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Source Control of Solvents Using Jet Grout Containment Wall

Westminster Pier Park: A Case Study

Loris Bertoncello, B.A.Sc, PMP
WorleyParsons Canada

BRITISH COLUMBIA

Government of Canada

FCM | Federation of Canadian Municipalities

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Canada

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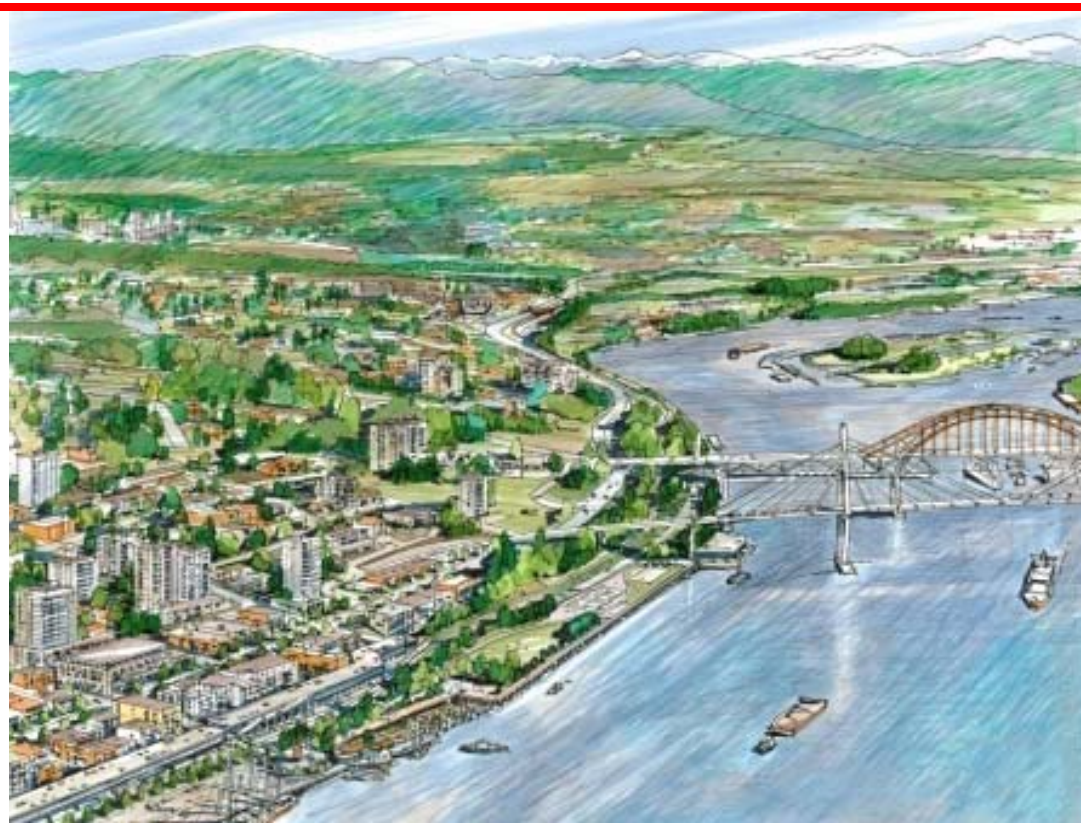

