



# GTEN 2019 Symposium

October 21-23, 2019 | Banff, Alberta

## The Coastal GasLink Pipeline

### A Seven Year Journey to the Starting Line

Rick Gateman, Vice President Business Development  
Canada Gas, TC Energy

Presented at the Gas Turbines Energy Network (GTEN) 2019 Symposium  
Banff, Alberta, Canada - October 2019

The GTEN Committee shall not be responsible for statements or opinions advanced in technical papers or in symposium or meeting discussions.

# A Natural Gas Pipeline to serve the LNG Canada project

---

## *A company of significance to all of Canada*

When LNG Canada's Joint Venture Participants – Shell, Petronas, Petro China, Mitsubishi and Kogas – made a final investment decision on October 1, 2018, it signified the culmination of seven years of community engagement and consultation with First Nations, local communities, all levels of government, the business community, regulators and countless others. It showed that British Columbia and Canada are open for business for a major energy project – a project that today represents the largest private sector investment in Canadian history.

From the LNG Canada Website

# Today's Presentation:

---

- Why LNG?
- Why Now?
- Advantages and Disadvantages of Canadian LNG
- Why did LNG Canada Succeed?
- Coastal GasLink's Pre-development Stage
- One Continuing Challenge
- A Pipeline under Construction

# Why LNG?

---

- Supply and Demand 101
- Growing natural gas production in many regions of the world
  - Access to shale gas through technological advances
  - Abundance of supply expected to keep cost low
- Growing economies in Asian countries need increasing energy supplies
  - Asian demand currently takes over 70% of world LNG supply
  - Industrialization and modernization drives future demand growth
  - In China, replacing coal is a priority

# Why LNG?

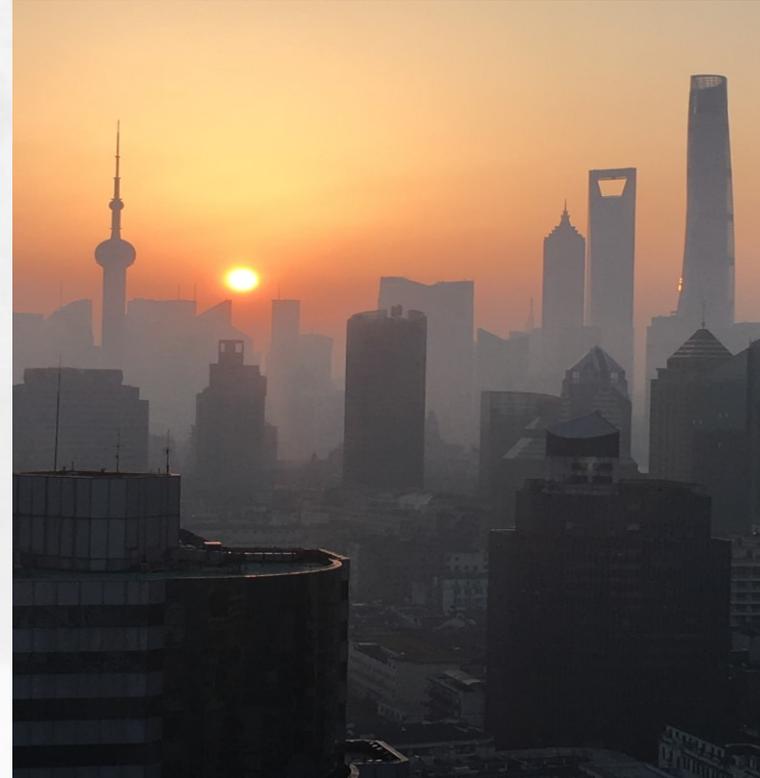
---

- Natural Gas is the fuel of choice:
  - Liquefied Natural Gas utilizes decades of proven technology
  - Once in liquid form, natural gas can be transported globally
    - at – 260F and at atmospheric pressure, natural gas remains a liquid
    - safe, non-explosive in liquid state
  - Flexible and versatile for base load power and for heating applications
  - Cleanest burning hydrocarbon (50 – 60% less CO<sub>2</sub> than coal; less particulates)

# Why Now?

---

Early April in Shanghai, China...



What causes China's air pollution?

Coal. The increasing number of **air pollutants** can **cause** incidences of low visibility for days and acid rain. ... Long-term exposure to **pollutants** can **cause** health risks such as respiratory diseases, cancer, cardiovascular and cerebrovascular diseases. Coal is a huge issue because of the SO<sub>2</sub> emissions from coal factories. [Google Search]

# Why Now?

---

China's State Council has issued plans to reduce air pollution:

- Air Pollution Prevention and Control Action Plan (2013)
- Three-Year Action Plan for Winning the Blue Sky War (2018)



# Timing is Key

---

- There are fairly well defined windows of opportunity for entering LNG markets
  - Extensive forecasting of future demand for energy in worldwide markets
    - Including energy switching from coal
  - Extensive monitoring of worldwide LNG production capability and proposed projects
    - Final Investment Decision (FID) dates are closely watched
    - Country-specific conditions which enable or impede the progress of projects
- Canadian West Coast projects were first targeted to meet a 2020 LNG market window
  - Initial planning for some projects started around 2005-2009
  - Up to 20 projects were proposed for BC – they all missed the window and most were terminated
- Next window is targeted for 2023, followed by a post-2025 window

# Advantages to Canadian LNG

---

- The BC Advantage
  - Shipping Times to Asian markets are about 50% less than from US Gulf Coast
    - 8 days to Tokyo; 10 days to Seoul
  - No Panama Canal tolls/uncertainties
  - Energy advantage to LNG operations due to lower ambient temperatures
    - Average northern BC port temperature is 7 degrees C vs 27 degrees C for Australia
  - Extensive, long-life natural gas reserves at low cost
    - BC claims over 3,300 Trillion Cubic Feet of gas (2016 estimate)
    - Availability of NIT liquidity/AECO hub

VS...

