

# Situation Manual

## BNSF 2022 B.C. Worst-Case Discharge Operations-Based Test

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### Exercise: 9/22/22

The SitMan and other resources referenced above can be downloaded at the BNSF 'IMT & Exercise Resource Center' ([link](#)) and should be reviewed by exercise players before the exercise.

Please forward any recommended edits and changes to:

[Dominic.Winslow@BNSF.com](mailto:Dominic.Winslow@BNSF.com)

**Exercise Check-in Location:**  
BNSF Brunette River Wye  
New Westminster, Canada  
[49.232930, -122.880899]

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## List of Appendices

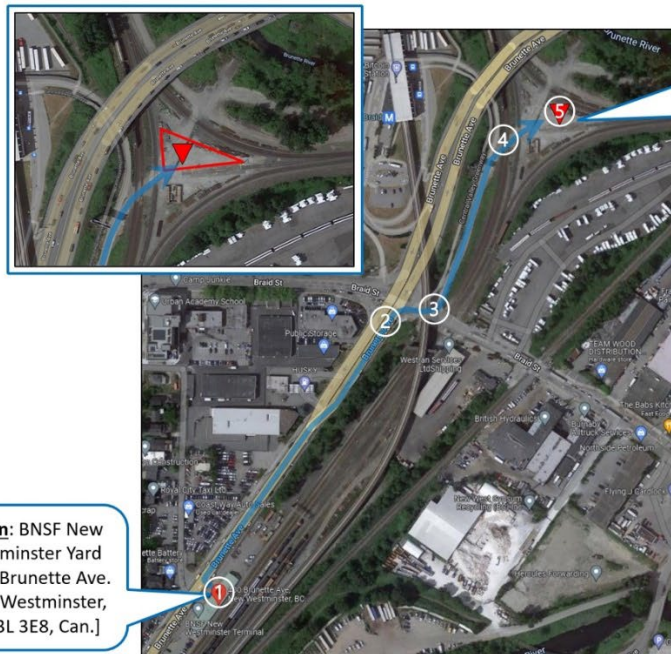
- A. Exercise Response Strategies
- B. Drill Scenario Site Location Maps
- C. Exercise Participants

## Driving Directions to Exercise from BNSF New Westminster Terminal

### Directions from BNSF New Westminster Terminal to Brunette River Wye:

1. Leaving the BNSF New Westminster Terminal [400 Brunette Ave. New West., BC V3L 3E8, Can.] – head northeast onto Brunette Ave
2. Proceed for 350 meters and turn right on to Braid St.
3. Immediately turn left under the overpass bridge, before crossing the tracks
4. Proceed north and turn slight right at the track crossing
5. Arrive at the Brunette River Wye [49.232930, -122.880899]

**Origin:** BNSF New Westminster Yard  
[400 Brunette Ave.  
New Westminster,  
BC V3L 3E8, Can.]



**Destination:** BNSF  
Brunette River Wye  
[49.232930,  
-122.880899]

## **EXERCISE OVERVIEW**

<b>Exercise Name</b>	BNSF 2022 Worst-Case Discharge (WCD) Operations-Based Test
<b>Exercise Date(s)</b>	9/22/22
<b>Scope</b>	This WCD operations-based test is designed to be an expansion of the BNSF 'initial incident' operations-based test performed in 2021 and implements the same scenario. This exercise considers response efforts if spilled materials progress past the confluence of Brunette River and the Fraser River.
<b>Mission Area(s)</b>	Focus is on the initial <u>response and recovery</u> aspects of the scenario, assuming source control has been achieved.
<b>Core Capabilities</b>	Parts of the system to test: <ol style="list-style-type: none"><li>1. Assessment</li><li>2. Ability to form incident command under the Incident Command System</li><li>3. Ability to complete the exercise objectives identified.</li></ol>
<b>Objectives</b>	Test BNSF's Oil Spill Contingency Plan for British Columbia (B.C.) and exercise objectives identified in the Situation Manual.
<b>Threat or Hazard</b>	Unit Train crude oil derailment and release to surface water of Brunette River and the Fraser River.
<b>Scenario</b>	A BNSF Crude Oil Unit Train (UN 1267) derailment at BNSF Mile Post 144.5 in B.C. near the BNSF New Westminster Yard in New Westminster, B.C. 24 tank cars carrying Crude Oil were reported to have derailed.
<b>Sponsor</b>	BNSF
<b>Point of Contact</b>	Nic Winslow: BNSF Hazmat Department



