Friends of Fish Creek

Vegetation Inventory

2024

Final Report

Submitted To:

Emma Stroud

Team Lead – Ecology & Conservation

Friends of Fish Creek Provincial Park Society

Submitted By:

Tannas Conservation Services Ltd.

Box 31
Cremona, AB, T0M 0R0
www.tannasenvironmental.com

February 2024

Lead Authors

Hilary Baker, P.Ag.
Cassandra Schroeder, P.Ag.

Contributions (Field and Report) By:

Katherine Johnson, A.I.T.
Steven Tannas, Ph.D. P.Ag.
Darin Sherritt MSc. P.Ag.

Review By:
Hilary Baker, P.Ag.
Steven Tannas, Ph.D. P.Ag.

We respectfully acknowledge that our research and field work took place on Treaty 7 (1877) territory, a traditional gathering place, travelling route and home for many Indigenous Peoples including traditional territories of the Blackfoot confederacy: Siksika, Kainai, Piikani, as well as the Îyâxe Nakoda, Tsuut'ina nations, and Métis Nation.

This report is developed using primarily western methods, concepts, and theories. When weaved together, modern western science and traditional ecological knowledge will form a tapestry for ecological and cultural reconciliation.

Executive Summary

In 2023, Friends of Fish Creek retained Tannas Conservation Services to complete a full inventory of ecological resources on Fish Creek Provincial Park to understand the current status of plant communities, ecological threats and drivers, and inform restoration potentials. A total of sixty-three plant communities were identified, with native grasslands only comprising four plant communities, or thirty acres. Invasive species were widespread, with 17 invasive plant species found during the assessments. Two species are provincially listed as prohibited noxious weeds, five unlisted invasive plants were noted, and the remaining invasive plants were listed as noxious. One rare plant was found during assessments, known as western false gromwell (*Onosmodium mole ssp. Occidentale*).

Health assessments were completed and evaluated five ecological parameters which are 1) integrity and ecological status, 2) structure of plant communities, 3) protection of the soil, nutrient and hydrological function, 4) bare ground and erosion, and 5) invasive plant species. The majority of plant communities in grassland and forested areas scored healthy with problems, meaning the ecosystem assessed is no longer performing all of its functions properly. No grassland areas scored as healthy, largely due to the invasion of non-native grasses and invasive plants. Several riparian areas scored unhealthy, largely due to anthropogenic pressure.

The major issues driving ecological concerns leading to reduction in range health scores on FCPP are the increased abundance of non-native introduced species that is leading to the decline of biodiversity and native plant species, erosion caused by anthropogenic features (e.g., trailing, compaction, recreational use), and large infestations of invasive plants. The following course of recommendations are provided in order of importance.

1. Invasive Plant Management
    - Invasive plants are found throughout all community types on FCPP.
    - The development of an Invasive Plant Management Plan is recommended to inventory, prioritize, and treat invasive species with an integrated approach.
    - Priority plant lists and priority treatment areas can help inform treatment actions and support restoration activities.
    - Key areas of protection should include plant communities with rare plants, native plants, and riparian areas.
    - Dedicated time and funding, with a repetitive multi-year approach will be required to address invasive plants.
2. Native Grassland Conservation
    - Less than 30 acres of grasslands contain native plant species, with remaining grasslands impacted from anthropogenic use.
    - Targeted grazing (i.e., sheep grazing) is recommended to control litter and brush in these areas.
    - Prescribed fire may support restoration goals.
3. Restoration Activities
    - Several restoration prescriptions including grassland conservation, restoration, riparian forest plantings, targeted grazing, prescribed fire, aspen and shrub control, and trail development have been presented and discussed as options to improve ecological integrity.

Table of Contents

1.0 Introduction 8
1.1 Location 8
1.2 About 9
2.0 Ecological Overview 9
3.0 Methodology 11
3.1 Desktop Polygon Delineation and Imagery Review 11
3.2 Range and Riparian Health Assessments 11
3.2.1 Range Health Assessment Overview 11
3.2.2 Riparian Health Assessment Overview 13
3.2.3 Interpreting Health Assessment Results 14
3.3 Plant Communities 15
3.4 Targeted Grazing Prescriptions 16
3.5 Rare Plant Observations 17
3.5.1 ACIMS Data Search 18
3.5.2 Field Survey 18
3.6 Invasive Plants 19
4.0 Results and Discussion 20
4.1 Plant Communities and Health 20
4.1.1 Modified Grassland Communities 20
4.1.2 Grassland Health 25
4.1.3 Forest Health 27
4.1.4 Lotic Health 29
4.1.5 Lentic Health 31
4.2 Health Discussion 32
4.3 Plant Communities 34
4.4 Native Grassland Locations 36
4.5 Rare Plants 36
4.6 Invasive Species 40
4.6.1 Summary of Control Options 43
4.6.2 Integrated Pest Management Discussion 45
4.7 Erosion Features 46
4.8 Restoration Activities 49
4.8.1 Grassland Conservation 51
4.8.2 Grassland Restoration 51
4.8.3 Riparian Forest Plantings 53
4.8.4 Targeted Grazing 54
4.8.5 Prescribed Fire 58
4.8.6 Aspen and Shrub Encroachment Control 58
4.8.7 Trail Development 59
5.0 Summary 59
Certification Page 60

References **61**

List of Tables

Table 2-1: Summary of nearby natural subregions major characteristics compared to the City of Calgary (Natural Regions Committee 2006). **9**
Table 3-1: Summary of the scoring schematic for grassland and forested range health assessments. **12**
Table 3-2: Health rating categories for range health assessments. **14**
Table 3-3: Health rating categories for riparian health assessments. **14**
Table 3-4: Range health ratings and details on score and ecological function. **15**
Table 3-5: Animal Unit Equivalency for various animal classes. **17**
Table 3-6: Density distribution descriptions within the range health assessment from Adams et al. (2016) **20**
Table 4-1: Excerpt from the Foothills Parkland range plant community guide showing modified grassland community types. **21**
Table 4-2: Modified grassland community types found on FCPP and area of each plant community in acres **21**
Table 4-3: Health summary for the Property broken out by health category and area. **24**
Table 4-4: Question scoring breakdown and discussion for grassland assessment points **26**
Table 4-5: Question scoring breakdown and discussion for forested assessment points. **28**
Table 4-6: Question scoring breakdown and discussion for lotic assessment points. **30**
Table 4-7: Question scoring breakdown and discussion for lentic assessment points **32**
Table 4-8: Native grassland communities and locations in Fish Creek Provincial Park. **36**
Table 4-9: ACIMS element occurrence search for Township 022-01 W5M. **36**
Table 4-10: Rare plant occurrences noted during the assessment. **39**
Table 4-11: Summary of invasive species found during the assessment. **40**
Table 4-12: Weed category scores and descriptions. **41**
Table 4-13: Advantages and disadvantages to invasive plant control methods adapted from (Parks Canada 2021). **43**
Table 4-14: Description of the stages of plant control and generalized actions for each stage **46**
Table 4-15: Restoration activity discussion and suggested target polygons. **49**
Table 4-16: Suggested grazing numbers and duration for goats to target leafy spurge. **56**
Table 4-17: Suggested grazing numbers and duration for sheep to target excess litter. **56**

List of Figures

Figure 1-1: FCPP study area. **8**
Figure 2-1: Natural subregion context for FCPP. **10**
Figure 3-1: Major vegetation classes of the Foothills Parkland NSR (adapted from DeMaere et al., 2012). **16**
Figure 4-1: Health overview of FCPP. **23**
Figure 4-2: Overview of health assessment types and health scores. **24**
Figure 4-3: Native grassland and shrubland health, and modified grassland health. **25**
Figure 4-4: Grassland health score synopsis for discussion **25**
Figure 4-5: Number of forest assessments scoring in each health category. **27**

Figure 4-6: Forested health score synopsis for discussion. 27
Figure 4-7: Number of lotic riparian assessments scoring in each health category. 29
Figure 4-8: Lotic health synopsis for summary discussion. 29
Figure 4-9: Number of lentic riparian assessments scoring in each health category. 31
Figure 4-10: Lotic health score synopsis for discussion....31
Figure 4-11: Schematic demonstrating common causes for loss of health scores. 33
Figure 4-12: State and transition model for modal plant communities on FPCC, modified communities denoted in grey boxes. 35
Figure 4-13: Native grassland polygons. 37
Figure 4-14: Rare plant locations. 38
Figure 4-15: Western false gromwell floral characteristics. 39
Figure 4-16: Mature western false gromwell plant with seeds. 40
Figure 4-17: Cover of invasive plants on FCPP. 42
Figure 4-18: Stages of invasive plant management. 45
Figure 4-19: Examples of high human use impacts resulting in erosion and bare ground. 47
Figure 4-20: Erosion in polygons observed during the health assessment. 48
Figure 4-21: Visual representation of dietary needs of various species and their overlap (Adapted from Wagner 1978). 55

List of Appendices

Appendix A ....Polygon Maps

Appendix B ....Assessment Locations

Appendix C ....Range Health Data Sheets (2022 and 2023)

Appendix D ....Photo Log

Appendix E ....Range Health Maps

Appendix F ....Plant Community List

Appendix G ....Plant Community Maps

Appendix H ....ACIMS Data

1.0 Introduction

Tannas Conservation Services Ltd. (TCS) was retained by Friends of Fish Creek Provincial Park Society (FoFC) to a complete a vegetation inventory and range health assessment for Fish Creek Provincial Park (FCPP). In 2022, a portion of FCPP referred to as Lafarge Meadows was assessed as pilot project. The purpose of the field work was to understand plant communities and occurrences of rare plants to inform invasive species management recommendations related to control options and seed mixes as part of the Enhancing Partnerships with Non-Profit Societies in Parks (EPP) pilot project. In 2023, the remainder of FCPP was assessed. The goals of the assessment were to complete plant community and range health mapping, identify native grasslands, inventory weeds and rare plants, and provide a report with recommendations to inform future park planning and management supporting the Friends of Fish Creek Provincial Park Society's vision for a sustainable park that improves the quality of life for present and future generations.

1.1 Location

The FCPP is in the southern part of Calgary, Alberta. The park location is shown in Figure 1-1. The FCPP boundary is shown in red, and the portion assessed in 2022 is shown in cross hatch. FCPP is the second largest urban park in Canada, encompassing approximately 1,300 hectares and stretching 19 kilometres (km) from east to west. The park boarders Fish Creek and the Bow River in the midst of the city and is a well used recreational area in Calgary.

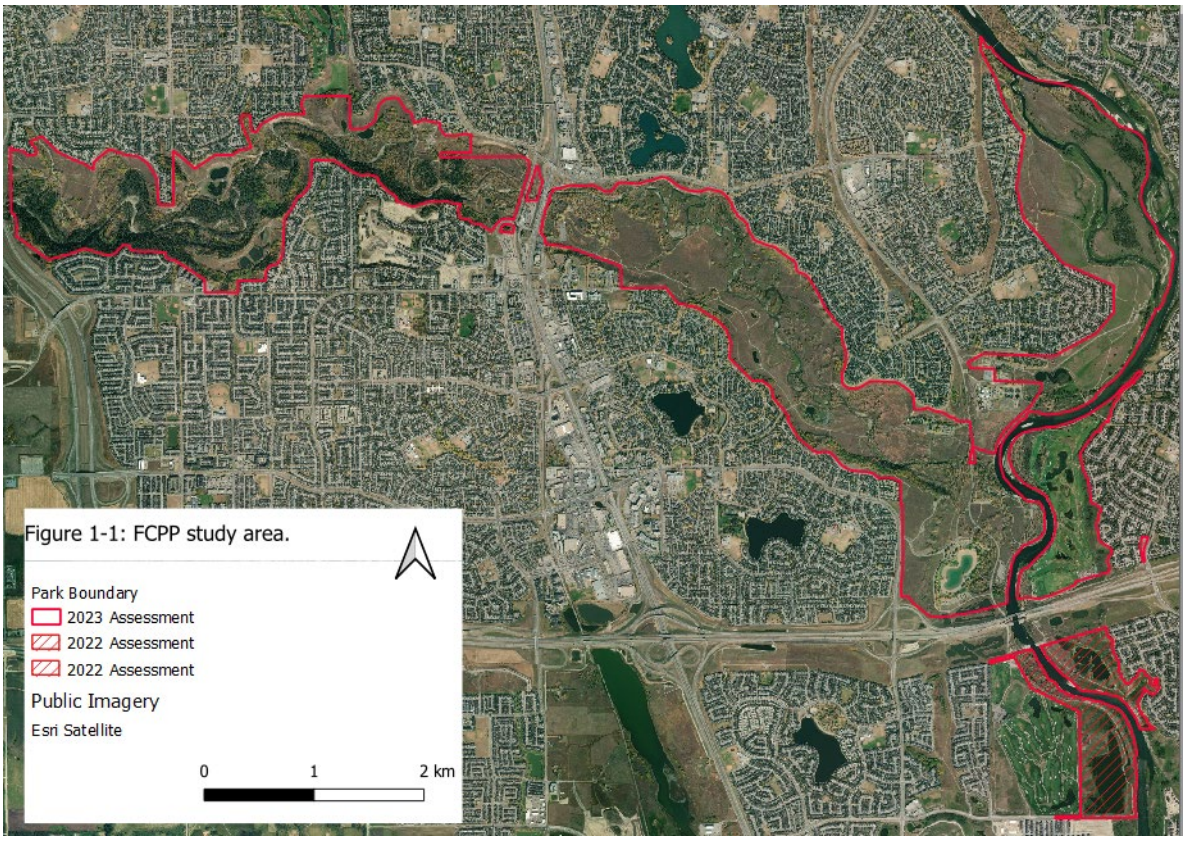


Figure 1-1: FCPP study area.

1.2 About

The Friends of Fish Creek Provincial Park Society (the society) is a non-profit organization that contributes to the conservation of FCPP for present and future generations. Their mission is to engage the community through activities and awareness to conserve a truly unique naturalized urban park (Friends of Fish Creek Provincial Park Society 2024). The society was formed in the 1990s by citizens concerned about the preservation of FCPP. Collaboration with Alberta Environment and Protected Areas (formerly Alberta Environment and Parks) occurs, and is formalized in a cooperating agreement between the Ministry and the society, but the society remains an independent organization. The society organizes various programs that inform park users and contribute to park conservation, including but not limited to invasive species management, beaver coexistence, and outdoor education programs.

2.0 Ecological Overview

Calgary is located at the intersection of the Foothills Parkland, Central Parkland, and Foothills Fescue Natural Subregions (NSR) as shown in Figure 2-1, making this location unique. The mean daily temperature, total annual precipitation, and growing degree days of the averages found within the Foothills Parkland, Foothills Fescue, Central Parkland NSR's and City of Calgary are illustrated in Table 2-1. Technically, the majority of FCPP is found in the Foothills Fescue NSR, but physical characteristics, soils, and dominant vegetation cover is most similar to the Foothills Parkland NSR. The natural subregion boundaries are general digital boundaries based on modeling and are not exact or always true to what is observed on the ground. In the Calgary area, it is common to see the river valley ecosystems express more similar to the Foothills Parkland NSR, and the upland and plateau areas more similar to the Foothills Fescue NSR (S. Tannas, personal communication, January 30, 2024).

Table 2-1: Summary of nearby natural subregions major characteristics compared to the City of Calgary (Natural Regions Committee 2006).

Subregion	Mean Daily Temp (°C)	Total precip. (mm)	Degree Days >5°C	Soils	Grasslands	Shrublands	Forests
Foothills Fescue	4.5	614	1355	Black Chernozem	Foothills rough fescue (modal) Agronomic invasion uncommon	Shrubby cinquefoil Snowberry-Rose-Saskatoon	Uncommon
Foothills Parkland	3.8	416	1505	Black Chernozem	Foothills rough fescue (modal) Agronomic invasion common	Bebb's willow Snowberry-Rose-Saskatoon	Trembling aspen Balsam Poplar White spruce
City of Calgary	3.6[1]	407.9[2]	1511[3]	Black Chernozem	Foothills rough fescue (modal) Agronomic invasion common	Bebb's willow Snowberry-Rose-Saskatoon	Trembling aspen Balsam Poplar White spruce
Central Parkland	2.8	458	1410	Black Chernozem Solonetzic common	Plains rough fescue Western porcupine grass (modal) Agronomic invasion common	Chokecherry-snowberry	Aspen

[1] 25 year data summarized from https://en.climate-data.org/north-america/canada/alberta/calgary-390/
[2] 25 year data summarized from https://calgary.weatherstats.ca/charts/precipitation-yearly.html
[3] 25 year data summarized from https://calgary.weatherstats.ca/charts/gdd_5-yearly.html

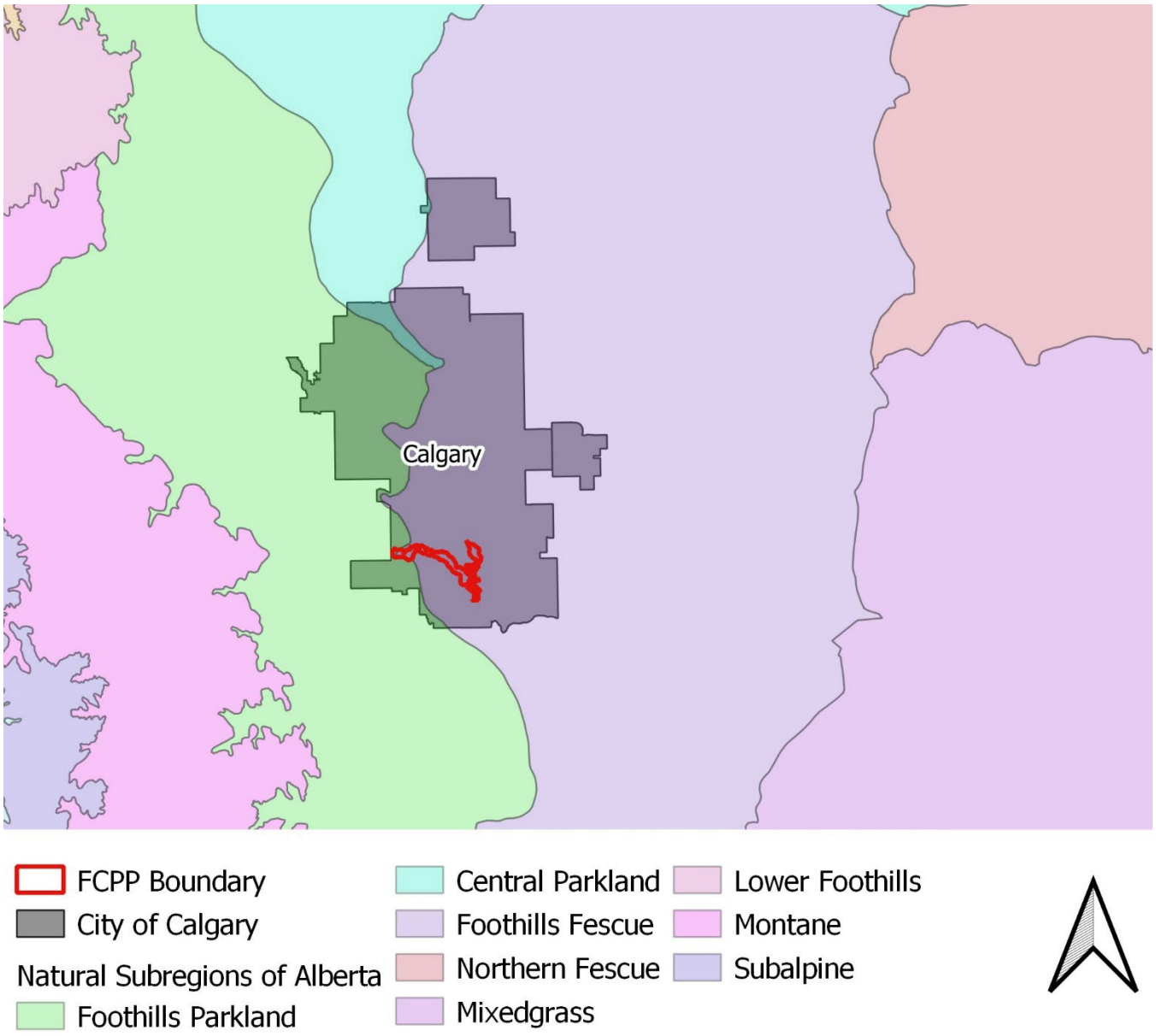


Figure 2-1: Natural subregion context for FCPP.

The Foothills Parkland NSR is characterized by three main vegetation types, foothills fescue grasslands, willow shrublands, and aspen forests (DeMaere et al. 2012). Grasslands dominate southern slopes but can be found on a variety of slopes and aspects. Foothills parkland grasslands commonly have foothills rough fescue (*Festuca campestris*) and Parry's oat grass (*Danthonia parryi*) (DeMaere et al. 2012). Agronomic invasion is common in the Foothills Parkland, and smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), and timothy (*Phleum pratense*) will slowly overtake native grasslands, often resulting in modified grasslands with very native grass cover. Shrublands in the Foothills Parkland occur in moist areas such as valley bottoms, depressions, and seepage areas. Willows are the most common shrub species, in particular Bebb willow (*Salix bebbiana*) (DeMaere et al. 2012). Shrub groves are common and can be found among grasslands and willows, often with snowberry (*Symphoricarpos spp.*), rose (*Rosa* spp.), saskatoon (*Amelanchier alnifolia*), and choke cherry (*Prunus*

virginiana). Aspen forests occur on mesic north facing slopes, seepage zones, and low areas. Drier forests are dominated by trembling aspen (*Populus tremuloides*) while wetter forests are dominated by balsam poplar (*Populus balsamifera*) (DeMaere et al. 2012). Since colonization, aspen forests have been expanding into grasslands, presumably due to decreased fire occurrences (DeMaere et al. 2012). Successional pathways in forested ecosystems, usually due to the removal of fire and herbivory, result in aspen forest invasion by white spruce (*Picea glauca*), transitioning into mixedwood, and eventually conifer forest stands (DeMaere et al. 2012).

3.0 Methodology

3.1 Desktop Polygon Delineation and Imagery Review

Maps were produced using QGIS 3.28 (QGIS Development Team, 2020), publicly available imagery, data provided by FoFC, and data collected during the assessment. Data and spatial layers were viewed on imagery to understand the landscape, soil inventory and vegetation in the park. While considering landscape, soil and range site type factors, assessors evaluated plant community differences based on tone, texture, and pattern, finally grouping like areas together to form polygons. Preliminary vegetation polygons were mapped for field verification and to inform the field sampling sites.

3.2 Range and Riparian Health Assessments

Range and riparian health assessments were completed in unique vegetation polygons in representative locations. Photos and coordinates were collected at each assessment location. Photos were taken using Solocator to capture location, orientation, and relevant comments directly on photos. Assessments followed the standard protocols for each assessment type. Successful long-term monitoring and planning depend on regular, accurate, up to date inventories and range health audits performed in a standardized, measurable, and repeatable process. This enables the data to be compared between assessment years and ensured required data is collected each time. These assessments are described in detail in the respective resources:

- Rangeland Health Assessment for Grassland, Forest & Tame Pasture (Adams et al. 2016).
- Riparian Health Assessment for Lakes, Sloughs and Wetlands (Ambrose et al., 2009).
- Riparian Health Assessment for Streams and Small Rivers (Fitch et al., 2009).

The main components of these assessments are highlighted in the following sections to provide context for the results.

3.2.1 Range Health Assessment Overview

Range health assessments are designed to provide an indication of the sustainability and resiliency of the resource through a snapshot assessment in time of the status, disturbances, and/or management implications on a particular site, providing information on the ability of a site to perform important ecological functions that contribute to long term stability, supporting sustainable grazing opportunities in conjunction with watershed and soil protection.

This assessment protocol is designed to be applied across the spectrum of rangeland landscapes in Alberta, with three different scoring systems available that are tailored to 1) native and modified grasslands (grasslands with over 70% non-native species that are not managed as tame pastures), 2) forest, and 3) tame pasture. It is simplistic in its design; using 5 or 6 questions (depending on scoring system applied) to assess ecosystem health

and function using qualitative and quantitative science-based measurements, allowing for easily repeated health assessments without a large-scale baseline inventory, or the requirement of advanced degrees or extensive training. For native grassland and forest systems these questions include:

1. What plants are on the site, what is the plant community?
2. Are the expected plant layers present (i.e., grasses, forbs, shrubs, trees)?
3. Does the site retain moisture and cycle nutrients?
4. Is there accelerated soil erosion? Is there human-caused bare ground?
5. Are noxious weeds present? What species, in what density and what distribution pattern?

Modified plant communities are used in cases where non-native species make up >70% of the cover. For this assessment, tame pasture assessments were not used in communities dominated by agronomic cover as there is no information on potential historical cultivation, and soil confirmation was not included in the scope. All agronomic plant communities are considered modified, where cover is less than 30% native.

Scoring categories are defined to enable comparison over time, allowing the assessor to determine trends and better inform potential management changes. Observations relating to these five categories can be used to interpret the overall health and functioning of rangeland ecosystems. Results indicate areas where management can be targeted to improve range health. A summary of scoring is provided in Table 3-1 below.

Table 3-1: Summary of the scoring schematic for grassland and forested range health assessments.

Assessment Question	Scoring
1. Grassland: How do the plants on the site compare to the reference plant community (RPC)? Note that this question has differing scoring for: · 1A Native Grassland · **1B Modified Grassland >70% non-native**	1A Native Grassland • 40, 27, (20 for fescue grasslands), 15, 0 **1B Modified Grassland** • **15, 8, 0**
1. Forested: How do the plants on the site compare to the reference plant community (RPC)?	Native Forested • 25, 20, 15, 10, 5, 0
2. Grassland: Are the expected plant layers present?	2A: Native Grassland/Shrubland • 10, 7, 3, 0
2. Forested: Are the expected plant layers present?	Native Forested • 35, 27, 18, 9, 0
3. Grassland: Does the site retain moisture? Is the expected amount of litter present?	• 25, 13, 0
3. Forested: What is the thickness of the surface organic layer (LFH) and is there compaction?	Native Forested • 20, 14, 8, 0
4. Grassland: Is there accelerated soil erosion? Answer both 4.1 and 4.2.	4.1 Erosion evidence • 10, 7, 3, 0 4.2 Bare soil • 5, 3, 1, 0
4. Forested: Is there accelerated soil erosion? Answer both 4.1 and 4.2.	4.1 Erosion evidence • 5, 3, 1, 0 4.2 Bare soil • 5, 3, 1, 0
5. Grassland: Are prohibited noxious and/or noxious weeds present? Answer both 5.1 and 5.2.	5.1 Cover (%) • 5, 3, 1, 0 5.2 Density distribution

Assessment Question	Scoring
	• 5, 3, 1, 0
6. Forested: Are prohibited noxious and/or noxious weeds present? Answer both 5.1 and 5.2.	5.1 Cover (%) • 5, 3, 1, 0 5.2 Density distribution • 5, 3, 1, 0
Maximum Total Score Grasslands	**100**
Maximum Total Score Forested	**100**

3.2.2 Riparian Health Assessment Overview

Riparian health assessments use a similar approach to range health assessments to capture the overall functioning of the riparian area. Riparian areas are transitional areas existing between the aquatic area and the surrounding upland (Ambrose et al. 2009). All riparian areas have a combined presence and abundance of water on or close to the surface, even when appearing dry. Riparian areas have vegetation that respond to and survive well with abundant water, and soils that are often modified by water (Ambrose et al. 2009). These areas perform additional functions in ecological systems and so additional parameters are evaluated in riparian assessments.

Healthy riparian areas perform the following key ecological functions:

- Trap and store sediment.
- Build and maintain banks and shores.
- Store water and energy.
- Recharge aquifers.
- Filter and buffer water.
- Reduce and dissipate energy.
- Maintain biodiversity.
- Create primary productivity.
- Provide key wildlife habitat and water.
- Forage sources for domestic livestock.

There are two types of riparian assessments which are lentic and lotic. Lentic assessments are used for riparian areas with still water such as lakes, sloughs, and wetlands. Lotic assessments are used for riparian areas with flowing water like streams and small rivers.

Lentic (still water)

The lentic assessment (Ambrose et al., 2009) collects the following information:

- The vegetative cover of the riparian area.
- Invasive species presence, canopy cover, and distribution.
- Presence of disturbance/increaser undesirable herbaceous species.
- The preferred tree and shrub establishment and regeneration.
- The use of trees and shrubs (e.g., browse by wildlife, beavers).

- How the riparian area vegetation has been changed due to humans.
- The amount of shore and bank that has been physically changed due to humans.
- The amount of human caused bare ground.
- The degree of artificial withdrawal or raising or water.

Lotic (flowing)

Two meander cycles, or 200 m of the stream was assessed. The riparian zone was determined as the portion of the stream and adjacent plant communities that contained riparian species. Often, this is the "bank full stage". Grassland communities that occur in the flood-prone area that exhibited upland/rangeland plant community types were not included in the riparian assessment. The riparian health methodology (Fitch et al., 2009) for streams and rivers collects the following information:

- The vegetative cover of the floodplain and streambanks.
- Invasive species presence, canopy cover, and distribution.
- Presence of disturbance/increaser undesirable herbaceous species.
- The preferred tree and shrub establishment and regeneration.
- The use of trees and shrubs (e.g., browse by wildlife, beavers).
- The amount of standing decadent and dead woody material.
- The amount of streambank root mass protection.
- The amount of human-caused bare ground.
- The amount of the streambank that is structurally altered by human activity.
- The amount of the reach that is structurally altered by human activity.
- The amount of stream channel incisement (i.e., vertical stability).

3.2.3 Interpreting Health Assessment Results

Range health scores are a cumulative measure of key indicators and functions, and results in classification within three different categories that provide information on ecosystem health and function (Adams et al. 2016). Health assessment scores are categorized as healthy, healthy with problems, or unhealthy based on their score. Range health assessments have different categories then riparian health assessments as shown in Table 3-2 and Table 3-3.

Table 3-2: Health rating categories for range health assessments.

Rating	Scoring (%)
Healthy	75-100%
Healthy with Problems	50-74%
Unhealthy	0-49%

Table 3-3: Health rating categories for riparian health assessments.

Rating	Scoring (%)
Healthy	57-100%
Healthy with Problems	60-79%
Unhealthy	0-59%

These range health categories were used to support mapping displaying range health ratings for each polygon across the property, providing a high-level interpretation of results. An explanation of the health categories and

what they represent is provided in Table 3-4. Range health provides an indication of the resiliency of the resource and a guide to understand which factors are showing declines in ecological health and function, and when and how a manager might be able to implement a positive change. Areas with unhealthy scores usually require significant effort to improve health.

Table 3-4: Range health ratings and details on score and ecological function.

Health Category	Details
Healthy	• A health score of 75% or greater • All key ecological functions are being performed, the resource is healthy • Grazing (disturbance) is balanced with site capabilities • This resource is providing optimum value to its many users • Indicates good to excellent management
Healthy with Problems	• A score of 50 to 74% • Most, but not all of the functions of a healthy resource are being performed, performance of one or two of the key functions may be impaired • This score is an early warning that adjustments to management are needed • Recovery to a healthy category can normally occur within a few years with positive management changes
Unhealthy	• A score of less than 50% • Few of the functions are being performed • Significant management changes are required to address unsustainable grazing pressure or other types of disturbance • Recovery to a healthy category may take many years • Disturbance pressures have been significant and prescriptive management may be needed (e.g., weed control, seeding).

*Table Source: (Miller and Baker 2022), summarized from (Adams et al. 2016).

3.3 Plant Communities

Plant communities were classified using the Alberta range classification tools and system. As described in Section 2.0 Ecological Overview, the Foothills Parkland Range Plant Community Guide (DeMaere et al., 2012) was used for classification purposes. Full descriptions for the plant communities in this natural subregion can be found in:

- Range Plant Communities and Range Health Assessment Guidelines for the Foothills Parkland Natural Subregion of Alberta (DeMaere et al., 2012)

Conditional plant communities may be described or use existing plant communities described in nearby natural subregions, all of which have range plant community guides publicly available from the Government of Alberta[4]. Conditional plant communities are coded COND followed by a number and are then either described or refer to a plant community code in another subregion. For example, COND10 refers to CPA17 where CP indicates that the plant community is described in the Central Parkland NSR. Foothills Parkland plant communities all begin with FP and are then followed with another letter which represents the major vegetation class as shown in Figure 3-1. Therefore, native grassland communities could be determined after the plant community

[4] https://www.alberta.ca/range-classification-and-survey-tools

classification by pulling the FPAxx communities. Further classification can be made to a plant community by using the following:

- _D to denote disturbed communities.
- _ES to denoted early seral communities.
- _S to denote seral communities.

Figure 3-1: Major vegetation classes of the Foothills Parkland NSR (adapted from DeMaere et al., 2012).

3.4 Targeted Grazing Prescriptions

Survey information informed locations suitable for goat grazing using the following parameters:

- The site had significant litter loading.
    - Litter was found in excess of 2000 lbs/ac and was casing a decline in species diversity and ecological function.
- The site had large invasive plant infestations where grazing is suitable for control.
    - Target species include leafy spurge.

Ecologically Sustainable Stocking Rate (ESSR) information provided in the plant community guides was used as a baseline to determine the available biomass of target sites to estimate the number of animals and duration of the grazing event needed in each area to provide the targeted result for planning and budgeting purposes.

Provincial resources in Alberta use an ecologically sustainable stocking rate (ESSR) to represent the number of livestock that can graze a given area for a specific time period while maintaining ecosystem health and function (Government of Alberta 2004). The ESSR generally reflects the maximum amount of animal unit months (AUMs) per hectare or acre that the plant community can support given biophysical constraints in conjunction with the goal of sustained plant community health and function (Alberta Environment and Parks 2021). Ecologically sustainable stocking rates allocate a percentage of forage production to livestock, for native grasslands ESSR's are generally set to utilize within 25-50% of total forage production, while tame pastures allocate 40-70%

(Government of Alberta 2004). This built in utilization target is termed a safe use factor, or proper use factor (Society for Range Management 1998).

Since the defoliation targets to manage litter and invasive plants are different than management goals for sustainable grazing, suggested ESSR's were manipulated and presented as "targeted ESSR's" for 50-75% defoliation.

The ESSR is expressed as an animal unit month (AUM). An animal unit (AU) is a standard animal unit, representing the forage requirement of one mature cow (dry or without calf) weighing approximately 1000 lbs (455 kg). An AUM is the amount of forage required to feed one AU for 30 days, generally expressed as a stocking rate of AUM/hectare or acre (Government of Alberta 2004).

An animal unit equivalent (AUE) is an adjustment to a standard animal unit that accounts for variation in livestock size above or below the standard 1,000lb AU, other types of animals, or other livestock class that do. To determine stocking rates, an AUE is applied to adjust the available AUM as shown in Table 3-5 (complied averages).

Table 3-5: Animal Unit Equivalency for various animal classes.

Animal Type	Animal Unit Equivalency (AUE)
Cow 1000 lbs with calf	1.0
Goat doe	0.15
Goat buck	0.26
Goat kid	0.10
Sheep ewe	0.20
Sheep ram	0.25
Lamb yearling	0.15
White tailed deer	0.15
Mule deer	0.20
Elk	0.60
Moose	1.0

* Data for this table is summarized from (Alberta Agriculture and Forestry 2017)

The carrying capacity of an area reflects the ability of that environment to support a population of grazing animals and refers to the maximum amount of grazing animals that can be supported given optimal distribution (Government of Alberta 2004). Grazing capacity refers to an adjusted stocking rate that accounts for the realities of livestock distribution, range health variation, current management, or to meet a management target as in this case.

3.5 Rare Plant Observations

Rare plant observations were recorded, when incidentally observed during polygon level range health assessments. Species and percent cover were noted for larger populations. Specific GPS locations and occurrence data were collected for specific observations. Incidental observation data was submitted to the Alberta Conservation Information Management System (ACIMS).

Under the National Wildlife Policy for Canada, indigenous plant species are considered wildlife and must be protected. Rare plants refer to those listed on the provincial tracking list (Alberta Conservation Information Management System; ACIMS). Rare plants in Alberta are rated within the ACIMS database and follow the NatureServe ranking methodology (ACIMS 2018a):

> **S1:** Five or fewer occurrences in the province or only a few remaining individuals or may be imperiled because some factor of its biology making it especially vulnerable to extirpation.
>
> **S2:** Six to 20 occurrences or with many individuals in fewer occurrences; or may be susceptible to extirpation because of some factor of its biology.
>
> **S3:** Twenty-one to 100 occurrences may be rare and local throughout its provincial range, or in a restricted provincial range (may be abundant in some locations or may be vulnerable to extirpation because of some factor of its biology).
>
> **S4:** Apparently secure under present conditions, typically >100 occurrences, may be rare in parts of its provincial range, especially peripherally.
>
> **S5:** Demonstrably secure under present conditions, >100 occurrences, may be rare in parts of its provincial range, especially peripherally.

Typically, S1, S2, and some S3 species are considered sufficiently rare to be tracked and therefore considered a rare species. Rare vascular plants within the region are commonly found across all moisture regimes but are most common in very dry (xeric) and very wet (hydric) sites. Additionally, locations are dependent on sunlight, soil type, and exposure. These features combine to create the following common habitats to find rare and endangered species:

- Groundwater seepage areas (springs, seeps)
- Stream banks
- Steep eroding slopes
- Sandstone outcrops
- Wetlands
- Disturbed ground
- Native grasslands

3.5.1 ACIMS Data Search

The ACIMS spatial data published in June 2022 (ACIMS, 2022) was searched for vascular plant occurrences in the townships that FCPP spans. These are:

- TWP-023 RGE-01 MER-5
- TWP-023 RGE-29 MER-4
- TWP-022 RGE-01 MER-5
- TWP-022 RGE-29 MER-4

ACIMS occurrences and field observations are provided in Section 4.6.

3.5.2 Field Survey

Plotless floristic surveys were completed for 2022 only by meandering throughout natural and disturbed vegetation areas searching all observed microsites and micro-community areas. All surveys were completed with

the aid of a GPS unit, to record observed locations of rare plant species. To confirm identification of rare plants references, plant keys, herbarium specimens, photos, and senior staff were used to ensure the correct species was identified. Resources include:

- Flora of Alberta (Moss 1983).
- Rare Vascular Plants of Alberta (Freyer et al. 2022).
- Common Plants of the Western Rangelands (Tannas 2004).
- Vascular Flora of Alberta (Kershaw and Allen 2020).

Photographs of rare plants were taken. Rare plants were noted as incidental occurrences as full rare plant surveys protocols were not in the project scope. In 2023, rare plants were only noted as incidental observations.

3.6 Invasive Plants

Provincially listed plant species include those regulated by the provincial *Alberta Weed Control Act* (2008) and the *Weed Control Regulation* (Government of Alberta 2008; Government of Alberta 2010). There are two categories of invasive species controlled by the regulation, prohibited noxious weeds and noxious weeds. Prohibited noxious weeds are plants with the highest potential threat that are not yet established at a large scale in Alberta, and noxious weeds are established species that cause significant ecological and/or economic damage in Alberta (Government of Alberta 2023). Invasive species data was collected for provincially listed plants and other invasive plants that were known to be of concern. Other invasive plants of concern included:

- Absinthe (*Artemisia absinthium*)
- Caragana (*Caragana arborescens*)
- Cotoneaster (*Cotoneaster spp.*)
- Field thesium (*Thesium ramosum*)
- Wild caraway (*Carum carvi*)

Invasive plant information including species present, cover of species present, and density distribution of species is collected in the range health assessment question number 5 as shown in Table 3-6. Additional incidental invasive plant observations were made, and locations were recorded. This was most typically done for species that were less common, or until they were determined to be very common.

Table 3-6: Density distribution descriptions within the range health assessment from Adams et al. (2016).

Density Distribution			
Class	**Description of abundance in polygon**	**Distribution**	**Weeds Score**
0	None		5
1	Rare		3
2	A few sporadically occurring individual plants		
3	A single patch		
4	A single patch plus a few sporadically occurring plants		1
5	Several sporadically occurring plants		
6	A single patch plus several sporadically occurring plants		
7	A few patches		
8	A few patches plus several sporadically occurring plants		0
9	Several well spaced patches		
10	Continuous uniform occurrences of well spaced plants		
11	Continuous occurrence of plants with a few gaps in the distribution		
12	Continuous dense occurrence of plants		
13	Continuous occurrence of plants with a distinct linear edge in the polygon		

4.0 Results and Discussion

Assessments in the Lafarge Meadows area was completed in June 2022. In 2023, assessments in the remainder of FCPP were completed between July 31 and September 6. Positive highlights include rare plant observations, identification of native grasslands, and significant litter protection in grassland areas. Some key issues identified include heavily modified grassland communities and significant invasive weeds.

4.1 Plant Communities and Health

4.1.1 Modified Grassland Communities

Modified plant communities are defined as grassland areas that have never been cultivated (i.e., native) and are comprised of more than 70% non-native species. Grasslands occupy a total of 1079 acres, of which, 999 acres or 93% of the total grassland area is comprised of modified plant communities, and only 80 acres or 7% is considered native or successional community types. Table 4-1 illustrates the c ecological site of the Foothills Parkland plant communities, which designates the FPB5, FPB7, and FPB6 communities as modified. Table 4-2 lists each modified grassland plant community and the total area it occupies on FCPP.

Table 4-1: Excerpt from the Foothills Parkland range plant community guide showing modified grassland community types.

Ecological Site	Ecosite Phase	Reference Plant Community	Successional Community Types	Modified Community Types	Harvesting Succession
c thick black Foothills rough fescue (submesic/rich)	c1 rough fescue	FPA1 Foothills rough fescue - Parry oat grass - Idaho fescue	FPB1 Kentucky bluegrass - Parry oatgrass FPB3 Foothills rough fescue - Kentucky bluegrass FPB2 Kentucky bluegrass - Foothills rough fescue FPB4 Kentucky bluegrass - Timothy / Common dandelion	FPB5 Timothy FPB7 Creeping red fescue - Kentucky bluegrass FPB6 Smooth (awnless) brome - Kentucky bluegrass	
		FPA13 Foothills rough Fescue - Richardson's needlegrass			

Table 4-2: Modified grassland community types found on FCPP and area of each plant community in acres.

