description[1]	Area/Percentage Occurring in Project Area and 100 m buffer
	operations). Unused pits or quarries that have been flooded are classified as a Lentic Open Water site type.	
Rural – Ru	Ares with people living in sparsely populated lands laying outside urban areas or areas being used by a relatively small number of people on a temporary basis where the native vegetation surface cover has been removed or severely altered by anthropogenic activity.	240.33 ha (4.76%)
Sand – Sa	Typically associated with glaciofluvial or eolian landforms and includes loamy sand and sand soils. Reliance on soil survey information is important when identifying this site type.	54.24 ha (1.08%)
Sandy – Sy	Typically ranges from morainal to glaciofluvial areas. Includes sandy-loam-textured soils. Reliance on soil survey information is important when identifying this site type.	33.33 ha (0.66%)
Shallow to Gravel – SwG	Often occurs on terraces, valley bottoms and as caps on remnant bedrock uplands. Terraces with gravels close to the surface or at the surface often show evidence of exposed gravels and sparse vegetation growth.	184.86 ha (3.66%)
Subirrigated – Sb	Has water close to the surface, but is not a wetland or a creek. Water table is close to the surface during growing season, but rarely above. Often has patches or bands of lush vegetation. Does not have depressional edges.	251.81 ha (4.99%)
Tame Pasture or Hay (Non-irrigated) – PN	Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or hay crops. Relies directly on rainfall for crop growth.	40.42 ha (0.8%)
Thin Breaks – TB	Often associated with Badlands/Bedrock, Limy and Overflow and can be considered a transition between Limy and Badlands/Bedrock. Typically occur on moderate to steep valley slopes including slumps, and as plains with thin surficial sediments overlying bedrock. Typically partially vegetated, with thin, eroded and immature soils on gentle to steep landscapes.	446.21 ha (8.85%)
Urban – Ur	Areas where much of the land is covered by structures and the population density is high. Includes cities, towns, summer villages, town sites, hamlets, cottage developments, strip developments, cemeteries, and shopping centers.	41.71 ha (0.83%)

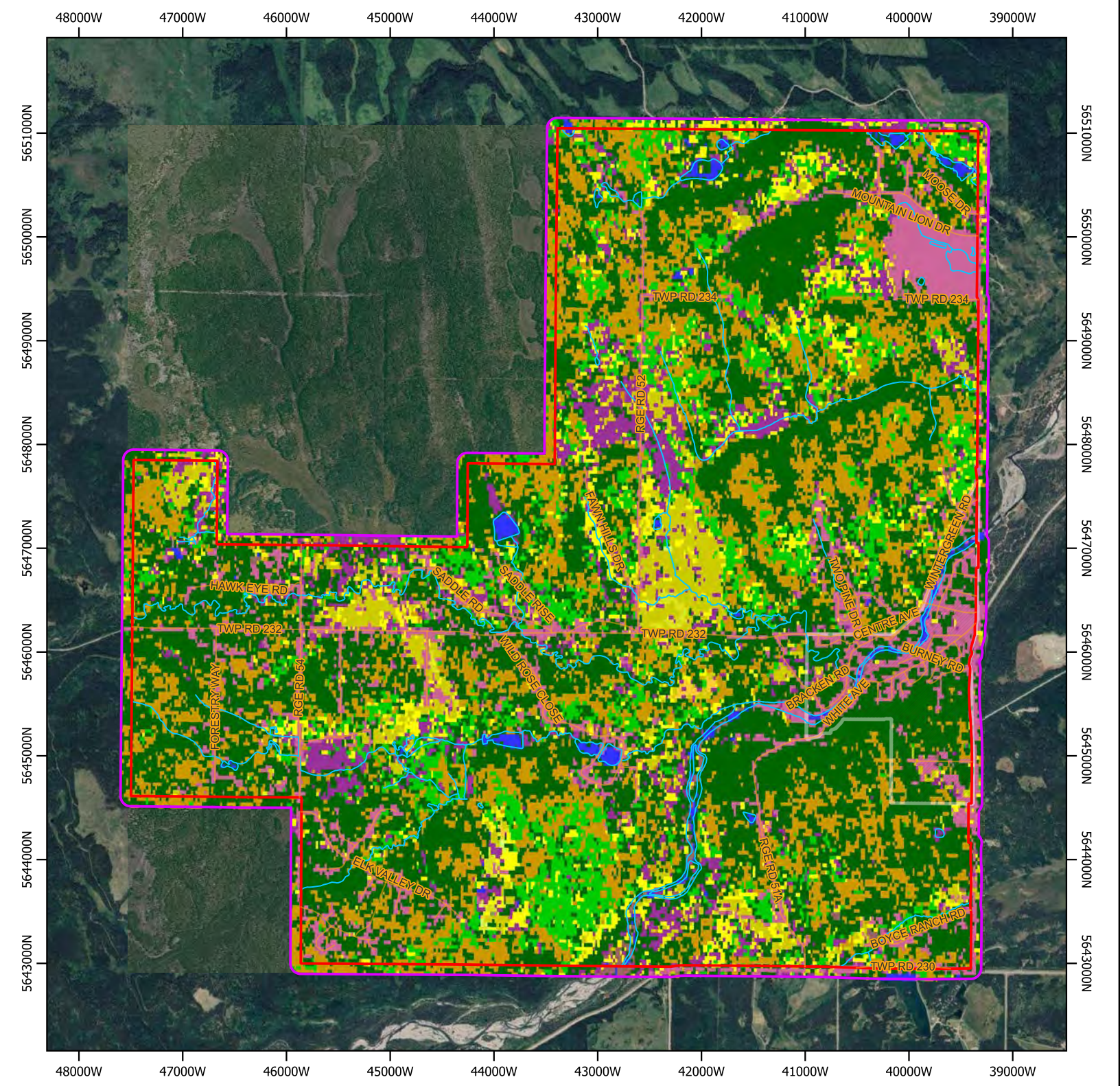
[1] Descriptions are from Government of Alberta (2011)

Additionally, 14 land classes were identified within the project area and 100 m buffer using the 2023 Annual Crop Inventory (Table 2; Figure 3). The three predominant land classes (coniferous, mixedwood, and urban/developed) accounted for a combined total of 72.35% of the project area and 100 m buffer. Natural areas such as wetted areas, shrublands, and grasslands consisted of 13.24%, while agricultural uses consisted of less than 5% of the total area (Table 2).

Table 2 – 2022 Annual Crop Inventory classes present within the project area and 100 m buffer.

Annual Crop Inventory Class	Description[1]	Area/Percentage Occurring in Project Area and 100 m Buffer
Barley	N/A	228.6 ha (4.47%)
Broadleaf	Predominantly broadleaf/deciduous forests or treed areas.	479.88 ha (9.38%)
Canola/Rapeseed	N/A	1.62 ha (0.03%)
Coniferous	Predominantly coniferous forests or treed areas	2176.11 ha (42.53%)
Exposed Land/Barren	Land that is predominately non-vegetated and non-developed. Includes: glacier, rock, sediments, burned areas, rubble, mines, other naturally occurring non-vegetated surfaces. Excludes fallow agriculture	22.23 ha (0.43%)
Grassland	Predominantly native grasses and other herbaceous vegetation, may include some shrubland cover.	11.43 ha (0.22%)
Mixedwood	Forest that is a combination of both the coniferous and broadleaf classes.	1036.26 ha (20.25%)
Other Grains	N/A	0.63 ha (0.01%)
Pasture/Forages	Periodically cultivated. Includes tame grasses and other perennial crops such as alfalfa and clover grown alone or as mixtures for hay, pasture or seed.	4.5 ha (0.09%)
Shrubland	Predominantly woody vegetation of relatively low height (generally +/-2 meters). May include grass or wetlands with woody vegetation, regenerating forest.	306.06 ha (5.86%)
Spring Wheat	N/A	0.09 ha (0.00%)
Urban/Developed	Land that is predominantly built-up or developed and vegetation associated with these land covers. This includes road surfaces, railway surfaces, buildings and paved surfaces, urban areas, industrial sites, mine structures, golf courses, etc.	489.87 ha (9.57%)
Water	Water bodies (lakes, reservoirs, rivers, streams, salt water, etc.).	44.55 ha (0.87%)
Wetland	Land with a water table near/at/above soil surface for enough time to promote wetland or aquatic processes (semi-permanent or permanent wetland vegetation, including fens, bogs, swamps, sloughs, marshes etc.).	321.39 ha (6.28%)

[1] Descriptions are from Annual Crop Inventory Data Product Specifications (ISO 19131; Agriculture and Agri-Food Canada 2023).



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Annual Crop Inventory (ACI)

- Water
- Exposed land/barren
- Urban/developed
- Shrubland
- Wetland
- Grassland
- Pasture/forages
- Barley
- Other grains
- Spring wheat
- Canola/rapeseed
- Coniferous
- Broadleaf
- Mixedwood

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

Rocky View County Aerial Imagery 2024 and ©2025 Google Maps Satellite Imagery - Map Data: © Maxar Technologies

Rocky View County

Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Annual Crop Inventory (ACI)

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 12 Feb 2025
Project #: 25003

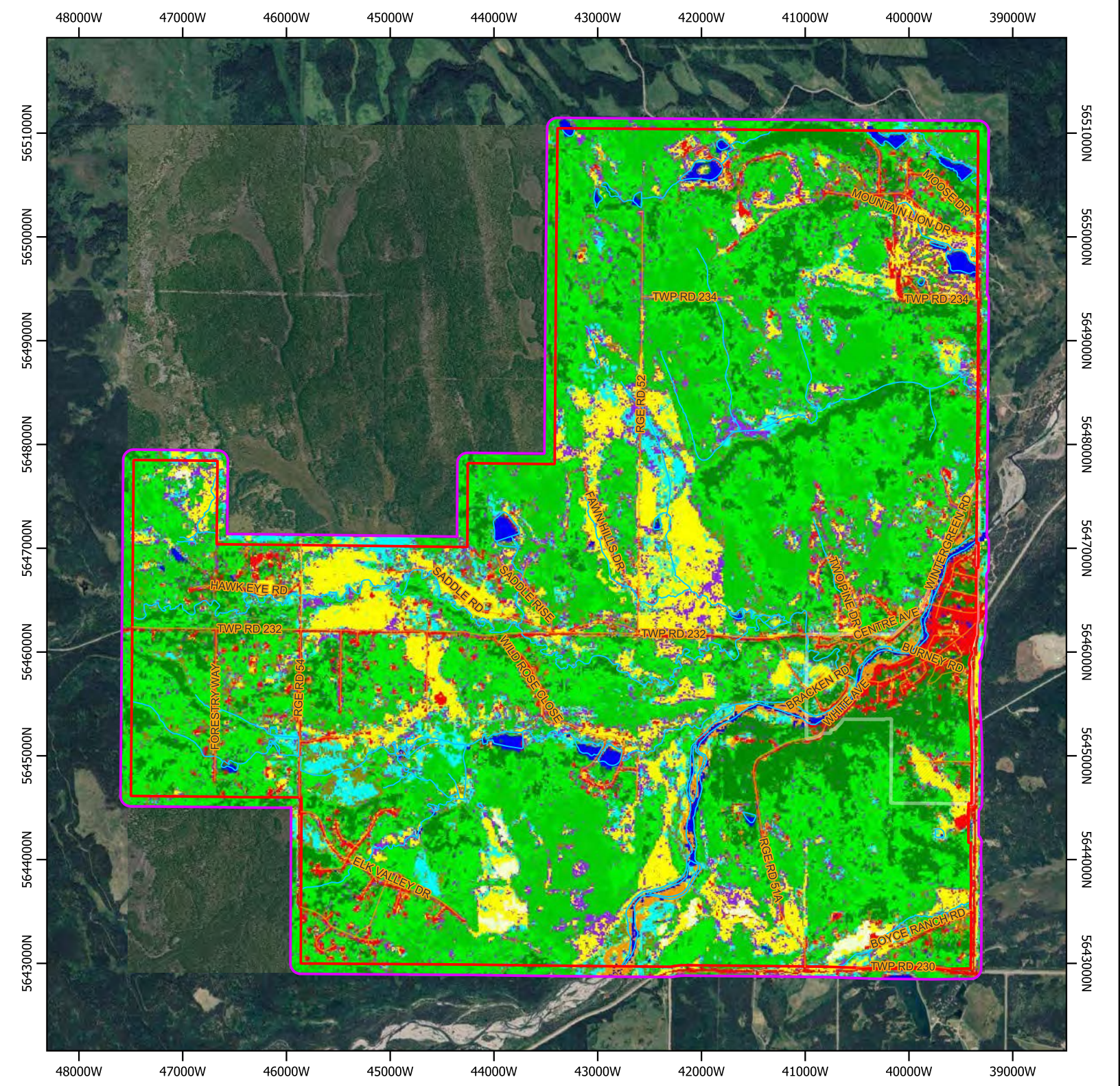
Figure No.
 # 3

Of the 14 land classification types within the LULC dataset, the project area and 100 m buffer contained 11 (Table 3, Figure 4). Of these, mixedwood (26.47%) was the largest, followed by broadleaf (20.04%) and coniferous (12.69%; Table 3). The 'disturbed' land classes contained some of the smallest land cover types, for a combined total of 6.89 % (Table 3).

Table 3 – 2020 Land-use/Land-cover classes present within the project area and 100 m buffer.

Land-use/Land-cover Type	Area/Percentage Occurring in Project Area and 100 m Buffer
Water	68.00 ha (1.33%)
Herbs	393.32 ha (7.70%)
Exposed/Barren Land	103.58 ha (2.03%)
Shrubland	386.23 ha (7.56%)
Wetland – Treed	312.64 ha (6.12%)
Grassland	571.75 ha (11.19%)
Coniferous	648.24 ha (12.69%)
Broadleaf	1023.32 ha (20.04%)
Mixedwood	1351.99 ha (26.47%)
Agriculture	26.22 ha (0.51%)
Developed	222.19 ha (4.35%)

*Note that LULC does not provide descriptions of land classification types (Chowdhury 2021).



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Land Use and Land Classification (LULC)

Unclassified	Exposed or Barren Land	Broadleaf
Water	Shrubland	Mixedwood
Bryoids	Wetland	Agriculture
Wetland - Treed	Grassland	Developed
Herbs	Coniferous	Burned Areas

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

Rocky View County

Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Rocky View County Aerial Imagery 2024 and ©2025 Google Maps Satellite Imagery - Map Data: © Maxar Technologies

Land Use and Land Classification (LULC)

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 11 Mar 2025
Project #: 25003

Figure No.
 # 4

2.2.3 Vegetation – Rare Plants

2.2.3.1 Methodology

A search was completed for plant species considered endangered or threatened according to the Alberta Conservation and Information Management Systems (ACIMS 2022) database and/or the SARA and COSEWIC (Government of Canada 2023a,b).

Native plant species are considered wildlife under the National Wildlife Policy for Canada and must be protected. In Alberta, protection of rare and endangered vascular plant species is an important part of environmental planning due to anthropogenic activities becoming more common. Depending on the location of future projects, vegetation assessments and rare plant surveys may be required. If needed, these surveys must be completed during appropriate survey times according to the Government of Alberta standards. The rare plant surveys will be conducted according to the procedures outlined by the Alberta Native Plant Council's "Guidelines for Rare Plant Surveys".

Rare plants are those listed on the provincial (Alberta Conservation Information Management System; ACIMS) or national (Committee on the Status of Endangered Wildlife in Canada; COSEWIC) lists. Within Alberta, a rare plant is defined as a plant with few recorded collection locations (five or fewer) or with one of the following distribution patterns: (1) widespread, but rare throughout its range, (2) widespread, but only small populations in Alberta due to being at the periphery of the range, (3) disjunct species that is widely scattered, but found as localized populations, and (4) endemic species that are rare because they are geographically restricted, but may occur in large numbers in those patches (Packer and Bradley 1984).

In Alberta rare plants are rated within the ACIMS database and follow the NatureServe ranking methodology (ACIMS 2022):

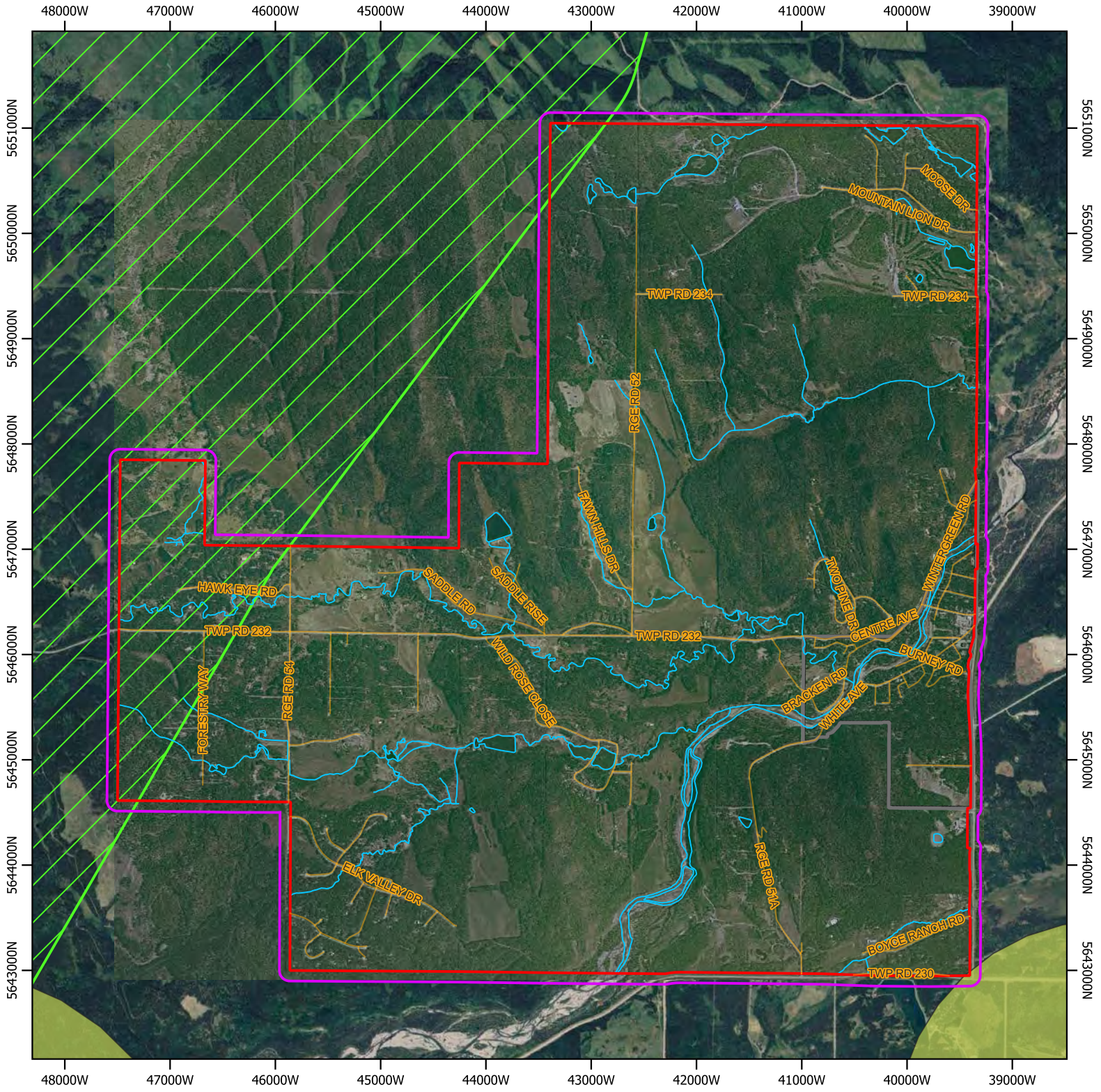
- S1: Known from five or fewer occurrences in the province or especially vulnerable to extirpation due to other factors.
- S2: Known from 20 or fewer occurrences or vulnerable to extirpation because of other factors.
- S3: Known from 100 or fewer occurrences or vulnerable to extirpation because of other factors.
- S4: Apparently secure, taxon is uncommon, but rare, and there is potentially some cause for long-term concern due to declines or other factors.
- S5: Secure, the taxon is common, widespread, and abundant.
- SU: Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
- S#: A numeric range rank (e.g., S2S4) is used to indicate any range of uncertainty about the status of the species.

S1, S2, and some S3 species are considered rare enough to be tracked by the Natural Heritage Information Centre.

Rare vascular plants within the Montane Natural Subregion are found across all moisture conditions, but are most common in very dry and very wet sites. Moisture conditions, combined with soil type, sunlight, and exposure create specific habitats to find rare and endangered species, which include: (1) native grasslands, (2) wetlands, (3) groundwater seepage areas (springs, seeps), (4) steep eroding slopes, (5) disturbed ground, (6) stream banks, and (7) sandstone outcrops. There are multiple wetlands, groundwater seepage areas, and stream banks within the proposed development areas.

2.2.3.2 Results

A literature review was completed using the Alberta Conservation Information Management Systems (ACIMS) Rare Plant Tracking List (ACIMS 2022) and Community Tracking list (ACIMS 2022). The purpose of this review is to identify potential rare plants and plant communities that can occur within the project area. No rare plants listed as sensitive have been documented within a significant distance (20 kilometers [km]) of the project area. Sixty-five species of non-sensitive tracked species were found within 20 km of the project footprint, with one (Mueller's pouchwort; *Calypogeia muelleriana*) occurring within the project area and 100 m buffer (Table 4, Figure 5). No sensitive species were identified within the project boundary or 20 km buffer.



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer
- Endangered and Threatened Plants Ranges
- ACIMS NonSensitive Plants

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

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Rocky View County

Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Rare Plants

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 12 Mar 2025
Project #: 25003

Figure No.
 # 5

Table 4 4– Non-Sensitive Species found within 20 km of the project area.