# Disadvantages to Canadian LNG

---

- The Canadian Disadvantage
  - A growing belief that nothing can be built in Canada
    - Regulatory uncertainty
    - Government uncertainty
    - First Nations uncertainty
    - Environmental activism
  - Gas reserves are 670 - 900 kilometers from the coast
    - Lengthy and costly new pipelines are required over mountainous terrain
  - Construction costs for plant are generally higher than competitor countries
    - Uncertainty as to Federal government tariffs on steel and fabricated vessels
    - Electrification policy of current BC government
    - Brown-field US Gulf Coast cost seen as a direct competitor, further advantaged by established pipeline service

# Why Did LNG Canada Succeed?

---

- A world-class assembly of Joint Venture participants:
  - Shell 40%
  - PETRONAS 25%
  - Mitsubishi 15%
  - PetroChina 15%
  - KOGAS 5%
- All participants bring:
  - BC/Alberta natural gas reserves
  - LNG plant experience/deep industry knowledge
  - Asian markets for LNG
  - Financial strength
- TC Energy is a world-class Pipeline Partner
  - Proven experience with First Nations and stakeholders
  - Skilled in construction
  - Responsible operator

# Why Did LNG Canada Succeed?

---

- A long and arduous pre-FID journey served to de-risk the disadvantages
  - Pipeline and plant permits were received (and renewed)
  - Governments were supportive (BC/Federal)
    - Fiscal arrangements were concluded; tariff impacts minimized
  - First Nations Agreements were obtained for both the plant and along the pipeline route
  - Environmental activism was and continues to be managed
    - “Greenest” LNG plant in the world
    - Pipeline construction best practices (river crossings)
- This all took a long time...
  - 2020 market window was missed – refocused on 2023-24
    - Staying power of the JV participants was key
  - FID decision was indefinitely postponed in July, 2016 due to global market conditions
    - All-out drive to reduce/optimize capital costs of plant and pipeline construction
    - Goal of beating US Gulf Coast delivered cost to Asian markets

# LNG Canada Final Investment Decision October 1, 2018...



# Formal FID Announcement – October 2, 2018



# ... Which leads to the Coastal GasLink Notice to Proceed



|                |                        |
|----------------|------------------------|
| OCT 2          | HALIFA                 |
| 10:01 AT       | 5°                     |
| WTI OIL (NOV)  | 75.44 +0.00            |
| WCS OIL (US\$) | 35.80 -2.50            |
| NAT GAS (NOV)  | 3.113 +0.00            |
| COMING UP      | CANADIAN CYBERSECURITY |
| 0 PM IET       | DAY                    |
| BNN Bloomberg  |                        |

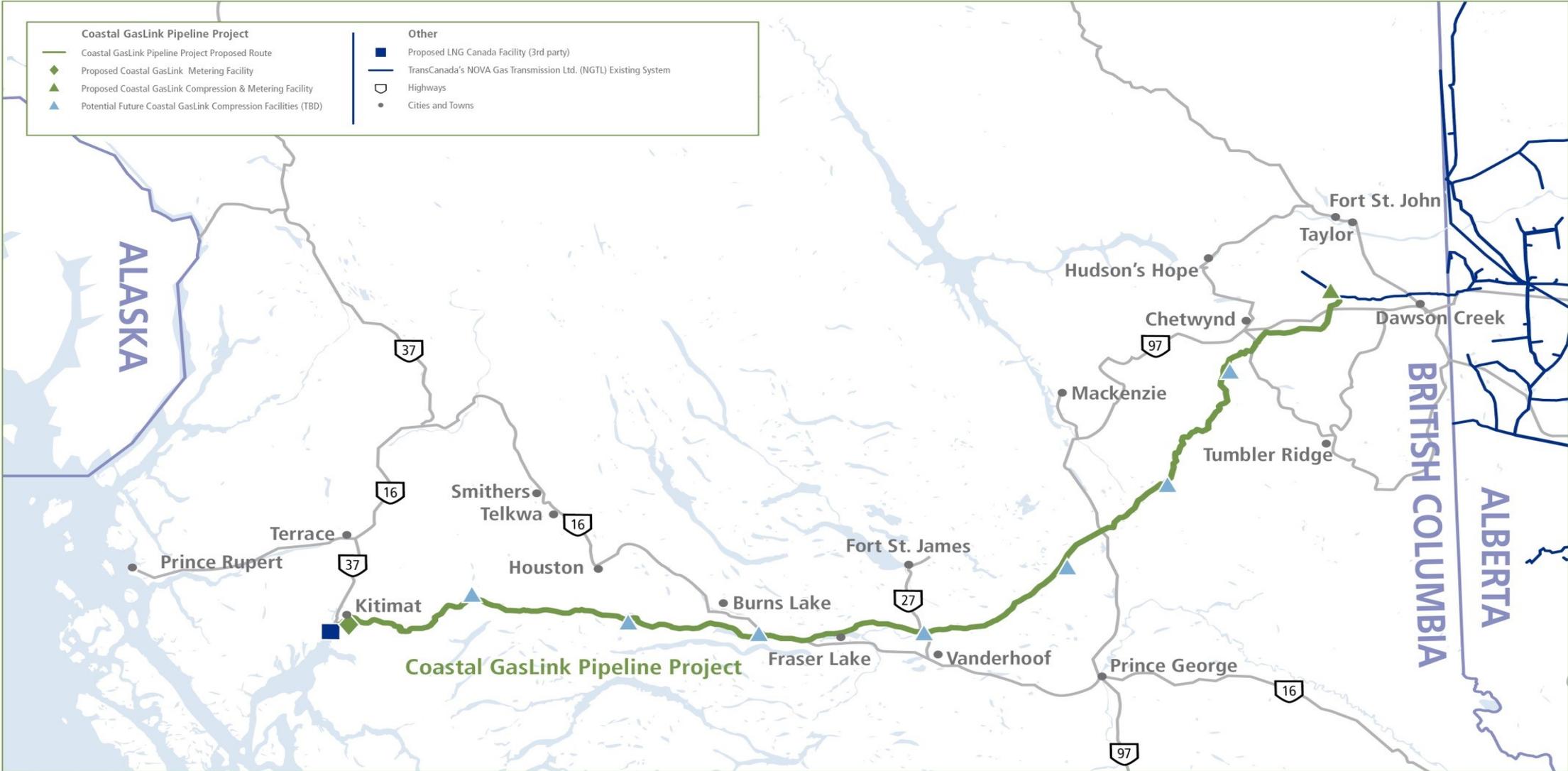
# What is TC Energy Building?

