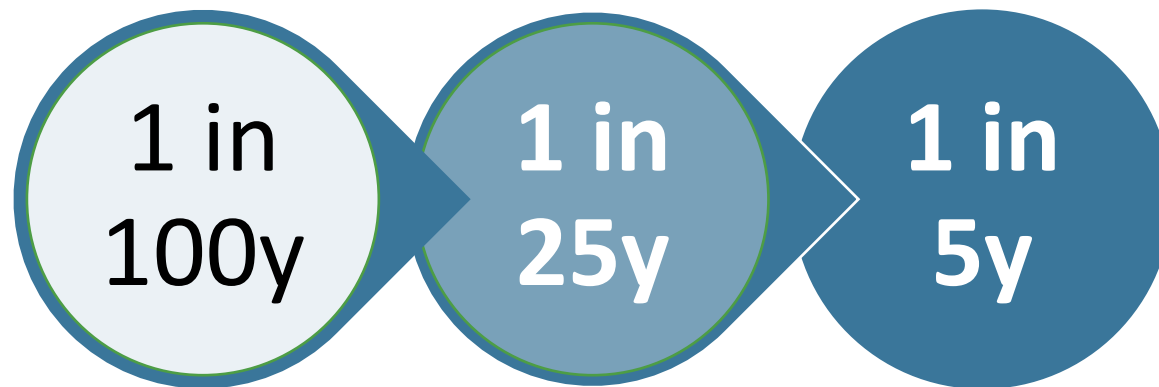


# Integration of Asset Management, Land Use Planning & Climate Action

Kim Fowler, Regional District of Nanaimo  
November 8, 2023

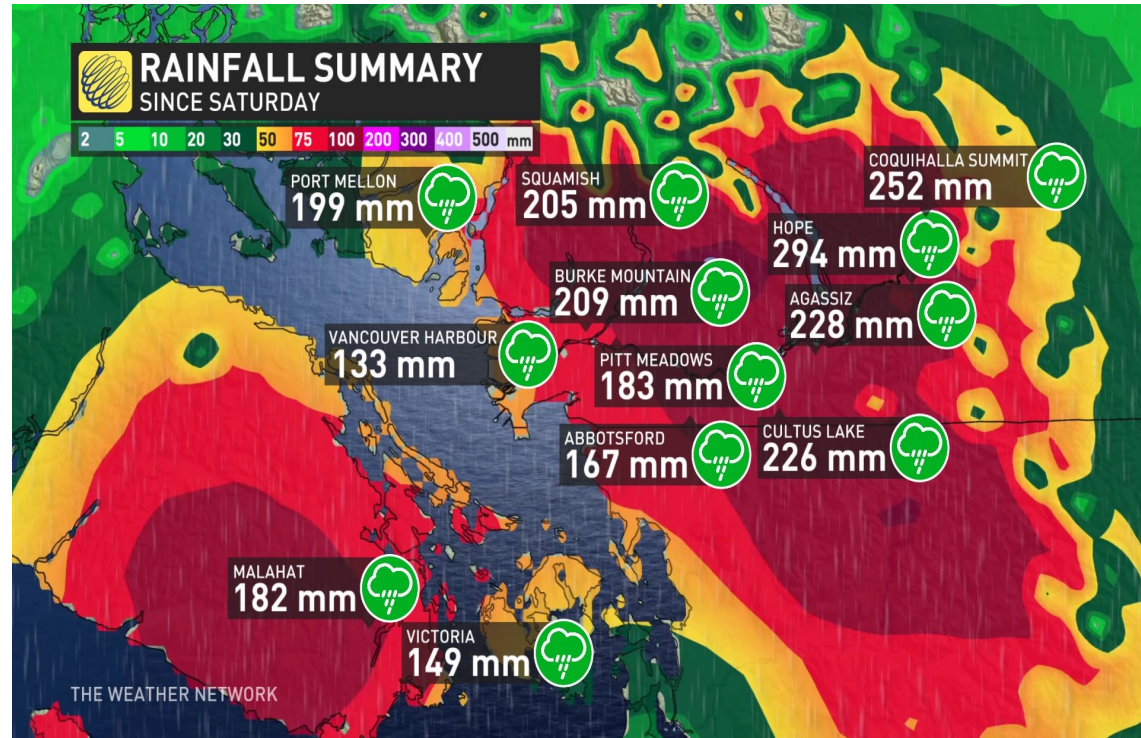
# Climate change trends

- 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)



