

**CEA TRANSPORTATION CONNECTS  
ALBERTA CONFERENCE 2024  
MARCH 10-12, 2024**

**HIGHWAY 8  
HYDROTECHNICAL  
EMERGENCY RESPONSE**

**PRESENTATION BY JASON MILLER, P.ENG.**

March 11, 2024

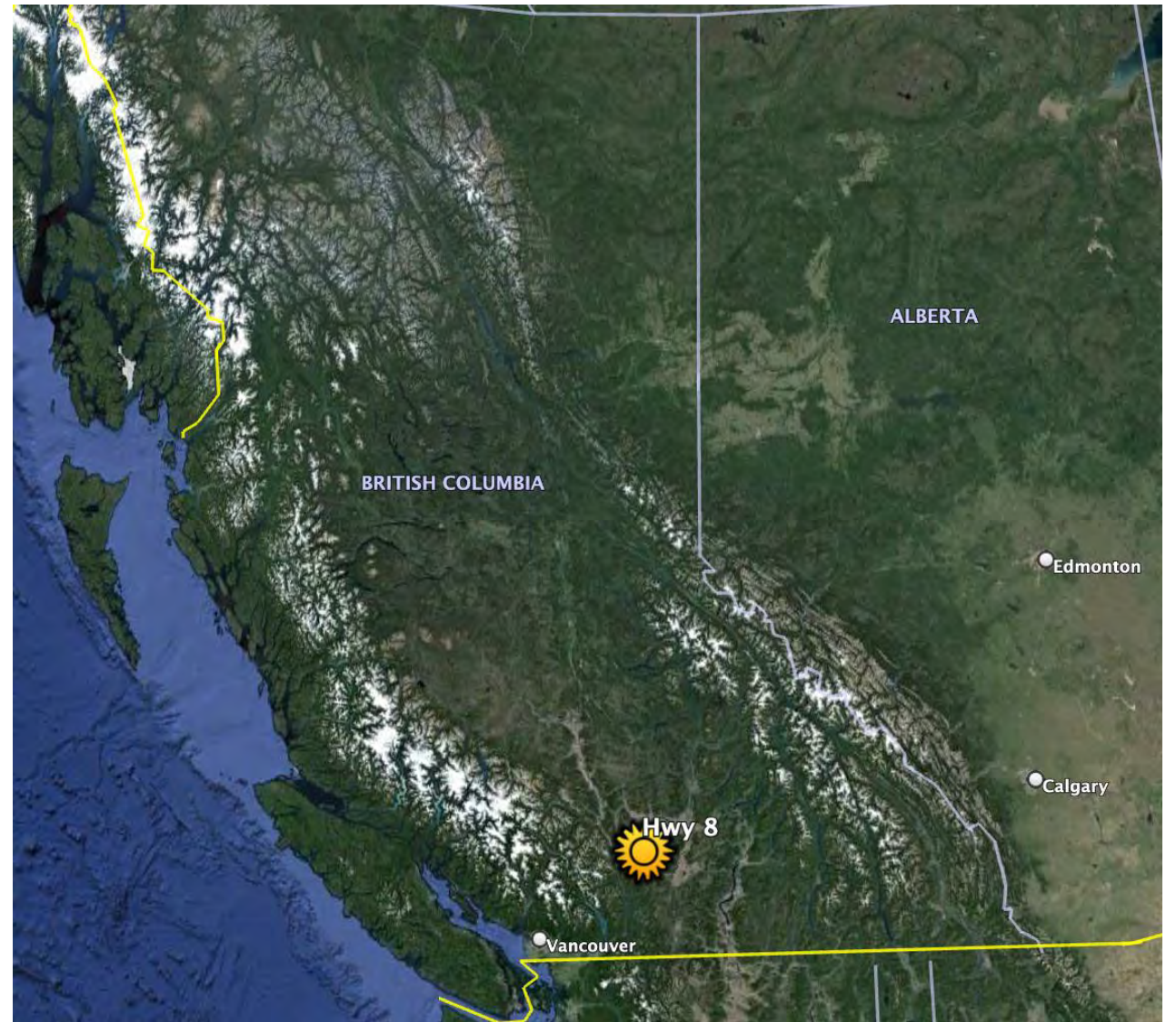


# OUTLINE

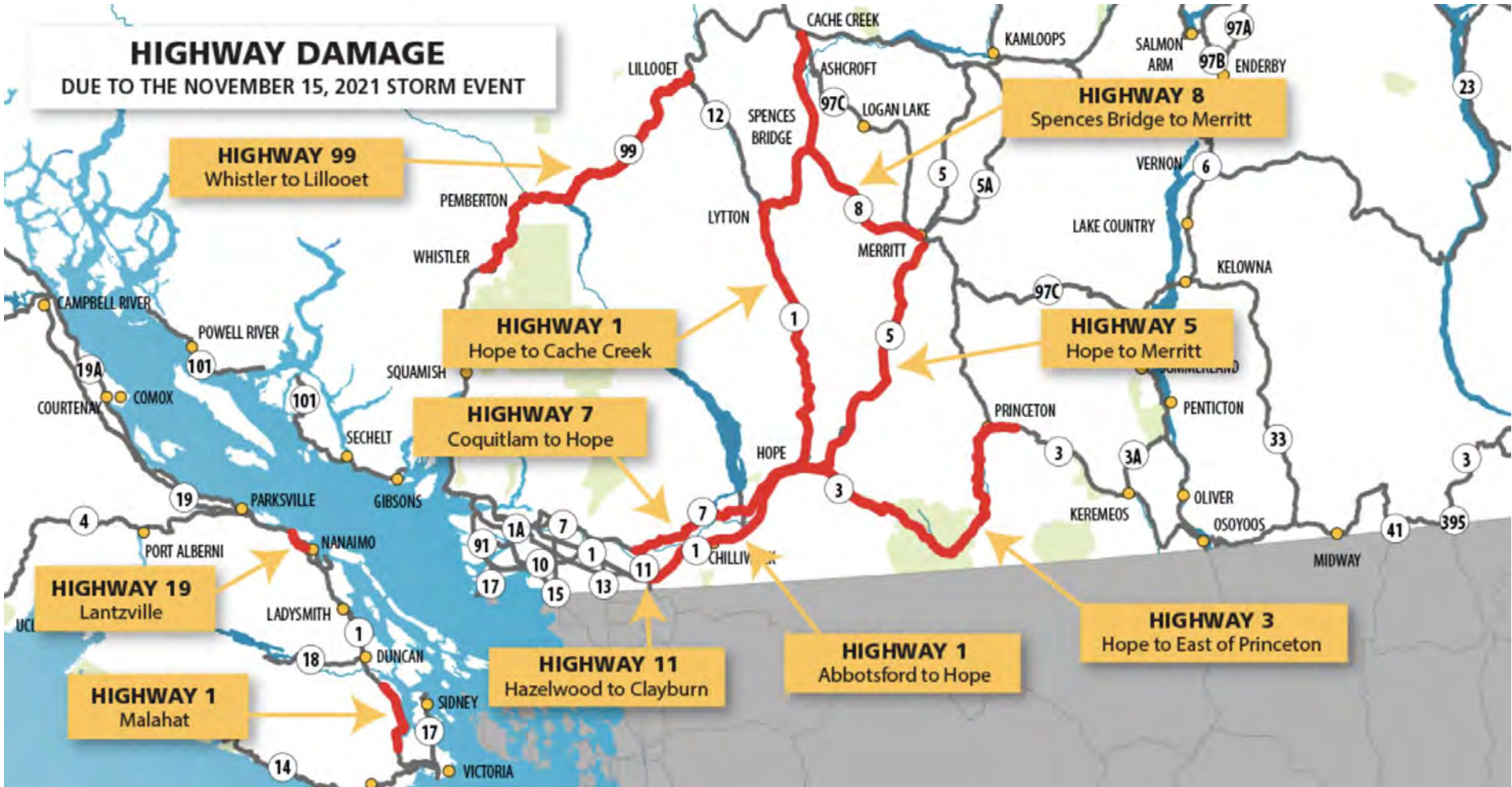
November 2021 Flood

Flood Response

Keys to Success



# NOVEMBER 2021 FLOOD EVENT



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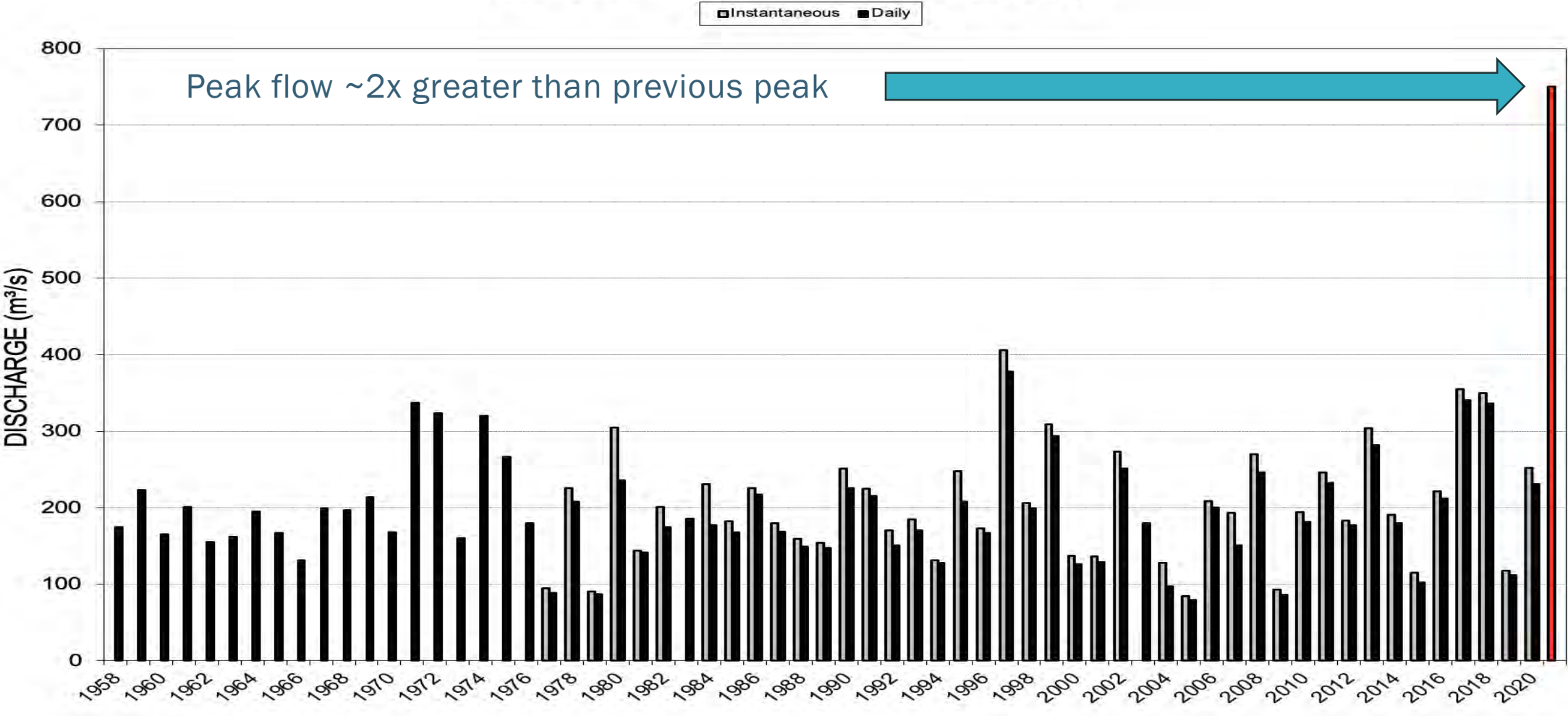
Wildfires in the headwaters  
Early snow in the mountains

Significant rain on BC South  
Coast and Coast Mountains  
>7 km of highway damaged –  
25 sites