---

- A 48” diameter natural gas pipeline running approximately 670 kilometers from the Groundbirch region in northeast British Columbia to Kitimat, BC. to provide natural gas feedstock to the LNG Canada plant
- Initial capacity of 2.1 bcf/day, with potential to expand to about 5 bcf/ day with the addition of up to 7 compressor stations
- Construction cost of \$6.2 billion - \$470 million spent to FID on pre-development costs
- 2,000 to 2,500 jobs during the four year construction period and 16 to 35 jobs during ongoing operations



# Coastal GasLink Pipeline Project



# Coastal GasLink Pre-Development Timeline

---

|      |   |
|------|---|
| 2010 | First Meeting with Shell in December  |
| 2011 | Internal discussions/marketing/validation with Shell; December 9 Request for Proposals (RFP)  |
| 2012 | RFP success in April; Interim Agreement; Announcement in June, 2012; Immediate engagement with First Nations and stakeholders   |
| 2013 | Consultation with approximately 25 First Nations and 10 Northern BC communities; Field Work for Environmental Certificate and BC Oil & Gas Commission (OGC) permit applications |
| 2014 | EAO Certificate application submitted in January, 2014  |

# Environmental Certificate Application submitted – January 29, 2014



# BC Environmental Assessment Certificate issued October 24, 2014 (5 year term)

**In the matter of the  
 ENVIRONMENTAL ASSESSMENT ACT  
 S.B.C. 2002, c. 43  
 (Act)**  
 and  
**in the matter of an  
 Application  
 for an  
 Environmental Assessment Certificate  
 (Application)**  
 by  
**Coastal GasLink Pipeline Ltd.  
 (Proponent)**  
 for the  
**Coastal GasLink Pipeline Project**  
**ENVIRONMENTAL ASSESSMENT CERTIFICATE # E14-03**

**Whereas:**

A. The Proponent proposes to construct one sweet natural gas pipeline and associated components, that would be located from Groundbirch, BC to Kitimat, BC, as described in Schedule A to this Certificate (Project);

e. whether, after any consultation with Aboriginal Groups undertaken by the Holder or any further such consultation directed or undertaken by the Executive Director, the proposed activities may adversely affect Aboriginal Interests that were not (i) considered in the Application and assessment, or (ii) considered in any regulatory or approval processes that concluded after the date of this Certificate; and

f. whether and to what extent the conditions in this Certificate constitute practical means of preventing or reducing any potential adverse effects that will, or are reasonably likely to, result from the proposed activities.

(3) If the Executive Director determines that the proposed changes to the Project Activities are not material in nature, then the Executive Director may make a decision regarding an amendment of Schedule A pursuant to section 19(3) of the Act.

(4) If the Executive Director determines that the proposed changes to the Project Activities are material in nature, then the Holder must apply to the Executive Director to amend Schedule A pursuant to section 19(1) of the Act.

**Duration of Certificate**

8. For the purpose of section 16(1) of the Act, the deadline is 5 years from the date set out below.

  
 Honourable Mary Polak  
 Minister of Environment

  
 Honourable Rich Coleman  
 Minister of Natural Gas Development

Issued this 23rd day of October, 2014



B. On December 11, 2012, a Project Lead of the Environmental Assessment Office (EAO) issued an order pursuant to section 10(1)(g) of the Act stating that an environmental assessment certificate for the Project and that the Proponent could not proceed with the Project in the interim;

C. The assessment of the Project was conducted from December 11, 2012 to October 8, 2014, including consultation with Aboriginal Groups and the public respecting the Application; and

D. This Certificate, including its conditions, will be monitored by the staff of the EAO, and others who have been authorized to inspect under the Act, and

E. On October 8, 2014, pursuant to section 17 of the Act, the Executive Director referred to the Assessment Report and his recommendations to the undersigned; and

F. The undersigned has considered the Application, the Assessment Report, submissions received from the Saulteau First Nations, Doig River First Nation, West Moberly First Nations, a group of Saulteau First Nations, McLeod Lake Indian Band, Doig River First Nation, West Moberly First Nations, the Office of the Wet's Wewé'tin, Sak'uz First Nation, and the Council, and the recommendations of the Executive Director.