## **PURPOSE**

As part of its ongoing commitment to transportation safety, the BNSF Railway Company (BNSF) is conducting a worst-case discharge (WCD) operations-based test (i.e., equipment deployment exercise) on 22 September 2022 based at the BNSF Brunette River Wye.

The exercise is meant to exercise and validate BNSF's Oil Spill Contingency Plan for British Columbia (B.C.), as well as the BNSF Incident Management Team (IMT) and Response Organization (RO) capabilities to respond to a simulated oil spill.

This exercise Situation Manual (SitMan) has been developed for use by all participants to understand the details, scope, and objectives of the exercise and allow them to fulfill their assigned roles. Additional supporting materials such as the drill scenario map (etc.) are attached as appendices to this manual.

Due to COVID-19, this exercise will be conducted in accordance with applicable restrictions and reflecting BNSF and B.C. Provincial COVID-19 policies and procedures. Be advised that event details and logistics may need to be adjusted in accordance with evolving requirements.

As information, BNSF is additionally facilitating a discussion-based test (i.e., table-top exercise) on 21 September 2022. This exercise is covered by a SitMan under separate cover.

## **SCOPE**

- This operations-based test uses the same oil spill scenario, IMT, and ROs, as the BNSF discussion-based test implemented the day before.
- Exercise activities will focus on implementation of on-water equipment deployment activities by ROs (WCMRC and Nucor) under the oversight of the IMT.
- Exercise activities assume that source control and Brunette River containment strategies have been implemented (both demonstrated during BNSF's 2021 operations-based test).
- Equipment deployment will focus on downstream Fraser River containment at Sapperton Landing Park (GRS #: FR0062) and shoreline/wildlife protection at Gundersen Slough (GRS #: FR0038). See Appendix A for these Geographic Response Strategies (GRSs) and Appendix B for spill source area and spill trajectory maps.
- The exercise will validate plans and procedures and provide experience for participants by using a scenario to drive exercise play.
- On-water work boats and operations personnel will maintain UHF or VHF radio communications with the incident command post (ICP) staff during the exercise.
- An unmanned aerial system will fly over the deployed equipment and capture photographs of the exercise.

## **AGENDA**

The following agenda has been developed to support equipment deployment exercise activities on 22 September 2022. Exercise activities will commence with an "all-hands" briefing and safety

kick-off meeting at the BNSF Brunette River Wye, New Westminster, Canada [49.232930, -122.880899]. Driving directions are presented on the second page of the SitMan.

Time (Pacific)	Activity Item	Participants	Location
7:30 a.m. – 8:30 a.m.	Sign-In	All	BNSF Breunette R. Wye
8:30 a.m. – 9:00 a.m.	Safety Briefing / Introductions / Scenario Review	All	BNSF Breunette R. Wye
9:00 a.m - 11:30 p.m.	Exercise Play	DPX Players	Sapperton Park & Gundersen Slough
11:30 - 12:30 p.m.	Working Lunch & Hotwash	All	

## **PARTICIPANTS**

Exercise Participants include Players, Observers, and Evaluators (outlined below) and include personnel from BNSF's IMT, ROs, and response contractors, as well as agencies and other participants (etc.).

- **Players:** Exercise players are personnel who have an active role in performing their regular response roles and responsibilities during the exercise.
- **Observers:** Exercise observers visit or view selected segments of the exercise. Observers do not play in the exercise or perform any control or evaluation functions.
- **Evaluators:** Evaluators evaluate and/or document the exercise.

