

The background of the slide is a photograph of a lush forest of tall evergreen trees. In the distance, a wide, flat landscape, likely a wetland or delta, is visible under a blue sky with light clouds. The text is overlaid on this image.

Integrated Water Management

Kim Fowler, Regional District of Nanaimo
August 15, 2024

Climate Change Trends

- Increasing frequency and intensity of extreme weather events creating more uncertainty
 - Extreme rainfall, prolonged drought and wildfire risk
 - Managing longer gradual changes (e.g. sea level rise)

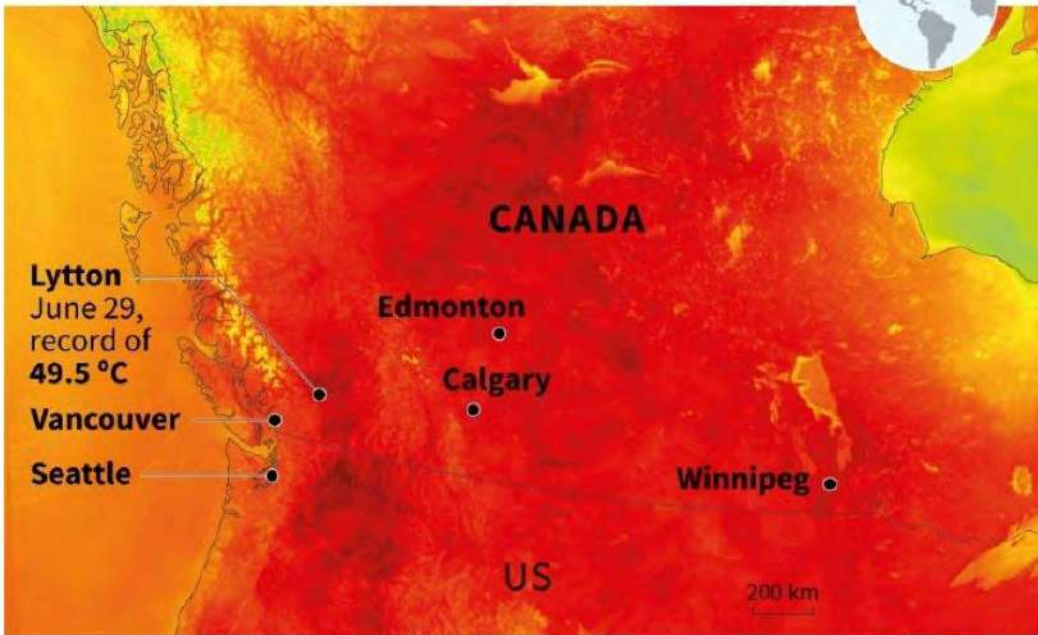


	More days above 25°C and more nights above 16°C
	Longer, hotter, and more frequent heat waves
	Less rainfall and longer dry spells in the summer
Less annual snowfall	
More precipitation in the fall, winter, and spring	
Larger amounts of rainfall occurring in a single day	

