

Adapting to Climate Change on the British Columbia Coast

Video Series

 <https://www.youtube.com/playlist?list=PLbER4Sxdn0R4RkkJN5sKGzM0CdkOjUQs1>

Scope

Adapting to climate change can be manageable if its planned early, and if its implemented in small steps. Our relationship with water will be central to our adaptation to climate change.

This Video Series provides an introduction to living with climate change on the BC Coast, with special attention to three subject areas:

- **Coastal Flood Management** - examples of adaptation to sea level rise
- **Rainwater Management** - examples of adaptation to changed precipitation and stormwater patterns
- **Water Conservation** - examples of adaptation to seasonal droughts

Audience

Our audience for these videos is the general public and their elected representatives. We introduce key concepts, and we show what our colleagues are doing to adapt right now. The actions shown in the video series have benefits that extend beyond resilience to climate change.

For links to the series embedded in web-pages, please use:

<https://www.youtube.com/playlist?list=PLbER4Sxdn0R4RkkJN5sKGzM0CdkOjUQs1>

For embedding module-specific URLs, please select them from the series on the YouTube channel.



**Coastal Flood
Management**



**Rainwater
Management**



**Water
Conservation**

Viewing the Series

You may choose to watch one or two modules only to address a specific issue. Or you may focus on modules in only one of the three themes: Coastal Flood Management, Rainwater Management, or Water Conservation.

B.C. Adapts: Climate Change Backgrounder

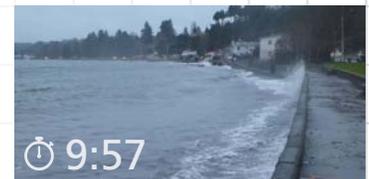
Please be sure to review the Backgrounder video in the first module. It introduces recent climate change trends in BC that are relevant to all the videos that follow.

After viewing the Backgrounder video, you may watch the videos in any order. Viewing in numerical sequence provides a 'general to specific' organization. Links to more detailed science-based and technical information are provided at the end of each video module.



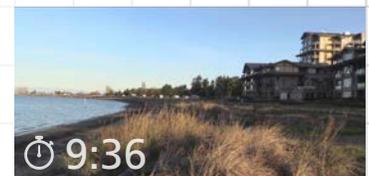
Coastal Flood Management 1

Planning for Sea Level Rise: By planning ahead and building Sea Level Rise adaptation into our projects now, we can save human lives and property, preserve our coastal ecosystems, and minimize trauma and expense of disaster-response in coastal floodplains.



Coastal Flood Management 2

Partnerships for Sea Level Rise Adaptation: A wide variety of stakeholders have an interest in avoiding flooding consequences. There are some surprising opportunities for partnerships in funding and implementing adaptation.



Coastal Flood Management 3

Adapting Existing Buildings & Neighbourhoods: We need to avoid building new communities in locations where they will have to be relocated when sea levels rise. Where buildings and neighbourhoods already exist in a coastal floodplain, adaptation innovations can reduce the consequences of coastal flooding.



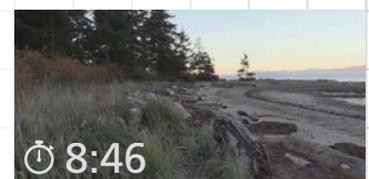
Coastal Flood Management 4

Design of Raised Shorelines: Increased Sea Level Rise may create a need to raise shorelines at existing developments – by dikes, floodwalls, or raised beaches. Careful site-specific design is required for all types of raised shorelines.



Coastal Flood Management 5

Green Shores: Green Shores strive to work with shoreline physical and biological processes to adapt to sea level rise. They often include a raised beach with gentle slopes of sand and gravel, and protect or re-introduce shoreline native vegetation to provide habitat and filter pollutants.





Coastal Flood Management 6

Integration into Urban Design: High density and mixed use developments can be compatible with climate change. But there are urban design challenges that will require creative solutions, including how raised floors relate to streets, and in phasing of adaptation as redevelopment occurs incrementally.