# Coastal GasLink Timeline

---

- 2014 BC Oil & Gas Commission permit applications submitted in March; Formal Project Development Agreement signed with LNG Canada and JV participants in April; 4 Project Agreements signed with First Nation bands
- 2015 Most OGC permits received; 7 Project Agreements signed with First Nation bands; continuing engagement with Northern BC municipalities
- 2016 Final OGC permits received; 6 Project Agreements signed with First Nation bands
- July - LNG Canada final investment decision (FID) deferred indefinitely, project teams reduced to maintenance mode

# Maintaining Momentum - Investing in Communities



# Achieving and Maintaining First Nations and Stakeholder Support in BC



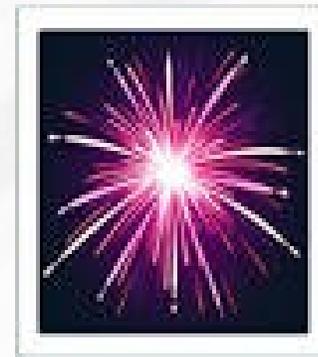
# Coastal GasLink Timeline

---

2017 Maintenance mode – community and First Nation investments; maintain momentum and engagement

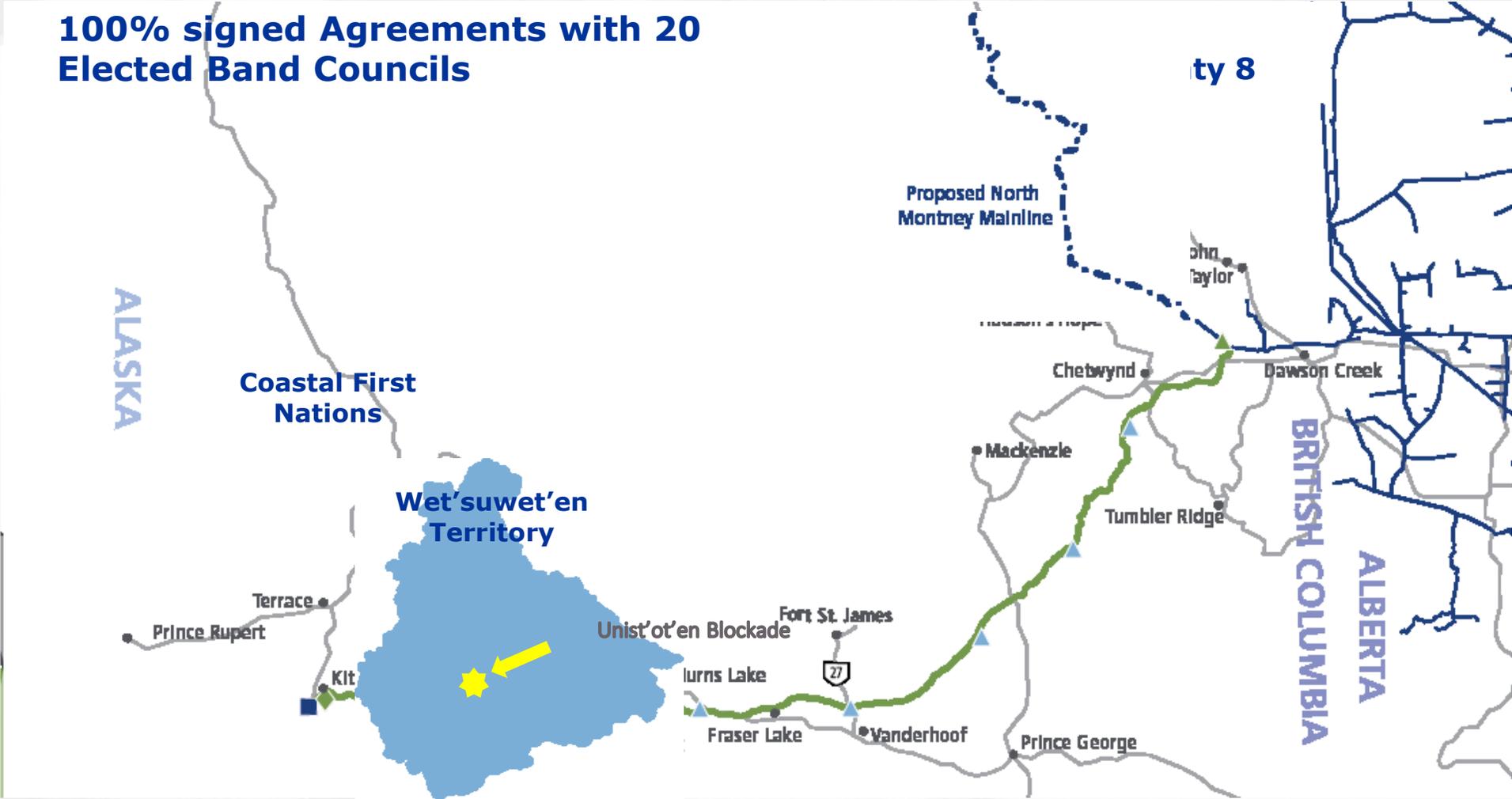
2018 3 Project Agreements signed... and... after numerous extensions to the Final Investment Decision (FID) over seven years