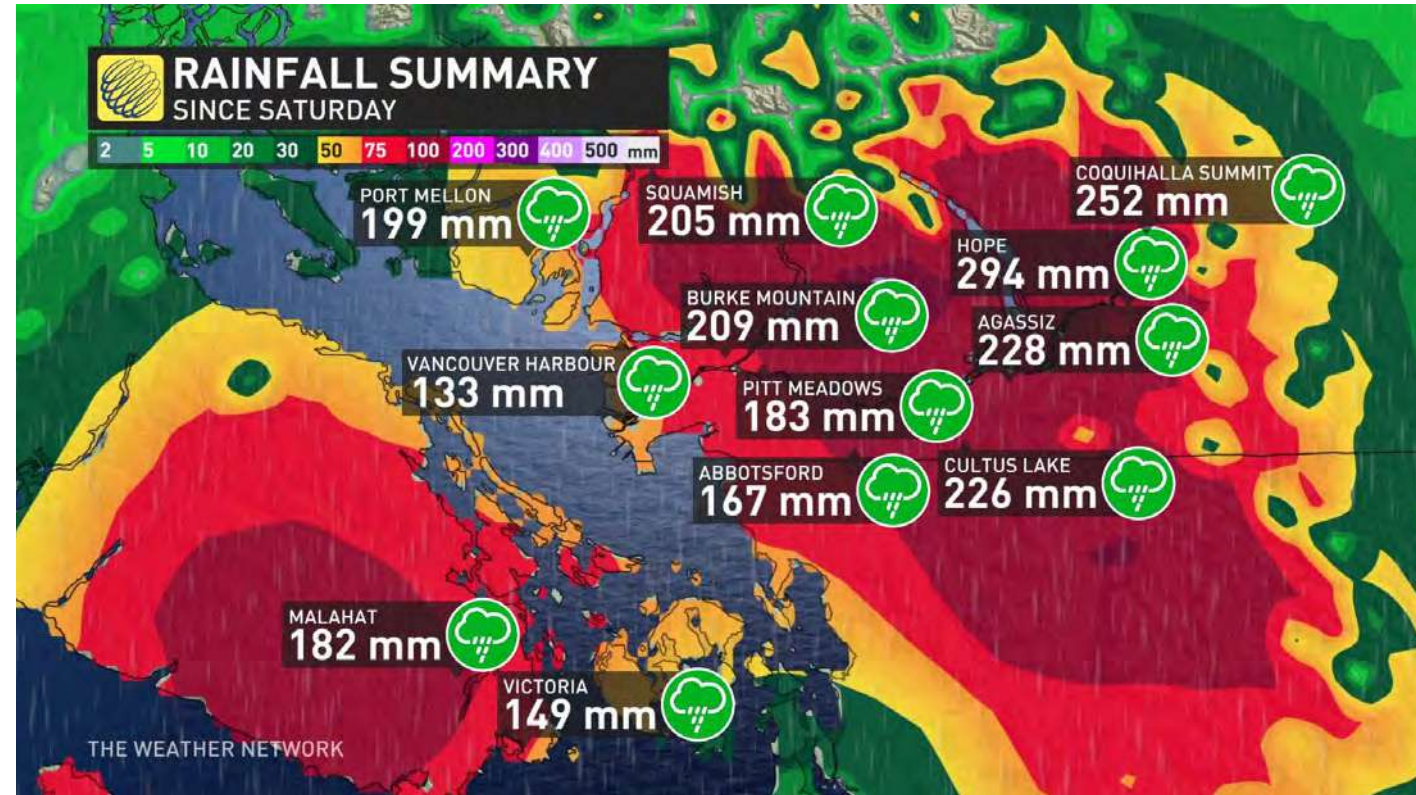
July 1 & Nov 5, 2021

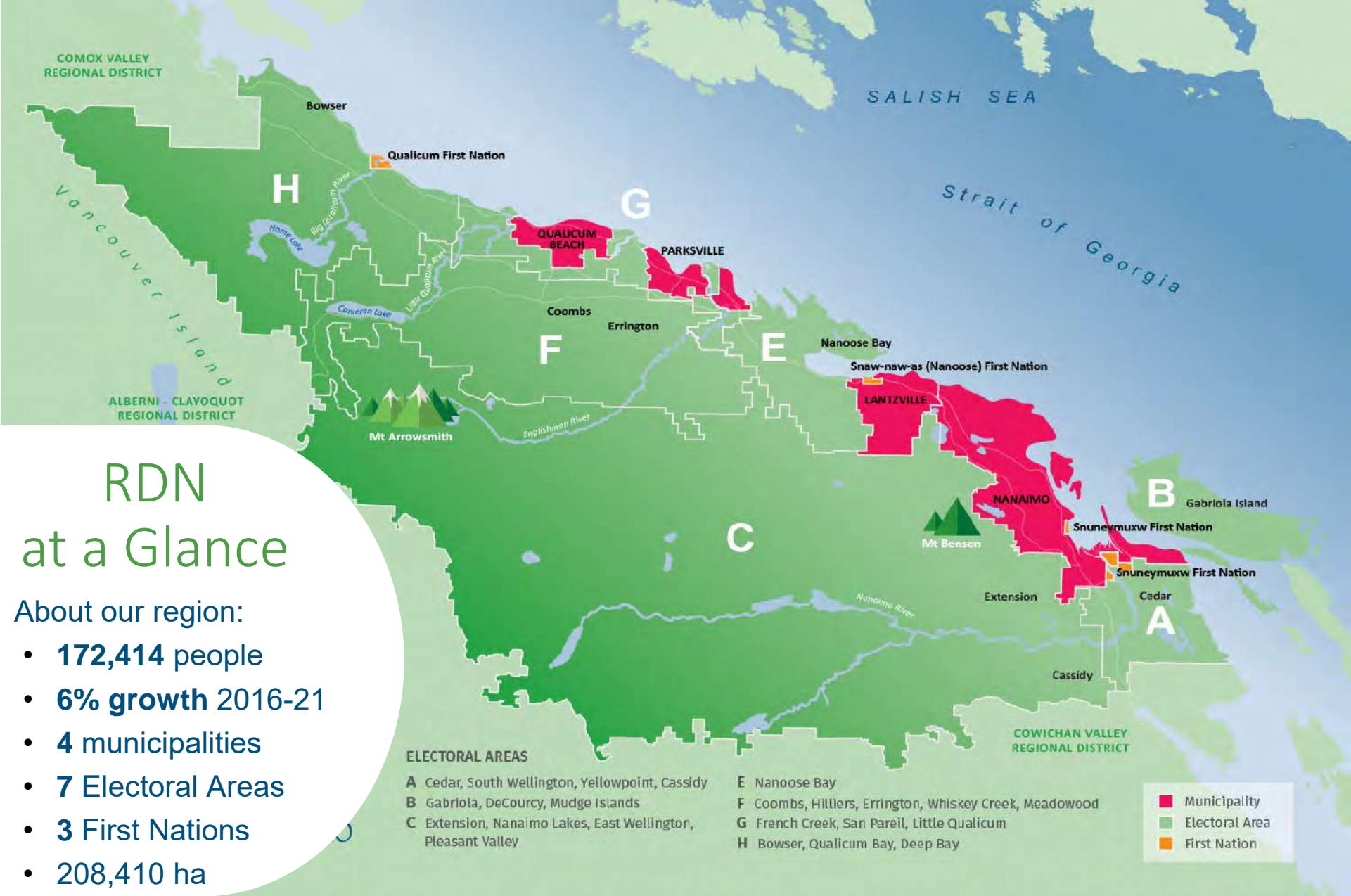
Extreme heat in Canada and the US

Forecast temperatures to July 1



Source: Canadian Meteorological Service





RDN at a Glance

About our region:

- **172,414** people
- **6% growth** 2016-21
- **4** municipalities
- **7** Electoral Areas
- **3** First Nations
- **208,410** ha

ELECTORAL AREAS

- A** Cedar, South Wellington, Yellowpoint, Cassidy
- B** Gabriola, DeCourcy, Mudge Islands
