

A large oil tanker ship is shown sailing on the ocean, viewed from an elevated perspective. The ship is dark-colored with a white superstructure at the front. The water is a light blue-grey color, and the sky is a pale, hazy blue. The ship is moving from left to right, leaving a white wake behind it.

# **Trans Mountain Pipeline Expansion: Issues and Recommended Next Steps**

Presented to Vancouver City Council  
December 4, 2013

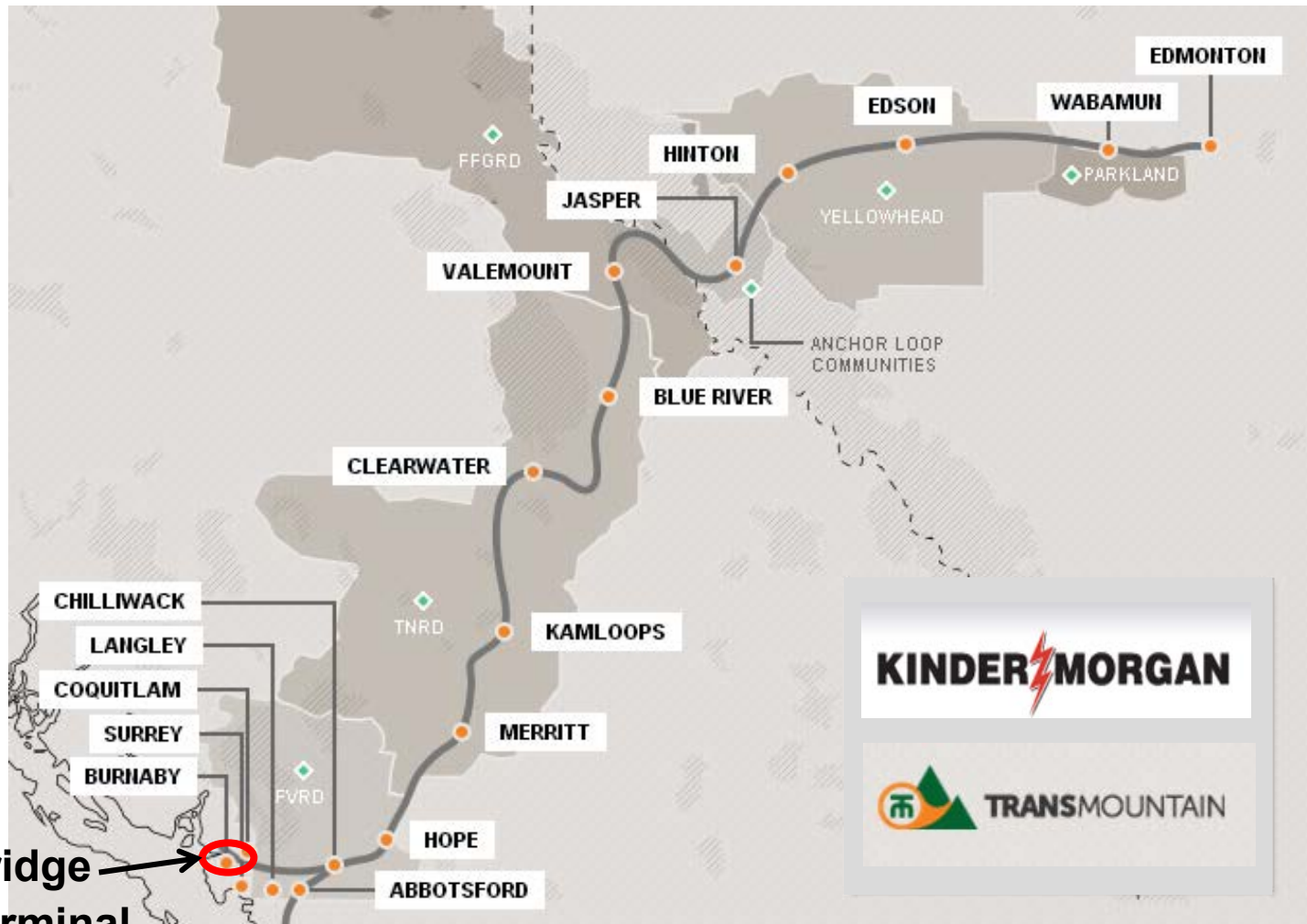
Sadhu Johnston, Deputy City Manager

# Agenda

1. Overview of proposed Trans Mountain pipeline expansion
2. Hazards
3. Significant concerns for the City of Vancouver
4. Intervening in upcoming Kinder Morgan National Energy Board hearings
5. Next steps