**LNG CANADA FID WAS ANNOUNCED ON OCTOBER 1, 2018**



# Achieving First Nations Support

100% signed Agreements with 20 Elected Band Councils



| Coastal GasLink Pipeline Project                    |   | Other                           |  |
|---|---|---------------------------------|--|
| Coastal GasLink Pipeline Project Certified Corridor | Proposed Coastal GasLink Metering Facility                    | LNG Canada Facility (3rd party) | TransCanada's NOVA Gas Transmission Ltd. (NGL) Existing System |
| Potential South of Houston Alternate Route (SHAR)   | Proposed Coastal GasLink Compression & Metering Facility      | Highways                        | Cities and Towns   |
| Morice River North Alternate Route                  | Potential Future Coastal GasLink Compression Facilities (TBD) |                                 |  |

# Coastal GasLink's Approach to Partnering with First Nations

---

- Over 15,000 engagements have been undertaken and over \$13 million in capacity funding has been advanced to Indigenous groups since the project was announced in June, 2012
- Coastal GasLink has sought from the outset to include First Nations along the pipeline route as partners – to allow shared success in the project. Project Agreements offered to First Nation communities include:
  - Preferential access to contracting opportunities for Band-owned and joint venture businesses
  - Preferential access to skills training and employment opportunities for Band members
  - 3-stage project payments
  - Annual payments throughout the operating life of the pipeline
  - Covenants to not convert the use of the pipeline

# Coastal GasLink's Approach to Partnering with First Nations

---

- Financial contributions toward socio-economic, environmental and cultural initiatives
- Ongoing liaison committee involvement through construction and beyond
- In signing a Project Agreement, the First Nation agrees to support the project and *consents* to the pipeline crossing their traditional territory
- Importantly, TC Energy has achieved:
  - the BC government's "First Nations' partnership" condition to LNG development; and
  - the spirit and intent of "free prior and informed consent" of the United Nations Declaration on the Rights of Indigenous Peoples

# Project Agreements with First Nations

Signed 20 of 20 Project Agreements with Elected Band Councils along the Pipeline route



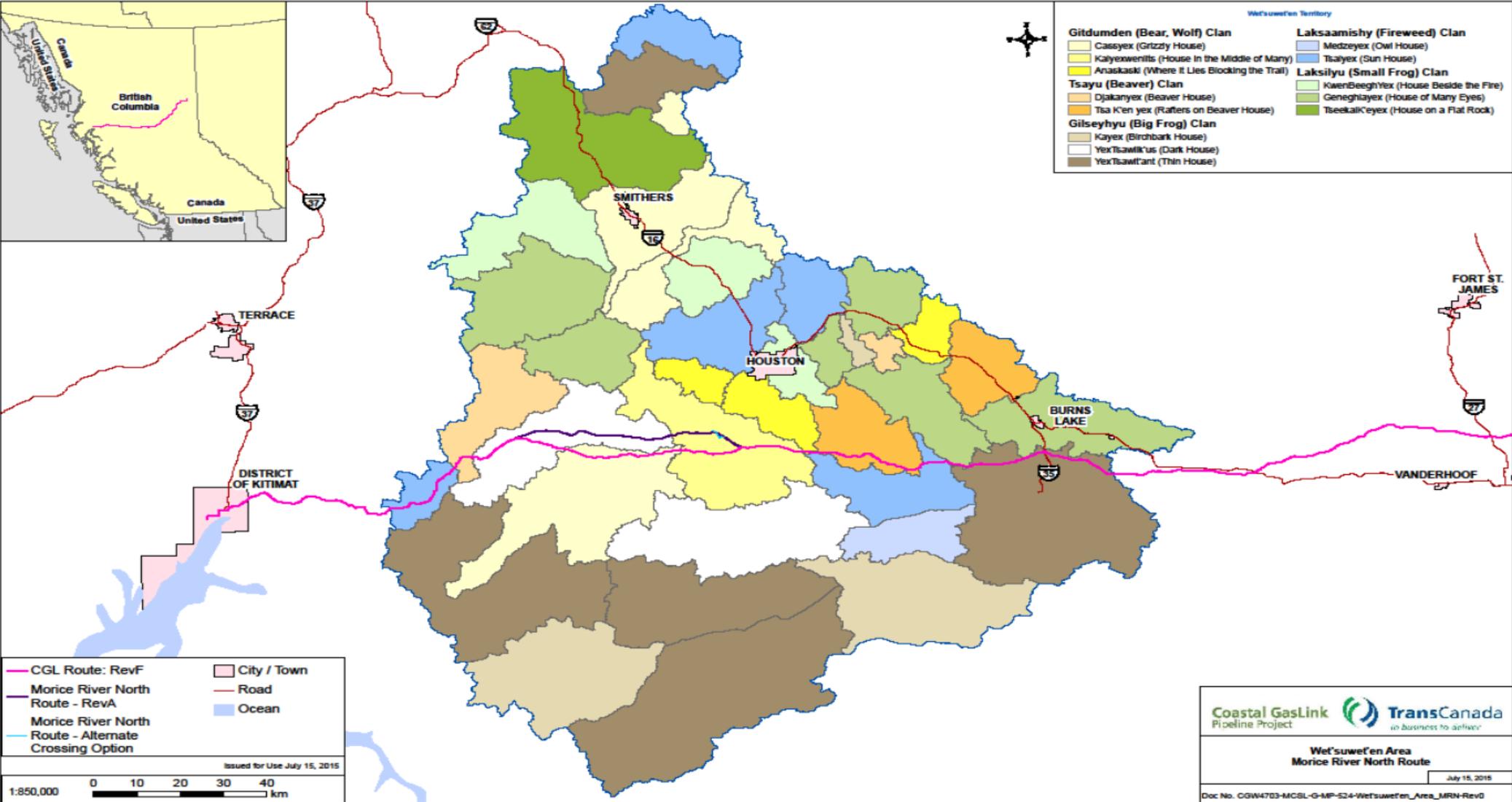
# One Continuing First Nation Challenge...