- C** Extension, Nanaimo Lakes, East Wellington, Pleasant Valley

- E** Nanoose Bay
- F** Coombs, Hilliers, Errington, Whiskey Creek, Meadowood
- G** French Creek, San Pareil, Little Qualicum
- H** Bowser, Qualicum Bay, Deep Bay

- Municipality
- Electoral Area
- First Nation

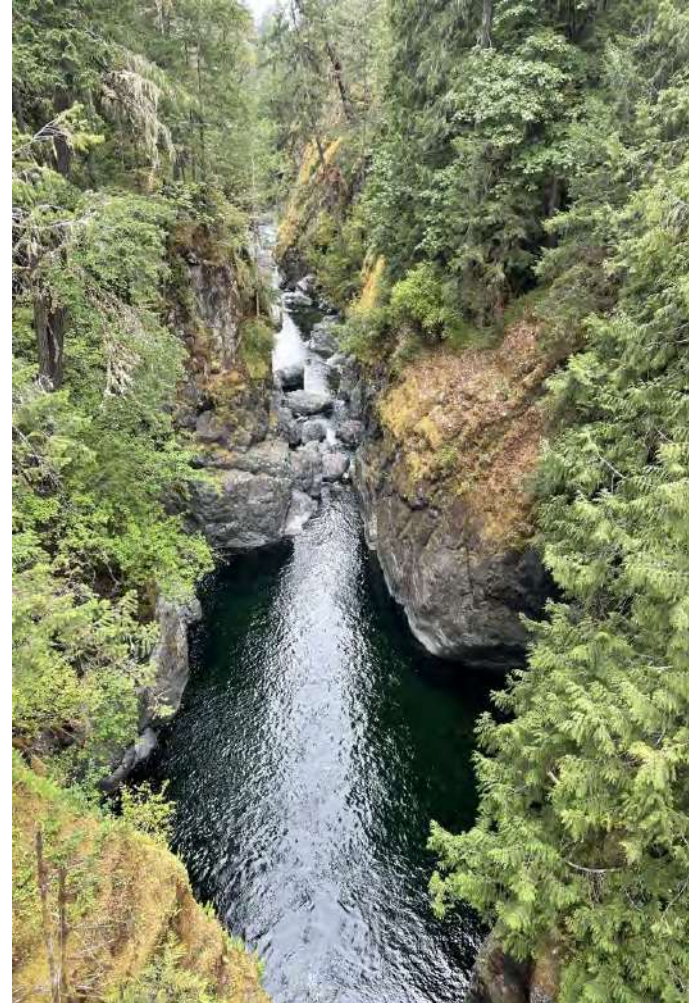
RDN's Growth Management Framework (RGS)

Key strategies:

- Land Use Designations
- Growth Containment Boundaries
- Supporting Policies

Avoid sprawl.







