

Field Studies Information Sheet – August 2013

Port Metro Vancouver is continuing field studies in August as part of ongoing environmental and technical work for the proposed Roberts Bank Terminal 2 Project.

Roberts Bank Terminal 2 Project

The Roberts Bank Terminal 2 Project is a proposed new three-berth container terminal which would provide 2.4 million TEUs (twenty-foot equivalent unit containers) of additional container capacity. The project is part of the Container Capacity Improvement Program, Port Metro Vancouver's long-term strategy to deliver projects to meet anticipated growth and demand for container capacity until 2030.

No decision has been made to proceed with the proposed Roberts Bank Terminal 2 Project. Port Metro Vancouver is undertaking a comprehensive multi-round, multi-year community, stakeholder and public consultation process regarding the project, which began in June 2011 with Pre-Consultation and continued from October 22 to November 30, 2012, with Project Definition Consultation.

The proposed Roberts Bank Terminal 2 Project will be subject to a thorough and independent environmental assessment.

Field Studies – August 2013

An overview of field studies that will be taking place in August 2013 is below.

Overview
Biofilm Study
Annual Variability Study
Regeneration Study
Shear Stress Study
Coastal Geomorphology
Continuous Measurement of Discharge Study
Coastal Seabirds
Impacts of Overhead Transmission Wires and Vehicular Traffic on Coastal Seabirds Study
Predation Risk Study
Shorebird Use of Fraser River Estuary during Southward Migration Study
Marine Invertebrates
Micro Invertebrates Study
Marine Mammals
Marine Mammal Observation Study
Underwater Noise Study
Marine Vegetation
Rocky Foreshore Habitat Study
Salt Marsh Productivity Study
Noise and Vibration
Baseline Noise and Vibration Monitoring
Deltaport Source Measurements
Terrestrial Wildlife
Amphibians and Reptiles Study
Barn Owl Nest/Roost Check Study
Songbird Study

Sediment and Water Quality
Sediment and Water Quality Study
Sediment Characterization Study
Visual Impact
Visual Impact Assessment Study

Some field studies may require access to public and private land. Port Metro Vancouver will obtain permission before accessing private property. As part of the Adaptive Management Strategy developed as part of the Deltaport Third Berth Project, Port Metro Vancouver will continue studies at Roberts Bank in addition to those outlined in this information sheet.

Port Metro Vancouver will produce monthly field studies information sheets summarizing work to occur each month. These updates will be available at www.portmetrovancover.com/RBT2.

Study Name	Summary
Biofilm – Annual Variability Study (continued from April 2013)	<p><u>Purpose:</u> The purpose of the study is to assess the temporal fluctuations of the biofilm communities in relation to bird migration periods, and assess any variability in terms of food availability.</p> <p><u>Study Area:</u> This study will be conducted on Roberts Bank.</p> <p><u>Methods:</u> Sediment samples will be collected from the intertidal mudflats and measured for the following parameters of biofilm quantity and quality:</p> <ul style="list-style-type: none"> • Photopigment density • Carbohydrate • Total Organic Carbon • Microphytobenthos Taxonomy <p>It is intended that seasonal variations in the results obtained will allow for the annual variability of the biofilm communities to be determined.</p> <p><u>Timing:</u> This study will continue in August 2013 and will take place during daylight hours.</p>