### **Exercise Participants:**

- **Players:** Players are anticipated to include the BNSF IMT and ROs, and Emergency Response Contractor(s) listed in the BNSF Oil Spill Contingency Plan for B.C.
- **Observers:** Observers are anticipated to include additional exercise participants without IMT or operational/response roles driven by exercise play.
- **Evaluators:** BNSF and B.C. Ministry of Environment (BC ENVL).

After completion of the exercise, BNSF will close with a facilitated group discussion (exercise "Hot Wash") covering response actions, responsibilities, and/or response expectations. **During the facilitated discussion, all parties are involved in the discussion, irrespective of their prior role(s).**

## **OBJECTIVES**

The overall objectives of the exercise include:

1. BNSF IMT, ROs, and partnering organizations will complete applicable BC ENVL/ Preparedness for Response Exercise Program (PREP) objectives per response standards outlined in exercise evaluation guides prior to the end of the exercise.
2. BNSF IMT, ROs, and partnering organizations will demonstrate knowledge of an effective response to the simulated oil spill release.

These objectives are supported by completion of the following provincial 'Components to be Tested' and their equivalent PREP Core Components:

<b>PREP (U.S.) &amp; EMA Div 2.1 Component (B.C.)</b>		<b>PREP Description</b>	<b>To-Be-Exercised</b>
1.	PREP: Notifications B.C.: Notification [Section 12(3)]	Validate the notifications procedures identified in the response plan being exercised.	X
2.	PREP: Staff Mobilization B.C.: Mobilization [Section 12(4)(c)] / ICP [Section 12(4)(d)]	Demonstrate the ability to assemble the response organization identified in the response plan being exercised.	X
3.	PREP: Ability to operate within the RMS described in the plan B.C.: ICS [Section 7]	Demonstrate the ability of the IMT organization to operate within the framework of the incident management system identified in their respective plan(s).	X
4.	PREP: Source Control B.C.: Source Control [Sect. 12(4)(e)] / Deployment [Sect. 12(4)(c)]	Demonstrate the ability of the response organization to control and stop the discharge at the source, and to effectively coordinate source control activities within the response management system used for the overall incident. Source control actions may involve specialized operations.	
5.	PREP: Assessment B.C.: Initial/ongoing Assessments [Section 12(2) & (4)(b)]	Demonstrate the ability of the IMT organization to provide an initial assessment of the discharge or potential discharge and provide continuing assessments of the effectiveness of the tactical planning.	
6.	PREP: Containment B.C.: Stabil. & Contain [Sect. 12 (4)(f)] / Deployment [Sect. 12 (4)(c)]	Demonstrate the ability of the IMT organization to contain the discharge at the source or in various locations for recovery operations.	X
7.	PREP: Mitigation/Recovery B.C.: Removal & Clean Up [Sect. 12 (4)(f)] / Deployment [Sect.12(4)(c)]	Demonstrate the ability to mitigate the discharged product through the use of spill countermeasures, including, but not limited to, dispersants, in-situ burning, and bioremediation, in addition to mechanical recovery.	X
8.	PREP: Protection B.C.: Protection [Section 12(4)(g)] / Deployment [Section 12(4)(c)]	Demonstrate the ability to protect the environmentally and economically sensitive areas identified in the ACP and the respective industry response plan, including: 1. Protective Booming: Demonstrate the ability to assemble and deploy sufficient resources to implement the protection strategies contained in the ACP and the respective industry	X