Scientific Name	Common Name	S Ranking
Acarospora veronensis	cobblestone lichen	SU
Acolium inquinans	cupped soot lichen	SU
Amblyodon dealbatus	short-tooth hump moss	S3
Anastrophyllum michauxii	Michaux's Anastrophyllum	SU
Aulacomnium androgynum	little groove moss	S2S3
Brachythecium frigidum	Northern Ragged Moss	S1S2
Braya humilis	low braya	S3
Bryonora castanea	lichen	SU
Buellia badia	button lichen	S1
Buellia dispersa	button lichen	SU
Calicium notarisii	soot lichen	SU
Calicium trabinellum	yellow collar stubble lichen	S2S3
*Calypogeia muelleriana**	Mueller's Pouchwort*	S2S4*
Chaenotheca chrysocephala	stubble lichen	S1S3
Chaenotheca stemonea	stubble lichen	SU
Chaenotheca trichialis	stubble lichen	SU
Cirsium scariosum var. scariosum	Meadow Thistle	S2
Cladonia portentosa ssp. pacifica	reindeer lichen	S1S2
Coscinodon cribrosus	sieve-tooth moss	S1
Dichelyma falcatum	Lance-leaved Claw Moss	S2S3
Dicranella subulata	awl-leaved forklet moss	S2S3
Dicranum tauricum	Fragile Broom Moss	S1S3
Didymodon fallax	False Beard Moss	S2S3
Diploschistes actinostomus	crater lichen	SU
Draba porsildii	Porsild's draba	S3
Drepanocladus longifolius	Long-leaved Hook Moss	SU
Ephebe lanata	Waterside Rockshag Lichen	S1S2
Erigeron radicatus	dwarf fleabane	S3
Gentiana fremontii	marsh gentian	S3
Grimmia donniana	Donn's grimmia moss	S1S2
Gyalolechia flavovirescens	sulphur-firedot lichen	S2S4
Hennediella heimii	Heim's Chain-teeth Moss	S2S3
Hygroamblystegium varium var. varium		S1S2
Imbribryum muehlenbeckii	Muehlenbeck's Bryum Moss	S2S3
Jaffueliobryum raui	Rau's Long-awn Moss	S2
Jaffueliobryum wrightii	Wright's Long-awn Moss	S1S2
Jungermannia atrovirens	Dark-green Flapwort	SU

Scientific Name	Common Name	S Ranking
Limprichtia cossonii	Cosson's Hook Moss	SU
Mycocalicium subtile	lichen	S2S4
Neottia convallarioides	broad-lipped twayblade	S2
Orthotrichum pylaisii	Pylaie's Bristle Moss	S2
Packera contermina	high alpine butterweed	S2
Phaeophyscia sciastra	dark shadow lichen	S3
Philonotis marchica	bog apple moss	S2S3
Physaria arctica	arctic bladderpod	S3
Physcomitrium pyriforme	urn moss	S2
Pinus flexilis	limber pine	S2
Polysporina arenacea	cobblestone lichen	S2
Potentilla macounii	Macoun's cinquefoil	S1
Potentilla pulcherrima	soft cinquefoil	S1
Psora nipponica	butterfly scale lichen	S2S3
Psora tuckermanii	brown-eyed scale lichen	S2S3
Ptychostomum turbinatum	Top-shaped Bryum	S2S3
Ramalina intermedia	rock ribbon lichen	S3
Ranunculus glaberrimus var. ellipticus	early buttercup	S3
Rhizocarpon concentricum	Concentric Map Lichen	SU
Ribes inerme var. inerme	white stem gooseberry	S2?
Riccardia chamedryfolia	Jagged Germanderwort	SU
Solitaria chrysophthalma	firedot lichen	SU
Thrombium epigaeum	epigeal clot lichen	SU
Verrucaria hydrela	speck lichen	SU
Vulpicida canadensis	brown-eyed sunshine lichen	S2S3
Xanthomendoza montana	Small-footed Sunburst Lichen	S3
Xanthoparmelia subdecipiens	Fatty-acid rock-shield lichen	S2?
Xylographa parallela	black woodscript lichen	SU

* Species found within the Project Area and 100 m buffer

Early and late season rare plant surveys will be required for Biophysical Impact Assessments (BIA) containing any of the seven habitat types of areas listed above, particularly wetlands. Early season rare plant surveys should occur in June and late season rare plant surveys should occur in August.

2.2.4 Vegetation – Weeds

2.2.4.1 Methodology

There are no databases of weeds for the project area.

2.2.4.2 Results

As there is no database for weeds, a list of restricted, noxious, and nuisance weeds as per *Alberta Weed Act* (Province of Alberta 2011) can be completed during a BIA vegetation field survey.

2.2.5 Wildlife

Wildlife habitat present in the Montane Natural Subregion contains a mix of grassland and deciduous-coniferous or predominantly coniferous forests on lower slopes or valley bottoms of the Front Ranges of the Rocky Mountains. It has many unique habitat makeups with wildlife such as Blue (Dusky) Grouse (*Dendragapus obscurus*), Mountain Chickadee (*Poecile gambeli*), Clark's Nutcracker (*Nucifraga columbiana*), Red Crossbill (*Loxia curvirostra*), Pine Siskin (*Spinus pinus*), Columbian ground squirrel (*Spermophilus columbianus*), and red squirrel (*Tamiasciurus hudsonicus*) being commonly found in coniferous-dominated habitats (Natural Subregions Committee 2006). Mixedwood forests provide habitat for Alder Flycatcher (*Empidonax alnorum*), Swainson's Thrush (*Catharus ustulatus*), Warbling Vireo (*Vireo gilvus*), Calliope and Rufous Hummingbirds (*Stellula* (now *Selasphorus*) *calliope*; *Selasphorus rufus*), and Western Tanager (*Piranga ludoviciana*) (Natural Subregions Committee 2006). Habitats such as wetlands, beaver ponds, and riparian zones surrounding rivers support wildlife species such as Barrow's Goldeneye (*Brucephala islandica*), Common Yellowthroat (*Geothlypis trichas*), Lincoln's Sparrow (*Melospiza lincolnii*), beaver (*Castor canadensis*), western toad (*Anaxyrus boreas*), and long-toed salamander (*Ambystoma macrodactylum*) (Natural Subregions Committee 2006).

2.2.5.1 Basic Wildlife Desktop Methodology

A desktop review of provincial databases was conducted to identify wildlife species present in the area listed as "endangered", "threatened", or of "special concern" by either federal or provincial governments (Government of Canada 2022a,b; Government of Alberta 2022). Databases reviewed include Alberta Environment and Park's (AEP) General Status of Alberta Wild Species (Government of Alberta 2022), AEP Fisheries and Wildlife Management Information System (FWMIS) database (AEP 2023a,c), and the Database of Wildlife Species Assessed by SARA Wildlife Species Search (Government of Canada 2022b). FWIMS searches were completed for the project area and 100 m buffer, in addition to a 5 km radius surrounding the buffered project area due to the highly mobile nature of wildlife. Complete FWMIS data requested by RC BioSolutions Ltd. in January 2025 was also used to capture the common species in the area.

2.2.5.2 Basic Wildlife Desktop Results

Within 5 km of the project area, 27 recorded species were provincially listed: 18 bird species, six mammal species, and three amphibian species (Table 5; Figure 6). Northern leopard frog (*Lithobates pipiens*), grizzly bear (*Ursus arctos*), Harlequin Duck (*Histrionicus histrionicus*), and Barred Owl (*Strix varia*) are species listed under the *Alberta Wildlife Act* (either Threatened or Special Concern) which are found within 5 km of the project area, with northern myotis (northern long-eared bat) (*Myotis septentrionalis*) being noted as data deficient (Government of Alberta 2014). Additionally, multiple species are listed under COSEWIC and SARA:

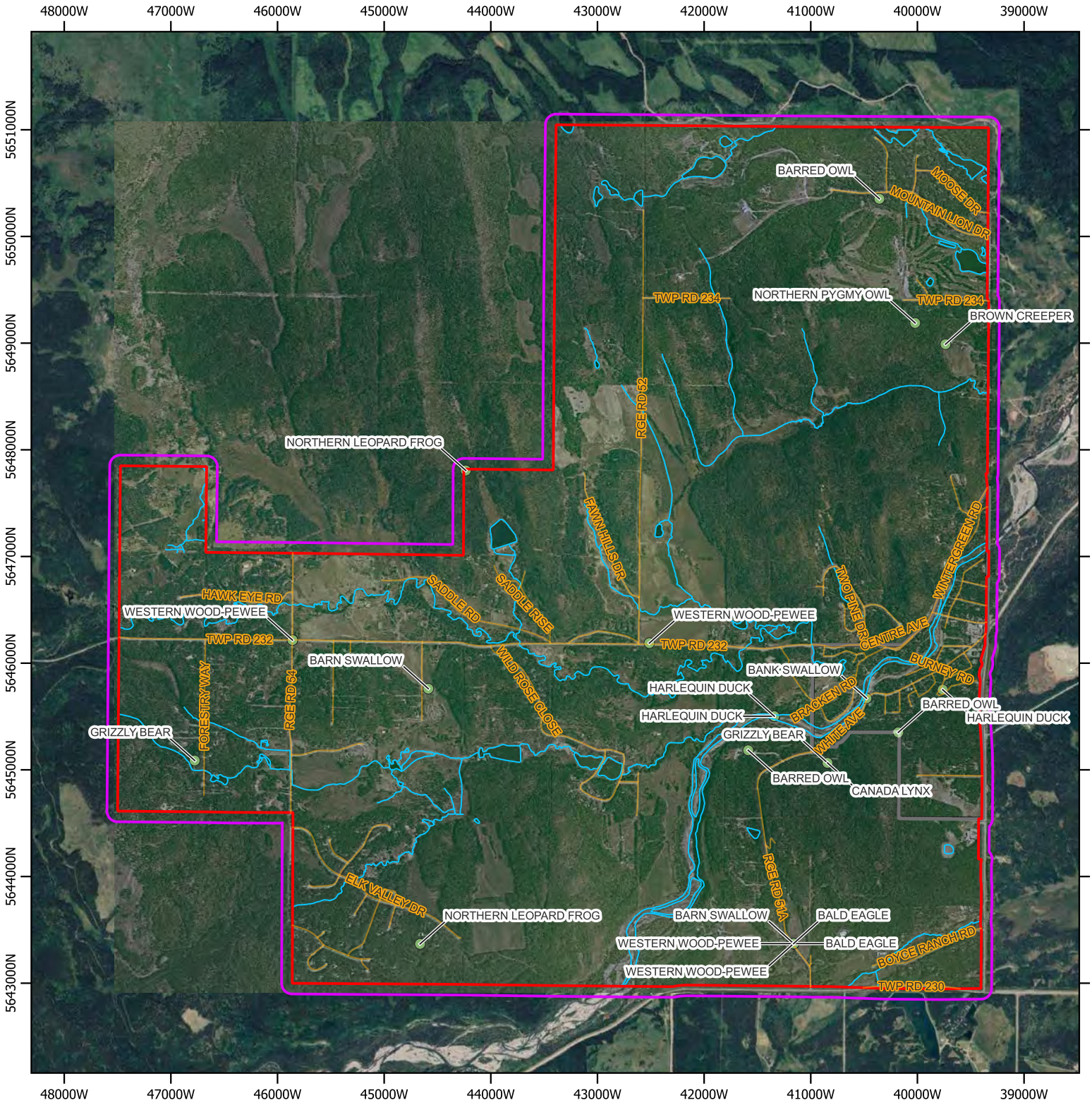
- Bank Swallow (*Riparia riparia*) – Provincially 'Sensitive', and COSEWIC/SARA 'Threatened'.
- Barn Swallow (*Hirundo rustica*) – Provincially 'May be at Risk', COSEWIC 'Special Concern', and SARA 'Threatened'.
- Boreal (Western) toad (*Anaxyrus boreas*) – Provincially 'Sensitive', and COSEWIC/SARA 'Special Concern'.
- Common Nighthawk (*Chordeiles minor*) – Provincially 'Sensitive', and COSEWIC/SARA 'Special Concern'.
- Evening Grosbeak (*Coccothraustes verspertinus*) – Provincially 'Secure', and COSEWIC/SARA 'Special Concern'.
- Grizzly bear (*Ursus arctos*) – Provincially 'At Risk', and COSEWIC/SARA 'Special Concern'.
- Lesser Yellowlegs (*Tringa flavipes*) – Provincially 'Secure', COSEWIC 'Threatened', and SARA 'Not Listed' but is under consideration to be added to Schedule 1.
- Little brown myotis (*Myotis lucifugus*) – Provincially 'May be at Risk', COSEWIC/SARA 'Endangered.
- Northern leopard frog (*Lithobates pipiens*) – Provincially 'At Risk', and COSEWIC/SARA 'Special Concern'.
- Olive-sided Flycatcher (*Contopus cooperi*) – Provincially 'May be at Risk', COSEWIC/SARA 'Special Concern'.
- Silver-haired bat (*Lasionycteris noctivagans*) – Provincially 'Sensitive', COSEWIC 'Endangered', and SARA 'Not Listed' but is under consideration to be added to Schedule 1.

It is important to note that several listed species were present in the online FWMIS search, but not the requested FWMIS data with exact data locations. It is likely that the database was cleaned of erroneous data points, but the online database was overlooked. These species include:

- American badger (*Taxidea taxus taxus*) – Provincially 'May be at Risk', *Alberta Wildlife Act* 'Data Deficient', COSEWIC/SARA 'Special Concern'.
- Fisher (*Martes pennanti*) – Provincially 'Sensitive'.
- Wolverine (*Gulo gulo*) – Provincially 'May be at Risk', *Alberta Wildlife* Act 'Data Deficient', COSEWIC/SARA 'Special Concern'.

Using the FWIMT, it was determined that the following Wildlife Sensitivity Layers are located within or near the ASP Amendment area boundary (Figure 7):

- Grizzly Bear Support Zone (covers entire ASP area) and Grizzly Bear Core Zone (directly adjacent to the west edge of the ASP boundary).
- Mountain Goat and Bighorn Sheep Disease Buffer (covers entire ASP area) and Mountain Goat and Bighorn Sheep Areas (7 km west of the ASP boundary).
- Sensitive Raptor Range – Bald Eagle, Golden Eagle, Prairie Falcon (600 m east of the ASP boundary).
- Sharp-tailed Grouse Survey Area (600 m east of the ASP boundary).
- Key Wildlife and Biodiversity Zone (throughout ASP boundary).



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer
- Sensitive or Listed Wildlife Species

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

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Rocky View County

Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

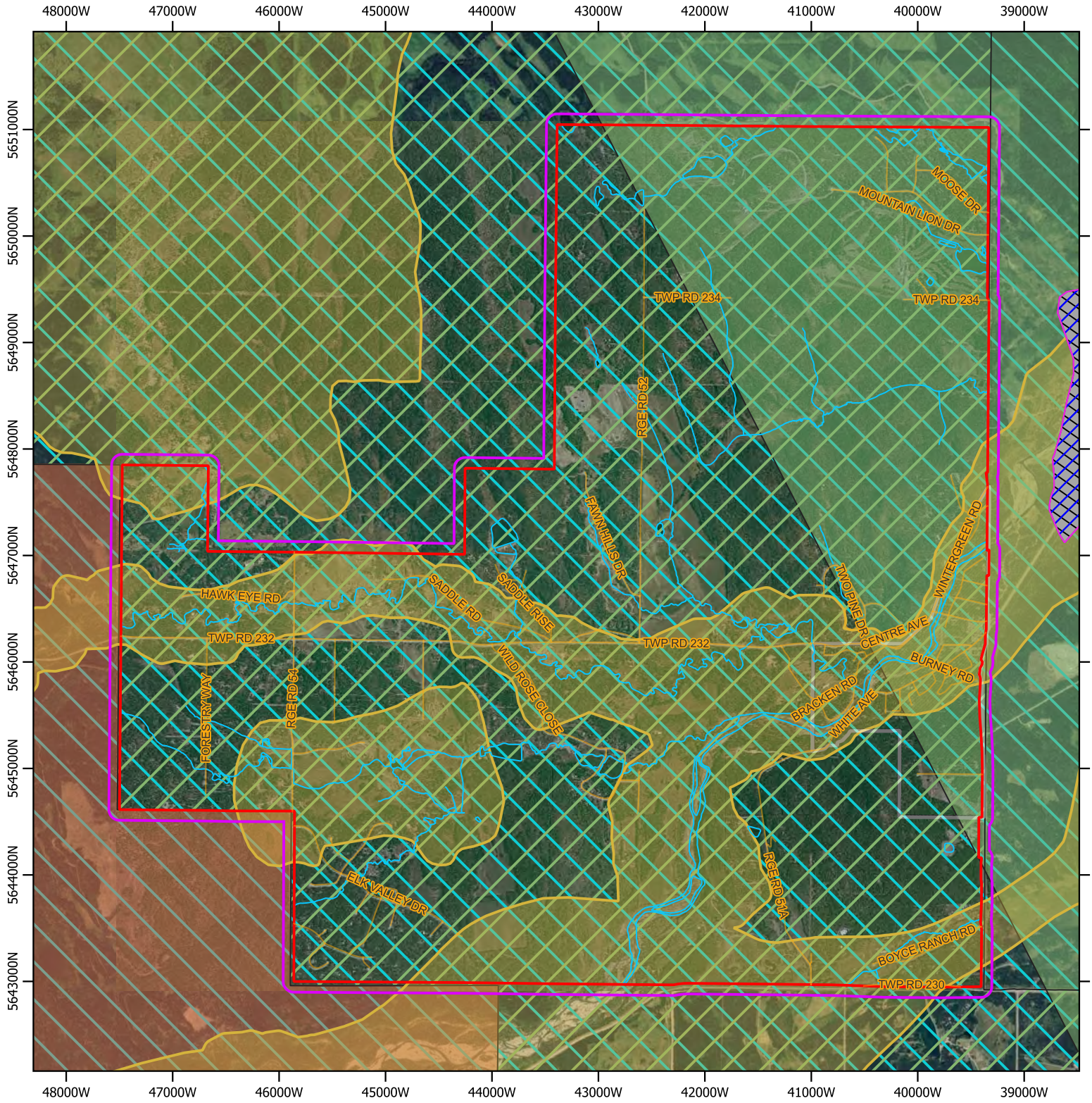
Sensitive or Listed Wildlife Species

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 05 Mar 2025
Project #: 25003

Figure No.
 # 6



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer
- Key Wildlife and Biodiversity Zones
- Mountain Goat and Sheep Areas Disease Buffer
- Grizzly Bear Support Zone
- Grizzly Bear Core Access Management Area
- Leopard Frog
- Sharp-tailed Grouse

Sensitive Raptor Range

- Bald Eagle
- Golden Eagle
- Prairie Falcon

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

Rocky View County

Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

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Sensitive Wildlife

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 12 Feb 2025
Project #: 25003

Figure No.
 # 7

Table 55 – Wildlife species observed and reported in the FWMIS database for the project area and within a 5 km buffer.

Common Name	Scientific Name	AB General[1]	COSEWIC status[3]	SARA status[4]
Birds				
Alder Flycatcher*	*Empidonax alnorum*	Secure	N/A	N/A
American Crow*	*Corvus brachyrhynchos*	Secure	N/A	N/A
American Dipper*	*Cinclus mexicanus*	Secure	N/A	N/A
American Goldfinch*	*Spinus tristis*	Secure	N/A	N/A
American Robin*	*Turdus migratorius*	Secure	N/A	N/A
Bald Eagle*	*Haliaeetus leucocephalus*	Sensitive	Not At Risk	N/A
Bank Swallow*	*Riparia riparia*	Sensitive	Threatened	Threatened
Barn Swallow*	*Hirundo rustica*	May Be At Risk	Special Concern	Threatened
Barred Owl*	*Strix varia*	Sensitive	N/A	N/A
Barrow's Goldeneye	*Brucephala islandica*	Secure	N/A	N/A
Belted Kingfisher	*Megaceryle alcyon*	Secure	N/A	N/A
Black-billed Magpie*	*Pica hudsonia*	Secure	N/A	N/A
Black-capped Chickadee*	*Poecile atricapillus*	Secure	N/A	N/A
Blue Jay*	*Cyanocitta cristata*	Secure	N/A	N/A
Bohemian Waxwing	*Bombycilla garrulus*	Secure	N/A	N/A
Boreal Chickadee*	*Poecile hudsonicus*	Secure	N/A	N/A
Brewer's Blackbird*	*Euphagus cyanocephalus*	Secure	N/A	N/A
Brown Creeper*	*Certhia americana*	Sensitive	N/A	N/A
Brown-headed Cowbird*	*Molothrus ater*	Secure	N/A	N/A
Bufflehead*	*Bucephala albeola*	Secure	N/A	N/A
Canada Goose*	*Branta canadensis*	Secure	N/A	N/A
Cassin's Vireo	*Vireo cassinii*	Undetermined	N/A	N/A
Cedar Waxwing*	*Bombycilla cedrorum*	Secure	N/A	N/A
Chipping Sparrow*	*Spizella passerina*	Secure	N/A	N/A
Clay-colored Sparrow*	*Spizella pallida*	Secure	N/A	N/A
Cliff Swallow*	*Petrochelidon pyrrhonota*	Secure	N/A	N/A
Common Grackle	*Quiscalus quiscula*	Secure	N/A	N/A
Common Loon*	*Gavia immer*	Secure	N/A	N/A
Common Merganser*	*Mergus merganser*	Secure	N/A	N/A
Common Nighthawk	*Chordeiles minor*	Sensitive	Special Concern	Special Concern
Common Raven*	*Corvus corax*	Secure	N/A	N/A
Common Yellowthroat*	*Geothlypis trichas*	Sensitive	N/A	N/A
Cooper's Hawk	*Accipiter* (now *Astur*) *cooperii*	Secure	Not At Risk	N/A
Dark-eyed Junco*	*Junco hyemalis*	Secure	N/A	N/A
Downy Woodpecker*	*Dryobates pubescens*	Secure	N/A	N/A
Eared Grebe	*Podiceps nigricollis*	Sensitive	N/A	N/A
European Starling*	*Sturnus vulgaris*	Exotic/Alien	N/A	N/A

Common Name	Scientific Name	AB General[1]	COSEWIC status[3]	SARA status[4]
Evening Grosbeak*	*Coccothraustes vespertinus*	Secure	Special Concern	Special Concern
Golden-crowned Kinglet*	*Regulus satrapa*	Secure	N/A	N/A
Gray (Canada) Jay*	*Perisoreus canadensis*	Secure	N/A	N/A
Great Blue Heron	*Ardea herodias*	Sensitive	N/A	N/A
Great Grey Owl*	*Strix nebulosa*	Sensitive	Not At Risk	N/A
Green-winged Teal	*Anas crecca*	Secure	N/A	N/A
Hairy Woodpecker*	*Dryobates villosus*	Secure	N/A	N/A
Hammond's Flycatcher	*Empidonax hammondii*	Secure	N/A	N/A
Harlequin Duck*	*Histrionicus histrionicus*	Sensitive	N/A	N/A
Hermit Thrush	*Catharus guttatus*	Secure	N/A	N/A
House Finch*	*Carpodacus (*now *Haemorhous) mexicanus*	Secure	N/A	N/A
House Sparrow*	*Passer domesticus*	Exotic/Alien	N/A	N/A
House Wren*	*Troglodytes aedon*	Secure	N/A	N/A
Killdeer*	*Charadrius vociferus*	Secure	N/A	N/A
LeConte's Sparrow	*Ammospiza leconteii*	Secure	N/A	N/A
Least Flycatcher*	*Empidonax minimus*	Secure	N/A	N/A
Lesser Yellowlegs	*Tringa flavipes*	Secure	Threatened	Not Listed
Lincoln's Sparrow*	*Melospiza lincolnii*	Secure	N/A	N/A
MacGillivray's Warbler	*Oporornis* (now *Geothlypis*) *tolmiei*	Secure	N/A	N/A
Magnolia Warbler	*Dendroica* (now *Setophaga*) *magnolia*	Secure	N/A	N/A
Mallard*	*Anas platyrhynchos*	Secure	N/A	N/A
Marsh Wren	*Cistothorus palustris*	Secure	N/A	N/A
Mountain Bluebird*	*Sialia currucoides*	Secure	N/A	N/A
Mountain Chickadee*	*Poecile gambeli*	Secure	N/A	N/A
Mourning Dove	*Zenaida macroura*	Secure	N/A	N/A
Northern Flicker*	*Colaptes auratus*	Secure	N/A	N/A
Northern Harrier	*Circus hudsonius*	Secure	Not At Risk	N/A
Northern Hawk Owl	*Surnia ulula*	Secure	Not At Risk	N/A
Northern Pygmy Owl*	*Glaucidium gnoma*	Sensitive	N/A	N/A
Northern Rough-winged Swallow*	*Stelgidopteryx serripennis*	Secure	N/A	N/A
Northern Saw-whet Owl	*Aegolius acadicus*	Secure	N/A	N/A
Northern Waterthrush*	*Seiurus* (now *Parkesia*) *noveboracensis*	Secure	N/A	N/A
Olive-sided Flycatcher	*Contopus cooperi*	May Be At Risk	Special Concern	Special Concern
Osprey	*Pandion haliaetus*	Secure	N/A	N/A
Ovenbird	*Seiurus aurocapilla*	Secure	N/A	N/A
Pacific Wren ˣ	*Troglodytes troglodytes* (now *pacificus*)	Secure	N/A	N/A
Pine Siskin*	*Spinus pinus*	Secure	N/A	N/A
Prairie Falcon	*Falco mexicanus*	Sensitive	N/A	N/A
Purple Finch*	*Haemorhous purpureus*	Secure	N/A	N/A