Unist'ot'en Blockade on the Morice River bridge – circa 2012

- Originally tied to proposed Northern Gateway routing
- Environmental activist funding (US protestors)
- Aligned (for different reasons) with a minority of Wet'suwet'en Hereditary Chiefs

# Wet'suwet'en Hereditary Houses



# Wet'suwet'en Hereditary Chiefs

---

- In all other regions along the pipeline right-of-way, community members, elders and Hereditary Chiefs were informed and consulted by elected Chiefs and Council members. Many Nations held community votes to approve Project Agreements
- Wet'suwet'en Hereditary Chiefs have largely separated from Wet'suwet'en region elected Chiefs and Councils, refusing co-operative overtures and asserting that elected Councils only have jurisdiction on reserves
- A small faction of Chiefs are opposed to the pipeline, largely as a means to assert larger land right and title claims tied to historical legal cases involving the provincial government
- Environmental activist groups have aligned with these Chiefs, providing funding, protest participants and social media presence
- BC government has announced they are resuming discussions with the Chiefs

# Unist'ot'en Camp



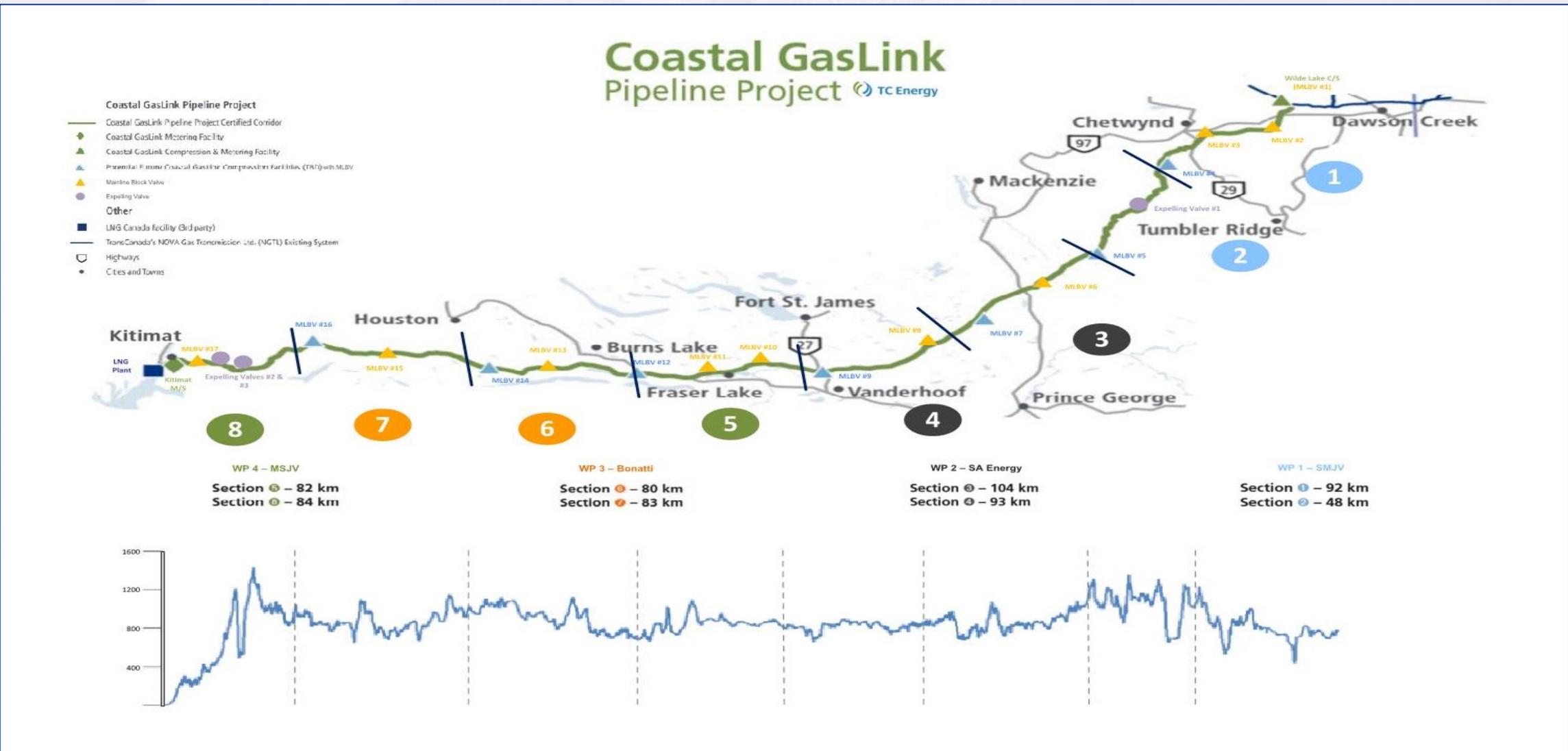
Morice River Bridge – circa 2017

# Obtaining Land Access

---

- Extensive attempts to reach an Agreement with Wet'suwet'en Hereditary Chiefs and Unist'ot'en representatives were ultimately unsuccessful
- An injunction was granted on December 14, 2018 by the BC Supreme Court
- Access to the Morice River bridge and the dismantling of an ancillary blockade was enforced by the RCMP on January 7, 2019
- Substantial social media and mainstream media attention ensued and to a limited degree continues today
- Continuing presence of protestors in the vicinity of pipeline worksites near the Morice river bridge