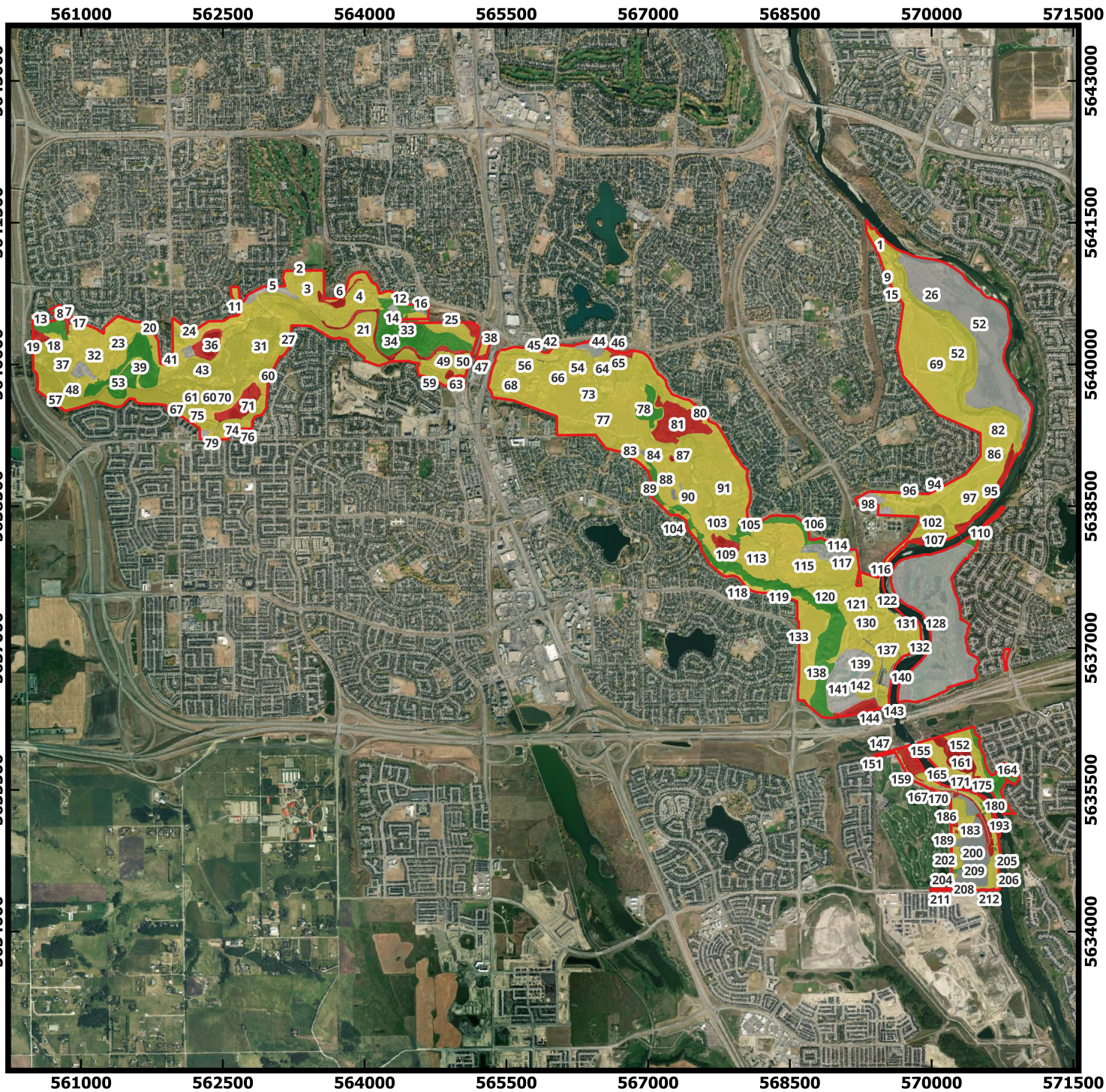
Code	Description	Area (ac)
Conditional	Crested wheatgrass, smooth brome weedy, sheep fescue – tall fescue	34.76
FPB5	Timothy	89.94
FPB6	Smooth brome – Kentucky bluegrass	828.82
FPB7	Creeping red fescue (or seeded fescue) – Kentucky bluegrass	36.34
FPB9	Timothy – Kentucky bluegrass	9.20
	Total Area	**999.07**

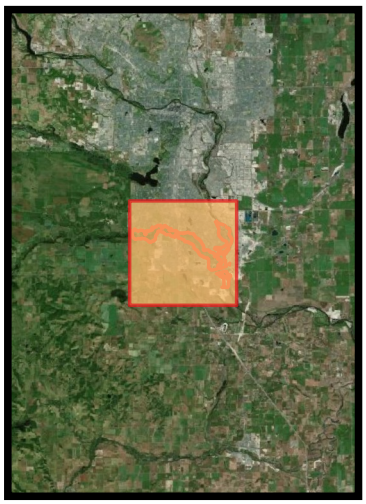
The impact of non-native grasses on native plant communities has been studied numerous times, with the results being consistent. Both smooth brome and Kentucky bluegrass have both been shown to decrease species diversity (Desserud 2006) while increasing litter beyond what native communities were able to produce. Given enough time, these species have the ability to suppress almost all species as shown by (Romo et al. 1990) on fescue prairie in Saskatchewan. Resulting from this suppression of native species, (Romo et al. 1990) found that as the age of brome stands increased, the use of those grassland by birds decreased. Smooth brome has been selected over its use as a tame forage for traits that make it a superior competitor against native species, these traits include establishment, growth, persistence, and seed production (Romo et al. 1990).

In addition to the prolific seed production, smooth brome and Kentucky bluegrass are also aggressively rhizomatous. These rhizomes for smooth brome remain close to the soil surface and assist in out competing native species and contributing to its monoculture growth (Romo et al. 1990). For a species such as crested wheatgrass, Henderson (2005) showed evidence that it persisted as a dominant species. 35 years after establishment, it still dominated vegetative cover with little infill from native species. As talked about in Section 4.3, these modified communities may be in fact new stable states. To return areas to native species dominated may require time and funding that is greater than possible.

Any shift away from this new stable state would require significant investment in money to modify the plant community trajectory. Previous work on shifting competitive advantages between species have found there to be possible shifts with changing disturbance regimes and environmental variables (Tannas 2011), but generally this only happens under extreme conditions and not the normal conditions we see within our ecosystems. This is why restoration activities look at removal of the seed bank and vegetative propagules (i.e., rhizomes) prior to establishing the desired community. This process typically can take years and as such is generally only undertaken in specific high value locations where the economic investment is worth while. A secondary approach to dealing with these invasive grasses is to attempt to crowd them out through competition with larger native plants (trees and shrubs) but generally both smooth brome and Kentucky bluegrass thrive under deciduous forests until an understory layer of shrubs and forbs is able to establish and the leaf litter starts to build up which is a slow process. Range Health Summaries

A total of 212 polygons were mapped on FCPP (displayed in Appendix A), resulting in a total of 166 health assessments completed (displayed in Appendix B). In 2022, 46 assessments were completed, and 120 assessments completed in 2023. On average, the most common score was healthy with problems. Reduced range health scores are widely a result of the increase of agronomic species which has reduced the abundance of native plants, anthropogenic disturbance leading to increased erosion and bare soil, and widespread increases of invasive plants. A summary of the health of the entire FCPP is presented in Figure 4-1.





LEGEND

FishCreekPP_Bounda

Polygons Jan30cs

Healthy

Healthy with problen

NA

Unhealthy

Public Imagery

Esri Satellite

Tannas Conservation Services Ltd

Figure 4-1: Health Overview

Overview - Healthy Areas

Friends of Fish Creek

Range Health

N

0 1,000 2,000 3,000 4,000 m

Scale: 1:60,000

Projection: NAD84 UTM Zone 11U

Imagery: Esri Satellite

Data from 2023 Range Health Assessement

Of the 166 health assessment points, 50 assessments were completed in forested sites, 84 assessments were completed in grassland sites of which 51 assessments were in modified plant communities23 assessments were completed in riparian lentic sites (i.e., ponds, lakes, sloughs), and nine assessments were completed in riparian lotic sites (i.e., rivers or streams). A total of 20 assessments scored healthy, 114 assessments scored healthy with problems, and 32 assessments scored unhealthy as summarized in Table 4-3 and Figure 4-2. Full health datasheets are presented in Appendix C. Range health photos are presented in Appendix D. Smaller scale range health maps, with maps showing just healthy and unhealthy polygons are provided in Appendix E.

Table 4-3: Health summary for the Property broken out by health category and area.

Assessment Type	Healthy	Healthy with Problems	Unhealthy	Grand Total
Forest	6	40	4	50
Native Grassland and Shrubland	8	20	4	33
Modified Grassland	4	42	5	51
Riparian - Lentic	2	6	15	23
Riparian - Lotic	-	5	4	9
Grand Total	**20**	**114**	**32**	**166**

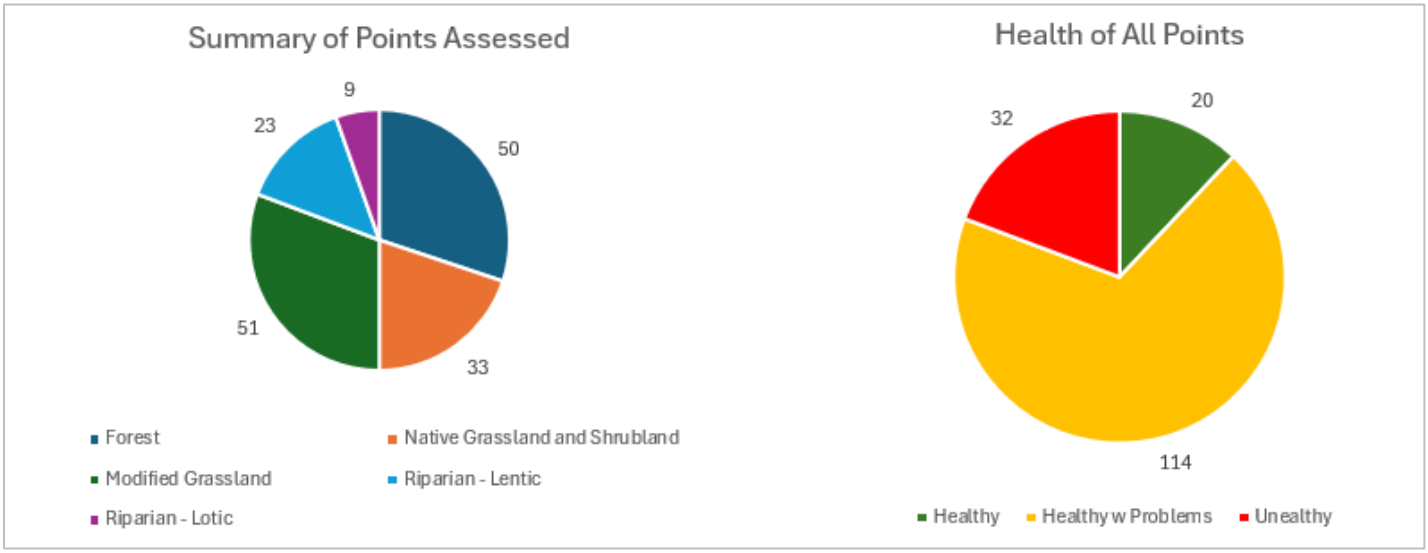


Figure 4-2: Overview of health assessment types and health scores.

4.1.2 Grassland Health

A total of 84 grassland assessments were completed. Only 12 assessments scored healthy, 63 assessments scored healthy with problems, and 9 assessments scored unhealthy as shown in Figure 4-3.

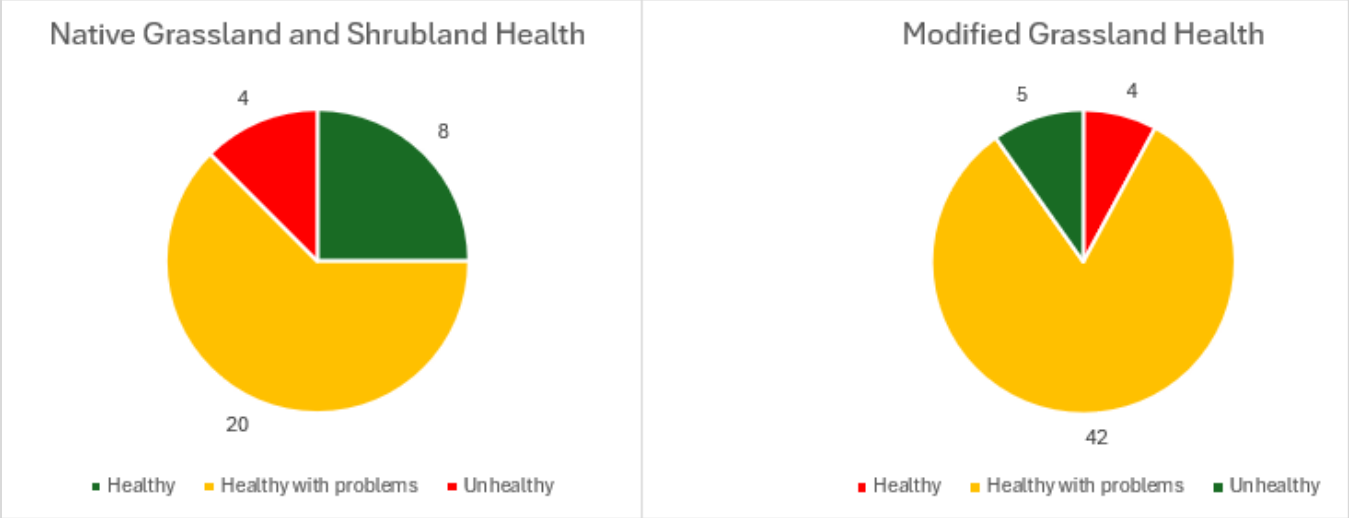
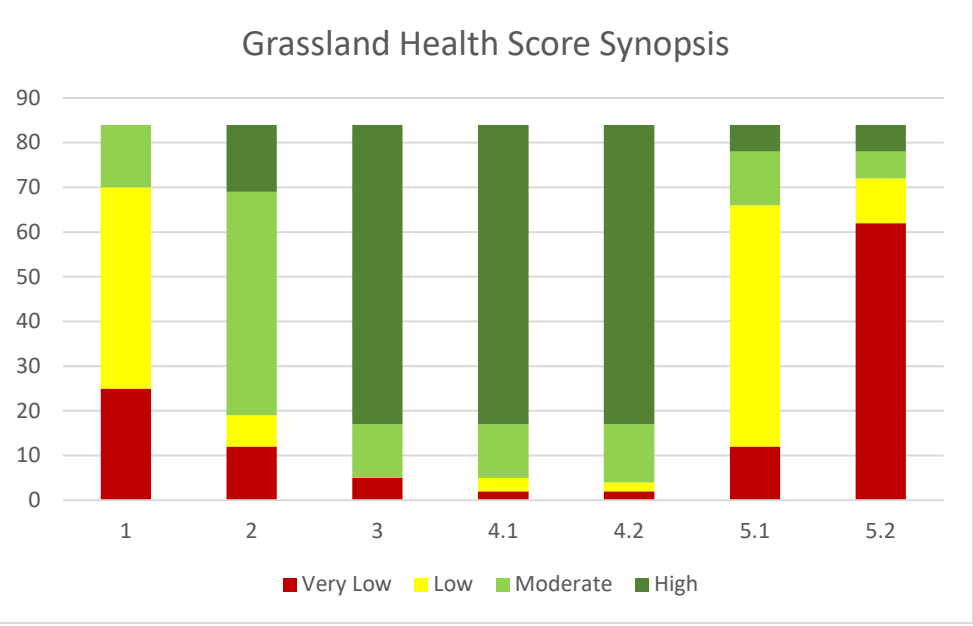


Figure 4-3: Native grassland and shrubland health, and modified grassland health.

A detailed breakdown of scores per questions is presented in Figure 4-4 below which displays some general trends that will be discussed per question in Table 4-4.



Question	VL	L	M	H	Total Possible Score
1	0 or 8	15	20 or 27	40	40
2	0	3	7	10	10
3	0	NA	13	25	25
4.1	0	3	7	10	10
4.2	0	1	3	5	5
5.1	0	1	3	5	5
5.2	0	1	3	5	5

Figure 4-4: Grassland health score synopsis for discussion.

Table 4-4: Question scoring breakdown and discussion for grassland assessment points.

Question	Out of a Possible	Measure	Discussion
1	40	How close is the plant community to reference status.	To score 40 out of 40, grasslands must resemble the reference plant community. No plant communities scored a 40. Only 14 sites scored a 20 or 27 out of 40, meaning native grasses are present but codominant with agronomic species. Most grasslands scored 15 or less, meaning they are trending modified or modified, where agronomic and non-native species are the dominant cover making up >70% cover.
2	10	Are all layers present such as tall grasses and forbs, mid grasses and forbs, low grasses and forbs, and ground cover?	Most grasslands are reduced or missing one structure layer, meaning some structural diversity has been lost.
3	25	How much litter is on the site? Is it evenly distributed?	Most grasslands reported full scores for litter with notes that litter may be in excess.
4.1	10	Is there accelerated site erosion?	Most grasslands did not have accelerated site erosion. A few sites showing signs of micro-erosion, scoring a 7. One site showed significant erosion, scoring a 0.
4.2	5	Is there human caused bare ground?	Most grasslands did not have human caused bare ground. A few sites scored a 3, meaning human caused bare ground was 10-20%. A few sites scored a 1, meaning human caused bare ground was 20-50%. One site scored a 0, meaning human caused bare ground was in excess of 50%
5.1	5	What is the cumulative cover of noxious weeds?	Noxious and prohibited noxious weeds were common in grasslands, most often with cover of 1 – 15%.
5.2	5	What is the cumulative density distribution class of noxious weeds?	Noxious and prohibited noxious weeds were common and occurred at moderate (density distribution 4-7) or heavy (density distribution 8-12) infestation levels.

4.1.3 Forest Health

A total of 50 forested assessments were completed. Only six assessments scored healthy, 40 assessments scored healthy with problems, and four assessments scored unhealthy as shown in Figure 4-5.

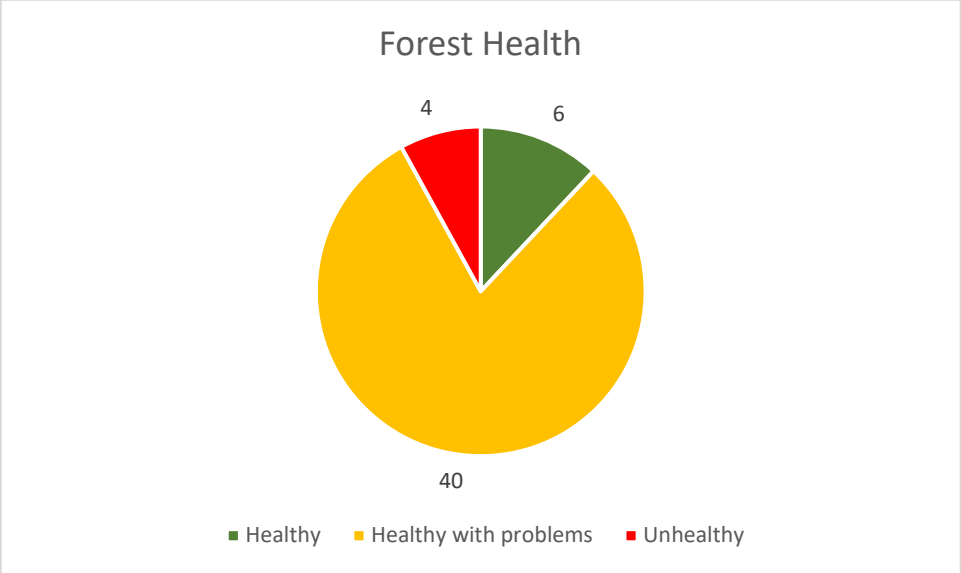
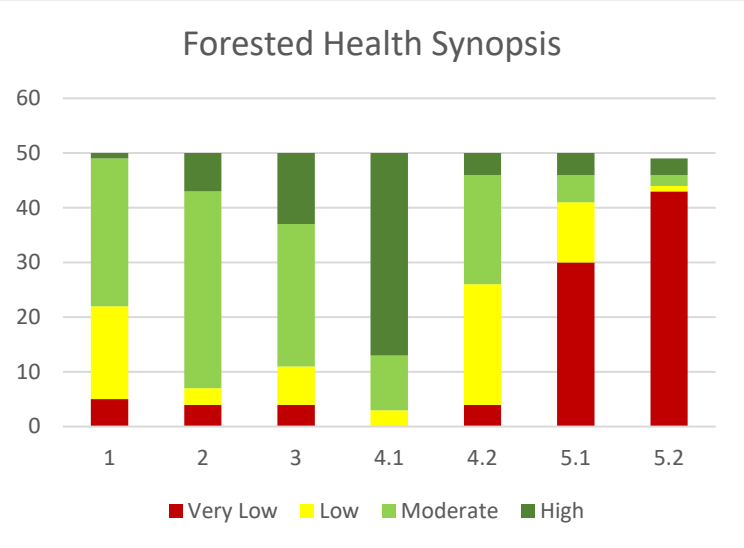


Figure 4-5: Number of forest assessments scoring in each health category.

A detailed breakdown of scores per questions is presented in Figure 4-6 below which displays some general trends that will be discussed per question in Table 4-5.



Question	VL	L	M	H	Total Possible Score
1	0 or 5	10	15 or 20	25	25
2	0	9	18 or 27	35	35
3	0	8	14	20	20
4.1	0	1	3	5	5
4.2	0	1	3	5	5
5.1	0	1	3	5	5
5.2	0	1	3	5	5

Figure 4-6: Forested health score synopsis for discussion.

Table 4-5: Question scoring breakdown and discussion for forested assessment points.

Question	Out of a Possible	Measure	Discussion
1	25	How do the plants on site compare to the reference plant community?	To score full marks, the composition must resemble the reference plant community with no reduction in decreasers, and no invaders present. Most forested sites had a reduction in decreasers, with a greater proportion of increaser species. Disturbance was light to moderate.
2	35	Are there changes in forest plant community structure? Are expected plant layers present? What level of utilization is occurring?	Only seven assessment sites scored full marks. Most sites showed reduced vigor to preferred species, and there was up to one lifeform layer significantly reduced or absent.
3	20	What is the thickness of the surface organic layer (LFH), and/or is mineral soil compacted?	Most forested sites had a minimal difference in LFH thickness between protected and disturbed area (less than a 10% difference).
4.1	5	Is there accelerated site erosion?	Most forested sites did not report macro or micro erosion.
4.2	5	Is there human caused bare ground?	Most forested sites reported human caused bare ground. A score of 3 reflects 1-5% human caused bare ground. A score of 1 reflects 6 to 15% human caused bare ground. A score of 0 means human caused bare ground is in excess of 15%.
5.1	5	What is the cumulative cover of noxious weeds?	Noxious and prohibited noxious weeds were common on forested sites, most often with cover of greater than 15%.
5.2	5	What is the cumulative density distribution class of noxious weeds?	Noxious and prohibited noxious weeds were common and occurred at heavy (density distribution 8-13) infestation levels.

4.1.4 Lotic Health

A total of nine lotic assessments completed in riparian areas. Five sites scored healthy with problems, and 4 sites scored unhealthy as shown in Figure 4-7 and Figure 4-9.

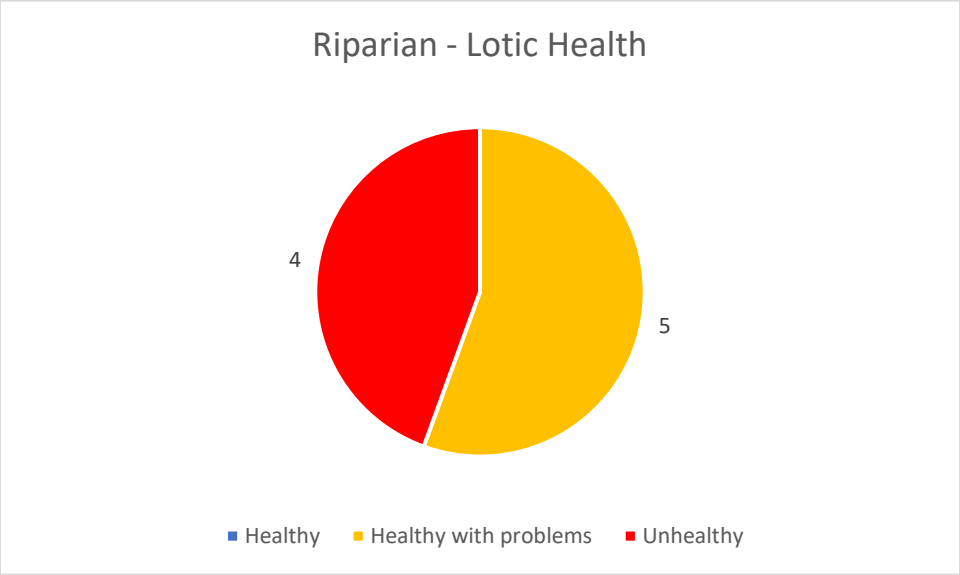
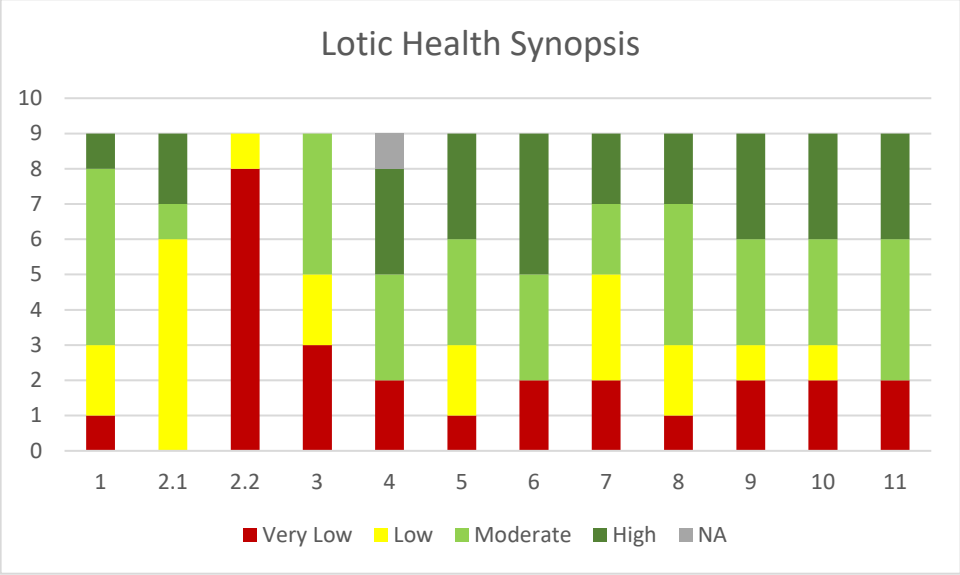


Figure 4-7: Number of lotic riparian assessments scoring in each health category.

A detailed breakdown of scores per questions is presented in Figure 4-8 below which displays some general trends that will be discussed per question in Table 4-6.



Question	VL	L	M	H
1	0	2	4	6
2.1	0	1	2	3
2.2	0	1	2	3
3	0	1	2	3
4	0	2	4	6
5	0	1	2	3
6	0	1	2	3
7	0	2	4	6
8	0	2	4	6
9	0	2	4	6
10	0	1	2	3
11	0	3	6	9

Figure 4-8: Lotic health synopsis for summary discussion.

Table 4-6: Question scoring breakdown and discussion for lotic assessment points.

Question	Out of a Possible	Measure	Discussion
1	6	Vegetative cover of the riparian area.	Most lotic assessment sites had 5-15% bare ground, and 85 to 95% of the reach soil surface was covered by plant growth.
2.1	3	Canopy cover of invasive plants.	Invasive plants were often present, and most often with covers of 1 to 15% canopy cover of the reach.
2.2	3	Density and distribution of invasive plants.	Invasive plants were often present in high densities, ranging from 8 to 12 density class.
3	3	Disturbance caused undesirable species.	Undesirable herbaceous species occupied all reaches in percentages greater than 5% canopy cover, and most often between 2 to 25% canopy cover.
4	6	Preferred tree and shrub establishment and regeneration.	Preferred tree and shrub seedlings were found in varying amounts across the reaches, with some sites having good cover, and some sites having poor cover.
5	3	Utilization of preferred trees and shrubs.	Utilization of preferred species was generally light to moderate across all sites.
6	3	Standing dead woody material.	Approximately half of the assessment sites had more than 5% decadent or dead woody material.
7	6	Streambank root mass protection.	Deep rooted vegetation was only present on 2 of the 9 assessment sites and varied from some to none at the other sites.
8	6	Human caused bare ground.	Human caused bare ground was most often found at more than 1% of the total reach.
9	6	Streambank structurally altered by human activity.	Over half of the assessment sites reported more than 5% of the streambank structurally altered due to human use and activities.
10	3	Pugging, hummocking, rutting.	Over half of the assessment sites reported more than 5% of the streambank to be physically altered due to human use and activities.
11	9	Stream channel incisement.	3 of 9 sites reported streambanks to be vertically stable and not incised. 4 of 9 sites reported streambanks slightly incised, and 2 of 9 sites reported streambanks vertically unstable like a ditch or gully with no floodplain.

4.1.5 Lentic Health

A total of 23 lentic health assessments were completed. Two sites scored healthy, 6 scored healthy with problems, and 15 sites scored unhealthy as summarized in Figure 4-9.

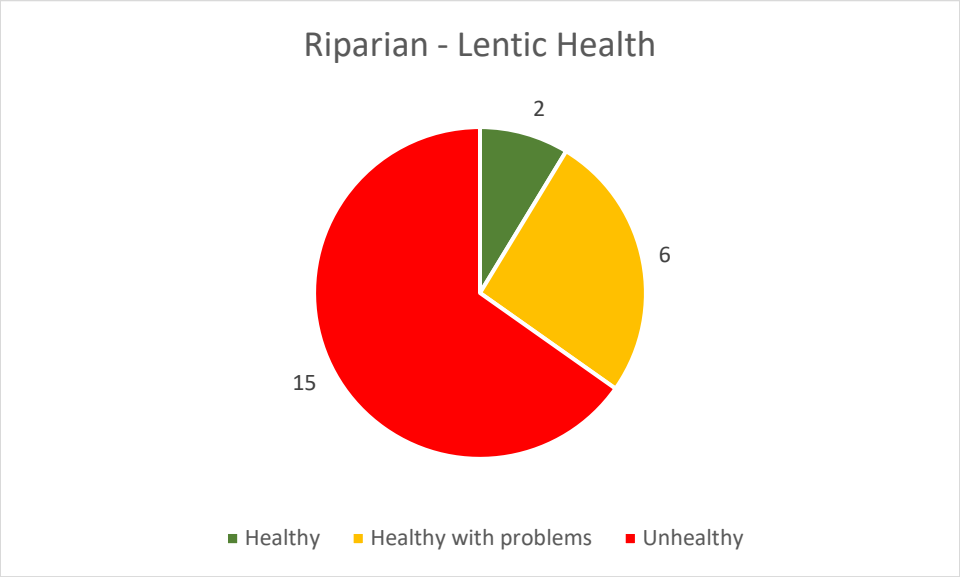
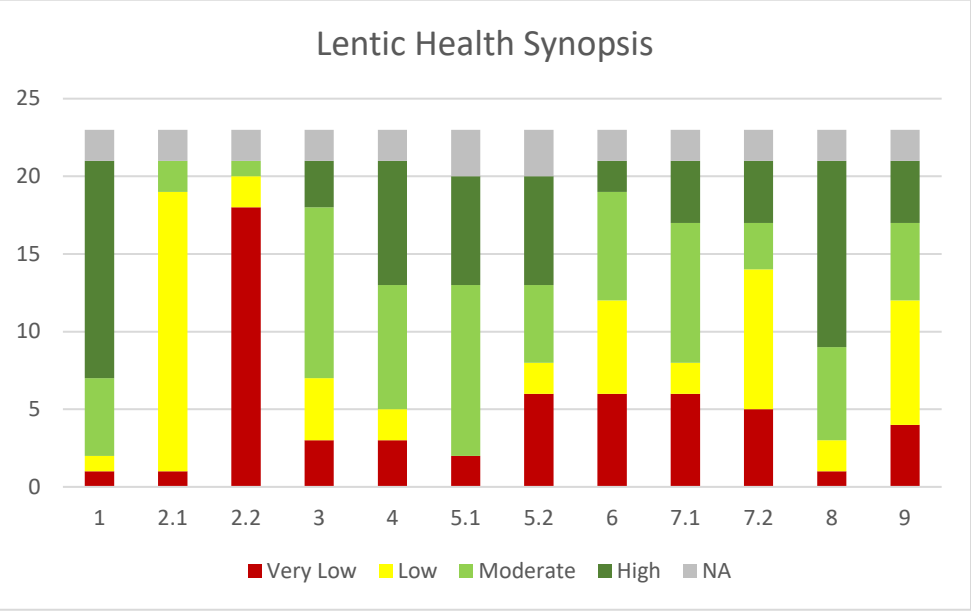


Figure 4-9: Number of lentic riparian assessments scoring in each health category.

A detailed breakdown of scores per questions is presented in Figure 4-10 below which displays some general trends that will be discussed per question in Table 4-6.

Figure 4-10: Lotic health score synopsis for discussion.



Question	VL	L	M	H
1	0	2	4	6
2.1	0	1	2	3
2.2	0	1	2	3
3	0	1	2	3
4	0	2	4	6
5.1	0	1	2	3
5.2	0	1	2	3
6	0	1	2	3
7.1	0	4	8	12
7.2	0	1	2	3
8	0	2	4	6
9	0	3	6	9

Table 4-7: Question scoring breakdown and discussion for lentic assessment points.

Question	Out of a Possible	Measure	Discussion
1	6	Vegetative cover of the riparian area.	Most of the assessment points had less than 5% bare ground, and over 95% of the reach was covered with vegetation.
2.1	3	Canopy cover of invasive plants.	Invasive plants were found on all assessment sites, found most frequently between 1 and 15% cover of the reach.
2.2	3	Density and distribution of invasive plants.	Invasive plant infestations were significant, often occurring at density distributions 4-12.
3	3	Disturbance caused undesirable species.	Most sites had disturbance caused vegetation present, most often between 5 to 25% cover.
4	6	Preferred tree and shrub establishment and regeneration.	Over half of the assessment sites had less than 15% total canopy cover of preferred trees and shrubs as seedlings or saplings.
5.1	3	Utilization of preferred trees and shrubs browse.	Most of the sites had light use of preferred trees and shrubs in terms of browse.
5.2	3	Utilization of preferred trees and shrubs all use other than browse.	Light to moderate use of trees and shrubs was observed on over half of the assessment sites. In urban areas this is often due to human use.
6	6	Human alteration of riparian area's vegetation	Over 90% of assessment sites reported alteration to the reach due to human activity. A number of assessed locations were man made.
7.1	12	Physical alteration of riparian area – human caused.	Over 80% of assessment sites reported physical alteration to the reach due to human activity. A number of assessed locations were man made.
7.2	3	Physical alteration of riparian area – severity.	Human alterations to the riparian areas were observed as slight or moderate, with some sites scoring severe, meaning sites are not naturalizing well.
8	6	Human-caused bare ground.	Overall, human caused bare ground was low.
9	9	Degree of artificial addition and removal of water.	Over half of the sites reported some level of artificial addition or removal of water. Many assessed locations connect to storm water systems where culverts add or divert water.

4.2 Health Discussion

A few general observations are presented in the data across all sites which help to explain why very few areas of FCPP are rated as healthy summarized in Figure 4-11. Most plant communities have shifted from their native reference condition towards modified communities where agronomic species and undesirable species make up the majority of the cover. Often, this is through the invasion of smooth brome and Kentucky bluegrass, observed in grassland, forested, and riparian plant communities on FCPP. Once plant communities become modified, it may take considerable resources to revert them back to native cover. This concept is described in more detail in Section 4.3. The shift in species composition can lead to a loss in both biodiversity and structural diversity of plant communities, where more aggressive non-native species start to displace native species. Sometimes, this can lead to a plant community that once had a diversity of grasses, forbs, and shrubs becoming a monoculture of smooth brome. The loss of structural diversity was seen in grasslands and forests.

Figure 4-11: Schematic demonstrating common causes for loss of health scores.

Grasslands generally scored full marks for litter, meaning litter was found in adequate levels. However, the health assessment scoring does not account for instances where there may be too much litter and litter is impeding ecological processes. This deficiency has to be addressed separately outside of the health assessment protocol. Smooth brome and Kentucky bluegrass can produce extremely high quantities of litter, particularly in the absence of disturbance, which can choke out native vegetation, cool soil surfaces, prevent seedling germination, supress growth of many species of native plants, and create vectors for invasive plants to establish (Alberta Government 2017).

Urban parks host numerous users throughout the year, and as a result can see significant impacts where use is high. There were several areas throughout the park where heavy trailing was seen, and evidence of micro (e.g.,

pedestalling, foot shear) and macro (e.g., rill erosion, gully erosion, root exposure, trailing) erosion reduced health scores. This type of bare soil can become a vector for increased slope instability, reduce nutrient cycling impact water cycling, and allows invasive species to establish (Adams et al. 2016).

Across all assessment locations, on average, over 80% of sites had invasive plants occurrences. Invasive species are among the top five environmental concerns worldwide due to their association with declines in biodiversity and ecosystem health (Didham et al. 2005). Displacement of native plant communities due to invasive species is occurring on a global scale (Mack 1989). The damaging effects of exotic species are known to create significant management problems (D'Antonio and Meyerson 2002). Invasive species are one of the significant drivers of ecological degradation. Invasive plant observations are summarised in Section 4.7.

4.3 Plant Communities

There were 63 plant communities identified in FCPP summarized in Appendix F, most of which were accurately described in the Foothills Parkland Range Plant Community Guide (DeMaere et al. 2012) descriptions, provided in Appendix F. The Foothills Parkland NSR is characterised by three main vegetation types which include fescue grasslands, willow shrublands, and aspen forests (Downing et al. 2006). Human activities have significantly altered the composition of grasslands, particularly in the City of Calgary region. Alteration to the landscape is contributed to the removal of free ranging bison, altercation of fire regimes, human settlement, heavy livestock grazing, and urban planning and development (DeMaere et al. 2012). This is reflected in the high number of modified plant communities identified during the assessment.

Modal climax grassland communities over Black Chernozemic soils will resemble a FPA1 Foothills rough fescue – Parry's oat grass – Idaho fescue community (DeMaere et al. 2012). With disturbance, smooth brome and Kentucky bluegrass will start to increase in presence and may resemble a FPB3 Foothills rough fescue – Kentucky bluegrass. Changes to natural disturbance regimes may cause agronomic grasses to increase further and resemble a FPB2 Kentucky bluegrass - Foothills rough fescue community. As agronomic invasion increases, the plant community may cross a threshold where it may no longer be possible to revert to a native community. Figure 4-12 presents the modal plant communities occurring on FCPP and their response to disturbance as a state and transition model. State and transition explains that some moves between plant communities can be reversed by changing management to a point, until the plant community transitions to another state, sometimes as an irreversible change (Bestelmeyer et al. 2017).

Events that could lead to a transition to another state are often alterations to the natural disturbance regime (Bestelmeyer et al. 2017). European colonization removed free ranging bison and natural fire cycles in the prairie regions (DeMaere et al. 2012), altering a natural and short-term disturbance cycle. This disturbance alteration has been linked to the increase of woody species on the landscape (DeMaere et al. 2012), which is described by successional pathways from grasslands to shrublands to forested types in Figure 4-12. Prolonged severe drought or recreational disturbance could be a catalyst for species composition shift, and extreme grazing or removal of grazing could change species composition leading to agronomic establishment or shrub encroachment (Baker et al. 2020). Once competitive dominant species are introduced, native species will decline, soil properties may be significantly altered (i.e., through litter loading), and the result is that transitions back to more desirable native cover will require some type of input (i.e., restoration activity). Often transitions are difficult, expensive due to the inputs needed, or perhaps impossible all together (Bestelmeyer et al. 2017).

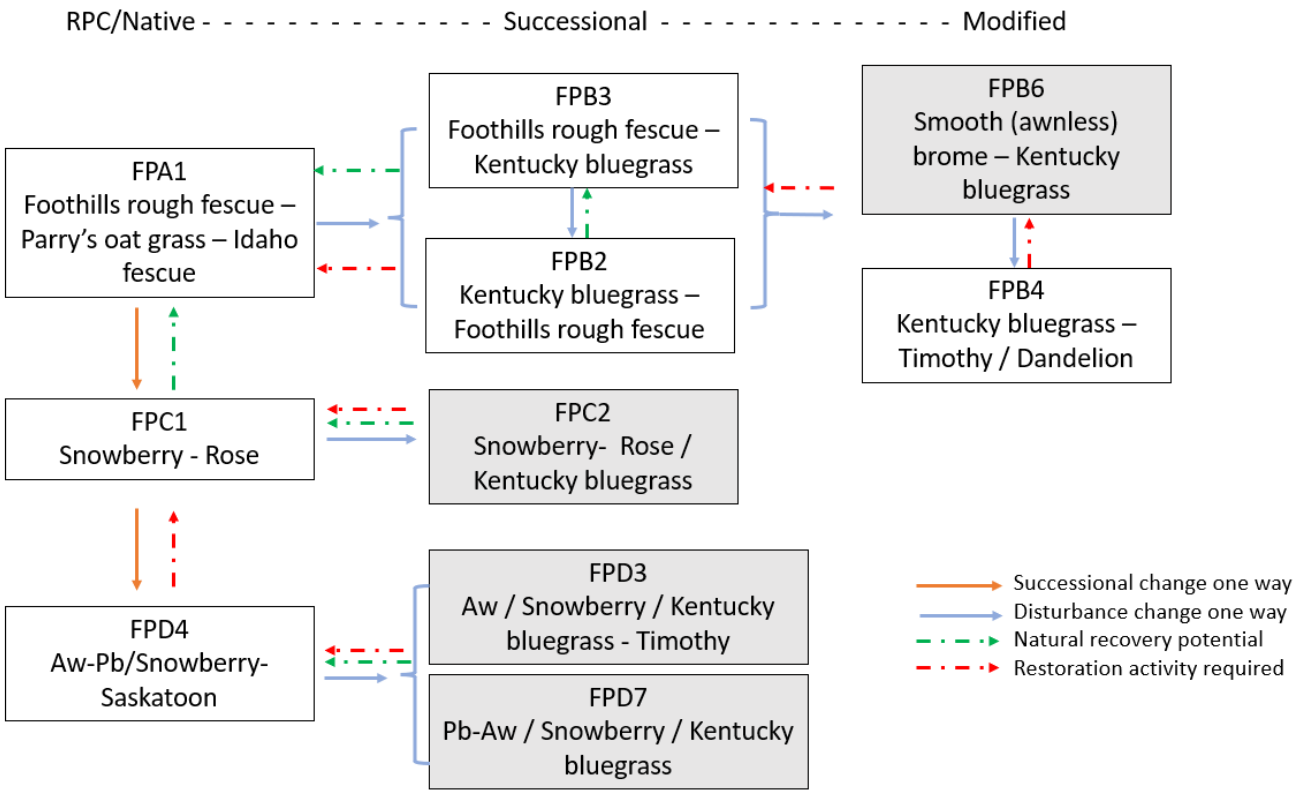


Figure 4-12: State and transition model for modal plant communities on FPCC, modified communities denoted in grey boxes.

The most common plant communities found in FCPP are the FPB6, FPC2, FPD3, and FPD7 communities, highlighted in grey in Figure 4-12. The most common community occurring across all of FCPP is the FPB6 Smooth (awnless) brome – Kentucky bluegrass. This community is a modified grassland that is now dominated by smooth brome and Kentucky bluegrass. Smooth brome and Kentucky bluegrass are aggressive non-native grasses that have replaced the native grasses. This community type is unlikely to return to a FPA1 community due to the prevalence and aggressiveness of introduced grasses as indicated by the red arrow in Figure 4-12 .