# Surf's Up on the Malahat

## Nov 15, 2021

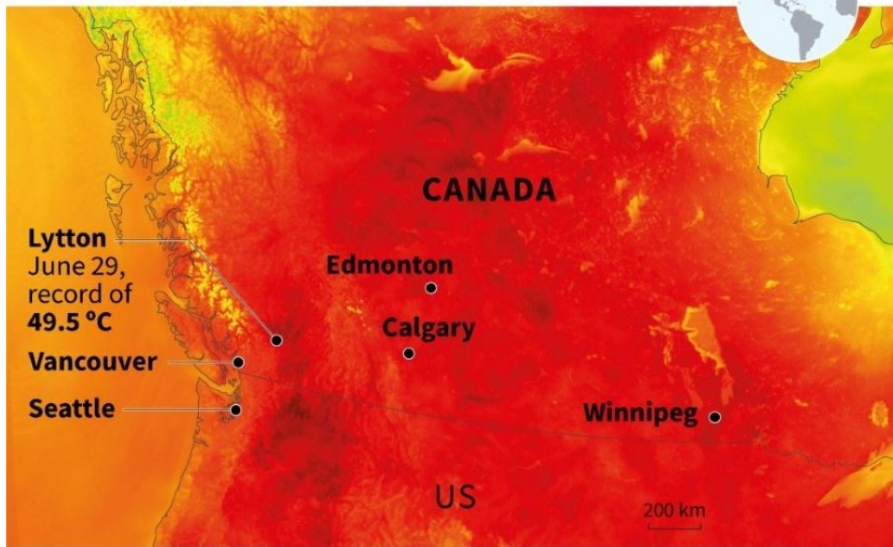




# 595 People Died in BC Summer Heat Wave July 2021

## Extreme heat in Canada and the US

Forecast temperatures to July 1



Source: Canadian Meteorological Service



## Climate emergencies in southern British Columbia the last five months



CBC NEWS

Map: Justin Mcelroy

# Rising Risk – Adapt or Expensive Victim?

- The cost of climate change to road infrastructure will be \$1-2 billion/yr and \$1 billion/yr for electrical infrastructure in Canada. 50-90% of that damage can be avoided with modest infrastructure investments.\*
- Ballooning infrastructure funding gap.
- The time to adapt is now. Proactive adaptation can avoid most risk. Imperfect information must not be a barrier. Lack of political will can no longer be one of the biggest risks.\*

\* UNDER WATER: The Costs of Climate Change for Canada's Infrastructure  
Canadian Institute for Climate Choices , 2021

# Get Off the Disaster Hamster Wheel\*

- Floods, severe winds, wildfires, and other perils are costing Canada about \$6 billion annually; about \$2.2 billion is insured while the rest is uninsured (2022 data).
- Growing 9%/yr, which is 3x faster than GDP, 6x new construction, and 10x faster than the population.
- Shows we're creating new risk & something is wrong with what we are building, how we are building and where we are building.

\* McGillivray, Glenn & Keith Porter, **Opinion: We have to get off the disaster hamster wheel**, November 24, 2022, **Advert: Focus on Disaster Management**

# 2019 Canadian Infrastructure Report Card

- 40% of roads & bridges are in fair, poor or very poor condition with roughly 80% more than 20 years old.
- 30-35% of recreational & cultural facilities are in fair, poor or very poor condition. In some categories (such as pools, libraries & community centres), more than 60% are at least 20 years old.
- 30% of water infrastructure (such as watermains & sewers) are in fair, poor or very poor condition.





# Integrated Approach to Climate Adaptation



All municipalities  
Technical Advisors  
All RDN Departments  
Community Stakeholders  
Peer local governments  
Provincial and Federal Governments

# 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



# Regulatory Flood Mapping Approach

## 1. Topography & Bathymetry Data

- channel and floodplain shape

## 2. Hydrologic Assessment

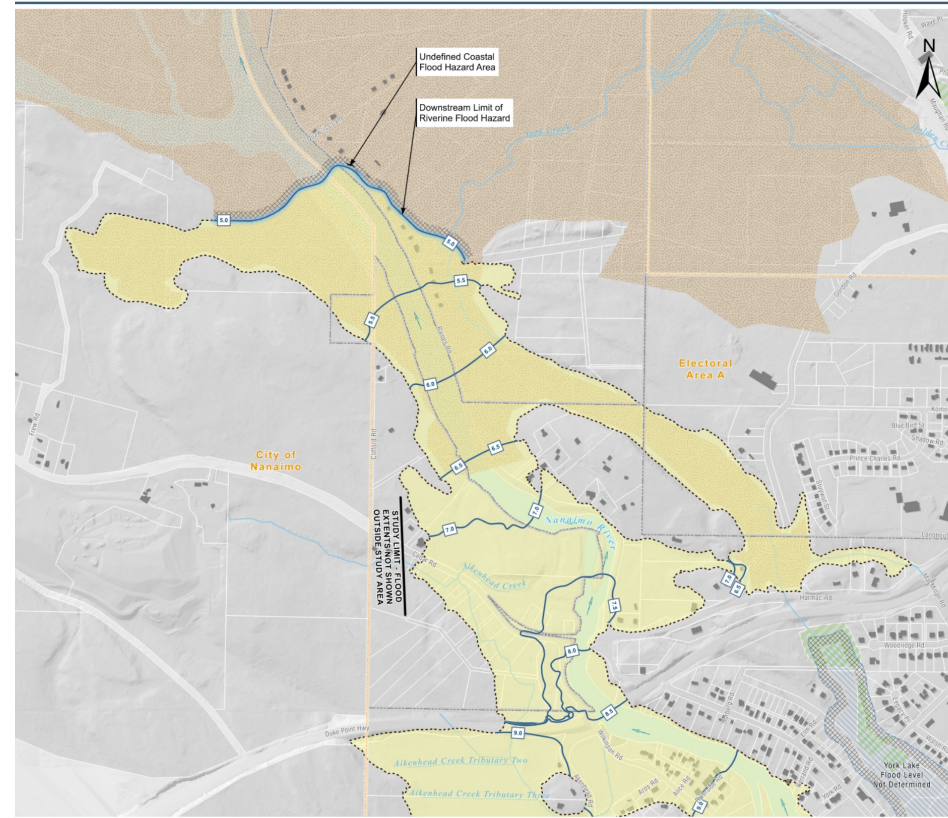
- flood flow size and shape
- climate change allowance

