

Seeing the soil for the trees: Regenerative approaches to managing parkland in Surrey's ALR

BC Recreation &
Parks Association
Professional Pathways 2024

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- What is a regenerative approach?
- Surrey Context:
 - Surrey's Biodiversity Conservation Strategy
 - Sustainability Charter
 - Campbell Heights Biodiversity Preserve
 - Climate Change Action Strategy
 - Parkland in Surrey's ALR - A Comprehensive Plan for Agriculture
- Application & implementation:
 - Revised practices with leasees
 - Mound Farm Park pilot project
- The regenerative path forward



What is a regenerative approach?

“Holistic land management practices that hold the potential of mitigating climate change by rebuilding soil organic matter and restoring degraded soil biodiversity resulting in carbon drawdown and improvement of the water cycle.”

In the agricultural context regenerative practices contribute to:

- Generating/building soils and soil fertility and health
- Increase water percolation, water retention, and clean and safe water runoff
- Increase biodiversity and ecosystem health and resiliency
- Invert carbon emissions through carbon sequestration.

Practices include no-till/low till, cover crops, crop rotations, compost, and animal manures, which restore the plant/soil microbiome to promote liberation, transfer, and cycling of essential soil nutrients, and well-managed grazing practices.



Surrey's Biodiversity Conservation Strategy (BCS) links landscape-level planning with site-level operations across the City.

The Parks Division leads on implementation, in coordination and collaboration with other divisions and departments (Recreation & Culture, Engineering, Planning and Development)

Core themes for BCS implementation:

- **PLANNING AND DEVELOPMENT:** Consider and incorporate biodiversity initiatives through all levels of the City's planning and development framework
- **AGRICULTURAL AREAS:** Enhance biodiversity on ALR* through habitat protection and enhancement and sustainable agricultural practices
- **CLIMATE CHANGE:** Improve ecosystem resilience to anticipated effects of climate change by adapting to changing ecological conditions
- **COMMUNITY EDUCATION AND AWARENESS:** Increase awareness of local biodiversity and its importance for community sustainability

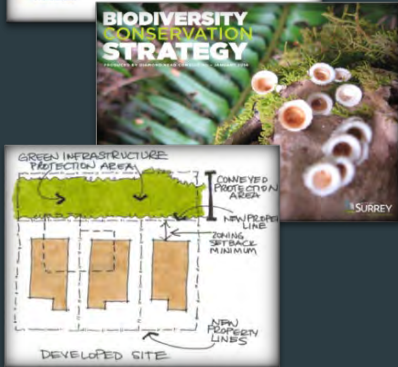
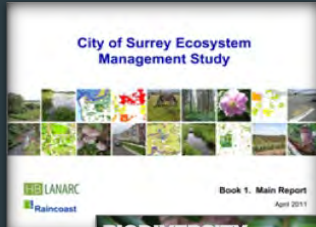


*1/3 of surrey's land base is in the ALR

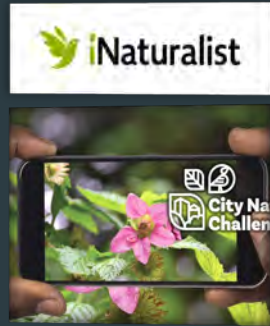
Agricultural stewardship and climate change action, part of the BCS continuum in Surrey



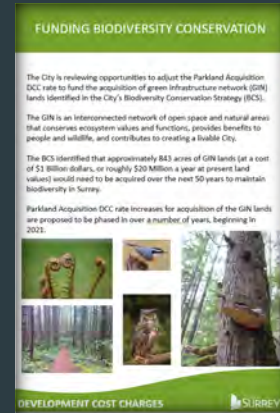
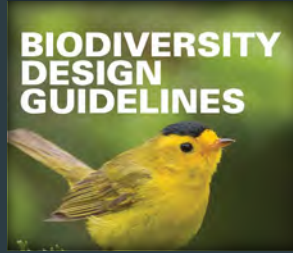
- Finding the Balance: 1990
- Surrey's Environmentally Sensitive Areas 1997