*Achieve Compact, Connected,
Complete Communities.*



2022 Summary of Indicators

Goal 1: Prepare for Climate Change & Reduce Energy Consumption		
	#1 Total community greenhouse gas emissions	Data last available 2012
	#2 Per capita non-renewable energy use	
	#3 Total community energy use	
Goal 2: Protect the Environment		
	#4 Total water consumption	Moving Towards
	#5 Surface water quality (community watershed monitoring)	Stable
	#6 Amount of land in protected areas	Moving Towards
Goal 3: Coordinate Land Use & Mobility		
	#7 Number of households within a set distance (400 m) of employment lands, shopping, schools, transit and recreation facilities	Moving Towards
	#8 Per capita transit use	Moving Towards
Goal 4: Concentrate Housing & Jobs in Rural Village & Urban Growth Centres		
	#9 Population inside and outside the Growth Containment Boundary	Moving Towards
	#10 Density of dwelling units inside and outside the Growth Containment Boundary	Moving Towards
	#11 Diversity of land use (ratio) inside the Growth Containment Boundary	Stable
Goal 5: Enhance Rural Integrity		
	#12 The number of new lots/units created through subdivision inside and outside the Growth Containment Boundary	Moving Towards
	#13 Number of parcels with Farm Status	Stable
	#14 The amount of land classified as Private Managed Forest Land	Moving Away

RGS Monitoring Indicators (2022)

Goal 6: Facilitate the Provision of Affordable Housing		
	#15 The total number of rental units affordable to households with income below fifty percent of the median income for the region	Moving Away
	#16 The portion of units in each housing type inside the Growth Containment Boundary (diversity of housing types in the Growth Containment Boundary)	Moving Towards
Goal 7: Enhance Economic Resiliency		
	#17 [Unemployment] Employment rate and labour participation rate	Moving Towards
Goal 8: Enhance Food Security		
	Number of parcels with Farm Status	Same as #13
Goal 9: Celebrate Pride of Place		
	#18 The amount of publicly owned land designated for parks and community use (including land in protected areas, community use parks, and recreational facilities such as pools, ice rinks, etc.)	Moving Towards
	#19 Per capita length of maintained public trails (including trails, paths, laneways)	Moving Away
Goal 10: Efficient Services		
	#20 Per capita waste disposal	Moving Away
	#21 Per capita cost to provide water and sewer systems	Moving Away
	#22 Per capita length of roads (length of paved roads per person)	Stable
Goal 11: Cooperation Among Jurisdictions		
	Cooperation among jurisdictions	Moving Towards

Flood Management Project

- Mapping of 188 km of sea shoreline
- Updating floodplain maps for 3 rivers for which we have original Provincial mapping
- Risk assessments for significant assets
- Integrated into RDN asset design, including park services, pump stations and WWTP expansion

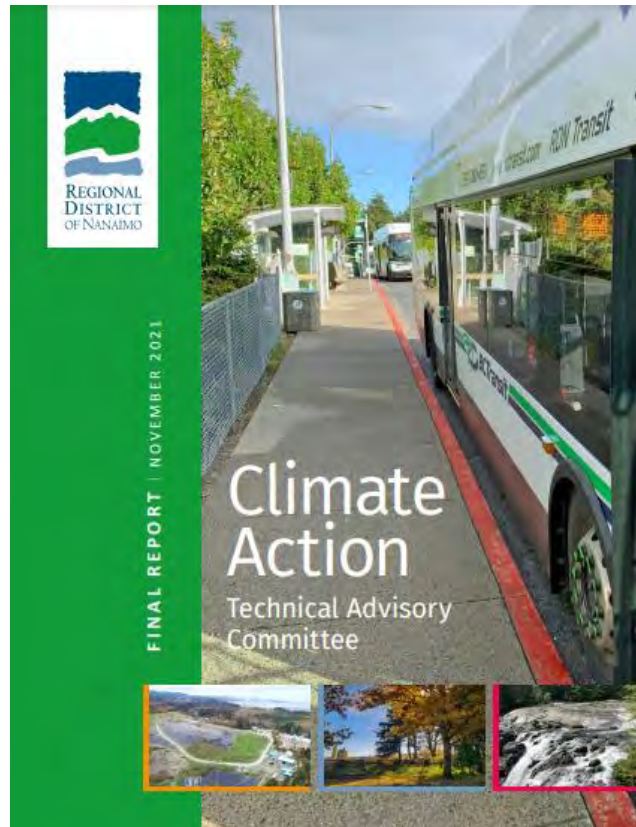


Prelim. Results (200-yr / YR 2100)