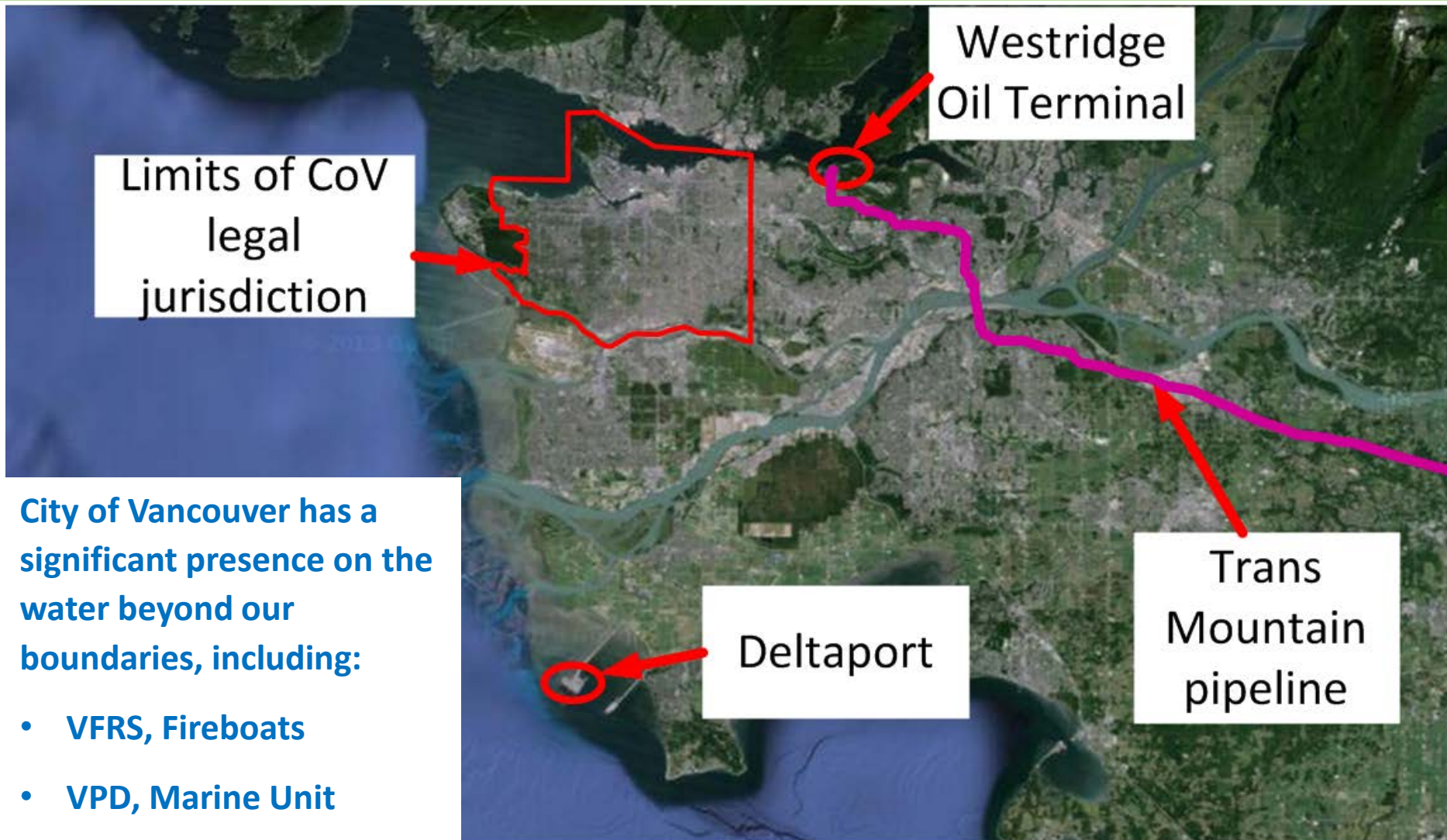


# Proposed Pipeline Route Does Not Pass Within City of Vancouver Land Jurisdiction



**Westridge** →  
**Oil Terminal**

# Location and route of pipeline and terminals



City of Vancouver has a significant presence on the water beyond our boundaries, including:

- VFRS, Fireboats
- VPD, Marine Unit

# Kinder Morgan's Proposed Trans Mountain Pipeline Expansion

- Current pipeline capacity approx. 300,000 bbd will increase to 890,000 bbd
- Most of the new capacity will be exported by ship from Westridge Oil Terminal in Burnaby
- Oil Tankers passing through Burrard Inlet will increase from 5 per month to 34 per month (~ 212 million barrels of oil a year)
- Oil storage at Burnaby terminal will increase by 330% to 890,432 m<sup>3</sup> (~350 swimming pools)
- 52 products approved to be transported in pipeline:
  - All may behave differently if spilled



# Vancouver Economic Commission: Literature Review

## Context:

- Burrard Inlet is a complex waterway, ecosystem and economic driver for the city and region
- Likelihood of tanker spills continues to decline, but cleanup costs have risen

## Findings:

- Some bitumen components are carcinogenic: composition of diluted bitumen is unknown and is proprietary
- Current liability schemes would likely fall short of covering true spill costs
- Parts of the ecosystem would take decades to recover, some may never recover from a spill
- Spill cleanup efforts would likely exacerbate damages to physical environment