Study Name	Summary
<p>Biofilm – Regeneration Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of the study is to measure re-establishment rates of biofilm on sediments over time.</p> <p><u>Study Area:</u> This study will be conducted on Roberts Bank.</p> <p><u>Methods:</u> Controlled disturbance plots will be used to assess natural re-establishment rates of biofilm over time. The following parameters will be measured in both disturbance plots and control (non-disturbed) plots:</p> <ul style="list-style-type: none"> • Photopigment density • Carbohydrate • Total Organic Carbon • Taxonomy <p><u>Timing:</u> This study will continue in August 2013 and will take place during daylight hours.</p>
<p>Biofilm – Shear Stress Study</p>	<p><u>Purpose:</u> The purpose of the study is to determine the maximum erosional force that a biofilm community can withstand.</p> <p><u>Study Area:</u> This study will be conducted on Roberts Bank and at a laboratory.</p> <p><u>Methods:</u> Sediment cores from biofilm habitat will be collected and transported to a laboratory where they will be analysed using a cohesive strength meter.</p> <p><u>Timing:</u> This study will begin in August 2013 and will take place during daylight hours.</p>
<p>Coastal Geomorphology – Continuous Measurement of Discharge Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of the study is to collect data relating to the flow discharge in Canoe Pass.</p> <p><u>Study Area:</u> The study area includes Canoe Pass (the southern-most arm of the Fraser River).</p> <p><u>Methods:</u> Sensors and probes will be installed within the study area. These will be connected to computers to collect and monitor data.</p> <p><u>Timing:</u> This study will continue in August 2013.</p>

Study Name	Summary
<p>Coastal Seabirds – Impacts of Overhead Transmission Wires and Vehicular Traffic on Coastal Seabirds Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> Bird diverters are special units installed on power lines that help birds see power lines and avoid potentially fatal collisions. The purpose of the study is to calculate the effectiveness of existing bird diverters, while identifying opportunities to further reduce bird collisions with transmission wires and vehicular traffic.</p> <p><u>Study Area:</u> The study area is comprised of the Roberts Bank causeway and the northern side of Westshore Terminals and Deltaport along the transmission wire and road.</p> <p><u>Methods:</u> The study will examine flight patterns, distribution, abundance and behaviour of birds as they cross the Roberts Bank transmission line. Where bird collisions do occur within 20 metres of the transmission wire and road, birds will be collected and studied.</p> <p><u>Timing:</u> Flight surveys will be undertaken every two weeks at each station, raptor surveys will be conducted every week and collision searches will take place every four days. Assessments will occur during daylight hours, weather permitting. This study began in mid-April 2012 and will continue in August 2013.</p>
<p>Coastal Seabirds – Predation Risk Study</p>	<p><u>Purpose:</u> The purpose of this study is to assess the extent to which project-related changes may influence the danger of raptor predation on shorebirds.</p> <p><u>Study Area:</u> This study will be conducted at Roberts Bank.</p> <p><u>Methods:</u> A specialist will conduct a desktop evaluation of the Roberts Bank Terminal 2 design and analyze the potential for changes in predation risk to shorebirds. The desktop study will be supported by infield observations of predator/prey behaviour to complete the analysis.</p> <p><u>Timing:</u> The study will begin in August 2013 and will take place during daylight hours.</p>

Study Name	Summary
<p>Coastal Seabirds – Shorebird Use of Fraser River Estuary During Southward Migration Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to determine the abundance and distribution of shorebirds across the Fraser River Estuary during the southward migratory period.</p> <p><u>Study Area:</u> The study area is comprised of mudflats within three sites of the Fraser River Estuary:</p> <ul style="list-style-type: none"> • Sturgeon Bank • Roberts Bank • Boundary Bay <p><u>Methods:</u> The number and distribution of bird use will be assessed by counting droppings at low tide within 1m² quadrants. Bird count surveys will also be conducted.</p> <p><u>Timing:</u> The study will continue in August 2013 and will take place during daylight hours.</p>
<p>Marine Invertebrates – Micro Invertebrates Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of the study is to determine the density and diversity of small marine invertebrates (meiofauna and macrofauna) living in the sediment at Roberts Bank, Sturgeon Bank and Boundary Bay. This study will also look at the role of small marine invertebrates as food for coastal seabirds.</p> <p><u>Study Area:</u> The study area includes:</p> <ul style="list-style-type: none"> • Roberts Bank • Sturgeon Bank • Boundary Bay <p><u>Methods:</u> Invertebrate field samples will be collected from intertidal sampling locations. Samples will be collected using syringes and will be sent to a laboratory for processing and analysis.</p> <p><u>Timing:</u> This study will continue in August 2013 and will take place during daylight low tide intervals.</p>