The most common shrubland community was the FPC2 Snowberry-Rose/Kentucky bluegrass community, a successional community to the FPC1 Snowberry – Rose reference community. Shrub cover can range from 20% to 80% in this community, and often native grasses will be found in trace amounts under or near the protective cover of a shrub plant. Natural recovery could be possible to return to reference condition through targeted grazing, litter removal, or invasive species control as shown with the green arrow in Figure 4-12 but may require a restoration activity as shown as the red arrow.

The most common forested communities are the FPD3 Aw[5]/Snowberry/Kentucky bluegrass-Timothy and FPD7 Pb[6]-Aw/Snowberry/Kentucky bluegrass community, which are successional communities to the FPD4 Aw-Pb/Snowberry-Saskatoon. Plant community maps are provided in Appendix G.

[5] Aw denotes trembling aspen (*Populus tremuloides*).
[6] Pb denotes balsam poplar (*Populus balsamifera*).

4.4 Native Grassland Locations

There were very few locations in FCPP that may be classified as true native grasslands, and communities were either disturbed, or made up less than 20% of the polygon area. Four plant communities with native species present are summarized in Table 4-8 and displayed in Figure 4-13, totalling only 30 acres.

Table 4-8: Native grassland communities and locations in Fish Creek Provincial Park.

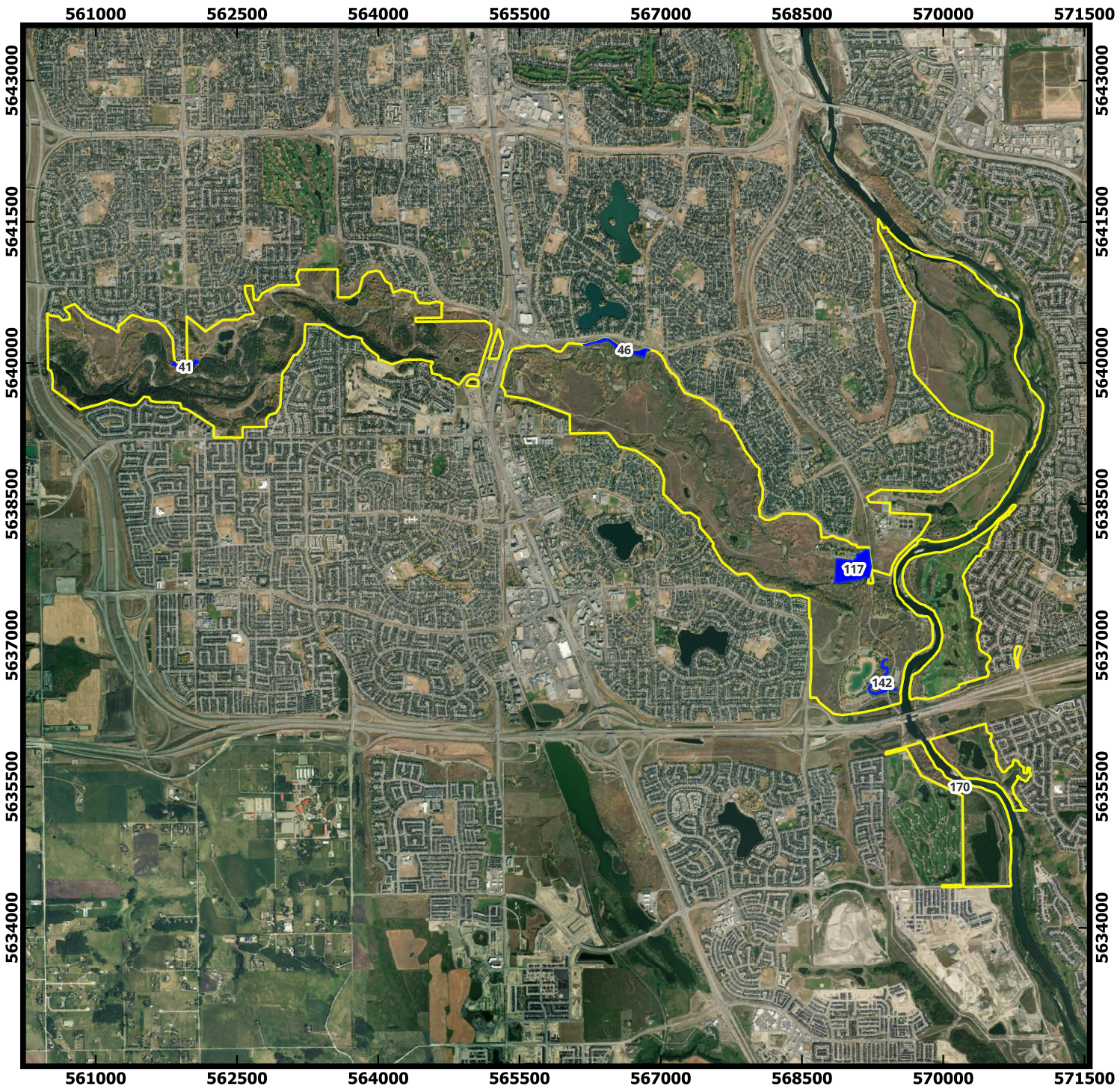
Plant Community Code	Community Name	Ecosite	Ecosite Phase	Assessment Points	Polygons	Area (acres)
FPA3_D	Bearberry – Foothills rough fescue – Parry's oat grass disturbed	A (submesic – poor)	A3 bearberry grassland thin breaks	FC80	41	1.28
FPA4_D	Foothills rough fescue – Western porcupine grass disturbed	B (submesic/medium)	B5 grassland	FC179	46	5.40
FPB2	Kentucky bluegrass – Foothills rough fescue	C (submesic/medium)	C1 rough fescue	FC65, FC155	170, 117	23.01
FPA1	Foothills rough fescue	C (submesic/medium)	C1 rough fescue	FC144	142	0.31

4.5 Rare Plants

The Alberta Conservation Information Management System (ACIMS) provides biodiversity information for Alberta's species (ACIMS 2018b). For Township 022-01 W5M, seven rare plants have been recorded. These were mostly S3 species, with only two S2 ranked species as show in Table 4-9 and Figure 4-14.

Table 4-9: ACIMS element occurrence search for Township 022-01 W5M.

Latin Name	Common Name	Regional Rank	Typical Habitat
Carex crawei	Crawe's sedge	S3	Wetlands
Elodea canadensis	Canada waterweed	S2	Wetlands
Lithospermum occidentale	Western false gromwell	S3	Grasslands
Oenothera flava	low yellow evening-primrose	S3	Thin Breaks
Rorippa curvipes	Blunt-leaved watercress	S3	Wetlands
Ruppia cirrhosa	Widgeon-grass	S3	Wetlands
Elodea bifoliate	Two-leaved waterweed	S2	Wetlands



LEGEND

- Assessment Name
- FCPP Boundary

Native Grassland Poly

- Native Grassland Component

Figure 4-13: Native Grassland Polygons

Friends of Fish Creek Range Health

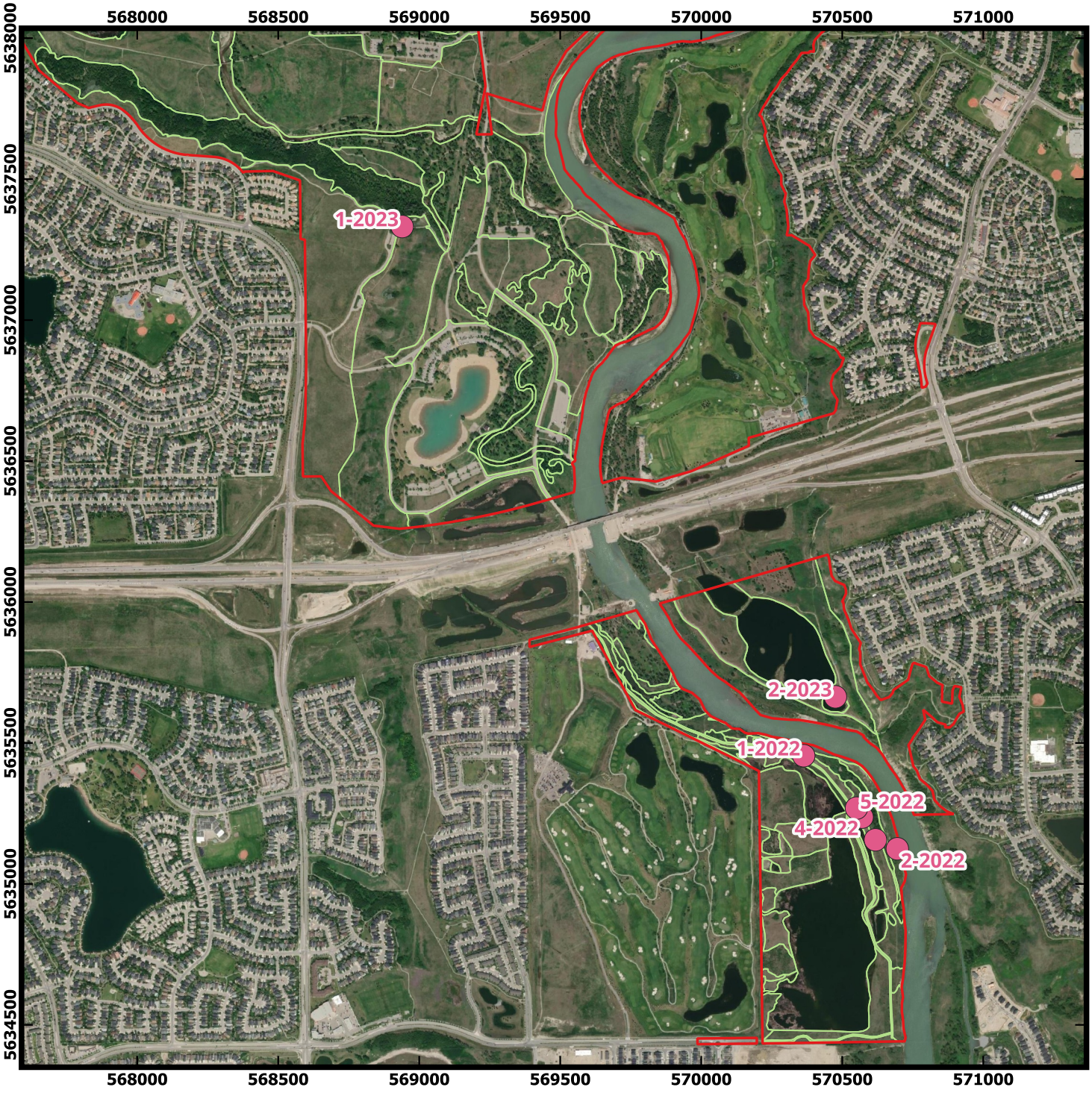
0 1,000 2,000 3,000 4,000 m

Scale: 1:60,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2023 Range Health Assessement

Tannas Conservation Services Ltd



Tannas Conservation Services Ltd

LEGEND

- Western False Gromwell Location
- FCPP_Boundary
- Polygons Final

Public Imagery

Esri Satellite

Figure 4-14: Rare Plant Locations.

South Overview

Friends of Fish Creek
Western False Gromwell

0 400 800 m

N

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2022-23 Range Health Assessements

Western false gromwell *(Onosmodium mole ssp. occidentale)* is an S3 plant, documented in six locations as outlined in Table 4-10. The occurrences were concentrated in the south end of FCPP.

Table 4-10: Rare plant occurrences noted during the assessment.

Latin Name	Common Name	Polygon	Date
Onosmodium mole ssp. occidentale)	Western false gromwell	181	2022
Onosmodium mole ssp. occidentale	Western false gromwell	193	2022
Onosmodium mole ssp. occidentale	Western false gromwell	193	2022
Onosmodium mole ssp. occidentale	Western false gromwell	180	2022
Onosmodium mole ssp. occidentale	Western false gromwell	193	September 6, 2023
Onosmodium mole ssp. occidentale	Western false gromwell	152	September 6, 2023

Western false gromwell is typically found in the southern foothills regions and grows in dry open woods and gravelly banks. Western false gromwell stands approximately 4-8 decimeter (dm) tall and is a perennial herb with ovate to ovate-lanceolate leaves that have entire margins and are conspicuously ribbed (Tannas, 2004). Foliage is hairy, and flowers are greenish white as shown in Figure 4-15. Seeds are hard nutlets that are a shiny white-brown color as shown in Figure 4-16. This figure also shows the conspicuous nerves on leaves. Management of this species should be taken into account in weed control programs as grazing and herbicide can both have negative effects on this species. Incidental observation data was submitted to the Alberta Conservation Information Management System (ACIMS) found in Appendix H. Location data is presented in Figure 4-14.

Figure 4-15: Western false gromwell floral characteristics.

Figure 4-16: Mature western false gromwell plant with seeds.

4.6 Invasive Species

There were 17 invasive plant species found during the assessments at FCPP which are listed in Table 4-11. Two species are provincially listed as prohibited noxious weeds under the *Weed Control Act* and *Weed Control Regulation*, which are nodding thistle (*Carduus nutans*) and spotted knapweed (*Centaurea stoebe* spp. *macranthos*). There were five unlisted invasive plants that were noted, and the remaining invasive plants were listed as noxious.

Table 4-11: Summary of invasive species found during the assessment.

Latin name	Common name	Map Code	Growth Form	Provincial Status	Significant Infestations (Polygon)*
Arctium minus	Common burdock		Biannual forb	Noxious	
Artemesia absinthium	Absinthe wormwood		Perennial forb		
Caragana arborescens	Caragana		Deciduous shrub		
Carduus nutans	Nodding thistle		Biannual or annual forb	Prohibited noxious	
Carum carvi	Wild caraway		Biannual forb		

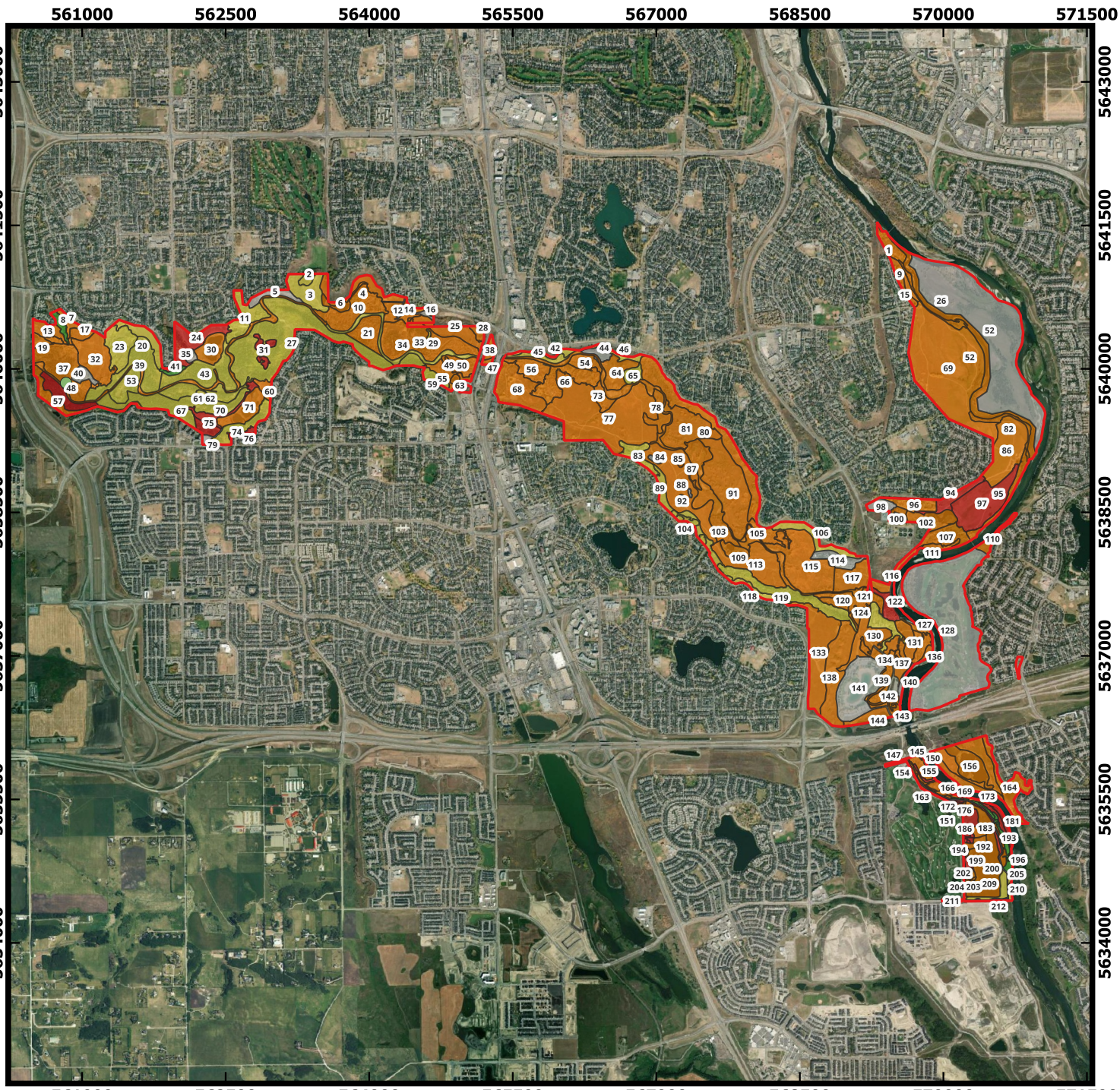
Latin name	Common name	Map Code	Growth Form	Provincial Status	Significant Infestations (Polygon)*
Centaurea stoebe spp. macranthos	Spotted knapweed	SK	Biannual forb	Prohibited noxious	185
Cirsium arvense	Canada thistle	CT	Perennial forb	Noxious	4, 24, 31, 71, 86, 94, 97, 145, 156, 174, 178,186, 194, 202, 203
Clematis tangutica	Yellow clematis		Perennial vine	Noxious	
Cotoneaster spp.	Cotoneasters		Perennial shrub		
Ephula esula	Leafy spurge	LS	Perennial forb	Noxious	31, 97, 155, 157, 158, 159, 168, 176
Hyocyamus niger	Black henbane		Biannual or annual forb	Noxious	
Leucanthemum vulgare	Oxeye daisy		Perennial forb	Noxious	
Linaria vulgaris	Yellow toadflax		Perennial forb	Noxious	
Sonchus arvensis	Sow thistle		Perennial forb	Noxious	
Tanacetum vulgare	Common tansy	TV	Perennial forb	Noxious	9, 145, 156, 157, 159, 174, 176, 178, 181, 186
Thesium ramosum	Field thesium	FT	Perennial forb		71, 81
Tripleurospermum inodorum	Scentless chamomile		Annual to short lived perennial	Noxious	

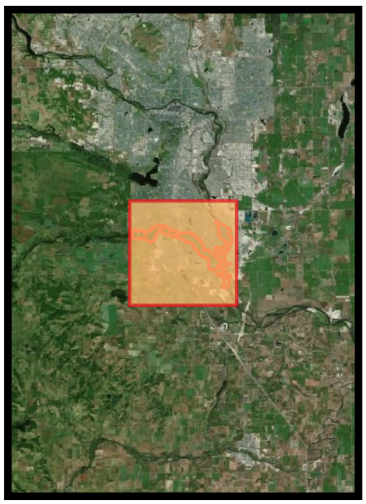
*Percent cover is 7% or higher for the polygon to be considered “significant”.

Invasive species cover is displayed in Figure 4-17 by the score received in Question 5.1 which evaluates the cover of invasive weeds, rated by scores of very low, low, medium, and high. Table 4-12 describes what each score category represents on the map.

Table 4-12: Weed category scores and descriptions.

Score Category	Description
Very Low	Greater than 15% cover from invasive plants.
Low	Invasive plants in covers of 1 to 15%.
Medium	Invasive plants present but less than 1% cover.
High	No invasive plants present.





Tannas Conservation Services Ltd

LEGEND

FishCreekPP_Boundary

Weed Evaluation

- High
- Low
- Medium
- Very Low
- Not Evaluated

Public Imagery

Esri Satellite

Figure 4-17: Invasive Plant Cover

Density and Cover

Friends of Fish Creek

Range Health

N

0 1,000 2,000 3,000 4,000 m

Scale: 1:60,000

Projection: NAD84 UTM Zone 11U

Imagery: Esri Satellite

Data from 2023 Range Health Assessement

4.6.1 Summary of Control Options

Tools for invasive plant control are commonly categorized into mechanical, chemical, biological, or cultural. Each tool has variations and applications at different stages of plant invasion and growth. Control tools also have unique advantages and disadvantages that can be leveraged. Table 4-13 outlines advantages and disadvantages to each control method, illustrating the need for integrated treatment approaches.

Prior to undertaking control actions, background information must be considered including:

- Species historic and current distribution.
- EDRR status and provincial designation.
- Growth form, method of spread, and biology.
- Past success as informed by monitoring and known published research.
- Size and accessibility of the infestation.
- Composition and health of existing plant community.

Table 4-13: Advantages and disadvantages to invasive plant control methods adapted from (Parks Canada 2021).

Control Method	Advantages	Disadvantages
Mechanical (Digging and pulling)	• Limit seed set/remove plants reproductive structure. • Target individual plants (no non-target impacts in most cases). • Less public concern with simple methods. • Digging can remove a complete plant if it is tap rooted or fibrous rooted.	• Requires multi-season approach. • Time and labor intensive. • Not suitable for rhizomatous or creeping species because roots will quickly re-establish after digging and mowing will not kill the plant. • Plant removal (digging) causes soil disturbance, increasing risk of new invasions.
Mechanical (Solarization)	• Less public concern with simple methods. • Sterilization of seed bank • Destruction of rhizomes	• Time and labor intensive. • Plant removal (digging) causes soil disturbance, increasing risk of new invasions. • Requires removal of all species including desirable plants.
Mechanical (Mowing)	• Less public concern with simple methods. • Limit seed set/remove plants reproductive structure. • Simulates natural grazing processes	• May require another control method to kill the target species. Will not normally control weeds alone. • Mechanical damage can stimulate growth and reproduction. • Defoliation does not destroy the plant. • Requires multiple control events per growing season. • Requires multi-season approach. • Time and labor intensive. • Not suitable for rhizomatous or creeping species because roots will quickly re-establish after mowing will not kill the plant. • Will damage desirable plants
Mechanical (Grazing)	• Less public concern with simple methods. • Limit seed set/remove plants reproductive structure. • Re-establishes natural grazing dynamics controlling litter.	• May require another control method to kill the target species. Will not normally control weeds alone. • Mechanical damage can stimulate growth and reproduction. • Defoliation does not destroy the plant. • Requires multiple control events per growing season.

Control Method	Advantages	Disadvantages
	• Causes stress to plants	• Requires multi-season approach. • Time and labor intensive. • May lead to targeting of desirable climax species. • Not suitable for rhizomatous or creeping species because roots will quickly re-establish after grazing will not kill the plant alone. It needs many treatments.
Chemical (Residual Herbicides)	• Highly cost effective with multiple years of control per treatment • Able to be used on a large scale economically. • Destroy plant with higher effectiveness (reduced number of applications). • Target species groups (Selective herbicides or all vegetation (non-selective herbicides) • Can be used to target specific plants (Spot-spray/wick application) • Certain active ingredients can prevent additional weed seed germination for a time after application. • Some herbicides can kills complete root systems (rhizomes) when desired.	• Can kill non-target species (native plants) related to the target species. • Variable toxicity, some herbicides have restrictions due to toxicity for a period of time after treatment. • Residual periods vary and may be too short or two long depending on the herbicide. • Requires formal, training (applicator licencing) for applications) • Concern from public when applying in populated areas. • May result in bare soil if all plants are supressed for multiple years (i.e., sterilants).
Chemical (Non-residual Herbicides	• Cost effective allowing large scale application at a relatively low cost • Destroy plant with higher effectiveness (reduced number of applications). • Target species groups (selective herbicide) or all vegetation (non-selective herbicide). • Target specific plants (spot-spray) or broadcast spray. • No residuals in soil allowing for plants to germinate effectively • Can be contact only, killing only what the herbicide touches.	• Can kill non-target species (native plants) related to the target species • Variable toxicity, some herbicides have restrictions due to toxicity for a period of time after treatment • Requires multiple treatments to control the seed bank. • Requires formal, training (applicator licencing) for applications) • Concern from public when applying in populated areas
Biological	• Introduce a predator, parasite, disease to control infestations, mimicking normal ecological processes. • Effective over long time periods with limited resources. • Works over the long-term.	• Rarely eradicates infestation (limits spread). • Variable effectiveness. • Variable host specificity. • Not suitable for all climates. • Requires long term monitoring and adaptive management. • Not suitable for small infestations (need significant weed population to establish most biocontrol agents).
Cultural and Other	• Use a variety of methods to alter the environment to be less suitable	• Generally used as a preventative strategy. • Generally used with other control actions.

Control Method	Advantages	Disadvantages
Control Methods	for invasive plants transmission, establishment, or spread. • Effective when paired with other control actions (prevents re-establishment of invasive plants post mechanical or chemical control. • Can be difficult to control or apply with precision (e.g., flooding or fire).	

4.6.2 Integrated Pest Management Discussion

It is strongly recommended that an Integrated Plant Management Plan is developed for FCPP to address the invasive plant concerns in the park, in collaboration with Alberta Parks. Target species should include spotted knapweed, leafy spurge, common tansy, field thesium, and any prohibited noxious species. Early detection and rapid response tactics should aim to eliminate single occurrences or small patches of high priority species, and an integrate approach should be employed with annual control targets to all other species.

There are four stages of invasive plant management which include prevention, eradication, containment, and long-term control as shown in Figure 4-18. The stages of invasive plant management are fluid and respective responses from land managers should be adapted accordingly. For example, prevention is still relevant for established species, not only species with limited distribution and small populations.

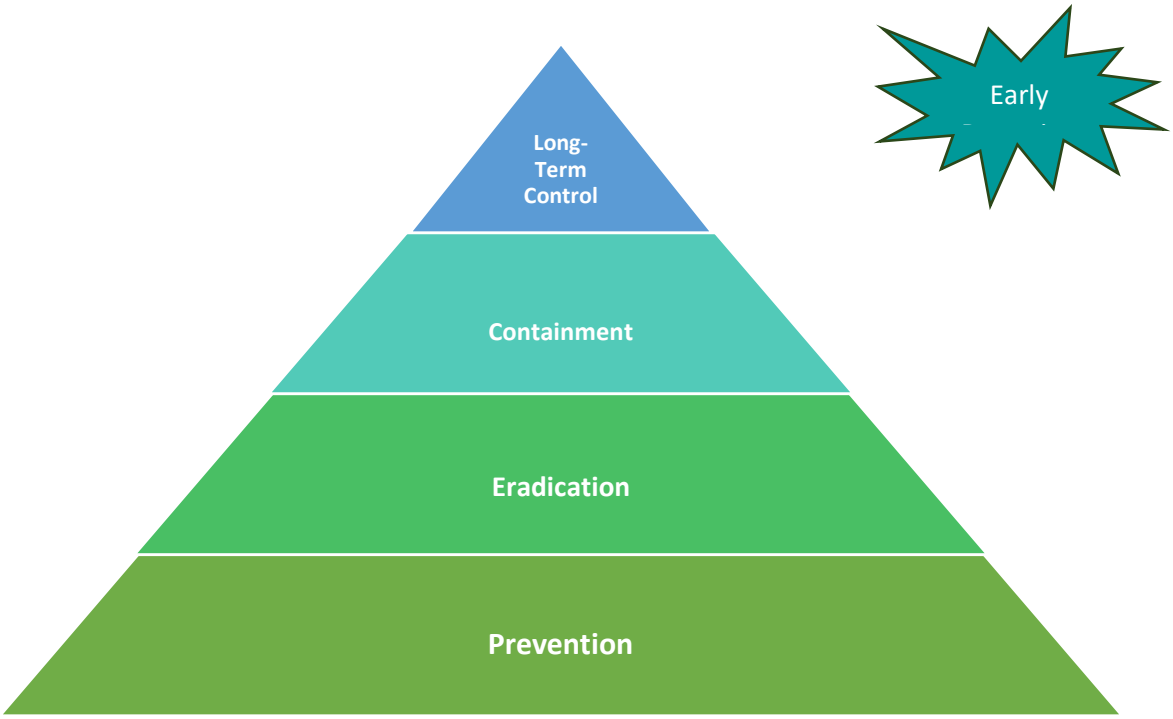


Figure 4-18: Stages of invasive plant management.

General descriptions and actions are provided as a summary in Table 4-14.

Table 4-14: Description of the stages of plant control and generalized actions for each stage.

Stage of Invasive Plant Control	Description	Actions
Prevention	• The first opportunity to minimize damage of invasive plants. • Foundation of invasive plant management. • Proactive activities are key. • Lower cost of implementation.	• Keep equipment clean, inspect before arriving on site. • Minimize disturbance footprint. • Use clean soil, seed, and other materials for projects. • Educate visitors to prevent recreational introduction. • Limit spread from known infestations. • Manage for healthy and resilient landscapes.
Eradication	• Control window where plant populations are small and limited in distribution. • Complete eradication can be possible in early stages of invasion. • Regular monitoring and community education. • High priority for control.	• Early detection and rapid response. • Integrated management approach. • Use citizen science to track invasions. • Reporting and tracking to prevent species growth.
Containment	• Invasive plant population is now established. • Eradication is not possible in the short term. • Focus shifts to prevent spread. • Establishment of a containment boundary or containment line.	• Targeted control approach. • Integrated management application. • Prevent spread across boundary or line. • Create a containment buffer from perimeter.
Long term control	• Invasive plants are widespread. • Focus shifts to reducing specific negative impacts.	• Multiple control strategies are used. • May require an amended approach to control.

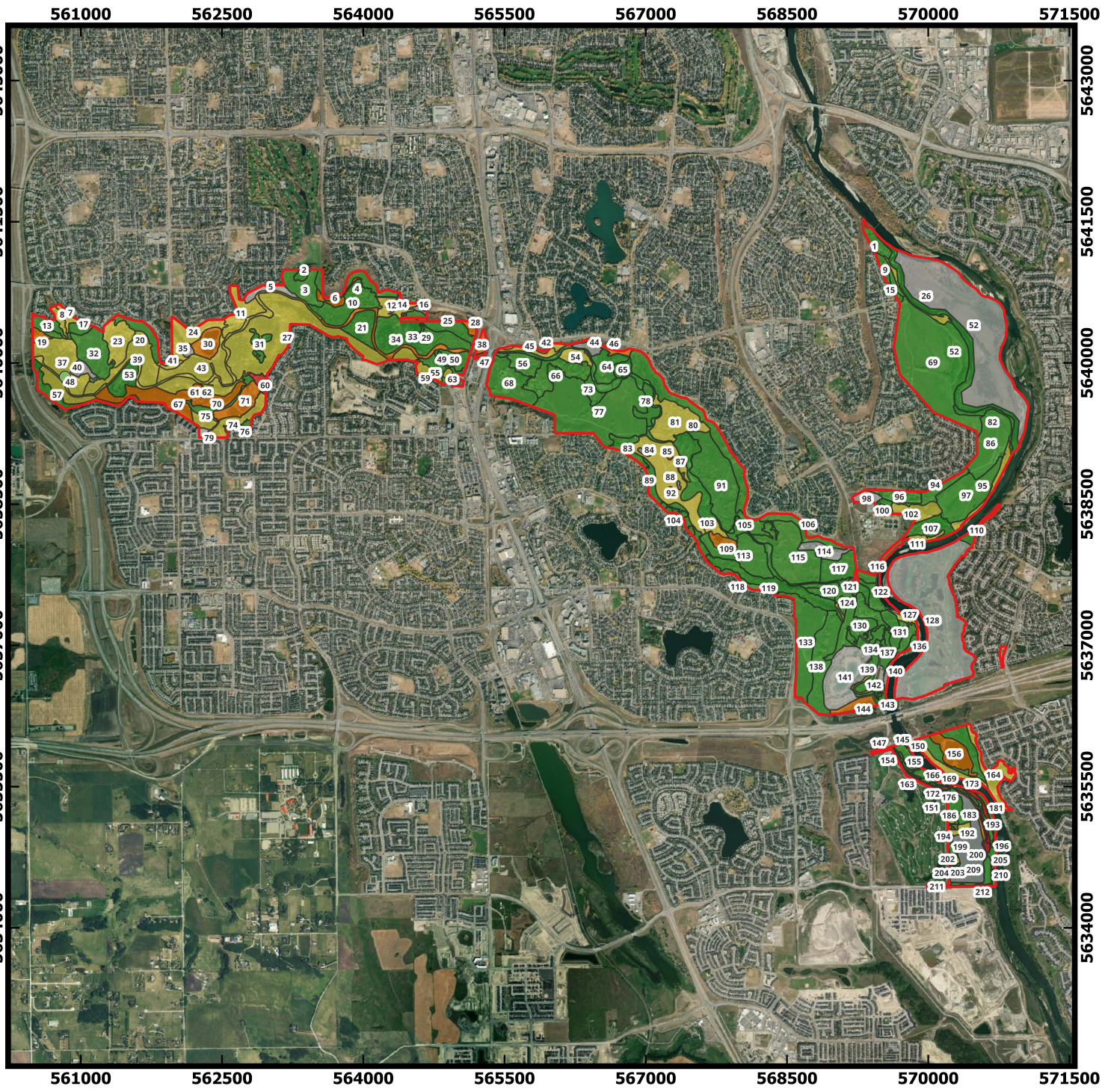
4.7 Erosion Features

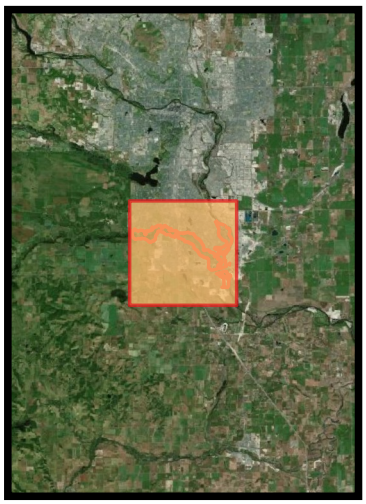
The FCPP is a well-used area that supports multiple recreational activities. Although it is important to build relationships with our natural environment, recreational activities can also impact ecological health and function. Some of the recreational activities occurring in FCPP include biking, birding, picnicking, rollerblading, walking, wildlife watching, and hiking (Alberta Parks 2021 Jan 27). The park also provides access to the river which is used for boating, fishing, and swimming (Alberta Parks 2021 Jan 27).

High levels of recreational activity results in an increased risk of spreading invasive weeds. Recreational activities contribute to trailing, bare ground, and compaction as illustrated in Figure 4-19. Bare ground impacts were less widespread across the park and localized to a few high use areas. Significant erosion in the form of trailing, root exposure, and compaction was wider spread, and polygons with considerable erosion features are illustrated in Figure 4-19 and Figure 4-20.

Figure 4-19: Examples of high human use impacts resulting in erosion and bare ground.

Bare ground is susceptible to erosion and fails to support ecosystem services expected of natural areas. However, some bare ground is expected and may be naturally present. Bare ground is evaluated to reflect human-caused bare ground which is estimated as the expected bare ground for the type of ecosite less the observed bare ground. Most of the grassland areas had minimal human-caused bare ground, but some of the riparian and forested areas had higher bare ground.





Tannas Conservation Services Ltd

LEGEND

FishCreekPP_Boundary

Erosion Evaluation

- High
- Low
- Medium
- Very Low
- Not Assessed

Public Imagery

Esri Satellite

Figure 4-20: Erosion Evaluation Density and Cover
Friends of Fish Creek
Range Health

N

0 1,000 2,000 3,000 4,000 m

Scale: 1:60,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2023 Range Health Assessement

4.8 Restoration Activities

Targeted restoration activities may be suitable ways to address ecological concerns in FCPP. A number of targeted applications are already in place such as native grassland restoration projects. Table 4-15 summarizes several potential restoration activities and suggests ideal target polygons.

Table 4-15: Restoration activity discussion and suggested target polygons.

Topic	Description	Benefits	Threats or Constraints	Action?	Target Polygons
Grassland Conservation	Grasslands with native species components are in short supply, and efforts should be made to reduce further disturbance to these areas.	Native grasslands provide biodiversity, perform important ecological function, are drought resilient, and provide important forage to many wildlife species. This technique is relatively cost effective as it involves restriction of use not active management.	Encroachment of agronomic species, shrubs, and invasive species from nearby areas threaten to displace remaining native species. Removal of natural disturbance may result in reduced resilience leading to further loss. May require introduction of new natural disturbance regimes (grazing, fire…)	Yes	42, 117, 142, 170
Grassland Restoration	Areas that have been converted to non-native species are at a new stable state that will not naturally recover. Conversion through active reclamation activities is the only way to truly shift the balance of species towards native plants.	This can increase native plant communities within the park. It is very effective. Leads to increased biodiversity and resets the ecological trajectory.	This process is expensive and takes multiple years. Invasive species may invade again if proper land management is not in place.	Yes	
Prescribed Fire	A planned and controlled fire event, generally applied as a low intensity burn in the spring or the fall to remove fine fuels and apply light disturbance to plant communities. It can be used to reduce fuel loading risk or applied as a targeted treatment for vegetation management.	Mimics a natural disturbance event that historically suggests was fairly frequent in the Great Plains, used culturally, and mimicked bison movements (Higgins et al. 1989).	Invasive species load is a large concern in FCPP, and many polygons have significant invasions. Canada thistle, annual bromes, and other species increase with the application of fire, so burn planning will need to account for invasive plants. This technique may require integration of grazing to maximize effectiveness.		

Topic	Description	Benefits	Threats or Constraints	Action?	Target Polygons
Riparian Forest Planting	The natural flood cycle is necessary to allow riparian forests to propagate properly. Planting of trees as well as understory species. Is necessary.	This will improve the ecological health of the riparian forests and allow them to supress invasive species.	Installation requires maintenance and suppression of competitive grasses to successfully establish trees and shrubs. This can be expensive.	Yes	8, 31, 33, 34, 35, 36, 37, 39, 40, 70
Targeted Grazing	Using livestock to target a problem like invasive plants or litter loading.	Application mimics natural disturbance and can be adaptively managed to target the problem. This also manages litter loads and helps improve biodiversity through the intermediate disturbance hypothesis.	A single event of defoliation is not adequate to control weeds or provide litter removal. Repeated application is required, with monitoring, and is best used with other integrated approaches. This leads to long term costs when it is managed as a targeted grazing program. It is only cost effective when it can be managed under a traditional livestock management system (e.g., Glenbow Ranch Provincial Park).	Yes	Leafy spurge control: 31, 97, 155, 157, 158, 159, 168, 176 Litter removal: 4, 14, 24, 25, 31, 32, 55, 56, 68, 70, 77, 89, 115, 118, 120, 130, 131, 137, 143
Control of Woody Species Encroachment	Shrubs (e.g., snowberry, willow) and trees (e.g., aspen) can move into grassland areas and with them comes invasive grasses and exclusion of the native grassland communities. Removal of woody species is necessary to maintain grassland ecosystems.	Increased biodiversity of grassland species. Conservation of the few remaining native grasslands in the park. Creating and maintaining more diverse wildlife habitat	Requires fire and herbicide to be effectively implemented. Conversion to grassland can be difficult in an urban park. Invasive species may still invade and may require additional controls.		
Trail Development	Trail improvements may include signage, fencing, gravelling, or paving to reduce undesirable impact.	Concentrate use to upgraded areas and minimize impact to sensitive areas.	Cost is likely the largest constraint. The ability to implement the improvement and restrict unwanted human impact is also a consideration to consider for feasibility. Some areas may not be suitable for improvement	Yes	8, 46, 37, 60, 67

Topic	Description	Benefits	Threats or Constraints	Action?	Target Polygons
			and will be considered a sacrifice area.		

4.8.1 Grassland Conservation

Grassland conversion is a process can be used in combination with trail development. This can provide the public with ways to avoid impacts to grasslands that are healthy by closing trails in areas where damage is occurring or develop trails with erosion controls in place to allow the public to cross grasslands that are healthy to minimize impacts to them. It is important to protect those areas that are healthy and have functioning native plant communities. Additional efforts should include increased weed control and maintenance activities such as grazing and/or prescribed fire to supress shrub and tree encroachment along with maintaining healthy litter levels to support the native plant biodiversity of these communities. Conservation requires an integrated and thoughtful approach to land management to ensure that the most serious threats to ecological integrity are removed. These threats included invasive species encroachment, human use impacts (e.g., trailing), loss of natural disturbance regimes (e.g., grazing and fire) and woody encroachment.

4.8.2 Grassland Restoration

Restoration ecology involves complex processes that have numerous targeted outcomes along with numerous approaches to achieve those outcomes. For each area that is to undergo reclamation, it is necessary for the long-term goals to be set ahead of time and an appropriate plan to be put in place. The project target will fall into one of three major categories which are reclamation, revegetation and restoration. Within FCPP, the target will generally fall under some form of the following:

1) Reclamation - re-establishing natural processes (i.e., nutrient cycling, water cycling, soil building, and productivity) and ecological health, but not the pre-existing plant community.
2) Restoration - the re-establishment of a target pre-existing ecosystem with its ecological processes and health re-established.

The current condition of many of the grasslands in the park require significant investment to move them to a native ecosystem and this may not be achievable in most situations. It is recommended to start small and focus on high-quality projects that can shift plant communities effectively rather than large projects that do not properly address the root problems that are shifting the plant community away from a healthy native status. In most cases some form of reclamation is recommended as it is much easier to achieve, but a hybrid between reclamation and restoration is also possible. Choosing early and mid successional grasslands that are easier to establish may allow for healthy functions to occur with a few climax species included will allow for success to be more easily achieved while setting the site up for long term movement on a trajectory to a long-term target climax plant community. It is recommended that a 10-year plan be put in place for reclamation/restoration projects with shorter term actionable items that be broken up into grant applications. This way there is a bigger picture and long-term goal with shorter term achievable action items that funders can get behind.

Both processes require the following steps:

1) Site preparation – this step includes complete control of all non-native species on site including live plants, seed, and rhizomes. To achieve, this an integrated plant management program is required. The most significant challenges will come from non-native grasses such as smooth brome, quack grass

(*Elymys repens*), and Kentucky bluegrass, and reed canary grass (*Phalaris arundinacea;* not native in southern Alberta). All of these species have creeping root systems and prolific seed production. The soil seed bank will hold viable seed for up to ten years after the plants are removed. For this reason, a combination of herbicide treatments, tillage, fire and/or solarization is recommended and may take up to three years depending on the techniques used. Soil preparation will include tillage to prepare the soil for the establishment of the desired plant community.