# Concerns for Vancouver: Hazards

	Day to day operations	Significant spill		
		Preparedness	Response	Recovery
Responsible Agencies				
Environmental & GHG impacts				
Economic impact				
Global Brand				

**Focus of today's discussion**

# Spill Prevention and Safety Measures in Place

- Established the Marine Emergency Response Coordination committee
- Safer double hull tankers are required in Canada
- Tug escorts required by Port Metro Vancouver
- Two local pilots on every ship
- Containment booms are deployed while loading



An oil tanker is guided by tugboats under Vancouver's Lions Gate Bridge. (Jonathan Hayward/Canadian Press)

Despite PMV's excellent navigational safety record, there is no way to eliminate the risk of a spill



# Hazards

- Ship collision
- Ship running aground
- Explosion
- Fire (on ship)
- Fire (at terminal)
- Earthquake
- Accidental spill



Aerial view of the **Ambès** oil depot and the slick, following a tank rupture. France 12/04/07 (Source Cedre)



2010 Collision between oil tanker Eagle Otome and barge (Source: United States Coast Guard)

- Chemical accident
- Terrorism
- Extreme weather
- Fog
- Tank rupture/ mechanical failure
- Spills during normal operations

# Case Study: *Exxon Valdez* 1989

- Loaded with 180,000 tonnes of crude oil ran aground spilling 38,500 tonnes
- At the time it was the US's largest ever oil spill – estimated clean up cost about \$5bn (adjusted for inflation)
- More than 7,000 km<sup>2</sup> of oil slicks
- 1,400 ships, 85 helicopters and 1,100 people used in clean-up
- Resulted in requirements for double hulls for all vessels built after 1996
- Ten years after the disaster, the mortality rate of certain species still remained abnormally high



Exxon Valdez clean-up  
(Source: Anchorage Daily News / MCT / Landov)

# Case Study: Aegean Sea 1992

- Oil-ore carrier sank entering the harbour of La Coruna, Spain spilling over 74,000 t of crude oil
- Ship and spilled cargo burned for several days, causing dense clouds of black smoke to threaten the city leading to a temporary mass evacuation



Oil from the Aegean Sea washes ashore  
Photo from: Cedre



Smoke from oil fire hangs over La Coruna  
(Photo from [ITOPF](#))

# Illustrative scenario\*



	6 Hours	24 Hours	6 Days	2 Months	10 Years
<b>Oil</b> 	LEAKING	SPREADING	BITUMEN SINKING	OIL OFF SHIP CLEAN-UP	NO SIGN OF OIL
<b>Fire</b> 	FIRE ON SHIP, WATER AND LAND		FIRE OUT		
<b>Air</b> 	THICK TOXIC SMOKE	TOXIC PLUME	HEADACHES, LUNG IRRITATION	OILY SMELL BUT SAFE	NORMAL AIR QUALITY LONG-TERM HEALTH CONCERNS
<b>Impacts</b>	FEAR	EVACUATION BIRDS OILED	MARINE ANIMALS DYING	TOURISM IN DECLINE BIRD SHELTERS BRAND DAMAGED	FISHERIES CLOSED MARINE LIFE RETURNING TO INLET GLOBAL BRAND RECOVERING

\* For illustrative purposes only - events and actual timelines will vary depending on the situation

# Case Study: *Limburg* 2002

- Terrorist attack off the coast of Yemen
- Small boat packed with explosives rammed into the side of the ship
- 12,500 tonnes of heavy crude spilled
- Brand new double hulled tanker



Terrorist attack causes a massive explosion followed by fire (Source: BBC News/ AFP)

Sources: [www.cedre.fr/](http://www.cedre.fr/), [www.bbc.co.uk](http://www.bbc.co.uk)

# Case Study: *Prestige* 2002

- Old single hulled tanker issued a distress call off the coast of Spain
- Ship sank spilling 64,000 tonnes of heavy oil
- Damages reached €2.2 billion, although the cost of the disaster has been estimated at €4.121 billion
- The litigation continues

*“The case of the Prestige, it's got a Bahama flag, Liberia registry, the cargo is owned by a Swiss based company run out of Russia, the vessel, I believe, is owned by a Greek consortium or at least managed by a Greek consortium”* Ray Suarez PBS NewsHour - November 20, 2002



The Prestige sinking off the coast of Spain  
(Source: BSAM/Douanes françaises)

# Case Study: *Hebei Spirit* 2007

- Oil tanker anchored in front of the Port of Incheon on the west coast of South Korea
- Hit by a barge which was drifting as its towline had broken
- Approximately 10,000 tonnes of crude spilled
- Clean up cost estimate \$330 million (1.8 million volunteers were used)



Hebei Spirit (Source: BBC News/ AFP)