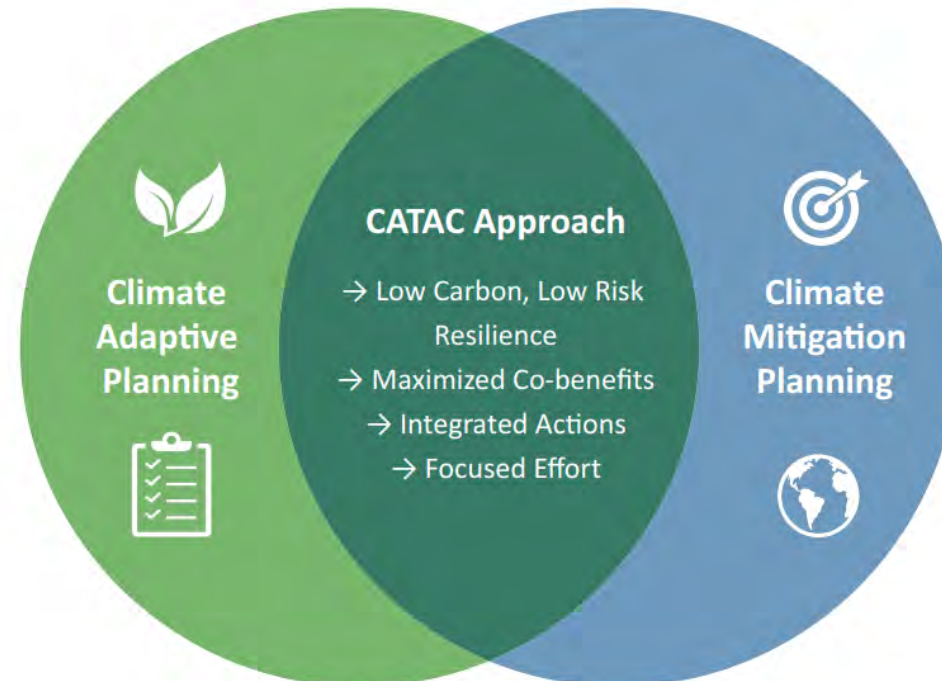
EXTREME RIVER FLOOD UNDER FUTURE CLIMATE CONDITIONS
(Zoomed In)



Climate Action Technical Committee Final Report – December 2021



- Technical team, focused



CATAC Recommended Priorities



1 Ensure ongoing
Water Supply
Resiliency,
supported by
Natural Asset
Management



2 Review and update existing
RDN policies and bylaws to
remove barriers to climate
mitigation and adaptation
and ensure RDN policies
support climate-appropriate
development



3 Increase support
for home energy/
adaptation retrofits

- Food security and local food systems
- Accelerated energy efficiency and decarbonization of new buildings

Work Plans - 2022-2024



- Understanding and improving supply planning practices in region – DWWP and municipalities
- Natural asset inventory and pathway
- Future work – addressing gaps