2) Installation – installation of the native plant communities will include seeding alone or seeding with installation of live plants (shrubs or key grass species). This process must occur in the appropriate season (spring/fall and with correctly source identified plant materials). There is a danger in fescue seed not being appropriate due to the integrity of the seed supply chain and careful assessment is recommended before use of any fescue species and avoidance of some species is generally recommended for high-cost projects such as this.
3) Monitoring – the monitoring of a project is critical during the first three years of establishment. Many factors can cause the establishing native plants to miss the target trajectory. Factors such as invasive species and drought are two key issues that need to be monitored for.
4) Adaptive Management – as problems are identified it is possible to mitigate them and reduce their impact through implementation of a proper adaptive management program. When the monitoring program identifies a problem, it must be possible to adapt the plan and correct the problems quickly. Actions may include watering, fertilization, weed control, seeding, and/or planting of live plants.

A detailed reclamation plat that is general enough to be applied across the park is likely not possible. It is recommended that site specific reclamation plans are developed for each treatment prescription. Each plan must be customized to each location based on the site requirements, environmental conditions, invasive species on site and the site location/topography. The following recommended approach should be considered the base of reclamation plans to be implemented for grassland conversion:

1) Vegetation Control

   Considering the high cover of invasive grasses, the removal of these species must include both treatment of the seedbank as well as the living plant material. To achieve this in a timely and cost-effective manner, a combination of herbicide application and solarization is recommended. To achieve this method, the area to be reclaimed should be treated with glyphosate to kill all existing vegetation between June 1st and July 1st. Once treated, the vegetation cover must be removed. This can be completed a prescribed burned as it will remove all vegetation as well as kill much of the seed in the soil surface of the seed bank. Alternatively, the vegetation can be removed through intensive targeted grazing or mowing and removal of litter and vegetation. Once completed, solarization is to occur. This should include making sure the soil is moist then installing plastic over the site where all edges are buried into the ground. The soil should remain in solarization treatment for a minimum of a month, but it is recommended to occur for up to two months. This will kill any remaining propagules and germinate and kill seed from the seed bank.

2) Seedbed Preparation

   Once the solarization is complete, the ground should be tilled with a rotospike or rototiller to the depth of 5 cm to break up the sod and prepare the seed bed. A cover crop should be planted in late august into this tilled soil (i.e., annual rye; *Lolium multiflorum*) and allowed to germinate in the fall and over winter

to hold the soil together. If significant weeds establish as well, then a following year of annual cover crops and herbicide treatment is recommended to ensure all grassy weeds are effectively controlled.

3) Seed and Plant Material Selection

Plant material selection will be based on assessing the landscape position and climatic conditions of the area to be reclaimed. This will be cross referenced with the reference plant communities within the Foothills Parkland Plant Community Guide. The seed mix will be made from commonly available grasses and forbs that germinate and establish effectively from seed. Live plants of grasses and forbs that are challenging to establish from seed will be added in small quantities to initiate natural infill over time. This process should consider that virtually all available fescue seed on the market that claims to be native is actually *Festuca trachyphylla* (formerly *Festuca ovina*) and is not native (S. Tannas, S. Tannas, personal communication, February 26, 2024). Investing this amount of money in restoration should mean that considering any species that is a high risk of contamination with a non-native species should be avoided. Use of fescue species requires clear verification of the living plants grown from the seed to confirm authenticity of the seed as a seed lab cannot tell the difference in a weed analysis.

4) Installation

Installation timing should be early spring (April 1st to May 10th) or in October. This will maximize the ability of the seed to take advantage of early spring moisture and establish before the heat of summer and typical moisture deficits occur.

5) Maintenance and Monitoring

Considering the investment in preparation and installation maintenance should be carefully applied. An effective weed control program is necessary that monitors invasive grass establishment along with regulated weeds to control them wherever possible. Watering is not practical on larger areas although it can help in the reclamation process where feasible. Monthly monitoring is recommended to identify problems and create effective mitigations. Where establishment is poor additional seed and plants can be utilized to infill the gaps in establishment.

4.8.3 Riparian Forest Plantings

Riparian forest plantings would fall under a revegetation category which is more easily achieved than a full reclamation or restoration activity. Planting both overstory and understory species is important and can allow for a healthy forest ecosystem to re-establish. In many areas of the park there are mature trees, but young trees and the understory is not healthy. The process to successfully establish trees and shrubs to increase the health of the riparian forest requires a number of key steps:

1) Site Preparation – In most cases suppression of invasive grasses will be necessary. This process should be completed in one of a number of ways. The most effective is to use glyphosate to spot spray patches of grass out (i.e., 50 cm diameter) where the trees and shrubs will be installed. Another method is to cut the sod and turn it upside down to supress grass growth around the locations where the trees will be installed (i.e., more labour intensive and not as effective).
2) Installation – installing trees into the patches prepared for them can be done by hand or in some cases with equipment. Once planted it is possible to help further supress invasive grasses through application of mulch or other materials (i.e., cardboard) around the base of the plants to help supress invasive grass

growth. Another option that will be available in a couple years is the use of Indaziflam around the base of the plants to prevent germination of invasive species for up to 3 years.

3) Monitoring – monitoring is necessary to identify if invasive species are becoming a problem if watering is needed or if other plant health issues exist.
4) Adaptive Management – The maintenance period of two to three years will be necessary to mitigate any problems that occur. Watering, weed control, and fertilization may be necessary to help the trees establish.

4.8.4 Targeted Grazing

The use of livestock for vegetation management purposes is generally referred to as targeted grazing, prescriptive grazing, or managed herbivory, and is defined as:

> '…the application of a specific kind of livestock at a determined season, duration, and intensity to accomplish defined vegetation or landscape goals.' (Launchbaugh and Walker 2006)

Targeted grazing uses the timing, frequency, intensity, and selectivity of grazing/browsing to apply herbivory pressure on specific plant species or sections of the landscape to reach vegetative goals, providing land managers with an alternative to mechanical, chemical, or prescribed fire treatments to manipulate vegetation (Launchbaugh and Walker 2006; Frost et al. 2012; Rinella and Bellows 2016; Bailey et al. 2019). Targeted grazing is often used to address the following issues:

- Noxious weeds and non-native plant species invasion.
- Woody vegetation invasion of grasslands.
- Grass and broadleaf woody vegetation management in regenerating forests.
- Manipulation of vegetation and litter to reduce fire hazard.
- Habitat enhancement for species at risk and other wildlife.

In targeted grazing treatments, livestock are focused in a specific area of interest using distribution tools and techniques (fencing, herding, placement of water/supplements) to defoliate and/or trample the species or area of interest to achieve management objectives (Rinella and Bellows 2016; Bailey et al. 2019). Effective targeted grazing treatments require knowledge of plant ecology, livestock nutrition, livestock foraging behaviour, livestock handling/management, and site-specific ecological attributes (Launchbaugh and Walker 2006; Rinella and Bellows 2016; Bailey et al. 2019).

Grazing animals are generally separated into three main groups based on their feeding habits which are grazers, browsers, and intermediate feeders (Holechek et al. 2011).

- Grazers
    - E.g., cattle, bison.
    - Most of our common grazers are bulk feeders (non-selective) and are better at removing biomass than targeting specific plant groups.
    - Grass dominated diets.
    - Will eat forbs and shrubs, although they generally avoid shrubs.
    - Cannot eat toxic plants.
- Browsers
    - E.g., domestic goats, moose, deer.

- Are adapted to targeted grazing/browsing.
- Primarily select for forbs and shrubs.
- Less susceptible to toxicity effects and can consume volatile oils.

- Intermediate feeders
  - E.g., domestic sheep, horses, elk, pigs.
  - Can be both bulk feeders, or able to target specific species groups.
  - Utilize grasses, forbs, and shrubs equally.
  - Can adapt feeding to available resource.
  - More susceptible to toxicity.

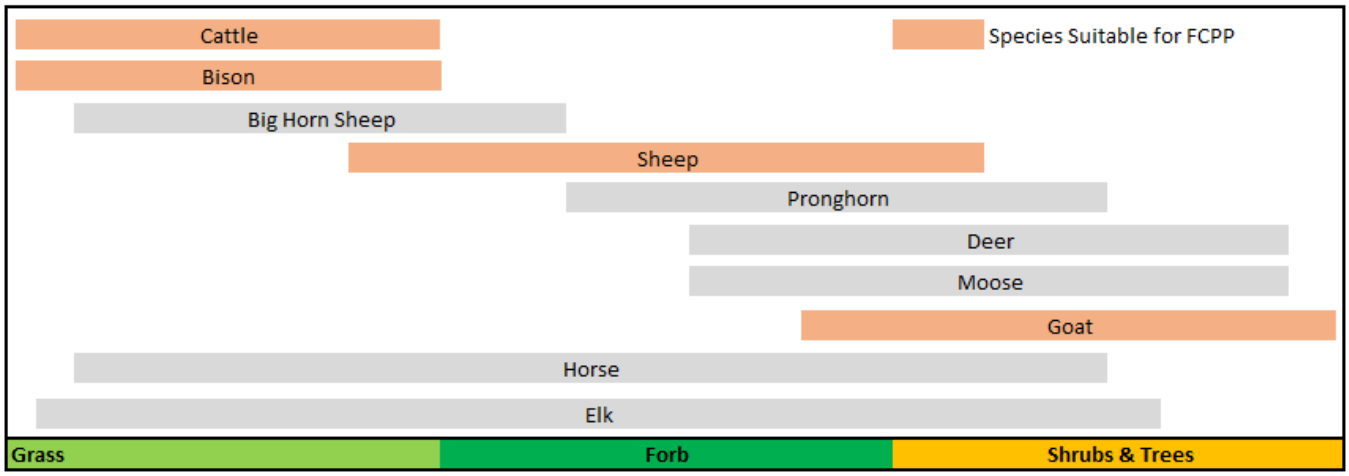


Figure 4-21: Visual representation of dietary needs of various species and their overlap (Adapted from Wagner 1978**).**

Although there is flexibility within these functional feeding categories, feeding habits suggest that domestic goats would be suitable for targeted grazing of toxic plants such as leafy spurge, while domestic sheep would be better suited for targeted litter removal in litter loaded grasslands. Suggested target polygons were provided in Table 4-11. Suggested stocking numbers for planning and budgeting are provided below in Table 4-16 for goat grazing on leafy spurge, and Table 4-17 for sheep grazing on excess litter.

Table 4-16: Suggested grazing numbers and duration for goats to target leafy spurge.

Polygon	Plant Community	Suggested ESSR (AUM/ac)	Targeted ESSR (AUM/ac)	Area (ac)	Carrying Capacity (AUM)	Grazing Capacity (AUM)	AUE	Adjusted GC (# Goats)	# Goats 4 Weeks	# Goats 3 Weeks	# Goats 2 Weeks	# Goats 1 Weeks	# Goats Per Day
31	FPB6	0.65	1.30	6.82	4.43	8.87	0.15	59.11	59	44	30	15	2
97	FPB6	0.65	1.30	52.66	34.23	68.46	0.15	456.37	456	342	228	114	16
155	FPC2	0.30	0.60	7.31	2.19	4.39	0.15	29.26	29	22	15	7	1
157	COND2	0.40	0.80	1.71	0.68	1.36	0.15	9.09	9	7	5	2	
159	FPB7	0.55	1.10	2.33	1.28	2.57	0.15	17.11	17	13	9	4	
176	FPB7	0.55	1.10	0.83	0.46	0.91	0.15	6.07	6	5	3	2	

Table 4-17: Suggested grazing numbers and duration for sheep to target excess litter.

Poly	Plant Comm	Sugg. ESSR (AUM/ac)	Targeted ESSR (AUM/ac)	Area (ac)	Carrying Capacity (AUM)	Grazing Capacity (AUM)	AUE	Adjusted GC (# Sheep)	# Sheep 4 Weeks	# Sheep 3 Weeks	# Sheep 2 Weeks	# Sheep 1 Weeks	# Sheep Per Day
4	FPB6	0.65	1.30	17.99	11.69	23.39	0.20	116.93	117	88	58	29	4
14	FPB5	0.55	1.10	15.22	8.37	16.74	0.20	83.72	84	63	42	21	3
24	FPB6	0.65	1.30	27.48	17.86	35.72	0.20	178.61	179	134	89	45	6
25	FPC3	0.30	0.38	20.14	6.04	7.55	0.20	37.76	38	28	19	9	1
31	FPB6	0.65	1.30	6.82	4.43	8.87	0.20	44.33	44	33	22	11	2
32	FPB6	0.65	1.30	36.40	23.66	47.32	0.20	236.59	237	177	118	59	8
55	FPB6	0.65	1.30	12.11	7.87	15.74	0.20	78.70	79	59	39	20	3
56	FPB6	0.65	1.30	17.15	11.15	22.29	0.20	111.47	111	84	56	28	4
68	FPB6	0.65	1.30	40.53	26.34	52.68	0.20	263.41	263	198	132	66	9
70	FPB5	0.55	1.10	11.02	6.06	12.12	0.20	60.61	61	45	30	15	2
77	FPB6	0.65	1.30	141.20	91.78	183.55	0.20	917.77	918	688	459	229	33
89	FPC2	0.30	0.38	8.23	2.47	3.09	0.20	15.43	15	12	8	4	1
115	FPB6	0.65	1.30	67.36	43.78	87.57	0.20	437.85	438	328	219	109	16
118	FPB6	0.65	1.30	8.25	5.36	10.73	0.20	53.65	54	40	27	13	2
120	FPC2	0.30	0.38	5.49	1.65	2.06	0.20	10.29	10	8	5	3	

130	FPC2	0.30	0.38	21.52	6.46	8.07	0.20	40.36	40	30	20	10	1
131	FPC2	0.30	0.38	12.08	3.63	4.53	0.20	22.66	23	17	11	6	1
137	COND13	0.80	1.60	14.36	11.49	22.97	0.20	114.85	115	86	57	29	4
143	FPC2	0.30	0.38	2.77	0.83	1.04	0.20	5.19	5	4	3	1	

Successful targeted grazing prescriptions require significant site-specific environmental data, knowledge of wildlife use and interactions, excellent animal management skills, an understanding that results are not immediate, and a long-term adaptive process is likely necessary for success. Urban applications can have significant logistical considerations that should be accounted for, these are outlined in Appendix I (adapted from Miller et al. (2020)). Adaptive management is key as prescriptions need to be planned, monitored, and adjusted to achieve the goals of the project while mitigating negative impacts.

4.8.5 Prescribed Fire

Grasslands on the Northern Great Plains have evolved under disturbance from fire and grazing. We are now under a period of fire deficit (Canadian Prairie Prescribed Fire Exchange 2023). Fire on grasslands has a number of ecological functions. Among these are, habitat for wildlife, rare species conservation, maintain and encourage growth of fire adapted species, invasive species management, reducing shrub and tree encroachment and perhaps most importantly in an urban interface park, reducing wildfire risk by reducing fuel loads (City of Saskatoon). Prescribed fire for tree (Aspen) encroachment is not a single treatment, it requires very quick follow up with grazing to impact sucker growth. Wildfire and prescribed fire are not the same. Wildfire is exactly that, a fire that starts under uncontrolled circumstances and typically at a time when a fire is most catastrophic. A prescribed fire is a fire with defined goals and executed under a set of conditions (i.e., climate, landscape and people) that allow the fire to be successful and limit the risk of escape (Canadian Prairie Prescribed Fire Exchange 2021). Within the City of Saskatoon, the Meewasin Valley Authority has been conducting prescribed fires successfully for over 25 years, with the management objectives listed by the City of Saskatoon. With the appropriate planning and people, fire can be reintroduced on grasslands as a management tool.

As a case study example, Meewasin burned 2 hectares (ha) out of a 300 ha parcel of the Northeast Swale in Saskatoon in 2021. The objectives of the fire were to reduce the wolf willow- western snowberry shrub layer and reduce the Kentucky bluegrass litter to push the competitive advantage to the native grass species. The burn was delayed a number of times because conditions did not meet those in the burn plan, but the burn was conducted on the afternoon of November 4, once the frost dissipated. Following the fire, it was deemed a success by the burn boss as the ecological objectives had been met(Canadian Prairie Prescribed Fire Exchange 2021).

4.8.6 Aspen and Shrub Encroachment Control

A study in the aspen parkland found that the best control of aspen suckers was achieved when an ester was used rather than an amine of 2,4-D + dicamba (Bowes 1991). A study in east central Saskatchewan found that the most economical treatment was a one-time application of 2,4-D ester at 2.2 kg/ha plus dicamba at 1.5 kg/ha, and that the 2,4-D ester formulation was superior to 2,4-D amine under all scenarios (Zentner and Bowes 1991). Similar studies found that a repeat application of the same herbicide was not required for aspen control but could be beneficial if the site has western snowberry (*Symphoricarpos spp.*; Bowes 1991). Treatments were a single dose of 2,4-D ester was applied had the added benefit of yielding the highest forage production of all treatments, with forage production remaining high for up to 9 years-post treatment. Forbs were found to decrease overall, but native and tame grass production increased significantly (Hilton and Bailey 1974; Zentner and Bowes 1991; Bowes 1991). Single applications of 2,4-DE (ester) + dicamba were found to be as effective and persistent as two or three applications, with some controls lasting 7 – 9 years before woody regrowth re-established (Bowes 1991). The use of residual herbicides such as Restore II (Corteva) can be effective in

controlling aspen growth, but these formulations prevent the growth of legumes in the pasture mix which can reduce the ability of the pastures to produce their own nitrogen.

4.8.7 Trail Development

The installation of proper trails can reduce erosion, bare soil, and subsequently reduce weed control requirements as the open niches for weeds to establish in are removed. The process of completing this can be simply going to the location where trails have formed and upgrading them with steps gravel and other features to create a proper trail that allows public access. Generally, if there is a trail going where the public want to go then they will use it naturally. This is why placing trails on existing naturally formed public trails is the best method to effectively add trails. Closing trails that are not desired is possible but requires blacking natural public access points such that the public goes to an official trail instead. This is possible but in many cases the public tends to ignore closures if it makes it too difficult to access a location hey want to get to. For this reason, careful consideration of access should be part of the upgrade vs closure decision process.

5.0 Summary

The major issues driving ecological concerns leading to reduction in range health scores on FCPP are the increased abundance of non-native introduced species that is leading to the decline of biodiversity and native plant species, erosion caused by anthropogenic features (e.g., trailing, compaction, recreational use), and large infestations of invasive plants. Only 30 acres of grassland remain with native species, most of these communities also containing agronomic grasses and invasive species. The following course of recommendations are provided in order of importance.

1. Invasive Plant Management
    - Invasive plants are found throughout all community types on FCPP.
    - The development of an Invasive Plant Management Plan is recommended to inventory, prioritize, and treat invasive species with an integrated approach.
    - Priority plant lists and priority treatment areas can help inform treatment actions and support restoration activities.
    - Key areas of protection should include plant communities with rare plants, native plants, and riparian areas.
    - Dedicated time and funding, with a repetitive multi-year approach will be required to address invasive plants.
2. Native Grassland Conservation
    - Less than 30 acres of grasslands contain native plant species, with remaining grasslands impacted from anthropogenic use.
    - Targeted grazing (i.e., sheep grazing) is recommended to control litter and brush in these areas.
    - Prescribed fire may support restoration goals.
3. Restoration Activities
    - A number of restoration prescriptions including grassland conservation, restoration, riparian forest plantings, targeted grazing, prescribed fire, aspen and shrub control, and trail development have been presented and discussed as options to improve ecological integrity.

Certification Page

I hereby certify that:

The requested surveys and reporting were completed by qualified professionals (Hilary Baker, Steven Tannas) who considered all factors and influences that are within the scope of this assessment.

No person at Tannas Conservation Services Ltd., or associated sub-consultant working on this project have any contemplated interest in the property being assessed.

This report has been completed in conformity with the standards and ethics of the Alberta Institute of Agrologists and the Alberta Society of Professional Biologists.

Respectfully submitted:

Hilary Baker, P.Ag.
Senior Ecologist, Project Manager
Tannas Conservation Services Ltd.

Steven Tannas, PhD, P.Ag.
Senior Ecologist, President
Tannas Conservation Services Ltd.

References

ACIMS. 2018a. Element Occurrence Data. Alberta Environment and Parks, Edmonton, Alberta.

ACIMS. 2018b. Element Occurrence Data. Alberta Environment and Parks, Edmonton, Alberta. [accessed 2019 Mar 6]. https://www.cosewic.ca/index.php/en-ca/assessment-process/wildlife-species-assessment-process-categories-guidelines/status-categories.html.

Adams B, Ehlert G, Stone C, Alexander M, Lawrence D, Willoughby M, Moisey D, Hincz C, Burkinshaw A, Richman J, et al. 2016. Rangeland Health Assessment for Grassland, Forest, and Tame Pasture. [accessed 2024 Feb 22]. https://open.alberta.ca/dataset/51cad211-09f6-49bd-86ef-ca3162f2ea7a/resource/2cadf8f4-ef65-4e48-812e-10f8daf027a8/download/rangelandhealthassessment-2017.pdf.

Alberta Agriculture and Forestry. 2017. Using Animal Unit Month (AUM) Effectively. [accessed 2022 May 10]. https://open.alberta.ca/dataset/7de47496-cb67-40e3-9c35-f95a7b9fc5a8/resource/63ac0d8d-d718-4b1c-a088-104e4c738525/download/420-16-1.pdf.

Alberta Environment and Parks. 2021. Range Inventory Manual. [accessed 2021 Sep 26]. https://open.alberta.ca/publications/range-inventory-manual.

Alberta Government. 2017. Castle River range reference area.

Alberta Parks. 2021 Jan 27. Fish Creek Provincial Park - Recreational Activities. [accessed 2024 Jan 22]. https://albertaparks.ca/parks/kananaskis/fish-creek-pp/activities-events/recreational-activities/.

Ambrose N, Ehlert G, Spicer-Rawe K. 2009. Riparian Health Assessment for Lakes, Sloughs, and Wetlands - Field Workbook Second Edition. Second, Mo. Lethbridge, Alberta: Cows and Fish Program.

Bailey DW, Mosley JC, Estell RE, Cibils AF, Horney M, Hendrickson JR, Walker JW, Launchbaugh KL, Burritt EA. 2019. Synthesis Paper: Targeted Livestock Grazing: Prescription for Healthy Rangelands. Elsevier Inc. Rangel Ecol Manag. 72(6):865–877. . doi:10.1016/j.rama.2019.06.003. [accessed 2020 Jun 22].

Baker H, DeMaere C, France T, Willoughby M. 2020. Range plant communities and range health assessment guidelines for the south ecosection of the Montane Natural Subregion of Alberta. Eighth approximation. Pincher Creek, AB.

Bestelmeyer BT, Ash A, Brown JR, Bulgamaa D, Fernandes-Gimenez M, Johanson J, Levi M, Lopez D, Peinetti R, Rumpff L, et al. 2017. State and Transition Models: Theory, Applications, and Challenges. In: Briske, D. (eds) Rangeland Systems. Springer Series on Environmental Management. Springer, Cham. p. 303–345. [accessed 2022 Oct 10]. https://link.springer.com/chapter/10.1007/978-3-319-46709-2_9.

Bowes G. 1991. Multiple applications of 2,4-D + dicamba for control of aspen poplar and western snowberry. Canadian Journal of Plant Science.

Canadian Prairie Prescribed Fire Exchange. 2021. Meewasin Valley Authority – November 2021 Prescribed Fire at the Northeast Swale — Canadian Prairies Prescribed Fire Exchange. [accessed 2024 Feb 13]. https://www.grasslandfire.ca/fire-story-articles/meewasin-valley-authority-november-2021-prescribed-fire-at-the-northeast-swale.

Canadian Prairie Prescribed Fire Exchange. 2023. What is Prescribed Fire? — Canadian Prairies Prescribed Fire Exchange. [accessed 2024 Feb 13]. https://www.grasslandfire.ca/faqs.

D'Antonio C, Meyerson LA. 2002. Exotic plant species as problems and solutions in ecological restoration: A synthesis. Restor Ecol. 10(4).

DeMaere C, Alexander M, Willoughby M. 2012. Range Plant Communities and Range Health Assessment Guidelines for the Foothills Parkland Subregion of Alberta. Pincher Creek, AB.

Desserud P. 2006. Restoration of Rough fescue (Festuca campestris) Grassland on Pipelines in Southwestern Alberta. Lethbridge, Alberta: Rangeland Management Branch, Public Lands Division, Alberta Sustainable Resource Development.

Didham RK, Tylianakis JM, Hutchison MA, Ewers RM, Gemmell NJ. 2005. Are invasive species the drivers of ecological change? Elsevier. Trends Ecol Evol. 20(9):470–474. . doi:10.1016/J.TREE.2005.07.006. [accessed 2021 Nov 30]. http://www.cell.com/article/S0169534705002272/fulltext.

Downing DJ, Pettapiece WW, Natural Regions Committee. 2006. Natural Regions and Subregions of Alberta. Government of Alberta.

Freyer G, Lancaster J, Ottenbreit K, Metke C, Cherniawsky D, Griffiths A, Foreman K, Mischkolz J. 2022. Rare vascular plants of Alberta. Second. Alberta Native Plant Council. [accessed 2022 Aug 31].

Friends of Fish Creek Provincial Park Society. 2024. Friends of Fish Creek. Mission and Vision. [accessed 2024 Jan 29]. https://friendsoffishcreek.org/mission-and-vision/.

Frost R, Walker J, Madsen C, Holes R, Lehfeldt J, Cunningham J, Voth K, Welling B, Davis TZ, Bradford D, et al. 2012. Targeted Grazing: Applying the Research to the Land. Society for Range Management. Rangelands. 34(1):2–10. . doi:10.2111/1551-501X-34.1.2. [accessed 2020 Jul 8]. https://linkinghub.elsevier.com/retrieve/pii/S0190052812500015.

Government of Alberta. 2004. Methodology for calculating carrying capacity and grazing capacity on public rangeland. Alberta Sustainable Resource Development Public Lands & Forests. [accessed 2022 Jan 24]. https://open.alberta.ca/dataset/5e93d3c6-3302-4d04-ab89-b89fe7172c24/resource/e66f2896-b595-4252-b8b8-d9af4f7535ee/download/2004-carryinggrazingcapacitymethodology.pdf.

Government of Alberta. 2008. Weed Control Act (S.A. 2008, c. W-5.1) Current as of November 16, 2022. [accessed 2018 Dec 31].

Government of Alberta. 2010. Weed Control Regulation (A.R. 19/2010). Alberta, Canada: Alberta Queen's Printer.

Government of Alberta. 2023. Provincially Regulated Weeds. [accessed 2023 Oct 31]. https://www.alberta.ca/provincially-regulated-weeds#:~:text=economy%20and%20society.-,Act,noxious%20weeds%20must%20be%20controlled.

Henderson DC. 2005. Ecology and management of crested wheatgrass invasion [Doctor of Philosophy]. [Edmonton, AB]: University of Alberta.

Higgins KF, Kruse AD, Piehl JL. 1989. Prescribed burning guidelines in the Northern Great Plains. South Dakota State University, Cooperative Extension Service, South Dakota Cooperative Fish and Wildlife Research Unit.

Hilton JE, Bailey AW. 1974. Forage production and utilization in a sprayed aspen forest. Aspen Bibliography. 5228:375–380. [accessed 2022 May 2]. https://digitalcommons.usu.edu/aspen_bib/5228.

Holechek JL, Pieper RD, Herbel CH. 2011. Range Management: Principles and Practices (6th Edition). Pearson. [accessed 2020 Feb 6].

Kershaw L, Allen L. 2020. Vascular flora of Alberta: An illustrated guide. Linda Kershaw; Illustrated edition. [accessed 2022 Aug 31].

Launchbaugh K, Walker J. 2006. Targeted grazing: A new paradigm for livestock management. In: Launchbaugh K, Walker J, editors. Targeted grazing—a natural approach to vegetation management and landscape enhancement. Centennial, CO, USA: American Sheep Industry Association. [accessed 2020 Jul 8]. https://www.researchgate.net/publication/286914608_Targeted_grazing_A_new_paradigm_for_livestock_management.

Mack RN. 1989. Temperate grasslands vulnerable to plant invasions: characteristics and consequences. Drake JA, Mooney HA, di Castri F, Groves FH, Kruger FJ, RM, et al, editors. Brisbane, Australia: John Wiley & Sons.

Miller AJ, Baker H. 2022. Sagebrush Slopes Range Health Assessment. Osoyoos, B.C.

Miller AJ, Tarasoff C, Salmon T. 2020. Feasibility of Targeted Invasive Plant Grazing in Metro Vancouver.

Moss EH. 1983. Flora of Alberta. Second. Toronto, Ontario: University of Toronto Press.

Natural Regions Committee. 2006. Natural Regions and Subregions of Alberta.

Rinella MJ, Bellows SE. 2016. Evidence-Targeted Grazing Benefits to Invaded Rangelands Can Increase over Extended Time Frames. Society for Range Management. Rangel Ecol Manag. 69(3):169–172. . doi:10.1016/j.rama.2016.02.001. [accessed 2020 Jan 29].

Romo JT, Grilz PL, Driver EA. 1990. INVASION OF THE CANADIAN' PRAIRIES BY AN EXOTIC PERENNIA.

Society for Range Management. 1998. Glossary of terms used in range management. Fourth Edition.

Tannas K. 2004. Common Plants of the Western Rangeland. Edmonton, AB: Alberta Agriculture and Rural Development.

Tannas SC. 2011. Mechanisms Regulating Poa pratensis L. and Festuca campestris Rybd. Within the Foothills Fescue Grasslands of Southern Alberta [Doctor of Philosophy]. University of Alberta.

Wagner FH. 1978. Livestock grazing and the livestock industry. Washington DC: Wildlife and America. Council on Environmental Quality.

Zentner RP, Bowes GG. 1991. Economics of chemical brush control in pastures of east-central Saskatchewan. Canadian Journal of Plant Science. 71:1122–1144. [accessed 2022 May 1].

Appendix A

Polygon Maps

Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP Boundary
- Polygons Numbers

Appendix A - Figure 1

Shannon Terrace / Bebo Grove

Friends of Fish Creek

Polygon Numbers

N

0 300 600 900 1,200 m

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U

Imagery: Esri Satellite

Data from 2023 Range Health Assessement

Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP Boundary
- Polygons Numbers

Appendix B - Figure 3

Glennfield / Bow Valley Ranch

Friends of Fish Creek

Polygon Numbers

N

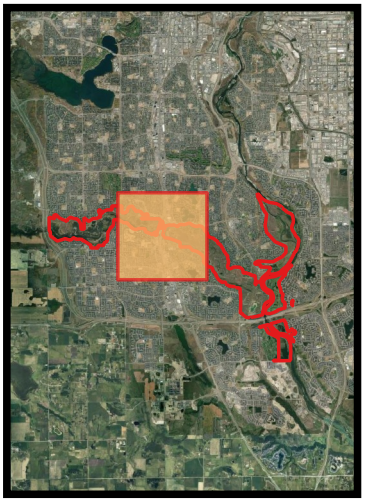
0 300 600 900 1,200 m

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U

Imagery: Esri Satellite

Data from 2023 Range Health Assessement



Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP Boundary
- Polygons Numbers

Appendix B - Figure 2

Votier's Flats / Glennfield

Friends of Fish Creek

Polygon Numbers

N

0 300 600 900 1,200 m

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U

Imagery: Esri Satellite

Data from 2023 Range Health Assessement

Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP Boundary
- Polygons Numbers

Appendix B - Figure 4

Poplar Island / Bankside

Friends of Fish Creek

Polygon Numbers

N

0 300 600 900 1,200 m

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U

Imagery: Esri Satellite

Data from 2023 Range Health Assessement

Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP Boundary
- Polygons Numbers

Appendix B - Figure 5

Lafarge Meadows / Sikome

Friends of Fish Creek

Polygon Numbers

N

0 300 600 900 1,200 m

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U

Imagery: Esri Satellite

Data from 2023 Range Health Assessement

Appendix B

Assessment Locations

Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP Boundary

Appendix B - Figure 1

Shannon Terrace / Bebo Grove

Friends of Fish Creek

Assessment Locations

N

0 300 600 900 1,200 m

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U

Imagery: Esri Satellite

Data from 2023 Range Health Assessement

LEGEND

- Assessment Points
- FCPP Boundary

Appendix B - Figure 2
Votier's Flats / Glennfield
Friends of Fish Creek
Assessment Locations

N

0 400 800 1,200 m

Scale: 1:20,000
Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2023 Range Health Assessement

Tannas Conservation Services Ltd

Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP Boundary

Appendix B - Figure 3
Gelnnfield / Bow Valley Ranch
Friends of Fish Creek
Assessment Locations

N

0 500 1,000 1,500 m

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2023 Range Health Assessement

Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP Boundary

Appendix B - Figure 4
Poplar Island / Bankside
Friends of Fish Creek
Assessment Locations

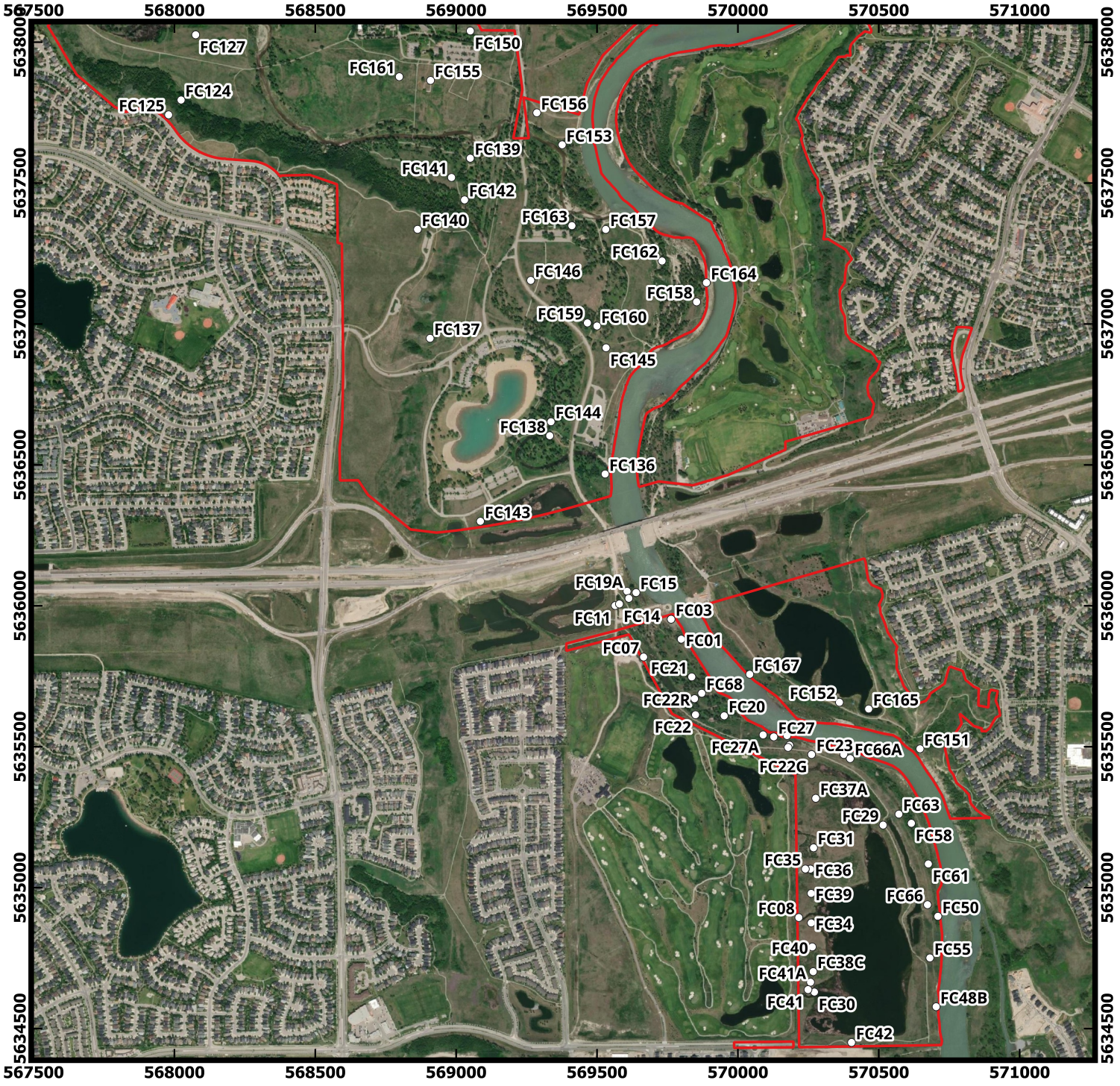
N

0 300 600 900 1,200 m

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2023 Range Health Assessement



Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP Boundary

Appendix B - Figure 5
Lafarge Meadows / Sikome
Friends of Fish Creek
Assessment Locations

N

0 300 600 900 1,200 m

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2023 Range Health Assessement

Appendix C

Range Health Sheets

Project: **Friends of Fish Creek Veg I** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC001** Form Type: Riparian - Lentic GPS: 11 710476 5641936
LSD: Wetland Class: Fish Creek
Observer: HB, AB Plant Community Code: COND
Date: 2022-06-02 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Phalaris arundinacea	60	Tanacetum vulgare	2	Salix pseudomonticola	1	Populus balsamifera	3
Juncus balticus	3	Equisetum arvense	3	Salix exigua	2		
Poa pratensis	25	Taraxacum officinale	2	Cornus stolonifera	2		
Carex aquatilis	2	Crepis tectorum	1	Symphoricarpos occidentalis	1		
Alopecurus pratensis	2	Cirsium arvense	1	Rosa woodsii	1		

Weeds	% Cover	Density
Tanacetum vulgare	2	7
Cirsium arvense	2	4

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	2	2	4	3	6	8	6	9	73%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Geranium richardsonii, Achillea millefolium, Maianthemum stellatum, Salix bebbiana

Comments: Bow river bank lotic - closest is CPA21_D

Project: **Friends of Fish Creek Veg Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC03 **Litter (lbs/acre):** **GPS:** 11 710438 5622005

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** FPB6

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	60	Solidago missouriensis	2	Populus balsamifera	2		
Juncus balticus	5	Tanacetum vulgare	2	Salix sp.	1		
Elytrigia repens var. repens	15	Taraxacum officinale	2	Symphoricarpos occidentalis	5		
		Fragaria virginiana	2		1		

Weeds	% Cover	Density
Tanacetum vulgare	20	9
Cirsium arvense	7	4

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
8	3	25	10	5	0	0	NA	NA	51%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
8	3	25	10	5	0	0	0	0	51%	Healthy with problems

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):** 1500

Site FC07 **Litter (lbs/acre):** 600 **GPS:** 11 710344 5641869

LSD: **Form Type:** Forested

Observer: ST **Plant Community Code:** FPD7_S

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	35	Thermopsis rhombifolia	2	Symphoricarpos occidentalis	20	Picea glauca	15
Poa pratensis	30	Taraxacum officinale	4	Betula occidentalis	2	Populus balsamifera	80

Weeds	% Cover	Density
Euphorbia esula	1	2

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
10	20	20	5	5	1	1	6	4	72%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 1

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC08 **Litter (lbs/acre):** **GPS:** 11 710905 5640958

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** FPB4_D

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Elytrigia repens var. repens	35						
Bromus inermis	5						
Taraxacum officinale	2						

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	NA	NA

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC011 **Litter (lbs/acre):** **GPS:** 11 710238 5642049

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** fpb4

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	80	Artemisia absinthium	3	Salix bebbiana	T		
Symphoricarpos occidentalis	3			Populus balsamifera	T		
Stipa viridula	2						
Bromus inermis	8						

Weeds	% Cover	Density
Thesium arvense	1	10

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	NA	NA

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC14 **Litter (lbs/acre):** **GPS:** 11 710253 5642055

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** FPB4

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	80	Sonchus arvensis	1	Symphoricarpos occidentalis	7	Populus balsamifera	3
Stipa viridula	8	Cirsium arvense	2				
		Thermopsis rhombifolia	2				
		Artemisia absinthium	1				
		Vicia americana	1				

Weeds	% Cover	Density
Sonchus arvensis	1	1
Cirsium arvense	1	1

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	NA	NA

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inven** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC15** Form Type: Riparian - Lentic GPS: 11 710311 5642097
LSD: Wetland Class:
Observer: ST Plant Community Code: COND
Date: 2022-06-02 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Typha latifolia	10	Tanacetum vulgare	2	Salix lutea	5		
Phalaris arundinacea	25	Taraxacum officinale	1	Salix exigua	20		
Juncus balticus	4			Caragana arborescens	1		
Scirpus microcarpus	1						
Poa pratensis	10						

Weeds	% Cover	Density
Tanacetum vulgare	2	7

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
0	0	0	0	0	0	7	0	0	11%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Like FC3 and FC5. Merge this with polygons 19, 6, 15
Like CPA21 with FPA11

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):** 1500

Site FC19 **Litter (lbs/acre):** **GPS:** 11 710286 5642076

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** FPC2

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Stipa viridula	10	Artemisia absinthium	1	Symphoricarpos occidentalis	20	Populus balsamifera	3
Poa pratensis	55	Euphorbia esula	1				
Calamovilfa longifolia	5						
Elymus junceus	10						
Bromus inermis	1						

Weeds	% Cover	Density
Euphorbia esula	1	3

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
15	12	25	10	5	3	3	NA	NA	66%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 3

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC19A **Litter (lbs/acre):** **GPS:** 11 710279 5642101

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** FPB7_D

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	25	Taraxacum officinale	1				
Festuca ovina	30	Euphorbia esula	25				
Stipa viridula	3						
Bromus inermis	5						

Weeds	% Cover	Density
Euphorbia esula	25	11

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	NA	NA

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Veg Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC020 **Litter (lbs/acre):** **GPS:** 11 710636 5641668

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** FPD7

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Euphorbia esula	10	Symphoricarpos occidentalis	30	Populus balsamifera	20
Poa pratensis	30	Maianthemum stellatum	1	Rosa woodsii	10		
		Cirsium arvense	1	Ribes oxyacanthoides	2		
		Galium boreale	1	Amelanchier alnifolia	1		
		Thalictrum venulosum	1				

Weeds	% Cover	Density
Euphorbia esula	10	10
Cirsium arvense	1	2

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
10	19	20	5	5	1	0	4	2	53%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
10	15	20	5	5	1	0	0	0	56%	Healthy with problems

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Veg Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC021 **Litter (lbs/acre):** **GPS:** 11 710517 5641803

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** FPC2

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Maianthemum stellatum	2	Symphoricarpos occidentalis	25		
Poa pratensis	30	Euphorbia esula	10	Rosa woodsii	10		
		Cirsium arvense	1	Amelanchier alnifolia	2		
		Tanacetum vulgare	1				

Weeds	% Cover	Density
Euphorbia esula	10	10
Cirsium arvense	1	2

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
10	4	20	5	5	1	0	4	2	43%	Unhealthy

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
10	15	20	5	5	1	0	0	0	56%	Healthy with problems

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Veg Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC22 **Litter (lbs/acre):** **GPS:** 11 710534 5641669

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** COND

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	10	Lithospermum ruderale	2	Amelanchier alnifolia	0	Picea glauca	T
Poa pratensis	10	Vicia americana	2	Rosa woodsii	0	Populus balsamifera	2
Calamagrostis canadensis	30	Galium boreale	2				
		Maianthemum stellatum	2				
		Taraxacum officinale	2				

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
15	10	13	10	5	1	3	NA	NA	57%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 3