Wildlife in South Korea after the spill caused by a collision (Source: BBC News/ AFP)

# Case study: Burnaby spill 2007

- Pipeline accidentally ruptured by third party construction company
- 30 metre “geyser” of oil spilled about 230 t of oil
- Barnet Highway closed for several days
- Burrard Clean (now WCMRC) responded to oil that escaped into the Burrard Inlet
- 1200 m of shoreline was affected
- Local concerns around response time



Workers from Burrard Clean mop up oil from the shoreline  
(Canadian Press pool file photo)



# Case Study: *Deepwater Horizon* 2010

- Oil rig Deepwater Horizon suffered an explosion followed by fire
- More than 500,000 tonnes of oil leaked
- US federal government declared this pollution a “national disaster”
- BP, in agreement with the US government, set up a \$20 billion trust to pay compensation



Deepwater Horizon on fire. Causing billions of dollars of damage (Source: US Coast Guards)



In situ burning was employed extensively during the Deepwater Horizon/BP oil spill in 2010. (U.S. Coast Guard)

# Case Study: Kalamazoo River spill 2010

- Pipeline rupture in Marshall, Michigan: largest known spill of diluted bitumen (dilbit) - 3,200 tonnes of oil
- The dilbit behaved very differently from other crude oils
  - Many of the diluent compounds evaporated including benzene, toluene, and hydrogen sulfide
  - Remaining heavy compounds sank
- Clean up cost is currently estimated at \$725 million
- Average clean-up cost for crude \$2,000 per barrel; Marshall spill has cost upwards of \$29,000 per barrel



Andre J. Jackson/Detroit Free Press, via Associated Press

# Recovery

- Recovery from a major spill would be measured in decades
- Significant negative impacts to economy, environment, health and international image
- VEC report – cleanup operations can be more damaging to the environment than natural degradation of the oil



Clean-up of a Korean beach following *Hebei Spirit* spill.  
(Source: Cedre)



Clean-up following Prestige spill.  
(Source: ITOPF)



The body of a California gray whale washes up on Latoucha Island, Alaska, in the wake of the Valdez oil spill.  
(John Gaps III / Associated Press)

# Key Risks to Vancouver

Insufficient and uncoordinated response capability

**Response  
Capability**

Insufficient information to plan

**Planning  
Information**

Insufficient funding for a recovery

**Recovery  
Costs**

# Complex Picture

## Response Capability

## Planning Information

## Recovery Funds

### Web of regulatory bodies:

- National Energy Board
- Transport Canada
- Environment Canada
- Department of Fisheries and Ocean
- Canadian Coast Guard
- Transport Safety Board
- PMV
- Pacific Pilotage Authority
- BC Ministry of the Environment
- BC Oil and Gas Commission
- International Marine Law

### Unclear response roles:

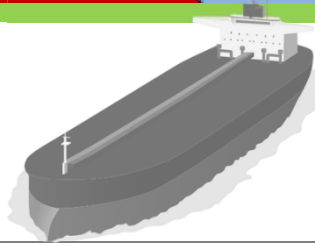
- Western Canada Marine Response Corporation
- Ship Captain is Incident Command
- VF&RS
- VPD
- Canadian Coast Guard
- Local tug boat companies
- International salvage companies
- Regional Environmental Emergency Team (Provincial and Federal)
- Local authorities

# Key Response Agencies

## Response Capability

## Planning Information

## Recovery Funds



### SHIPPING COMPANY

- Primary financial and operational responsibility for response, recovery and remediation
- Ship Captain (likely with little local knowledge) assumes Incident Command role



### REGIONAL ENVIRONMENTAL EMERGENCY TEAM

- Planning and integration of emergency response
- Co-chaired by Environment Canada & BC Ministry of Environment



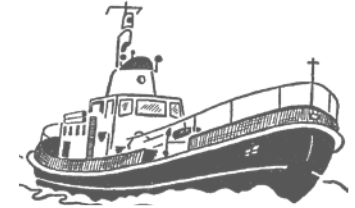
### WEST COAST MARINE RESPONSE CORPORATION

- Ensure state of preparedness in place and mitigate impact of an oil spill, protection of wildlife, economic and environmental sensitivities, safety of responders & public
- Funded by oil shipping industry, Transport Canada certified Response Organization



### CANADIAN COAST GUARD & DFO

- Ensure cleanup of ship-sourced spills of oil and other pollutants into Canadian waters, including monitoring cleanup efforts by polluters, managing cleanup efforts when polluters are unknown, or unwilling or unable to respond to a marine pollution incident; part of Department of Fisheries and Oceans



### LOCAL TUG BOAT COMPANIES, VF&RS FIREBOATS/CREWS, VPD, PORT METRO VANCOUVER, INT'L SALVAGE COMPANIES

- Enlisted at the discretion of the Incident Command to support clean up
- VF&RS and VPD may be among first on the scene if incident in Burrard Inlet