Study Name	Summary
<p>Marine Mammals – Marine Mammal Observation</p>	<p><u>Purpose:</u> The purpose of this study is to document marine mammal presence and behaviour in the waters around Deltaport.</p> <p><u>Study Area:</u> The study area is the waters in the vicinity of Deltaport at Roberts Bank.</p> <p><u>Methods:</u> Marine mammal observers will be stationed on Deltaport Terminal and will record data on marine mammal sightings and behaviour. A ground-based remote video surveillance system will also be established to observe the proposed project footprint for marine mammals.</p> <p><u>Timing:</u> This study will begin in August 2013 and will take place during daylight hours.</p>
<p>Marine Mammals – Underwater Noise Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to capture baseline data on ambient underwater noise levels and southern resident killer whale (SRKW) presence at Roberts Bank.</p> <p><u>Study Area:</u> The study area is the waters in the vicinity of Roberts Bank.</p> <p><u>Methods:</u> At Roberts Bank, both ambient noise levels and marine mammal vocalizations will be recorded continuously for one year using a hydrophone cabled to shore.</p> <p><u>Timing:</u> Acoustic recordings at Roberts Bank will continue in August 2013.</p>
<p>Marine Vegetation – Rocky Foreshore Habitat Study</p> <p>(continued from August 2012)</p>	<p><u>Purpose:</u> The purpose of this study is to determine the composition and distribution of rocky foreshore marine vegetation.</p> <p><u>Study Area:</u> The study will be conducted along the Roberts Bank causeway and the northern side of the Deltaport terminal.</p> <p><u>Methods:</u> Transect surveys will be conducted from the highest high water mark to where the rocky intertidal habitat meets the tidal mudflats. Quadrats will be placed along the transects and habitat inventories will be conducted within the quadrat.</p> <p><u>Timing:</u> This study will continue in August 2013 and will take place during daylight hours.</p>

Study Name	Summary
<p>Marine Vegetation – Saltmarsh Productivity Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to determine summer salt marsh productivity (grams of carbon per square metre) of five prevalent salt marsh plant species at Roberts Bank.</p> <p><u>Study Area:</u> The study will be conducted at salt marsh habitat across Roberts Bank, but will focus on Brunswick Point where diverse salt marsh habitat is located.</p> <p><u>Methods:</u> Within randomly placed quadrats, aerial coverage of individual vegetative species will be estimated and the number of stems/shoots of target species will be counted. A number of shoot samples will also be collected for laboratory analysis.</p> <p><u>Timing:</u> This study will continue in August 2013 and will take place during daylight hours.</p>
<p>Noise and Vibration – Baseline Noise and Vibration Monitoring</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to measure baseline noise and vibration levels within potentially impacted residential areas.</p> <p><u>Study Area:</u> This study will be conducted in areas around Deltaport, Tsawwassen First Nation land and some communities of Delta in close proximity to Deltaport.</p> <p><u>Methods:</u> Sound and vibration level meters will be used to conduct noise level measurements at residential properties.</p> <p><u>Timing:</u> This study will continue in August 2013.</p>
<p>Noise and Vibration – Deltaport Source Measurements</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to measure close-up “source” measurements within Deltaport.</p> <p><u>Study Area:</u> This study will be conducted at Deltaport.</p> <p><u>Methods:</u> Sound and vibration level meters will be used to conduct source noise measurements to document the level of different noise sources.</p> <p><u>Timing:</u> This study will continue in August 2013.</p>