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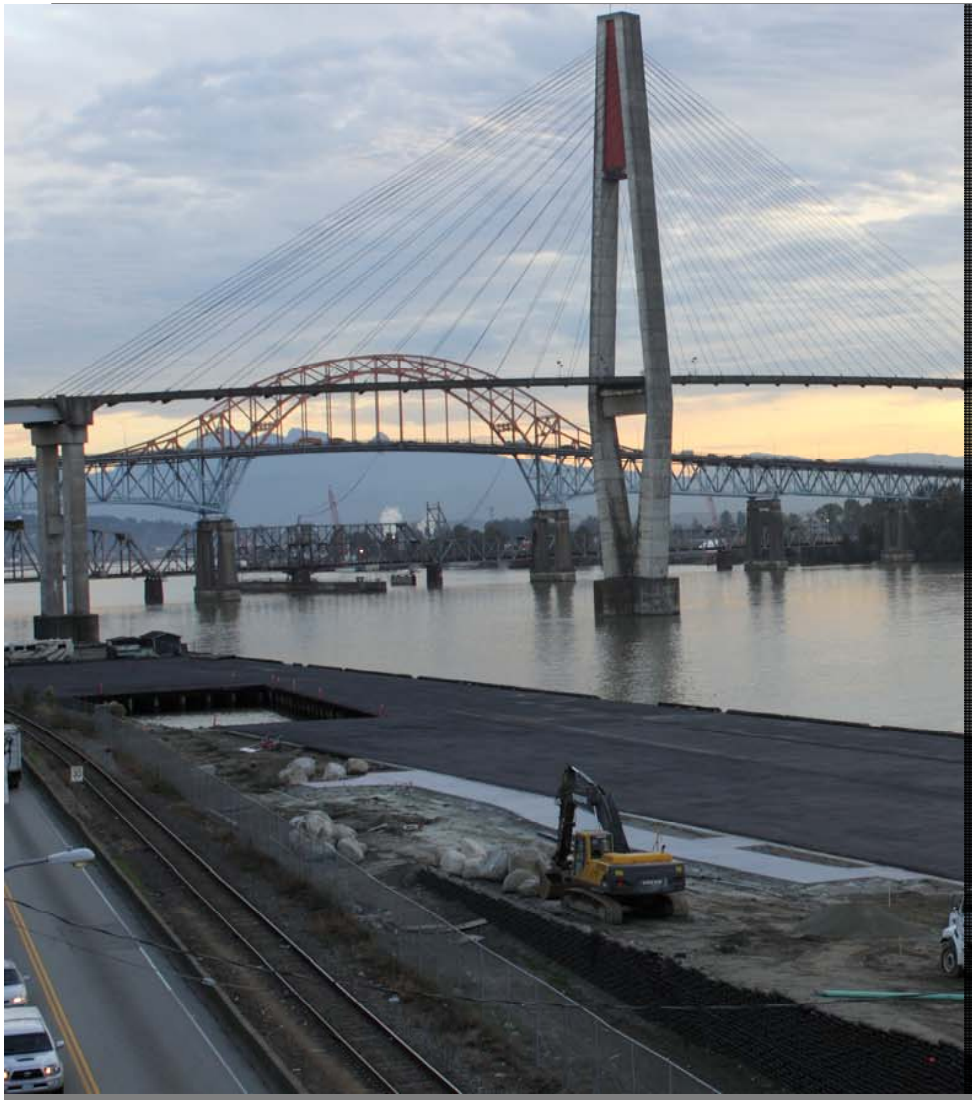
Agenda



- Project Setting & Scope
- Site Overview
- Solvent Plume Area
- Jet Grout Technology
- Benefits/Challenges
- Lessons Learned
- Q & A

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Project Location

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Project Scope

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Project Overview

AERIAL PERSPECTIVE OVER LYTTON SQUARE
AND FESTIVAL LAWN

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Solvent Plume Area

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Toxic soil fouls plan for riverfront park

City and environment ministry look for ways to clean up contaminants 10-15 metres deep at Pier Park site

BY THERESA MCMANUS

A small portion of the Westminster Pier Park site is home to a toxic blob of unknown origin.

A Nov. 8 report to New Westminster council states that remediation of contaminated soils at the park has been completed, but recent groundwater testing in the area around Fourth Street has identified a higher concentration of contaminants than was previously known. The contaminant, called tetrachloroethylene, is a common dry-cleaning chemical, which has been found at depths of 10 to 15 metres.

According to the report, the highest concentrations are located a short distance north of the park boundary, within the railway corridor.

"The contamination we found in the area around Fourth Street is a high risk," said Jim Lowrie, the city's director of engineering services. "It's a high-chlorinated solvent."

Lowrie said there are a few options available to address the contaminants because they are so far underground. He said they could be excavated, but that may not be the best option. "We can contain it and pump and treat it," he said. "If it's not mobile, we can leave it."

"The concern is the potential to migrate toward the river," Lowrie said. "The highest concentration is just off-site in the railway corridor. We are doing additional testing."

The Ministry of Environment has prioritized this site "because it's close to the river with political sensitivities around it," said Doug Walton, the manager of the ministry's risk assessment and remediation department. But, he added, tetrachloroethylene is "nothing unusual for us."

Lowrie said the toxic "blob" is about 750 square metres, which is about five per cent of the park property.

A previous laundry facility in the area has been ruled out as the source of the contaminants, but the source has yet to be identified.

"As part of the remediation process, a human health and ecological risk assessment study will be undertaken to assess the degree of exposure to humans and environment in order that appropriate mitigation measures may be implemented," said the report to council.

"Additional groundwater sampling is currently underway to determine if the contaminants are mobile, and to identify the potential source of the contamination."

JENELLE SCHNEIDERMAN FILES

The City of New Westminster is planning a waterfront park for a 3.2-hectare site along Front Street the city purchased last year.

New Westminster resident Christopher Bell has raised concerns about contamination since the city purchased the 3.2-hectare riverfront site last year. Last week, he met with representatives of the Ministry of Environment and the city for two hours to discuss the park site. "We are not even finished the testing," he said. "They haven't figured out the nature of the problem."