# Western Canada Marine Response Corporation

## Response Capability

## Planning Information

## Recovery Funds

- Privately owned and funded by industry
- Transport Canada Certified Response Organization
- WCMRC - over 2000 members
  - Ship owners (under the Canada Shipping Act 2001) are required to have an arrangement with a Certified Response Organization
- Bulk oil cargo fee \$0.674 per tonne
- Responsible for 27,000 km of BC shoreline
- 28 response vessels
- 24 full-time staff
- Tabletop and deployment exercises run to meet certification requirements



WCMRC 2500 tonne certification exercise in Howe Sound  
(source: WCMRC)

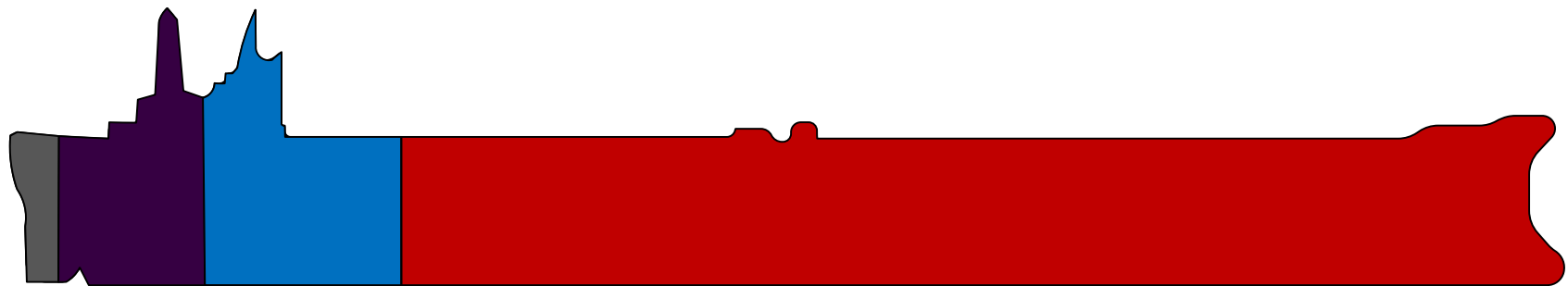
# Current Response Capacity

Response Capability

Planning Information

Recovery Funds

*The fixed requirements that define the 10,000 tonne capacity are somewhat generic and may not always be sufficient to address local sensitivities* Trans Mountain Pipeline Submission to the Tanker Safety Expert Panel June 21, 2013



■ WCMRC biennial equipment deployment exercise (2,500 t)

■ Mandated response capacity (10,000 t)

■ WCMRC claimed capacity (20,000 t)

■ Typical load of oil leaving Westridge (82,000 t)

Typical load of oil leaving Westridge (82,000 t)



# Provincial Readiness

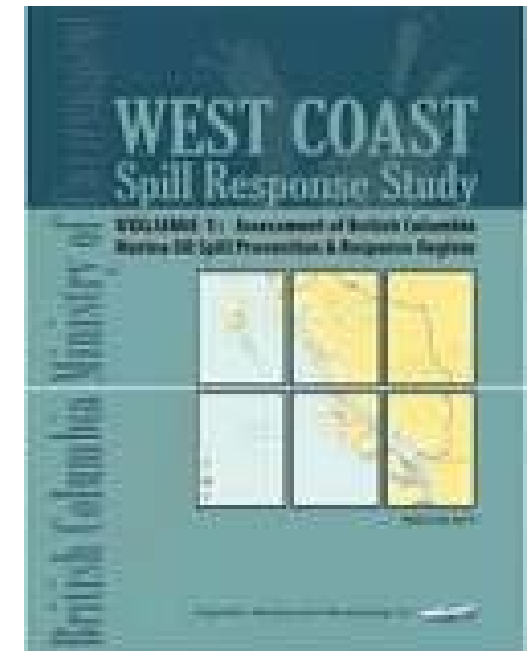
## Response Capability

## Planning Information

## Recovery Funds

### *BC Ministry of Environment - West Coast Spill Response Study 2013*

- Scenario based study identified significant issues:
  - Limited response and clean up capacity (max oil recovered 31%)
  - Lack of inter-governmental planning and coordination
  - Emergency plans not shared
  - Reliance on the availability of US resources
  - Significantly reduced ability to respond in poor weather
- Study did not consider impacts and implications of a spill in an urban area



# Federal Readiness

## Response Capability

## Planning Information

## Recovery Funds

- Office of the Auditor General of Canada reported on oil spill preparedness in 2010. Key findings:
  - There is no process to be sure that the response system is ready
  - No formal framework to define roles and responsibilities
- Follow up 2012 report found that many of the 2010 recommendations had not been implemented
- The Kitsilano Coast Guard Station closed in February 2013