Rainwater Management 1

Why? An Introduction: In British Columbia, climate change is expected to bring more intense short duration storms and increased runoff from roof and pavement. To adapt to climate change, we need to increase the use of low impact green infrastructure across our urbanizing watersheds.



Rainwater Management 2

Streets & Surface Parking: Adding green infrastructure to streets can increase water quality and reduce the volume of runoff entering stormwater pipes. Rainfall can take natural pathways through the soil to support groundwater and ecosystems.



Rainwater Management 3

Design for the Rainfall Spectrum: Green infrastructure should be designed to perform in all three tiers of the rainfall spectrum: small (including showers), large (annual storms), and extreme (rare occurrences).



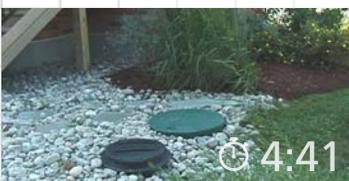
Water Conservation 1

Why? An Introduction: Climate change induced summer droughts are expected to make the need for effective water conservation more urgent than ever. New technologies to make water conservation easy are becoming mainstream around the world.



Water Conservation 2

Water Conservation Outdoors: As we adjust to climate change induced summer droughts, reducing our outdoor water use can reduce our impacts on water needed to keep streams flowing and wetland habitat wet.



Water Conservation 3

Rainwater Harvesting: Water from rooftops is relatively clean. While not suitable for human contact without treatment, it has several beneficial uses in our yards and buildings. As climate change creates more summer drought conditions, and water prices rise, rainwater harvesting and reuse will become increasingly common in BC.



Water Conservation 4

Water Treatment & Reuse: Tertiary treatment of wastewater can create non-potable water for irrigation, toilet flushing, laundry, and industrial processes. The 'fit for use' application of water resources is key to climate change adaptation.

With funding and in kind support from:



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Ministry of
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Natural Resources Canada through the Adaptation
Platform

British Columbia Ministry of Environment

British Columbia Climate Action Secretariat

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Capital Regional District

City of Burnaby

City of Nanaimo

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Advisory Committee:

John Sommerville, PARDP Policy Analyst

Thomas White, Manager, Science and Adaptation

Kari Tyler, BSc, M.Ed.

Cathy LeBlanc, BA, M.Sc.Pl.

Dirk Nyland, P.Eng., Chief Engineer

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Luke Sales, MCIP, RPP

Nikki Elliott, CSP

Trevor Murdock, MSc., Climate Scientist

D.G. (Dorothy) Blair, M.Sc.

Rowland Atkins, M.Sc., P. Geo.

Robert Millar, Ph.D., P.Eng.

Phil Osborne, P.Geo., Ph.D.

Troy Vassos, Ph.D., FEC, P.Eng.

Harriet Rueggeberg, Planner/Water Resources

Climate Change Impacts and Adaptation Division, Natural Resources Canada

BC Ministry of Environment, Climate Action Secretariat

BC Ministry of Environment, Climate Action Secretariat

BC Ministry of Community, Sport and Cultural Development

BC Ministry of Transportation and Infrastructure

Manager Utilities, Regional District of Nanaimo

Metro Vancouver (Greater Vancouver Regional District)

City of Vancouver Engineering

City of Vancouver Sustainability

City of Burnaby Engineering

Environmental Planner, City of Nanaimo

City of Nanaimo (retired)