Bell said the area is now considered a high-risk area, rather than a low-risk area, as had been previously thought.

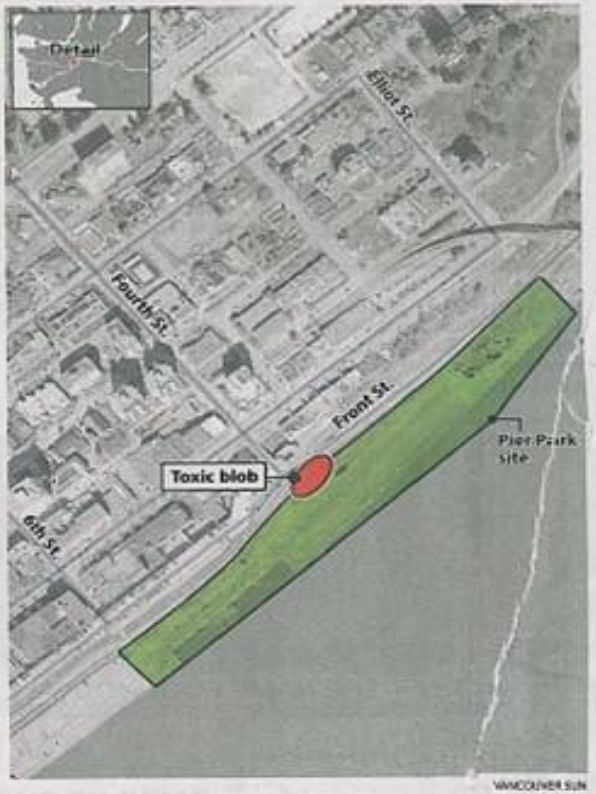
"We bought this real mess for $8 million without knowing the true toxic nature of this blob," he said.

Bell said a 2005 report done by an environmental consultant noted the presence of off-site contaminants.

Monday's staff report indicated that $400,200 had been spent on soil remediation at the site as of Sept. 30.

Lowrie said the method used to treat the contaminated area will dictate the cost of remediation.

New Westminster Record
With a file by Kim Pemberton



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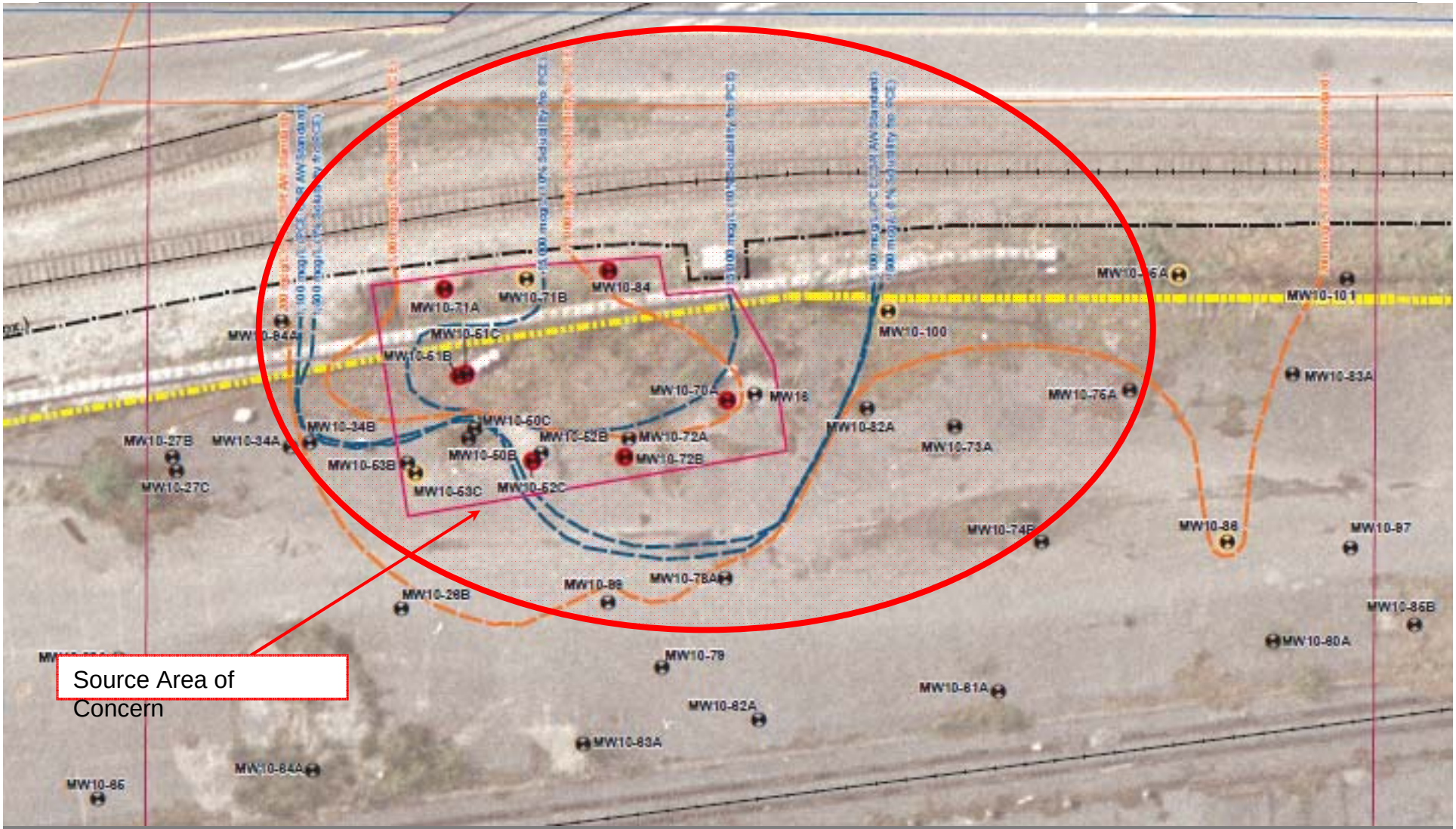
Solvent Plume Area