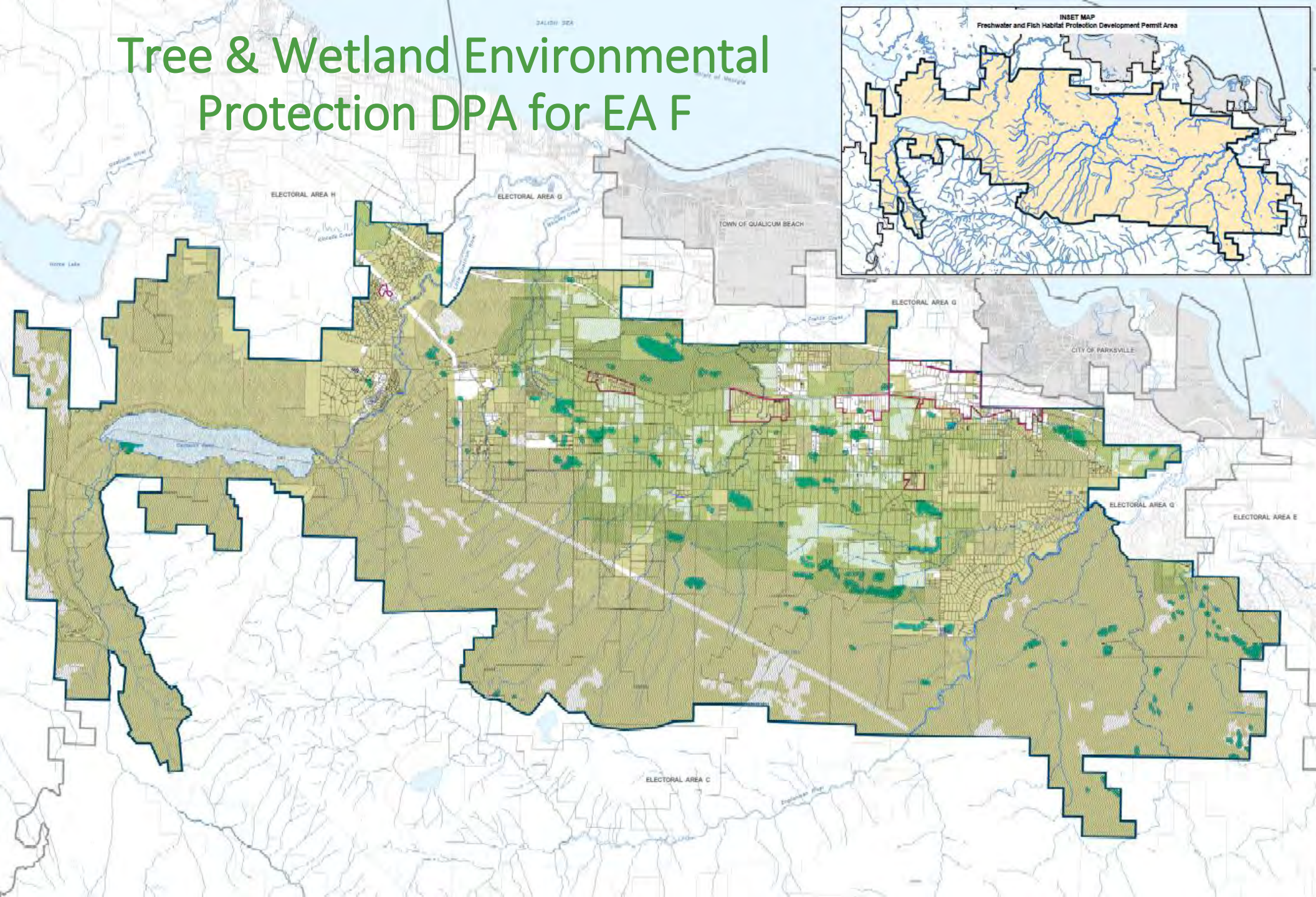
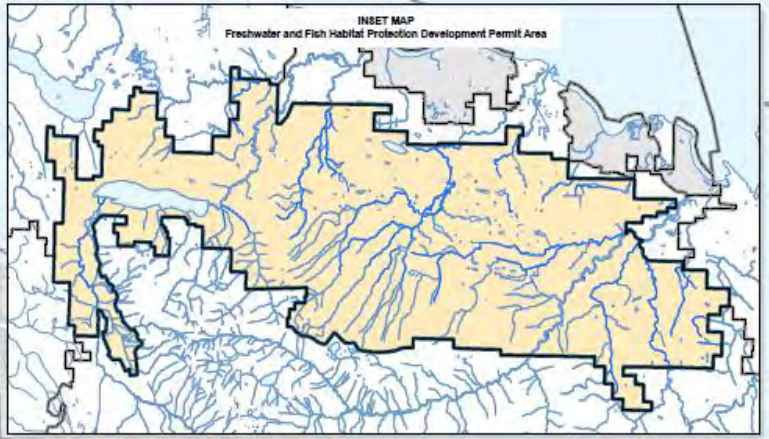


- Development permit areas
- Net Zero Building and localized energy generation
- Opportunities in building bylaw review



- Identifying barriers to renovation uptake
- Redesigning supports to residents, industry, suppliers
- Aiming for focused, effective program 2023/2024