Planner, Town of Qualicum Beach

Climate Action Program Coordinator, Capital Regional District

Pacific Climate Impacts Consortium, University of Victoria

Executive Director, Stewardship Centre for BC

Principal, Geomorphologist, Golder Associates Ltd. Victoria

Associate, Hydrologist, Golder Associates Ltd. Vancouver

Principal, Coastal / SLR Expert, Golder Associates Ltd. Vancouver

Troy David Vassos Inc., UBC Adjunct Professor, Vancouver

Consultant, Green Shores Technical Team

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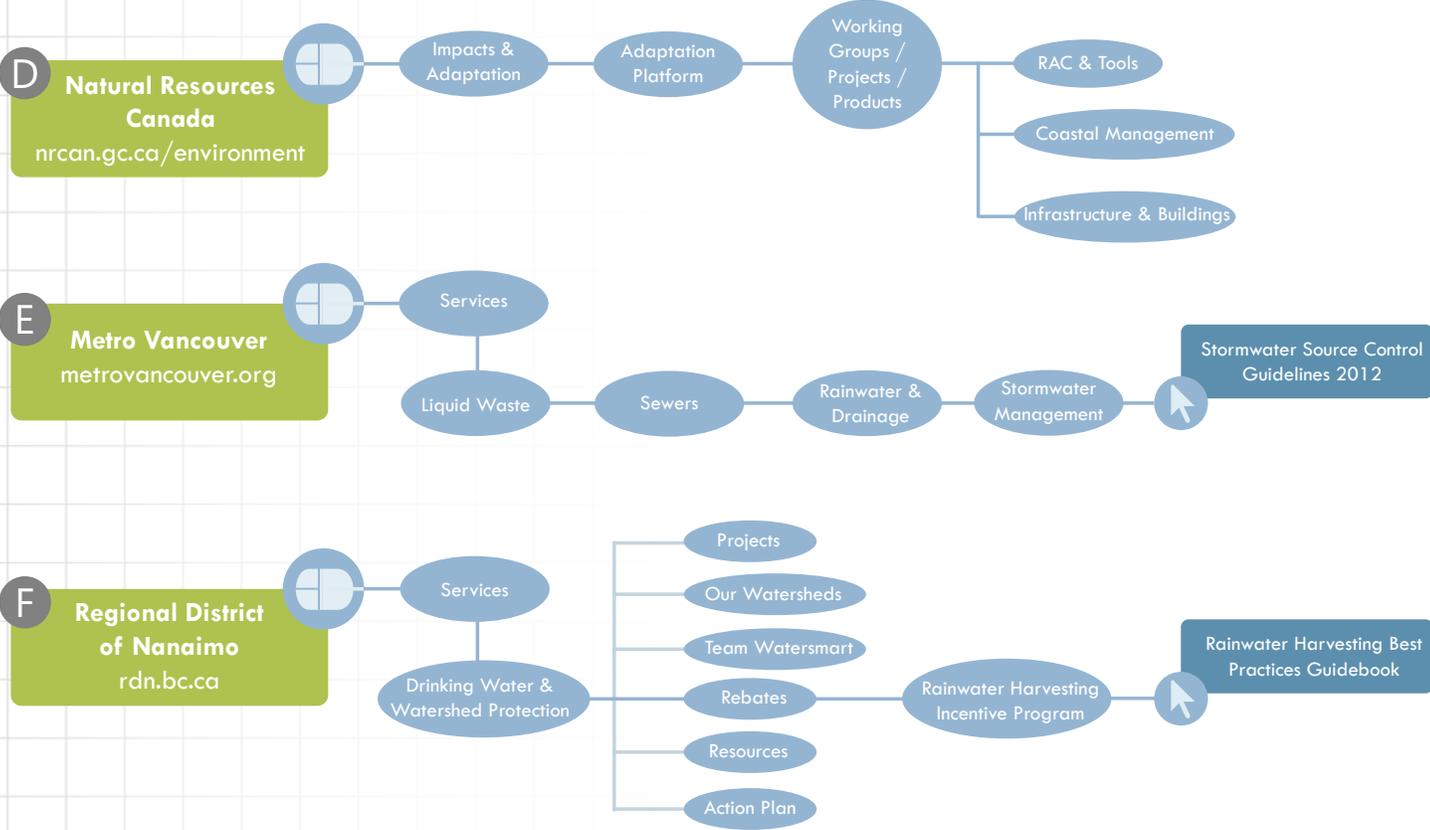
- **Coastal Flood Management** - examples of adaptation to sea level rise
- **Rainwater Management** - examples of adaptation to changed precipitation and stormwater patterns
- **Water Conservation** - examples of adaptation to seasonal droughts