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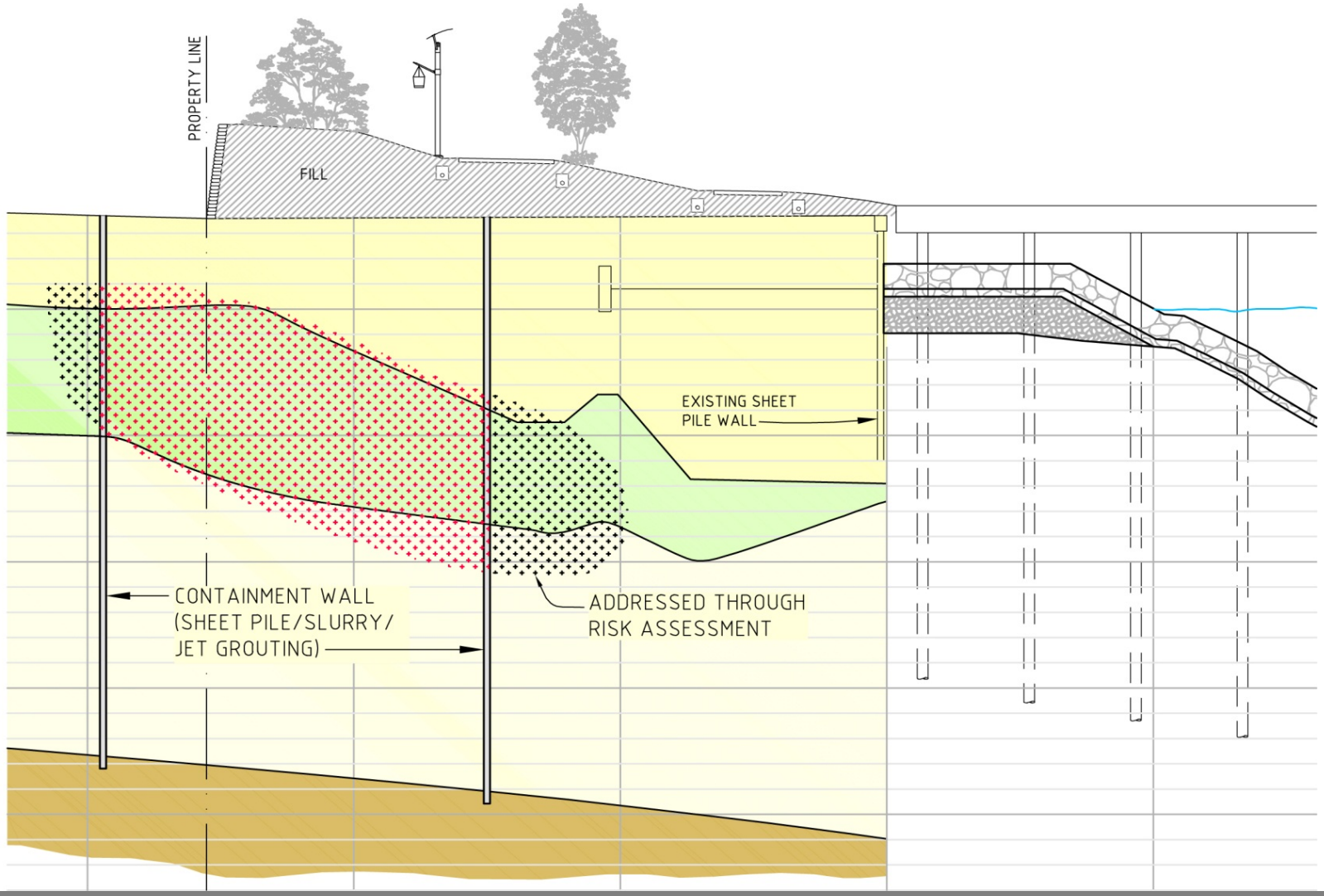
Solvent Containment