Common Name	Scientific Name	AB General[1]	COSEWIC status[3]	SARA status[4]
Red Crossbill	*Loxia curvirostra*	Secure	N/A	N/A
Red-breasted Nuthatch*	*Sitta canadensis*	Secure	N/A	N/A
Red-eyed Vireo	*Vireo olivaceus*	Secure	N/A	N/A
Red-naped Sapsucker	*Sphyrapicus nuchalis*	Secure	N/A	N/A
Red-tailed Hawk*	*Buteo jamaicensis*	Secure	N/A	N/A
Red-winged Blackbird*	*Agelaius phoeniceus*	Secure	N/A	N/A
Ring-necked Duck	*Aythya collaris*	Secure	N/A	N/A
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	Secure	N/A	N/A
Rough-legged Hawk	*Buteo lagopus*	Secure	Not At Risk	N/A
Ruby-crowned Kinglet*	*Regulus* (now *Corthylio*) *calendula*	Secure	N/A	N/A
Ruffed Grouse*	*Bonasa umbellus*	Secure	N/A	N/A
Sandhill Crane	*Grus (now Antigone) canadensis*	Sensitive	N/A	N/A
Savannah Sparrow*	*Passerculus sandwichensis*	Secure	N/A	N/A
Say's Phoebe*	*Sayornis saya*	Secure	N/A	N/A
Solitary Sandpiper	*Tringa solitaria*	Secure	N/A	N/A
Sora	*Porzana carolina*	Sensitive	N/A	N/A
Spotted Sandpiper*	*Actitis macularius*	Secure	N/A	N/A
Swainson's Thrush*	*Catharus ustulatus*	Secure	N/A	N/A
Tennessee Warbler*	*Leiothlypis peregrina*	Secure	N/A	N/A
Townsend's Solitaire*	*Myadestes townsendi*	Secure	N/A	N/A
Townsend's Warbler	*Dendroica* (now *Setophaga*) *townsendi*	Secure	N/A	N/A
Tree Swallow*	*Tachycineta bicolor*	Secure	N/A	N/A
Varied Thrush*	*Ixoreus naevius*	Secure	N/A	N/A
Vesper Sparrow*	*Pooecetes gramineus*	Secure	N/A	N/A
Violet-green Swallow	*Tachycineta thalassina*	Secure	N/A	N/A
Warbling Vireo*	*Vireo gilvus*	Secure	N/A	N/A
Western Tanager	*Piranga ludoviciana*	Sensitive	N/A	N/A
Western Wood-pewee*	*Contopus sordidulus*	May Be At Risk	N/A	N/A
White-breasted Nuthatch	*Sitta carolinensis*	Secure	N/A	N/A
White-crowned Sparrow	*Zonotrichia leucophrys*	Secure	N/A	N/A
White-throated Sparrow*	*Zonotrichia albicollis*	Secure	N/A	N/A
White-winged Crossbill*	*Loxia leucoptera*	Secure	N/A	N/A
Willow Flycatcher	*Empidonax traillii*	Secure	N/A	N/A
Wilson's Snipe*	*Gallinago delicata*	Secure	N/A	N/A
Wilson's Warbler	*Cardellina pusilla*	Secure	N/A	N/A
Yellow Warbler*	*Setophaga petechia*	Secure	N/A	N/A
Yellow-bellied Sapsucker*	*Sphyrapicus varius*	Secure	N/A	N/A
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	Secure	N/A	N/A
Yellow-rumped Warbler*	*Dendroica* (now *Setophaga*) *coronata*	Secure	N/A	N/A

Common Name	Scientific Name	AB General[1]	COSEWIC status[3]	SARA status[4]
Mammals				
American beaver	*Castor canadensis*	Secure	N/A	N/A
American black bear*	*Ursus americanus*	Secure	Not At Risk	N/A
Big brown bat	*Eptesicus fuscus*	Secure	N/A	N/A
Bobcat	*Lynx rufus*	Sensitive	N/A	N/A
Canada lynx*	*Lynx canadensis*	Sensitive	N/A	N/A
Cougar*	*Puma concolor*	Secure	N/A	N/A
Coyote*	*Canis latrans*	Secure	N/A	N/A
Elk (Wapiti)*	*Cervus elaphus*	Secure	N/A	N/A
Ermine*	*Mustela erminea*	Secure	N/A	N/A
Feral horse	*Equus caballus*	Exotic/Alien	N/A	N/A
Gray wolf*	*Canis lupus*	Secure	Not At Risk	N/A
Grizzly bear*	*Ursus arctos*	At Risk	Special Concern	Special Concern
Least weasel	*Mustela nivalis*	Secure	N/A	N/A
Little brown bat	*Myotis lucifugus*	May Be At Risk	Endangered	Endangered
Marten*	*Martes americana*	Secure	N/A	N/A
Moose*	*Alces alces*	Secure	N/A	N/A
Mule deer*	*Odocoileus hemionus*	Secure	N/A	N/A
Northern long-eared bat	*Myotis septentrionalis*	May Be At Risk	N/A	N/A
Northern pocket gopher	*Thomomys talpoide*	Secure	N/A	N/A
Red fox*	*Vulpes vulpes*	Secure	N/A	N/A
Red squirrel*	*Tamiasciurus hudsonicus*	Secure	N/A	N/A
Silver-haired bat	*Lasionycteris noctivagans*	Sensitive	Endangered	Not Listed
Snowshoe hare*	*Lepus americanus*	Secure	N/A	N/A
Striped skunk*	*Mephitis mephitis*	Secure	N/A	N/A
White-tailed deer*	*Odocoileus virginianus*	Secure	N/A	N/A
Amphibians				
Boreal chorus frog*	Pseudacris maculata	Secure	N/A	N/A
Boreal (Western) toad	*Anaxyrus boreas (boreas)*	Sensitive	Special Concern	Special Concern
Columbia spotted frog	*Rana luteiventris*	Sensitive	Not At Risk	N/A
Northern leopard frog*	*Lithobates pipiens*	At Risk	Special Concern	Special Concern
Wood frog*	*Lithobates sylvatica*	Secure	N/A	N/A

(1) General Status of Alberta's Wild Plants and Animals (Government of Alberta 2022)
(2) Status listed by the Committee on the Status of Endangered Wildlife in Canada (Government of Canada 2022a)
(3) Species at Risk Act (Government of Canada 2022b)

* Species found within the project area and 100 m buffer

× The Pacific Wren was previously considered conspecific with the Winter Wren (*Troglodytes hiemalis*) under the name *Troglodytes troglodytes.* They were listed as separate species in 2010 but they are still listed as one in (Government of Alberta (2022).

It is recommended that any future development require a Biophysical Impact Assessment (BIA). The following wildlife surveys would be required:

- Breeding Bird
- Sensitive Raptor
- Amphibian (when wetlands are present)
- Water Bird
- Species at Risk (vary depending on the parcel and the available habitat)
- Incidental Wildlife/Wildlife Habitat

These surveys should be completed between the beginning of March and the end of June, depending on the species and weather conditions (Government of Alberta 2013).

RC Bio (2024) performed wildlife habitat modelling for the Bearspaw ASP (approximately 25 km to the northeast) for five focal species (1) moose (*Alces alces*), (2) deer (*Odocoileus* sp.), (3) American badger, (4) porcupine (*Erethizon dorsatum*), and (5) frogs (various species). These were used as umbrella species for other sensitive wildlife species. Based on the wildlife occurrence records from the FWMIS database for the Bragg Greek ASP boundary area, our chosen focal species will be:

- Moose – Moose prefer forested, shrubland, and wetland habitat types, while avoiding agricultural and urban areas. Relevant associated species may include: cougar, bobcat, Western Wood-peewee, and Olive-sided Flycatcher.
- Deer – Deer are generalists that prefers deciduous and mixedwood forests, and shrublands. They have a positive association with agricultural areas and rural/urban features. Relevant associated species may include: coyote and other disturbance tolerant species.
- Savannah Sparrow (*Passerculus sandwichensis*) – This species prefers native prairie or tame pasture and avoids annual cropland, urban areas, and forests. Relevant associated species may include: Sprague's Pipit, American badger, and other grassland obligate species.
- Amphibians – These species, namely the boreal chorus frog (*Pseudacris maculata*), wood frog (*Lithobates sylvatica*), and northern leopard frog, require wetland or riparian habitat. They have greater difficulty traversing larger, more open areas and fragmented habitat.
- Black Bear (*Ursus americanus*) – This species prefers coniferous, deciduous, or mixedwood forests. They can also be found in herbaceous and shrub communities. Relevant associated species could include: Little brown bat, Hoary bat, Northern Flicker, and other forest obligates.

2.2.5.3 Wildlife Habitat Modelling Methodology

Structural landscape connectivity for wildlife in the Bragg Creek ASP area was modelled using Circuitscape version 4.0.5 (McRae et al. 2013). Circuitscape uses circuit theory to model movement routes of animals across fragmented landscapes and to identify important areas for habitat connectivity (McRae et al. 2016). Circuitscape models the landscape into a large "circuit board" with each individual pixel being assigned a resistance value, which reflects how difficult it is for a wildlife species to move through the 'circuit board' (landscape). A theoretical 'current' is then applied to randomly placed 'nodes' within the landscape and the current moves through the landscape according to how 'conductive' different parts of the landscape are. The resulting current density of each pixel represents the likelihood that that pixel will be used by an animal that is randomly walking across the landscape (Bowman & Cordes 2015). Areas with high current density represent the most connective (or best) corridors that support movement of the wildlife species of interest in the model (and any other species that share the same habitat). Protecting these corridors can help to mitigate the negative effects of habitat loss and fragmentation in anthropogenically modified landscapes and conserve wildlife biodiversity (McRae et al. 2016).

A combination of multiple habitat and disturbance databases was used to make shapefiles and raster files converted to a raster file that was then used as the base map for Circuitscape modelling. These included (1) Habitat Classes – comprising of the Land Use/Land Cover Classification of Alberta (LULC; Chowdhury 2021), and the Derived Ecosite Phase (DEP; Government of Alberta 2020), (2) Anthropogenic Disturbance – comprising of the Human Footprint data (ABMI 2022), Grassland Vegetation Inventory (GVI; Government of Alberta 2011), the LULC (Chowdhury 2021), and the DEP (Government of Alberta 2020), (3) Water/wetlands – comprising of the Grassland Vegetation Inventory (GVI; Government of Alberta 2011)), and the DEP (Government of Alberta 2020), and the hydrography shapefiles provided by Rocky View County and additional hydrography from AEPA's Base Waterbody Polygon Update dataset (AEPA 2024). The GVI database did not fully cover the ASP area and 20% buffer (see below). In those cases, the GVI and DEP vectorized data were pieced together to provide full coverage of the modelling area. The LULC database wetlands and waterbodies were found to be inconsistent with current aerial imagery. Water and wetlands were classified where it did not exist, therefore those areas were replaced with DEP habitat data. Wetlands and waterbodies were replaced with the Base Waterbody Polygon Update (river data from AEP) and data from GVI (wetlands and riparian areas). Roads were also added/ updated in areas with higher traffic due to inconsistent classification to remove missing information in the LUCL database.

Movement simulations were based on the habitat preferences and habitat barriers for several focal species: (1) Moose (*Alces alces*; forest/wetland/riparian species), (2) Deer (*Odocoileus* sp.; generalist species), and (3) Savannah Sparrow (grassland species), (4) black bear (*Ursus americanus*; forest species), and (5) frogs – boreal chorus frog (*Pseudacris maculata*), wood frog (*Rana sylvatica*), and Northern leopard frog (*Rana pipiens*; wetland/riparian amphibian species) (Table 5). These species were chosen because of the availability of distribution and habitat data, their presence in or near the ASP area (based on FWMIS data), and their contrasting habitat preferences. These species were also chosen to function as "umbrella species" for other wildlife.

Typically, birds or bats are not selected as umbrella species for habitat modelling due to their ability to fly, which allows them to cross large areas of disturbance easier than mammals (non-bats), amphibians, or reptiles. However, limited grassland species were recorded in the FWMIS database for the project area, so the Savannah Sparrow was selected as an adequate grassland habitat representative. Sensitive species identified in the ASP area, with the exception of Northern leopard frogs, were not selected as model species due to the lack of FWMIS data to check the models, but also because their habitat preferences are often similar to other species that were chosen as target species.

A literature review of habitat preferences for the target species (Table 6) was used to assign resistance values to the land-use map categories using a 1-100 scale (1, 25, 50, 75, and 100) with 1 being optimal habitat with little resistance and 100 being impermeable habitat (Table 7).

Table 66 – Target species used for wildlife habitat modelling with their general habitat preferences.

Target Species for Model	General Habitat Preferences
Moose	Prefers forested, shrubland, wetland, and riparian habitat types. Avoids agricultural and urban areas. Relevant associated species could include: black bear, cougar, bobcat, Western Wood-peewee, and Olive-sided Flycatcher.
Deer (White-tailed Deer and Mule Deer)	A generalist species that prefers deciduous forest, mixedwood forests, and shrublands. These species have a positive association with agricultural and recreational areas, as well as rural/urban features. Relevant associated species could include: coyote, red fox, and other disturbance tolerant species.
Savannah Sparrow	Prefers native prairie or tame pasture and avoids annual cropland, urban areas, and forests. May or may not be associated with certain wetland classes. Relevant associated species could include: Sprague's Pipit, American badger, Short-eared Owl, and other grassland obligate species.
Black Bear	Prefers coniferous and mixedwood forests. They can also be found in grasslands, deciduous forest, and shrub communities. Relevant associated species could include: Little brown bat, Hoary bat, Northern Flicker, and other forest obligates.
Frogs – Boreal Chorus Frog, Wood Frog, and Northern Leopard Frog	Prefers wetland and riparian habitat. These species were selected to represent small wildlife that may have greater difficulty traversing larger areas and fragmented habitat. Relevant associated species could include: boreal chorus frog, wood frog, and Northern leopard frog

Table 77 - Resistance values assigned to each land-use type for each target species model.

Land-use Type/Habitat:	Resistance Values				
Forest and Shrubland:	**Moose**	**Deer**	**Sparrow**	**Frogs**	**Bear**
Coniferous (LULC/DEP)	25	25	100	50	1
Broadleaf/ Deciduous (LULC/DEP)	1	1	75	50	1
Mixedwood (LULC/DEP)	1	1	100	50	1
Shrubland (LULC/DEP)	1	1	50	25	25
Grassland and Agriculture:					
Herbs (LULC)	1	1	1	1	25
Grassland (LULC/DEP)	50	1	1	50	50
Tame Pasture (DEP)	75	25	25	75	75
Agriculture (LULC)	75	25	25	75	75
Barren Land:					
Natural Barren Land (SOURCE?)	25	25	25	50	50
Exposed or Barren Land (LULC/DEP)	50	50	50	100	50
Hydrology:					
Water (LULC/DEP/RVC Hydro)	25	50	75	25	75
Wetland (LULC/DEP)	1	50	75	1	50
Anthropogenic:					
Developed (LULC/DEP)	75	50	100	75	50
Rural Residential (GVI)	50	25	75	75	50
High Traffic Roadway (ABMI)	75	75	75	100	75
Low Traffic Roadway (ABMI)	25	25	25	50	50

A patch-free model was used in Circuitscape with starting and ending nodes outside of the ASP project boundary. This methodology is suitable for showing the broad movement of individuals across the landscape. A 20% (by area) rectangular buffer zone was created around the ASP boundary to define the habitat modelling boundary and to place the nodes. Enough space between the ASP area and the nodes is required to remove any artificially biased data or create data “hotspots”. A buffer of 20% of the ASP area, corresponding to 1,400 m, with node focal points spaced of 5,000 m apart, was applied outside the ASP area to mitigate for hotspots and provide a realistic result. A total of eight node focal points were created and a buffer area. See Table 8 for the full Circuitscape model specifications.

Table 88 – Circuitscape specifications.

Option	Input
Input Data Type:	Raster
Modelling Mode:	Pairwise: iterate across all pairs in focal node file
Input Resistance Data:	ASP Boundary + 20% buffer raster file
Pairwise Mode Options:	.txt file containing eight focal node points spaced 5,000 meters apart in the 20% buffer area
Advanced Mode Options:	None
Output Options:	Current Maps by species
Options - Calculation Options:	None
Options - Mapping Options:	Write cumulative & max current maps only
Options - Optional Input Files:	None

2.2.5.4 Wildlife Habitat Modelling Results

The following are a few guidelines on interpreting the wildlife habitat mapping provided:

- Wildlife habitat corridors do not indicate the direction in which the wildlife species move. Circuitscape modelling does not provide direction of use. Instead, it provides areas through which wildlife likely move and/or utilize.
- Wildlife habitat corridors shown in Appendix A reveal the areas that are most likely to be used by each species type based on their habitat preferences.
- Modelling was somewhat able to be verified using FWMIS data for some species, but very little location specific data was available for most species within the ASP area.

2.2.5.4.1 Frogs (and Small Wetland/Riparian Species)

Amphibian habitat is limited to wetlands and riparian areas within the ASP (Appendix A, Figure A1). Due to the quality of the wetland data and lack of accurate wetland classifications in the government databases, we adopted the conservative approach and assessed all wetlands and riparian areas as being frog habitat, while in reality, this is not true. As such, areas of wetland complexes in the central and south portions of the ASP, as well the riparian zones along the Bragg and Iron Creeks, and the Elbow River in the southeast appear to be where the most frog connectivity is located (Appendix A, Figure A2). Frogs are small animals dependent on wet habitats so movement ability is limited. Finer scale movement studies are better suited for species like these, but with finer scale assessments, you also require more accurate habitat data. FWMIS data points occur in small patches of habitat in the south half of the ASP, but do not appear to be reflecting areas of high-quality amphibian habitat or abundance.

2.2.5.4.2 Black Bear (and Forest Species)

Forest species habitat is abundantly available throughout the ASP area (Appendix A, Figure A3). As this habitat type is the most common and widely spread throughout the ASP, wildlife corridors are typically less defined in the model. However, there are some distinct corridors where bears and other forest obligate species would be able to move between the large forest stands

(Appendix A, Figure A4). These corridors are visible mostly in the central, south, and north ends of the ASP area. Within the Bragg Creek Hamlet Growth Area, there are some small, but well-defined corridors where forest species can travel through the trees along the south end of the current residential developments.

2.2.5.4.3 Deer (and other Generalist Species)

Habitat connectivity throughout the ASP area is stronger for deer and other generalist species (Appendix A, Figure A5). Most of the project area offers low resistance to generalist movement (green and light green), including within the Hamlet Growth Area. However, low resistance translates to generalists being able to move across most locations resulting in limited areas displaying high connectivity in the modelling (high value wildlife corridors tend not to show up if the animals are not restricted in their movement). Therefore, there are more limited or less strongly defined areas showing high connectivity throughout the ASP area, where deer can utilize a network of connected grassland, pastures, crop, and deciduous forest. It is important to note that while deer may utilize more open habitats for foraging in the spring and summer, they tend to rely on more forested and sheltered habitats during the critical winter period, meaning that their habitat map would more closely resemble the one for forest species during this time. Most of the expected high use corridors show up in the south and west sections of the ASP where there are large swaths of high quality generalist habitat with small pockets of low quality habitat to travel past (Appendix A, Figure A6). Most FWMIS generalist points are found within unbroken, good quality habitat.

2.2.5.4.4 Moose (and Forest/Wetland/Shrubland Species)

In general, habitat availability for moose and other forest/wetland/riparian/shrubland species within the overall ASP area is very good, but it is more limited within the Bragg Creek Hamlet Growth Area (Appendix A, Figure A7). Moose tend to favour forest and treed wetland habitats, of which there is abundant forests throughout the ASP area, and because good habitat values are relatively evenly distributed, connectivity pathways are not as pronounced. If moose were to travel through the ASP area, the northeast of the project area which lies northwest of the Hamlet Growth Area has the most abundant unbroken habitat, and the south end of the project area has good sections of habitat availability with some strongly defined corridors (Appendix A, Figure A8). There are some areas of forest/riparian/wetland connectivity throughout the ASP area in the acreage developments, which moose could also utilize to access smaller sections of habitat throughout the central and west portions of the ASP. Ten moose locations were provided in FWMIS within the project area, most of which were located within high-value habitat. Others were recorded in lightly defined corridors within acreage developments.

2.2.5.4.5 Savannah Sparrow (and Grassland Species)

Availability of suitable habitat for grassland species is much more limited within the project footprint, and avoids the large forested areas throughout (Appendix A, Figure A9). Preferential habitat is primarily concentrated in several patches in the central, south, and northeast portions of the ASP (green and light green polygons). Due to suitable habitat being more constrained for grassland obligate species, their connectivity pathways are strongly defined in the project area

(Appendix A, Figure A10). One of the areas with the highest connectivity is in the central portion of the ASP area, where there are larger portions of grassland habitat connected by distinct corridors of grassland throughout scattered acreages. Though the other main patches of grassland habitat can be found in the southern, northeastern, and northwestern ends of the ASP area, there are corridors throughout the area between forest stands. All FWMIS reports of Savannah Sparrows appear to be recorded from roadways that pass through high-quality grassland habitat or near available corridors.

2.2.6 Aquatics

Fish habitat within the Montane Subregion is found within open water that accounts for about 3% of the total area (Natural Regions Committee 2006). Potential fish habitat within the ASP boundary is primarily found in rivers or streams (e.g., the Elbow River, McLean Creek) and a few small lakes or ponds. Table 8 contains fish species known to occur in the Subregion, most of which are found in the Elbow River.

2.2.6.1 Methodology

A desktop review of provincial databases was conducted to identify fish species present in the area listed as “Endangered”, “Threatened”, or of “Special Concern” by either federal or provincial governments (Government of Canada 2022a,b; Government of Alberta 2022). Databases reviewed include Alberta Environment and Park’s (AEP) General Status of Alberta Wild Species (Government of Alberta 2022), AEP Fisheries and Wildlife Management Information System (FWMIS) database (AEP 2023a), and the Database of Wildlife Species Assessed by SARA Wildlife Species Search (Government of Canada 2022b).