For additional information:

A **Adaptation Library**
www.adaptationlibrary.ca

B **Plan 2 Adapt Analysis Tool**
plan2adapt.ca

C **Climate Insights 101 Course**
pics.uvic.ca/education



G **Stewardship Centre for British Columbia**
stewardshipcentrebc.ca

H **Water Sustainability Tools & Resources**
waterbucket.ca

I **Pacific Climate Impacts Consortium**
pacificclimate.org

J **BC Climate Action Toolkit**
toolkit.bc.ca

Coastal Flood Management:

A

Adaptation Library
www.adaptationlibrary.ca

BC MINISTRY OF ENVIRONMENT

Sea Level Rise Adaptation Primer: A Toolkit to Build Adaptive Capacity on Canada's South Coasts (2013)

Coastal Floodplain Mapping - Guidelines and Specifications (2011)

Sea Dike Guidelines: Climate Change Adaptation Guidelines for Sea Dikes and Coastal Flood Hazard Land Use (2011)

Guidelines for Management of Coastal Flood Hazard Land Use: Climate Change Adaptation Guidelines for Sea Dikes and Coastal Flood Hazard Land Use (2011)

Cost of Adaptation - Sea Dikes & Alternative Strategies (2012)

ATLANTIC CLIMATE ADAPTATIONS SOLUTIONS ASSOCIATION

Best Management Practices for Climate Change Adaptation in Dykelands: Recommendations for Fundy ACAS sites (2012)

Extreme Waves and Wave Runup in Halifax Harbour under Climate Change Scenarios (2012)

Coastal Climate Change in Prince Edward Island Parks: Retreat or Protect?

Scenarios and Guidance for Adaptation to climate change and sea level rise- NS and PEI Municipalities (2011)

Adapting to Climate Change: Coastal Flooding Ferryland, Newfoundland and Labrador (2012)

Vulnerability of Nova Scotia's Coastal Groundwater Supplies to Climate Change (2012)

Coastal Erosion and Climate Change (2011)

Climate Change and Shoreline Protection (2011)

Coastal Climate Change in Prince Edward Island: Shoreline Protection

NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Adapting to Climate Change: River Flooding Indian Bay, Newfoundland and Labrador (2012)

Adapting to Climate Change: Slope Movement Corner Brook, Newfoundland and Labrador (2012)

NOVA SCOTIA DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE DIRECTORATE

Visualising Sea-level Rise (2012)

PRINCE EDWARD ISLAND DEPARTMENT OF ENVIRONMENT

Coastal Flooding Issues (2011)

CANADIAN INSTITUTE OF PLANNERS

Climate Change Planning: Case Studies from Canadian Communities (2012)

UNIVERSITY OF BRITISH COLUMBIA COLLABORATIVE FOR ADVANCED LANDSCAPE PLANNING

Sea Level Rise Adaptation Visioning Study - Technical Report (2011)

SAINT FRANCIS XAVIER UNIVERSITY DEPARTMENT OF EARTH SCIENCES

Analytical modeling of saltwater intrusion: tests from Nova Scotia and the eastern United States (2011)

D

**Natural Resources
Canada**

nrcan.gc.ca/environment

BC MINISTRY OF ENVIRONMENT

Sea Level Rise in BC: mobilizing science into action

NATURAL RESOURCES CANADA

Adapting to sea level rise in Charlottetown, P.E.I. (2014)

Planning for Sea Level Rise in Halifax Harbour (2014)

G

**Stewardship Centre for
British Columbia**

stewardshipcentrebc.ca

STEWARDSHIP CENTRE FOR BRITISH COLUMBIA

Greening Shorelines to Enhance Resilience: An Evaluation of Approaches for Adaptation to Sea Level Rise (2014)