- 2011 Ecosystem Management Study
- Green Infrastructure Network defined
- 2014 Biodiversity Conservation Strategy
- OCP amended to include new Development Permit Area 3 - Sensitive Ecosystems
- 2016 Sensitive Ecosystem Development Permit Area Guidelines



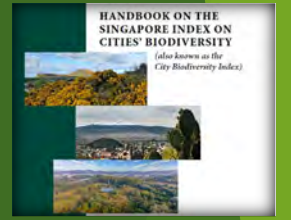
- 2019-2020**
- Community science program formally initiated
 - First City Nature Challenge (now annual event)



- 2020-2021**
- Biodiversity Design Guidelines
 - Biodiversity at the site level
 - GIN Development Cost Charge (Special Parklands Acquisition Fund)
 - First DCC in BC for specifically acquiring biodiversity lands



- 2021-2022 Parkland in Surrey's ALR - A Comprehensive Plan for Agriculture
- Pollinator Partnership Certification
- Rodenticide transition



- 2023-2024 Local Government Climate Action Program pilot (Mound Farm Park)
- Pollinator website launched / evolve conservation efforts
- Priority Places Species at Risk Assessment & BMPs project
- Boulevard & yard rewilding guidelines (in progress)
- BCS report card (in progress)

Key BCS Linkages:



Sustainability

CHARTER



ECOSYSTEMS



GOAL: Healthy, protected and well-maintained ecosystems and biodiversity.

DESIRED OUTCOMES:

Natural Areas, Biodiversity and Urban Forest

- Parks, natural areas, urban forests and habitat corridors are interconnected throughout Surrey and the region, creating healthy places for people and wildlife.
- Surrey actively protects, enhances and restores its natural environment and habitats.
- All development enhances, or minimizes the impacts on Surrey's lush tree canopy and natural environment, and avoids encroachment into natural areas, habitat features and parks.
- Surrey residents support biodiversity conservation, and are stewards of natural areas and urban forests on both public and private lands.
- Surrey takes pride in its rich biodiversity, including fish bearing streams, marine habitat and natural areas such as forests, meadows and wetlands.

Water, Air and Soil

- Water supports healthy ecosystem functioning.
- Water bodies are clean and safe for recreational activities.
- Surrey has a clean and adequate supply of groundwater.
- Air quality meets or exceeds established standards.
- Surrey values healthy soils as an important part of biodiversity.

Green Infrastructure

- Surrey's Green Infrastructure Network is an essential and integrated component of the City's infrastructure, providing valuable ecosystem services as well as places for recreation and rejuvenation.
- Surrey protects ecosystem services and manages natural assets in order to build resilience and adapt and thrive in a changing climate.

“The Campbell Heights Biodiversity Preserve is the ideal site to demonstrate the ability of sustainable agriculture practices to further promote biodiversity.

“The existing agriculture area will be leased for regenerative agriculture and will become an integral component of the Preserve. Combined with educational elements incorporated into the trail system, this approach will be a way to educate the public about biodiversity and regenerative agriculture.”



CAMPBELL ESCARPMENT
BIODIVERSITY PRESERVE



figure 39. Example of Regenerative Agriculture, South Okanagan Similkameen Conservation Program.

Climate Change Action Strategy

Surrey's roadmap to a zero-carbon resilient city in 2050

Surrey's Climate Action Tracker

The Climate Action Tracker shows what the City is doing to address the climate crisis and put the Climate Change Action Strategy (CCAS) into action. The CCAS is Surrey's roadmap to becoming a zero-carbon climate-resilient city by 2050.

GOAL 2

Explore opportunities for regenerative agriculture and negative emissions

Where We Are Now



"Preparing to Start"

Strengths to Build On

- > 30% of the city's lands are agricultural lands
- > Strong partnerships with academia
- > Interest and leadership from agricultural operators

Shifts* – What is needed to reach this Goal?