2.2.6.2 Results

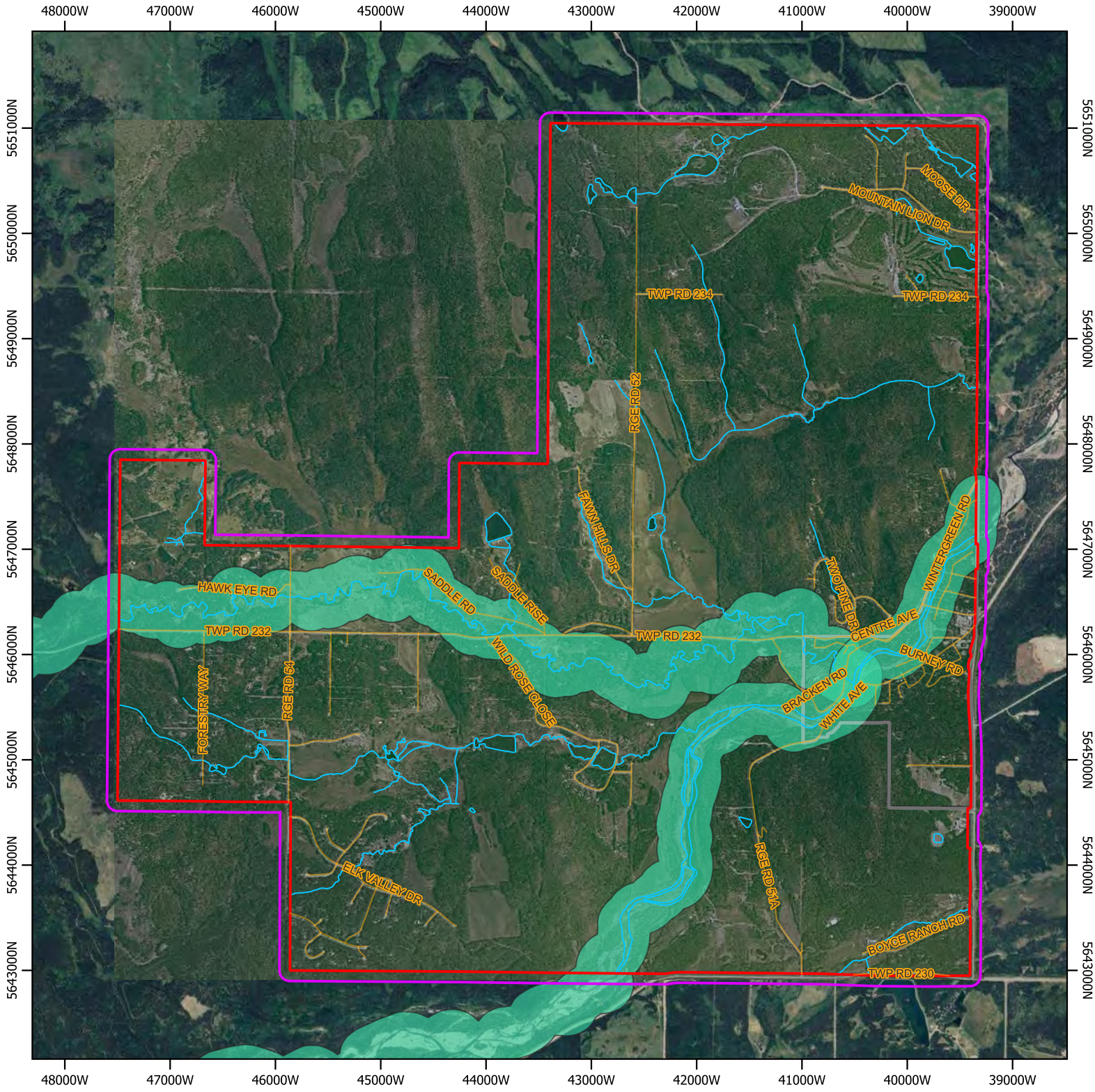
10 fish species were found within the project area, and an additional four fish species were found within 5 km of the project area (Table 9). Within the project boundary, one fish species was provincially listed as ‘At Risk’ (bull trout; *Salvelinus confluentus*).

Bull trout in the 5 km buffer belong to the Saskatchewan-Nelson Rivers populations, which are federally designated as ‘Threatened’ by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), with a current ‘Schedule 1’ (Threatened) status under the SARA (DFO 2023a). According to the DFO ‘Aquatic Species at Risk Map’, Bragg Creek and the Elbow River, both of which run through the project area and 5 km buffer, are listed as critical habitat for bull trout (DFO 2023b; Figure 8).

Table 99 – Fish species found in the FWMIS database for the project area and within a 5 km buffer

Common Name	Scientific Name	AB General[1]	COSEWIC status[3]	SARA status[4]
Brook stickleback	*Culaea inconstans*	Secure	N/A	N/A
Brook trout*	*Salvelinus fontinalis*	Exotic/Alien	N/A	N/A
Brown trout*	*Salmo trutta*	Exotic/Alien	N/A	N/A
Bull trout*	*Salvelinus confluentus*	At Risk	Threatened	Threatened
Burbot	*Lota lota*	Secure	N/A	N/A
Cutthroat trout*	*Oncorhynchus clarkii*	Secure	N/A	N/A
Lake chub*	*Couesius plumbeus*	Secure	N/A	N/A
Longnose dace*	*Rhinichthys cataractae*	Secure	N/A	N/A
Longnose sucker*	*Catostomus catostomus*	Secure	N/A	N/A
Mountain whitefish*	*Prosopium williamsoni*	Secure	N/A	N/A
Pearl dace	*Margariscus margarita*	Undetermined	N/A	N/A
Rainbow trout*	*Oncorhynchus mykiss*	Secure	N/A	N/A
Trout-perch	*Percopsis omiscomaycus*	Secure	N/A	N/A
White sucker*	*Catostomus commersoni*	Secure	N/A	N/A

(1) General Status of Alberta's Wild Plants and Animals (Government of Alberta 2022)
(2) Status listed by the Committee on the Status of Endangered Wildlife in Canada (Government of Canada 2022a)
(3) Species at Risk Act (Government of Canada 2022b)
* Species found within the project area and 100 m buffer



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer
- Critical Habitat - Bull Trout

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

Rocky View County Aerial Imagery 2024 and ©2025 Google Maps Satellite Imagery - Map Data: © Maxar Technologies

Rocky View County

Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Critical Habitat for Bull Trout

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 12 Feb 2025
Project #: 25003

Figure No.
 # 08

2.3 Environmentally Significant Areas and Protected Areas Database Search

Environmentally Significant Areas are defined as: (1) areas that are important to the long-term maintenance of biological diversity, soil, water, or other natural process at multiple scales and (2) areas that contain rare or unique elements or that include elements that may require special management consideration due to their conservation needs. The Alberta Parks Environmentally Significant Areas database (AEP 2016) includes maps, a final report, and GIS shapefile data.

2.3.1 Methodology

The most current version of the Environmentally Significant Areas (Fiera Biological Consulting 2014) shapefile was obtained from Alberta Environment and Parks (2016) and is presented on the map “as is”.

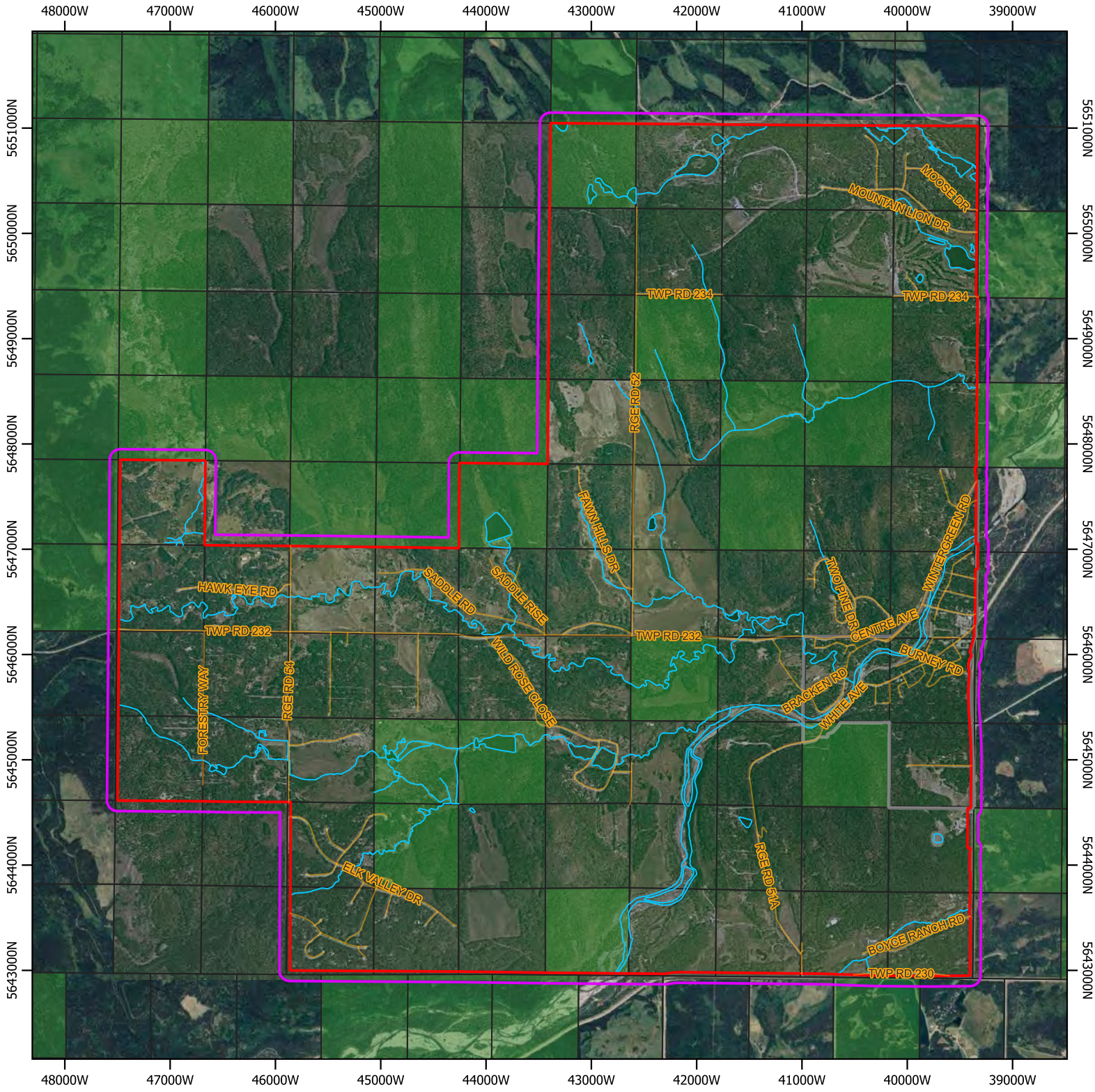
The Parks and Protected Areas of Alberta (AEP 2023b) database was also searched.

2.3.2 Results

There are 13 quarter sections classed as Environmentally Significant Areas within the project boundary, and an additional 17 Environmentally Significant Area quarter sections that have small portions within the 100 m buffer. (Fiera 2014; Figure 9).

Quarter sections classed as Environmentally Significant Areas within the project area are: NE-27-23-5-W5M, NW-23-23-5-W5M, NW-24-23-5-W5M, SE-23-23-5-W5M, SW-24-23-5-W5M, NW-15-23-5-W5M, NE-14-23-5-W5M, NW-11-23-5-W5M, SE-9-23-5-W5M, SW-10-23-5-W5M, SW-12-23-5-W5M, SE-4-23-5-W5M, SE-3-23-5-W5M.

There is one protected park within the project boundary; Bragg Creek Provincial Park can be found in the southeast of the ASP boundary. Additionally, there are four other protected areas found near the project area within 5 km; the West Bragg Creek (820 m west), Gooseberry (625 m south), McLean Creek (2.8 km southwest), and Elbow River (3.1 km southwest) Provincial Recreation Areas.



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Environmentally Significant Areas (Provincial)

- NO
- YES

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

Rocky View County Aerial Imagery 2024 and ©2025 Google Maps Satellite Imagery - Map Data: © Maxar Technologies

Rocky View County

Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Environmentally Significant Areas (Provincial)

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 11 Mar 2025
Project #: 25003

Figure No.
 # 9

2.4 Hydrology, Waterbodies, and Wetlands

2.4.1 Methodology – Hydrology, Waterbodies, and Wetlands

The following base layers were used to delineate hydrology for the ASP area:

- The hydrology shapefile provided by Rocky View County, which provides a line file of watercourses.
- ABMI Wetland Inventory (ABMI 2021) which provides polygons classified into five broad classes (bogs, fens, marshes, shallow open waters and swamps) based on the Alberta Wetland Classification System (AESRD 2015).
- GVI database using polygons containing lentic (still water) site types. Lentic site types are classified by GVI based on water permanence (e.g. seasonal, semi-permanent to permanent, temporary) and whether the polygon contains open water.
- Fish and Wildlife Management Information System (FWMIS) Hydrology Polygons (AEP 2023a).

Since only existing databases were used for wetland delineation, wetland classifications are not given because they were not provided in the databases. If multiple delineations for a single wetland were provided by the different databases, all delineations are shown in different colours, as ground truthing has not been completed and the true wetland delineation is currently unknown.

2.4.2 Results – Hydrology

Approximately 91% of the project area falls within the Elbow River sub-basin, 6.5% in the Fish Creek sub-basin, and 2.5% in the Jumping Pound Creek sub-basin. All flow into the Bow River. Fish Creek flows North, while the Elbow River flows Northeast, and the Jumping Pound Creek flows East.

Nine sources of natural spring water were discovered within the project area or 100 m buffer (Stewart 2009). Future ground truthing would likely be required to confirm these sources of natural springs and identify any others. Confirming alluvial aquifers and or any other shallow groundwater features would also be required.

2.4.3 Results – Watercourses

The project area contains four named watercourses: (1) the Elbow River, which flows Northeast along the southeastern edge of the ASP boundary, (2) Bragg Creek, which flows east through the centre of the ASP boundary before joining the Elbow River, (3) Iron Creek, south of Bragg Creek flowing east into the Elbow River, and (4) Priddis Creek, which flows northeast in the southwest corner of the ASP boundary. An additional 32 unnamed watercourses were identified within the ASP boundary. Of these unnamed watercourses, only two are tributaries to the Jumping Pound Creek (in NE-27-23-5-W5M and NW-17-23-5-W5M to SW-17-23-5-W5M), the remaining 30 were tributaries to the Elbow River.

2.4.4 Results – Wetlands

The desktop assessment for wetlands was completed using the ABMI Wetland Inventory (ABMI 2021) and GVI database (Government of Alberta 2011).

ABMI wetland polygons are segmented by their assigned wetland class: bog, fen, marsh, open water, or swamp (ABMI 2021). According to the ABMI Wetland Inventory, 89 wetlands are present in the project area and 100 m buffer, accounting for a combined total of approximately 7.24% of the ASP area (Table 10; Figure 10).

Table 1010 – Wetland classes present in the project area and 100 m buffer based on the ABMI Wetland Inventory.

Wetland Class	Description[1]	Total Area/Percentage Occurring in the Project Area and 100 m Buffer
Fen	A minerogenous peatland with surface or subsurface water flow that range from moderately-acidic to basic.	89.83 ha (1.76%)
Marsh	A mineral wetland with water levels near, at or above the ground surface for variable periods during the year, and which supports graminoid vegetation in the deepest portion of the wetland in the majority of years.	69.10 ha (1.35%)
Open Water	A mineral wetland with water levels near, at or above the ground surface for variable periods during the year, which is less than two metres deep at midsummer and that contains an open water zone in the deepest wetland zone covering greater than 25% of the total area in the majority of years.	28.98 ha (0.57%)
Swamp	A mineral wetland with water levels near, at or above the ground surface for variable periods during the year which contains either more than 25% tree cover of a variety of species or more than 25% shrub cover.	182.53 ha (3.57%)

[1] Descriptions are from Alberta Wetland Classification System (AESRD 2015)

Additionally, 48 wetlands were identified in the GVI database for the project area and 100 m buffer (Figure 10). GVI identified wetlands accounted for 2.15% of the total project area and 100 m buffer, and represented four GVI site types (Table 11). A total of 52 wetlands in the ABMI Wetland Inventory intersected with GVI wetland polygons, suggesting some level of agreement between the two datasets in these areas.

Table 1111 – Wetland site types present in the project area and 100 m buffer based on the GVI database.

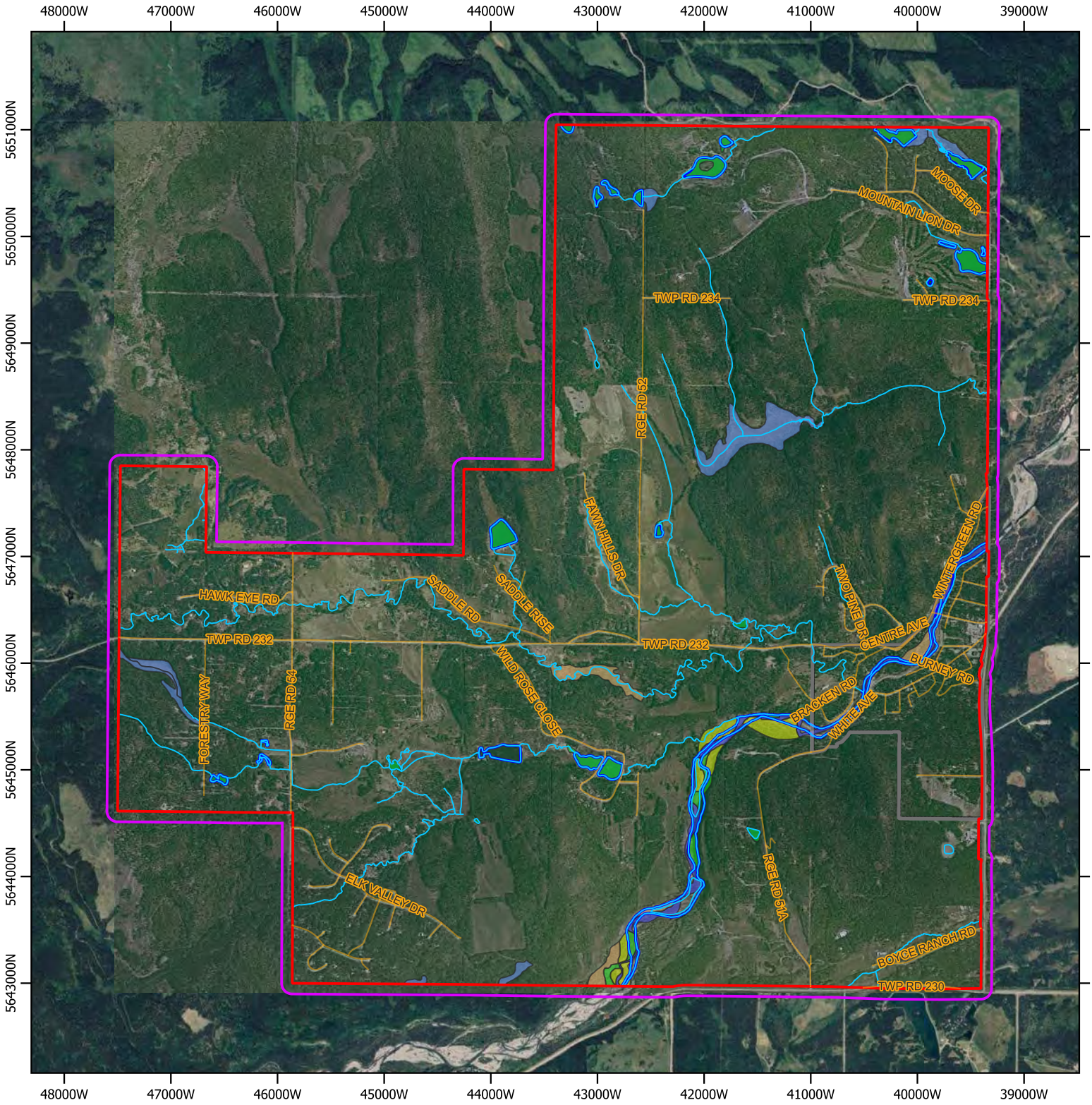
Wetland Site Type	Description[1]	Total Area/Percentage Occurring in the Project Area and 100 m Buffer
Alkali	Wetlands that hold surface water for variable time periods ranging from a few weeks to several months. Vegetation cover is variable-to-none and there is a distinct salt (saline) crust.	0.01 ha (0.00%)
Open Water	Permanent open water zones that are larger than 1.0 hectare. Bordering zones may include peripheral deep-marsh, shallow-marsh, wet-meadow, low-prairie and fen zones.	48.16 ha (0.94%)
Seasonal	Wetlands with water persisting more than three weeks, and usually disappearing by early July. The deepest parts are dominated by the shallow-marsh zone. Peripheral wet-meadow and low-prairie zones are usually present. Lentic Seasonal basins in GVI have relatively lush vegetation compared to Lentic Temporary due to a higher water table and do not have a visible salt crust.	2.53 ha (0.05%)
Semi-Permanent to Permanent	Marshes and lake where water persists throughout the year in most years, except during periods of extreme drought. Lentic Semi to Permanent wetlands are dominated by the deep=marsh and shallow-marsh zones consisting of emergent vegetation like cattails and bulrushes.	59.41 ha (1.16%)

[1] Descriptions from Grassland Vegetation Inventory (GVI) Specifications 5th edition (ASRD 2011)

There are a number of issues with the selected databases: Not all wetlands present in the aerial photography were identified in the databases, and some waterbodies identified from the database shapefiles are likely not wetlands or ephemeral wetlands (appear upland in the air photos). Since only historical imagery was used for the scope of this assessment, no missing waterbodies were added, nor were any potential waterbodies removed if they were likely not present. Ground truthing will be required to finalize the delineation and classification of the wetlands, and a full permanency assessment will be required to determine the permanence of the wetlands.

Since only a coarse-scale desktop assessment using available wetland and watercourse databases was conducted during this assessment, it is recommended that all parcels considering development require a Biophysical Impact Assessment (BIA). These BIAs should be completed using the Rocky View County Servicing Standards (2013). Field-based wetland assessments should also be completed using the appropriate AEP Directives (Government of Alberta 2015a, 2015b, 2015c, 2016, 2017, 2018).

Removal of any wetlands will require *Water Act* approval, with seasonal and semi-permanent wetlands requiring a permanency assessment under the *Public Lands Act* for removal. Because ephemeral wetlands also require *Water Act* Approval for their removal but may not be visible in imagery, field-based wetland assessment must be used to identify these water bodies. However, compensation is not required for the removal of ephemeral wetlands. Please note that the final boundaries of all wetlands in the project area may be modified once field ground truthing has been completed.