## 3. Hydraulic Modelling

- translating flow to water level
- sea level rise

## 4. Mapping

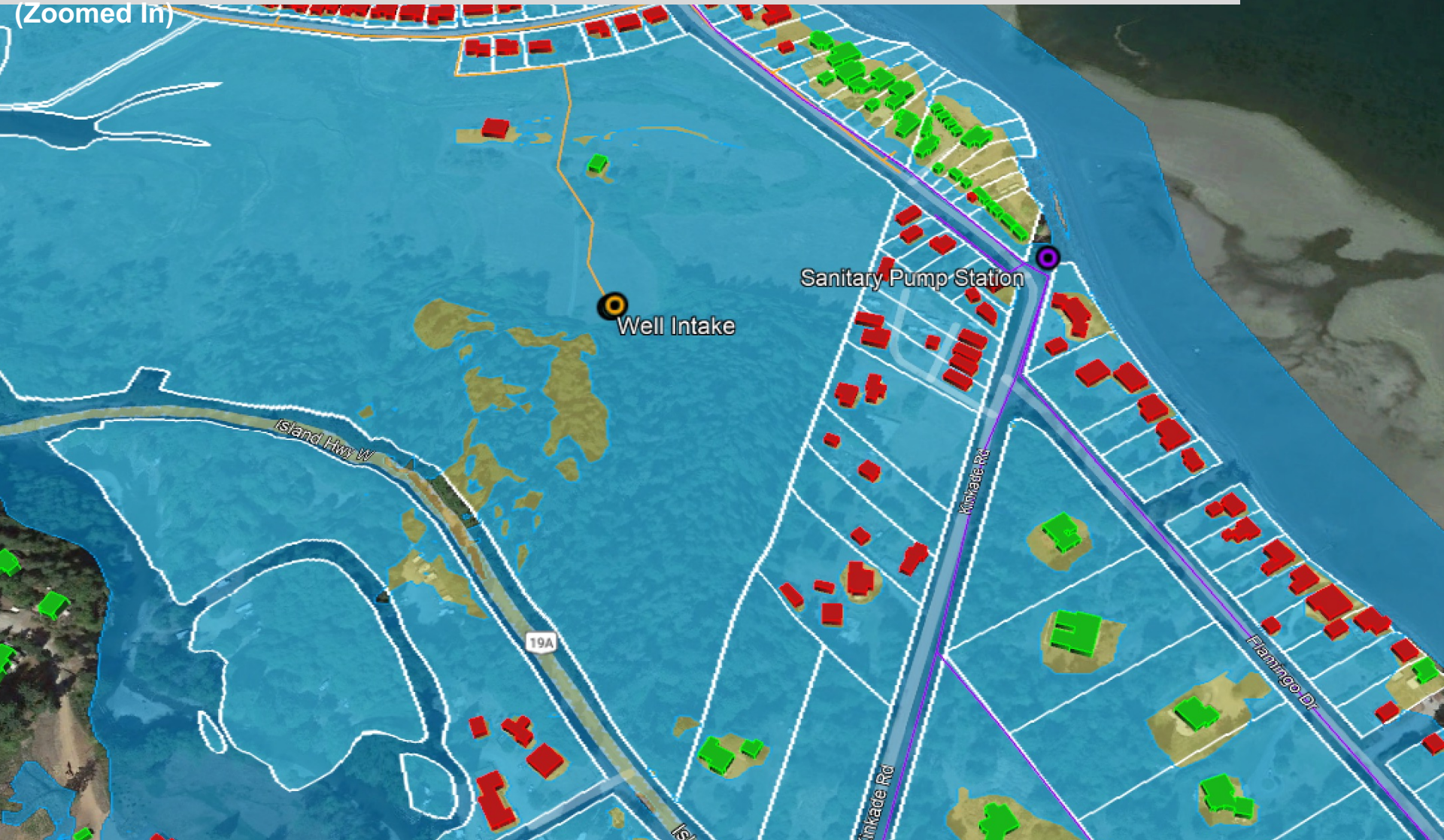
- map background features
- map floodplain limits & flood levels



# Prelim. Results (200-yr / YR 2100)

**EXTREME RIVER FLOOD** UNDER FUTURE CLIMATE CONDITIONS

(Zoomed In)