Project: **Friends of Fish Creek Veg I** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC22** Form Type: Riparian - Lentic GPS: 11 710529 5641726
LSD: Wetland Class: Fish Creek
Observer: HB Plant Community Code: FPA11/CPA10
Date: 2022-06-02 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Phalaris arundinacea	30	Tanacetum vulgare	5				
Typha latifolia	30	Geum macrophyllum	2				
Scirpus pallidus	5	Euphorbia esula	3				
Poa pratensis	4	Symphyotrichum laeve	2				

Weeds	% Cover	Density
Tanacetum vulgare	7	5
Euphorbia esula	7	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	2	2	0	0	6	12	4	3	56%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC022 **Litter (lbs/acre):** **GPS:** 11 710950

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** FPB7_D

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	35	Artemisia absinthium	3	Salix exigua	2	Populus balsamifera	2
Elytrigia repens var. repens	30	Taraxacum officinale	2				
Phalaris arundinacea	5	Tanacetum vulgare	3				
Stipa viridula	1	Vicia americana	4				

Weeds	% Cover	Density
Tanacetum vulgare	3	10
Euphorbia esula	1	3

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
15	0	13	10	5	1	0	NA	NA	44%	Unhealthy

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%): 5

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inv** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site: **FC023** Form Type: Riparian - Lotic GPS: 12 289064 5641537
LSD: Wetland Class:
Observer: ST Plant Community Code: COND
Date: June 2 2022 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Phalaris arundinacea	40	Symphyotrichum falcatum	2	Salix exigua	6	Populus balsamifera	3
Juncus balticus	3	Anemone canadensis	1	Salix lutea	1	Shepherdia argentea	1
Bromus inermis	5	Vicia americana	1	Juniperus horizontalis	1		
Poa pratensis	2	Taraxacum officinale	1	Arctostaphylos uva-ursi	1		
Festuca ovina	5	Tanacetum vulgare	1				

Weeds	% Cover	Density
Tanacetum vulgare	1	1
Euphorbia esula	1	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Standing Dead Woody	Stream Rootmass	Human - Bare Ground	Human - Streambank	Human - Reach	Incisement
0	0	0	0	0	0	0	0	0	0	0

Human Caused Bare Soil (%): 0 **Score:** 0% **Rating:** Unhealthy
Moss & Lichen Cover (%): 0

Other Species

Comments: All regen, moderate browse. Flooding bank with exposed soil incided to bedrock. Add polygon 64 to this one. Closest comm CPA21

Project: **Friends of Fish Creek**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC025 **Litter (lbs/acre):** **GPS:** 11 710871 5641570

LSD: **Form Type:** Grassland/Shrubland

Observer: ST **Plant Community Code:** FPC3_Seral

Date: 2023-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	20			Symphoricarpos occidentalis	70		
				Elaeagnus commutata	30		

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	NA	NA

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC027 **Litter (lbs/acre):** **GPS:** 11 710814 5641598

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** FPD7

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	50	Solidago canadensis	2				
Festuca ovina	2	Maianthemum stellatum	2				
Poa pratensis	15	Tanacetum vulgare	2				
Elytrigia repens	5	Zizia aptera	2				
		Geranium richardsonii	2				

Weeds	% Cover	Density
Euphorbia esula	2	2
Tanacetum vulgare	2	2

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
20	35	8	5	5	1	1	NA	NA	65%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 1

Project: **Friends of Fish Creek Veg I** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC027** Form Type: Riparian - Lentic GPS: 11 710861 5641604
LSD: Wetland Class: Fish Creek
Observer: HB Plant Community Code: FPA5_D
Date: 2022-06-02 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	20	Taraxacum officinale	2	Salix exigua	2		
Phalaris arundinacea	20	Fragaria virginiana	1	Amelanchier alnifolia	1		
Bromus inermis	10	Tanacetum vulgare	1	Ribes oxyacanthoides	1		
				Rosa woodsii	1		

Weeds	% Cover	Density
Tanacetum vulgare	1	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
0	4	1	6	3	6	4	4	9	59%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: All wood is saplings

Project: **Friends of Fish Creek Veg Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC27A **Litter (lbs/acre):** **GPS:** 11 710776 5641604

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** fpc3

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	40	Euphorbia esula	3	Symphoricarpos occidentalis	0	Populus tremuloides	20
Elytrigia repens var. repens	5	Onosmodium molle	2	Amelanchier alnifolia	0	Picea glauca	3
Bromus inermis	5	Maianthemum stellatum	1				
Stipa viridula	2	Lithospermum ruderale	1				
		Galium boreale	2				

Weeds	% Cover	Density
Euphorbia esula	3	7
Cirsium arvense	3	7

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
15	12	13	10	5	1	1	6	4	56%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 1

Date: June 2 2022 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	10	Centaurea maculosa	1	Picea glauca	8		
Elytrigia repens var. repens	30	Taraxacum officinale	5	Populus balsamifera	1		
Festuca ovina	30	Artemisia absinthium	1				
Poa pratensis	1						

Weeds	% Cover	Density
Centaurea maculosa	1	7
Tanacetum vulgare	1	7

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
5	5	14	10	4	38%	Unhealthy

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Reclaimed forest, LFH not formed yet

Project: **Friends of Fish Creek Inven** Estimated Production (lbs/acre): 4000

Property: Litter (lbs/acre):

Site **FC30** Form Type: Riparian - Lentic GPS: 11 710983 5640696

LSD: Wetland Class:

Observer: ST Plant Community Code: FPA11

Date: 2022-06-01 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Typha latifolia	90	Sonchus arvensis	1	Salix exigua	2		
Bromus inermis	5	Cirsium arvense	2				
Poa pratensis	5	Linaria vulgaris	1				

Weeds	% Cover	Density

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	2	6	3	4	8	6	3	62%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments:

Project: **Friends of Fish Creek Veg I** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC030A** Form Type: Lentic GPS: 12 289095 5641438
LSD: Wetland Class: Fish Creek
Observer: HB Plant Community Code: COND
Date: 2022-06-02 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Typha latifolia	40	Fragaria virginiana	2	Alnus incana	1	Populus balsamifera	3
Carex aquatilis	30	Solidago canadensis	2	Symphoricarpos occidentalis	1		
Carex utriculata	15	Galium boreale	1	Salix exigua	50		
Elytrigia repens	5	Tanacetum vulgare	1				
Poa pratensis	7	Vicia americana	1				

Weeds	% Cover	Density
Cirsium arvense	1	2
Euphorbia esula	2	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	3	2	2	3	6	12	6	6	73%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Sandbar willow/great bulrush-sedge.
Part of stormwater drainage system

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC31 **Litter (lbs/acre):** **GPS:** 11 710966 5641208

LSD: **Form Type:** Forested

Observer: ST **Plant Community Code:** FPD7_ES

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	2	Penstemon procerus	1			Populus balsamifera	20
Bromus inermis	1	Solidago missouriensis	8				
Carex deflexa	1	Centaurea maculosa	15				
Festuca ovina	3						

Weeds	% Cover	Density
Centaurea maculosa	15	12

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	3	0	0	0	6	4	10%	Unhealthy

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC33 **Litter (lbs/acre):** **GPS:** 12 289026 5641231

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** FPB7_D

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	50	Cirsium arvense	3	Symphoricarpos occidentalis	1		
Stipa viridula	2	Tanacetum vulgare	1				
Elytrigia repens	20	Artemisia cana	1				
Bromus biebersteinii	1	Cirsium vulgare	1				
Equisetum arvense	1	Sonchus arvensis	1				

Weeds	% Cover	Density
Cirsium arvense	3	7
Tanacetum vulgare	1	2

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
9	0	25	10	5	1	1	6	4	54%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 1

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC34 **Litter (lbs/acre):** **GPS:** 11 710965 564141

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:**

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	90	Cirsium arvense	5				
Elymus trachycaulus	1	Sonchus arvensis	3				
		Centaurea maculosa	1				

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	NA	NA

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC35 **Litter (lbs/acre):** **GPS:** 11 710939 5641132

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** COND-R

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	10	Taraxacum officinale	10				
Elytrigia repens var. repens	10						

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	NA	NA

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%): 65

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC36 **Litter (lbs/acre):** **GPS:** 11 710957 5641132

LSD: **Form Type:** Forested

Observer: ST **Plant Community Code:** FPD5_ES

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Juncus balticus	5	Medicago lupulina	1	Salix exigua	25	Populus balsamifera	25
		Taraxacum officinale	1				
		Potentilla anserina	10				

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	NA	NA

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Veg Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC037 **Litter (lbs/acre):** 400 **GPS:** 12 289006 5641331

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** fpb6

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	10	Erucastrum gallicum	1	Symphoricarpos occidentalis	0	Populus balsamifera	2
Poa pratensis	40	Sonchus arvensis	1				
Elytrigia repens var. repens	15	Cirsium arvense	25				
Festuca ovina	2	Taraxacum officinale	1				
Phalaris arundinacea	1	Descurainia sophia	1				

Weeds	% Cover	Density
Cirsium arvense	25	11
Tanacetum vulgare	1	2
Sonchus arvensis	1	1

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
8	7	13	0	0	0	0	NA	NA	28%	Unhealthy

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%): 2

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Veg Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC037A **Litter (lbs/acre):** **GPS:** 12 710969 5641384

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** FPB7

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	30	Tanacetum vulgare	20	Potentilla fruticosa	0	Populus balsamifera	10
Dactylis glomerata	1	Taraxacum officinale	2	Rosa woodsii	0		
Phleum pratense	2	Viola canadensis	1				
Poa pratensis	30	Solidago canadensis	1				
	5	Artemisia absinthium	2				

Weeds	% Cover	Density
Tanacetum vulgare	20	9
Cirsium arvense	1	6

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
12	0	25	10	5	0	0	NA	NA	52%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
12	0	25	10	5	0	0	0	0	52%	Healthy with problems

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):** 1800

Site FC38A **Litter (lbs/acre):** **GPS:** 11 710923 5640559

LSD: **Form Type:** Tame Pasture

Observer: ST **Plant Community Code:** fpb6

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	70	Thlaspi arvense	3	Salix exigua	1		
Poa pratensis	10	Erucastrum gallicum	4				
Elytrigia repens var. repens	35	Descurainia sophia	1				
Agropyron cristatum	2						
Festuca ovina	2						

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
12	0	16	10	3	1	0	6	4	50%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
12	7	25	10	5	5	5	0	0	69%	Healthy with problems

Human Caused Bare Soil (%): 3

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):** 2500

Site FC38C **Litter (lbs/acre):** **GPS:** 11 710977 5640768

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** FPB7_D

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	10	Descurainia sophia	3	Symphoricarpos occidentalis	2	Populus balsamifera	1
Elytrigia repens var. repens	65	Erucastrum gallicum	5				
Poa pratensis	30	Lappula squarrosa	t				
		Linaria vulgaris	1				
		Cirsium arvense	1				

Weeds	% Cover	Density
Cirsium arvense	1	7
Tanacetum vulgare	1	7

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
12	7	25	7	1	1	1	6	4	58%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%): 15

Moss & Lichen Cover (%):

Other Species

Comments: 1

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC39 **Litter (lbs/acre):** **GPS:** 11 710962 5641046

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** fpb7

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	15	Taraxacum officinale	3	Symphoricarpos occidentalis	1		
Stipa viridula	5	Sonchus arvensis	3				
Poa pratensis	25	Cirsium arvense	15				
Festuca ovina	60	Descurainia sophia	3				
Festuca idahoensis	1	Erucastrum gallicum	2				

Weeds	% Cover	Density
Cirsium arvense	15	10
Tanacetum vulgare	1	1

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
9	0	25	10	5	0	0	6	4	54%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%): 8

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC40 **Litter (lbs/acre):** **GPS:** 11 710971 5640856

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** COND

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	85	Taraxacum officinale	1	Symphoricarpos occidentalis	1		
Bromus inermis	5	Solidago canadensis	1				
		Tragopogon dubius	1				
		Medicago sativa	5				
		Cirsium arvense	2				

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	NA	NA

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC41 **Litter (lbs/acre):** **GPS:** 11 710960 5640704

LSD: **Form Type:** Tame Pasture

Observer: HB **Plant Community Code:** FPB6

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	25	Cirsium arvense	10	Symphoricarpos occidentalis	1		
Poa pratensis	60	Taraxacum officinale	4	Salix exigua	1		
Festuca ovina	3	Solidago canadensis	2				
Festuca idahoensis	7	Sonchus arvensis	1				
	12	Artemisia absinthium	1				

Weeds	% Cover	Density
Cirsium arvense	10	10

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
12	14	25	10	5	1	1	6	4	78%	Healthy

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
12	14	25	10	5	1	1	6	4	78%	Healthy

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 1

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):** 600

Site FC41A **Litter (lbs/acre):** **GPS:** 11 710968 5640730

LSD: **Form Type:** Tame Pasture

Observer: ST **Plant Community Code:** COND

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	40	Cirsium arvense	4	Symphoricarpos occidentalis	2		
Elytrigia repens var. repens	3	Taraxacum officinale	4				
Bromus inermis	10	Melilotus officinalis	2				
Stipa viridula	2	Vicia americana	T				

Weeds	% Cover	Density
Cirsium arvense	4	4

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
12	0	16	10	3	1	0	6	4	50%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%): 7

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC042 **Litter (lbs/acre):** **GPS:** 12 289036 5640514

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** FPB6/FPC2

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20	Cirsium arvense	2	Symphoricarpos occidentalis	20	Populus balsamifera	1
Poa pratensis	60	Taraxacum officinale	1	Elaeagnus commutata	1		
Stipa viridula	2	Sonchus arvensis	1				
Dactylis glomerata	3	Artemisia absinthium	1				
Bromus biebersteinii	20	Tragopogon dubius	1				

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
8	3	25	10	5	3	1	NA	NA	55%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 1

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC046 **Litter (lbs/acre):** **GPS:** 12 28892 5640512

LSD: **Form Type:** Tame Pasture

Observer: HB **Plant Community Code:** FPB6

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Elytrigia repens	20	Cirsium arvense	3	Symphoricarpos occidentalis	10	Populus balsamifera	2
Poa pratensis	60	Artemisia cana	2				
Phalaris arundinacea	5	Thermopsis rhombifolia	1				
Bromus inermis	25	Maianthemum stellatum	1				
		Lappula squarrosa	1				

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	NA	NA

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC48 **Litter (lbs/acre):** **GPS:** 12 289320 5640619

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** FPB4

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Dactylis glomerata	2	Lithospermum ruderale	1	Symphoricarpos occidentalis	5		
Poa pratensis	80	Galium boreale	1	Elaeagnus commutata	1		
Bromus biebersteinii	3	Cirsium arvense	1				
Festuca ovina	1	Symphyotrichum ericoides	1				
Bromus inermis	1	Solidago canadensis	2				

Weeds	% Cover	Density
Cirsium arvense	1	4

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
8	3	25	10	5	3	1	NA	NA	52%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%): 2

Moss & Lichen Cover (%):

Other Species

Comments: 1

Project: **Friends of Fish Creek Inv** Estimated Production (lbs/acre): 1000

Property: Litter (lbs/acre):

Site: **FC48B** Form Type: Riparian - Lotic GPS: 12 249343 5640625

LSD: Wetland Class:

Observer: ST Plant Community Code: FPB7

Date: 2022-06-01 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Elymus lanceolatus	4	Thermopsis rhombifolia	2	Potentilla fruticosa	8		
Festuca ovina	40	Tanacetum vulgare	3	Rosa woodsii	3		
Phalaris arundinacea	10	Anemone patens	1	Prunus virginiana	1		
Muhlenbergia richardsonis	1	Viola adunca	1	Elaeagnus commutata	1		
Bromus inermis	20	Achillea millefolium	1				

Weeds	% Cover	Density
Tanacetum vulgare	2	1
Euphorbia esula	1	7

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Standing Dead Woody	Stream Rootmass	Human - Bare Ground	Human - Streambank	Human - Reach	Incisement
4	1	1	4	3	0	0	4	6	3	9

Human Caused Bare Soil (%): 10 **Score:** 58% **Rating:** Unhealthy

Moss & Lichen Cover (%): 0

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Tannas Conservation Services Ltd

Property: Fish Creek **Estimated Production (lbs/acre):** 1000

Site FC50 **Litter (lbs/acre):** 700 **GPS:** 12 289366 5640945

LSD: **Form Type:** Forested

Observer: ST **Plant Community Code:** FPD7

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	60	Tanacetum vulgare	1	Shepherdia canadensis	2	Populus balsamifera	20
Bromus inermis	20	Taraxacum officinale	3	Salix lutea	1		
		Geranium richardsonii	5				

Weeds	% Cover	Density
Tanacetum vulgare	1	5
Sonchus arvensis	1	2

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
5	12	20	5	5	1	1	6	2	57%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 1

Project: **Friends of Fish Creek Inven** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC052** Form Type: Riparian - Lentic GPS: 12 289253 5640953
LSD: Wetland Class:
Observer: HB Plant Community Code: FPC7_D
Date: 2022-06-01 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	70	Taraxacum officinale	1	Salix exigua	60	Populus balsamifera	2
Bromus inermis	7	Geranium richardsonii	1	Rosa acicularis	3		
Dactylis glomerata	3	Thermopsis rhombifolia	1	Potentilla fruticosa	10		
Carex aquatilis	1	Trifolium repens	1	Cornus stolonifera	1		
Typha latifolia	1	Sonchus arvensis	1	Symphoricarpos occidentalis	2		

Weeds	% Cover	Density
Tanacetum vulgare	2	1
Cirsium arvense	2	1
Euphorbia esula	1	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
4	1	0	2	2	2	4	2	6	37%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC55 **Litter (lbs/acre):** **GPS:** 12 289330 5640799

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** FPC3

Date: Jun 1,22 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	50	Geum triflorum	2	Symphoricarpos occidentalis	15	Populus balsamifera	2
Bromus biebersteinii	10	Taraxacum officinale	2	Elaeagnus commutata	20		
Bromus inermis	15	Symphyotrichum laeve	1				
Stipa viridula	5	Galium boreale	1				
		Maianthemum stellatum	1				

Weeds	% Cover	Density
Sonchus arvensis	1	10
Tanacetum vulgare	1	3

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
8	10	25	10	5	1	0	NA	NA	59%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%): 3

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inven** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC057** Form Type: Riparian - Lentic GPS: 12 289301 5641083
LSD: Wetland Class:
Observer: HB Plant Community Code: FPC7_D
Date: 2022-06-01 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	40			Salix exigua	35		
Elymus lanceolatus	2			Potentilla fruticosa	5		
Calamovilfa longifolia	1			Populus balsamifera	7		
Bromus inermis	5			Juniperus communis	1		
Bromus biebersteinii	1						

Weeds	% Cover	Density
Cirsium arvense	1	1
Euphorbia esula	1	1
Tanacetum vulgare	1	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
2	2	1	1	2	3	2	2	6	33%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC58 **Litter (lbs/acre):** **GPS:** 12 289290 5641280

LSD: **Form Type:** Forested

Observer: ST **Plant Community Code:** fpd7

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	15	Vicia americana	2	Symphoricarpos albus	50	Populus balsamifera	30
Poa pratensis	15	Galium boreale	1	Prunus virginiana	5	Populus tremuloides	8
		Cirsium arvense	1				
		Thalictrum venulosum	1				
		Smilacina stellata	3				

Weeds	% Cover	Density
Cirsium arvense	T	2

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	NA	NA	0%	Unhealthy

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC063 **Litter (lbs/acre):** **GPS:** 12 289248 5641318

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** FPC3

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	2	Galium boreale	1	Symphoricarpos occidentalis	20		
Poa pratensis	10			Elaeagnus commutata	30		

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
27	10	25	10	3	5	5	NA	NA	85%	Healthy

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 5

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek Inv** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site: **FC61** Form Type: Riparian - Lotic GPS: 12 289342 5641132
LSD: Wetland Class:
Observer: HB Plant Community Code: FPC7/FPB4
Date: 2022-06-01 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Phalaris arundinacea	15	Tanacetum vulgare	15	Salix lutea	8	Populus balsamifera	5
Poa pratensis	30	Euphorbia esula	2	Salix bebbiana	5		
Juncus balticus	3	Anemone canadensis	1	Salix exigua	35		
Festuca ovina	2	Vicia americana	1				
		Artemisia absinthium	2				

Weeds	% Cover	Density
Hyoscyamus niger	1	2
Tanacetum vulgare	15	10
Euphorbia esula	2	4

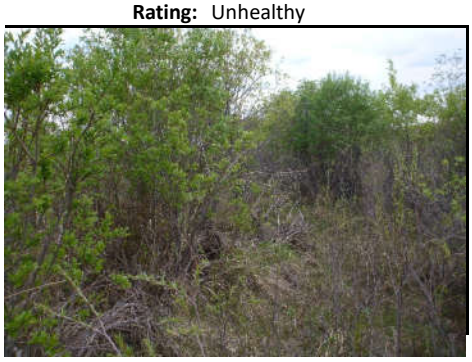
Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Standing Dead Woody	Stream Rootmass	Human - Bare Ground	Human - Streambank	Human - Reach	Incisement
2	0	0	0	2	3	2	4	6	3	9

Human Caused Bare Soil (%): 0 **Score:** 52% **Rating:** Unhealthy
Moss & Lichen Cover (%): 0



Other Species

Comments:

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):** 2000

Site FC66 **Litter (lbs/acre):** **GPS:** 12 289332 5640988

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** COND

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	60	Thermopsis rhombifolia	1	Potentilla fruticosa	15		
Stipa viridula	1	Zigadenus elegans	1	Amelanchier alnifolia	3		
Calamovilfa longifolia	25	Onosmodium molle	1				
Festuca ovina	5	Gaillardia aristata	1				
		Galium boreale	1				

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
20	10	25	10	5	5	5	NA	NA	80%	Healthy

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 5

Project: **Friends of Fish Creek Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC66A **Litter (lbs/acre):** **GPS:** 12 289228 5641324

LSD: **Form Type:** Grassland

Observer: HB **Plant Community Code:** FPB7

Date: 2022-06-01 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	30	Galium boreale	2	Symphoricarpos occidentalis	3		
Calamovilfa longifolia	2	Thermopsis rhombifolia	2	Amelanchier alnifolia	1		
Poa pratensis	60	Anemone multifida	1				
Elymus lanceolatus	3	Onosmodium molle	2				
		Oxytropis deflexa	1				

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
15	3	13	10	5	5	5	NA	NA	56%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 5

Project: **Friends of Fish Creek Veg Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):** 2000

Site FC067 **Litter (lbs/acre):** **GPS:** 11 710866 5641562

LSD: **Form Type:** Grassland

Observer: ST **Plant Community Code:** FPB2_D

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	70	Smilacina stellata	6	Symphoricarpos occidentalis	0		
Festuca ovina	1	Onosmodium molle	2	Amelanchier alnifolia	0		
Stipa viridula	1	Geum triflorum	1				
		Galium boreale	1				
		Symphyotrichum falcatum	1				

Weeds	% Cover	Density

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
15	6	25	10	5	5	5	NA	NA	65%	Healthy with problems

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
0	0	0	0	0	0	0	0	0	0%	0

Human Caused Bare Soil (%):

Moss & Lichen Cover (%):

Other Species

Comments: 5

Project: **Friends of Fish Creek Veg Inventory**

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC68 **Litter (lbs/acre):** **GPS:** 11 710554 5641746

LSD: **Form Type:** Tame

Observer: HB **Plant Community Code:** COND

Date: 2022-06-02 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca ovina	15	Euphorbia esula	7	Symphoricarpos occidentalis	30		
Poa pratensis	30	Artemisia absinthium	2	Potentilla fruticosa	2		
Bromus inermis	3	Linum lewisii	1	Populus balsamifera	2		
		Cirsium arvense	2				
		Thlaspi arvense	2				

Weeds	% Cover	Density
Euphorbia esula	7	6
Tanacetum vulgare	10	11

Soils

Depth	
Texture	
Classification	

Ecological Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
9	0	8	10	3	0	0	0	0	30%	Unhealthy

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds 5.1	Weeds 5.2	Browse 6.1	Browse (	Score	Rating
9	0	8	10	3	0	0	0	0	30%	Unhealthy

Human Caused Bare Soil (%): 15

Moss & Lichen Cover (%):

Other Species

Comments:

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC70** Form Type: Riparian - Lentic GPS: 11 701108 5646076
LSD: Wetland Class:
Observer: CS Plant Community Code:
Date: 2023-07-31 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
	40	Melilotus officinalis	4	Salix exigua	10		
Poa pratensis	10	Taraxacum officinale	3	Elaeagnus commutata	20		
Poa compressa	5	Linum lewisii	1	Rosa woodsii	2		
Dactylis glomerata	1	Trifolium repens	2	Symphoricarpos occidentalis	2		
Elytrigia repens var. repens	5				3		
Phalaris arundinacea	2						

Weeds	% Cover	Density
Cirsium arvense	4	10
Sonchus arvensis	1	4
	1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	0	6	6	0	1	4	3	43%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Festuca ovina, Festuca rubra, Festuca idahoensis, Hyoscyamus niger

Comments: Human created storm water pond. Seeded fescue on NW bank. Lots of Canada thistle. Occassional bare ground around

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC71** Litter (lbs/acre): GPS: 11 701312 5646109
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Trembling Aspen/Smooth brome
Date: 2023-07-31 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20	Cirsium arvense	3	Symphoricarpos albus	10	Populus tremuloides	40
Poa pratensis	15	Galium boreale	1	Prunus pensylvanica	1	Picea glauca	2
	1	Smilacina stellata	2	Rosa woodsii	2	Populus balsamifera	3
		Hackelia floribunda	t	Amelanchier alnifolia	2		

Weeds	% Cover	Density
Cirsium arvense	1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
10	18	20	10	2	60%	Healthy with problems

Human Caused Bare Soil (%): <1 <1
Moss & Lichen Cover (%): 0

Other Species
Lathyrus ochroleucus, Thalictrum venulosum, Taraxacum officinale, Petasites frigidus

Comments: Agronomic grasses dominant. Deadfall. Missing some tall forbs and low growing species, understory mostly

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC72** Litter (lbs/acre): GPS: 11 701324 5646309
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Aspen/Smooth Brome
Date: August 1/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20	Galium boreale	5	Symphoricarpos albus	5	Populus tremuloides	25
Poa pratensis	15	Smilacina stellata	3	Shepherdia canadensis	7	Picea glauca	5
		Lathyrus ochroleucus	1	Prunus virginiana	2		
		Actaea rubra	1	Rosa woodsii	3		

Weeds	% Cover	Density

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
10	35	14	6	10	75%	Healthy

Human Caused Bare Soil (%):	2	2
Moss & Lichen Cover (%):	3	3

Other Species
Lonicera involucrata, Petasites frigidus, Taraxacum officinale

Comments: NE slope. Native grasses replaced by sommoth brome and kentucky bluegrass, but forb and shrubs are as

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC73** **Litter (lbs/acre):** **GPS:** 11 701299 5646167

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** COND_Snowberry-Silverberry/Smooth Brome

Date: 45138 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	60	Galium boreale	2	Symphoricarpos occidentalis	5	Populus tremuloides	1
Poa pratensis	10	Lithospermum ruderale	1	Rosa acicularis	3		
Agropyron smithii	t	Apocynum androsaemifolium	1	Elaeagnus commutata	5		
Calamovilfa longifolia	t	Thermopsis rhombifolia	1	Potentilla fruticosa	1		

Weeds	% Cover	Density
Thesium arvense	3	9
Cirsium arvense	2	8
Euphorbia esula	1	4

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	84%	Healthy

Human Caused Bare Soil (%): <1 <1

Moss & Lichen Cover (%): 0

Other Species

Medicago sativa, Astragalus cicer, Amelanchier alnifolia, Smilacina stellata, Fragaria virginiana, Comandra umbellata, Monarda fistulosa, Bouteloua gracilis, Geum triflorum, Helianthus nuttallii, Artemisia ludoviciana, Artemisia frigida, Symphyotrichum laeve

Comments: Mostly brome and shrubs. More forb diversity on steeper slopes. Low forbs and grasses missing. 600-800 lb/ac of

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC74** **Litter (lbs/acre):** **GPS:** 11 701426 5646292
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:** COND_FFC5
Date: 45138 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Galium boreale	3	Symphoricarpos occidentalis	30	Populus balsamifera	t
Poa pratensis	15	Symphyotrichum laeve	2	Elaeagnus commutata	10	Picea glauca	t
Elymus lanceolatus	3	Artemisia frigida	t	Rosa acicularis	2		
Agropyron smithii	t	Tragopogon dubius	t				

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	<1	4

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	13	7	3	1	NA	46%	Unhealthy

Human Caused Bare Soil (%): 10 10
Moss & Lichen Cover (%): 0

Other Species
Thermopsis rhombifolia, Comandra umbellata, Solidago missouriensis, Symphyotrichum ericoides

Comments: Mainly agronomic grasses. Low grasses and forbs misssing. 800 lb/ac of litter; patchy across site. Pedistalling in

Project: Friends of Fish Creek

Property: Fish Creek **Estimated Production (lbs/acre):**

Site FC75 **Litter (lbs/acre):** **GPS:** 11 701595 5646154

LSD: **Form Type:** Grassland

Observer: **Plant Community Code:** COND_FFC5

Date: 45138 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Cirsium arvense	25	Symphoricarpos occidentalis	10		
Poa pratensis	20						

Weeds	% Cover	Density
Cirsium arvense	2	8
Euphorbia esula	<1	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	10	5	1	NA	56%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Flixweed, stinkweed, wild mustard, some disturbance species. Missing forbs and low ground cover. More than

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC76** **Litter (lbs/acre):** **GPS:** 11 7017182 5645961

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 1/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	75	Artemisia ludoviciana	1	Symphoricarpos occidentalis	10		
Poa pratensis	10	Smilacina stellata	1				
		Gaillardia aristata	1				
		Lithospermum ruderale					

Weeds	% Cover	Density
Cirsium arvense	1	9
Thesium arvense	1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Some aspen bluffs and manitoba maple deciled. Needs disturbance. Agronomic species. Missing forbs and low

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC77** **Litter (lbs/acre):** **GPS:** 11 702297 5646159
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:** FFC5
Date: August 1/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	50	Symphyotrichum ericoides	1	Symphoricarpos occidentalis	10		
Poa pratensis	10	Galium boreale	1	Elaeagnus commutata	5		
		Symphyotrichum laeve	1				

Weeds	% Cover	Density
Cirsium arvense	<1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	4	NA	66%	Healthy with problems

Human Caused Bare Soil (%): <1 <1
Moss & Lichen Cover (%): 0

Other Species

Comments: Native forbs and shrubs with agronomic grasses. Missing low forbs/graminoids. Over 900 lb/ac of litter. Includes

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC78** Litter (lbs/acre): GPS: 11 702147 5645994
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_White spruce/Hairy Wild Rye-Purple Oat Grass
Date: August 1/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
	10	Lathyrus ochroleucus	1	Symphoricarpos albus	5	Picea glauca	25
Leymus innovatus	10	Symphyotrichum laeve	1	Shepherdia canadensis	3	Populus balsamifera	4
Schizachne purpurascens	10	Smilacina stellata	1	Alnus viridis	1	Populus tremuloides	1
Bromus inermis	5	Galium boreale	1	Rosa woodsii	<1		

Weeds	% Cover	Density
Arctium minus	<1	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
20	35	14	8	6	83%	Healthy

Human Caused Bare Soil (%): <1 <1
Moss & Lichen Cover (%): 30 30

Other Species
Campanula rotundifolia, Taraxacum officinale

Comments: Some agronomics, lots of palatable native grasses, small amount of dandelion. A few trails with compaction.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC79** Litter (lbs/acre): GPS: 11 702062 5646148
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Aspen/Brome
Date: August 1/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Galium boreale	1	Symphoricarpos albus	10	Populus tremuloides	40
Poa pratensis	15	Thalictrum venulosum	1	Amelanchier alnifolia	1		
		Smilacina stellata	1	Rosa woodsii	1		
		Actaea rubra	<1		2		

Weeds	% Cover	Density
Cirsium arvense	t	2
Thesium arvense	t	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
10	27	14	8	6	65%	Healthy with problems

Human Caused Bare Soil (%): <1 <1
Moss & Lichen Cover (%): 0

Other Species
Petasites frigidus, Lathyrus ochroleucus, Potentilla fruticosa, Elaeagnus commutata, Symphoricarpos occidentalis, Festuca campestris, Campanula rotundifolia, Fragaria virginiana, Symphyotrichum laeve, Artemisia ludoviciana, Solidago missouriensis, Thermopsis rhombifolia, Solidago canadensis

Comments: Not weedy, full of agronomic grasses. Missing medium/tall shrubs (saskatoon short where present). Trails with

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC80** **Litter (lbs/acre):** **GPS:** 11 702537 5645803

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** COND_Creeping juniper/spreading dogbane

Date: August 1/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Agropyron smithii	2	Glycyrrhiza lepidota	2	Juniperus horizontalis	30	Picea glauca	1
		Apocynum androsaemifolium	3			Populus tremuloides	1
		Comandra umbellata	1				
		Thermopsis rhombifolia	1				

Weeds	% Cover	Density

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	7	NA	7	1	10	NA	52%	Healthy with problems

Human Caused Bare Soil (%): 25 25

Moss & Lichen Cover (%): 0

Other Species

Comments: South slope 10-15%. Thin break. Missing low cover. Less than 50 lb/ac of litter. Some trails closed for reveg. Lots

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site: **FC81** Form Type: Riparian - Lotic GPS: 11 702185 5645751
LSD: Wetland Class:
Observer: CS Plant Community Code:
Date: 2023-08-01 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Juncus balticus	1	Melilotus officinalis	1				
Poa pratensis	2	Symphyotrichum laeve	1				
Carex atherodes	1		2				
	2	Plantago major	1				
		Trifolium pratense	1				

Weeds	% Cover	Density

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Standing Dead Woody	Stream Rootmass	Human - Bare Ground	Human - Streambank	Human - Reach	Incisement
2	1	2	6	6	3	4	2	2	2	6

Human Caused Bare Soil (%): 0 **Score:** 60% **Rating:** Healthy with problems
Moss & Lichen Cover (%): 0

Other Species

Comments: Leafy spurge along pathway. Lots of trailing/use. Rocky. Sweet clover, clover, KBG. Paths. Some bank re-

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC82** Litter (lbs/acre): GPS: 11 701361 5645833
LSD: Form Type: Forest
Observer: CS Plant Community Code: FPE2
Date: August 7/2023 AUM: 0.15

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Leymus innovatus	3	Smilacina stellata	2	Elaeagnus commutata	3	Picea glauca	20
Bromus inermis	5	Galium boreale	2	Shepherdia canadensis	3	Populus tremuloides	15
Poa pratensis	7	Lathyrus ochroleucus	1	Symphoricarpos albus	5	Populus balsamifera	5
	2	Taraxacum officinale	2	Rosa acicularis	3		

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	t	6
Sonchus arvensis	t	3

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	35	14	8	1	73%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Monarda fistulosa, Symphyotrichum laeve, Hieracium umbellatum, Fragaria virginiana, Thalictrum occidentale, Arctostaphylos uva-ursi

Comments: Brome invasion. Dandelion and agronomic grasses. Some compaction and trailing. Trailing with some erosion.

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site: **FC83** Form Type: Riparian - Lotic GPS: 11 701152 5645825
LSD: Wetland Class:
Observer: CS Plant Community Code:
Date: 2023-08-07 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Phalaris arundinacea	2	Taraxacum officinale	2	Elaeagnus commutata	2	Populus balsamifera	10
Poa pratensis	1		2	Salix exigua	7		
Elytrigia repens var. repens	1	Plantago major	1	Salix lucida	7		
Agrostis stolonifera	1	Viola canadensis	1	Alnus incana	1		
Carex atherodes	2	Trifolium repens	1				
Phleum pratense	1	Melilotus officinalis	1				

Weeds	% Cover	Density
Cirsium arvense	1	7
Sonchus arvensis	1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Standing Dead Woody	Stream Rootmass	Human - Bare Ground	Human - Streambank	Human - Reach	Incisement
4	2	2	6	6	2	4	4	4	2	6

Human Caused Bare Soil (%): 1 **Score:** 70% **Rating:** Healthy with problems
Moss & Lichen Cover (%): 0

Other Species
Medicago lupulina, Potentilla anserina, Symphyotrichum falcatum

Comments: Deciled with FC81

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC84** Litter (lbs/acre): GPS: 11 701125 5645569
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPD7
Date: August 7/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	10	Taraxacum officinale	1	Shepherdia canadensis	5	Populus tremuloides	30
Schizachne purpurascens	5	Galium boreale	2	Symphoricarpos albus	5		
Leymus innovatus	2	Smilacina stellata	2	Amelanchier alnifolia	5		
	5	Lathyrus ochroleucus	1	Prunus virginiana	2		
				Rosa woodsii	1		

Weeds	% Cover	Density
Cirsium arvense	1	8
Caragana arborescens	<1	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	20	10	1	73%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Symphyotrichum laeve, Thalictrum occidentale, Cornus stolonifera, Apocynum androsaemifolium, Bromus inermis

Comments: Trending to FPD3. Taraoff and agronomics present. Mid shrubs reduced, potentially browse. Very little use or

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC85** Litter (lbs/acre): GPS: 11 701311 5645542
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPF8 with horsetail
Date: August 7/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Leymus innovatus	5	Smilacina stellata	2	Arctostaphylos uva-ursi	2	Picea glauca	30
		Galium boreale	1	Rosa woodsii	1	Populus balsamifera	2
		Fragaria virginiana	1	Symphoricarpos occidentalis	1	Populus tremuloides	1
		Actaea rubra	t	Lonicera dioica	t		
		Equisetum arvense	20				

Weeds	% Cover	Density
Cirsium arvense	<1	7
Euphorbia esula	<1	8
Caragana arborescens	<1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
20	35	8	6	0	69%	Healthy with problems

Human Caused Bare Soil (%):	5	5
Moss & Lichen Cover (%):	60	60

Other Species

Comments: Slope towards creek, NE facing. Agronomic grasses along trails. Ground cover and LFH lost in used area,

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC86** Litter (lbs/acre): GPS: 11 702248 564511
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPF6
Date: August 7/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Leymus innovatus	3	Hackelia floribunda	2	Symphoricarpos albus	5	Picea glauca	40
Schizachne purpurascens	2	Disporum trachycarpum	5	Cotoneaster spp.	1		
		Galium trifidum	2	Clematis occidentalis	3		
		Lathyrus ochroleucus	5				

Weeds	% Cover	Density
Cirsium arvense	t	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
20	27	8	4	4	63%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 20 20

Other Species

Comments: Mostly north facing slope. River below. 60% moss cover. Hackelia and cotoneaster. Lots of use, removing low and

Project: **Friends of Fish Creek**

Property: **Fish Creek** Estimated Production (lbs/acre):

Site **FC87** Litter (lbs/acre): GPS: 11 702027 5645691

LSD: Form Type: Forest

Observer: CS Plant Community Code: COND_Poplar/Saskatoon-Poa

Date: August 7/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Schizachne purpurascens	5	Taraxacum officinale	1	Amelanchier alnifolia	15	Populus tremuloides	20
Poa pratensis	8	Solidago canadensis	2	Prunus virginiana	2	Populus balsamifera	25
Bromus inermis	1	Smilacina stellata	1	Rosa woodsii	5	Picea glauca	1
	1	Thalictrum occidentale	1	Symphoricarpos albus	15		

Weeds	% Cover	Density
Cirsium arvense	t	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
20	35	14	10	4	83%	Healthy

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 5 5

Other Species

Epilobium angustifolium, Heracleum lanatum, Galium boreale

Comments: Few introduced species. 5% moss and lichen. Some compaction.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC88** Litter (lbs/acre): GPS: 11 702793 5645289
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPD8
Date: August 8/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	2	Viola spp.	2	Ribes spp.	1	Picea glauca	15
Schizachne purpurascens	1	Disporum trachycarpum	1	Symphoricarpos albus	2	Populus tremuloides	20
Poa pratensis	2	Galium trifidum	2	Rubus idaeus	2		
			2	Caragana arborescens	5		

Weeds	% Cover	Density
Cirsium arvense	0.5	5
	5	9
Arctium minus	t	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	14	8	0	64%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 15 15

Other Species
Taraxacum officinale, Geranium richardsonii, Hackelia floribunda

Comments: Community similar to FPE5. More than 15% moss. Caragana and other introduced species common. Low/mid

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC89** **Litter (lbs/acre):** **GPS:** 11 702826 5645366

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 8/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Tragopogon dubius	1	Symphoricarpos occidentalis	10		
Poa pratensis	20	Lithospermum ruderale	t				
Phleum pratense	2	Taraxacum officinale	1				
Elymus trachycaulus	1	Cirsium arvense	4				
	1	Euphorbia esula	2				
		Thesium arvense	2				

Weeds	% Cover	Density
Cirsium arvense	4	10
Thesium arvense	2	10
Euphorbia esula	2	9

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	0	NA	62%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Sonchus arvensis, Linaria vulgaris, Stipa viridula

Comments: Weedy. Invasives present, low forbs and grasses, over 1000 lb/ac of litter. Small trail around the perimeter, but

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC90** Litter (lbs/acre): GPS: 11 703221 5645232
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPD7
Date: August 8/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Galium boreale	2	Symphoricarpos occidentalis	10	Populus tremuloides	25
Poa pratensis	10	Thalictrum occidentale	1	Shepherdia canadensis	1	Picea glauca	2
		Achillea millefolium	1	Rosa acicularis	7		
		Anemone cylindrica	1	Prunus virginiana	5	Populus balsamifera	15
				Amelanchier alnifolia	7		
				Ribes oxyacanthoides	3		

Weeds	% Cover	Density
Cirsium arvense	0.5	7

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	14	8	4	68%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Smilacina stellata, Fragaria virginiana, Lathyrus ochroleucus

Comments: Agronomic grasses. Decreased low ground cover and mid shrubs. Some compaction, a few trails.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC91** **Litter (lbs/acre):** **GPS:** 11 703266 5645200

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 8/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	60	Cirsium arvense	4	Symphoricarpos albus	10	Populus tremuloides	2
Poa pratensis	30	Symphyotrichum laeve	1	Rosa acicularis	2		
		Taraxacum officinale	1				
		Thalictrum venulosum	1				

Weeds	% Cover	Density
Cirsium arvense	4	10
	2	8
Euphorbia esula	1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	0	NA	62%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Low layer reduced. Over 1000 lb/ac of litter.