# Federal Readiness: Tanker Safety Expert Panel

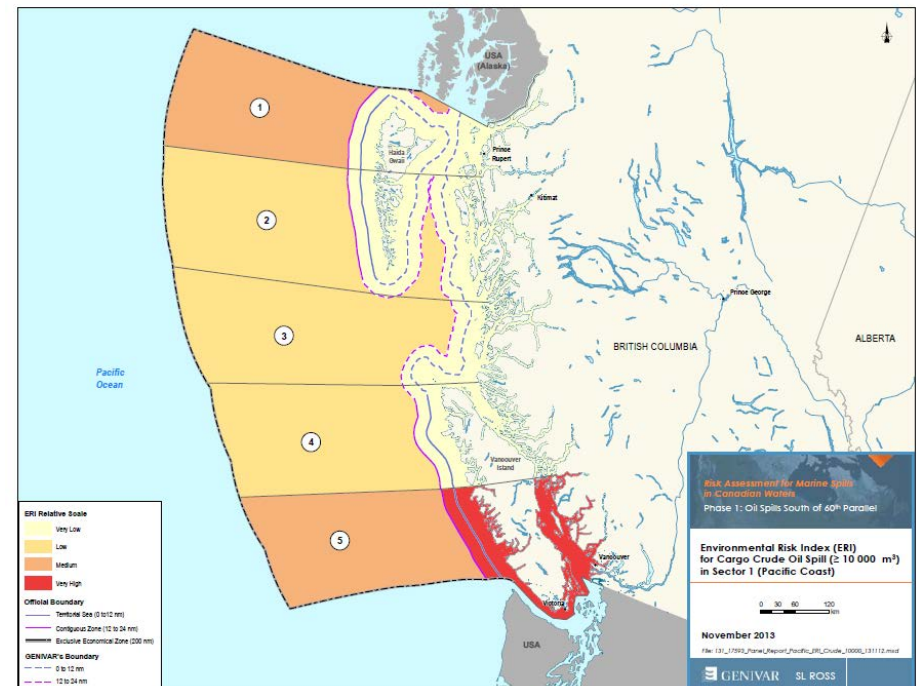
## Response Capability

## Planning Information

## Recovery Funds

- Review of spill preparedness and response regime (part 1) released December 3<sup>rd</sup>, 2013
- Key finding – Canada’s preparedness for oil spills could be improved
- Risk assessment published alongside report
  - Area around Vancouver deemed very high risk
- 45 recommendations made but not adopted by Transport Canada

Figure 3: Excerpt — Overall Risk from Oil Spills — Pacific Sector



# Tanker Safety Expert Panel – key recommendations

## Response Capability

## Planning Information

## Recovery Funds

- Response Agencies should have capacity to deal with the full discharge of a tanker's cargo
- New risk assessments and new plans are needed that include stakeholders involved in preparedness and response
- Options other than mechanical recovery should be researched and available to responders
- Liability protection should be extended to responders and agents
- The limits on Ship-source Oil Pollution Fund should be removed and the fund should pay all admissible claims
- A new coordination, testing and review regime should be established to ensure preparedness

Source:

Transport Canada: A Review of Canada's Ship-source Oil Spill Preparedness and Response Regime — Setting the Course for the Future

# Insufficient information to plan

Response Capability

Planning Information

Recovery Funds

- Primary product shipped expected to be diluted bitumen (dilbit)
- Little available information about the composition, behaviour and effects of dilbit:
  - Does it float or sink?
  - Will it release toxic fumes?
  - Will it explode?
  - What other chemicals are in it?
  - How will it break down in the environment?
  - How will it react with other chemicals?

Summary:

Emergency responders have insufficient information to plan a safe response

# Responsibility for a Spill

Response Capability

Planning Information

Recovery Funds

Responsibility for clean-up and recovery sits with the ship **owner**

- “Owners” are often shell companies
  - 70% of tankers worldwide are registered to single-vessel companies – companies with no other assets
- Most are registered in a country different from the nationality of the owner and fly a “flag of convenience”
- Top five flag states for oil tankers:
  1. Panama
  2. Liberia
  3. Singapore
  4. Greece
  5. Marshall Islands

# Funds and Limits to Owner's Liability in a Spill

Response Capability

Planning Information

Recovery Funds

- Total funds for clean up and recovery are limited to about **\$1.3bn**, made up of:
  - \$136 million- liability cap on ship owner contributions
  - \$1.1 billion- two international funds
  - \$161 million- Canadian Ship-source Oil Pollution Fund (SOPF)
- Payment from the funds will probably require lengthy litigation.
- In some circumstances (e.g. terrorism) the ship owner is not liable

# Economic Impact of a Spill

Response Capability

Planning Information

Recovery Funds

- A major spill would have a profoundly negative economic impact for the City of Vancouver, its residents and businesses
- Both direct and indirect costs would impact the city
- It is difficult to estimate the size of these costs as they will depend on the spill