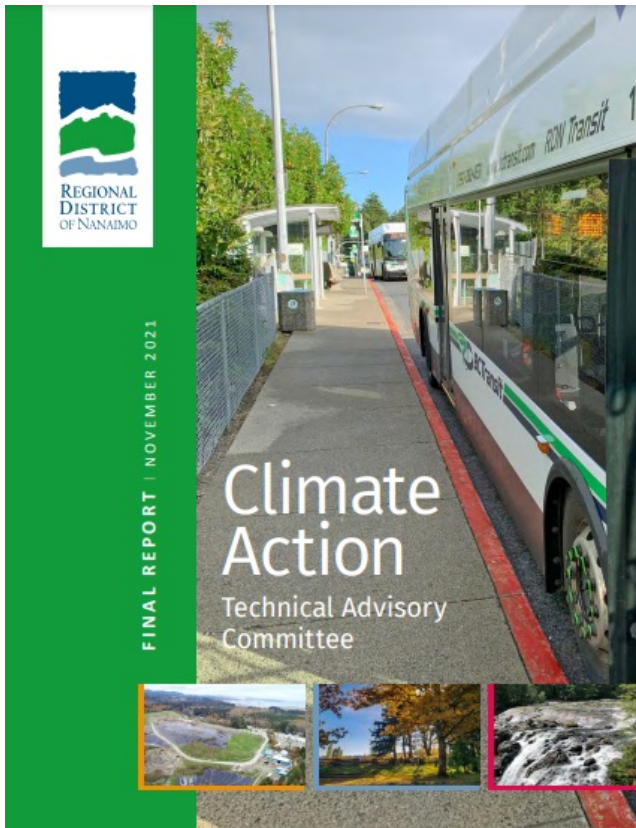
# Rising Risk – Adapt or Expensive Victim?

- 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.

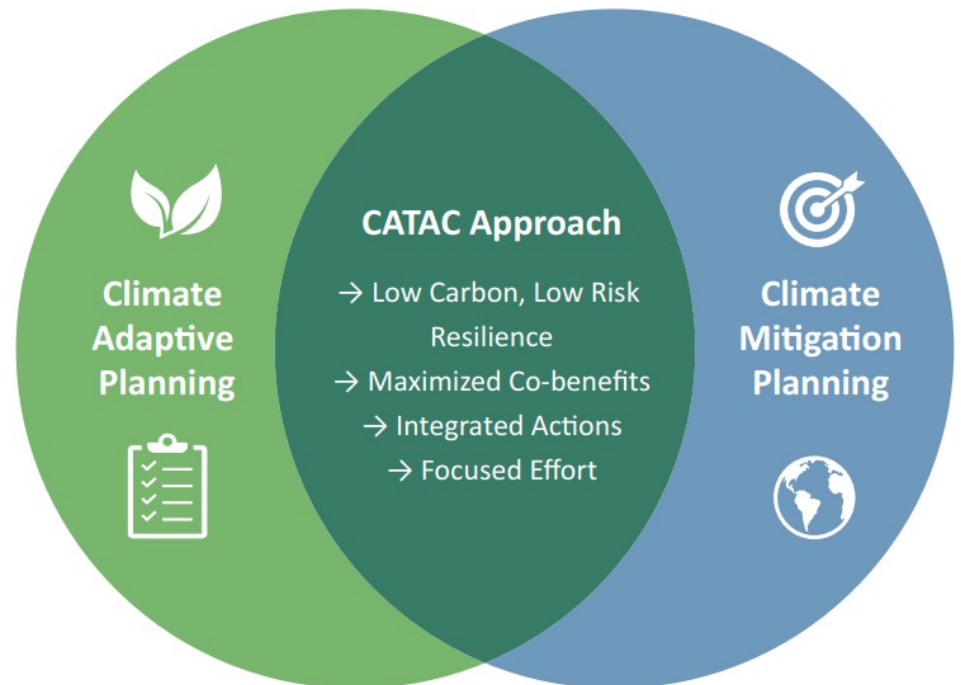
# Hwy 1, Sumas Prairie, Abbotsford November 21, 2021