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer
- Hydro (From RVC)
- Surface Water (From RVC)

Waterbodies (ABMI)

- Marsh
- Open water
- Swamp
- Fen

Waterbodies (GVI)

- Lentic (Open Water)
- Lentic (Semi-Permanent to Permanent)
- Lotic (Coniferous)
- Lotic (Deciduous)
- Lotic (Herbaceous)
- Lotic (River)

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

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Rocky View County

Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Waterbodies and Wetlands

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 11 Mar 2025
Project #: 25003

Figure No.
 # 10

2.5 Topography

2.5.1 Methodology

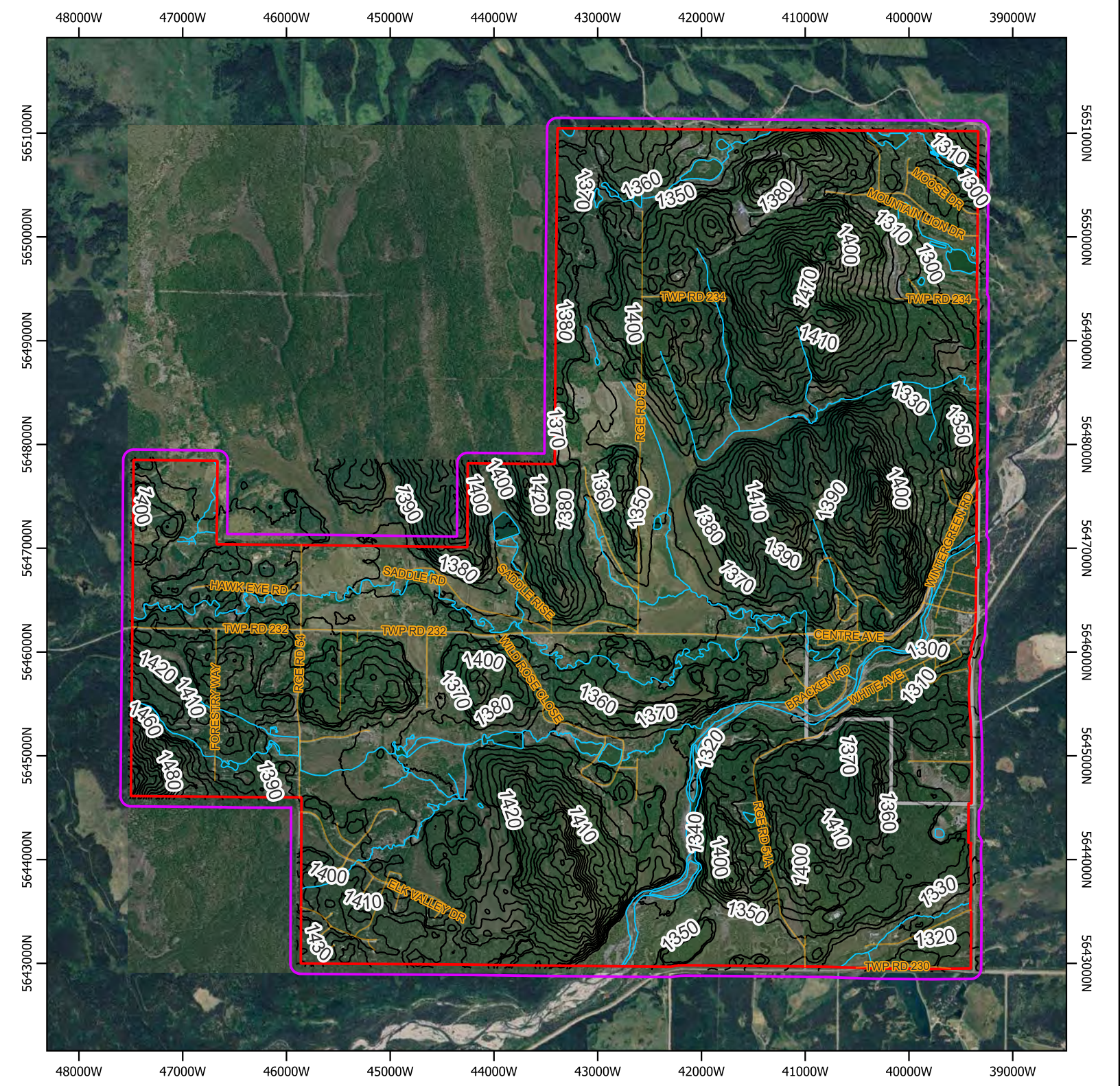
We examined the two-meter contour shapefile provided by Rocky View County, which displays the contours that show sloped areas and basins.

2.5.2 Results – Project Footprint

The local topography within the project area is diverse, with ridges being dissected by river valleys. The highest elevation is in the southwestern portion of the project area, west of the upper Elbow River. Topography of the entire project area slopes northeast with the Elbow River, with a total range from approximately 1,288 to 1,592 meters (Figure 11).

2.5.3 Results – Regional Context

Regionally, the topography consists of sequential ridges and river valleys (Rocky View County 2007). The project area is similar to the regional topography of the surrounding area.



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer
- Contours (10 meters)

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

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Topography

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Drawn by: Jesse Bird

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Project #: 25003

Figure No.
 # 11

2.6 Soils

2.6.1 Methodology

Soil types within the ASP boundary were examined using the soils shapefile provided by Rocky View County, which contained data derived from the Soil Survey of the Municipal District of Rocky View County No. 44, Alberta (Turchenek and Fawcett 1994).

2.6.2 Results

Twelve soil series (Alluvium, Bragg Creek, Darnell, Drywood, Elbow-Robinson, Harmatton, Mitford-Darnell, Pothole Creek, Spruce Ridge, Spruce Ridge-Tough Creek, Winchell, and Rough Broken) occur within the Project Area (Turchenek and Fawcett 1994; Table 12; Figure 12).

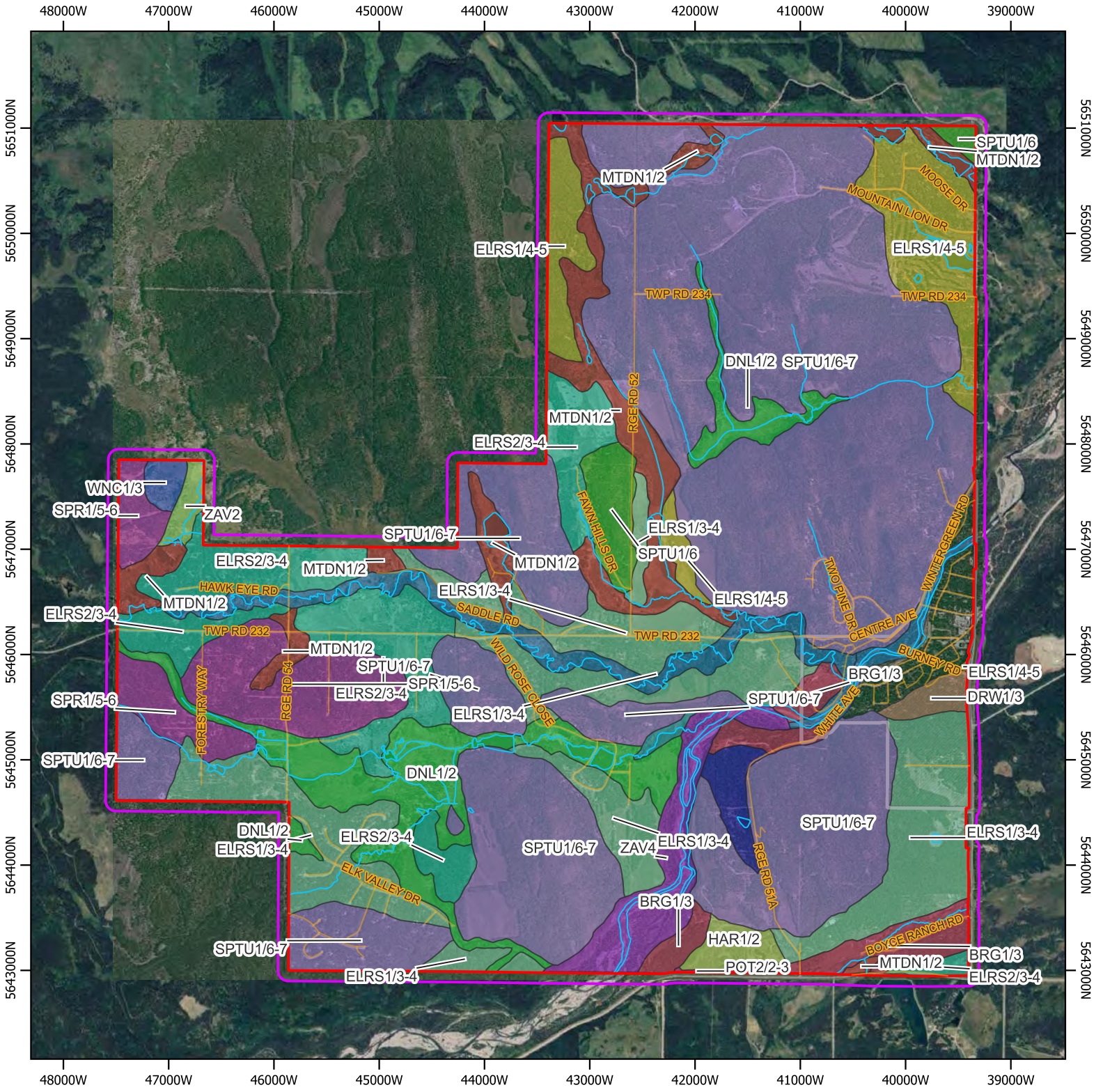
Table 1212 – Soil Series Present Within the Project Area

Soil Series	Description	Area/Percentage Occurring in Project Area
Bragg Creek - BRG1	Bragg Creek soils are defined as medium to moderately coarse textured glaciofluvial veneer overlying very gravelly, very coarse textured glaciofluvial deposits that are well to very well drained. BRG soilds are slightly calcareous and non-saline. BRG1 occurs on terraces along major stream and river channels, usually under spruce and pine vegetation with minor (0-15%) Gleyosolic soils (GgW).	118.34 ha (2.48%)
Darnell - DNL1	Darnell soils are composed of moderately decomposed brown moss-sedge peat in soligenous peatlands that are non-calcareous, non-saline, with uncontrolled drainage. DNL soils are non-calcareous and non-saline. DNL1 soils have severe cimatic limitations which offers little to no capability for agriculture and are found in horizontal or patterned fens.	287.77 ha (6.03%)
Drywood - DRW1	Drywood soils are defined as medium to moderately fine-textured fluvial or glaciofluvial veneer over gravelly, very coarse textured fluvial or glaciofluvial deposits that are well to rapidly drained. DRW soils are moderately calcareous and non-saline. DRW soils are associated with Lundbreck (LND) soils, but DRW soils' veneer of finer material is 30-100 cm at the surface whereas LND soils' is only 0-30 cm.	22.99 ha (0.48%)
Elbow-Robinson - ELRS1	Elbow-Robinson soils are mixed deposits of fine textured till and fine-textured glaciolacustrine materials, with dominant moderately well-drained gray and dark gray Luvisols. ELRS soils are weakly calcareous and non-saline. ELRS1 occurs on undulating to hummocky or ridged terrain and are composed of 20-40% of both Elbow (ELB) and Robinson (RSN) soils, and containing 5-20% each of minor soils like Spruce Ridge (SPR) and Beauvais (BVA), and GgW.	855.38 ha (17.93%)

Soil Series	Description	Area/Percentage Occurring in Project Area
Elbow-Robinson - ELRS2	Elbow-Robinson soils are mixed deposits of fine textured till and fine-textured glaciolacustrine materials, with dominant moderately well-drained gray and dark gray luvisols. ELRS soils are weakly calcareous and non-saline. ELRS2 occurs on undulating to hummocky terrain and are composed of 20-40% of ELB, RSN, and GgW, and containing 5-15% each of minor soils SPR and BV).	356.86 ha (7.48%)
Harmatton - HAR1	Harmatton soils are fine-textured glaciolacustrine or lacustrine materials over moderately fine textured till that are poorly to very poorly drained. Harmatton soils are similar to the Dewinton (DWT) soils desribed in MacMillan (1987) which occur in shallow depressions within undulating to hummocky morainal or glaciofluvial landscapes. HAR soils are moderately calcareous and non-saline. HAR1 contains 10-30% of both Wildcat (WDC) and Pothole Creek (POT) soils and minor (0-15%) Antler (ATL soils).	31.86 ha (0.65%)
Mitford-Darnell - MTDN1	Mitford-Darnell soils are moderately decomposed and moderately to slightly acidic brown fen peat, with peat <1.6m over medium to fine textured glacial deposits. MTDN soils are non-calcareous and non-saline. MTDN-1 horizontal or sloping fen and are composed of 30-60% of both Mitford (MTF) and Darnell (DNL) soils, and containing 0-15% each of minor soils like WDC and SPR.	239.26 ha (5.02%)
Pothole Creek - POT2	Pothole Creek soils are composed of fine-textured glaciolacustrine or lacustrine sediments that are poorly drained. POT soils are moderately calcareous and non-saline. POT1 soils occur in level to undulating and channeled landforms and have extremely severe physical and climatic limitations. They contain moderate (10-30%) HAR soils, 5-20% Fish Creek (FHS) soils and 0-15% WDC soils.	1.20 ha (0.03%)
Spruce Ridge - SPR1	Spruce Ridge soils are composed of moderately fine to medium textured till and are moderately well drained. SPR soils are moderately calcareous and non-saline. SPR1 are the dominant soils on undulating to hummocky and steep terrain under the coniferous vegetation of the foothills.	274.08 ha (5.74%)
Spruce Ridge-Tough Creek - SPTU1	Spruce Ridge-Tough Creek soils are discontinuous, medium textured till of 0-5 m overlaying bedrock ridged. SPTU soils are moderately calcareous and non-saline. SPTU1 occurs on exposed bedrock outcrops long ridgetops and steep slopes. They are composed of 30-50% of both SPR and Tough Creek (TUC) soils, and contain 5-20% each of minor Beaupre (BPE) soils, and 0-15% of minor Leighton Centre (LTC) soils and exposed bedrock.	2194.17 ha (45.99%)

Soil Series	Description	Area/Percentage Occurring in Project Area
Winchell - WNC1	Winchell soils are medium textured glaciofluvial gravels that are often unsorted. WNC soils are moderately calcareous and non-saline. WNC1 are found on undulating to hummocky and steep landforms, and contain 5-20% Outpost (OTP) soils and 0-15% SPR and GgW.	15.98 ha (0.33%)
Alluvium - ZAV1	Alluvium soils are variably textured fluvial sediments of stream channels that include relatively flat and terraced floodplain deposits and sloping sides of channels. They occur on level, terraced, or inclined landforms. ZAV1 are composed of well to imperfectly drained Chernozemic and Regosolic soils with minor areas of poorly drained and Solonetzic soils.	147.27 ha (3.09%)
Alluvium - ZAV2	Alluvium soils are variably textured fluvial sediments of stream channels that include relatively flat and terraced floodplain deposits and sloping sides of channels. They occur on level, terraced, or inclined landforms. ZAV2 contains well to imperfectly drained Chernozemic and Regolosic soils, poorly drained saline Gleysols, and minor to significant Solonetzic soils.	17.91 ha (0.38%)
Alluvium - ZAV4	Alluvium soils are variably textured fluvial sediments of stream and river channels that include relatively flat and terraced floodplain deposits and sloping sides of channels. ZAV4 occurs on sandstone or shale bedrock on banks of stream and river channels on levelm terraced, inclinded, and steeply sloping landforms. ZAV4 is a combination of Alluvium (ZAV) and Rough Broken (ZRB) landforms.	117.48 ha (2.46%)
Rough Broken - ZRB1	Rough Broken soils are composed of numerous combinations of soils occurring on steep valley sides (>20% slope). RB1 soils occur on steep till covered slopes, consisting of thin, dark-colored soils.	7.82 ha (0.16%)

[1] Descriptions are from Turchenek and Fawcett 1994



LEGEND

- Bragg Creek Hamlet Growth Area
- Bragg Creek ASP Boundary
- Bragg Creek Boundary_100m buffer

Soils

- BRG1/3
- DNL1/2
- DRW1/3
- ELRS1/3-4
- ELRS1/4-5
- ELRS2/3-4
- HAR1/2
- MTDN1/2
- POT2/2-3
- SPR1/5
- SPR1/5-6
- SPTU1/6
- SPTU1/6-7
- WNC1/3
- ZAV1
- ZAV2
- ZAV4
- ZRB1

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

Rocky View County

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Bragg Creek Area Structure Plan Hamlet Review

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Soils

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 11 Mar 2025
Project #: 25003

Figure No.
 # 12

2.7 Archaeological

2.7.1 Methodology

Historical resources were assessed using the most recent listing of historical resources (Alberta Arts, Culture and Status of Women 2023).

2.7.2 Results

A total of nine historical listings were identified in the project area, falling fully or in part within 17 quarter sections in the project area. An additional two historical listings were identified within the 100 m buffer.

Four listings within the project area were classed as HRV5a, or a high potential to contain an archeological historic resource (Figure 13). Additionally, five listings were classed as HRV4, indicating the site contains a historic resource that may require attention (Figure 13). Of the HRV4 sites, the historic resources were archaeological for one of the sites (HRV4a), and paleontological for two sites (HRV4p), and cultural for two sites (HRV4c). A *Historical Resources Act* approval is required for all quarter sections with an HRV of 5, 4 or 3.

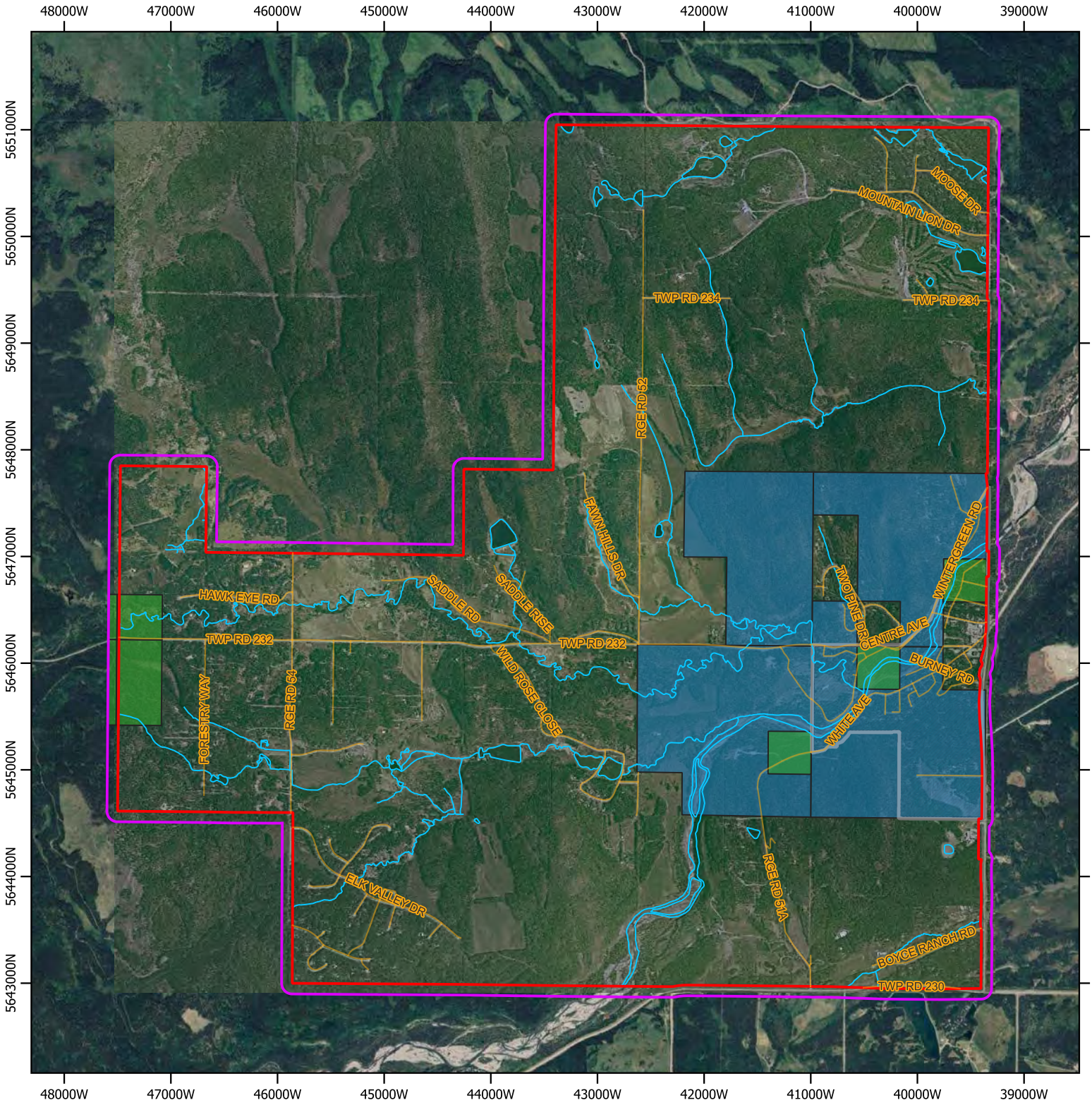
2.8 Other Features

2.8.1 Methodology

To determine other features on the landscape, we assessed the air photo provided by Rocky View County and available online imagery.

2.8.2 Results

The majority of the project area is primarily a mixture of forest types, with some open grassland and grazing fields, wetland complexes, and anthropogenic features within developed acreages and ranches. Some of the anthropogenic features include homes, barns, garages, and various other building types. There is a golf course in the northeast of the project area. Highway 22 and Wintergreen Road form the east border of the ASP boundary, Highway 66 forms the east half of the south ASP boundary, and West Bragg Creek Road runs east-west through the center of the project area. In addition to these major roadways, a number of small roads lead to various homes and businesses throughout the site. Powerlines exist throughout the project area. The majority of the Bragg Creek Hamlet Growth Area consists of treed residential neighbourhoods, business development, and a mostly forested area in the south portion with an isolated neighbourhood and some grass/grazing land.



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Historical Resource Values (HRV)

- 4
- 5

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

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Historical Resources

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Drawn by: Jesse Bird

Date: 11 Mar 2025
Project #: 25003

Figure No.
 # 13

2.9 Environmentally Sensitive Areas

2.9.1 Methodology

As per the CMRB Land Use & Servicing Committee (2023) Regional Evaluation Framework, Environmentally Sensitive areas are required to be determined to assist with Regional Evaluation Framework (REF) reviews. They are identified using the following questions:

- Areas maintaining the provision of water quality and quantity and providing protection against drought and flooding events.
    - ■ Yes ☐ No
    - Please briefly describe – There are a number of watercourses throughout the project area that maintain the provision of water quality and quantity to larger watercourses (i.e. Elbow and Bow Rivers), provide protection against drought and flooding events, and supply water for Bragg Creek via the Elbow River, and the City of Calgary via the Glenmore Reservoir.
    - Does this finding require an Environmental Study be conducted?
        - ■ Yes ☐ No
- Area providing habitat for identified local species of interest, designated species of conservation concerns (SCC), or identified local species group.
    - ■ Yes ☐ No
    - Please briefly describe – While some of project area has been converted to ranches and residential developments, valuable habitat remains abundant, such as the protected area Bragg Creek Provincial Park, and other relatively undisturbed forested, riparian, and wetland areas. The 10 SCC within a 5 km buffer of the project area and each require diverse habitat types with minimal disturbance for breeding, nesting and foraging and may benefit from these areas.
    - Does this finding require that an Environmental Study be conducted?
        - ■ Yes ☐ No
- Area providing rare, unique, or biologically diverse ecosystems or unique landforms.
    - ■ Yes ☐ No
    - Please briefly describe – Undisturbed wetlands, stream corridors, and forests within the project area may provide rare, unique, or biologically diverse ecosystems.
    - Does this finding require that an Environmental Study be conducted?
        - ■ Yes ☐ No
- Areas contributing to other important ecosystem functions or services at a regional or local scales.
    - ■ Yes ☐ No
    - Please briefly describe – Stream corridors, wetlands, and forests within the project area contribute to important ecosystem functions or services at the regional or local scales: stream corridors and wetlands likely provide water to support the Bow River system. These, in addition to undisturbed forests, also provide habitat for numerous species.
- Does this finding require that an Environmental Study be conducted?