PREP (U.S.) & EMA Div 2.1 Component (B.C.)		PREP Description	To-Be- Exercised
		<p>response plan.</p> <p>2. Water Intake Protection: Demonstrate the ability to quickly identify water intakes and implement the proper protection procedures from the ACP or develop a plan for use.</p> <p>3. Wildlife Recovery and Rehabilitation: Demonstrate the ability to quickly identify these resources at risk and implement the proper protection procedures from the ACP to develop a plan for use.</p> <p>4. Population Protection (Protect Public Health and Safety): Demonstrate the ability to quickly identify health hazards associated with the discharged product and the population at risk from these hazards, and to implement the proper protection procedures from the ACP to develop a plan for use.</p>	
9.	PREP: Disposal B.C.: Waste Mgmt. [Section 10]	Demonstrate the ability to dispose of the recovered material and contaminated debris.	
10.	PREP: Communications B.C.: Communication [Section 9]	Demonstrate the ability to establish an effective communications system for the response organization.	X
11.	PREP: Transportation B.C.: NA - 'Transportation' not a B.C. Component	Demonstrate the ability to provide effective multimode transportation, both for execution of the discharge and support functions.	
12.	PREP: Personnel Support B.C.: Ongoing Sufficiency [Section 12(4)(c)]	Demonstrate the ability to provide the necessary support of all personnel associated with the response.	X
13.	PREP: Equipment Maintenance and Support B.C.: NA - 'Equip. Maint.' not a B.C. Component	Demonstrate the ability to maintain and support all equipment associated with the response.	
14.	PREP: Procurement B.C.: NA - 'Procurement' not a B.C. Component	Demonstrate the ability to establish an effective procurement system.	
15.	PREP: Documentation B.C.: Monitoring & Documentation [Section 12(1)(d)]	Demonstrate the ability of the IMT organization to document all operational and support aspects of the response and provide detailed records of decisions and actions taken.	

## **GROUND RULES**

1. SAFETY is our number one priority. In the event any unsafe condition is identified and/or incident occurs, exercise activities must be halted until the situation is adequately addressed and all required mitigation activities are performed. Any unsafe act observed during the exercise must be immediately addressed and reported to the Safety Officer

and your direct supervisor. All attending Players must complete a Health and Safety Plan (HASP) for their organization, appropriate to their assignment(s).

2. EXERCISE SAFETY BRIEFING: The exercise will begin with a Safety Briefing.
3. COMMUNICATIONS: All exercise communications and written materials must be started and ended with the phrase "This is an Exercise."
4. PERSONAL PROTECTIVE EQUIPMENT (PPE): All exercise participants are required to wear PPE appropriate to their assignments. PPE for on- or near-water activities must include a personal floatation device (PFD). PPE specifically for evaluator(s) who may board WCMRC watercraft includes steel toed boots and a PFD. Protective headwear, eyewear, footwear, gloves, and weather appropriate outer clothing are recommended for all attendees.
5. SIGN-IN/OUT: All Participants must sign in at the exercise location by 8:00 a.m. and sign out of the exercise when their responsibilities have been completed or are leaving the exercise location for any reason to maintain personnel accountability. Failure to perform the sign-out activity may result in unnecessary actions being taken to locate missing person(s).

#### **ASSUMPTIONS, ARTIFICIALITIES, AND OUT-OF-PLAY**

It will be assumed, for the purpose of meeting the exercise objectives, that the following circumstances exist:

- The exercise will begin with a scenario review for all participants and will proceed through the safe and effective execution of activities meant to address the simulated release.
- The release volume and liquid petroleum oil type defined in the scenario is the total volume for the exercise. This will include the amount simulated to have been released and the remaining potential.
- Actual mobilization of equipment is out-of-play other than designated deployment sites by the Exercise Director.
- There is no "hidden agenda," nor any trick questions.
- Weather will be defined by day-of-exercise conditions.
- Spill trajectory and "overflight" information will be provided at the start of the exercise.
- The following is out-of-play: Circumstances leading up to the release. Track closure, service interruption, and service re-establishment. Security / evacuations / road closures. Community air monitoring field operations. Wildlife; volunteers; alternative response technologies; VIP visits; Natural Resource Damage Assessment; sinking oil; security in terms of terrorism.