- E6** Explore opportunities and partnerships to support ecologically regenerative agriculture and land use practices in the Agricultural Land Reserve for GHG reduction, carbon sequestration, and improved climate resilience.
- E7** Explore opportunities for negative emissions, especially through ecosystem restoration, to remove carbon from the air and store it in plants and soil.

Potential outcomes and benefits of implementing these Shifts

- > Negative emissions can help reach 2050 net zero target, but this potential is not well quantified
- > Large potential to improve resilience of farming and ecosystems to climate impacts

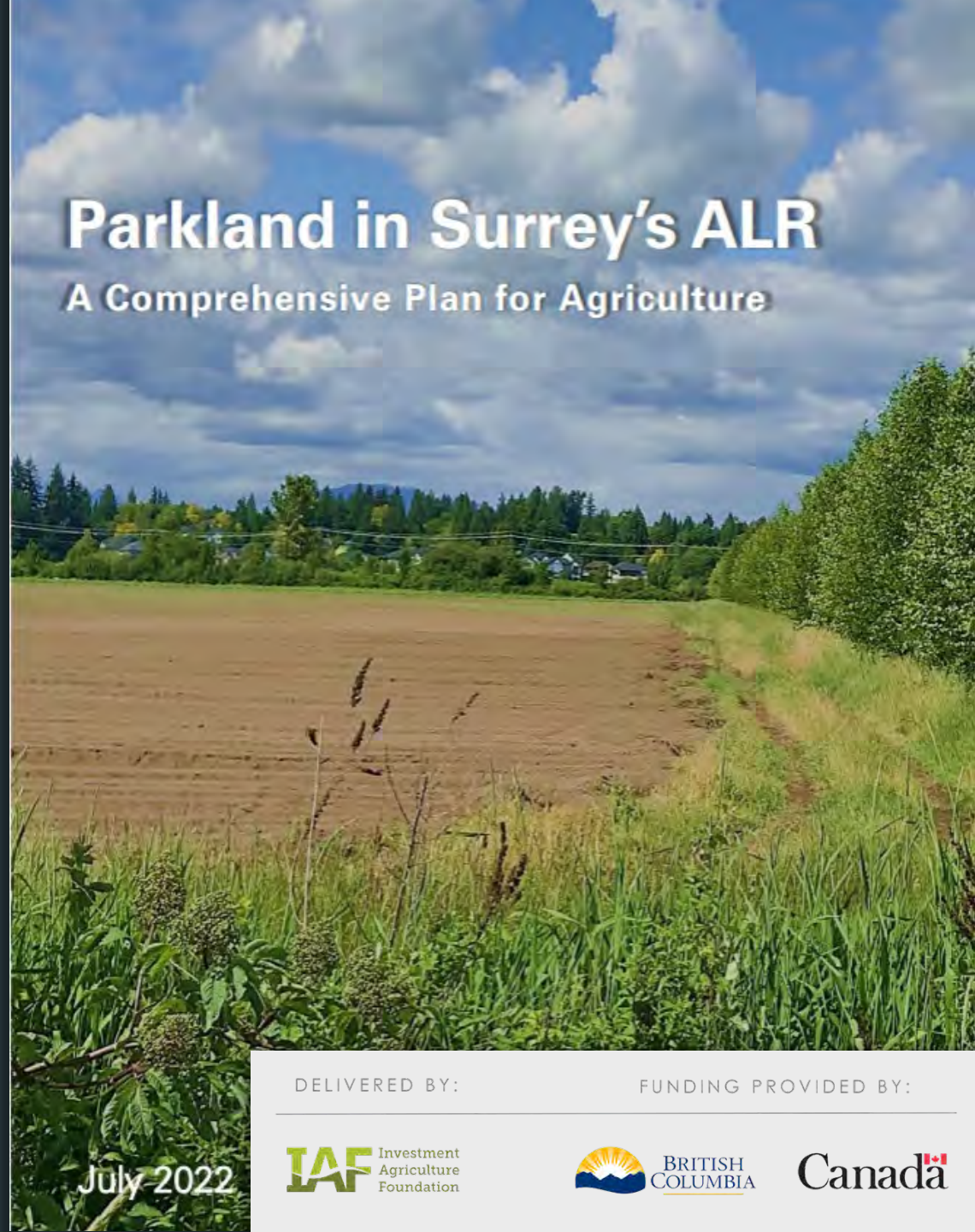


Objectives:

- 1) Assess the value and benefits of existing agricultural uses on parkland in the ALR.
- 2) Determine the feasibility of expanding agricultural activities to increase food production while providing benefits such as educational opportunities and supporting ecosystem services.
- 3) Identify resources to support farm practices and activities on public lands that protect and conserve surface and ground water quality and quantity, air and soil quality and improve habitat for wildlife.
- 4) Uncover how Surrey's parkland can play a role in supporting agriculture and ecological objectives within the City's statutory and non-statutory plans and policies.

Parkland in Surrey's ALR

A Comprehensive Plan for Agriculture



July 2022

DELIVERED BY:

FUNDING PROVIDED BY:

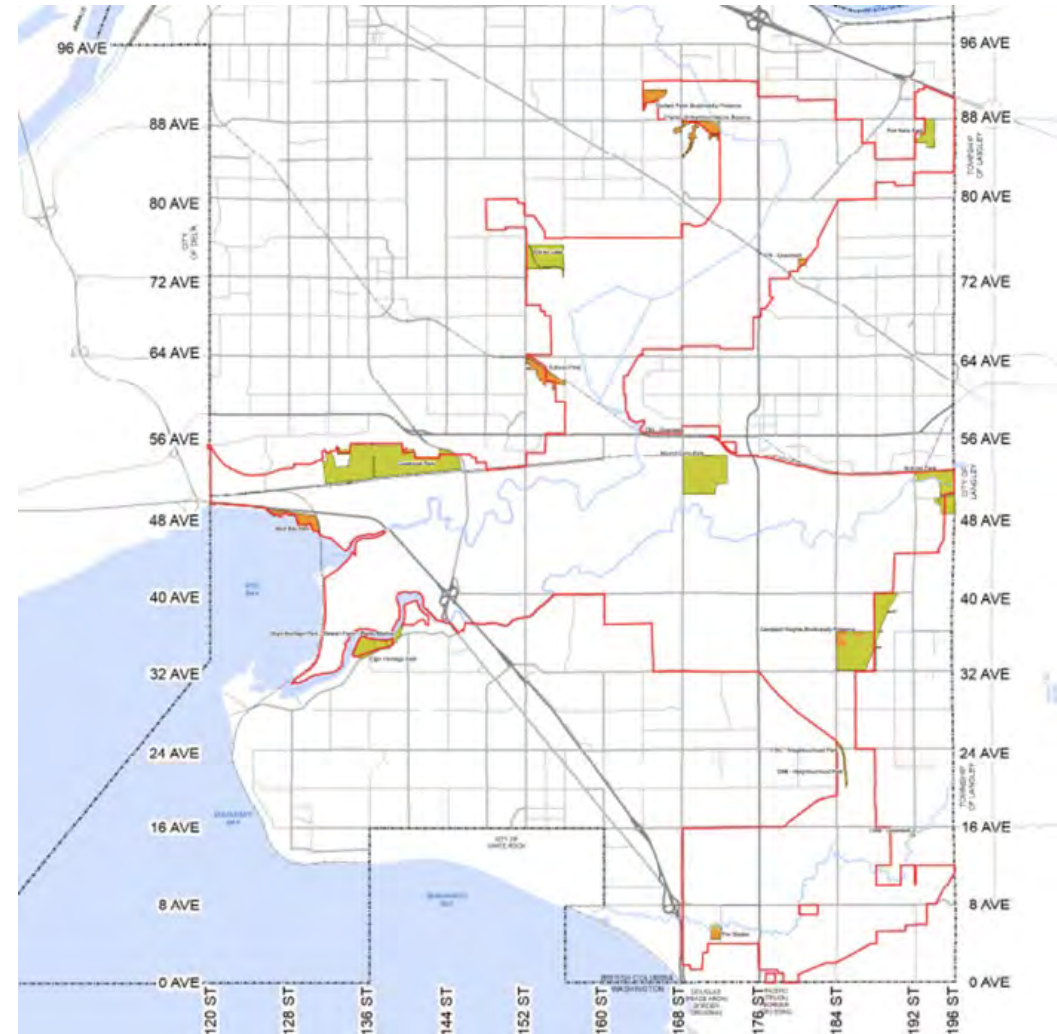


18 parks within the ALR in Surrey

Each assessed for:

- Current and planned uses
- Current land cover
- Adjacent land uses
- Potential for agriculture
- Ecosystem services
- Local food economy

16 Recommendations



Application & implementation

- Parks within the agricultural land base present a unique opportunity to support food security while enhancing ecosystem services.
- As climate change continues to increase the frequency and intensity of drought and flooding events in the region, healthy ecosystems and regenerative agriculture practices help reduce some of the negative impacts from these events.



Review existing current agricultural land tenure agreements in CoS parks once existing terms expire, to ensure that they are meeting objectives around agricultural production, biodiversity, and protection of ecosystem services.

- Seek feedback and input from tenant when developing the revised agreements.
- Incorporating biodiversity objectives.
- Determine appropriate and practical vegetative buffers and agricultural setback distances from streams or other habitat of value.
- Determine additional appropriate and practical BMPs that benefit biodiversity, wildlife habitat, water quality, carbon sequestration and other ecosystem services on a site-by-site basis.

SCHEDULE "B"

TENANT'S COVENANTS RESPECTING ENVIRONMENTAL PROTECTION AND CONSERVATION

Mound Farm Park is a single title parcel with two civic addresses which is comprised of floodplain agricultural lands at 5288 - 168 Street, adjacent to a treed mound that is reserved by dedication for park uses (Mound Farm Park at 5202 - 168 Street) and for the conservation and enhancement of the native flora and fauna. The City's Biodiversity Conservation Strategy identifies the Mound Farm Park as a "biodiversity hub". The Master Plan in place for Mound Farm Park envisions a "well-integrated park, in an agricultural setting, that allows both active and passive activities consistent with the recreational, agricultural, social, and community needs of Surrey". The City recognizes the importance of preserving Mound Farm Park as a valued ecological and heritage resource. Complementary to that, the City is committed to undertaking approaches to agricultural operations on farmland that complement those preservation and conservation goals, e.g., regenerative farming practices¹.

The Tenant covenants and agrees with the Landlord as follows:

- (a) to strictly comply and cause any person for whom it is in law responsible to comply, with all Environmental Laws and associated regulations regarding the use and occupancy of the Leased Lands including but not limited to: Federal Fisheries Act, Species at Risk Act, Migratory Birds Convention Act, Provincial Water Sustainability Act, Wildlife Act, Environmental Management Act (e.g., Code of Practice for Environmental Management), Integrated Pest Management Act;
- (b) to manage the Lands for the long-term conservation and benefit of biodiversity (e.g., endemic fish, wildlife and invertebrate species, resident and migratory birds, all federally listed species at risk and the habitat on which they depend), including the following:
 - (i) **Terrestrial and Aquatic Habitat**
 - Adherence to a fifteen (15) metre set-aside around the perimeter of all leased lands for the purposes of buffering active farmed areas from all watercourses and terrestrial edges/natural areas and other environmentally sensitive areas. The Landlord will provide resources and guidance to the tenant to ensure the buffer is appropriately implemented and vegetated to maximize biodiversity and ecosystem benefits (e.g., for fish, wildlife and pollinators);
 - Implementation of a fully integrated pest management approach for addressing noxious weed and other pest issues. The use of pest-resistant crops, biological/natural predator/pest controls and companion planting will be given preference over the use of crops which require chemical controls. Chemical pest controls known to be directly or indirectly toxic to birds, rodents and other wildlife and or invertebrates are not permitted. Where noxious weeds become a significant issue to crop productivity and non-chemical control options may be limited, the tenant shall work with the Landlord to develop an integrated pest management plan that poses the least environmental harm to the receiving environment;