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC92** Form Type: Riparian - Lentic GPS: 11 703377 5645478
LSD: Wetland Class:
Observer: CS Plant Community Code:
Date: 2023-08-08 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	60	Taraxacum officinale	1	Salix lucida	3		
Poa pratensis	25	Melilotus officinalis	1	Populus balsamifera	1		
Phleum pratense	2	Medicago lupulina	1	Populus tremuloides	1		
Typha latifolia	5	Thesium arvense	8				
		Sonchus arvensis	5				
		Cirsium arvense	10				

Weeds	% Cover	Density
Sonchus arvensis	5	1
Cirsium arvense	10	2
Thesium arvense	8	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	2	4	5	4	1	6	3	51%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Euphorbia esula, Linaria vulgaris

Comments: Stormwater pond. Covers several bodies of water. Some beaver activity. *OW=open water. Point in dominant decile

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC93** **Litter (lbs/acre):** **GPS:** 11 703405 5645709

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** COND_Saskatoon-Snowberry/Western Wheatgrass

Date: August 8/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Agropyron smithii	10	Liatris punctata	2	Symphoricarpos occidentalis	20		
Koeleria macrantha	1	Galium boreale	2	Amelanchier alnifolia	15		
Bouteloua gracilis	2	Symphyotrichum falcatum	2				
Festuca campestris	1	Solidago missouriensis	2				
Bromus inermis	3						

Weeds	% Cover	Density
Thesium arvense	2	10
Cirsium arvense	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	10	25	1	3	1	NA	67%	Healthy with problems

Human Caused Bare Soil (%): 15 15

Moss & Lichen Cover (%): 0

Other Species

Bromus inermis, Muhlenbergia cuspidata, Poa pratensis, Calamovilfa longifolia, Potentilla gracilis, Thermopsis rhombifolia, Psoralea argophylla, Allium cernuum, Tragopogon dubius

Comments: 10% is similar to point 128 aspen bluffs. Weedy, abundant introduced species, diverse. 500-600 lb/ac of litter.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC94** Litter (lbs/acre): GPS: 11 703607 5646048
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Spruce-Poplar/Brome
Date: August 8/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	15	Galium boreale	3	Symphoricarpos albus	20	Populus tremuloides	20
Poa pratensis	7	Disporum trachycarpum	5	Amelanchier alnifolia	7	Populus balsamifera	7
		Lathyrus ochroleucus	5		1	Picea glauca	10
			3	Rosa acicularis	2		
		Heracleum lanatum	5		<1		

Weeds	% Cover	Density
Cirsium arvense	0.5	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	14	8	3	67%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 10 10

Other Species

Comments: ~10% moss. Agronomics, decreased mid level shrubs, trailing. Some erosion on trails. Some shrub use. Some low

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC95** **Litter (lbs/acre):** **GPS:** 11 703415 5646122

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 8/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Cirsium arvense	7	Symphoricarpos albus	2	Populus balsamifera	1
Poa pratensis	30	Thesium arvense	2			Populus tremuloides	1
		Euphorbia esula	10			Picea glauca	1

Weeds	% Cover	Density
Cirsium arvense	7	8
Thesium arvense	2	8
Euphorbia esula	10	11

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	10	5	0	NA	61%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Tanacetum vulgare

Comments: Very weedy. Area 129 more shrubby, less weedy. Low layer decreased, missing native forbs. Excess litter, >1500

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC96** Litter (lbs/acre): GPS: 11 703098 5645544
LSD: Form Type: Forest
Observer: CS Plant Community Code: FPD7
Date: August 8/2023 AUM: 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	50	Solidago canadensis	7	Symphoricarpos occidentalis	10	Populus tremuloides	25
Poa pratensis	15	Symphyotrichum laeve	3			Picea glauca	7
		Cirsium arvense	0.5				
		Thesium arvense	0.1				
		Sonchus arvensis	1				

Weeds	% Cover	Density
Cirsium arvense	0.5	8
Thesium arvense	0.1	6
Sonchus arvensis	1	4

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
8	27	14	8	3	60%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Perennial sow thistle along the river in places (included with lotic assessment). Agronomic grasses. Low forbs and

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC97** Litter (lbs/acre): GPS: 11 702806 5645763
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPE6
Date: August 9/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Schizachne purpurascens	7	Symphyotrichum laeve	2	Rosa acicularis	1	Picea glauca	30
Leymus innovatus	7	Smilacina stellata	1	Symphoricarpos albus	2	Populus balsamifera	3
	5	Disporum trachycarpum	1	Shepherdia canadensis	1		
		Taraxacum officinale	1				

Weeds	% Cover	Density
Cirsium arvense	<1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
20	27	14	6	4	71%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 30 30

Other Species
Lathyrus ochroleucus, Hieracium umbellatum, Lonicera dioica, Trifolium repens, Actaea rubra

Comments: Approximately 30% moss. Some taraoff and trace alfalfa and sweet clover. Decreaser grasses present. Area is

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC98** Form Type: Riparian - Lentic GPS: 11 702870 5646075
LSD: Wetland Class:
Observer: CS Plant Community Code:
Date: 2023-08-09 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Hordeum jubatum	2	Melilotus alba	5	Salix exigua	1	Populus tremuloides	1
	10	Vicia cracca	2				
Phleum pratense	7	Melilotus officinalis	1				
Bromus inermis	20	Medicago lupulina	1				
Poa pratensis	15	Plantago major	1				
Elymus trachycaulus	10						

Weeds	% Cover	Density
Cirsium arvense	1	8
Thesium arvense	0.2	8
Sonchus arvensis	0.2	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	2	6	6	0	1	6	6	54%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Agropyron smithii, Typha latifolia, Calamagrostis canadensis, Schoenoplectus tabernaemontani

Comments: Storm water ponds

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC99** **Litter (lbs/acre):** **GPS:** 11 702757 5646134

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 9/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Thlaspi arvense	1	Symphoricarpos occidentalis	15		
	5	Achillea millefolium	1	Elaeagnus commutata	7		
Poa pratensis	15	Sisymbrium altissimum	1				
		Cirsium arvense	7				
		Thesium arvense	2				

Weeds	% Cover	Density
Cirsium arvense	7	11
Thesium arvense	2	8
Arctium minus	t	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	7	5	0	NA	69%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Some areas more fescue, but overall brome dominated. Weedy species, mole hills. No low forbs, lacking diversity.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC100** Litter (lbs/acre): GPS: 11 703900 5646819
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPD7
Date: August 9/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	15	Thalictrum occidentale	1	Rosa acicularis	1	Populus tremuloides	35
Bromus inermis	10	Actaea rubra	1	Amelanchier alnifolia	5	Populus balsamifera	7
		Galium boreale	1	Symphoricarpos albus	5		
		Disporum trachycarpum	2	Prunus virginiana	2		
				Shepherdia canadensis	3		
				Cotoneaster spp.	15		

Weeds	% Cover	Density
Cirsium arvense	0.5	8
Linaria vulgaris	t	3

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
8	27	14	10	3	62%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Fragaria virginiana, Lathyrus ochroleucus, Taraxacum officinale

Comments: Applies to 746, 132, 137. Heavy browse, shrubs reduced. Lots of deer droppings and some trails. Decreased LFH

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC101** Litter (lbs/acre): GPS: 11 703916 5646727
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Silverberry-Shrubby Cinquefoil/Kentucky Bluegrass
Date: August 9/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	45	Thermopsis rhombifolia	4	Rosa acicularis	2		
Agropyron smithii	15	Liatris punctata	1	Potentilla fruticosa	3		
Elymus lanceolatus	2	Lygodesmia juncea	2	Elaeagnus commutata	15		
Stipa viridula	t	Galium boreale	2				
		Smilacina stellata	2				
		Lithospermum ruderale	1				

Weeds	% Cover	Density
Cirsium arvense	0.5	8
Thesium arvense	0.5	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	7	25	10	3	60%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Native forbs and shrubs, but lots of Poaprat. Tall grasses reduced, lots of deer evidence. 700-800 lbs/ac of litter.

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC102** Form Type: Riparian - Lentic GPS: 11 704179 5646543
LSD: Wetland Class:
Observer: CS Plant Community Code:
Date: 2023-08-09 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Vicia cracca	2	Caragana arborescens	2		
Festuca hallii	2	Solidago canadensis	1	Symphoricarpos occidentalis	2		
Poa pratensis	3	Sisymbrium altissimum	1				
Elymus trachycaulus	5		1				
Dactylis glomerata	2	Erucastrum gallicum	1				
		Medicago lupulina	1				

Weeds	% Cover	Density
Cirsium arvense	1	8
Thesium arvense	0.5	6
Caragana arborescens	0.3	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
4	1	2	4	2	0	1	4	3	33%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Linaria vulgaris, Euphorbia esula, Hyoscyamus niger, Arctium minus

Comments: Strip of bare ground above water line. Paved trails. Litter cover. Not much riparian veg. Goes from grasses to weedy forbs

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC103** Litter (lbs/acre): GPS: 11 704232 5646415
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Balsam Poplar/Snowberry/Smooth brome
Date: August 9/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	70	Smilacina stellata	1	Prunus virginiana	5	Populus balsamifera	15
Poa pratensis	5	Lathyrus ochroleucus	1	Symphoricarpos albus	3	Picea glauca	1
		Galium boreale	1	Rosa acicularis	2		
		Thalictrum occidentale	1				

Weeds	% Cover	Density
Cirsium arvense	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	20	10	1	73%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Elaeagnus commutata, Rubus idaeus

Comments: Possible cottonwood habitat. Understory heavy browse. Missing low forb/ground cover and some shrubs. Lots of

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC104** Litter (lbs/acre): GPS: 11 703331 5646459
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPD1
Date: August 9/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Schizachne purpurascens	2	Taraxacum officinale	7	Shepherdia canadensis	5	Populus tremuloides	15
Leymus innovatus	5	Galium boreale	5	Symphoricarpos albus	25	Picea glauca	1
	3	Campanula rotundifolia	5	Amelanchier alnifolia	20		
		Solidago canadensis	4	Cornus stolonifera	7		
		Fragaria virginiana	3	Prunus virginiana	15		
		Hieracium umbellatum	1				

Weeds	% Cover	Density
Arctium minus	t	2
Cirsium arvense	0.5	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	14	6	4	66%	Healthy with problems

Human Caused Bare Soil (%): 3 3
Moss & Lichen Cover (%): 0

Other Species
Monarda fistulosa

Comments: Dandelion invasion. Missing some grass cover, shrub height reduced. Trailing.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC105** **Litter (lbs/acre):** **GPS:** 11 704546 5646815

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 10/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	60	Vicia cracca	2	Symphoricarpos occidentalis	5	Populus balsamifera	t
Festuca campestris	5	Lithospermum ruderale	2				
Poa pratensis	10	Thesium arvense	0.5				
		Cirsium arvense	10				
		Artemisia absinthium	t				

Weeds	% Cover	Density
Thesium arvense	0.5	5
Cirsium arvense	10	11
Artemisia absinthium	t	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	10	5	1	NA	75%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Significant Canada thistle. Low layer decreased, decreased diversity. More than 1200 lbs/ac of litter.Thesium in

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC106** Litter (lbs/acre): GPS: 11 704547 5646263
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPD7
Date: August 10/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	50	Lathyrus ochroleucus	1	Symphoricarpos albus	3	Populus balsamifera	20
Poa pratensis	2	Taraxacum officinale	1	Elaeagnus commutata	4	Populus tremuloides	15
		Solidago canadensis	1	Rosa acicularis	2	Picea glauca	2
		Galium boreale	1	Amelanchier alnifolia	4	Populus deltoides	3
				Cornus stolonifera	2		
				Shepherdia canadensis	1		

Weeds	% Cover	Density
Thesium arvense	1	8
Cirsium arvense	2	8
Euphorbia esula	<1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	20	10	1	73%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Alnus incana

Comments: Floodplain/fluvial soils. Exotics. Lots of structure, but brome choked out lower species. Not many trails, poor

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC107** Litter (lbs/acre): GPS: 11 705093 5646140
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPE5
Date: August 10/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	15	Taraxacum officinale	4	Shepherdia canadensis	2	Populus balsamifera	15
Stipa columbiana	2	Galium boreale	3	Symphoricarpos albus	20	Picea glauca	10
Schizachne purpurascens	2	Lathyrus ochroleucus	3	Rosa woodsii	1		
Equisetum pratense	3	Hieracium umbellatum	1		1		
		Equisetum arvense	7				

Weeds	% Cover	Density

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	35	14	10	1	75%	Healthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Moss 10%. Some exotics. Some compaction, some trails. Cotoneaster and caragana patch near river. Some areas

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site: **FC108** Form Type: Riparian - Lotic GPS: 11 704685 5646307
LSD: Wetland Class:
Observer: CS Plant Community Code:
Date: 2023-08-10 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	15	Plantago major	2	Elaeagnus commutata	5	Populus balsamifera	5
Elymus trachycaulus	3	Medicago lupulina	1	Salix exigua	1	Picea glauca	1
Calamagrostis canadensis	2	Symphyotrichum laeve	1	Alnus incana	2		
		Solidago canadensis	1				
		Melilotus alba	1				
		Melilotus officinalis	1				

Weeds	% Cover	Density
Cirsium arvense	<1	8
Sonchus arvensis	<1	8
Thesium arvense	t	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Standing Dead Woody	Stream Rootmass	Human - Bare Ground	Human - Streambank	Human - Reach	Incisement
4	2	2	NA	5	2	6	4	6	1	0

Human Caused Bare Soil (%): 0 **Score:** 59% **Rating:** Unhealthy
Moss & Lichen Cover (%): 0

Other Species
Taraxacum officinale, Potentilla anserina, Hippuris vulgaris, Equisetum arvense, Astragalus cicer

Comments: Some bare soil along banks, gravel bare, trailing. Around 5% dead wood.

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC109** **Litter (lbs/acre):** **GPS:** 11 705474 5646292
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:** COND_Silverberry-Snowberry/Smooth Brome-Poa
Date: August 10/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	35	Thermopsis rhombifolia	2	Elaeagnus commutata	50	Picea glauca	3
Poa pratensis	10	Smilacina stellata	2	Symphoricarpos occidentalis	10		
		Astragalus cicer	1				

Weeds	% Cover	Density
Cirsium arvense	<1	8
Euphorbia esula	1	8
Thesium arvense	t	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Only short Picegla. Missing low layer. Over 1000 lb/ac litter.

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC110** Form Type: Riparian - Lentic GPS: 11 705692 5646258
LSD: Wetland Class:
Observer: CS Plant Community Code:
Date: 2023-08-10 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Typha latifolia	10	Galium boreale	1	Cornus stolonifera	5	Populus balsamifera	10
Bromus inermis	5	Smilacina stellata	1	Symphoricarpos albus	15	Picea glauca	2
Deschampsia cespitosa	1	Symphyotrichum laeve	1	Rosa woodsii	15	Populus tremuloides	7
		Hieracium umbellatum	1	Elaeagnus commutata	2		
		Taraxacum officinale	1	Salix bebbiana	7		

Weeds	% Cover	Density
Cirsium arvense	<1	8
Thesium arvense	<1	6
Euphorbia esula	<1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	3	4	3	4	1	6	3	49%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Sonchus arvensis

Comments: Stormwater pond

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC111** Form Type: Riparian - Lentic GPS: 11 705149 5646194
LSD: Wetland Class:
Observer: CS Plant Community Code:
Date: 2023-08-10 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
	15	Mentha arvensis	5	Cornus stolonifera	2	Populus balsamifera	5
Phalaris arundinacea	15	Epilobium palustre	1	Betula pumila	5	Picea glauca	2
Typha latifolia	20			Salix lucida	7		
Deschampsia cespitosa	2			Salix bebbiana	15		

Weeds	% Cover	Density
Cirsium arvense	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	2	3	4	5	4	15	6	9	86%	Healthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments:

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC112** **Litter (lbs/acre):** **GPS:** 11 704761 5646428

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 10/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	50	Tragopogon dubius	t	Symphoricarpos occidentalis	1		
Poa pratensis	25	Cirsium arvense	3	Elaeagnus commutata	2		
Festuca campestris	5						

Weeds	% Cover	Density
Cirsium arvense	3	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	7	5	1	NA	80%	Healthy

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: . Decreased low layers, Excess litter over 1200 lb/ac.Trailing.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC113** Litter (lbs/acre): GPS: 11 706998 5645667
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Cottonwood
Date: August 17/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	5			Symphoricarpos albus	80	Populus deltoides	5
Poa pratensis	10					Populus balsamifera	10

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
8	18	20	10	1	57%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Dense buckbrush. Missing mid-shrub, low forb. Not seeing much poplar regeneration. Extend to other patches

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC114** **Litter (lbs/acre):** **GPS:** 11 706718 5645665

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 17/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Symphyotrichum laeve	t	Symphoricarpos occidentalis	10		t
Poa pratensis	40	Cirsium arvense	2				
		Thesium arvense	<1				
		Euphorbia esula	<1				

Weeds	% Cover	Density
Cirsium arvense	2	8
Thesium arvense	<1	8
Euphorbia esula	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	10	5	1	NA	56%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Low forbs and grass reduced. Reduced forb diversity. 1500 lb/ac of litter. Trails still vegetated except for the

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC115** Litter (lbs/acre): GPS: 11 706795 5646031
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Cottonwood
Date: August 17/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	60	Lathyrus ochroleucus	3	Symphoricarpos albus	7	Populus deltoides	10
Poa pratensis	15	Smilacina stellata	2			Populus balsamifera	15

Weeds	% Cover	Density
Cirsium arvense	1	8
Thesium arvense	<1	5
Euphorbia esula	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
8	27	14	8	1	58%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Agronomics. Mid shrubs missing. Trailing near river, resistance/compaction. Trailing. Potentially oxeye daisy near

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC116** Litter (lbs/acre): GPS: 11 706487 5645864
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Cottonwood
Date: August 17/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	10	Actaea rubra	2	Rosa acicularis	2	Populus deltoides	10
Poa pratensis	10	Prunus virginiana	15	Prunus virginiana	15	Populus balsamifera	15
		Amelanchier alnifolia	10	Amelanchier alnifolia	10	Populus tremuloides	2
		Taraxacum officinale	1	Symphoricarpos occidentalis	8		

Weeds	% Cover	Density
Cirsium arvense	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
8	27	14	10	1	60%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Still floodplain, but higher forest cover. Looks like there was a fire through some parts at some point. Agronomic

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC117** **Litter (lbs/acre):** **GPS:** 11 706324 5645904
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:** COND_Cottonwood
Date: August 17/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	50	Thalictrum occidentale	1	Symphoricarpos albus	5	Populus balsamifera	10
Poa pratensis	10	Galium boreale	1	Rosa woodsii	1	Populus deltoides	8
		Solidago canadensis	1	Prunus virginiana	2		
				Amelanchier alnifolia	2		
				Ribes spp.	1		

Weeds	% Cover	Density
Euphorbia esula	1	8
Cirsium arvense	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Some hybrid poplars. Flood plain area. Natural shrub and tree cover, agronomic and weedy understory. Low layer

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC118** **Litter (lbs/acre):** **GPS:** 11 706187 5645662

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 17/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	50	Cirsium arvense	2	Elaeagnus commutata	3	Picea glauca	7
Poa pratensis	25	Thesium arvense	<1	Symphoricarpos occidentalis	15	Populus balsamifera	1

Weeds	% Cover	Density
Cirsium arvense	2	10
Thesium arvense	<1	8
Euphorbia esula	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	10	5	1	NA	56%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Planted spruce. Brome/snowberry. Decreased low layer, no or trace native forbs. Over 1200 lb/ac of litter

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC119** Form Type: Riparian - Lentic GPS: 11 705426 5645796
LSD: Wetland Class: Fish Creek
Observer: CS Plant Community Code:
Date: August 17/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	10	Astragalus cicer	2	Salix exigua	80	Populus balsamifera	5
Poa pratensis	3	Artemisia ludoviciana	5	Cornus stolonifera	5	Picea glauca	2
				Symphoricarpos albus	3		
				Elaeagnus commutata	2		

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	<1	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	2	6	4	0	6	6	6	59%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Combines 166 and 170. Cicer milkvetch aggressive. Some beaver activity. Mostly younger veg, dense willow. Mostly man-

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC120** **Litter (lbs/acre):** **GPS:** 11 705327 5645886

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 17/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	60	Tragopogon dubius	t	Elaeagnus commutata	1	Picea glauca	7
Elytrigia repens var. repens	10	Cirsium arvense	3	Prunus virginiana	1	Populus balsamifera	1
Poa pratensis	3	Euphorbia esula	1	Symphoricarpos albus	2		
		Linaria vulgaris	t				

Weeds	% Cover	Density
Cirsium arvense	3	10
Euphorbia esula	1	8
Linaria vulgaris	t	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	3	25	10	5	1	NA	52%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Planted spruce (domestic variety?). Significant weeds and agronomic grasses. No low forbs or grasses. Decresed

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC121** Litter (lbs/acre): GPS: 11 705213 5645836
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Spruce-aspen/Brome
Date: August 17/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	10	Thalictrum occidentale	2	Amelanchier alnifolia	3	Populus tremuloides	35
Poa pratensis	3		1	Symphoricarpos albus	3	Picea glauca	25
		Galium boreale	1				
		Actaea rubra	2				

Weeds	% Cover	Density
Cirsium arvense	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
20	27	14	8	3	72%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: NE slope 5-10%. Brome, not many other disturbance/increaser species. Shrub and low forb layers decreased.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC122** Litter (lbs/acre): GPS: 11 705561 5645973
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPD7
Date: August 17/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	25	Thalictrum occidentale	1	Rosa acicularis	1	Populus balsamifera	35
Poa pratensis	10	Astragalus cicer	1	Prunus virginiana	5	Picea glauca	7
		Galium boreale	1	Amelanchier alnifolia	5		
		Symphyotrichum laeve	1	Symphoricarpos albus	7		
					4		

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
20	27	14	10	1	72%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Agronomic species. Decreased mid shrub and low forb. Some compaction. Main trails used. Cotoneasers.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC123** **Litter (lbs/acre):** **GPS:** 11 707500 5645413

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC3

Date: August 17/2023 **AUM:** 0.8

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Juncus balticus	2	Equisetum arvense	5	Salix bebbiana	15		
Bromus inermis	25	Galium boreale	2				
Poa pratensis	50	Lathyrus ochroleucus	1				
Calamagrostis canadensis	3	Smilacina stellata	1				

Weeds	% Cover	Density
Cirsium arvense	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	7	25	10	5	1	NA	75%	Healthy

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Gronomics. Low ground cover and mid shrubs reduced. 1000 lbs/ac of litter.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC124** Litter (lbs/acre): GPS: 11 708648 5643802
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPD7
Date: August 18/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20	Actaea rubra	1	Amelanchier alnifolia	15	Populus tremuloides	35
Poa pratensis	10	Galium boreale	1	Prunus virginiana	5	Populus balsamifera	5
		Galium trifidum	1	Symphoricarpos albus	5		
		Taraxacum officinale	1				
		Lathyrus ochroleucus	1				

Weeds	% Cover	Density
Euphorbia esula	<1	5
Cirsium arvense	<1	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	20	10	4	76%	Healthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: NE slope 10%. Mid shrubs, low layer reduced.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC125** **Litter (lbs/acre):** **GPS:** 11 708605 5643748

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFB4

Date: August 18/2023 **AUM:** 0.32

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Medicago sativa	t	Symphoricarpos occidentalis	1		
Poa pratensis	40	Artemisia ludoviciana	t				

Weeds	% Cover	Density
Cirsium arvense	0.5	5
Euphorbia esula	t	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	4	NA	66%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Low layer reduced. Excess litter about 1500 lb/ac.

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC126** **Litter (lbs/acre):** **GPS:** 11 708619 5644226
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:** COND_Cottonwood
Date: August 18/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Achillea millefolium	1	Elaeagnus commutata	1	Populus balsamifera	7
Poa pratensis	10	Fragaria virginiana	1	Salix bebbiana	2	Populus deltoides	10
Phalaris arundinacea	2	Galium boreale	1	Cornus stolonifera	1	Populus tremuloides	7
Carex spp.	3	Solidago canadensis	1	Symphoricarpos albus	10		
		Equisetum arvense	2	Rosa acicularis	2		
				Amelanchier alnifolia	8		

Weeds	% Cover	Density
Cirsium arvense	1	8
Thesium arvense	<1	5
Euphorbia esula	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	7	25	10	5	1	NA	75%	Healthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
0, Sonchus arvensis

Comments: Flood plain. Almost riparian. Similar to 544. Wildlife use/browse impacts, dogwood shaved down. Beaver use.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC127** **Litter (lbs/acre):** **GPS:** 11 708693 5644035

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 18/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Tragopogon dubius	<1	Symphoricarpos occidentalis	5	Populus tremuloides	t
Poa pratensis	25	Cirsium arvense	2			Populus balsamifera	t
Festuca hallii	t	Thesium arvense	<1				
		Euphorbia esula	1				

Weeds	% Cover	Density
Cirsium arvense	2	10
Thesium arvense	<1	5
Euphorbia esula	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Artemisia absinthium

Comments: Low forbs reduced, litter 1200 lb/ac.

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC128** Form Type: Riparian - Lentic GPS: 11 708485 5644138
LSD: Wetland Class: Fish Creek
Observer: CS Plant Community Code:
Date: August 18/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Phalaris arundinacea	60	Cirsium arvense	1	Salix lucida	3	Populus balsamifera	2
Poa pratensis	5	Euphorbia esula	1	Salix exigua	2	Populus deltoides	3
Elytrigia repens var. repens	5	Artemisia absinthium	<1				

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	1	8
Artemisia absinthium	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
4	1	1	4	4	2	5	4	0	40%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Sonchus arvensis, Thesium arvense

Comments: Stormwater, naturally low. Seems like drowned trees and bare ground suggesting fluctuations.

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC129** Form Type: Riparian - Lentic GPS: 11 707861 5645003
LSD: Wetland Class: Fish Creek
Observer: CS Plant Community Code:
Date: August 18/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Typha latifolia	15	Melilotus alba	1	Salix lucida	2		
Bromus inermis	10	Melilotus officinalis	1	Symphoricarpos albus	1		
Festuca hallii	3		1				
Poa pratensis	10						
Carex atherodes	1						
Phalaris arundinacea	8						

Weeds	% Cover	Density
Sonchus arvensis	<1	5
Cirsium arvense	1	8
Euphorbia esula	2	11

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
4	1	2	6	6	2	1	6	3	49%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Juncus balticus

Comments: Trails near stormwater ponds. More shrubs/habitat towards river - minimal use here. Trails gravelled.

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site: **FC130** Form Type: Riparian - Lotic GPS: 11 708061 5644883
LSD: Wetland Class: Fish Creek
Observer: CS Plant Community Code:
Date: August 18/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	5	Symphyotrichum falcatum	t	Salix exigua	5	Populus balsamifera	2
Poa pratensis	10	Euthamia graminifolia	1			Populus deltoides	2
Phalaris arundinacea	25	Tragopogon dubius	t				
Calamagrostis canadensis	3	Melilotus officinalis	1				
Typha latifolia	1	Medicago lupulina	2				
		Melilotus alba	1				

Weeds	% Cover	Density
Euphorbia esula	1	8
Linaria vulgaris	1	5
Thesium arvense	1	10

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Standing Dead Woody	Stream Rootmass	Human - Bare Ground	Human - Streambank	Human - Reach	Incisement
4	1	1	4	3	2	2	4	6	3	6

Human Caused Bare Soil (%): 0 **Score:** 60% **Rating:** Healthy with problems
Moss & Lichen Cover (%): 0

Other Species
Trifolium repens, Trifolium pratense, Tanacetum vulgare, Matricaria perforata, Artemisia absinthium, Sonchus arvensis, Clematis tangutica, Cirsium arvense

Comments: Some beavers, dam nearby. 5% standing decadent and dead woody material. Streambank mostly natural. Lots of

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC131** **Litter (lbs/acre):** **GPS:** 11 707715 5644544

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** COND_Saskatoon-Snowberry/Kentucky Bluegrass

Date: August 18/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	50	Galium boreale	2	Potentilla fruticosa	3	Populus tremuloides	1
Bromus inermis	10	Lithospermum ruderale	2	Amelanchier alnifolia	15		
Festuca hallii	<1	Gaillardia aristata	<1	Symphoricarpos occidentalis	10		
		Achillea millefolium	1	Rosa acicularis	2		

Weeds	% Cover	Density
Cirsium arvense	<1	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	7	25	10	5	4	NA	78%	Healthy

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: East slope about 15%. Poa is main community issue. Litter choked out low layer. 1200-1500 lb/ac.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC132** Litter (lbs/acre): GPS: 11 707401 5645034
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPD3
Date: August 18/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Thalictrum occidentale	1			Populus tremuloides	25
Poa pratensis	20	Galium boreale	1				

Weeds	% Cover	Density
Cirsium arvense	<1	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	18	20	10	6	69%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Agronomics, lacking diversity. Low layer and shrub layer missing.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC133** Litter (lbs/acre): GPS: 11 708104 5644223
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_FPD4
Date: August 18/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	50	Smilacina stellata	1	Amelanchier alnifolia	15	Populus tremuloides	20
Poa pratensis	15	Taraxacum officinale	1			Populus balsamifera	5
		Actaea rubra	1				

Weeds	% Cover	Density

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	18	20	10	4	67%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: 5-10% slope. Lacking diversity. Wildlife use, shrub layer and low layer decreased. Wildlife trails vegetated.

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC134** **Litter (lbs/acre):** **GPS:** 11 707911 5644769
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:** FFC5
Date: August 18/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Tragopogon dubius	1	Symphoricarpos albus	2	Populus tremuloides	1
Poa pratensis	35	Cirsium arvense	4				
		Euphorbia esula	<1				

Weeds	% Cover	Density
Cirsium arvense	4	10
Euphorbia esula	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	7	5	1	NA	53%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Population of Seniere near trails. Lots of Canada thistle, Poa. Decreased low forbs and grasses. Lacking forb

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC135** **Litter (lbs/acre):** **GPS:** 11 708311 5644279
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:** COND_Cottonwood
Date: August 18/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Smilacina stellata	1	Salix exigua	5	Populus deltoides	7
Poa pratensis	20	Solidago canadensis	1	Salix bebbiana	5	Populus balsamifera	8
				Symphoricarpos albus	10	Picea glauca	t
				Rosa acicularis	2		
				Elaeagnus commutata	3		
				Amelanchier alnifolia	3		

Weeds	% Cover	Density
Cirsium arvense	<1	5
Euphorbia esula	<1	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	7	25	7	5	2	NA	73%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Shrubby floodplain. Bromine and Poa, but native trees and shrubs. Decreased low cover, mid shrubs present but

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC136** **Litter (lbs/acre):** **GPS:** 11 710190 5642515

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 31/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	25	Solidago canadensis	1	Symphoricarpos albus	50	Populus tremuloides	2
Poa pratensis	15			Salix bebbiana	1	Populus balsamifera	6
Elytrigia repens var. repens	1			Salix lucida	1		

Weeds	% Cover	Density
Cirsium arvense	1	8
Thesium arvense	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Low native forbs. Excess litter, less in dense snowberry.

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC137** **Litter (lbs/acre):** **GPS:** 11 709555 5642980
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:**
Date: August 31/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Agropyron smithii	7	Glycyrrhiza lepidota	1	Symphoricarpos albus	5	Populus tremuloides	1
Calamovilfa longifolia	15	Artemisia frigida	1	Potentilla fruticosa	5		
Bromus inermis	7	Artemisia ludoviciana	1	Rosa acicularis	2		
Poa pratensis	7	Helianthus nuttallii	2	Amelanchier alnifolia	5		
		Symphyotrichum falcatum	1	Prunus virginiana	3		
		Tragopogon dubius	1				

Weeds	% Cover	Density
Cirsium arvense	2	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	10	25	10	5	1	NA	78%	Healthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Linum usitatissimum

Comments: East facing slope 20%. Poplar bluffs. Poputre dominant, also Elaecom and Amelaln. Native shrub and forb

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC138** Litter (lbs/acre): GPS: 11 709989 5642646
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Cottonwood
Date: August 31/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Solidago canadensis	1	Symphoricarpos albus	5	Populus balsamifera	15
Poa pratensis	20			Amelanchier alnifolia	5	Populus deltoides	10
				Prunus virginiana	2		
				Cornus stolonifera	1		
				Rosa woodsii	1		

Weeds	% Cover	Density
Euphorbia esula	6	10
Thesium arvense	1	8
Cirsium arvense	1	10

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
10	27	20	10	1	68%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Flood plain/edge of riparian. Lots of cicer along the edge of the trail. Lots of weeds, agronomic grasses, native

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC139** Litter (lbs/acre): GPS: 11 709680 5643623
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Cottonwood
Date: August 31/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	5	Galium boreale	1	Symphoricarpos albus	60	Populus balsamifera	7
Poa pratensis	20	Solidago canadensis	1	Alnus incana	2	Populus deltoides	10
		Smilacina stellata	t			Picea glauca	t

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	20	10	1	73%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Heracleum lanatum

Comments: Decile 0.2 is borderline riparian. Some dead and decadent, poor regeneration. Some sapplings are fenced off.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC140** **Litter (lbs/acre):** **GPS:** 11 709500 5643366

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 31/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	60	Tragopogon dubius	t				
Poa pratensis	15	Cirsium arvense	3				
Festuca hallii	t	Linaria vulgaris	t				
		Sonchus arvensis	t				

Weeds	% Cover	Density
Cirsium arvense	3	10
Linaria vulgaris	t	4
Sonchus arvensis	t	4

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	10	5	1	NA	56%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Modified, not managed as pasture. Low layer and forbs are missing. Over 1500 lb/ac. Needs grazing/mowing.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC141** **Litter (lbs/acre):** **GPS:** 11 709616 5643553

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 31/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	35			Symphoricarpos albus	30	Populus balsamifera	1
Poa pratensis	25			Rosa acicularis	t	Populus tremuloides	1

Weeds	% Cover	Density

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	3	25	10	5	1	NA	59%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: No native forbs, low layer replaced by litter. Excess litterm over 1200 lb/ac. Trails paved.

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC142** Form Type: Riparian - Lentic GPS: 11 709664 5643475
LSD: Wetland Class: Fish Creek
Observer: CS Plant Community Code:
Date: August 31/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Carex atherodes	15	Solidago canadensis	1	Symphoricarpos occidentalis	3	Populus balsamifera	1
Phalaris arundinacea	10	Trifolium repens	1			Populus deltoides	1
Typha latifolia	8	Equisetum arvense	2			Picea glauca	1
Poa pratensis	3	Achillea millefolium	1			Salix bebbiana	1
Bromus inermis	3	Hippuris vulgaris	1			Alnus spp.	1
Calamagrostis canadensis	3	Galium boreale	1				

Weeds	% Cover	Density
Cirsium arvense	1	8
Tanacetum vulgare	t	4

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	2	4	4	4	10	6	9	73%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Phleum pratense, Elytrigia repens var. repens, Taraxacum officinale

Comments: Small patch of pearly everlasting besite assessment point. Trail pavede. Looks like bery little water level fluctuation, may

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC143** Form Type: Riparian - Lentic GPS: 11 709751 5642335
LSD: Wetland Class: Fish Creek
Observer: CS Plant Community Code:
Date: August 31/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	15	Vicia cracca	3	Salix exigua	2	Picea glauca	t
Poa pratensis	15	Melilotus officinalis	1				
Typha latifolia	20	Melilotus alba	1				
Phalaris arundinacea	2	Trifolium repens	1				
Carex atherodes	2						

Weeds	% Cover	Density
Cirsium arvense	3	10
Euphorbia esula	5	10
Artemisia absinthium	1	10

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	1	6	5	0	5	6	6	57%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Sonchus arvensis, Arctium minus, Linaria vulgaris

Comments: Stormwater. Willows all small. Should be more woody cover.

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC144** Form Type: Riparian - Lentic GPS: 11 709992 5642695
LSD: Wetland Class: Fish Creek
Observer: CS Plant Community Code:
Date: August 31/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	10	Smilacina stellata	1	Symphoricarpos albus	20	Populus deltoides	5
Typha latifolia	6	Cirsium arvense	2		1		
Poa pratensis	7	Euphorbia esula	2				
Carex atherodes	2						
	3						
Juncus balticus	1						

Weeds	% Cover	Density
Cirsium arvense	2	1-
Sonchus arvensis	1	6
Euphorbia esula	2	10

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	2	4	6	8	8	9	0	70%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Popudel all mature. Might be man-made.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC145** **Litter (lbs/acre):** **GPS:** 11 710181 5642963

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 31/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20	Cirsium arvense	1	Symphoricarpos occidentalis	35	Populus balsamifera	1
Poa pratensis	30	Thesium arvense	<1			Populus tremuloides	2
						Populus deltoides	1

Weeds	% Cover	Density
Cirsium arvense	1	10
Thesium arvense	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Decreased low forbs. Excess litter, 1500 lb/ac.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC146** **Litter (lbs/acre):** **GPS:** 11 709907 5643195

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: August 31/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	35			Symphoricarpos occidentalis	45		
Bromus inermis	10						

Weeds	% Cover	Density
Euphorbia esula	<1	8
Cirsium arvense	1	10

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Low level and forbs decreased. Excess litter, 1500 lb/ac.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC147** **Litter (lbs/acre):** **GPS:** 11 289296 5644213

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** COND_Saskatoon-Snowberry/Kentucky bluegrass

Date: September 6/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20	Symphyotrichum laeve	2	Potentilla fruticosa	5	Populus tremuloides	t
Poa pratensis	15	Vicia cracca	2	Symphoricarpos occidentalis	25		
		Cirsium arvense	1	Rosa spp.	3		
				Elaeagnus commutata	5		
				Amelanchier alnifolia	15		
				Prunus virginiana	5		

Weeds	% Cover	Density
Cirsium arvense	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	10	25	10	5	1	NA	78%	Healthy

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Native shrubs, agronomic grasses. 1200 lb/ac of litter.