# Climate Action Technical Committee Final Report – December 2021



- Technical team, focused approach



# 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



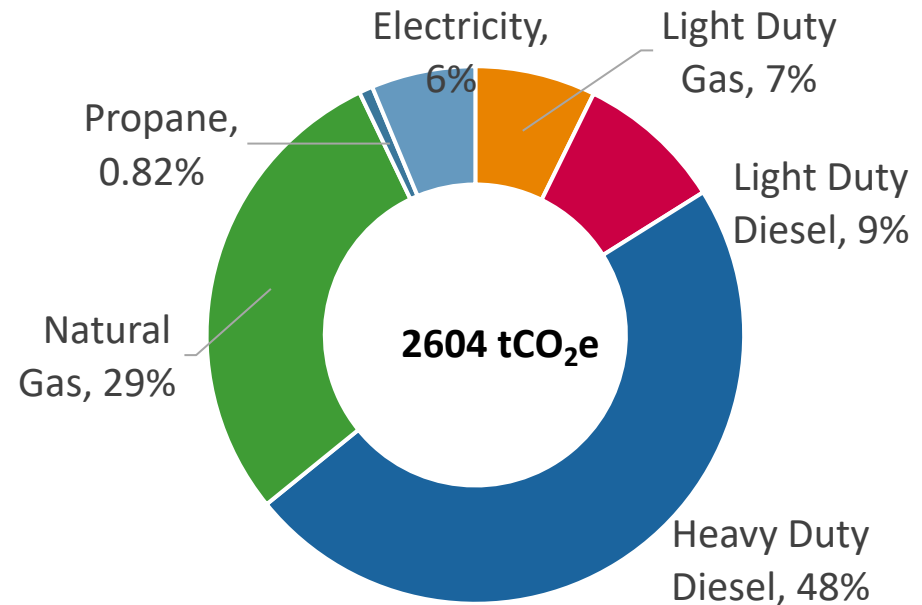
- Development permit areas
- Net Zero Building and localized energy generation
- Opportunities in building bylaw review



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

# Corporate Carbon Neutral 2032 Plan - *Implementation*

- Prioritize fuel switching, waste heat recovery & light duty fleet electrification
- Net Zero Pathways for each facility
- Policy Development - Buildings
- Shift from “sticker” to lifecycle cost thinking
- **Challenges** include focus on up front costs & market solutions for heavy duty fleet
- **Credits** – organics/landfill gas



# CCNP 2032 – *Opportunities*



Savings over lifetime of infrastructure

Less exposure to energy price changes  
Avoided cost of retrofits  
Grant funding



Sharing knowledge with the community

Low carbon building materials  
Design for deconstruction  
Sourcing from local suppliers



Support for other RDN initiatives

Rainwater management  
FireSmart  
Zero Waste

# RDN Green Building Program



**Connecting** residents with resources needed to take next steps on more sustainable homes



**Outreach & Education** on sustainable building options



Small, stackable rebates for **RDN Electoral Area** residents.