# Examples of Direct and Indirect costs

Response Capability

Planning Information

Recovery Funds

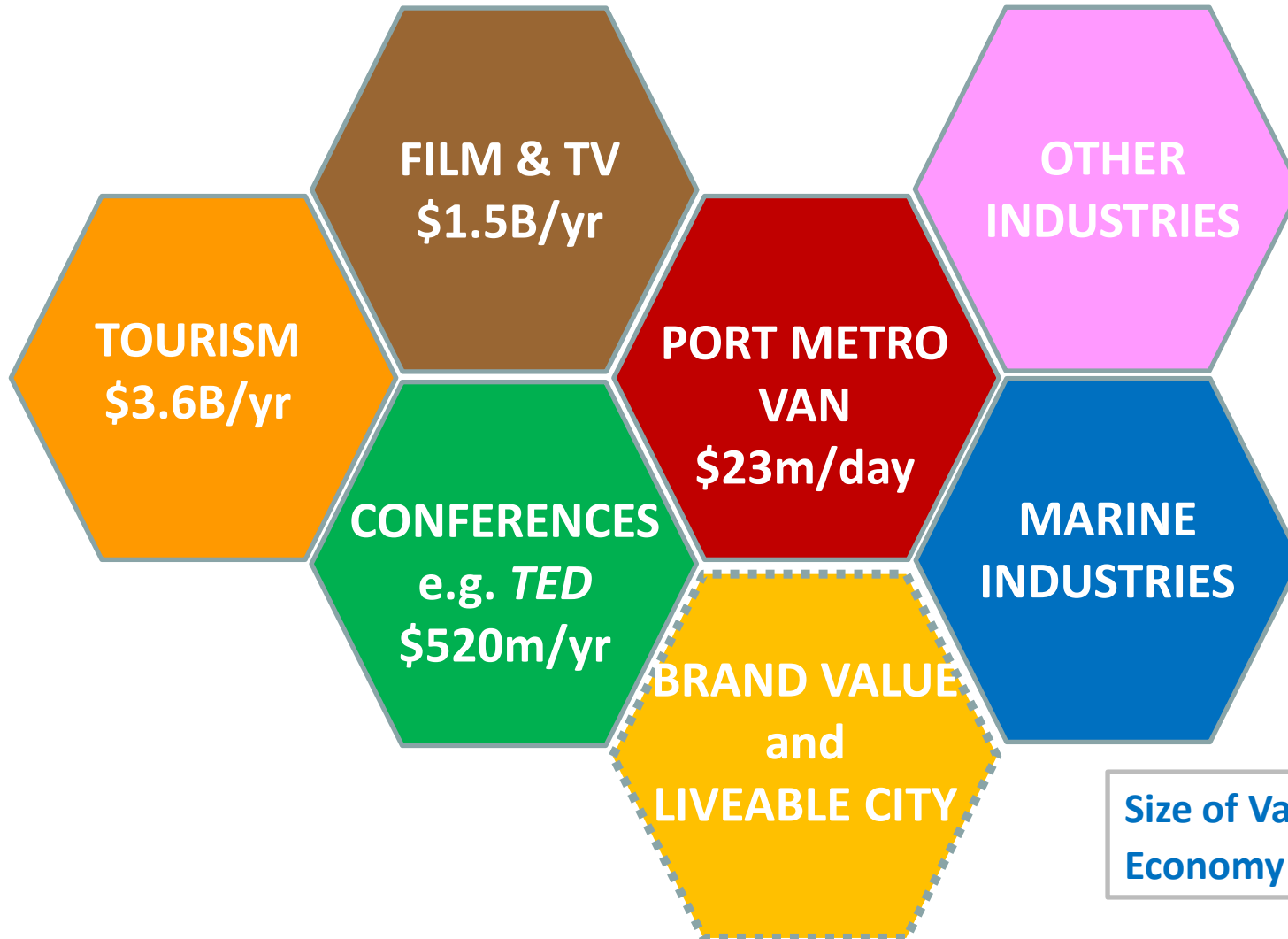
- **Direct Costs:**
  - Clean up costs and environmental remediation
  - Emergency response costs (deployment, evacuation and public safety and security)
  - Short and long term healthcare
  - Damage to business equipment
  - Litigation and legal costs
- **Indirect Costs:**
  - Damage to business resources
  - Loss of cultural resources
  - Loss of recreational opportunities
  - Lost workforce productivity

