

BC Hydro – Working Area 1 (Stage 1) Remediation History

- Assessment (1990-2003)
- Stage 1 Remediation (2004/05)
- Post Remediation
 Assessment (2007-15)
- Heritage Revitalization Agreement (2012)
- WA1 Supplementary Remediation and Tar Well Removal (2013)
- BC Certificate of Compliance (2016)



Manufactured Gas Plant 101

Retorts



Manufactured Gas Plant 101

Retorts



Historical Structures with Heritage Value





Administration Building



Rock Bay (Powerhouse) Building

Historical Structures with Heritage Value

Instrumentation Building



Historical Structures with Heritage Value

Instrumentation Building







BC Hydro – Stage 1 Remediation

- Excavation and off-site disposal of over 110,000 tonnes of contaminated material from BC Hydro and Transport Canada Lands
- Minimal contamination identified beneath the Admin Building and the Rock Bay Building





- Significant volume of Waste and Hazardous Waste contamination remained beneath the Former Instrumentation Building (FIB) (estimated at ~2,000 tonnes)
- > Source of ongoing groundwater contamination for the property

BC Hydro – Stage 1 Remediation

Tar Well

- Identified during the excavation around the perimeter of the Former Instrumentation Building
- > 1.9 m diameter / 14 m depth
- Estimated to contain 26,000 litres of coal tar NAPL





BC Hydro – Stage 1 Remediation

Instrumentation Building

 Waste and Hazardous Waste isolated with CDF until a resolution on how to address the material could be reached (2004)





Heritage Revitalization Agreement

- BC Hydro collaborated with the City of Victoria to establish a heritage revitalization agreement in 2012
- Engagement and consultation with Planning Department, Heritage Advisory Committee, City Council, and Community Groups
- Ensured stabilization of two heritage buildings (Admin Building / Rock Bay Powerhouse Building)
- Exchange for demolition of the Former Instrumentation Building
- Allowed unfettered access to the Tar Well





Early Contractor Involvement

- > High risk project
- > Technically challenging
- > Specialized solution needed
- Candidate for Early Contractor Involvement Approach (ECI)
- Three specialist remediation contractors engaged to assist with developing the overall remedial approach
- Successful in mitigating risk (technical feasibility, constructability, schedule, costs)
- > Aid to ensure that the design will achieve the desired outcome!



Suddenly, a heated exchange took place between the king and the moat contractor.

Remedial Option Evaluation

> Temporary Sheetpile Box

- Excavate to 8 m bgs for working platform
- 5 m sheetpile box with bracing around the Tar Well
- Once the contents have been excavated, backfill the Tar Well footprint with CDF and remove the steel sheets





Remedial Option Evaluation

- > Steel Caisson Shorting
 - ~3 m (10 ft) diameter steel pipe driven into the ground around the Tar Well
 - Removal of contents with clamshell attachment on a large lattice boom crane
 - Caisson removed and filled with CDF
- > Secant Barrier Wall
 - 900 mm diameter overlapping secant piles consisting of medium strength concrete columns
 - Removal of contents with clamshell attachment on a large lattice boom crane
 - Secant piles are permanent, filled with CDF upon completion





Planning

- Tar Well constructed of brick and mortar – potential for tar leakage
- Detailed drilling program to understand impacts around the well
- > 14 boreholes drilled to >14 m depth





Planning

- Detailed drilling program to understand impacts around the well
- > 14 boreholes drilled to >14 m depth
- Ensure the diameter of the Secant Pile Shoring systems captures all contamination





Secant Installation

- > 22 Interlocking Secant Piles @ 3.75 m dia
- > Styrofoam forms used as guide
- > Secants keyed into bedrock







Tar Well Excavation

- Soil, brick and tar removed using various pieces of equipment
- Material stabilization in-situ using hogfuel. Needed to meet specifications of treatment facility (Envirogreen Technologies)
- Specialized equipment to remove residual material and clean the sidewalls of the secant piles
- Shipments carefully planned / coordinated to minimize odour coming from the transport trucks





Tar Well Remediation Tar Well Excavation







Tar Well Excavation







Tar Well Excavation

Time-Lapse Video