### **EXERCISE SCENARIO:**

- A BNSF manifest train derailment occurred at 0100 on 21 September 2022 at BNSF Mile Post 144.5 in B.C. near the Brunette River railroad bridge on the southern side of New Westminster, BC.
- Twenty-four cars were reported to have derailed: all derailed tank cars were placarded UN 1267 – Crude Oil. The release potential from these tank cars is 2,680,072 Liters (708,000 gallons / 16,857 barrels).
- After the derailment, the engineer and conductor contacted the Dispatcher who notified the BNSF Service Interruption Desk (SID) at 0120 after inspection of the train. The Dispatcher reported that in the initial damage assessment, an unknown quantity of crude oil was released from the derailed tank cars and is flowing into the Brunette River. The Brunette River discharges to the Fraser River 1.6 kilometers downstream from the derailment location.
- It was later confirmed that crude oil is being released from the 24 derailed tank cars and is flowing across the ground surface into the Brunette River.
- The oil release volumes have been confirmed by BNSF Hazmat Responders and the response organizations. A BNSF-developed GRS is available on the Brunette River. No fires, injuries, or fatalities have been reported.
- BNSF SID and the BNSF Resource Operations Control Center started emergency notifications at 0120 to the British Columbia Emergency Coordination Center. At 0130, New Westminster Fire Department arrived and started a scene assessment and road closures using a conservative 800-meter (½-mile) evacuation distance based on the Transport Canada/U.S. Department of Transportation Emergency Response Guidebook recommendations for rail car fires.
- At 0145, New Westminster Fire Department reported visible sheen flowing on the Brunette River in the direction of the Fraser River. According to Avadepth models for the Fraser River in New Westminster area, from 00:00 to 1400, the flow direction is southwest, with a reversal in flow to the northeast from 14:00 to 18:00, before returning to a southwestern flow at ~18:30 for the rest of the day.
- The Qualified Individual reports to the Emergency Coordinator that their arrival time onsite will be 0600.

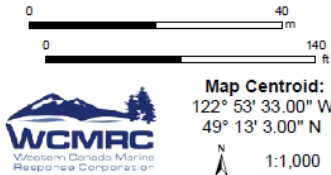
## Appendix A: Exercise Response Strategies

Notes: This map is not intended to be a definitive source of features. Spatial accuracy and quality varies. Due to page space limitations some feature have not been mapped. Not for Navigation.

Document created: 23-Aug-2022 14:25

**GRS: Sapperton Landing Park**  
**GRS #: FR0062**

PDF Link



CHS Chart Reference:  
3490

*Please Note: Responders must adhere to incident specific site safety plans and WCMRC's response safety plan and procedures at all times.*



### Legend

- OPERATIONAL**
- Shore Tie
- red
- ENVIRONMENTAL**
- Fish Obstacle (S0005b)
- Critical Habitat (F0091)
- SOCIO-EC**
- SHORELINE FEATURES**
- BASE**

### Strategic Objective

Deflection

### Access

Water & Road

### Cell Coverage

Yes

### Radio Coverage

Yes

### Staging Area

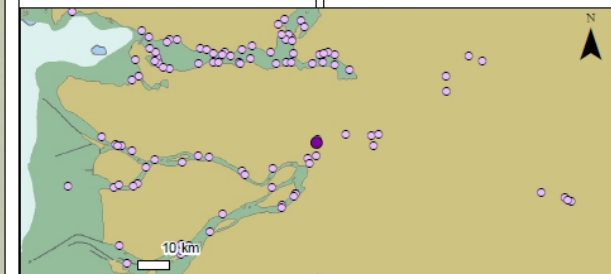
n/a

### GRS Comments

-deflection with a boom vane at the end.