Study Name	Summary
<p>Terrestrial Wildlife – Amphibians and Reptiles Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to determine the presence/non-detection of selected reptile species (garter snakes) within the study area.</p> <p><u>Study Area:</u> The study area includes the road shoulders on either side of Deltaport Way from the base of the Roberts Bank causeway, east towards 72nd Street.</p> <p><u>Methods:</u> Presence/non-detection in the study area will be determined using direct observation techniques by searching under previously deployed coverboards, which provide ideal refuge for garter snakes within their preferred habitat.</p> <p><u>Timing:</u> This study will continue in August 2013 and will take place during daylight hours.</p>
<p>Terrestrial Wildlife – Barn Owl Nest/Roost Check Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to collect baseline data on the presence of barn owls at nest/roost sites in the upland area.</p> <p><u>Study Area:</u> The study area includes predetermined properties along Roberts Bank rail corridor between the shore end of the Roberts Bank causeway and the east end of Fisher Yard.</p> <p><u>Methods:</u> The barn owl nest/roost checks will be conducted at predetermined locations where barn owl nests/roosts have been identified. At these locations biologists will record:</p> <ul style="list-style-type: none"> • Barn owl presence/absence, • General barn owl behaviour, • Number of barn owls, and • Age of barn owls, if possible. <p><u>Timing:</u> This study will continue in August 2013 and will take place in the hours preceding and following dusk.</p>

Study Name	Summary
<p>Terrestrial Wildlife – Songbird Study</p> <p>(continued from June 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to determine songbird presence, relative abundance and species diversity across representative habitat types in the study area.</p> <p><u>Study Area:</u> The study area consists of 1.5 kilometres either side of the existing BC Rail line from the causeway end of Deltaport Way to approximately 200 metres east of 72nd Street.</p> <p><u>Methods:</u> Point count surveys will be conducted to record species observed inside or outside of a 50-metre radius from the survey location. Surveys will record all audio and visual bird detections. Observations will take place from public roadsides.</p> <p><u>Time:</u> This study will continue in August 2013 and will take place in the five hours following dawn.</p>
<p>Sediment and Water Quality – Sediment and Water Quality Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of the study is to collect data on sediment and water quality throughout the study area. Furthermore, the study will examine the connection between water and sediment quality and the health of:</p> <ul style="list-style-type: none"> • Marine invertebrates, • Biofilm, • Eelgrass, • Sea pens, and • Biological resources and communities. <p><u>Study Area:</u> The study area is comprised of three sites within the Fraser River Estuary:</p> <ul style="list-style-type: none"> • Sturgeon Bank • Roberts Bank • Boundary Bay <p><u>Methods:</u> Throughout the study area, water and sediment samples will be taken during daylight hours and sent to a laboratory to determine the sample's physical and chemical characteristics.</p> <p><u>Timing:</u> This study will continue in August 2013 and will take place during daylight hours.</p>

Study Name	Summary
<p>Sediment and Water Quality – Sediment Characterization Study</p>	<p><u>Purpose:</u> The purpose of this study is to characterize the physical and chemical features of the sediments that may be dredged or deposited as part of project construction.</p> <p><u>Study Area:</u> This study will be conducted offshore of the Deltaport terminal at Roberts Bank.</p> <p><u>Methods:</u> Fieldwork will include both borehole drilling and surface sediment sampling activities. Sediment will be collected from drill and surface sampling locations using appropriate equipment from a secured barge or small boat.</p> <p><u>Timing:</u> The study will begin in August 2013 and will take place during daylight hours.</p>
<p>Visual Impact – Visual Inventory Study</p> <p>(continued from July 2013)</p>	<p><u>Purpose:</u> The purpose of this study is to gather baseline data to assess the existing aesthetic conditions at Roberts Bank.</p> <p><u>Study Area:</u> This study will be conducted from both shore-based and offshore viewpoints surrounding the Deltaport terminal.</p> <p><u>Methods:</u> Multiple digital photos will be taken of the Deltaport terminal at distances ranging from 1 to 8 kilometres. The data collected will be used to inform desktop studies.</p> <p><u>Timing:</u> This study will continue in August 2013 and will take place during daylight hours.</p>

For Further Information

For further information, please visit our website at www.portmetrovancover.com/RBT2

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