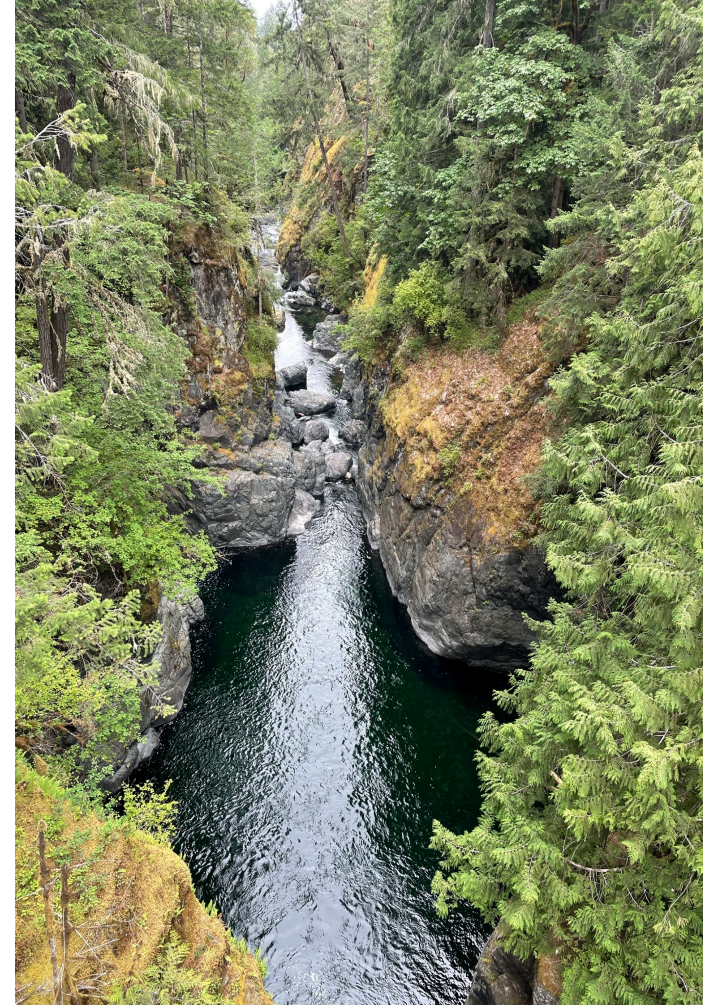
# RDN's Growth Management Framework

## Key strategies:

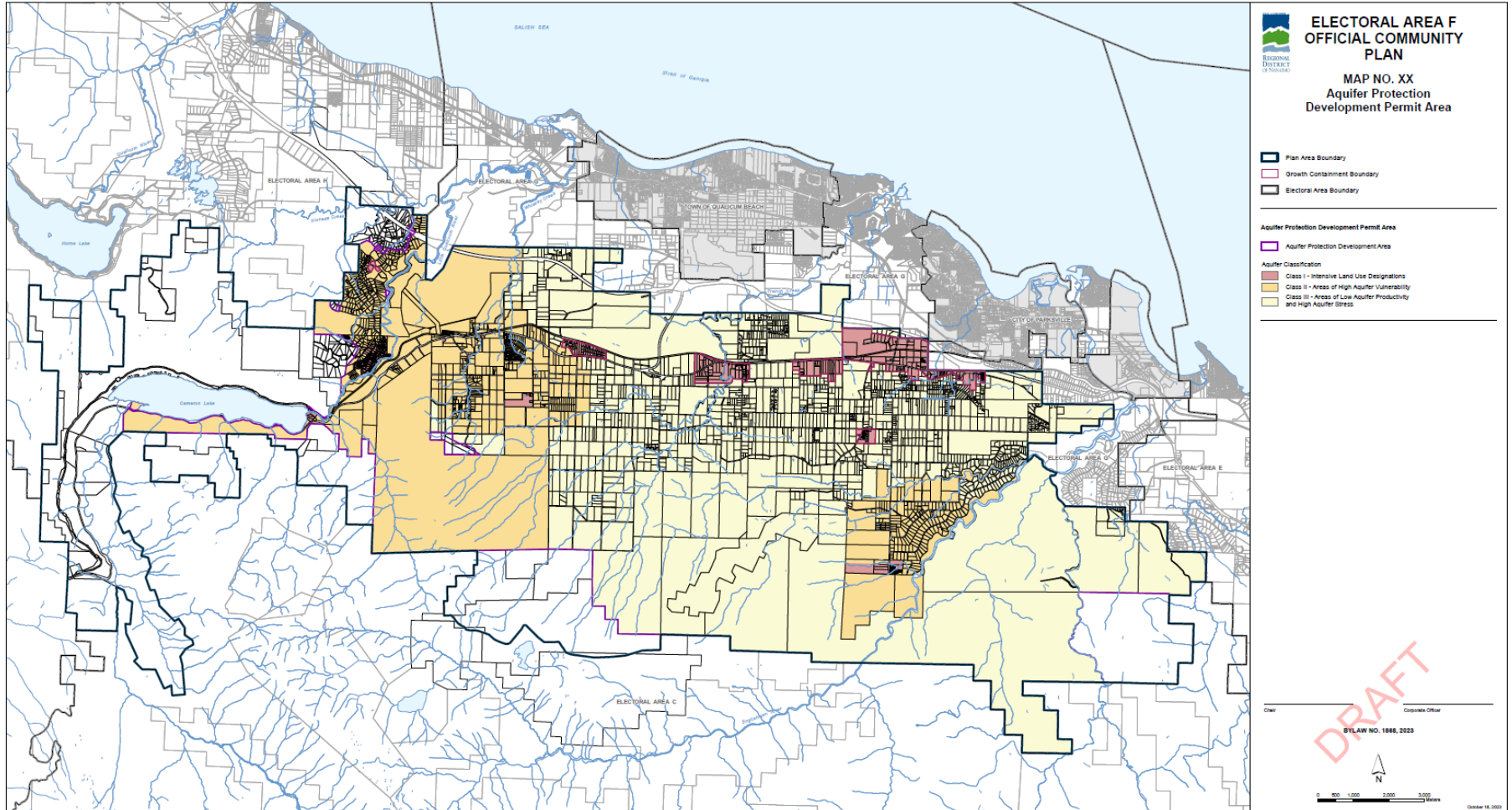
- Land Use Designations
- Growth Containment Boundaries
- Supporting Policies