# NOVEMBER 2021 FLOOD EVENT

Nicola River - WSC 08LG006 (1958 to 2021)



# FLOOD RESPONSE

CONSTRUCT – DESIGN – CONSTRUCT – PLAN

## CONSTRUCTION

Immediate response – restore access to communities

Available materials and equipment

Access and land ownership

River levels

## DESIGN

Limited time – use available background material

Develop guiding principles – consistent approach to response

Environmental considerations

Constraints



- Rebuilding road in original alignment



- Bound by right-of-way and reserve lands

# CONSTRUCTION / RESPONSE



- Diversions
- Four full river relocations



- Reduce work in flowing water where possible



- Bridge abutment repairs



- Bridge abutments on piles saved structures

# CONSTRUCTION / RESPONSE



- Temporary bridge installations



- New alignment due to significantly increased geotechnical hazards and environmental constraints





- Development of rock quarry



- Significant riprap transportation

# CONSTRUCTION / RESPONSE



- Environmental enhancements



- Live staking



# FLOOD RESPONSE

CONSTRUCT – DESIGN – CONSTRUCT – PLAN

## CONSTRUCTION

Construct elements not included in initial response

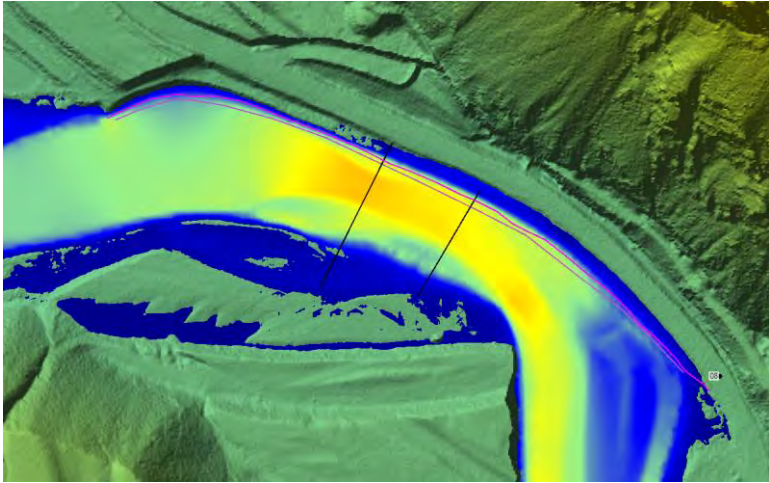
Repair initial works to match design developed for response