- o ■ Yes ☐ No

2.9.2 Results

Based on this checklist, there are five potential Environmentally Sensitive Areas for the project area. One of these areas occurs entirely within Crown Land, two occur partially within Crown Land and partially on private land, and two occur only on private land but were selected regardless due to their ecological value.

Selected Environmentally Sensitive Areas were broken down into five categories:

- Aquatic habitat (A)
- Riparian habitat (R)
- Wetland habitat (W)
- Forest habitat (F)
- Grassland habitat (G)

Environmentally Sensitive Areas include corridors along Bragg Creek, Iron Creek, and the Elbow River (Figure 14; A and R habitat types), as they:

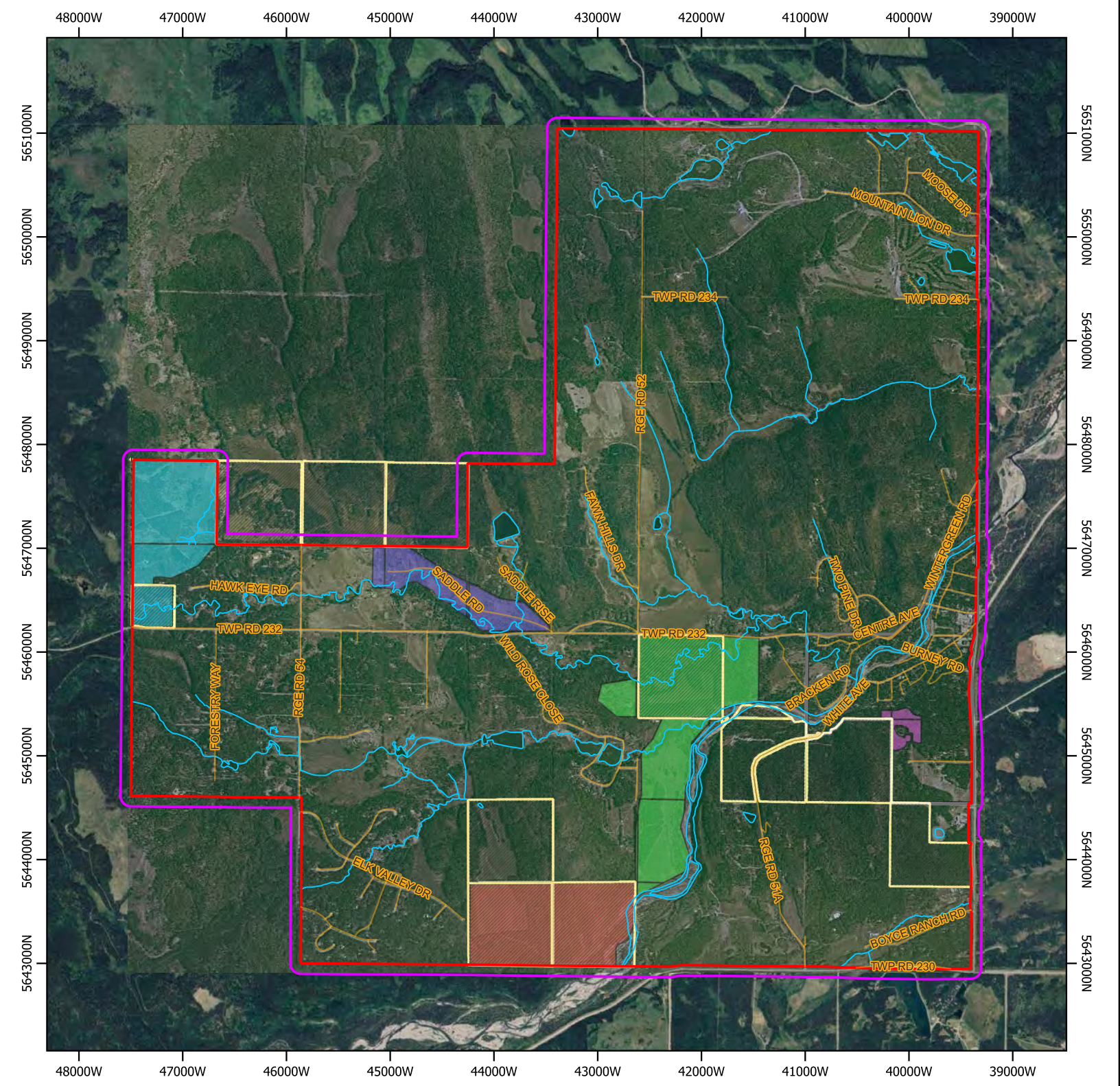
- Maintain the provision of water quality and quantity and provide protection against drought and flooding events.
- Provide habitat for identified local species of interest, designated species of conservation concerns (SCC), or identified local species group.
- Provide rare, unique, or biologically diverse ecosystems or unique landforms.
- Contribute to other important ecosystem functions or services at a regional or local scales.

Impacts to wetlands within the project area range from light impact to heavily impacted, so wetland areas that were minimally impacted and/or associated with riparian corridors containing wildlife habitat were selected as Environmentally Sensitive Areas (Figure 14; W habitat type), as they:

- Maintain the provision of water quality and quantity and provide protection against drought and flooding events.
- Provide habitat for identified local species of interest, designated species of conservation concerns (SCC), or identified local species group.
- Provide rare, unique, or biologically diverse ecosystems or unique landforms.
- Contribute to other important ecosystem functions or services at a regional or local scales.

Finally, areas of intact grassland or forest with high connectivity were selected as Environmentally Sensitive Areas (Figure 14; G and F habitat types), as they:

- Provide habitat for identified local species of interest, designated species of conservation concerns (SCC), or identified local species group.
- Provide rare, unique, or biologically diverse ecosystems or unique landforms.
- Contribute to other important ecosystem functions or services at a regional or local scales.



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer
- Crown Land

Habitat

- Area 1 - Forest
- Area 2 - Grassland and Forest
- Area 3 - Grassland and Wetland
- Area 4 - Grassland and Forest
- Area 5 - Forest

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

Rocky View County

Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

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Environmentally Sensitive Areas (Rocky View County)

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 11 Mar 2025
Project #: 25003

Figure No.
 # 14

2.10 Future Environmental Work

For future development projects, further surveys will be required for a full Biophysical Impact Assessment (BIA), and those include: wildlife surveys, species at risk surveys, wildlife habitat surveys, aquatic surveys (if fish and fish habitat may be present), vegetation assessments, rare plant habitat assessments, and wetland surveys that will be completed during appropriate survey times according to the Government of Alberta standards. The rare plant surveys will be conducted according to the procedures outlined by the Alberta Native Plant Council's (2000) Guidelines for Rare Plant Surveys, with early season surveys recommended in June and late season surveys recommended in August. Wetland surveys are required to be completed during the 'growing season', which is defined by AEP as between May 1 and September 30. Wildlife surveys need to be completed within the Government of Alberta standards for timing of wildlife, which is typically between March and late June, depending on the species of concern at each site.

3 Impacts, Mitigation, and Monitoring

3.1 Impact Assessment Methodology

For developing the ASP amendment area (project area), a general impact assessment methodology has been used to evaluate the impact of development on the following Valued Ecosystem Components (VECs): biological resources (vegetation and wildlife), hydrology, topography, soils, and archaeological resources.

3.2 Impact Assessment Results

A summary of potential environmental impacts for each VEC, as well as mitigation measures and residual impacts (post-mitigation), are described in detail below.

3.2.1 Potential Impacts to Vegetation

Several non-sensitive plants and plant communities have been identified within 10 km of the project area. Rare plants have the potential to be found within the project footprint in areas associated with wetlands, groundwater seepage areas, and stream banks. Since the project area contains many relatively undisturbed areas, development has the potential to impact biodiversity, native species, or rare species within them. Disturbance will likely cause invasive species to increase, as the soil disturbance can create ideal conditions for weeds to establish. These non-native species also have the potential to encroach on native plant communities and outcompete them, further impacting vegetation. Weeds must be controlled through weed control during construction activities during development and maintenance once the project is completed.

Due to number of wetlands, springs, and stream banks present, rare plant surveys must need to be completed prior to development during the appropriate survey times (ideally early season in June and late season in August). County Servicing Standards (Rocky View County 2013) require on-site vegetation surveys to be completed between May and September. If rare plants are detected, specific mitigation measures will be determined based on the findings of the survey. If rare plants occur within impact zones, and the impact zones cannot be changed to avoid the plants, the rare plants can either be moved, collected for propagation, or have seeds collected, depending on the species of rare plant.

3.2.2 Potential Impacts to Wildlife

The project area is already moderately impacted primarily due to the presence of acreages and residential developments, but there currently is still high-quality wildlife habitat within the project footprint. Most of the land within the project footprint, apart from acreage and residential development, is coniferous or mixed coniferous-deciduous forest, which provides habitat for various species. Creek corridors and wetlands on site also have a high potential for wildlife habitat.

The impacts to wildlife could be detrimental depending on extent of habitat alteration and the time of year construction occurs. Any work between April 19th and August 29th that requires clearing (trees, shrubs, grassland, and wetlands) has the potential to disturb nesting birds and other wildlife and requires nest sweeps completed by qualified wildlife biologists (Government of

Canada 2023c). Wildlife sweeps are recommended between August 30th to April 18th to find wildlife features such as dens, nests, owl nest, and Pileated Woodpecker nest holes. Mitigation measures can include changing the timing of construction, wildlife sweeps, and working within specific hours of operation will mitigate the impact to all wildlife in the region. The listed wildlife species found within the project area trigger the need for wildlife surveys to be completed prior to construction and a wildlife sweep to occur prior to the initiation of construction activities. If listed wildlife species are found on site during construction, site-specific mitigation measures will need to be developed by a qualified wildlife biologist, to reduce the impact to these species.

Some wildlife in the area would already be exposed to regular human disturbance, but with any clearing activities, wildlife movements and habitat availability may change substantially as a result of development, dependant on the location of development within the project area. As more habitat is removed, connectivity will decrease and wildlife use of the area will decrease as a result. During development, there may be a temporary increase in sensory disturbance to wildlife occupying the area when construction is occurring. Also, the removal of vegetation during construction may reduce nesting opportunities for birds and habitat for small mammals.

It is recommended that prior to development, wildlife surveys be conducted due to the presence of wildlife species of concern being found within the project area during the FWMIS search. The recommended surveys include:

- Breeding Bird
- Sensitive Raptor
- Amphibian (when wetlands are present)
- Sharp-tailed Grouse (depending on the parcel)
- Water Bird
- Species at Risk (vary depending on the parcel and the available habitat)
- Incidental Wildlife

3.2.2.1 Sensitive Raptor Recommendations

The Sensitive Raptor Range for Bald Eagle, Golden Eagle, and Prairie Falcon occurs 600 m outside the project boundary. These raptors are highly mobile, so before new development occurs in areas likely to contain suitable nesting habitat, a sensitive raptor survey should be conducted by a qualified wildlife biologist according to standards in the Sensitive Species Inventory Guidelines for boreal and foothills raptors (Government of Alberta 2013). Survey efforts should focus on areas that can act as potential nesting sites such as trees, stream banks, cliffs, or holes in cliffs. If an active nest is identified, a setback distance of 50 – 1000 m should be applied around the nest where activity is restricted (Government of Alberta 2021). The distance of the setback depends on the species, time of year, and level of disturbance. For more details refer to the *Master Schedule of Standards and Conditions* (Government of Alberta 2021).

3.2.2.2 Sharp-tailed Grouse Recommendations

The Sharp-tailed Grouse Survey Area occurs 600 m outside the project boundary. If development is to occur in an area with suitable Sharp-tailed Grouse habitat, such as pasture or native

grasslands, surveys for active leks should be conducted by a qualified wildlife biologist between March 15th and May 31st according to standards in the Sensitive Species Inventory Guidelines (Government of Alberta 2013). Leks are areas where male birds gather in the spring to perform mating displays. Suitable habitat in the project area is limited, but could include: pasture and rangeland, open prairie, margins of watercourses, margins of farmland, shrublands, shrubby sandhills, coulees, and open aspen groves. If an active lek is identified, a setback distance of 100 - 500 m should be applied around the lek where activity is restricted (Government of Alberta 2021). The distance of the setback depends on the time of year and level of disturbance. For more details refer to the *Master Schedule of Standards and Conditions* (Government of Alberta 2021).

3.2.2.3 Species at Risk Recommendations

Based on the listed species known to occur within the project area (Table 5 in Section 2.2.5.2), species-specific surveys should be conducted prior to habitat disturbance. As Common Nighthawks have been recorded in the area, crepuscular nighthawk surveys are recommended and should be conducted between May 25th and June 30th in accordance with the Sensitive Species Inventory guidelines (Government of Alberta 2013). Due to the presence of boreal toads and Columbia spotted frogs recorded in the wildlife buffer of the project area and northern leopard frogs recorded within the ASP boundary, both auditory and non-acoustic amphibian surveys are recommended when wetlands will be impacted, because northern leopard frogs and Columbia spotted frogs can be difficult to detect during auditory surveys due to their quiet or low-pitched calls (Government of Alberta 2013).

3.2.2.4 Key Wildlife and Biodiversity Zones

Key Wildlife and Biodiversity Zones are located throughout the Bragg Creek ASP boundary. Key Wildlife Biodiversity Zones are considered to be important for winter ungulate habitat as well as having higher potential for biodiversity, and typically occur along major river valleys. Those within the project area occur mainly along the Elbow River and Bragg Creek, as well as an isolated zone area in the southwest of the boundary. Some areas of Key Wildlife and Biodiversity Zones within the ASP boundary have been previously disturbed through acreage and residential development. The Government of Alberta (Government of Alberta 2015d) has developed a set of recommended guidelines for industrial land use within these zones which are summarized below:

1. New permanent access is not recommended. Where permanent access is essential, an access management plan and associate approval from AEP will be required. The access management plan should aid in minimizing disturbance to wildlife and habitat degradation and limit public vehicle traffic.
2. Where temporary access is required, it should be designed and managed to minimize disturbance to wildlife and degradation of associated habitat.
3. No construction is permitted within the applicable restricted period, which varies depending on the project location:

- For the Bragg Creek ASP, the following restricted period applies: No construction between December 15th and April 30th in Key Wildlife and Biodiversity Zones south of Highway 1 (Along the Elbow River valley).

4. Relaxation of the restricted activity period requires approval from AEP, but it still expected that other mitigation measures are put in place to protect the wildlife resource.

It is recommended that any new industrial developments taking place within Key Wildlife and Biodiversity Zones in the ASP Area should follow all of the government recommended guidelines. If construction must take place within the restricted time window, then consultation with AEP and associated approval is required before work proceeds.

3.2.2.5 Wildlife Corridors

The primary wildlife corridors present within the project area are mainly associated with Bragg and Iron Creeks and the Elbow River, the riparian wetland area in the northwest portion of the ASP boundary, and intact tracts of forest and grassland (Appendix A, Figures A1-A10). These corridors likely provide contiguous habitat for smaller and more mobile species (e.g. birds or bats depending on the habitat type). They may also provide non-fragmented movement corridors for larger animals such as moose.

3.2.2.6 Migratory Birds

The ASP Area is located in Nesting Zone B5 within the Boreal Taiga Plains (BCR 6) Bird Conservation Region within the Map of Nesting Zones in Canada (Government of Canada 2023c). In this nesting zone, birds are presumed to be actively nesting between April 19th and August 29th (Government of Canada 2023c), with some variation between different bird species and habitat types. Destroying habitat in areas attractive to migratory birds has a high risk of disturbing or destroying migratory bird nests or eggs during this timing window. Between April 19th and August 29th, it is recommended to avoid any habitat impacting disturbing activity (e.g. stripping and grading, tree clearing, wetland removal, vegetation removal, etc.) to comply with the Migratory Birds Convention Act (Government of Canada 1994). If it is necessary to disturb potential nesting habitat within the restricted activity period (RAP), a nest sweep should be conducted by a qualified wildlife biologist to ensure that nesting habitat is avoided and nesting birds or other wildlife species are not disturbed. If a nest is observed during the nest sweep, an appropriate species-dependent setback must be placed around the nest. These setbacks should be determined in consultation with Environment and Climate Change Canada and AEP, and this setback must be maintained until the nest is no longer occupied.

Some wildlife protected under provincial and/or federal legislation may begin breeding prior to April 19th so a wildlife sweep may be required, depending on the habitat present. Appropriate setbacks remain in effect if an active nest, or other wildlife feature (e.g. den, hibernaculum, etc.), is identified, regardless of the time of year. Specifically, owls and some waterfowl may begin nesting before April 19th, especially in forested or wetland areas.

3.2.3 Potential Impacts to Aquatics

There are four confirmed fish bearing watercourses within the project area (Elbow River, Iron Creek, Bragg Creek, and unnamed tributary to Elbow River). The Elbow River, Bragg Creek, and Iron Creek contain both sport and non-sport fish species, while the unnamed tributary to the Elbow River is only known to contain white sucker (a non-sport fish species). Some unnamed watercourses within the project boundary appear to lack a defined channel (based on satellite and aerial imagery), but require ground truthing to confirm. Therefore, a fish and fish habitat survey should be completed by a Qualified Aquatic Environmental Specialist to confirm the presence or absence of fish habitat prior to any works with potential to disturb fish or fish habitat (including riparian areas).

3.2.4 Potential Impacts to Hydrology, Waterbodies, and Wetlands

3.2.4.1 Hydrology Impacts

Depending on the finalized development plan for the project area, it is unknown the exact impact to the hydrology of the area. Natural surface water absorption would likely be very limited in unvegetated areas.

3.2.4.2 Watercourse Impacts

According to FWMIS, there are a total of 36 watercourses within the project area. However, site visits are required for a number of the smaller watercourses to determine whether flowing water is present. Potential impacts to watercourses include increased sedimentation, changes to the bed and banks of the watercourse, and changes to stream course and volume. There may be other ephemeral drainages within the project area, but those would require ground truthing to determine their location.

3.2.4.3 Wetland Impacts

Wetlands provide many valuable ecosystem functions including:

- Improving water retention to prevent flooding.
- Improving water quality.
- Suitable habitat for a wide variety of plants and animals.
- Stopover areas for migratory waterfowl.

It is recommended that high value wetlands in the project area be retained in order to utilize their ecosystem benefits. The Government of Alberta has developed a process for assessing the value of wetlands in terms of their relative abundance on the landscape, supported biodiversity, ability to improve water quality, importance to flood reduction, and human uses (Government of Alberta 2015a, b, c, 2017, 2018). It is recommended that any developments intending to impact wetlands in the project area perform a detailed field-based assessment to determine the value of wetlands by using the Alberta Wetland Rapid Evaluation Tool – Actual (ABWRET-A) or Alberta Wetland Rapid Evaluation Tool – Desktop (ABWRET-D), depending on the level of disturbance.

The ABWRET assigns a value category (A, B, C, or D) to each wetland based on different functions including: hydrology, water quality, ecology (habitat), and human use. Each wetland is

assigned a final value based on how the wetland's functions compare to other wetlands in the region, with Class A being the highest value and Class D being the lowest value. In locations where high valued (Class A) wetlands are identified, they should be protected wherever possible. Determining the ABWRET value of the wetlands in the project area was not possible from the desktop review of wetland databases that was completed for this report, but high value wetlands tend to be larger, more permanent waterbodies (semi-permanent or permanent) that provide high water quality and hydrology value and/or provide high quality wildlife and rare plant habitat. The Alberta Wetland Policy should be followed, which includes minimization and avoidance of wetlands as the primary strategy for their protection, and wetland replacement is only used when wetland impacts cannot be avoided.

3.2.5 Potential Impacts to Topography

This project will have a negligible impact to the topography at the regional scale. There will be an impact at the local scale if grading occurs. No mitigation measures are required.

3.2.6 Potential Impacts to Soils

Disturbed soils exist within the project area where agriculture and development have occurred, while native soil profiles exist in the undisturbed riparian, wetland, and forested areas. Development of the area will result in additional soil disturbance, as it requires stripping of topsoil and subsoil material. Excavation, removal, and/or recontouring of lower subsoil material may also occur. This results in a significant risk for loss of soil volume and quality, destruction of soil structure, erosion, admixing, and compaction. Loss of soil structure and minor admixing is mostly unavoidable regardless of mitigation measures. Soil structure can gradually redevelop in disturbed soils, but the natural soil profile can never be re-established. Admixing is also irreversible since soil cannot be un-mixed. Other potential impacts to soil include: compaction, clodding, erosion, significant admixing, soil loss, and reduced soil quality. However, these impacts can be mitigated by soil handling practices.

Development on a larger scale, such as the project area, can impact the subsurface and surface drainage by: compaction, recontouring, culvert/ditches, etc. If drainage is impeded or redirected, ponding or flooding may occur at location locations onsite or may affect adjacent properties. To limit impacts to the soils and risks to adjacent properties, an ECO Plan should be created for projects that explicitly outline site-specific impacts and mitigations for soils.

3.2.7 Potential Impacts to Archaeology

Nine historical resources were identified within the project area, spanning across 17 quarter sections. A *Historical Resources Act* approval is required for any quarter section with an HRV of 3, 4 or 5. Since all were classified as HRV4 or 5, approval is required. If any historical resources are encountered during development of these quarter sections, construction will be halted immediately, and the appropriate authorities will be contacted.

3.2.8 Potential Impacts to Environmentally Sensitive Areas

The Environmentally Sensitive Areas are mainly comprised of corridors associated with the Bragg and Iron Creeks, and the Elbow River, located in the center of the ASP area. These creek and riparian corridors provide a host of valuable ecosystem functions with potential to be impacted by future development:

- Maintaining the provision of water quality and quantity and provide protection against drought and flooding events.
- Providing habitat for identified local species of interest, designated species of conservation concerns (SCC), or identified local species group.
- Providing rare, unique, or biologically diverse ecosystems or unique landforms.
- Contributing to other important ecosystem functions or services at regional or local scales.

Most wetlands in the Project Area have been impacted, so wetland areas that were minimally impacted and/or associated with relatively undisturbed forested or grassland areas containing wildlife habitat were selected as Environmentally Sensitive Areas (Figure 14), as they:

- Maintain the provision of water quality and quantity and provide protection against drought and flooding events.
- Provide habitat for identified local species of interest, designated species of conservation concerns (SCC), or identified local species group.
- Provide rare, unique, or biologically diverse ecosystems or unique landforms.
- Contribute to other important ecosystem functions or services at a regional or local scales.

Finally, areas of intact grassland or forest were selected as Environmentally Sensitive Areas, as they:

- Provide habitat for identified local species of interest, designated species of conservation concerns (SCC), or identified local species group.
- Provide rare, unique, or biologically diverse ecosystems or unique landforms.
- Contribute to other important ecosystem functions or services at a regional or local scales.