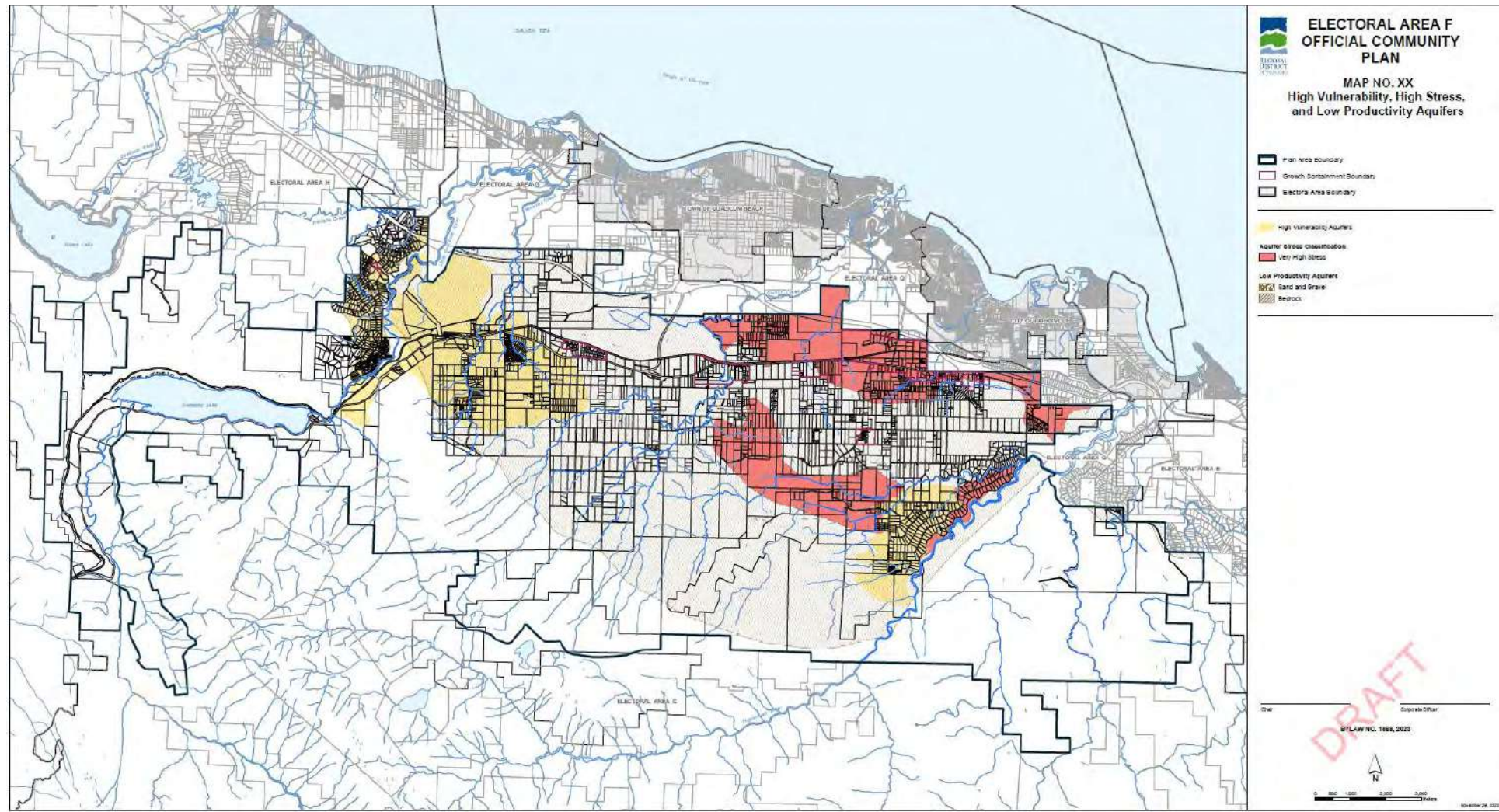
Tree & Wetland Environmental Protection DPA for EA F



- Plan Area Boundary
 - Growth Containment Boundary
 - Electoral Area Boundary
-
- Freshwater and Fish Habitat Development Permit Area**
- All Mapped and Unmapped Streams that are Subject to the "Riparian Areas Regulation" within the shaded area shown on the inset Map.
 - Watercourses with Known Fish Habitat
 - Other Watercourses
 - Waterbodies
-
- Environmental Protection Development Permit Area**
- Wetlands
 - Wetlands - 30m Buffer
 - Forest
-
- Agricultural Land Reserve (ALR)
 - Private Managed Forest Lands (PMFL)
 - Crown Land