### Recommended Equipment

1 x units Danforth Standard Anchor Kits  
1 x units Shore-tie  
2 x units Broadwater Vessel (or Landing Craft)  
200 x feet Polysteel Rope  
50 x metres Sheltered / Nearshore Boom Red (4 sections)  
-



Page Size: 8 1/2" x 11" - Data Source: Bing World Imagery, Data BIC #: Refer to GRS documentation. This is an UNCONTROLLED document. Map version 3.

## GRS: Gundersen Slough

GRS #: FR0038

### PDF Link



### CHS Chart Reference:

3491

*Please Note: Responders must adhere to incident specific site safety plans and WCMRCs response safety plan and procedures at all times.*



Map Centroid:  
122° 55' 21.72" W  
49° 10' 10.56" N

1:2,500



122°55'30"W

### Legend

#### OPERATIONAL

Shore Tie

blue

purple

#### ENVIRONMENTAL

Important Bird Area IBA (S3014)

#### SOCIO-EC

#### SHORELINE FEATURES

#### BASE

### Strategic Objective

Exclusion

### Access

Water & Road

### Cell Coverage

Yes

### Radio Coverage

Yes

### Staging Area

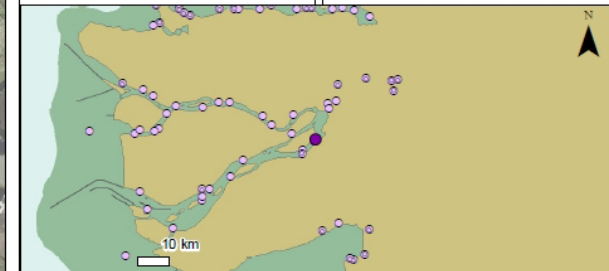
possible upland staging

### GRS Comments

-

### Recommended Equipment

1 x units Broadwater Vessel (or landing craft)  
122 x units Polysteel Rope  
152 x metres Sheltered / Nearshore Boom (Purple)  
2 x units Danforth Standard Anchor Kits  
2 x units Shore-tie  
-





## Appendix B-1: Drill Scenario Spill Location Map





**BNSF RAILWAY**

**New Westminster BC TTX**  
**Trajectory Showing Predicted Slick Location**  
**At 13:00 HRS. On 09/21/2022**  
**(If product is still remaining on the surface)**

**The Response Group**  
 Emergency Response, Fire Training & Support

Scale: 1:60,000

**TRG**  
 The output from this model shows estimated oil concentrations and predicted shoreline impact. This trajectory prediction is based on the latest available information. Actual product location and trajectory path may vary due to data accuracy.

**Incident Location - UN 1267**  
 Latitude: 49° 13' 58.08" N  
 Longitude: 122° 52' 52.32" W

**Trailing Edge:**  
 Latitude: 49° 13' 59" N  
 Longitude: 122° 52' 41" W

**THIS IS A DRILL!**

**MODEL INFORMATION:**  
 Start Time: 01:00 HRS at 09/21/2022  
 End Time: 13:00 HRS at 09/21/2022  
 Elapsed Time: 12 HRS

Slick Length: 11.38 km  
 Slick Width: 0.15 km

**MASS BALANCE (Liters):**  
 On Surface: 2040414.1  
 Ashore: 54629  
 Total Evaporated: 621030.8  
 Total in Water Column: 0

**SPILL INFORMATION:**  
 Spill Volume: 17108.29 Barrels  
 Product: Medium Crude

**WEATHER:**  
 Wind: 10.76 kph from ENE  
 Current: 0.07 m/s Downstream

**Leading Edge:**  
 Latitude: 49° 09' 20" N  
 Longitude: 122° 57' 20" W

**Legend**  
 ★ Incident Location  
 Trajectory  
 ● On Surface  
 ● Uncertainty  
 — Shoreline Impact  
 — Trajectory Line

0 0.4 0.8 1.2 1.6 2 Kilometers

## Appendix C: Exercise Participants

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Participants – Please Print Clearly
Name, department & email
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Participants – Please Print Clearly	
Name, department & email	
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