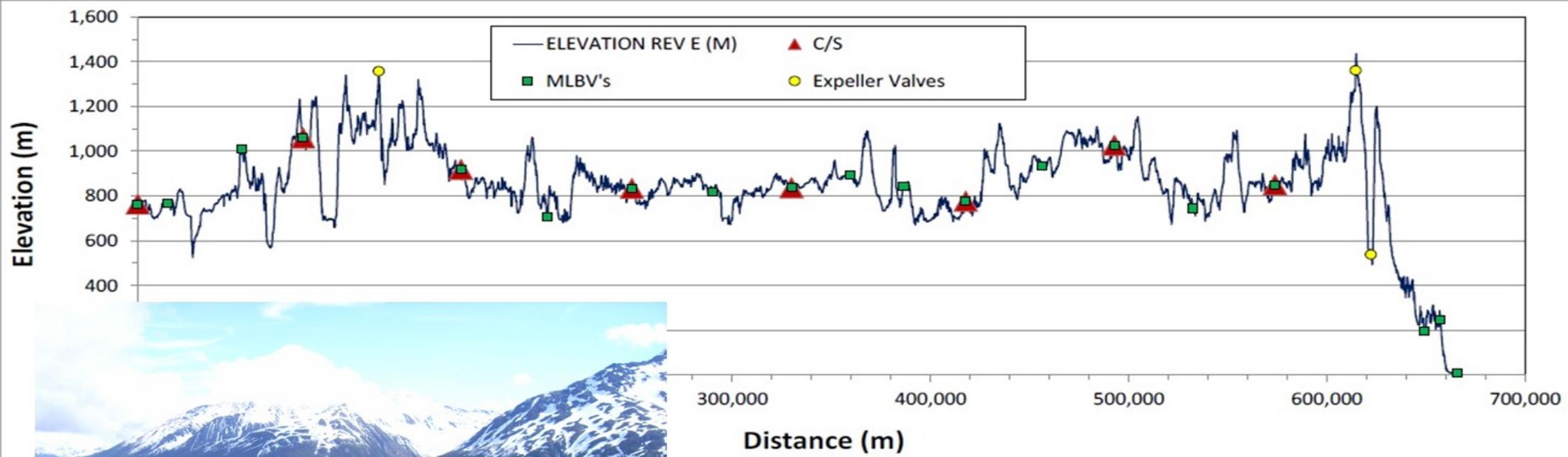
# Construction Overview: Spread Summary & Terrain Profile



# Types of Terrain



# Pipeline Construction – Challenging Terrain



# Construction Activity and Timeline – East (Spreads 1-4)

---

- Access road construction and upgrading largely completed
- Most workforce camp locations are prepared with camp installation underway
- Clearing has started for all Spreads in preparation for 2020 mechanical construction
- Grading and rock work also commencing

Clearing and mulching on Sukunka multi-use site (Spread 3)



Cleared multi-use site near Chetwynd (Spread 1)

# Construction – West (Spreads 5-8)



Spread 8 Camp



Spread 8 right of way clearing near Kitimat.



Grubbing and mulching at KP 650.

# Construction – West Spreads 5-8



Clearing Laydown 31/32, Shea Road



RoW Clearing – North Kitimat

# Construction – Spread 8 Cable Crane Slope



Clearing of cable crane slope  
(1.8km length, 26 degrees (49%).