DRAFT

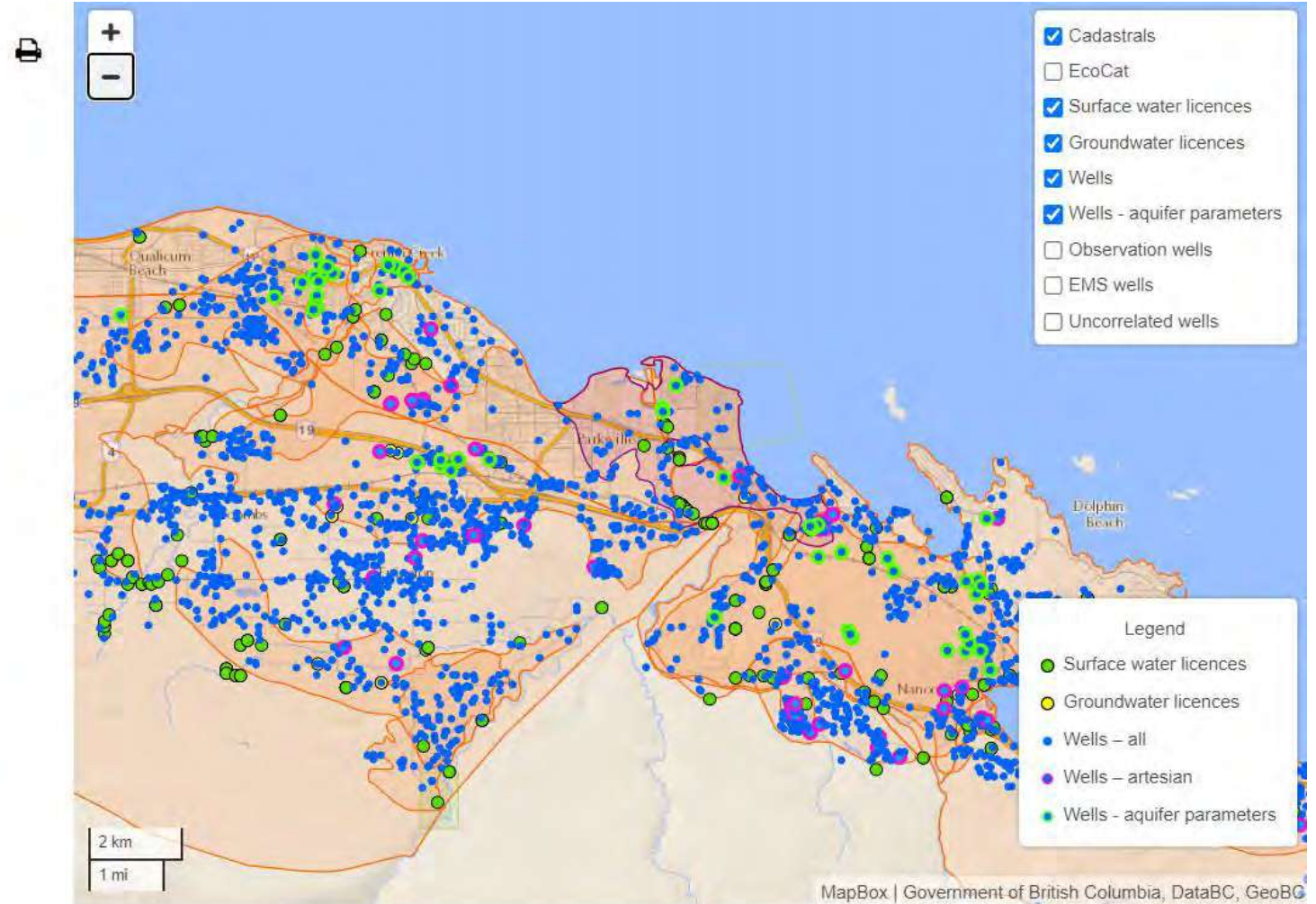
Aquifer Protection DPA for EA F



2023 Provincial Aquifer Maps

Aquifer 221 Summary

Aquifer number	221
Year of mapping	2023
Aquifer name	
Litho stratigraphic unit	Salish Sediments
Descriptive location	Parksville
Vulnerability ⓘ	High
Material type	Sand and Gravel
Subtype ⓘ	Unconfined sand and gravel - deltaic
Quality concerns ⓘ	
Productivity ⓘ	High
Size (km ²)	9.6
Calculated well density ⓘ	Moderate



Rising Risk – Adapt or Expensive Victim?

- MIABC sees evolving liability risk for local governments around climate change & advises local governments can be held liable for:
 - Development decisions – e.g., in areas of reasonably foreseeable hazards, such as flood plains or high-risk fire areas
 - Failure to properly design or maintain assets and infrastructure – e.g., not maintaining equipment, or failure to update infrastructure to meet expected conditions of operation
- MIABC recommendations:
 1. Incorporate natural assets into AM plan.
 2. Consider how development decisions will impact drainage, flooding, slope stability, and wildfire risks.
 3. Have a written, preferably Board approved, policy establishing an inspection and maintenance plan for your engineered and natural assets.