## PLAN

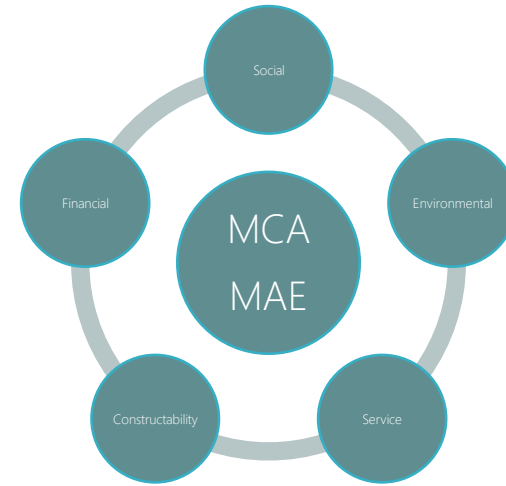
Hazard and risk assessment for corridor

Start preparation for recovery works

- Assess resiliency of response work
- Design recovery works to meet resiliency requirements
- Long term road alignment
- Incorporate environmental enhancements

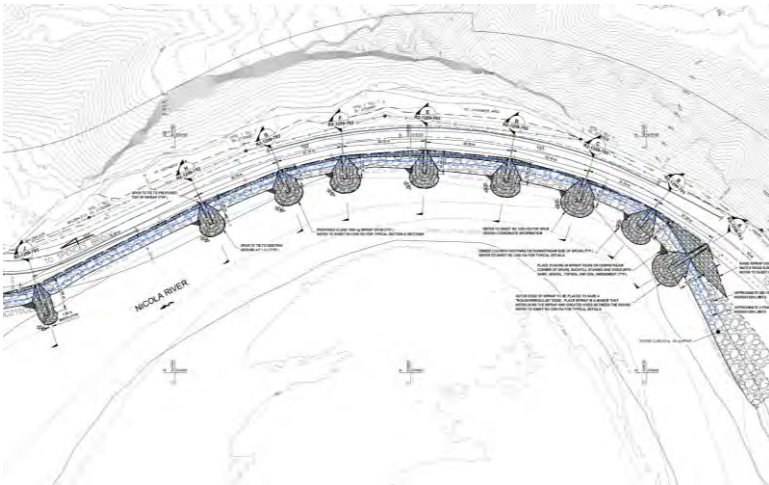


- Assess the resiliency of the response works

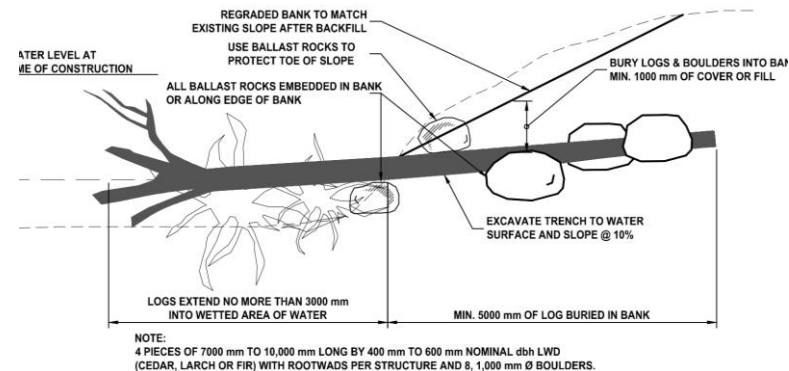


- Multiple Criteria Assessment and Multiple Accounts Evaluation for long term road alignment changes

# PLAN / RECOVERY



- Additional protections to achieve required resiliency



- Environmental enhancements / offsetting requirements

# FLOOD EVOLUTION

PRE-FLOOD



POST-FLOOD



RESPONSE COMPLETE





# KEYS TO SUCCESSFUL FLOOD RESPONSE AND RECOVERY

- Capture aerial imagery and LiDAR
- Collect highwater marks
- Communication – Start Early
  - Regular meetings with all discipline leads (engineering, contractors, environmental)
  - Regulators
  - Affected communities
- Flexibility of response work
  - Future additions/upgrades
  - Instream works
- Consider environmental enhancements during response



# THANK YOU

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# ACKNOWLEDGEMENT

**T**



Ministry of  
Transportation  
and Infrastructure



Video and some photos obtained from the BC Ministry of Transportation and Infrastructure website:  
<https://www2.gov.bc.ca/gov/content/transportation-projects/bc-highway-flood-recovery/2021-flood-road-recovery-projects-highway-8>