*Avoid sprawl.*

*Achieve Compact, Connected,  
Complete Communities.*








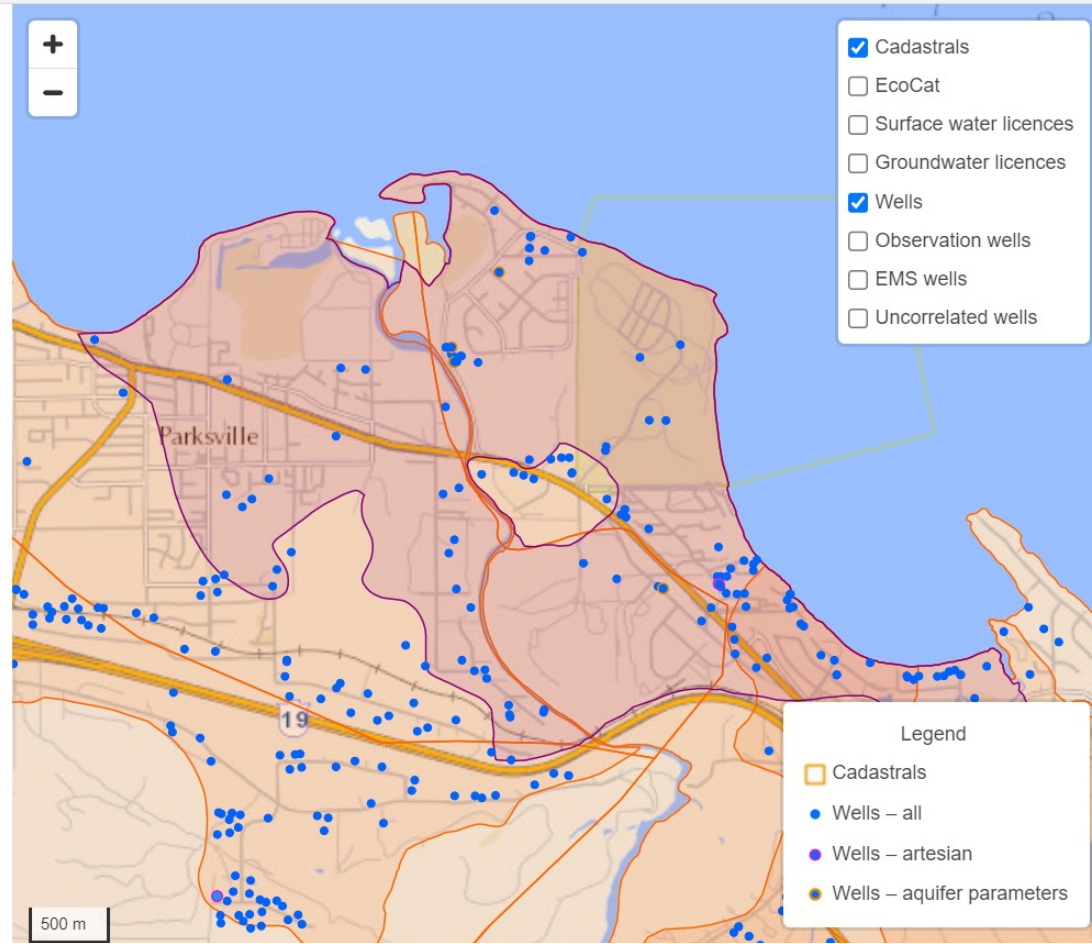
# Aquifer Protection DPA for EA F



# Newly Released 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 <sup>2</sup> )	9.6
Calculated well density 	Moderate





**ELECTORAL AREA F  
OFFICIAL COMMUNITY  
PLAN**

**MAP NO. 3  
ENVIRONMENTAL FEATURES**

- Plan Area Boundary
- Growth Containment Boundary
- Electoral Area Boundary

- Heron Nesting Trees\*
- Eagle Nesting Trees\*
- Wetlands, Fresh Water Atlas\*
- Coastal Douglas Fir Landuse Order (Crown Land)\*
- Old Growth Management Areas\*

\*Source: Province of BC, 2022

**Natural Asset Inventory - Regional District of Nanaimo, 2022**

- Forest
- Shrubland
- Wetland

**Sensitive Ecosystem Inventory - Province of BC, 2004**

- Coastal Bluff
- Seasonally Flooded Agricultural Land
- Terrestrial Herbaceous
- Older Forest
- Riparian
- Second Growth Forest
- Sparsely Vegetated
- Woodland
- Wetland