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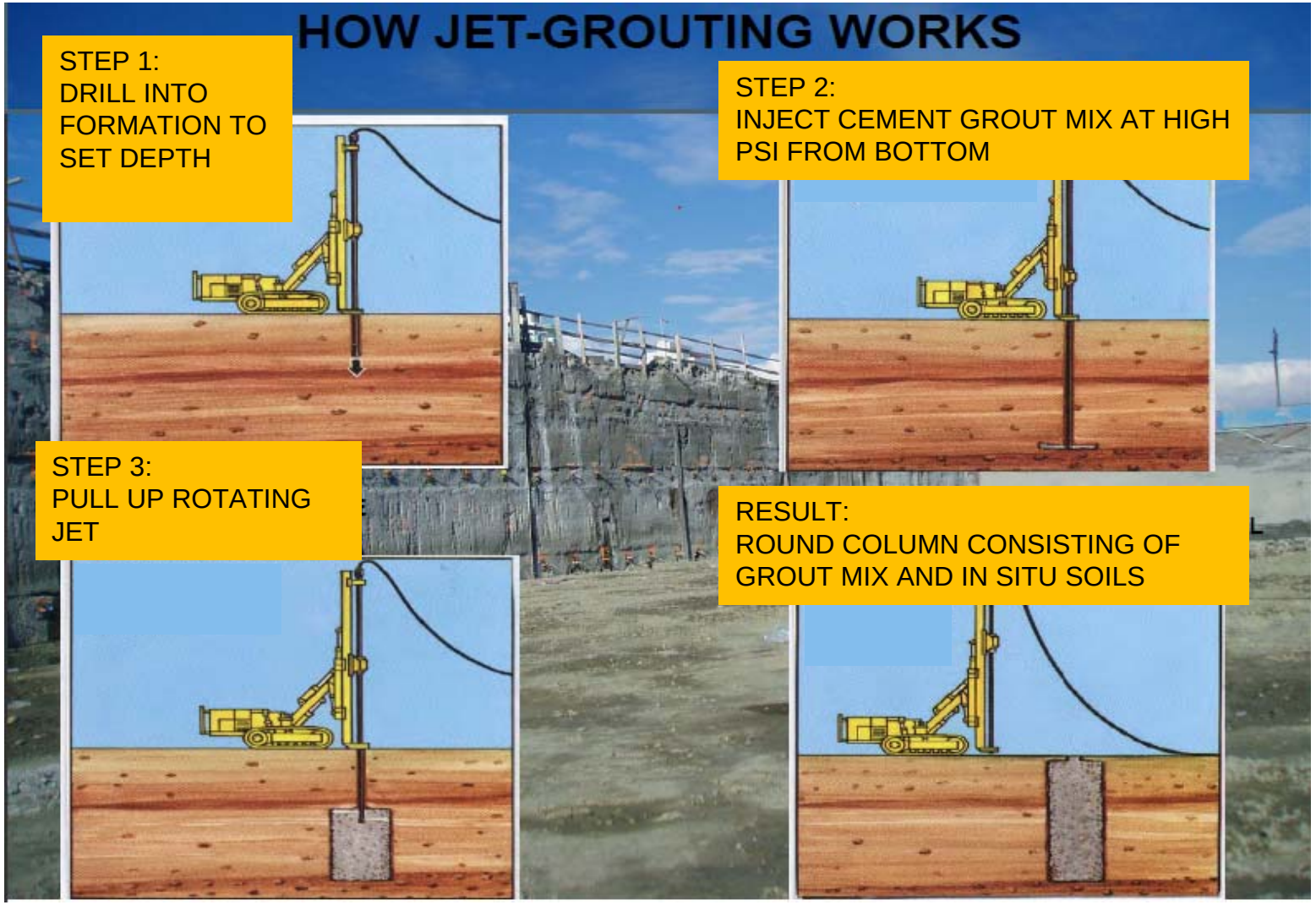