Impacts to these sensitive habitats should be minimized to maintain ecosystem health and function within the project area (Table 13). Recommended mitigation measures include:

- As per the Rocky View County Plan goal to, “practice sound land use planning in order to protect agricultural operations, native habitat, environmentally sensitive areas, and wildlife corridors” (Rocky View County 2023);
- As per the South Saskatchewan Regional Plan (Government of Alberta 2018), municipalities are encouraged to retain at least a 20 m buffer around permanent watercourses, as per the Government of Alberta (2012) *Stepping Back from the Water. A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta’s Settled Region;* however, a field study is needed to determine the appropriate buffer strip width based on the individual riparian characteristics;
- As per the Rocky View County Plan key direction to, “continue to protect significant wetlands and natural areas” (Rocky View County 2023).
- As per the Rocky View County Bragg Creek Area Structure Plan Terms of Reference (2024), developing policies that “minimize the impact of development on the natural

environment" which includes "Wildlife wellbeing, including mitigated wildlife/human interactions, protecting wildlife corridors, and habitat functionality" (Rocky View County 2024b);

- Consideration should be made for Policy C-419 *Riparian Land Conservation and Management* (Rocky View County 2010).

Table 1313 – Potential Impacts and Mitigation Measures to Environmentally Sensitive Areas

Name/Description of the Environmentally Sensitive Area	Potential Impacts of Proposed Development	Recommended Mitigation Measures	Identify Mitigation Measure
1 – Forest Habitat	• Provide habitat for identified local species of interest, designated species of conservation concerns (SCC), or identified local species group. • Provide rare, unique, or biologically diverse ecosystems or unique landforms. • Contribute to other important ecosystem functions or services at a regional or local scales.	• Potential Environmental Reserve pending further field investigation • Avoid habitat fragmentation	• *"Practice sound land use planning in order to protect agricultural operations, native habitat, environmentally sensitive areas, and wildlife corridors*" (Rocky View County 2023)
2 – Forest, Grassland, Riparian, and Aquatic Habitat	• Impact water quality & quantity • Impact protection against drought & flood • Impact habitat for local species of interest & species of conservation concern • Impact rare, unique, or biologically diverse ecosystems • Impact the contribution to important ecosystem functions or services at both the regional and local scale	• Retain watercourse with a 20 m buffer • Potential Environmental Reserve pending further field investigation • Retain current water flows from Bragg Creek into the Elbow River with a site-specific stormwater plan	• Watercourses with a 20 m buffer, as per the Government of Alberta (2012) Stepping Back from the Water. A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta's Settled Region • "*Continue to protect significant wetlands and natural areas*" (Rocky View County 2023c) • *"Practice sound land use planning in order to protect agricultural operations, native habitat, environmentally sensitive areas, and wildlife corridors*" (Rocky View County 2023)
3 – Grassland, Riparian, and Aquatic Habitat	• Impact water quality & quantity • Impact protection against drought & flood • Impact habitat for local species of interest & species of conservation concern	• Retain watercourse with a 20 m buffer • Potential Environmental Reserve pending further field investigation • Retain current water flows from Bragg Creek into the Elbow River with a site-specific stormwater plan	• Watercourses with a 20 m buffer, as per the Government of Alberta (2012) Stepping Back from the Water. A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta's Settled Region

Name/Description of the Environmentally Sensitive Area	Potential Impacts of Proposed Development	Recommended Mitigation Measures	Identify Mitigation Measure
	• Impact rare, unique, or biologically diverse ecosystems • Impact the contribution to important ecosystem functions or services at both the regional and local scale		• "*Continue to protect significant wetlands and natural areas*" (Rocky View County 2023c).
4 – Forest, Riparian, Grassland, Wetland, and Aquatic Habitat	• Impact water quality & quantity • Impact protection against drought & flood • Impact habitat for local species of interest & species of conservation concern • Impact rare, unique, or biologically diverse ecosystems • Impact the contribution to important ecosystem functions or services at both the regional and local scale	• Retain watercourse with a 20 m buffer • Retain wetlands with at least a 50 m buffer • Potential Environmental Reserve pending further field investigation • Retain current water flows from Bragg Creek into the Elbow River with a site-specific stormwater plan	• Watercourses with a 20 m buffer, as per the Government of Alberta (2012) Stepping Back from the Water. A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta's Settled Region • Wetlands with a 50 m buffer, as per the Government of Alberta (2012) Stepping Back from the Water. A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta's Settled Region • "*Continue to protect significant wetlands and natural areas*" (Rocky View County 2023c).
5 – Forest and Grassland Habitat	• Provide habitat for identified local species of interest, designated species of conservation concerns (SCC), or identified local species group. • Provide rare, unique, or biologically diverse ecosystems or unique landforms. • Contribute to other important ecosystem functions or services at a regional or local scales.	• Potential Environmental Reserve pending further field investigation • Avoid habitat fragmentation	• *"Practice sound land use planning in order to protect agricultural operations, native habitat, environmentally sensitive areas, and wildlife corridors*" (Rocky View County 2023c)

3.3 Impact Assessment Conclusions

Wildlife movements and habitat availability are expected to change due to developing the project area. Changes are anticipated to be less for within the Bragg Creek Hamlet Expansion Area than the remainder of the ASP due to the previously established habitat disturbance of residential development. Regardless, screening was performed for the entire ASP boundary. If the riparian areas and remaining grasslands and forested areas within the ASP boundary are undisturbed, movement patterns will still be impacted due to the mosaic of available habitat being reduced across the landscape. Most wildlife in the area is already exposed to human disturbance, and the plant community is already likely impacted by non-native species, due to development throughout the area. There may be a temporary increase in sensory disturbance to wildlife occupying the area during construction of the hamlet expansion project. Removal of vegetation during construction may reduce breeding opportunities for birds, and habitat for small mammals, though much of the surrounding areas to the are likely of similar or higher quality habitat. However, river riparian habitat is limited. Due to the presence of wildlife habitat and the potential for sensitive species, it is recommended that wildlife surveys be conducted before development can proceed during the recommended time periods according to the Government of Alberta (2013). Sensitive species are known to be in the project area, so it is necessary for a nest sweep to occur prior to the initiation of construction activities during the restricted activity period of April 15th and August 28th. If nests or listed species are found on site during construction, specific mitigation measures and setback buffers must be developed by a qualified wildlife biologist to reduce the impact to these species.

Due to the presence of wetlands and the potential for rare plants associated with the wetlands, wetland and rare plant surveys must be conducted before development can proceed. Areas determined to be Environmentally Sensitive Areas and should be retained as Environmental Reserves (or something similar) since they maintain the provision of water quality and quantity and provide protection against drought and flooding events, provide habitat for identified local species of interest, designated species of conservation concerns (SCC), or identified local species group, provide rare, unique, or biologically diverse ecosystems or unique landforms, and contribute to other important ecosystem functions or services at a regional or local scales. If wetlands within the project area are removed, stormwater ponds and/or a stormwater system will be required to capture the surface runoff from the site. If wetlands are to be removed, multiple regulatory applications and approvals will be required including a permanency assessment, ABWRET-A submission, and a *Water Act* approval submission, which will include compensation for lost wetland area.

3.4 Recommendations

Due to the potential for impact on wetlands, wildlife, vegetation, and historical resources, it is recommended that a Biophysical Impact Assessment (BIA) be completed for all projects proceeding within the project area following the Rocky View County (2013) Servicing Standards guidelines. The County should consider a study to delineate and classify the Environmentally

Sensitive Areas to properly determine setbacks and future protection steps, such as environmental reserves. If any wetlands are to be impacted, a Wetland Assessment and Impact Report (WAIR) and *Water Act* Approval application will be required, which consists of:

- Wetland delineation and permanency assessments (with submission to the AEP Public Lands Water Boundaries Unit).
- Full wetland surveys using the AEP ABWRET-A system.
- Wetland Assessment and Impact Report (WAIR) and submission under the *Water Act* to pay compensation for all non-ephemeral wetlands removed (both planned and historic).
- All historically removed wetlands that were removed without proper approval will have to be reported to AEP once the full extent is known.
- A Biophysical Impact Assessment be completed prior to development proceeding with an emphasis on:
    - Wetlands surveys.
    - Vegetation surveys (rare plants, vegetation communities, and weeds).
    - Wildlife surveys (breeding birds, amphibians, raptors, water birds, incidental wildlife, and wildlife habitat).

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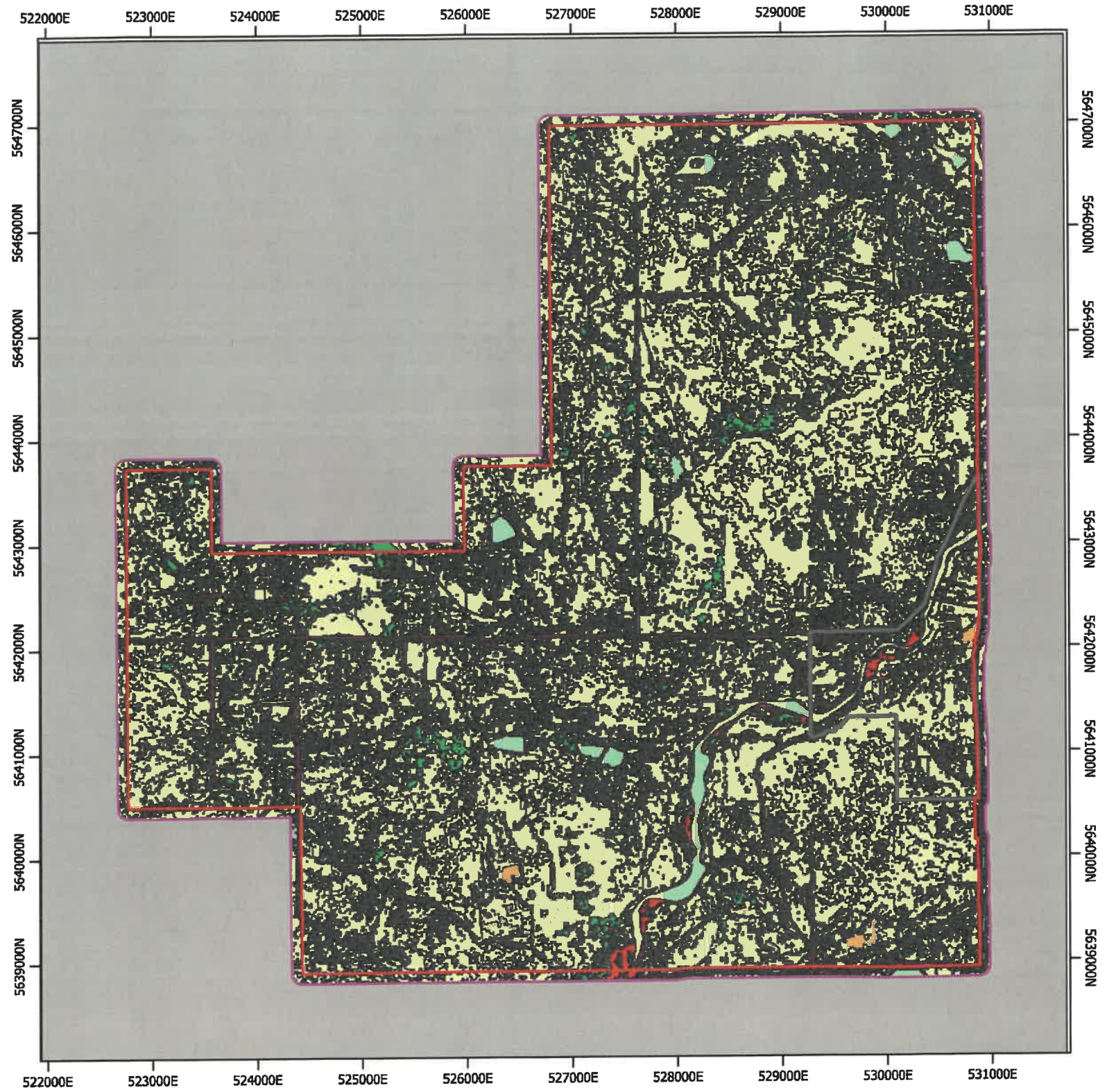
Appendix A

Wildlife Modelling Maps

A1 – Frogs (and Wetland/Riparian Amphibian Species) Habitat Resistance
A2 – Frogs (and Wetland/Riparian Amphibian Species) Habitat Connectivity
A3 – Black Bear (and Forest Species) Habitat Resistance
A4 – Black Bear (and Forest Species) Habitat Connectivity
A5 – Deer (and Generalist Species) Habitat Resistance
A6 – Deer (and Generalist Species) Habitat Connectivity
A7 – Moose (and Forest/Wetland/Riparian/Shrubland Species) Habitat Resistance
A8 – Moose (and Forest/Wetland/Riparian/Shrubland Species) Habitat Connectivity
A9 – Savannah Sparrow (and Grassland Species) Habitat Resistance
A10 – Savannah Sparrow (and Grassland Species) Habitat Connectivity



LEGEND

- Bragg Creek Hamlet Growth Area
- Bragg Creek ASP Boundary
- Bragg Creek Boundary_100m buffer

Resistance

- 1
- 25
- 50
- 75
- 100

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

0 0.4 0.8 1.2 km

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Environmental Screening Report and Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Amphibian and Wetland Species

Habitat Resistance Modeling

BieSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 04 Mar 2025
Project #: 25003

Figure No.
A1

LEGEND

- Bragg Creek Hamlet Growth Area
- Bragg Creek ASP Boundary
- Bragg Creek Boundary_100m buffer

Connectivity Scale

- Highest Connectivity
- Lowest Connectivity

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

0 0.4 0.8 1.2 km

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Amphibian and Wetland Species

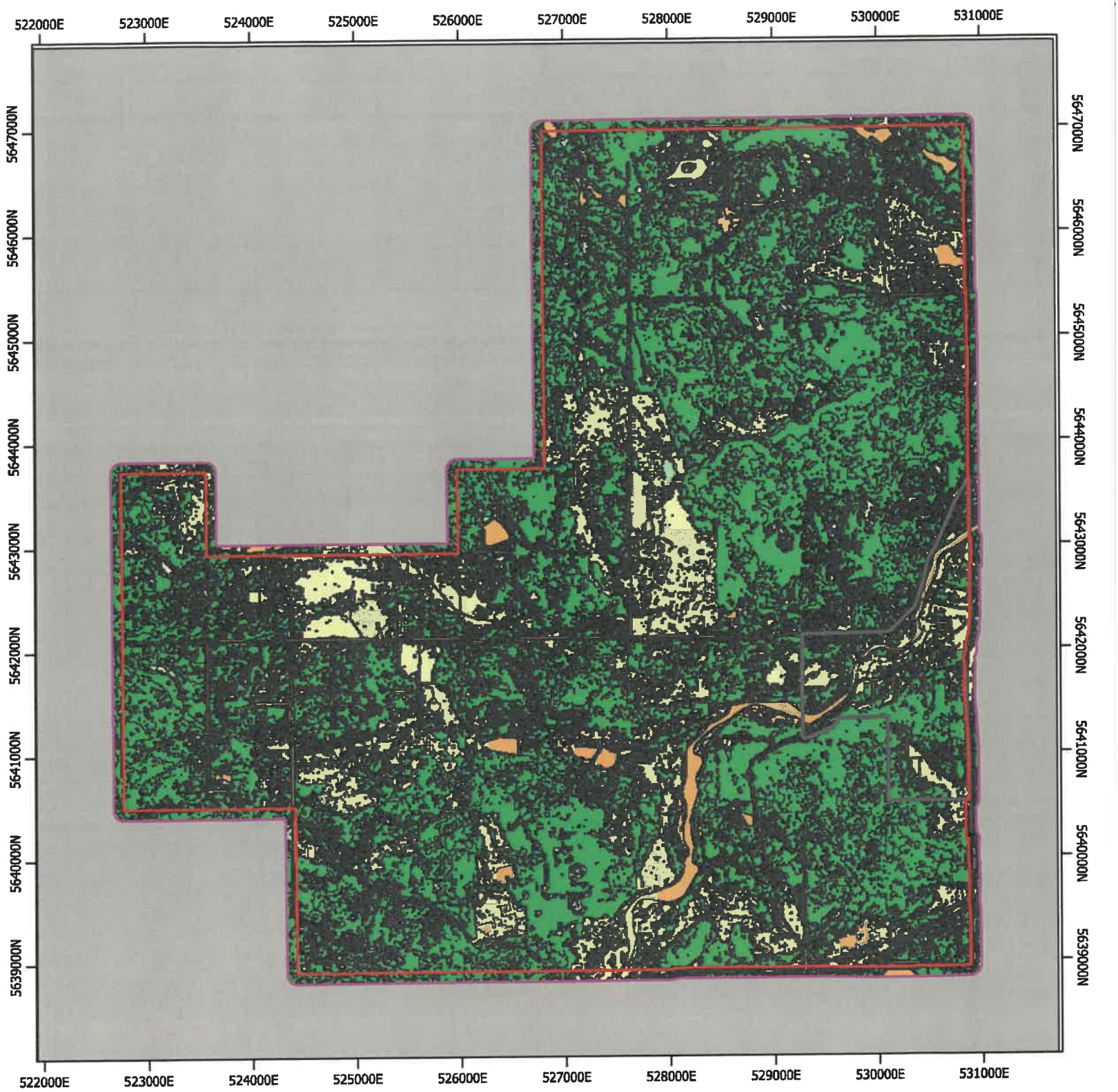
Habitat Connectivity

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 04 Mar 2025
Project #: 25003

Figure No.
A2



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Resistance

- 1
- 25
- 50
- 75
- 100

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

0 0.4 0.8 1.2 km

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Black Bear and Forest Species

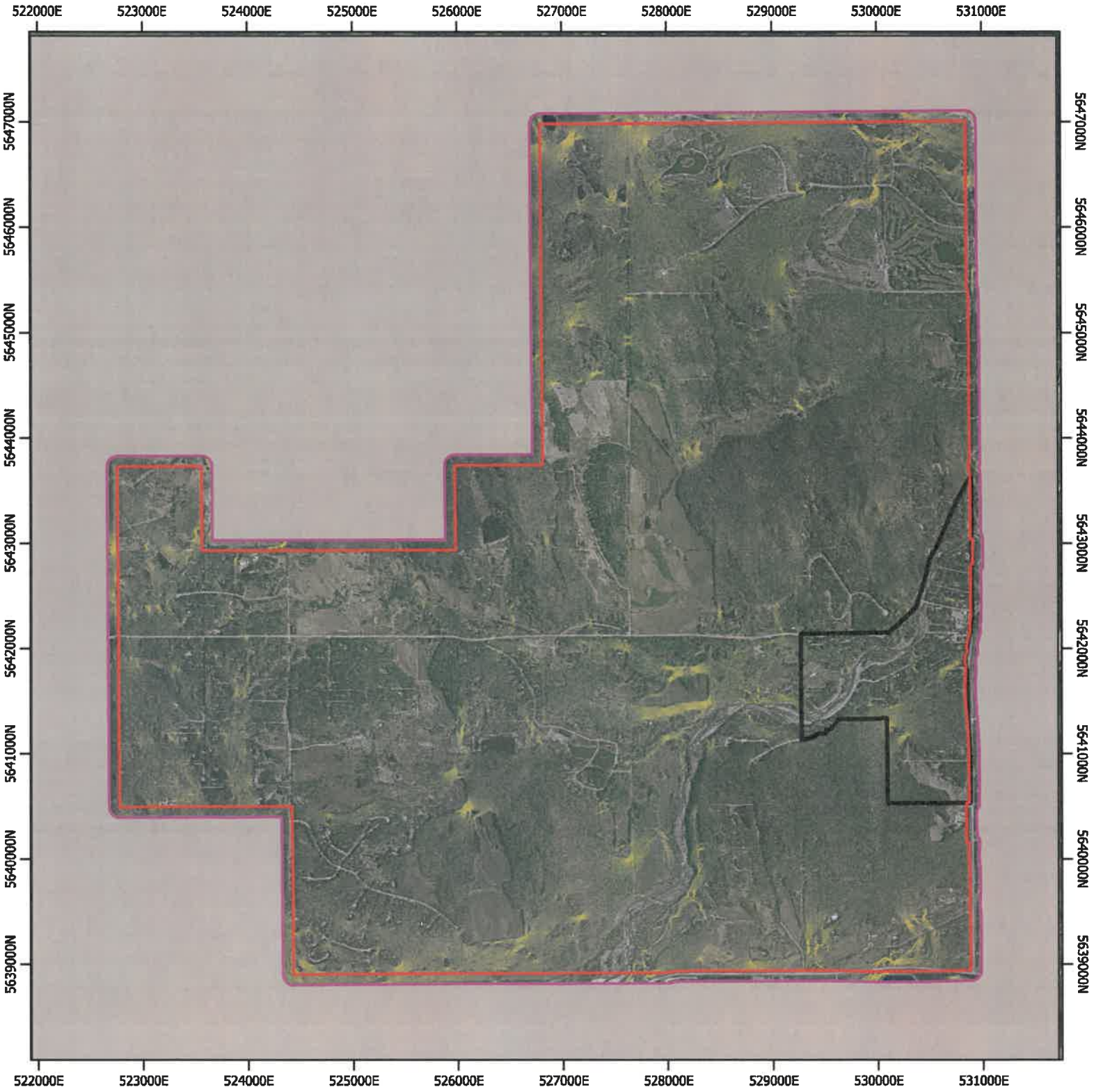
Habitat Resistance Modeling

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 04 Mar 2025
Project #: 25003

Figure No.
A3



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Connectivity Scale

Highest Connectivity

Lowest Connectivity

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

0 0.4 0.8 1.2 km

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Bragg Creek Area Structure Plan Hamlet Review

Black Bear and Forest Species

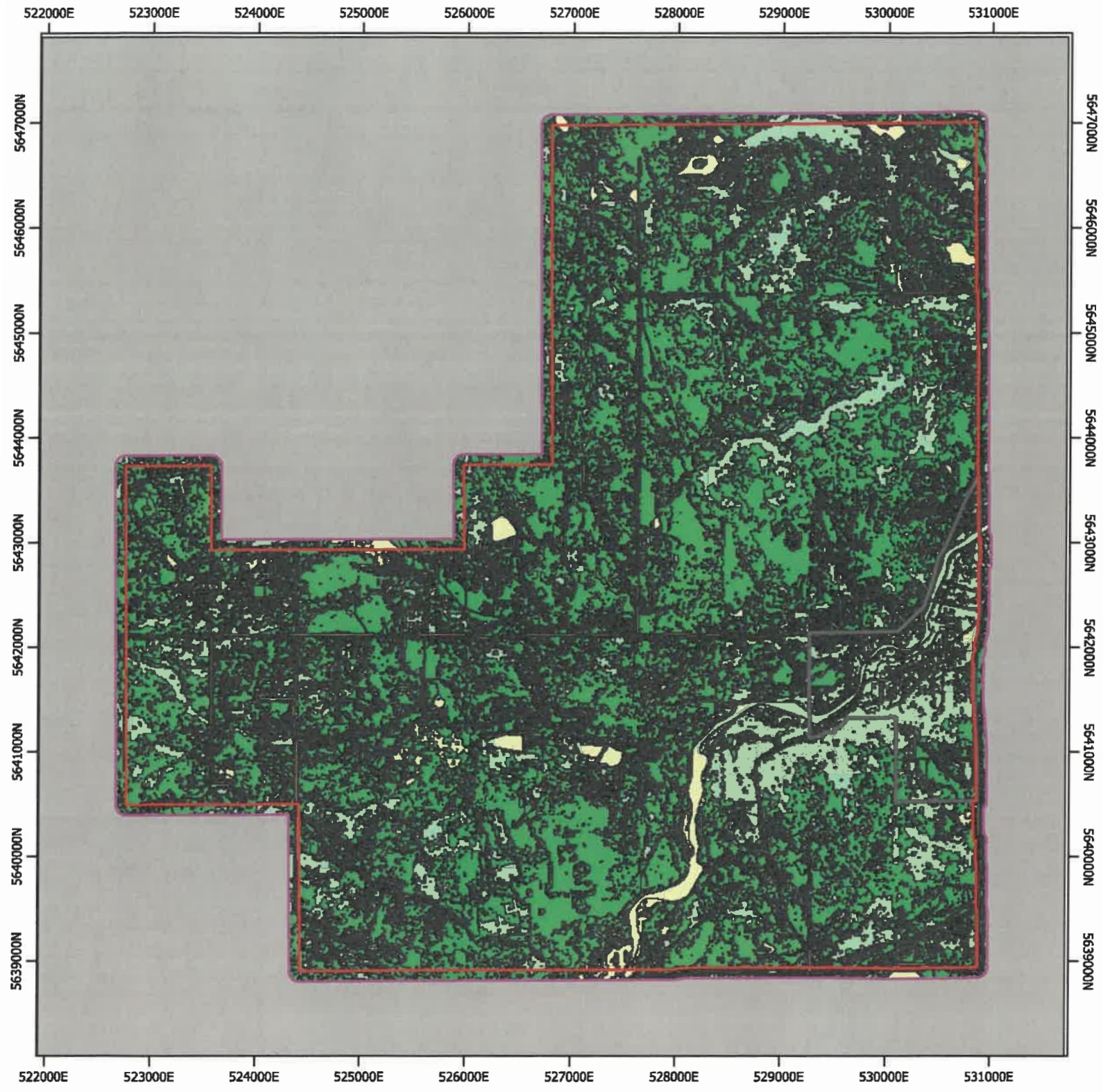
Habitat Connectivity

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 04 Mar 2025
Project #: 25003