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC148** **Litter (lbs/acre):** **GPS:** 11 710604 5644192
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:** COND_Shrubby cinquefoil-Snowberry/Brome
Date: September 6/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	5	Medicago lupulina	1	Potentilla fruticosa	2	Salix exigua	1
Poa pratensis	25	Medicago sativa	1		1	Elaeagnus commutata	1
Poa compressa	5	Vicia cracca	1	Symphoricarpos albus	2	Arctostaphylos uva-ursi	1
	1	Achillea millefolium	1	Rosa woodsii	1	Populus balsamifera	1
		Taraxacum officinale	1				

Weeds	% Cover	Density
Tanacetum vulgare	5	10
Euphorbia esula	2	8
Artemisia absinthium	<1	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	10	13	7	3	1	NA	42%	Unhealthy

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Border riparian. Introduced species, structural diversity okay, sandy limey reference, 600 lb/ac of litter. River

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC149** **Litter (lbs/acre):** **GPS:** 11 710216 5644529
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:** COND_FPB4
Date: September 6/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	15		Salix		Picegla		
Poa pratensis	10				Poputre		
Festuca campestris	3						
Elytrigia repens var. repens	2						

Weeds	% Cover	Density
Euphorbia esula	3	8
Cirsium arvense	3	8
Sonchus arvensis	<1	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	10	5	1	NA	56%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Artemisia absinthium

Comments: Trees are all still short. Grassland with sapplings planted. Memorial forest. Banks look constructed. Weedy. Low

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC150** **Litter (lbs/acre):** **GPS:** 11 709668 5644075

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** COND_Saskatoon/Prairie Muhly

Date: September 6/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Muhlenbergia cuspidata	10	Symphyotrichum ericoides	1	Amelanchier alnifolia	40		
Calamovilfa longifolia	7	Thermopsis rhombifolia	1	Elaeagnus commutata	2		
Bromus inermis	10	Galium boreale	1	Potentilla fruticosa	2		
		Apocynum androsaemifolium	2				

Weeds	% Cover	Density
Cirsium arvense	<1	8
Euphorbia esula	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	10	25	10	5	3	NA	80%	Healthy

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Thin breaks. Bare soil close to 10%, as expected. On bottom edge of polygon near parking lot. Slope OK.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC151** **Litter (lbs/acre):** **GPS:** 11 289335 5641542

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** COND_Saskatoon/Muhly

Date: September 6/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Muhlenbergia cuspidata	20	Comandra umbellata	1	Symphoricarpos occidentalis	3		
Agropyron smithii	5	Thermopsis rhombifolia	1	Elaeagnus commutata	2		
Calamovilfa longifolia	4	Galium boreale	1	Potentilla fruticosa	3		
Elymus lanceolatus	3	Artemisia frigida	1	Amelanchier alnifolia	10		
				Prunus virginiana	3		

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	1	8
Sonchus arvensis	<1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	10	25	7	5	1	NA	75%	Healthy

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Thin break. Steep slopes facing river. Upper slope. Some natural erosion and bare soil also trails with soil

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC152** **Litter (lbs/acre):** **GPS:** 11 289058 5641723
LSD: **Form Type:** Grassland
Observer: CS **Plant Community Code:** FFB4
Date: September 6/2023 **AUM:** 0.32

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Elytrigia repens var. repens	5		t	Symphoricarpos occidentalis	2		
Bromus inermis	15	Descurainia sophia	t				
Poa pratensis	10	Artemisia absinthium	1				
Festuca hallii	4	Euphorbia esula	2				
Agropyron cristatum	50	Tanacetum vulgare	2				

Weeds	% Cover	Density
Artemisia absinthium	1	8
Euphorbia esula	2	8
Tanacetum vulgare	2	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Cirsium arvense, Linaria vulgaris, Sonchus arvensis

Comments: Decreased forbs. 1200 lb/ac of litter.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC153** Litter (lbs/acre): GPS: 11 710005 5643680
LSD: Form Type: Forest
Observer: CS September Plant Community Code: COND_Cottonwood
Date: 6/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	25	Solidago canadensis	1	Shepherdia canadensis	2	Populus balsamifera	5
Poa pratensis	40	Thermopsis rhombifolia	1	Elaeagnus commutata	7	Populus deltoides	10
		Symphyotrichum laeve	1	Amelanchier alnifolia	1	Picea glauca	t
		Smilacina stellata	1	Symphoricarpos albus	1	Salix exigua	t
		Vicia cracca	1	Rosa acicularis	2		
				Cornus stolonifera	2		

Weeds	% Cover	Density
Cirsium arvense	0.5	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
20	27	5	8	0	60%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Euphorbia esula

Comments: Native forbs/shrubs/trees. Agronomic grasses. Willow, dogwood, saskatoon heavily browsed. Some beaver. Some

Project: **Friends of Fish Creek**

Property: **Fish Creek** Estimated Production (lbs/acre):

Site **FC154** Litter (lbs/acre): GPS: 11 710538 5644294

LSD: Form Type: Forest

Observer: CS September Plant Community Code: COND_Cottonwood

Date: 6/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Smilacina stellata	3	Cornus stolonifera	t	Populus deltoides	10
Poa pratensis	15	Symphyotrichum laeve	1	Symphoricarpos albus	5	Populus balsamifera	5
		Solidago canadensis	1	Amelanchier alnifolia	1	Picea glauca	t
		Cirsium arvense	1	Salix bebbiana	2		
		Euphorbia esula	3	Elaeagnus commutata	1		
		Tanacetum vulgare	t	Alnus incana	1		

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	3	8
Tanacetum vulgare	t	5

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	14	10	1	67%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments:

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC155** **Litter (lbs/acre):** **GPS:** 11 709532 5643896

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFB4

Date: September 6/2023 **AUM:** 0.32

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	25	Tragopogon dubius	t	Symphoricarpos occidentalis	1	Populus balsamifera	t
Poa pratensis	10						t
Festuca campestris	5						
Festuca idahoensis	3						

Weeds	% Cover	Density
Linaria vulgaris	1	10
Cirsium arvense	1	8
Euphorbia esula	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	10	25	10	5	1	NA	66%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Grazed area, medium use. Some plots, didn't assess plots. Grazing has created variation in structure. Still 800-900

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC156** **Litter (lbs/acre):** **GPS:** 11 709912 5643791

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: September 6/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	25	Cirsium arvense	1	Symphoricarpos occidentalis	10		
Poa pratensis	15	Euphorbia esula	2	Rosa woodsii	1		

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	2	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Low levels decreased. 1500 lb/ac or more.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC157** **Litter (lbs/acre):** **GPS:** 11 710168 5643384

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: September 6/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	15			Symphoricarpos occidentalis	35		
Poa pratensis	45			Rosa acicularis	t		

Weeds	% Cover	Density
Euphorbia esula	4	13
Cirsium arvense	1	8
Thesium arvense	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	10	5	1	NA	56%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Linaria vulgaris, Sonchus arvensis, Tanacetum vulgare, Artemisia absinthium

Comments: Weedy species. Low level decreaesd. No native forbs. Excess litter over 1500 lb/ac, sometimes less in dense

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC158** **Litter (lbs/acre):** **GPS:** 11 710498 5643135

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: September 6/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	25	Melilotus officinalis	1	Symphoricarpos occidentalis	30	Populus balsamifera	2
Poa pratensis	40	Melilotus alba	1	Potentilla fruticosa	1		
	1			Juniperus communis	t		
Festuca campestris	t						

Weeds	% Cover	Density
Tanacetum vulgare	1	8
Cirsium arvense	1	8
Thesium arvense	2	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	10	25	10	5	1	NA	59%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Artemisia absinthium

Comments: Weedy agronomics. Field thesium in low, there is some visible structure. Possible grazing or disturbance.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC159** Litter (lbs/acre): GPS: 11 710112 5643050
LSD: Form Type: Forest
Observer: CS September Plant Community Code: COND_Cottonwood
Date: 6/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	35	Galium boreale	3	Symphoricarpos albus	10	Populus balsamifera	5
Poa pratensis	15	Cirsium arvense	5	Prunus virginiana	t	Populus deltoides	2

Weeds	% Cover	Density
Cirsium arvense	5	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
8	18	14	10	1	51%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Burnt. Agronomics and thistles. Shrubs decreased by fire. Fire decreased LFH, still good ground cover. Lots of

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC160** Litter (lbs/acre): GPS: 11 7010147 5643040
LSD: Form Type: Forest
Observer: CS September
Date: 6/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	10	Galium boreale	2	Symphoricarpos albus	40	Populus balsamifera	10
Poa pratensis	25	Smilacina stellata	2	Rosa acicularis	1	Populus deltoides	5
		Vicia cracca	1				
		Cirsium arvense	2				
		Euphorbia esula	1				

Weeds	% Cover	Density
Cirsium arvense	2	8
Euphorbia esula	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	20	10	1	73%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Unburnt. Agronomics and weeds. Mid shrubs decreased.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC161** **Litter (lbs/acre):** **GPS:** 11 709420 5643906

LSD: **Form Type:** Grassland

Observer: CS **Plant Community Code:** FFC5

Date: September 6/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Descurainia sophia	1	Symphoricarpos occidentalis	10	Populus tremuloides	t
Poa pratensis	15	Urtica dioica	t				
Elytrigia repens var. repens	10	Tragopogon dubius	t				
		Cirsium arvense	1				

Weeds	% Cover	Density
Cirsium arvense	1	8
Hyoscyamus niger	t	4

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Low level decreased. Excess litter, 1500 lb/ac.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC162** Litter (lbs/acre): GPS: 11 710371 5643277
LSD: Form Type: Forest
Observer: CS Plant Community Code: COND_Cottonwood
September
Date: 6/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	5	Vicia cracca	2	Elaeagnus commutata	15	Populus deltoides	5
Phalaris arundinacea	2			Amelanchier alnifolia	3	Populus balsamifera	15
Poa pratensis	10			Symphoricarpos albus	15		
				Rosa acicularis	2		
					1		

Weeds	% Cover	Density
Tanacetum vulgare	2	8
Euphorbia esula	1	8
Cirsium arvense	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
10	27	14	10	1	62%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species
Sonchus arvensis, Artemisia absinthium

Comments: Gravel/stones. Riparian edge. Weedy understory. Mid/palatable shrubs and saplings. Trailing. Bare areas, mostly

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC163** Litter (lbs/acre): GPS: 11 710048 5643393
LSD: Form Type: Forest
Observer: CS September Plant Community Code: COND_Cottonwood
Date: 6/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20	Vicia cracca	2	Symphoricarpos albus	15	Populus deltoides	12
Poa pratensis	10	Taraxacum officinale	1	Rosa woodsii	2	Populus balsamifera	7
				Shepherdia canadensis	1		
				Amelanchier alnifolia	2		

Weeds	% Cover	Density
Cirsium arvense	0.5	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	27	14	10	3	69%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Riparian edge. Introduced grasses and forbs. Native shrubs and trees. Mid shrubs and saplings decreased. Trailing

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site: **FC164** Form Type: Riparian - Lotic GPS: 11 710531 5643204
LSD: Wetland Class: Fish Creek
Observer: CS Plant Community Code:
Date: September 6/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Phalaris arundinacea	2	Taraxacum officinale	2	Salix bebbiana	2	Populus balsamifera	10
Poa pratensis	2	Medicago lupulina	1				
Bromus inermis	2	Tragopogon dubius	1				
Juncus balticus	2	Melilotus alba	2				
		Melilotus officinalis	3				
		Vicia cracca	2				

Weeds	% Cover	Density
Artemisia absinthium	2	8
Thesium arvense	<1	8
Euphorbia esula	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Standing Dead Woody	Stream Rootmass	Human - Bare Ground	Human - Streambank	Human - Reach	Incisement
2	1	1	6	3	3	4	6	4	2	6

Human Caused Bare Soil (%): 0 **Score:** 63% **Rating:** Healthy with problems
Moss & Lichen Cover (%): 0

Other Species
Lactuca serriola, Sonchus arvensis, Tanacetum vulgare

Comments: Stony/gravel. Mainly weedy/introduced species. Lots of preferred tree and shrub near river, this zone likely

Tannas Conservation Services Ltd

Project:	**Friends of Fish Creek**	Estimated Production (lbs/acre):		
Property:		Litter (lbs/acre):		
Site	**FC165**	Form Type:	Riparian - Lentic	GPS: 11 289221 5641689
LSD:		Wetland Class:	Fish Creek	
Observer:	CS	Plant Community Code:		
Date:	September 6/2023	AUM:	N/A	

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Phalaris arundinacea	10	Melilotus officinalis	2	Symphoricarpos occidentalis	5		
Poa pratensis	5				2		
Bromus inermis	5			Elaeagnus commutata	3		
Festuca hallii	3						

Weeds	% Cover	Density
Cirsium arvense	8	1
Euphorbia esula	8	2
Tanacetum vulgare	8	1

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
4	1	1	6	3	2	5	4	3	46%	Unhealthy

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Trails, lots of use. Mainly young trees and forbs. Beaver use. Exotics. Stormwater pond. Human caused bare ground at

Tannas Conservation Services Ltd

Project:	**Friends of Fish Creek**	Estimated Production (lbs/acre):		
Property:		Litter (lbs/acre):		
Site	**FC166**	Form Type:	Riparian - Lentic	GPS: 11 710688 5644444
LSD:		Wetland Class:	Fish Creek	
Observer:	CS	Plant Community Code:		
	September			
Date:	6/2023	AUM:	N/A	

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20					Picea glauca	2
Poa pratensis	10						
Phalaris arundinacea	5						
Typha latifolia	15						

Weeds	% Cover	Density

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	2	4	0	2	10	6	9	70%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Poa present. Some planted trees. May be manmade. No evidence of flooding or receding.

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site: **FC167** Form Type: Riparian - Lotic GPS: 11 710723 5641818
LSD: Wetland Class: Fish Creek
Observer: CS Plant Community Code:
Date: September 6/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20			Symphoricarpos occidentalis	25	Populus balsamifera	3
Poa pratensis	10			Elaeagnus commutata	2	Populus deltoides	3
Phalaris arundinacea	10			Amelanchier alnifolia	5		
				Ribes spp.	1		
				Prunus virginiana	20		

Weeds	% Cover	Density
Euphorbia esula	1	8
Tanacetum vulgare	1	8
Cirsium arvense	1	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Standing Dead Woody	Stream Rootmass	Human - Bare Ground	Human - Streambank	Human - Reach	Incisement
6	1	0	4	3	3	6	6	4	2	6

Human Caused Bare Soil (%): 0 **Score:** 68% **Rating:** Healthy with problems
Moss & Lichen Cover (%): 0

Other Species
Artemisia absinthium, Carduus nutans

Comments: Shrubs and trees protecting banks. Bridge/reinforcement on banks. Trails.

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC168** Litter (lbs/acre): GPS: 11 710144 5644680
LSD: Form Type: Forest
Observer: KJ Plant Community Code:
Date: August 31/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	1	Taraxacum officinale	2	Ribes oxyacanthoides	1	Populus tremuloides	10
Poa pratensis	1	Sonchus arvensis	5			Picea glauca	7
		Cirsium arvense	1			Populus balsamifera	4
		Melilotus officinalis	1				

Weeds	% Cover	Density
Sonchus arvensis	5	3
Cirsium arvense	2	2
Euphorbia esula	2	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
25	0	20	10	4	59%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Trees planted, fairly fresh. Virtually no shrub, forb, or grass layer. Just mulch, leaves, no LFH. 429, 431, 420, 421,

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC169** **Litter (lbs/acre):** **GPS:** 12 210634 5644649

LSD: **Form Type:** Grassland

Observer: KJ **Plant Community Code:**

Date: August 31/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Cirsium arvense	25				
Poa pratensis	40	Euphorbia esula	15				
	3						

Weeds	% Cover	Density
Cirsium arvense	10	11
Euphorbia esula	5	9

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	10	5	0	NA	55%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Almost all agronomics and weeds. Forbs apart from weeds not present. 1200 lb/ac of litter. Polygons 427, 286,

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC170** **Litter (lbs/acre):** **GPS:** 12 289141 5644636

LSD: **Form Type:** Grassland

Observer: KJ **Plant Community Code:**

Date: August 31/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Vicia americana	3	Symphoricarpos occidentalis	3	Populus balsamifera	1
Poa pratensis	40						
	5						
Festuca hallii	7						

Weeds	% Cover	Density
Euphorbia esula	10	9
Cirsium arvense	7	9
Tanacetum vulgare	2	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	0	NA	62%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Some patches of fescue. Almost all agronomics and weeds. Forbs apart from weeds not present. 1200 lb/ac of

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC171** **Litter (lbs/acre):** **GPS:** 12 289691 5645317
LSD: **Form Type:** Grassland
Observer: KJ **Plant Community Code:**
Date: August 31/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Solidago canadensis	1	Symphoricarpos occidentalis	1	Populus balsamifera	2
	5	Vicia americana	1	Elaeagnus commutata	1		
	1						
Poa pratensis	20						

Weeds	% Cover	Density
Cirsium arvense	7	8
Euphorbia esula	3	7
Tanacetum vulgare	1	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
8	7	25	10	5	1	NA	56%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Lots of weeds. Forbs apart from weeds reduced. 1400 lb/ac of litter. Polygons 285, 287.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC172** **Litter (lbs/acre):** **GPS:** 12 289794 5645432

LSD: **Form Type:** Grassland

Observer: KJ **Plant Community Code:**

Date: August 31/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Vicia americana	3	Symphoricarpos occidentalis	10	Populus balsamifera	2
Phalaris arundinacea	15	Anemone canadensis	2	Cornus stolonifera	1		
Poa pratensis	20	Solidago canadensis	2				
	3						

Weeds	% Cover	Density
Cirsium arvense	2	4
Euphorbia esula	2	5
Tanacetum vulgare	5	9

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	10	25	10	5	1	NA	66%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Significant weeds, agronomics. 1400 lb/ac of litter. Some erosion against streambank. Trailing. Polygon 303.

Project: **Friends of Fish Creek**

Property: **Fish Creek** Estimated Production (lbs/acre):

Site **FC173** Litter (lbs/acre): GPS: 12 289695 5645018

LSD: Form Type: Forest

Observer: KJ Plant Community Code:

Date: August 31/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20	Vicia americana	2	Symphoricarpos occidentalis	3	Populus balsamifera	20
Poa pratensis	25	Trifolium hybridum	3	Cornus stolonifera	1	Picea glauca	2
Phalaris arundinacea	10			Salix bebbiana	2	Populus tremuloides	3
	4						

Weeds	% Cover	Density
Tanacetum vulgare	5	9
Euphorbia esula	1	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
10	18	8	6	1	43%	Unhealthy

Human Caused Bare Soil (%): 15 15

Moss & Lichen Cover (%): 0

Other Species

Comments: Tanavul dominates in areas. Shrub layer missing. 40% difference in LFH between use and non-use areas. Rocky

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC174** **Litter (lbs/acre):** **GPS:** 11 707170 5645834

LSD: **Form Type:** Grassland

Observer: KJ **Plant Community Code:** FFC5

Date: August 18/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Vicia americana	<1	Symphoricarpos occidentalis	15	Populus balsamifera	1
Poa pratensis	20	Symphyotrichum laeve	<1	Rosa woodsii	1		
	1	Taraxacum officinale	<1				
Phalaris arundinacea	1						

Weeds	% Cover	Density
Cirsium arvense	3	9
Euphorbia esula	<1	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Near stream. Beaver dams have created small pond, relatively isolated from trails. Agronomics dominate. Forbs

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC175** **Litter (lbs/acre):** **GPS:** 11 707810 5645486

LSD: **Form Type:** Grassland

Observer: KJ **Plant Community Code:** FFC5

Date: August 18/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	10	Equisetum laevigatum	3	Symphoricarpos occidentalis	25		
Poa pratensis	15	Symphyotrichum laeve	1	Rosa acicularis	1		
Festuca campestris	1	Cirsium arvense	4	Elaeagnus commutata	2		
Stipa viridula	1	Cirsium arvense	4	Prunus virginiana	1		
		Thesium arvense	10				

Weeds	% Cover	Density
Cirsium arvense	4	8
Thesium arvense	10	9

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	NA	7	5	1	NA	35%	Unhealthy

Human Caused Bare Soil (%): 25 25

Moss & Lichen Cover (%): 0

Other Species

Comments: Riparian streambed through middle. Festhal/Stipvir only on edges. Agronomic and weed invasion. Forbs reduced.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC176** **Litter (lbs/acre):** **GPS:** 11 708215 5645051

LSD: **Form Type:** Grassland

Observer: KJ **Plant Community Code:** FFC5

Date: August 18/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Thermopsis rhombifolia	5	Symphoricarpos occidentalis	15		
Poa pratensis	20	Comandra umbellata	1	Rosa acicularis	1		
		Symphyotrichum laeve	1	Elaeagnus commutata	5		
		Symphyotrichum ericoides	1	Potentilla fruticosa	1		

Weeds	% Cover	Density
Cirsium arvense	1	2
Euphorbia esula	3	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Near river beaverdam. Agronomic invasion, weeds. Forbs reduced. 900 lb/ac of patchy litter. Polygons 686, 668,

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC177** Litter (lbs/acre): GPS: 11 707633 5645850
LSD: Form Type: Forest
Observer: KJ Plant Community Code: COND_Pb-Bebb's Willow/Awnless Brome-Kentucky Bluegrass
Date: August 18/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Agrostis stolonifera	4	Equisetum pratense	5	Rosa acicularis	2	Populus balsamifera	15
Bromus inermis	15	Smilacina stellata	1	Elaeagnus commutata	1	Salix bebbiana	10
Calamagrostis canadensis	5	Vicia americana	1	Symphoricarpos occidentalis	3	Picea glauca	7
Poa pratensis	10	Solidago canadensis	1	Cornus stolonifera	4	Populus tremuloides	2

Weeds	% Cover	Density
Cirsium arvense	3	7
Sonchus arvensis	1	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
15	18	14	10	2	59%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Small trail through forest area. Agronomics, snowberry, cirsarv. Forb layer reduced, heavy use of Cornsto. 20%

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC178** Form Type: Riparian - Lentic GPS: 11 707245 5645945
LSD: Wetland Class: Fish Creek
Observer: KJ Plant Community Code:
Date: August 18/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Phalaris arundinacea	20	Glycyrrhiza lepidota	3	Salix exigua	5	Populus balsamifera	1
Carex utriculata	60			Symphoricarpos occidentalis	2		
Poa palustris	5						
Scirpus microcarpus	3						

Weeds	% Cover	Density
Cirsium arvense	<1	2
Euphorbia esula	<1	2
Sonchus arvensis	<1	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	4	3	6	6	4	15	6	0	79%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Similar in 632, 634, 750, 199. Typhlat present in areas. Next to stagnant water and stream. Many dead Popubal in forest.

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC179** **Litter (lbs/acre):** **GPS:** 11 707243 5646095
LSD: **Form Type:** Grassland
Observer: KJ **Plant Community Code:** COND_Snowberry/Sandgrass-Awnless Brome-Plains muhly
Date: August 17/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	5	Artemisia ludoviciana	2	Symphoricarpos occidentalis	5		
Calamovilfa longifolia	7	Glycyrrhiza lepidota	3	Elaeagnus commutata	3		
Stipa viridula	4	Apocynum androsaemifolium	4	Rosa woodsii	1		
Muhlenbergia cuspidata	5	Thermopsis rhombifolia	2	Amelanchier alnifolia	2		

Weeds	% Cover	Density
Cirsium arvense	<1	2
Euphorbia esula	<1	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	10	NA	3	3	6	NA	49%	Unhealthy

Human Caused Bare Soil (%): 10 10
Moss & Lichen Cover (%): 0

Other Species

Comments: Upslope from stagnant water, downslope from highway. Limited inbaders, agronomics. High forb diversity. <50

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC180** Litter (lbs/acre): GPS: 11 706380 5646050
LSD: Form Type: Forest
Observer: KJ Plant Community Code: COND_FPB5
Date: August 17/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	20	Galium boreale	1	Symphoricarpos occidentalis	7	Populus balsamifera	30
Poa pratensis	25	Lathyrus ochroleucus	1	Amelanchier alnifolia	5		
	1	Smilacina stellata	1	Rosa woodsii	3		
		Thermopsis rhombifolia	1	Prunus virginiana	3		
				Elaeagnus commutata	1		

Weeds	% Cover	Density
Cirsium arvense	<1	2
Euphorbia esula	<1	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
10	18	8	8	6	50%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Trail, several campsites throughout. Elaecom in patches.

Project: **Friends of Fish Creek**
Property: **Fish Creek** **Estimated Production (lbs/acre):**
Site **FC181** **Litter (lbs/acre):** **GPS:** 11 706440 5646075
LSD: **Form Type:** Grassland
Observer: KJ **Plant Community Code:** FFC5
Date: August 17/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa pratensis	30	Galium boreale	1	Amelanchier alnifolia	10		
Bromus inermis	7	Apocynum androsaemifolium	30	Potentilla fruticosa	1		
Stipa viridula	4	Comandra umbellata	2	Rosa woodsii	3		
Calamovilfa longifolia	2	Thermopsis rhombifolia	1	Elaeagnus commutata	2		

Weeds	% Cover	Density
Cirsium arvense	<1	2
Euphorbia esula	<1	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
27	10	NA	7	3	6	NA	53%	Healthy with problems

Human Caused Bare Soil (%): 15 15
Moss & Lichen Cover (%): 0

Other Species

Comments: Fescue-stipa grassland near road. Upslope from popubal forest, downslope from brome grassland. Muhlcus

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site: **FC182** Form Type: Riparian - Lotic GPS: 11 705759 5646016
LSD: Wetland Class: Fish Creek
Observer: KJ Plant Community Code:
Date: August 17/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Festuca rubra	10	Taraxacum officinale	2	Salix exigua	2	Populus balsamifera	2
Phalaris arundinacea	15	Sonchus arvensis	1				
Bromus inermis	5	Plantago major	1				
Hordeum jubatum	2	Trifolium repens	1				
Thinopyrum intermedium	1						
Poa pratensis	5						

Weeds	% Cover	Density
Sonchus arvensis	3	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Standing Dead Woody	Stream Rootmass	Human - Bare Ground	Human - Streambank	Human - Reach	Incisement
4	1	2	4	5	3	2	2	0	0	9

Human Caused Bare Soil (%): 0 **Score:** 53% **Rating:** Unhealthy
Moss & Lichen Cover (%): 0

Other Species

Comments: 10% bare soil. Light use of preferred trees and shrubs. Very little dead wood, lots of rocks and agronomics

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC183** Litter (lbs/acre): GPS: 11 705775 5646125
LSD: Form Type: Forest
Observer: KJ Plant Community Code: FPD5
Date: August 17/2023 AUM: 0.35

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	25	Aralia nudicaulis	1	Symphoricarpos occidentalis	15	Populus balsamifera	20
Poa pratensis	15	Smilacina stellata	1	Prunus virginiana	4	Betula occidentalis	2
	2	Euphorbia esula	4	Cornus stolonifera	3	Picea glauca	1
Festuca rubra	1	Cirsium arvense	2	Amelanchier alnifolia	1		

Weeds	% Cover	Density
Euphorbia esula	4	9
Cirsium arvense	2	8
Sonchus arvensis	1	2

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
10	27	14	4	1	56%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Caragana, cotoneaster, sewer manhole in grassland, trail through the middle. Astrcic on boundaries. Polygons

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC184** **Litter (lbs/acre):** **GPS:** 11 710461 5646379

LSD: **Form Type:** Grassland

Observer: KJ **Plant Community Code:** FFC5

Date: August 16/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	40	Vicia americana	1	Symphoricarpos occidentalis	5		
Poa pratensis	30	Cirsium arvense	3				
	3	Tragopogon dubius	1				
Agropyron smithii	1	Thlaspi arvense	1				

Weeds	% Cover	Density
Cirsium arvense	1	8
Euphorbia esula	1	3

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Patchwork of Poa and brome dominated. Several small patches dominated by Sympocc. Agronomics dominate.

Tannas Conservation Services Ltd

Project: **Friends of Fish Creek** Estimated Production (lbs/acre):
Property: Litter (lbs/acre):
Site **FC185** Form Type: Riparian - Lentic GPS: 11 710233 5646914
LSD: Wetland Class: Fish Creek
Observer: KJ Plant Community Code:
Date: August 16/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Poa palustris	3	Tanacetum vulgare	5			Populus balsamifera	3
Phalaris arundinacea	20	Vicia americana	1				
Bromus inermis	5	Taraxacum officinale	2				
Poa pratensis	5						

Weeds	% Cover	Density
Tanacetum vulgare	5	9
Euphorbia esula	1	2
Cirsium arvense	2	6

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Vegetative Cover	Invasive Species	Disturbance Vegetative Cover	Tree & Shrub	Utilization (Tree & Shrub)	Human - Vegetation	Human - Physical	Human - Bare Ground	Artificial Water Add/Remove	Score	Rating
6	1	2	2	5	4	15	4	9	76%	Healthy with problems

Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: A couple of small bare patches. Some popubal seedlings. Very little use of trees and shrubs. Patches of human-caused

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC186** **Litter (lbs/acre):** **GPS:** 11 710199 5646861

LSD: **Form Type:** Grassland

Observer: KJ **Plant Community Code:** FFC5

Date: August 16/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Vicia americana	1	Symphoricarpos occidentalis	<1		
Elytrigia repens var. repens	15	Thlaspi arvense	1				
Poa pratensis	30	Descurainia sophia	1				
Agropyron pectiniforme	10						
Festuca hallii	1						

Weeds	% Cover	Density
Cirsium arvense	4	9
Euphorbia esula	1	7

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Fescue growing throughout. Agronomics, invasives. Forb reduction. 900 lb/ac of litter.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC187** **Litter (lbs/acre):** **GPS:** 11 710197 5647026

LSD: **Form Type:** Grassland

Observer: KJ **Plant Community Code:** COND_Snowberry/Reed Canary grass-Awnless brome

Date: August 16/2023 **AUM:** N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	30	Melilotus officinalis	2	Salix exigua	1	Populus balsamifera	3
Agrostis scabra	5	Vicia americana	1	Symphoricarpos occidentalis	10	Salix discolor	1
Phalaris arundinacea	20	Tanacetum vulgare	3				
Poa pratensis	7	Melilotus alba	1				

Weeds	% Cover	Density
Tanacetum vulgare	3	8
Cirsium arvense	1	3

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	7	3	1	NA	58%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Some creeping bellflower. More phlaaru close to river. Agronomics, invaders. Reduced forb diversity. 1100 lb/ac.

Project: **Friends of Fish Creek**

Property: **Fish Creek** **Estimated Production (lbs/acre):**

Site **FC188** **Litter (lbs/acre):** **GPS:** 11 710101 5646999

LSD: **Form Type:** Grassland

Observer: KJ **Plant Community Code:** FFC5

Date: August 16/2023 **AUM:** 0.25

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	50	Vicia americana	4	Symphoricarpos occidentalis	15	Populus balsamifera	1
Elytrigia repens var. repens	3	Taraxacum officinale	2				
Poa pratensis	5	Artemisia absinthium	1				
		Solidago canadensis	1				

Weeds	% Cover	Density
Tanacetum vulgare	38	
Cirsium arvense	2	4

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	Litter	Stability-Erosion	Bare Soil	Weeds	Browse	Score	Rating
15	7	25	10	5	1	NA	63%	Healthy with problems

Human Caused Bare Soil (%): 0

Moss & Lichen Cover (%): 0

Other Species

Comments: Next to parking lot and subdivision. Dominated by agronomics. Significant invaders. Forb diversity low, few short

Project: **Friends of Fish Creek**
Property: **Fish Creek** Estimated Production (lbs/acre):
Site **FC189** Litter (lbs/acre): GPS: 11 709891 5647393
LSD: Form Type: Forest
Observer: KJ Plant Community Code:
Date: August 16/2023 AUM: N/A

Grasses	Cover %	Forbs	Cover %	Shrubs	Cover %	Trees	Cover %
Bromus inermis	50	Vicia americana	7	Symphoricarpos occidentalis	3	Populus balsamifera	25
Phalaris arundinacea	15	Smilacina stellata	1	Salix exigua	2	Betula occidentalis	1
Agrostis stolonifera	3	Taraxacum officinale	1	Rosa woodsii	1	Acer negundo	1
Poa pratensis	5			Prunus virginiana	1		

Weeds	% Cover	Density
Arctium minus	1	2
Tanacetum vulgare	5	8

Soils

Depth	0
Texture	0
Classification	0

Range Health Scores

Ecological Status	Community Structure	LFH	Stability-Erosion	Weeds	Score	Rating
10	18	14	10	1	53%	Healthy with problems

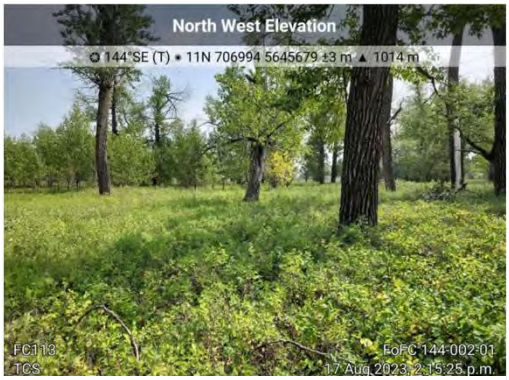
Human Caused Bare Soil (%): 0
Moss & Lichen Cover (%): 0

Other Species

Comments: Ephemeral stream. Significant tansy in grassland areas. Tansy, scentless chamomile, burdock, canada thistle.

Appendix D

Photo Log

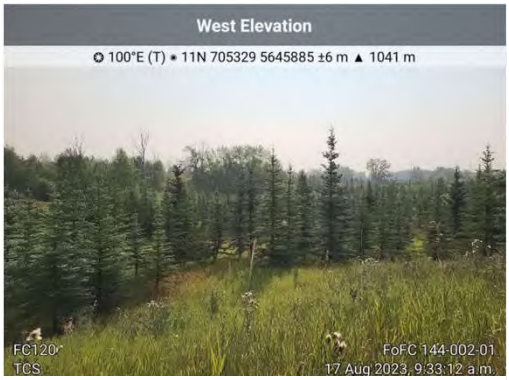


FC113 FC114

FC115 FC116

FC117 FC118

FC118 FC119



FC120 FC121

FC122 FC123

FC124 FC124

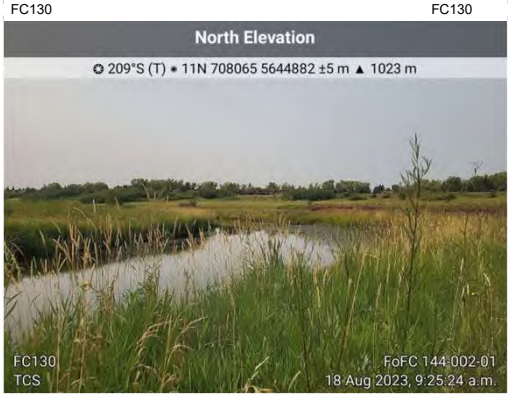
FC125 FC126

FC126 FC127

FC127 FC128

FC128 FC129

FC130 FC130



FC131

FC133

FC132

FC134

FC135

FC135

scentless chamomile

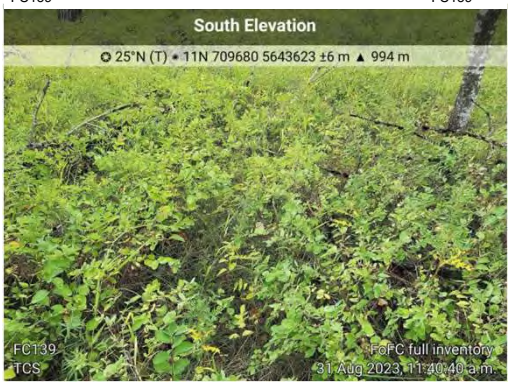
FC136

FC136

FC137

FC137 FC138

FC139 FC139



FC140 FC141

FC142 FC142

FC143 FC143

FC144 FC145

FC146 Weed removal

Bull thistle

FC147 FC148

FC149 FC150

FC150 FC151

FC151 FC152

FC153 FC154

FC154 FC155

FC156 FC157

FC158 FC159

FC159 FC159

FC160 FC160

FC161 FC162

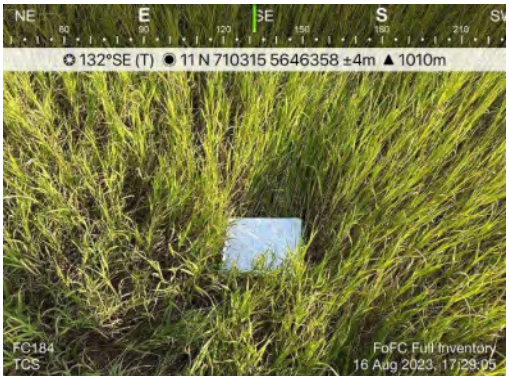
FC163 FC164

FC165 FC166

FC167 FC167

Shrub use Western False Gromwell

Wild Caraway FC184



FC184 FC185

FC185 FC186

FC186 FC187

FC187 FC188

FC188 FC189

FC189 FC179

FC179 FC180

FC180 FC181

FC181 FC182

FC182 FC183

FC183 FC174

FC174 FC175

FC175 FC176

FC176 FC177

FC177 FC178

FC178 FC168

FC169 FC169

FC170 FC170

FC171 FC171

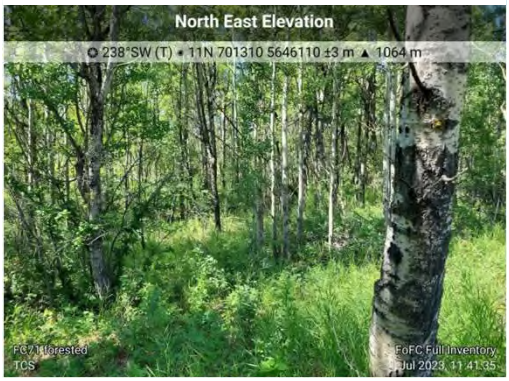
FC172 FC172

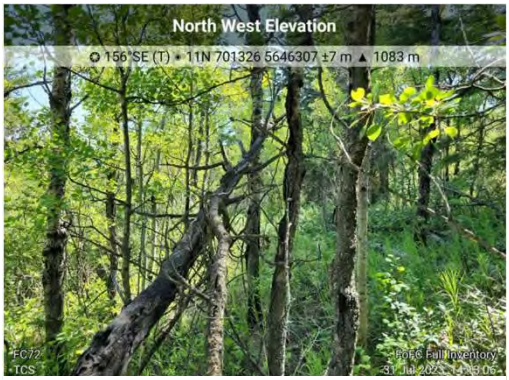
FC173 FC173

FC70 second pond FC70

FC71 FC71

FC72 cotoneaster FC72 erosion



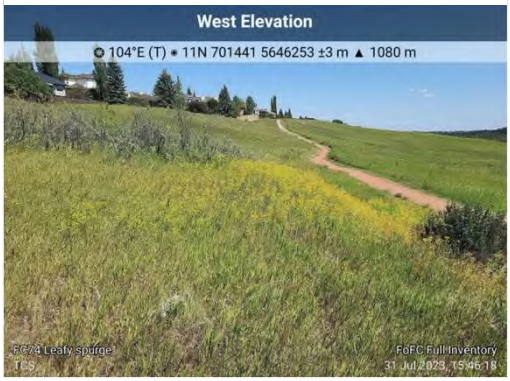


FC72

FC73

FC74

FC74



FC74

FC75

Canada thistle

Human-caused bare ground

Leafy spruge

Trash

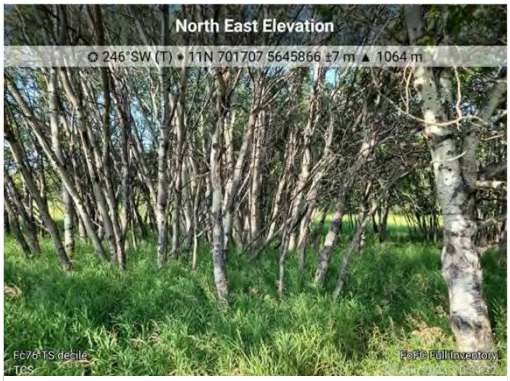
Scentless chamomile

Weeds

FC76

Litter loading

FC76



FC77

FC78

FC79

FC79

FC80

FC81

Brome

FC81

FC82

FC83

FC84

FC84

FC85

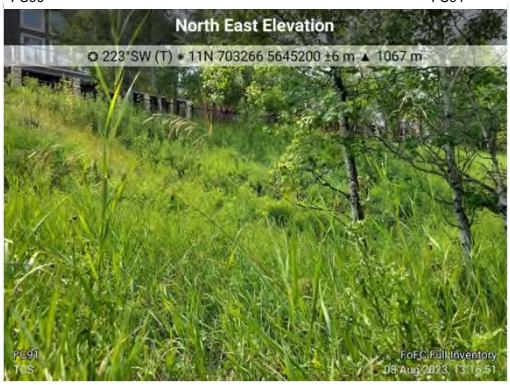
Beaver use

Common tansy

FC88

FC89 FC89

FC90 FC91



FC92 FC93

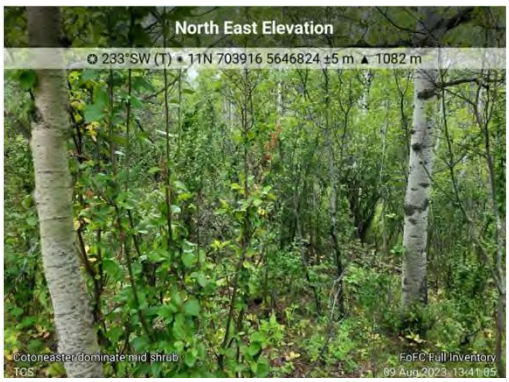
FC93 FC93

FC94

FC95

FC96

Yellow Toadflax



Cotoneaster invasion

FC97

FC98

FC98

FC99 FC99

FC100 FC101

Beaver impact near FC102 FC102

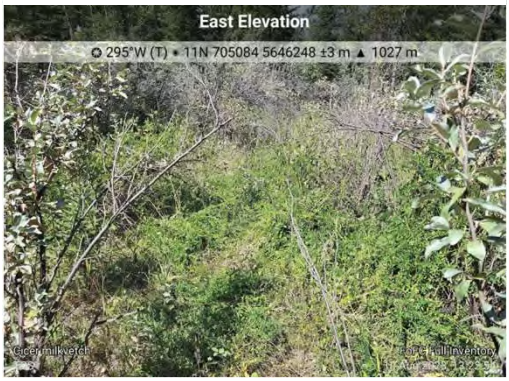
FC103 FC104

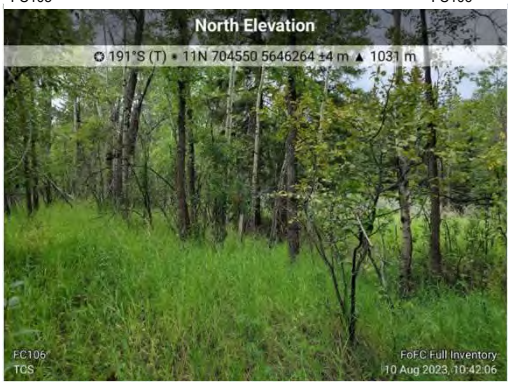
Cliff not assessed

Cicer Milkvetch

FC105

FC106





FC106

FC107

FC107

FC108

FC108

FC109

FC109

FC110

FC111

FC112

Appendix E

Range Health Maps

Tannas Conservation Services Ltd

LEGEND

- Assessment Points

Range Health Results

- Healthy
- Healthy with Problems
- Unhealthy
- Not Applicable
- FCPP Boundary

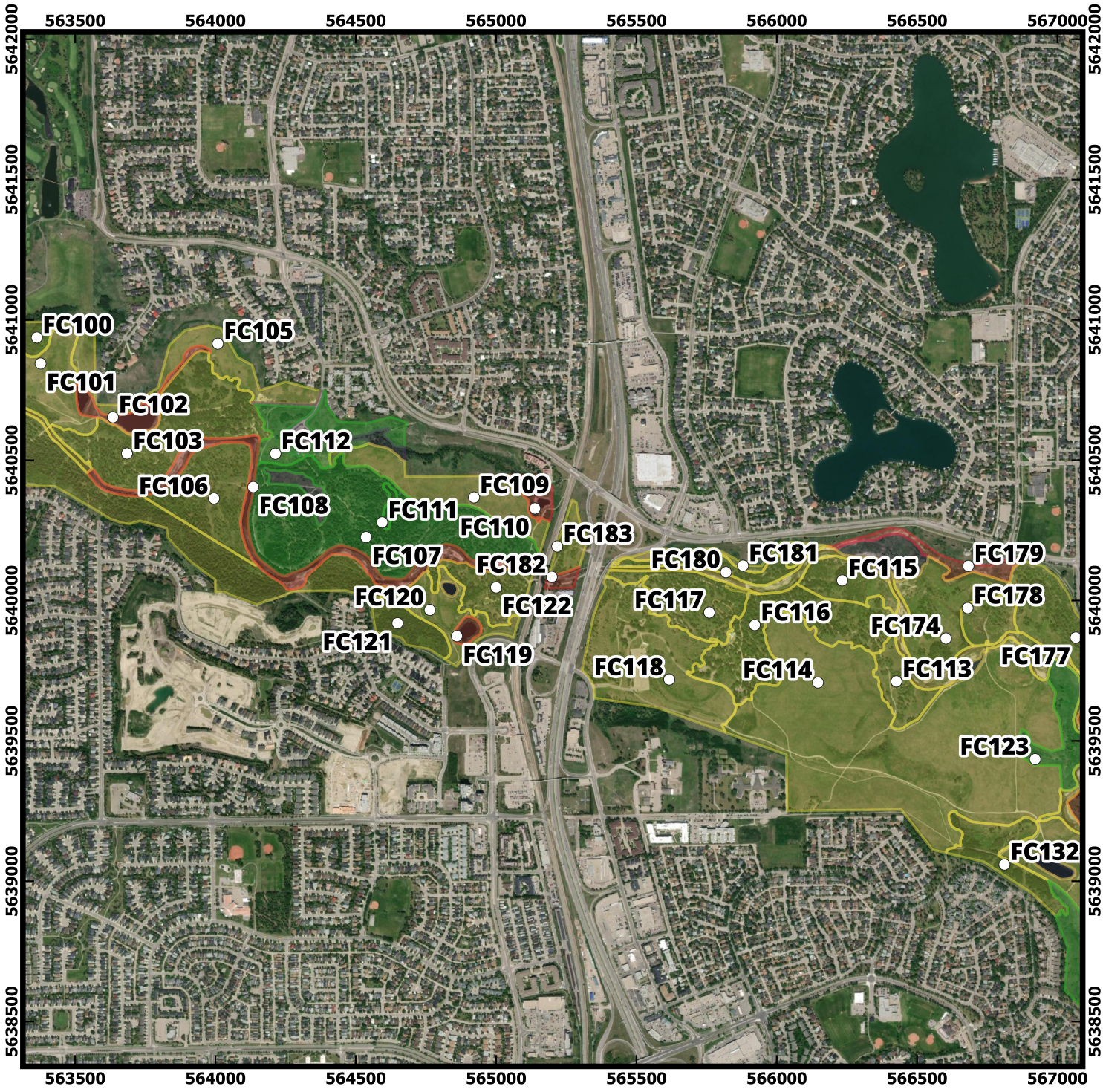
Appendix E - Figure 1
Shannon Terrace / Bebo Grove
Friends of Fish Creek
Range Health

N

0 300 600 900 1,200 m

Scale: 1:20,000
Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2023 Range Health Assessement