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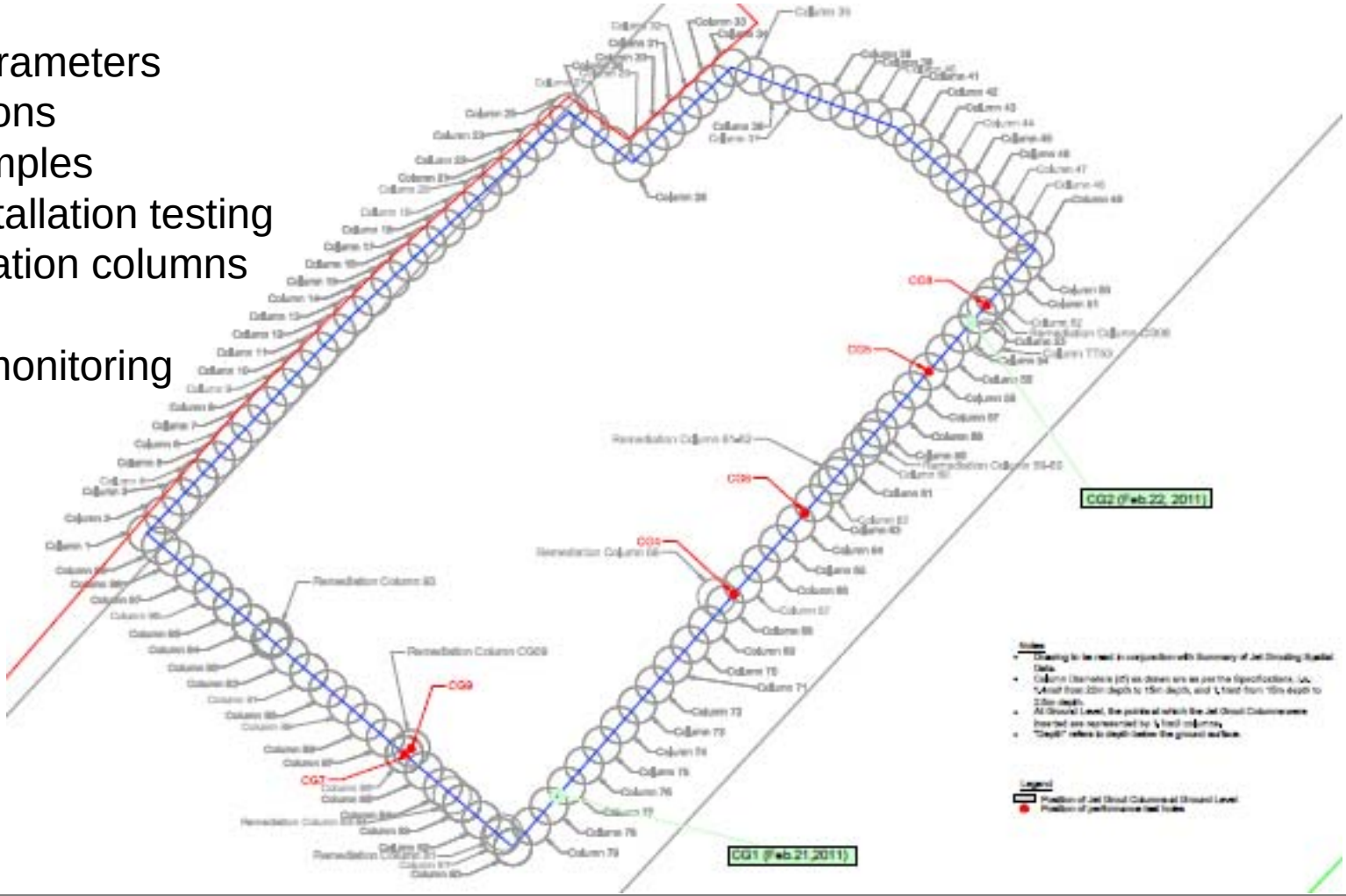
Performance testing:
-TIGOR
-Daily parameters
-Inspections
-Test samples
-Post installation testing
-Remediation columns