Rainwater Management:

A

Adaptation Library
www.adaptationlibrary.ca

REGIONAL DISTRICT OF NANAIMO

Primer on Integrated Rainwater and Groundwater Management for Lands on Vancouver Island and Beyond - Integrating the Site with the Watershed and the Stream (2012)

TOWN OF STRATFORD

Impacts of Climate Change on Stormwater Management: Stormwater Management Plan Update (2012)

OKANAGAN BASIN WATER BOARD

From Rain to Resource 2010 Managing Stormwater in a Changing Climate

Slow it. Spread it. Sink it. An Okanagan Homeowner's Guide to Using Rain as a Resource (2011)

D

**Natural Resources
Canada**
nrcan.gc.ca/environment

INSTITUTE FOR CATASTROPHIC LOSS REDUCTION

Best practices guide: Management of inflow and infiltration in new urban developments (2015)

Cities adapt to extreme rainfall (2014)

CITY OF BURNABY ENGINEERING

Metro Vancouver's Stormwater Management Program (2014)

TOWN OF ANNAPOLIS ROYAL

Preparing for Storm Surges in Annapolis Royal, Nova Scotia

PACIFIC CLIMATE IMPACTS CONSORTIUM; BC MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE

Review and Analysis of Climate Change Vulnerability Assessments of Canadian Water Management and Drainage Infrastructure (2014)

E

Metro Vancouver
metrovancover.org

METRO VANCOUVER

Stormwater Source Control Guidelines (2012)

F

**Regional District
of Nanaimo**
rdn.bc.ca

REGIONAL DISTRICT OF NANAIMO

Rainwater Harvesting Best Practices Guidebook (2012)

PACIFIC CLIMATE IMPACTS CONSORTIUM

Considerations for Addressing Climate Change for Water Handling Infrastructure In Highway Management, Design, Operation and Maintenance in British Columbia (2014)

Water Conservation:

A

Adaptation Library
www.adaptationlibrary.ca

NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION

When the Tap Runs Dry - Climate Variability and Community Water Supply (2012)

SIMON FRASER UNIVERSITY SCHOOL OF RESOURCE AND ENVIRONMENTAL MANAGEMENT

Assessing the effectiveness of climate change adaptation policies: a survey of residential preferences - Project Technical Summary

WATER CONSERVATION CALCULATOR

Water Conservation Calculator: Summary Brochure

CLEAN AIR PARTNERSHIP

Guelph Water Conservation Programming - Accelerating Adaptation in Canadian Communities

NATURAL RESOURCES CANADA

Okanagan Water Supply and Demand Project - Water Science for the Long-term

SASKATCHEWAN WATERSHED AUTHORITY

North Saskatchewan River Watershed Drought and Excessive Moisture Preparedness Plan (2011)

D

Natural Resources Canada
nrcan.gc.ca/environment

FRASER BASIN COUNCIL

Rethinking our Water Ways: A Guide to Water and Watershed Planning for B.C. Communities in the Face Of Climate Change and Other Challenges (2011)

General Reports:

D

Natural Resources Canada
nrcan.gc.ca/environment

NATURAL RESOURCES CANADA

Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation

Adapting to Climate Change: An Introduction for Canadian Municipalities (2010)

BC MINISTRY OF ENVIRONMENT

Adaptation planning: the local government experience in BC

CLEAN AIR PARTNERSHIP

Guide to Writing Community Adaptation Case Studies (2011)

I

Pacific Climate Impacts Consortium
pacificclimate.org

PACIFIC CLIMATE IMPACTS CONSORTIUM

BC Climate Summary: Cariboo

BC Climate Summary: Kootenay-Boundary

BC Climate Summary: Northeast

BC Climate Summary: Omineca

BC Climate Summary: Skeena

BC Climate Summary: South Coast

BC Climate Summary: Thompson-Okanagan

BC Climate Summary: West Coast