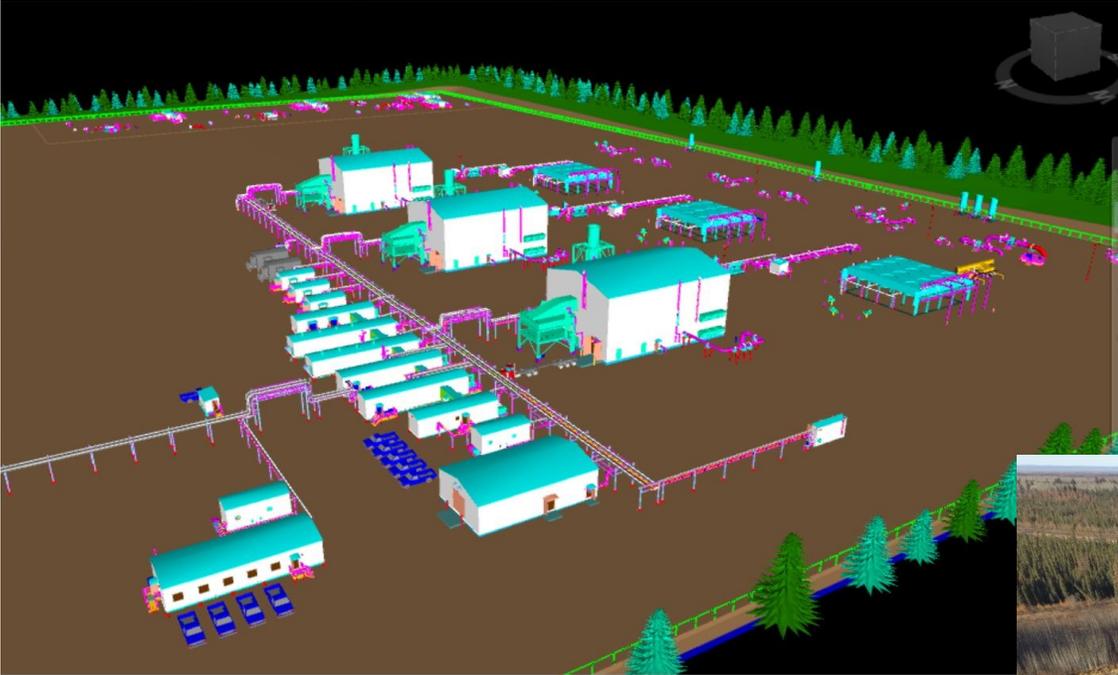


Working Cable-crane Arrangement  
(Albanian project, courtesy of Spiecapag)

# Steep Slope Construction Experience (Mexico)



# One Compressor Station in Phase One

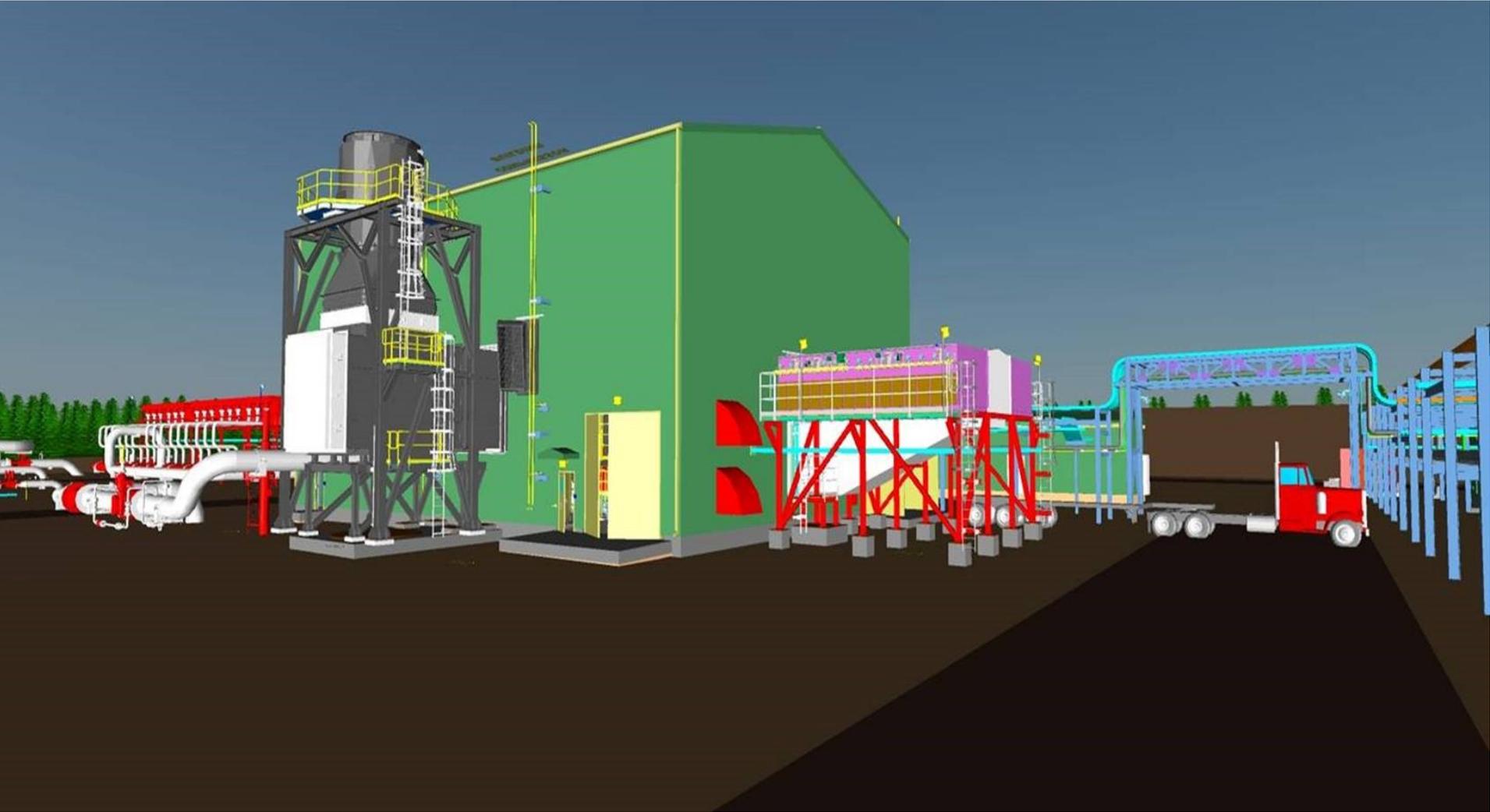


Schematic of Wilde Lake Compressor site



Similar to Goodfish Compressor Site – North Montney Mainline (NE BC)

# Wilde Lake Compressor Site Rendering



# Thank you

---