-Future monitoring



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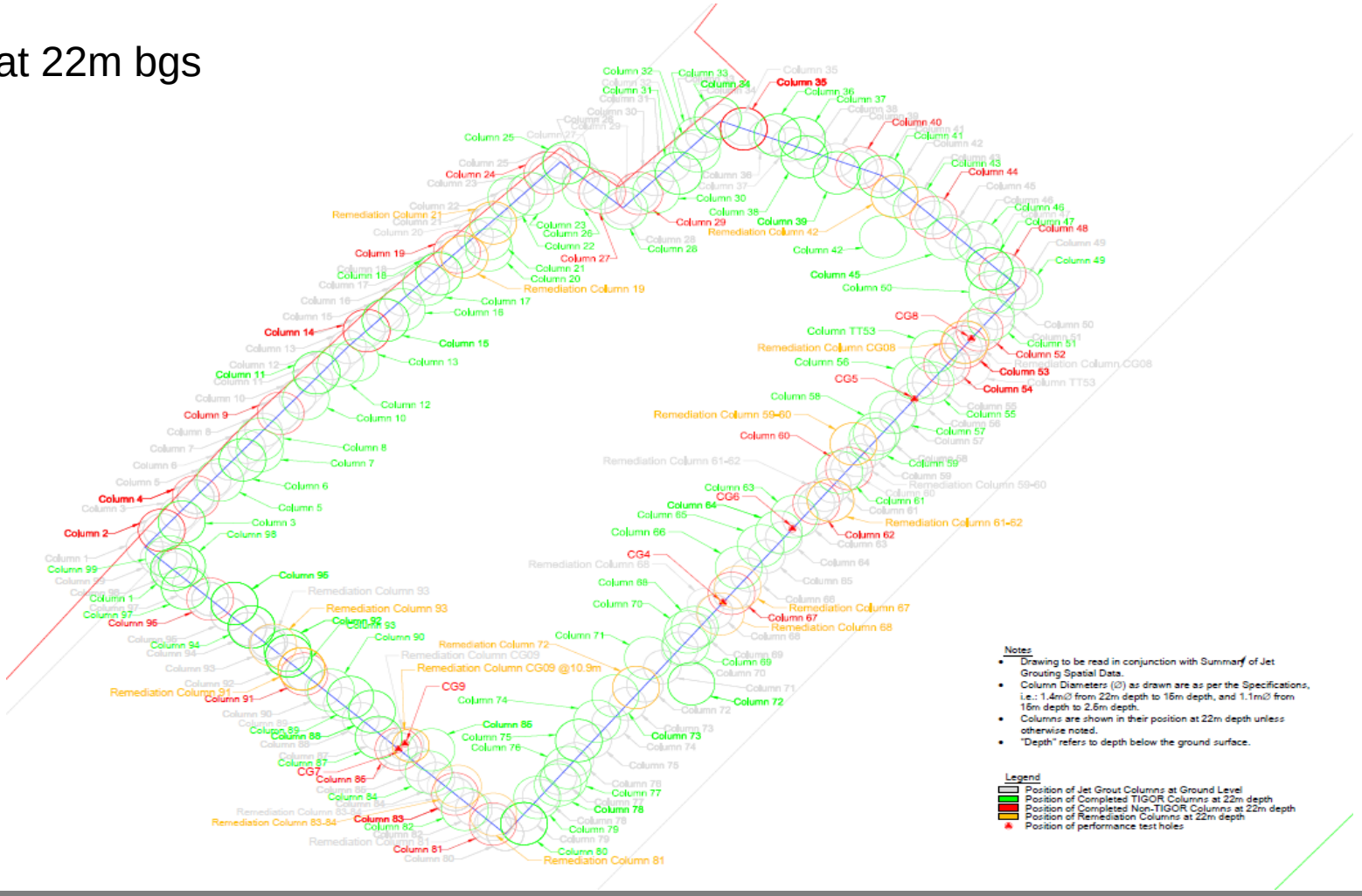
Performance testing:

-Overlap at 22m bgs



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Jet Grouting - *Benefits*

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Jet Grouting - *Benefits*

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Jet Grouting - *Challenges*

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Jet Grouting - *Challenges*

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Lessons Learned

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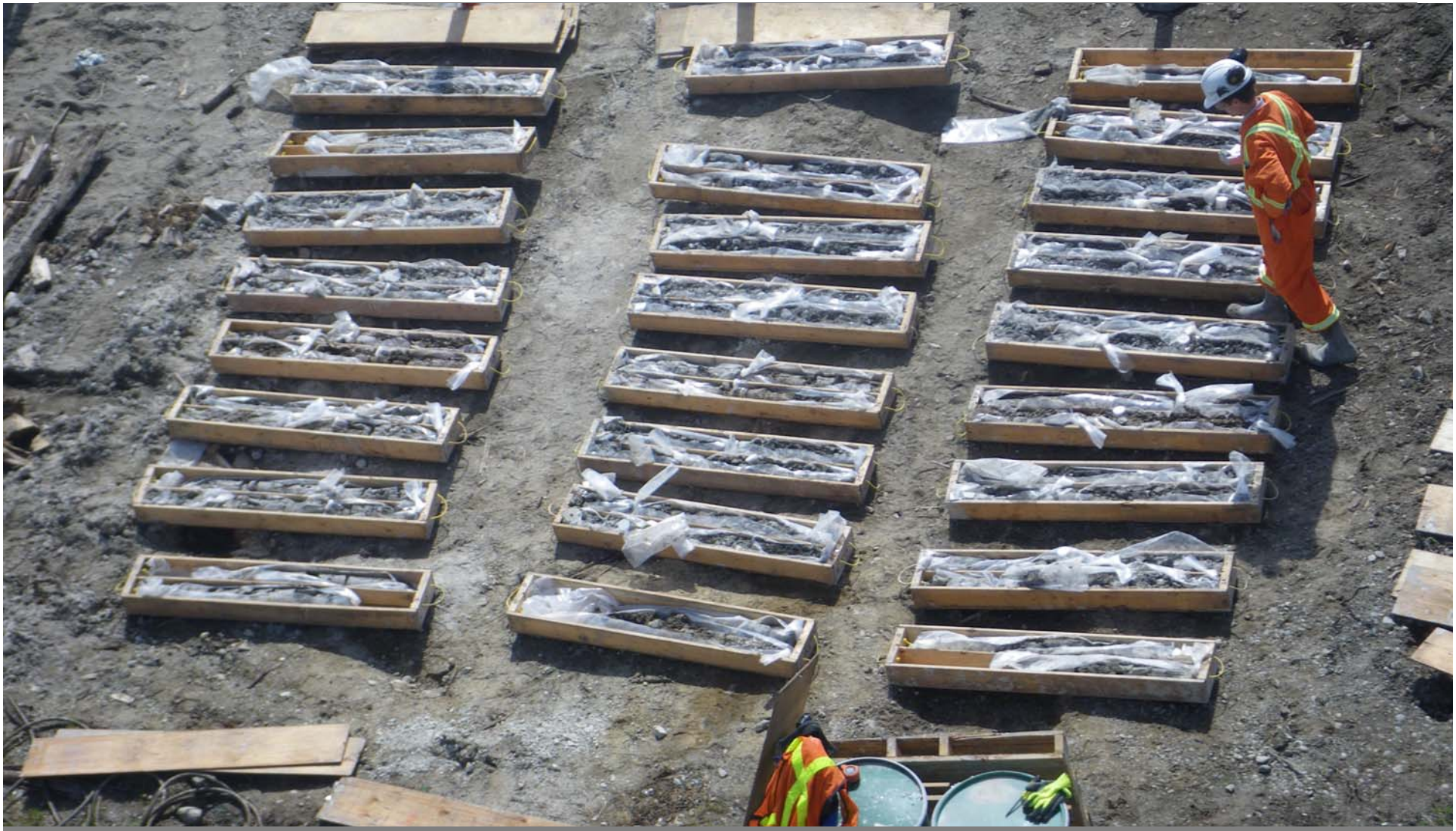
Lessons Learned



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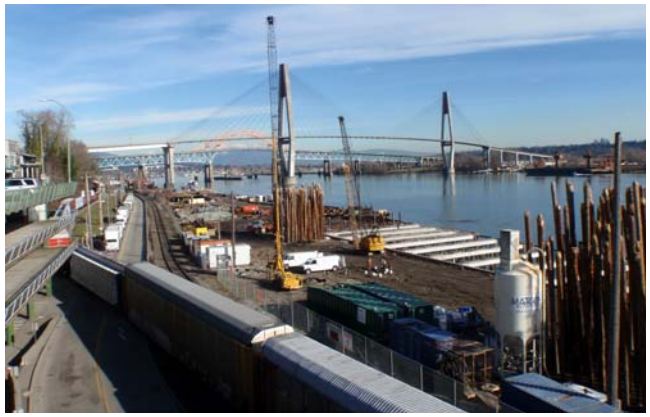
Benefits & Lessons Learned

BENEFITS:
-Viable technology for in-situ containment
-Avoids water management issues
-Minimal soil disturbance /instability issues
-Available technology to confirm wall integrity/verticality
-Cost: similar to caisson/sheet pile wall (within 10-15%)
-Overall: Still best option for Pier Park site



LESSONS:
-Prefer Performance Specification/Fixed Fee
-Use General Contractor- include spoils management/removal
-Be wary of ground conditions! Build in contingency
-Use of Bentonite additives – pros/cons to containment
-Complete PCOCs analyses early (consider Na+; pH)
-Impacts site drainage

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Questions?

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THANK YOU

Category 2 – Sustainable Remediation Technologies and Technological Innovation- winner

2011 Canadian Urban Institute "Brownie" awards

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SEA TO SKY Geotech Inc.

exp.