¹ Practices include composting, cover cropping, growing leguminous green manures, crop rotation, mixed farming, shallow and reduced cultivation, and enhanced biodiversity. Regenerative farming is knowledge-intensive rather than input-intensive. <https://www.cog.ca/regenerative-farming/>

Mound Farm Park LGCAP Pilot Project

The “mound” portion of the park is a glacial feature (drumlin) raised above the surrounding farmland and is within the Nicomekl River floodplain. It is covered by a stand of mature trees, including the City’s tallest Douglas-firs, as well as a mix of western red cedar and big-leaf maple.

The concentration of large diameter, mature trees is unique and increasingly rare in the area. Long-term management for Mound Farm Park is focused on limited access and disturbance to its unique ecological components and maintaining farmland for agricultural production.

Key Attributes:

- Biodiversity Hub
- Unique site ecologically and geologically
- Culturally significant for q’w’a:n̓’ən̓ (Kwantlen) First Nation
- Largest actively farmed park in Surrey (~40ha)

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Local Government Climate Action
Program



BC Harbours Rwy

Future as funding allows

Invasive plant removal, floodplain and mound slope ecological community restoration
*Archaeological assessment required

invasive plant removal/Ditch enhancement/hedgerow
~1.2 km (541 m each side of access road)

shrub bench along toe of dyke

Seasonal wetland enhancement & grassland/shrub thicket

2024-2025

Soil amendment:
winter cover crop
(~35ha total)

Invasive plant removal, floodplain and mound slope ecological community restoration (1.4ha)
Archaeological assessment

7m pollinator strip/set aside
(~2ha total)

Soil amendment:
winter cover crop

7m pollinator strip/set aside

168 St



Largest single-site restoration project done by Surrey Parks

Deliverables & timelines	2023	2024	2025 +
Floodplain & mound slope site clearing	Started	Completed before spring	
Pollinator set-aside (clover /sunflower blend ~2ha)		Spring	Spring re-seed if needed
Winter cover crop (legume/rye blend ~40ha)		Fall	Reevaluate, repeat annually
KPU Soil carbon analysis		Spring-fall	seasonally for 5 years
Planting (1.4 ha)		Fall/Winter	Maintenance (weeding, watering, infill planting if needed)





Institute for Sustainable Food Systems

Assessment of Mound Farm Park Soil Carbon and Productive Capacity

Objectives:

- Examine current land management practices and crop/vegetation patterns employed at the farm.
- Collect soil samples from different depths for baseline measurement of soil properties.
- Evaluate various physical, chemical and biological properties of the soil samples.
- Analyze and compile data of soil properties and develop recommendations related to soil health, carbon sequestration and sustainable soil management.
- Provide recommendations related to cover crops, soil carbon management and soil health.

The regenerative path forward

- Focus on completion of LGCAP project deliverables (<end of March 2025)
- Plan for continued partnership with farming tenant on winter cover cropping at Mound Farm Park
- Ongoing soil health and carbon monitoring with KPU
- UBC Scholar project focused on CO2 sequestration planning in parks
- Apply new agricultural lease terms for farming on parkland to other sites (existing, e.g., Sullivan Park, and future e.g., Campbell Heights BP)
- Inter-departmental collaborative opportunities (e.g., Engineering, Realty, Community Planning)
- Ongoing tracking & reporting through the City's CCAS tracker
- Seek continued opportunities to implement recommendations from the Parkland in Surrey's ALR plan





Thank you

www.surrey.ca/biodiversity

www.surrey.ca/about-surrey/sustainability-energy-services/climate-change-action-strategy