Tannas Conservation Services Ltd

LEGEND

- Assessment Points

Range Health Results

- Healthy
- Healthy with Problems
- Unhealthy
- Not Applicable
- FCPP Boundary

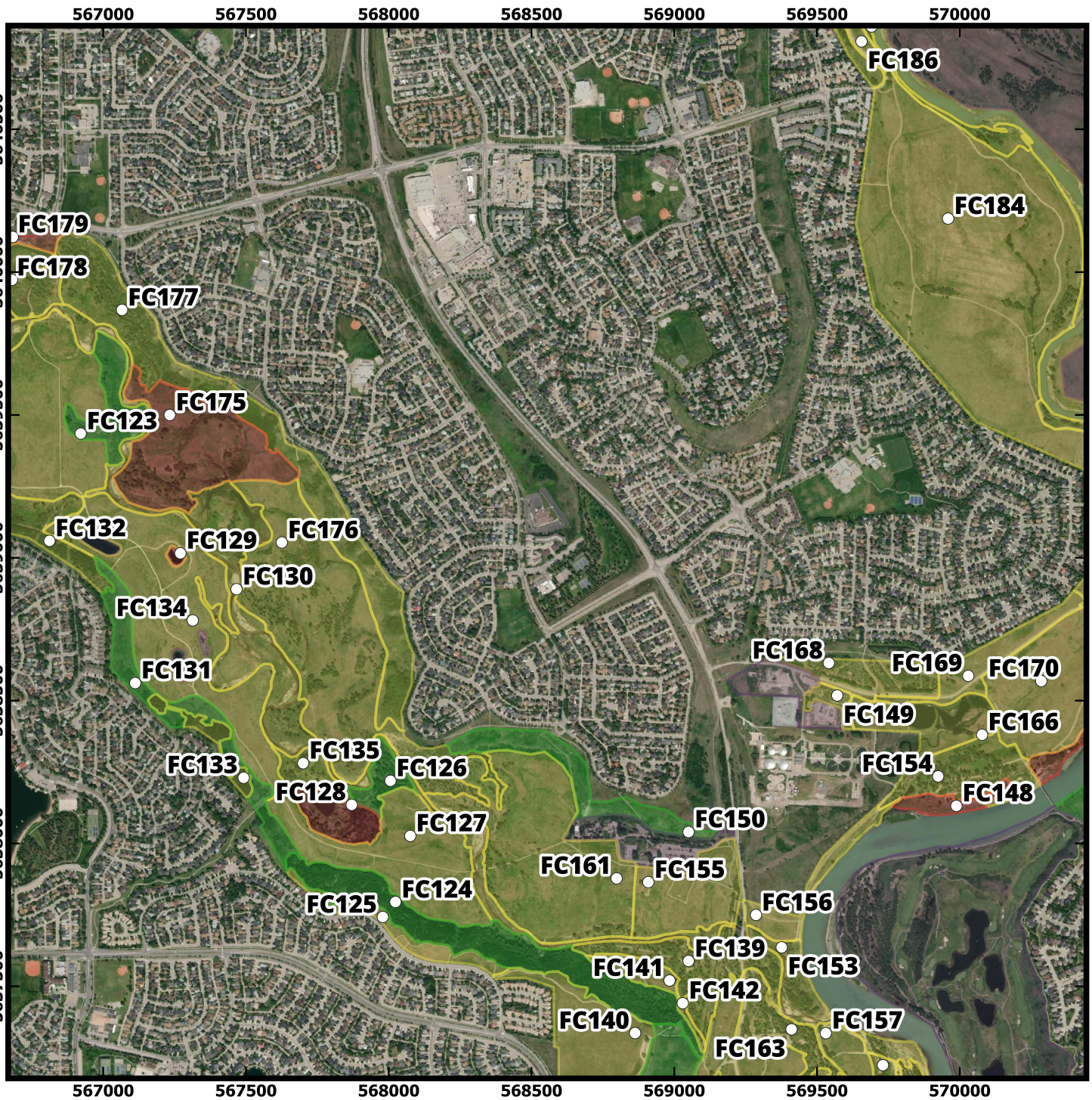
Appendix E - Figure 2
Votier's Flats / Glennfield
Friends of Fish Creek
Range Health

N

0 400 800 1,200 1,600 m

Scale: 1:20,000
Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2023 Range Health Assessement



Tannas Conservation Services Ltd

LEGEND

- Assessment Points

Range Health Results

- Healthy
- Healthy with Problems
- Unhealthy
- Not Applicable
- FCPP Boundary

Appendix E - Figure 3
Glennfield / Bow Valley
Friends of Fish Creek
Range Health

N

0 400 800 1,200 1,600 m

Scale: 1:20,000
Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2023 Range Health Assessement

Tannas Conservation Services Ltd

LEGEND

- Assessment Points

Range Health Results

- Healthy
- Healthy with Problems
- Unhealthy
- Not Applicable
- FCPP Boundary

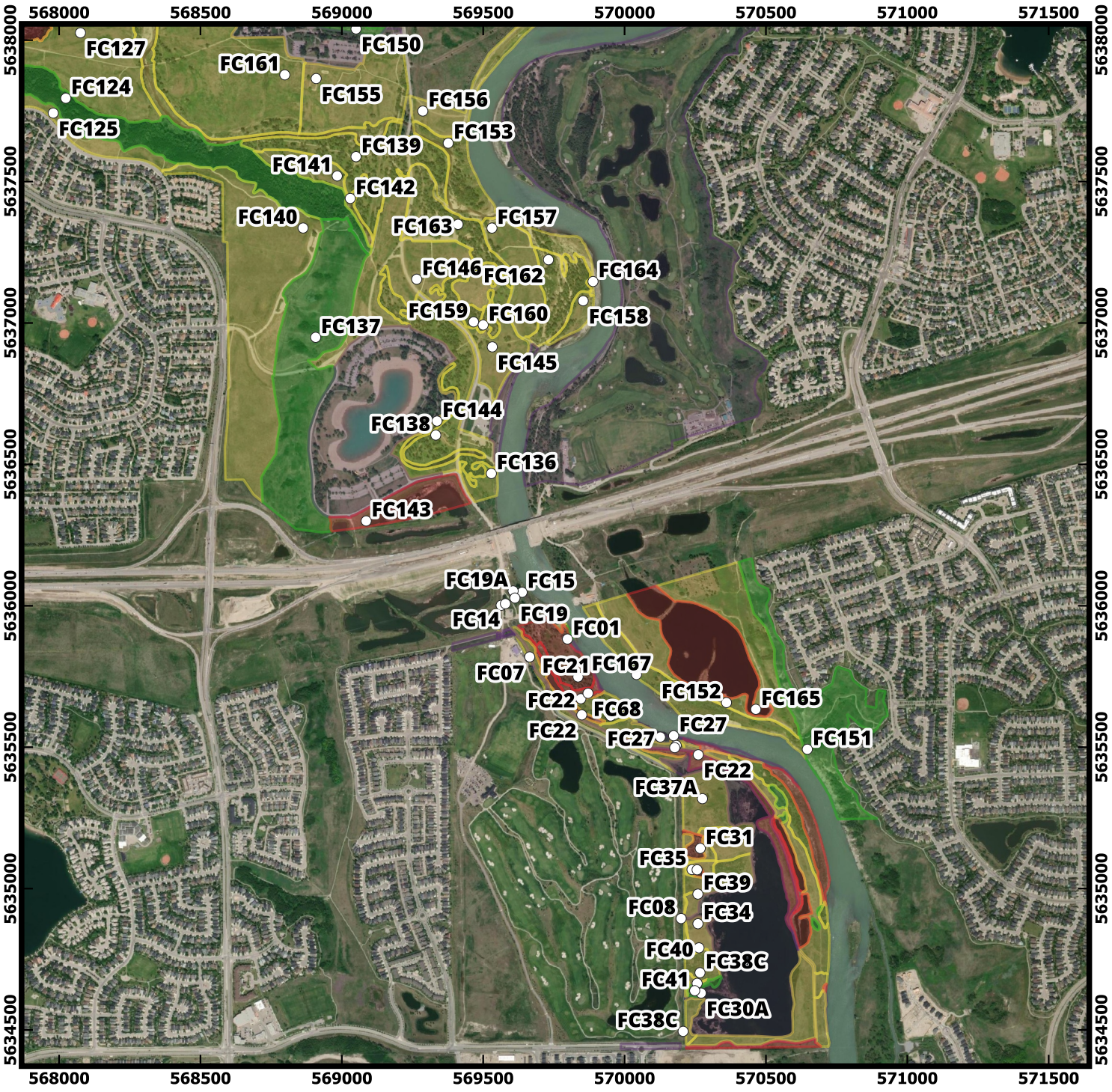
Appendix E - Figure 4
Poplar Island / Bankside
Friends of Fish Creek
Range Health

N

0 400 800 1,200 1,600 m

Scale: 1:20,000
Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2023 Range Health Assessement



Tannas Conservation Services Ltd

LEGEND

- Assessment Points

Range Health Results

- Healthy
- Healthy with Problems
- Unhealthy
- Not Applicable
- FCPP Boundary

Appendix E - Figure 5
Lafarge Meadows / Sikome
Friends of Fish Creek
Range Health

N

0 400 800 1,200 m

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2022-23 Range Health Assessements

Appendix F

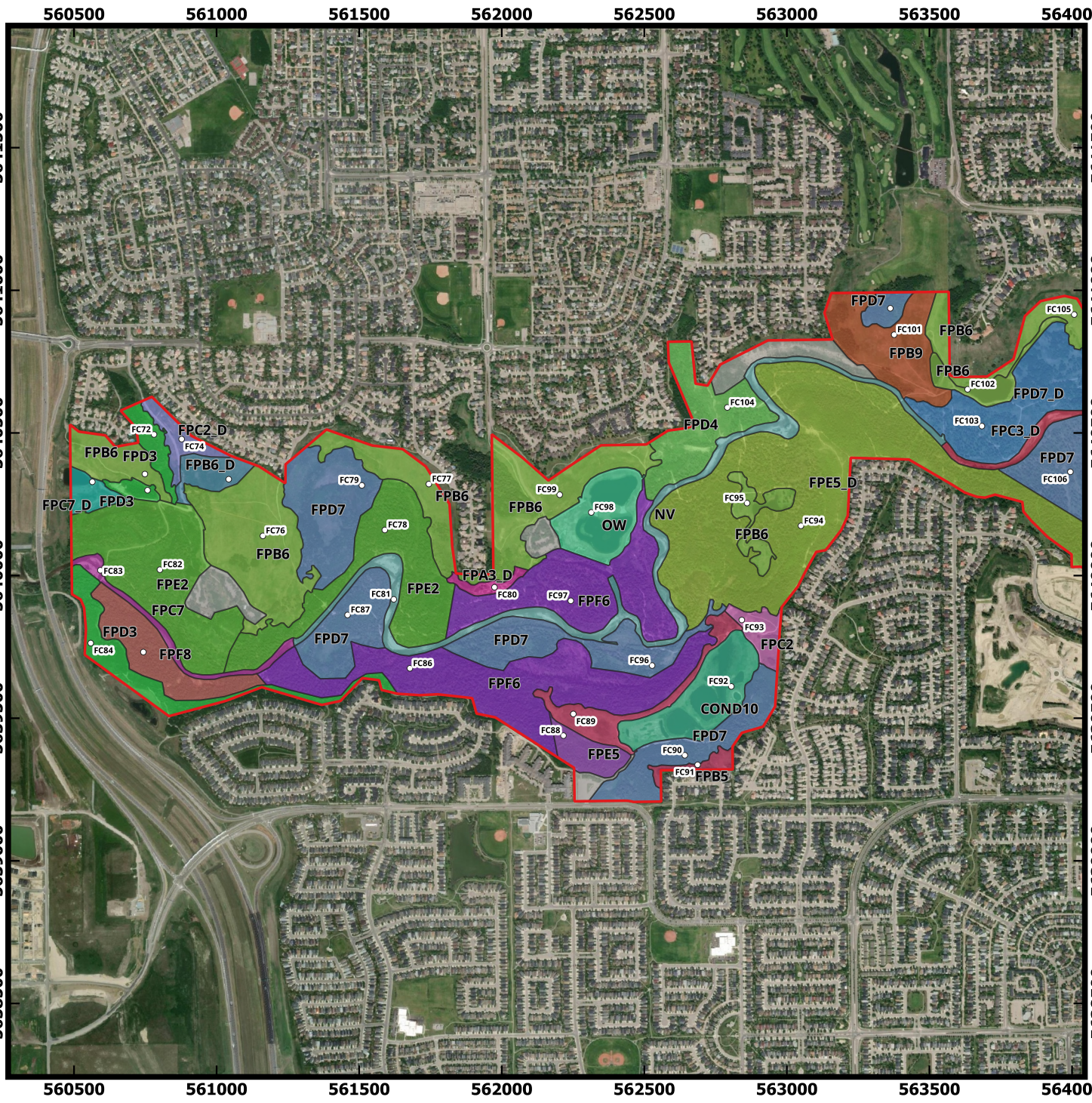
Plant Community List

PC Code	Name	Ecosite	Ecosite Phase
FPE1	Aw-Pl-Sw/Bearberry/Hairy wild rye	a (submesic)	a2 bearberry Aw-Pl
COND12	Saskatoon/Plains muhly thin breaks	a (submesic)	a3 thin break grassland
COND13	Sandgrass thin breaks	a (submesic)	a3 thin break grassland
FPA3_D	Bearberry/Foothills rough fescue - Parrys oatgrass Disturbed	a (submesic)	a3 thin break grassland
FPE2	Sw-Aw/Hairy wild rye	b (submesic/medium)	b3 hairy wild rye Aw-Sw-Pl
FPE2_D	Sw-Aw/Hairy wild rye Disturbed (weedy)	b (submesic/medium)	b3 hairy wild rye Aw-Sw-Pl
FPB9	Timothy-Kentucky bluegrass	b (submesic/medium)	b5 grassland
FPA4	Foothills rough fescue - western porcupine grass	b (submesic/medium)	b5 grassland
FPA4_DS	Foothills rough fescue - western porcupine grass disturbed/seral	b (submesic/medium)	b5 grassland
FPA5_D	Foothills rough fescue - western porcupine grass disturbed (weedy)	b (submesic/medium)	b5 grassland
FPB10	Wheatgrass - Foothills rough fescue	b (submesic/medium)	b5 grassland
FPB6	Smooth (awnless) brome - Kentucky bluegrass	c (submesic/rich)	c1 rough fescue
FPB5	Timothy	c (submesic/rich)	c1 rough fescue
FPB7	Creeping red or sheep fescue - Kentucky bluegrass	c (submesic/rich)	c1 rough fescue
FPB4	Kentucky bluegrass-Timothy/Common dandelion	c (submesic/rich)	c1 rough fescue
FPB6_D	Smooth (awnless) brome - Kentucky bluegrass Disturbed (weedy)	c (submesic/rich)	c1 rough fescue
COND14	Crested wheatgrass	c (submesic/rich)	c1 rough fescue
FPA1	Foothills rough fescue - Parrys oat grass - Idaho fescue	c (submesic/rich)	c1 rough fescue
FPB2	Kentucky bluegrass - Foothills rough fescue	c (submesic/rich)	c1 rough fescue
FPB2_D	Kentucky bluegrass - Foothills rough fescue disturbed (weedy)	c (submesic/rich)	c1 rough fescue
FPB4_D	Kentucky bluegrass-Timothy/Common dandelion weedy	c (submesic/rich)	c1 rough fescue
FPF6	Sw/Moss	d (mesic/medium)	d3 pinegrass - Sw
COND11	Sw/Bare ground	d (mesic/medium)	d3 pinegrass - Sw
FPD7	Pb-Aw/Snowberry/Kentucky bluegrass	e (mesic/rich)	e1 snowberry-silberberry Aw-PB
FPB7_D	Pb-Aw/Snowberry/Kentucky bluegrass Disturbed (weedy)	e (mesic/rich)	e1 snowberry-silberberry Aw-PB
FPD4	Aw-Pb/Snowberry-Saskatoon	e (mesic/rich)	e1 snowberry-silberberry Aw-PB
FPD7_ES	Pb-Aw/Snowberry/Kentucky bluegrass Early Successional (burnt)	e (mesic/rich)	e1 snowberry-silberberry Aw-PB
FPD5	Pb/Silverberry/Kentycky bluegrass	e (mesic/rich)	e1 snowberry-silberberry Aw-PB
FPD5_ES	Pb/Silverberry/Kentycky bluegrass early seral	e (mesic/rich)	e1 snowberry-silberberry Aw-PB
FPD6	Aw-Pb/Marsh reed grass	e (mesic/rich)	e1 snowberry-silberberry Aw-PB
FPD7_D	Aw-Pb/Marsh reed grass weedy	e (mesic/rich)	e1 snowberry-silberberry Aw-PB
FPD7_S	Pb-Aw/Snowberry/Kentucky bluegrass seral	e (mesic/rich)	e1 snowberry-silberberry Aw-PB
FPC2	Snowberry-Rose/Kentucky bluegrass	e (mesic/rich)	e3 shrubland
FPD3	Aw/Kentucky bluegrass - Timothy	e (mesic/rich)	e3 shrubland
FPC3	Silverberry/Kentucky bluegrass	e (mesic/rich)	e3 shrubland
FPC2_D	Snowberry-Rose/Kentucky bluegrass Disturbed (weedy)	e (mesic/rich)	e3 shrubland
FPC3_D	Silverberry/Kentucky bluegrass Disturbed (weedy)	e (mesic/rich)	e3 shrubland
FPC3_S	Silverberry/Kentucky bluegrass seral	e (mesic/rich)	e3 shrubland
FPD3_D	Aw/Kentucky bluegrass - Timothy Disturbed (weedy)	e (mesic/rich)	e3 shrubland
FPE4_D	Sw-Aw/Rose/Smooth Brome (Disturbed)	e (mesic/rich)	e4 snowberry-silverberry Sw-Aw
FPE5	Sw-Pb/Cow parsnip	f (subhygric/rich)	f1 red osier dogwood Sw
FPE5_D	Sw-Pb/Cow parsnip/Brome Disturbed	f (subhygric/rich)	f1 red osier dogwood Sw
FPC5	Bebb willow/Kentucky bluegrass	f (subhygric/rich)	f3 shrubland
FPC7	Sandbar willow	f (subhygric/rich)	f3 shrubland
FPC7_D	Sandbar willow Disturbed (weedy)	f (subhygric/rich)	f3 shrubland
FPC4	Bebb willow-Snowberry-Rose	f (subhygric/rich)	f3 shrubland
FPC4_S	Bebb willow-Snowberry-Rose seral	f (subhygric/rich)	f3 shrubland
FPF8	Sw/Horsetail	g (hygric/rich)	g1 horsetail Sw
FPD9_D	Pb/Willow/Disturbed (Smooth brome)	g (hygric/rich)	g2 horsetail Aw-Pb
FPC11	Basket willow/Awned (water) sedge	h (subhygric/rich)	h1 shrubby fen
FPC13	Flat leaved willow / Water (beaked) sedge	h (subhygric/rich)	h1 shrubby fen
FPA11	Bulrush	h fen (subhydric/rich)	h2 graminoid fen
FPA5	Reed canary grass	h (subhygric/rich)	h2 gramminoid fen
FPA7	Sedge meadows	h (subhygric/rich)	h2 gramminoid fen
COND10	CPA17 Cattail	n1 marsh	hydric/rich
OW	Open Water	NA	NA
NV	Non-vegetated	NA	NA

COND4	COND CPA21	graminoid fen	subhygric/rich
COND6	COND CPA21_D	graminoid fen	subhygric/rich
COND5	COND CPA21/FPA11	graminoid fen	subhygric/rich
COND7	COND Kentucky bluegrass - Sandgrass	b5 grassland	submesic/medium
COND9	COND Sheep fescue/Tall Fescue	c1 rough fescue	submesic/rich
COND2	COND FPB7	c1 rough fescue	submesic/rich

Appendix G

Plant Community Maps



Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP_Boundary

Plant Community

- COND10
- FPA3_D
- FPB5
- FPB6
- FPB6_D
- FPB9
- FPC2
- FPC2_D
- FPC3_D
- FPC7
- FPC7_D
- FPD3
- FPD4
- FPD7
- FPD7_D
- FPE2
- FPE5
- FPE5_D
- FPF6
- FPF8
- NV
- OW
- NA

Appendix G - Figure 1

Shannon Terrace / Bebo Grove

Friends of Fish Creek Plant Communities

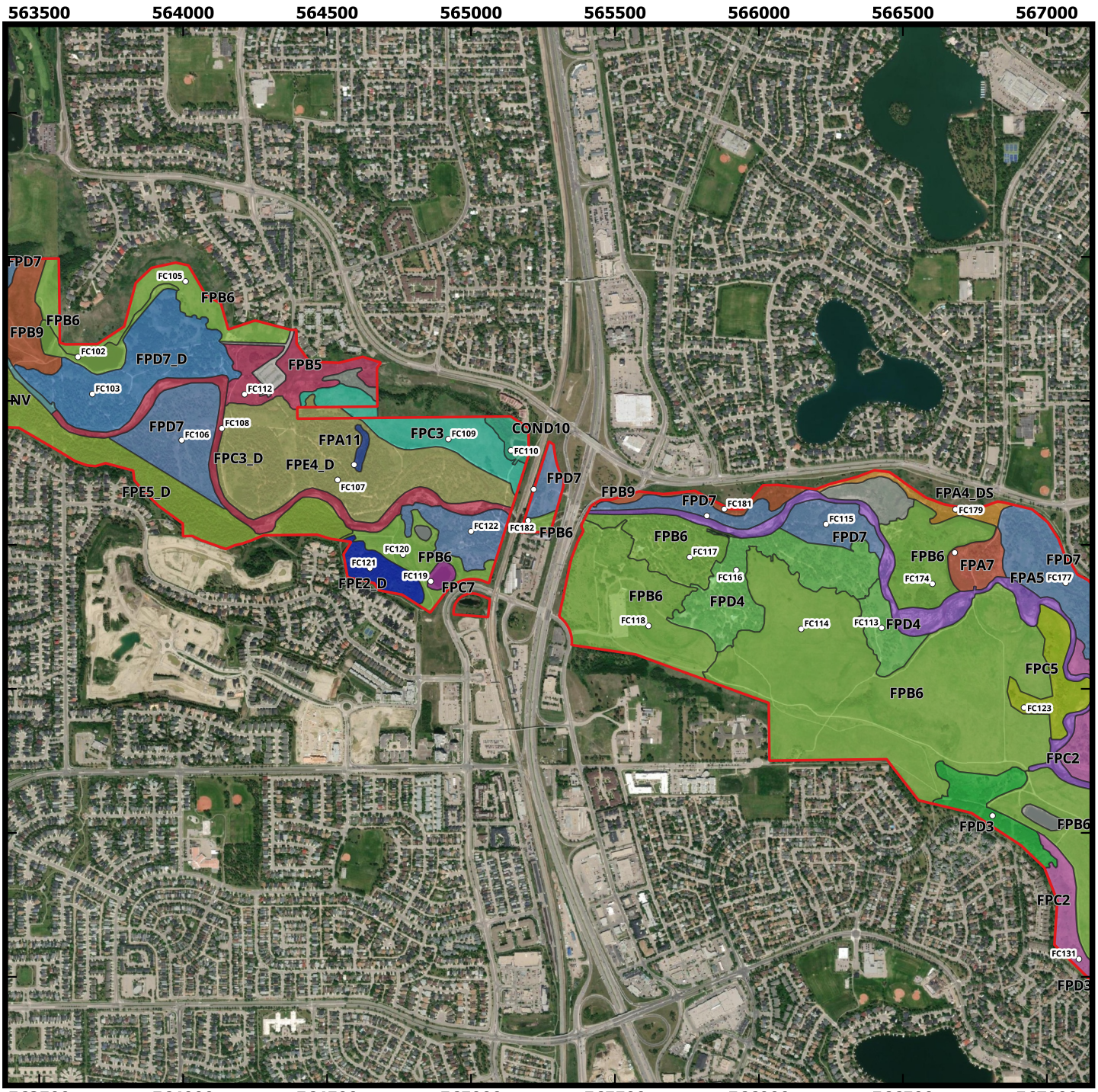
0 400 800 m

N

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2022-23 Range Health Assessements



LEGEND

- Assessment Points
- FCPP_Boundary

Plant Community

- COND10
- FPA11
- FPA4_DS
- FPA5
- FPA7
- FPB5
- FPB6
- FPB9
- FPC2
- FPC3
- FPC3_D
- FPC5
- FPC7
- FPD3
- FPD4
- FPD7
- FPD7_D
- FPE2_D
- FPE4_D
- FPE5_D
- NV
- NA

Tannas Conservation Services Ltd

Appendix G - Figure 2

Votier's Flats / Glennfield

Friends of Fish Creek Plant Communities

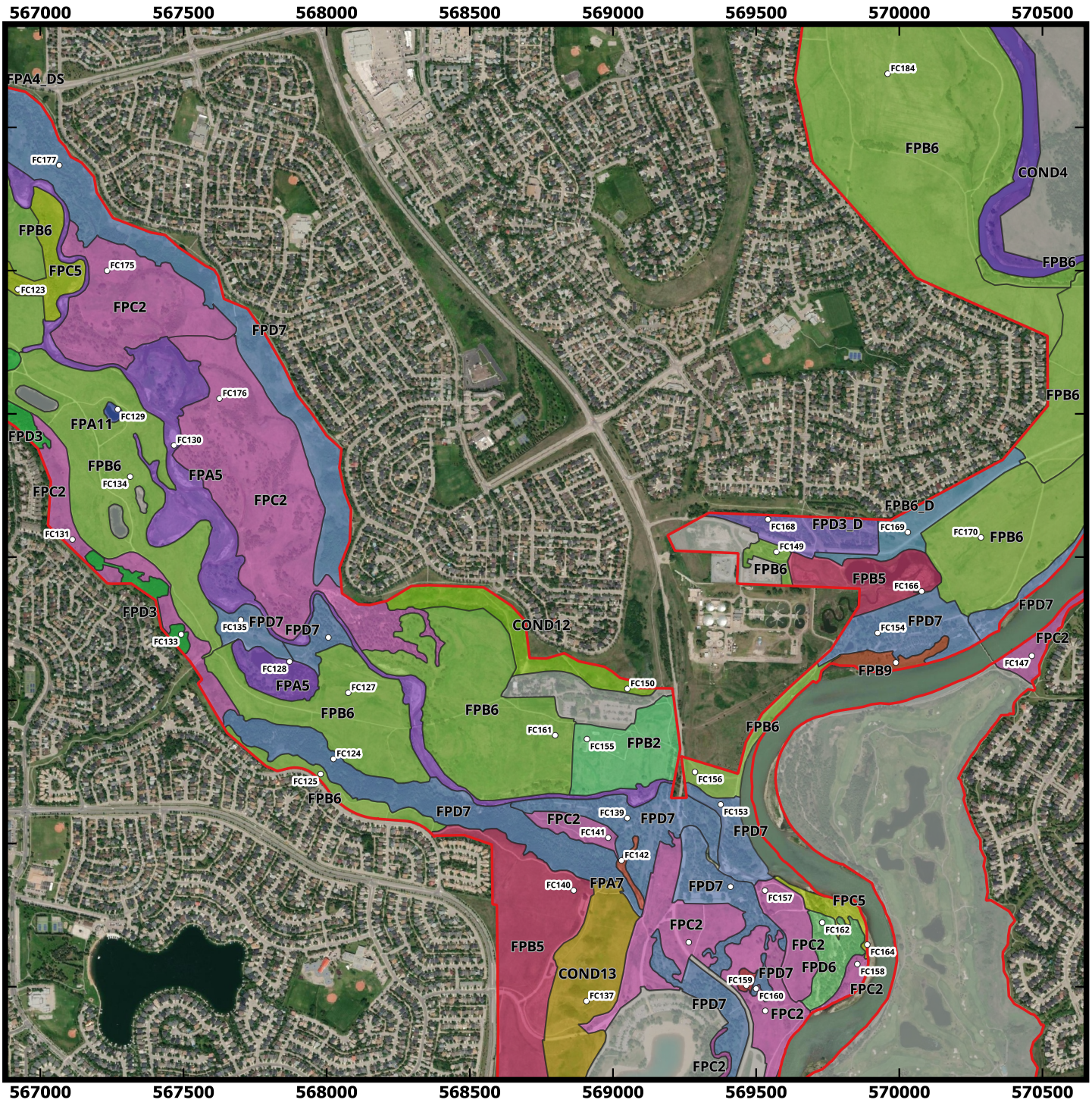
0 400 800 m

N

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2022-23 Range Health Assessements



LEGEND

- Assessment Points
- FCPP_Boundary

Plant Community

- COND12
- COND13
- COND4
- FPA11
- FPA4_DS
- FPA5
- FPA7
- FPB2
- FPB5
- FPB6
- FPB6_D
- FPB9
- FPC2
- FPC5
- FPD3
- FPD3_D
- FPD6
- FPD7
- FPD7_ES
- NA

Tannas Conservation Services Ltd

Appendix G - Figure 3

Glennfield / Bow Valley Ranch

Friends of Fish Creek Plant Communities

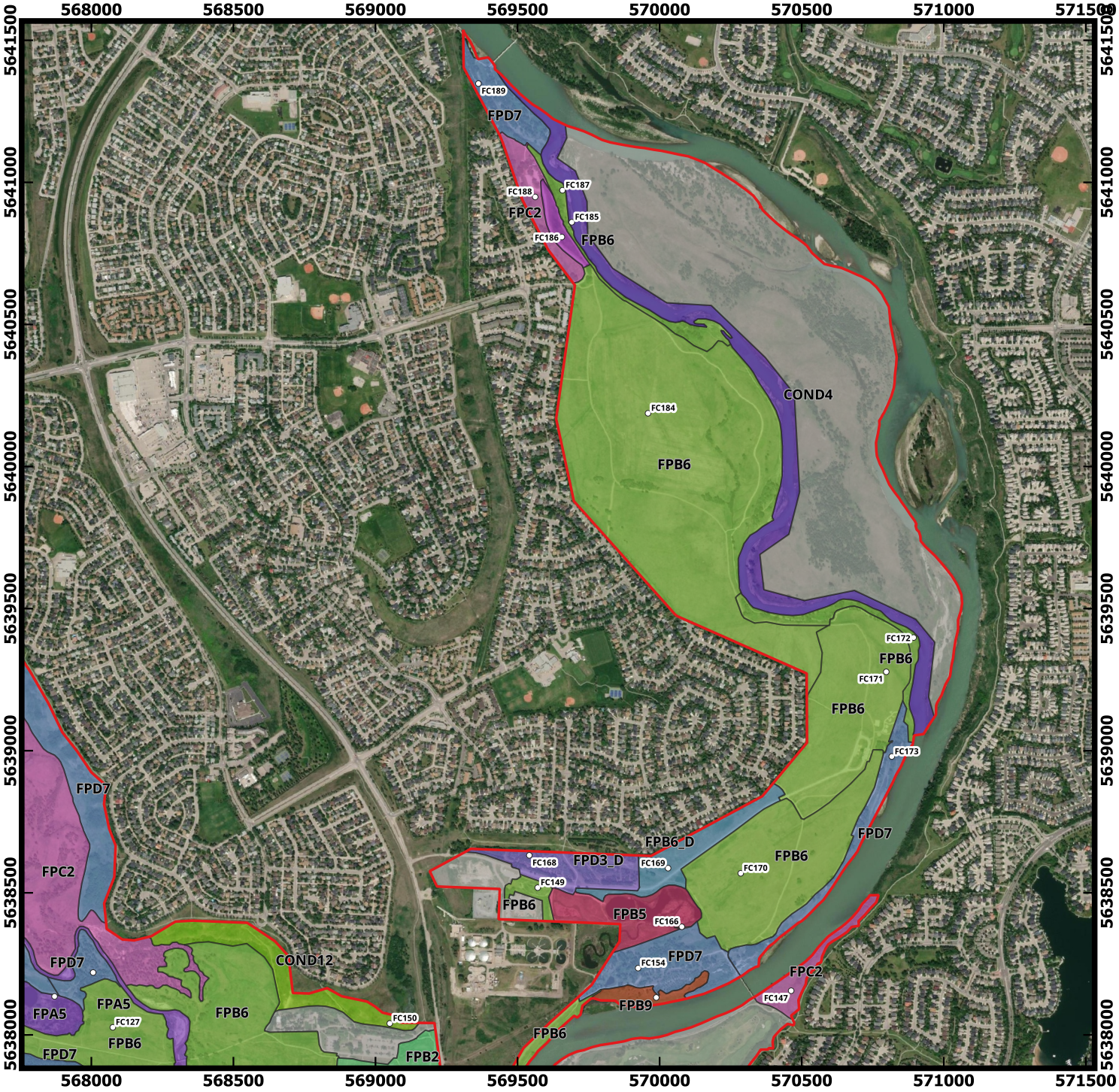
0 400 800 m

N

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2022-23 Range Health Assessements



LEGEND

- Assessment Points
- FCPP_Boundary

Plant Community

- COND12
- COND4
- FBP6
- FPA5
- FPB2
- FPB5
- FPB6
- FPB6_D
- FPB9
- FPC2
- FPD3_D
- FPD7
- NA

Tannas Conservation Services Ltd

Appendix G - Figure 4

Poplar Island / Bankside

Friends of Fish Creek Plant Communities

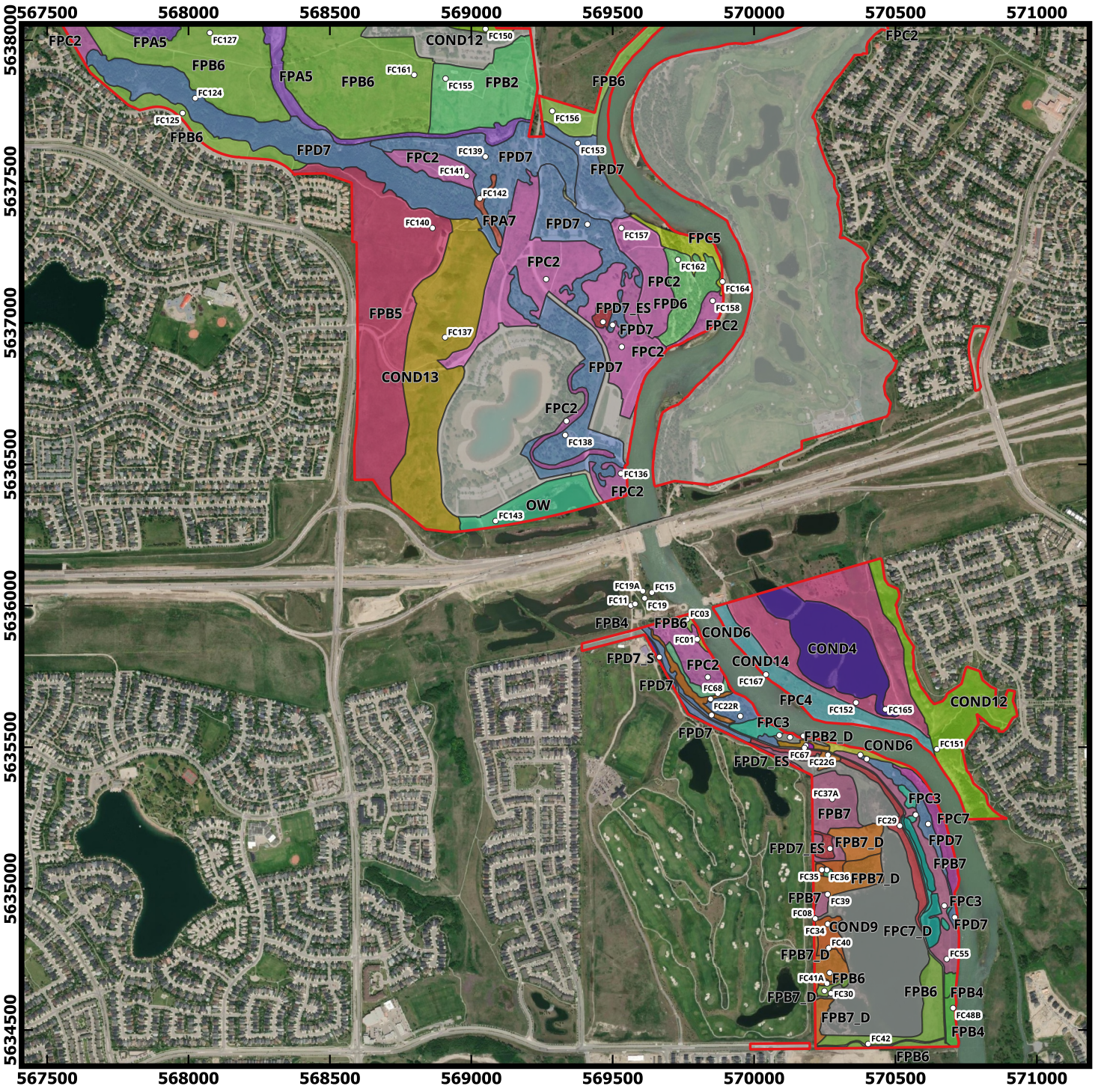
0 400 800 m

N

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2022-23 Range Health Assessements



Tannas Conservation Services Ltd

LEGEND

- Assessment Points
- FCPP_Boundary

Plant Community

- COND12
- COND13
- COND14
- COND2
- COND4
- COND6
- COND9
- FPA5
- FPA7
- FPB2
- FPB2_D
- FPB4
- FPB4_D
- FPB5
- FPB6
- FPB7
- FPB7_D
- FPC2
- FPC3
- FPC3_S
- FPC4
- FPC5
- FPC7
- FPC7_D
- FPD5_ES
- FPD6
- FPD7
- FPD7_ES
- FPD7_S
- OW
- NA

Appendix G - Figure 5

Lafarge Meadows / Sikome

Friends of Fish Creek Plant Communities

0 400 800 m

N

Scale: 1:20,000

Projection: NAD84 UTM Zone 11U
Imagery: Esri Satellite

Data from 2022-23 Range Health Assessements

Appendix H

ACIMS Data Submission

RECORD #	3ee9424b-9f30-40ff-990c-b6395f3c1115	773a645f-5d43-4796-864a-0187bcfe0e68
SPECIES	Lithocc	Lithocc
OBSERVER CONTACT INFO	Cassandra Schroeder; c.schroeder@tannasenvironmental.com	Cassandra Schroeder; c.schroeder@tannasenvironmental.com
SURVEY DATE (YYYY-MM-DD)	September 6, 2023	September 6, 2023
Type of Survey	Chance encounter	Chance encounter
TARGET SPECIES	n/a	n/a
Type of Visit	First	First
EO Number	n/a	n/a
DETERMINED BY	Hilary Baker; h.baker@tannasenvironmental.com	Hilary Baker; h.baker@tannasenvironmental.com
REFERENCES USED	Common Plants of the Western Rangelands (Tannas, 2004)	Common Plants of the Western Rangelands (Tannas, 2004)
KEY CHARACTERISTICS	Hairy. Leaf venation.	Hairy. More leaf venation.
SPECIMEN COLLECTED	No	No
SPECIMEN DISPOSITION	n/a	n/a
ACCESSION #	n/a	n/a
PHOTO TAKEN?	Yes	Yes
PHOTO FILE NAME	Lith occ c	Lith occ 1
POPULATION SIZE	5plus	1
COUNT OR ESTIMATE?	Estimate	Estimate
PHENOLOGY	V6 (stem and/or first leaves fading)	V6 (stem and/or first leaves fading), V7 (yellowing up to 50%)
POPULATION EXTENT	Scattered in area	No other plants observed in immediate area
MEASURED OR ESTIMATE	Estimated	Estimated
SITE/HABITAT DESCRIPTION	Park	Smooth brome dominated. In between trails near parking lot
MOISTURE	Mesic	Mesic
LIGHT	Open	Open
SLOPE	0	Na
ASPECT	Na	Na
SUBSTRATE	n/a	n/a
SITE NAME	0	FC140 or FC137
DIRECTIONS TO POPULATION	Around storm water pond	North of parking lot
UTM EASTING	289225	289240
UTM NORTHING	56441190	5637331
GRID ZONE	12	12
DATUM	NAD83	NAD83
SOURCE	phone	phone
PRECISION (m)	6	5

Appendix I

Targeted Grazing Logistical Considerations

Factor	Logistical Consideration(s)	Action(s)
Legal Requirements (Crown Land)	Ensure grazing use is supported by relevant legislation, obtain necessary permits and authorizations.	1. Engage with relevant provincial authority (Alberta Parks) 2. Approval of grazing prescription 3. Obtain permits/authorizations
Legal Requirements (Municipal Land)	Must ensure grazing use is enabled by municipal bylaw(s), obtain business licence, and necessary permits.	1. Review municipal bylaw 2. Obtain business licence(s) 3. Obtain permit(s)
Grazing Contract	Roles and responsibilities.	Determining which party is responsible for which logistical component, including funding.
Transportation	Transportation costs are a contractual consideration.	Transportation costs need to be assigned in the grazing contract. The grazing contract will need to be substantial enough to be economically viable for practitioners if they must travel large distances.
Liability Insurance	Practitioners must carry liability insurance.	Ensure as part of the grazing contract, that practitioners carry liability insurance at a rate acceptable to the client.
Coordinator	Coordination of various treatment aspects is necessary to ensure success	Ensure a coordinator is available for contract management, communications, and to coordinate with ranchers, researchers, partners, stakeholders, residents, etc.
Partnership(s)	Proactive communication and partnership building ensures success	Engage with relevant community stakeholders such as: • Police • Bylaw/Enforcement/Compliance • Community Associations • Adjacent neighbours
Communication	Public Education	Encourage project support through public engagement efforts. Eg. school visits, education days, citizen science, monitoring projects, etc.
Pre-Grazing Data	Pre-grazing data is necessary to develop the grazing plan.	Provide: • map of target areas, target invasive species, and infestation density • access information • infrastructure information
Site Assessment	Determine site suitability by reviewing criteria.	Review site suitability for targeted grazing treatments based on: 1. Environmental Suitability 2. Access Suitability 3. Available Infrastructure
Grazing Plan	A grazing plan is needed to implement the treatment.	Develop a grazing plan to define: • Forage availability and allocation • Grazing use levels • Stocking density Timing of grazing
Biosecurity	Reduce risk of disease.	• Implement a 'no-touch' policy to reduce human/animal and animal/animal contact Ensure herds are vaccinated and healthy • Use fencing to reduce contact with other livestock • Preferentially select for closed herds

Factor	Logistical Consideration(s)	Action(s)
Invasive Species Spread	Reduce risk of invasive species spread.	Pen livestock for 3-4 days prior to moving off site to reduce potential for spread of invasive species seeds.
Manure Management	Address manure build up.	• Develop onsite manure management protocols • Investigate options for offsite manure disposal
Herd Availability	Limited practitioners.	Contact active practitioners to gain understanding of capacity and obtain referrals.
Base Camp	Specifically for goat use there should be a base camp area for practitioners to stay on site and monitor livestock.	Ensure that potential targeted grazing treatment sites have areas suitable for base camps. Power/water/sewer is not necessary for self-contained units, however spaces must be flat and located relatively near to treatment areas.
Animal Husbandry	Fencing	Fence infrastructure (permanent or temporary electric) used to concentrate grazing pressure in target areas.
	Forage	Determine key forage species and forage availability to support stocking rate determination.
	Toxic Plants	Determine density and distribution of invasive and toxic plants prior to grazing.
	Water	Ensure access to suitable water exists by on-site water resources, development of troughs/other water infrastructure, or haul water to site. Water sources should be close enough together to support uniform distribution.
	Access	Ensure suitable access for long vehicles hauling livestock.
	Livestock class and kind	Ensure livestock class and kind are appropriate for target area.
	Livestock management dogs	Ensure that off leash working dogs are permitted if they are necessary to support the grazing treatment.
	ATV Use	Ensure that ATV use is permitted if they are necessary to support the grazing treatment.
Treatment Efficacy & Monitoring	Review efficacy of treatment by ensuring funding to support treatment and monitoring.	• Ensure funding will support targeted grazing to meet timing, frequency, and duration of grazing necessary to reach vegetation goals • May require a longer-term service contract and resources to write/oversee that contract • Monitoring to assess treatment success
Restoration	Plan for restoration and revegetation plans following weed control.	Ensure control does not overwhelm organizational restoration capacity (i.e. large areas will need prompt restoration to reduce the risk of re-infestation).