Figure No.
A4



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Resistance

- 1
- 25
- 50
- 75
- 100

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

0 0.4 0.8 1.2 km

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Bragg Creek Area Structure Plan Hamlet Review

Deer and Generalist Species

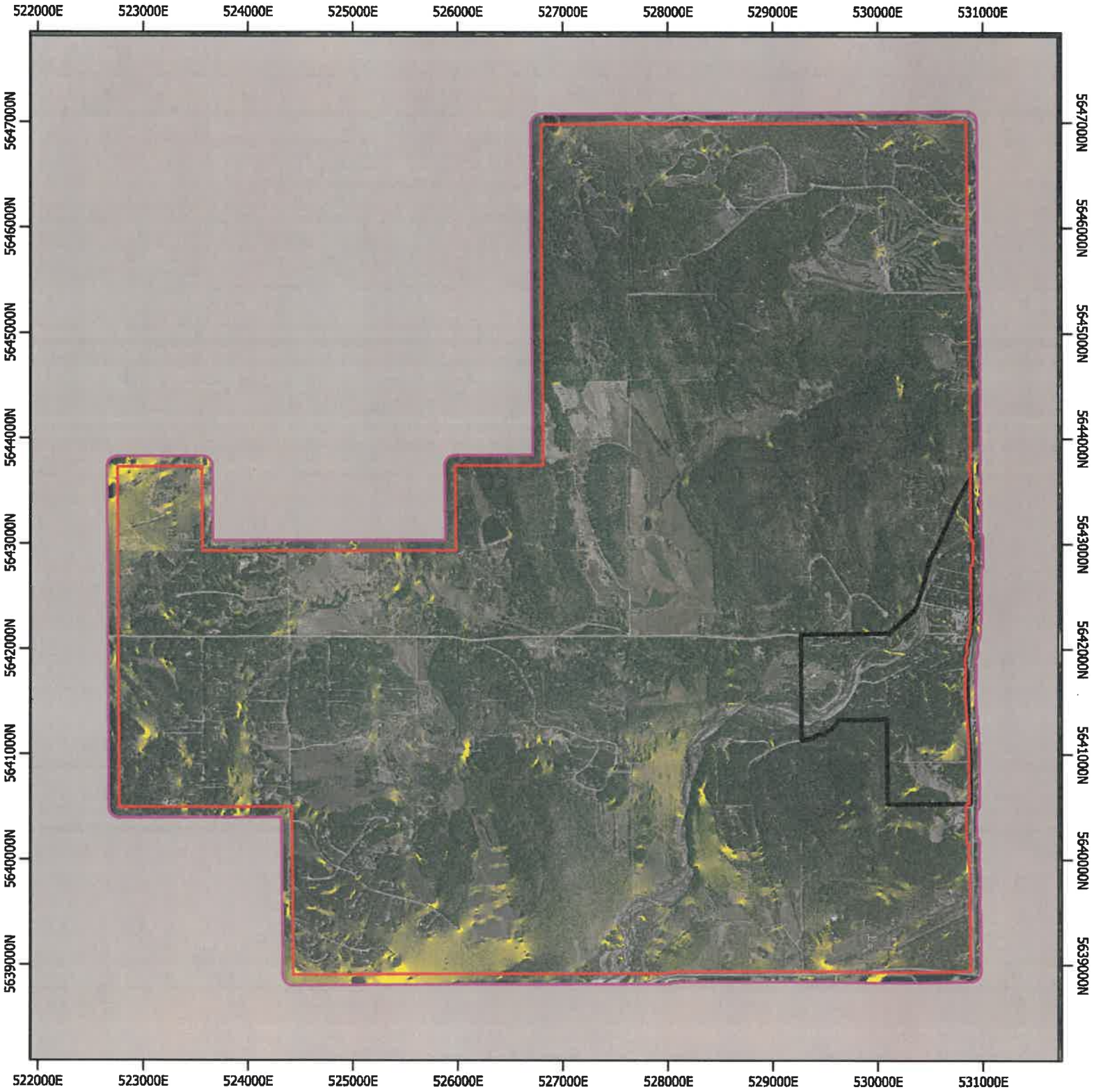
Habitat Resistance Modeling

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 04 Mar 2025
Project #: 25003

Figure No.
A5



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Connectivity Scale

Highest Connectivity

Lowest Connectivity

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

0 0.4 0.8 1.2 km

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Deer and Generalist Species

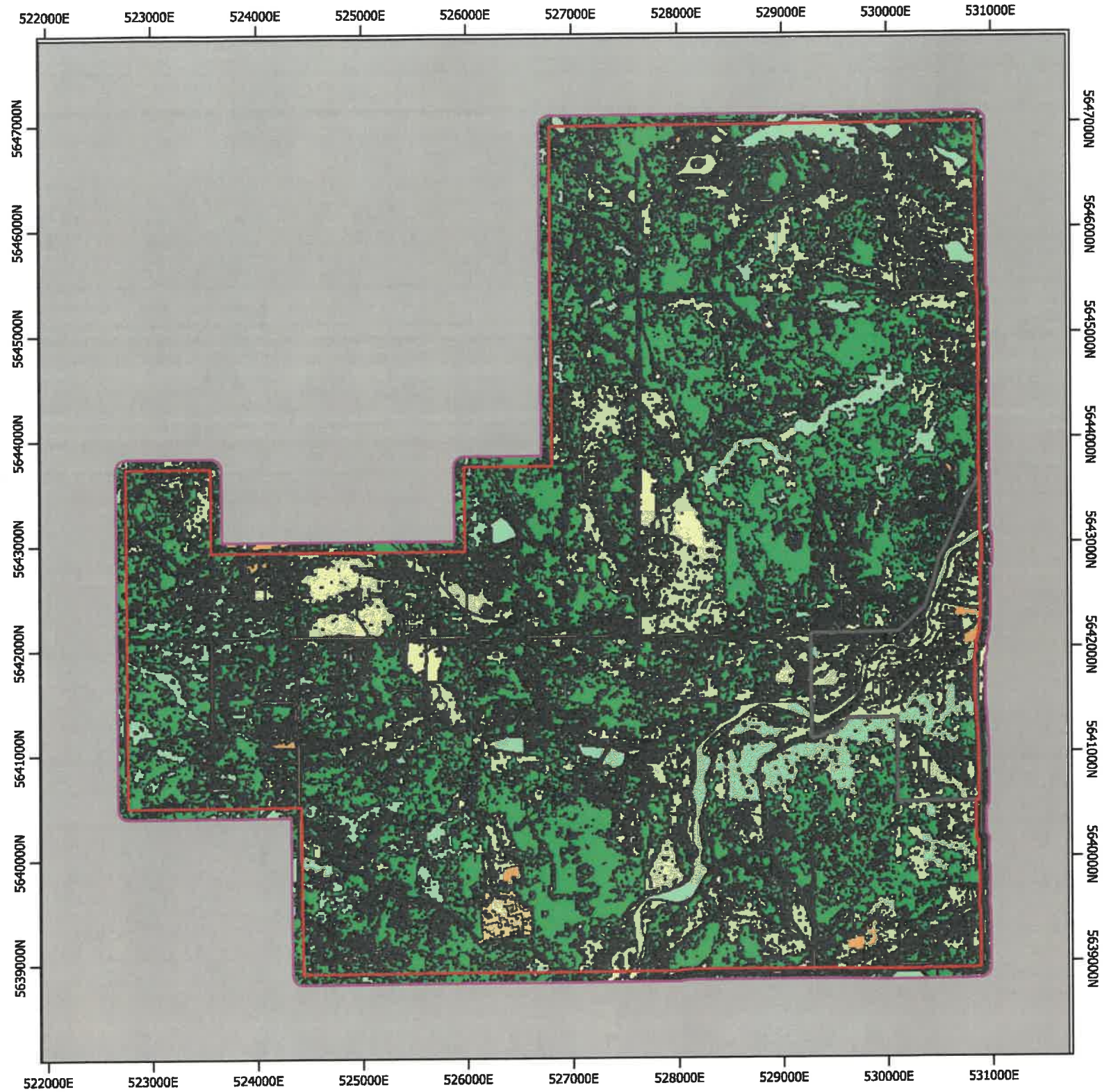
Habitat Connectivity

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 04 Mar 2025
Project #: 25003

Figure No.
A6



LEGEND

- Bragg Creek Hamlet Growth Area
- Bragg Creek ASP Boundary
- Bragg Creek Boundary_100m buffer

Resistance

- 1
- 25
- 50
- 75
- 100

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

0 0.4 0.8 1.2 km

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Bragg Creek Area Structure Plan Hamlet Review

Moose and Forest/Wetland/Riparian Species

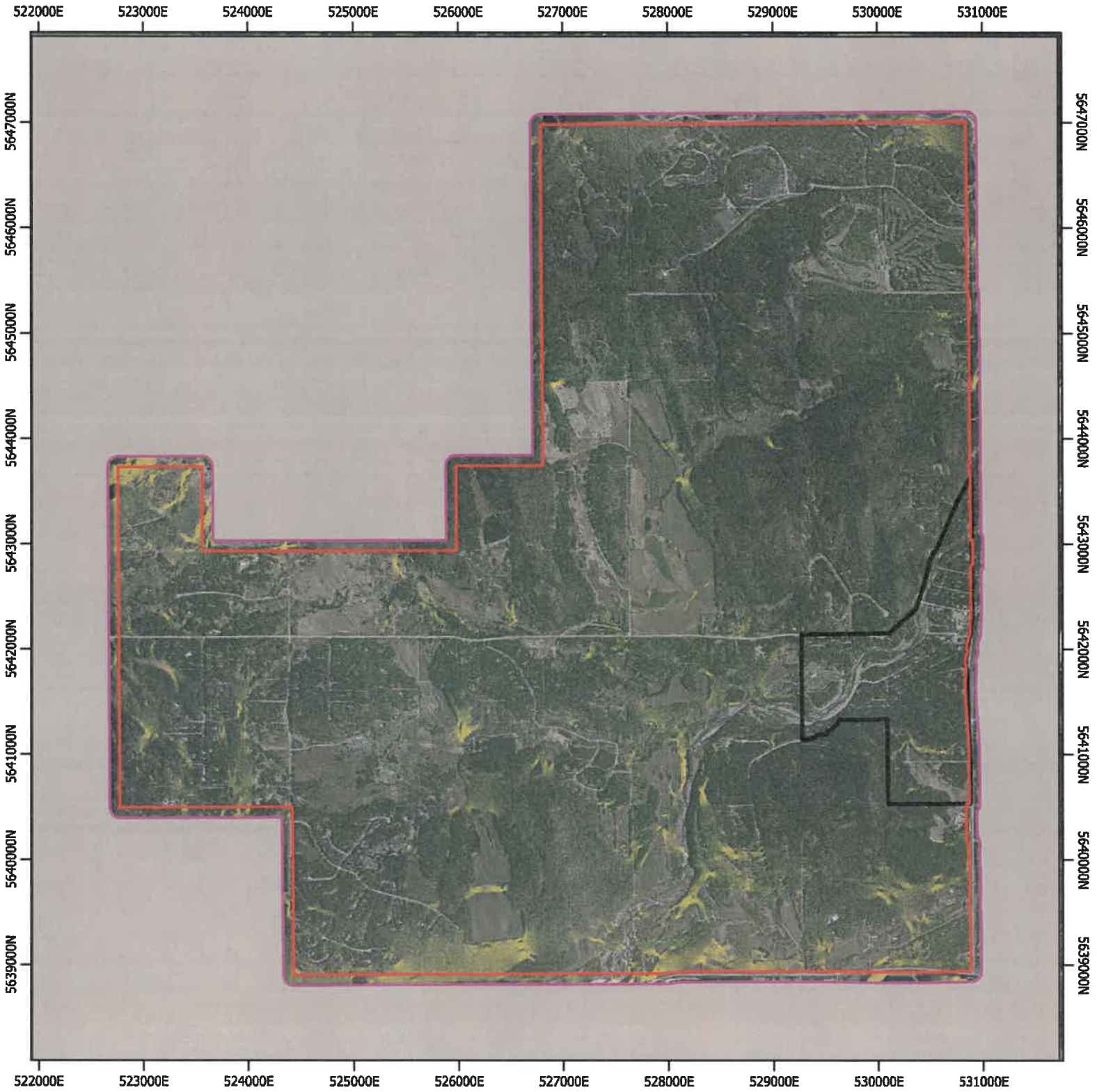
Habitat Resistance Modeling

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 04 Mar 2025
Project #: 25003

Figure No.
A7



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Connectivity Scale

- Highest Connectivity
- Lowest Connectivity

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

0 0.4 0.8 1.2 km

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Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Moose and Forest/Wetland/Riparian Species

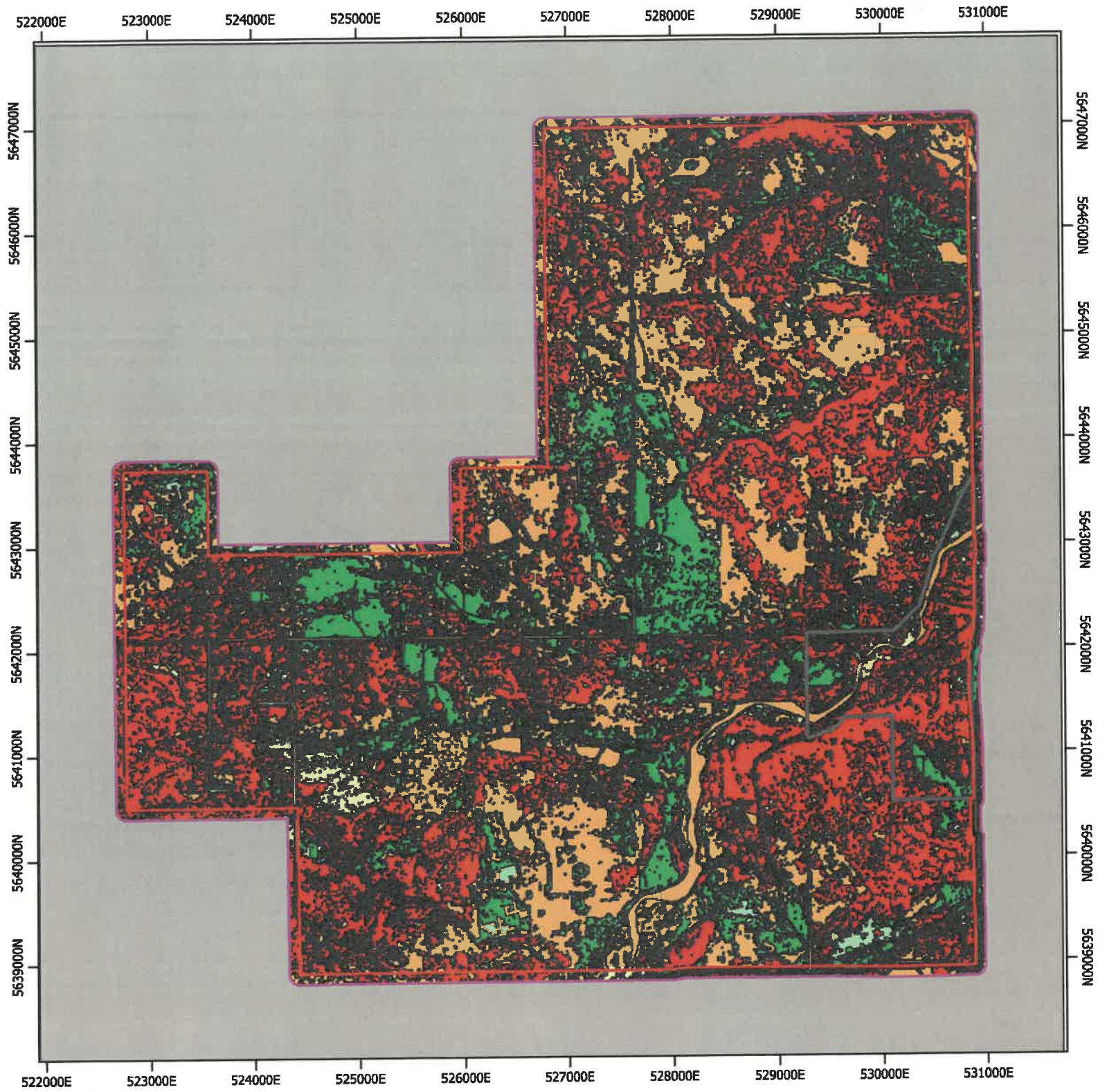
Habitat Connectivity

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 04 Mar 2025
Project #: 25003

Figure No.
A8



LEGEND

- Bragg Creek Hamlet Growth Area
- Bragg Creek ASP Boundary
- Bragg Creek Boundary_100m buffer

Resistance

- 1
- 25
- 50
- 75
- 100

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

0 0.4 0.8 1.2 km

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Environmental Screening Report and
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Bragg Creek Area Structure Plan Hamlet Review

Savannah Sparrow and Grassland Species

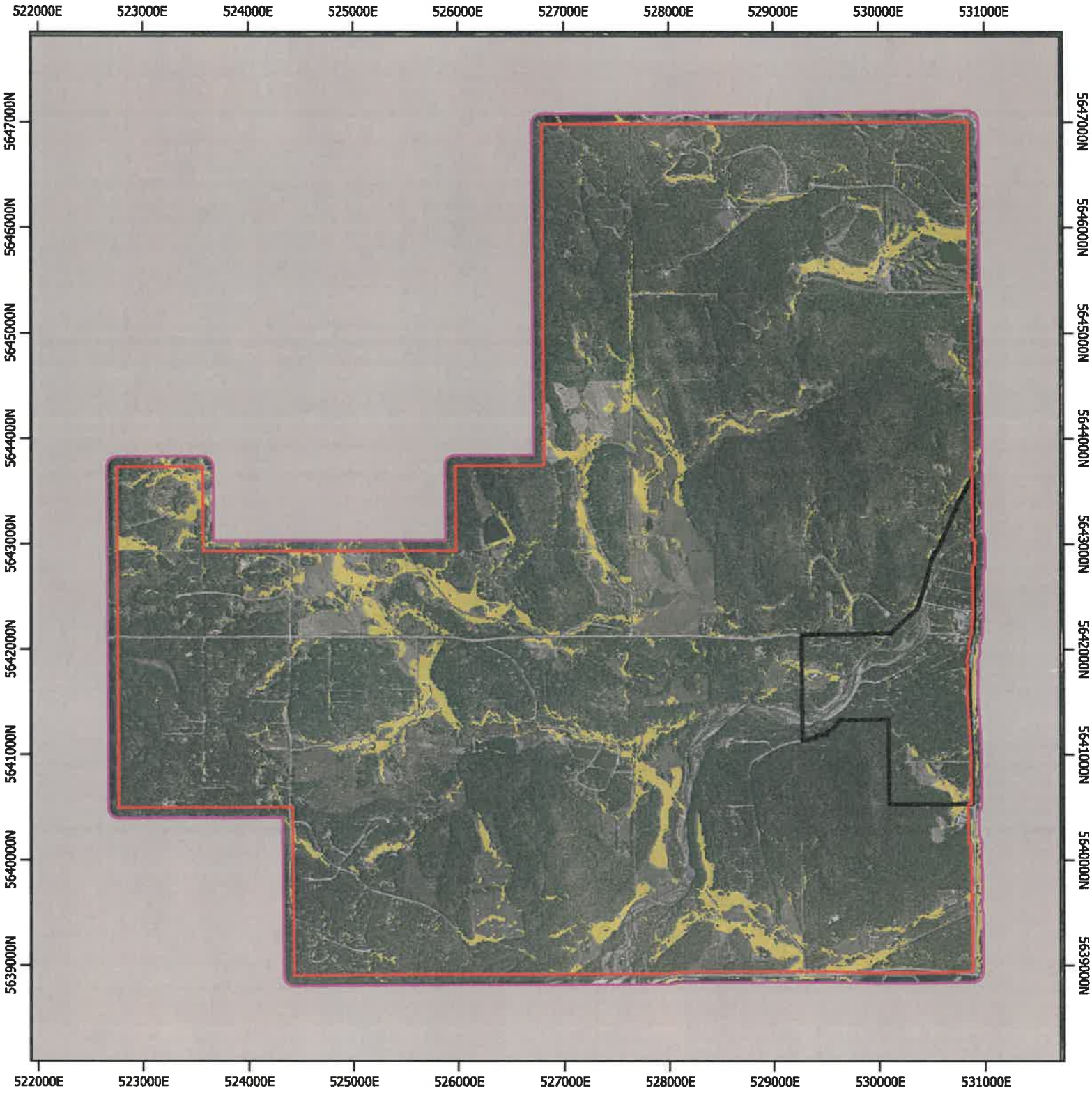
Habitat Resistance Modeling

RC BioSolutions Ltd.

Lead: Krissy Bird
Drawn by: Jesse Bird

Date: 04 Mar 2025
Project #: 25003

Figure No.
A9



LEGEND

- Bragg Creek ASP Boundary
- Bragg Creek Hamlet Growth Area
- Bragg Creek Boundary_100m buffer

Connectivity Scale

Highest Connectivity

Lowest Connectivity

NAD83 / Alberta 3TM ref merid 114 W

Scale: 1 : 50000

N

0 0.4 0.8 1.2 km

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Environmental Screening Report and
Wildlife Habitat Modeling
Bragg Creek Area Structure Plan Hamlet Review

Savannah Sparrow and Grassland Species

Habitat Connectivity

RC BioSolutions Ltd.

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Drawn by: Jesse Bird

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Project #: 25003

Figure No.
A10