Chair \_\_\_\_\_ Corporate Officer \_\_\_\_\_

BYLAW NO. 1888, 2023

DRAFT

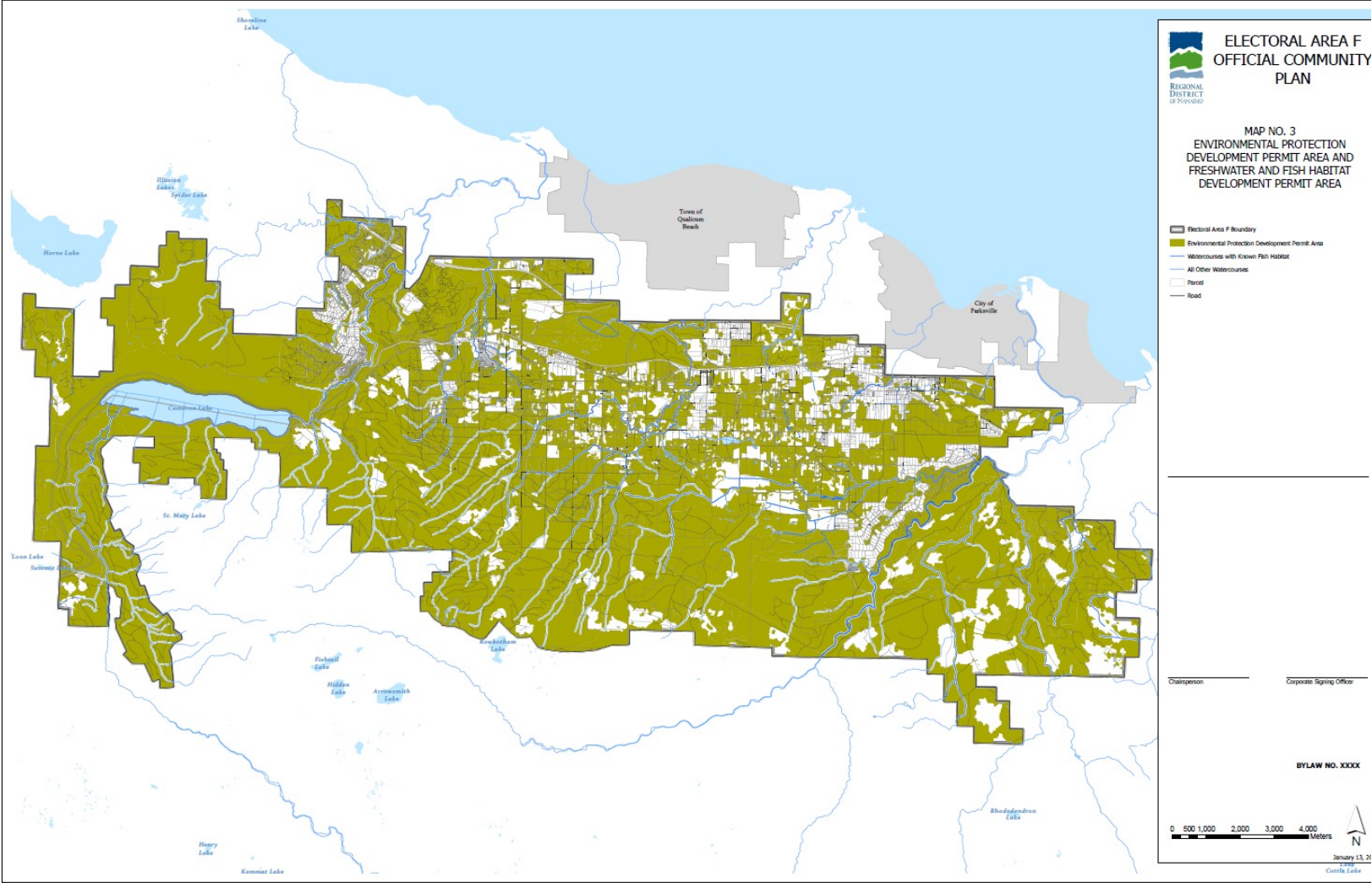


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January 24, 2023

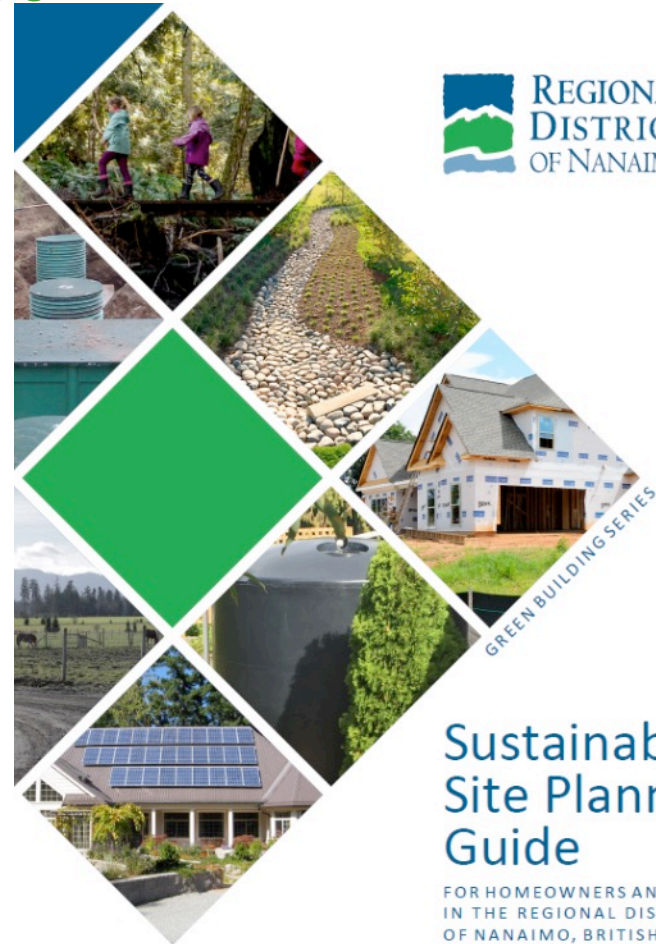


# Environmentally Sensitive Areas DPA



# Sustainable Site Planning Guide & Checklist

- Planning tool for homeowners and builders to minimize or restore natural environmental impacts of construction, landscaping, and major renovation projects.
- Site planning develops a thorough understanding of local area characteristics, such as its water, soil and climate before site design begins.
- Increase home comfort & reduce long-term O&M costs



## Sustainable Site Planning Guide

FOR HOMEOWNERS AND BUILDERS  
IN THE REGIONAL DISTRICT  
OF NANAIMO, BRITISH COLUMBIA

# Board Policy on Climate Action (Key: It's all about water!)

- Will set climate action as a corporate priority, minimize risk, and set high level of service
  - Managed retreat from high-risk areas and focus on high-risk assets owned by local government
- Provide overall framework for land use adaptation, CATAC, CCNP 2032, DWWP, green building, utilities and waste management



# Questions?

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Tel: 250-714-6719