# Existing Economic Activity That Could be Impacted

Response Capability

Planning Information

Recovery Funds



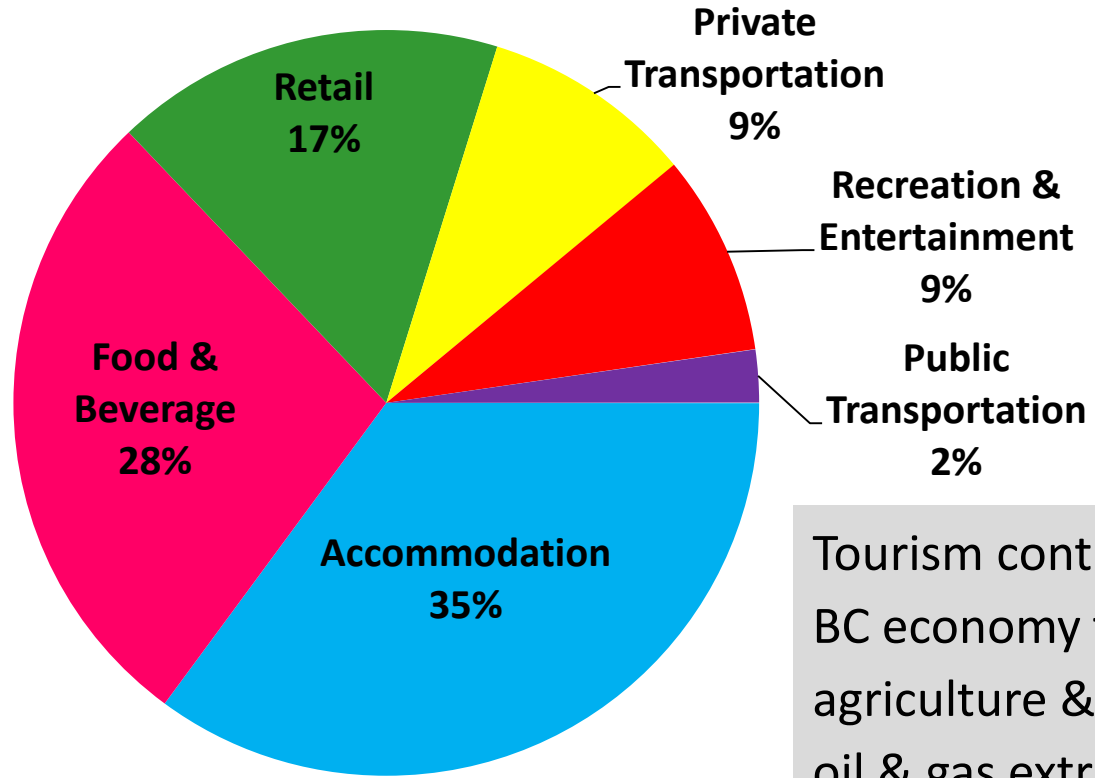
# Example: Tourism Spending – Direct Economic Contribution of \$3.6bn

Response Capability

Planning Information

**Recovery Funds**

## Tourism spending flows into other parts of the economy



“Seeing Wildlife” and “Ocean Activities” were the top two activities undertaken by North American visitors to BC

Tourism contributes more to the BC economy than forestry, agriculture & fish, or mining and oil & gas extraction

Source: Tourism Vancouver, 2012

# Climate Adaptation Impacts

- City Council has adopted a climate adaptation plan, which outlines strategies required to prepare the city for the impacts of a changing climate.
- While not considered by the NEB, the impacts of additional carbon emissions will increase the financial investments required to prepare the city for these changes.



# Summary of Primary Concerns

## Response Capability

Current response capacity is complicated uncoordinated, insufficient, and untested

## Planning Information

Municipal and regional emergency planners do not have adequate information to develop response plans and ensure public safety

## Recovery Costs

Recovery funding regime is insufficient to cover costs for even a moderate spill, and liability funds do not cover all hazards

# Approval Process

- Kinder Morgan will apply to the National Energy Board (NEB) (December 2013)
- Kinder Morgan's application will be a massive, complex document
- NEB will hold hearings and consider evidence
- NEB will make a recommendation to the Federal Government (March 2015)
- Recommendations can include conditions for approval

# National Energy Board Hearing: Anticipated Timeline

- Kinder Morgan's application expected on 16 December 2013
- Application to intervene likely in February 2014
- Hearings likely in the 3<sup>rd</sup> quarter of 2014
- Recommendation must be made by NEB within 15 months of the application

# National Energy Board Process

- The National Energy Board (NEB) have published a list of issues that will be considered in the hearing including:
  - Marine shipping activities, including the potential effects of accidents or malfunctions
  - Contingency planning for spills or accidents
  - Conditions to be included in any approval
- The NEB will hear evidence from parties with an interest by:
  - Considering “Letters of Comment”
  - Parties becoming “Intervenors”



# Intervenor at the NEB process

- Parties have to apply to NEB for intervenor status
- Intervenors may present evidence, question other witnesses and give final arguments
- Intervenors are not required to explicitly state support or opposition
- Requires significant time commitment and cost – but gets you a “seat at the table”



# City of Vancouver as Intervenor



- Staff are prepared to, and recommend that, the City apply as an intervenor, in order to ensure that:
  - Issues related to urban-maritime context are considered and addressed in emergency plans
  - Urban residents concerns are raised
  - Strong conditions are set before any approvals
  - Emergency planners have the necessary information to assess risk and develop contingency plans

End