



Solidification-Stabilization at the Sydney Tar Ponds: Canada's Largest Remediation Site

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An Overview of a Unique Canadian Site



- 100 years of coking operations
- Tar Ponds: 81 acres
 - 700,000 tonnes of PAH contaminated sediments
 - 45,000 tonnes of PCB contaminated sediments
- Coke Ovens: 178 acres
 - 3,000 tonnes of PAH & VOC contaminated soil
 - 25,000 tonnes of coal tar in tar cell

Solution



S/S Ponds

Channels

WTP

Landfill

Coke Ovens Brook

GW Collection

Cutoff Wall

S/S
Tar Cell

Coke Ovens Cap

Cutoff Wall

Review of the S/S Approach

- Control incoming flows from Coke Oven Brook and Wash Brook by diverting them from the work area using temporary pumping stations
- Control water coming from other sources using barriers
- Create a new channel within the isolated areas
- Complete in situ treatment of tar ponds sediments through solidification/stabilization



Pumping Stations – Multiple Stages



Stage 1 Stage 3

P1a
Wash Street
Narrows

Min 0 L/s
Median 400 L/s
Peak 5,180 L/s
Peak 11,800 L/s

P1b
Coke Oven Brook

Min 0 L/s
Median 200 L/s
Peak 6,700 L/s

High Flows in Coke Oven Brook

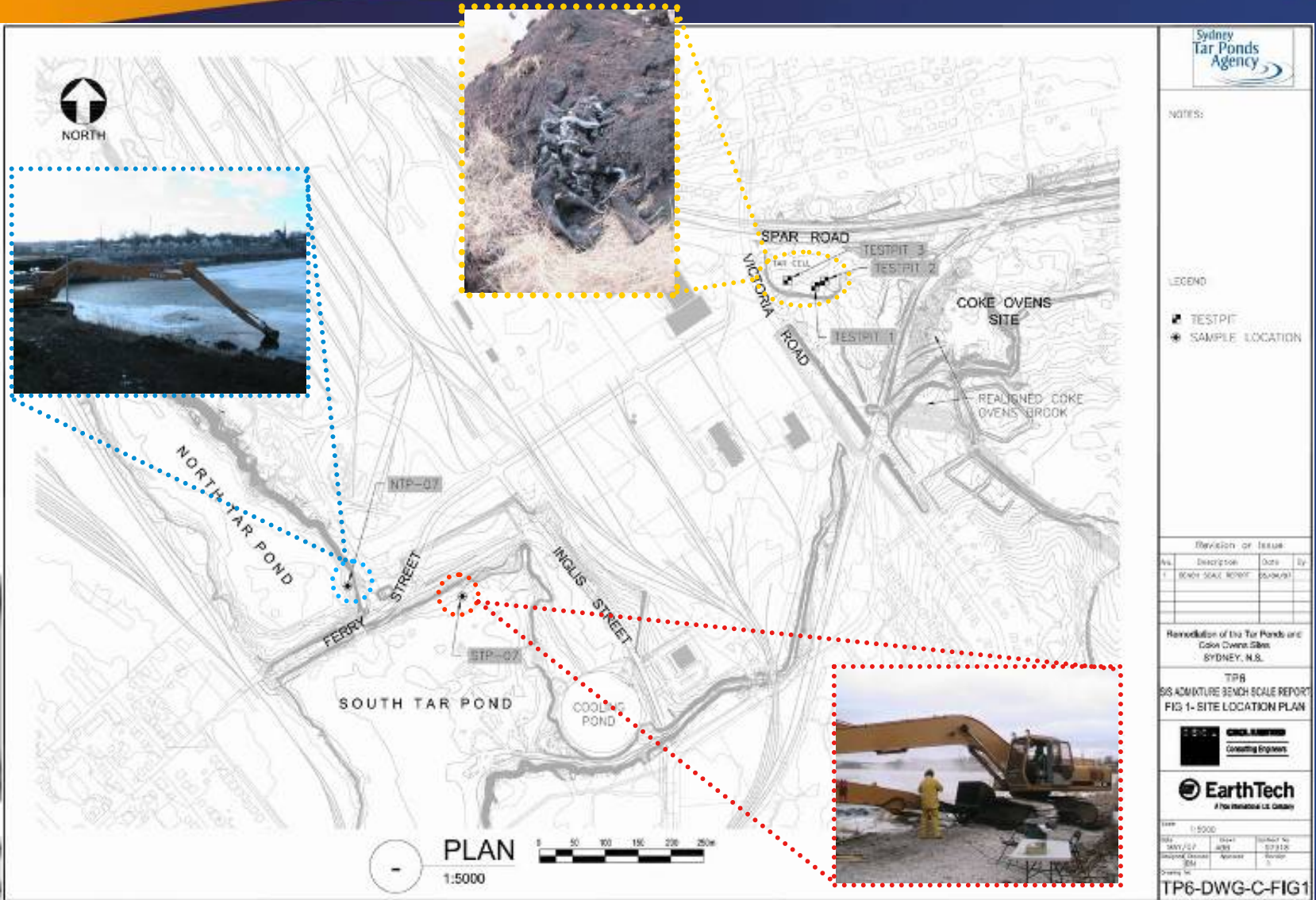


Solidifications/Stabilization

- Bench Scale Testing
- Pilot Testing
- Full Scale Construction



Sampling Locations



NOTES:

LEGEND

- TESTPIT
- ★ SAMPLE LOCATION

Revision or Issue			
No.	Description	Date	By
1	BENCH SCALE REPORT	05/06/01	

Remediation of the Tar Ponds and
Coke Ovens Sites
SYDNEY, N.S.

TPR
BIS ADAPTIVE BENCH SCALE REPORT
FIG 1- SITE LOCATION PLAN



Scale	1:5000	Sheet	004	Contract No.	07/12
Date	05/06/01	Drawn	AKS	Approved	
Checked	AKS				

TP6-DWG-C-FIG1



S/S Acceptance Criteria

- Consulted with Regulators and their representatives
 - Testing Methodology
 - Site Characterization
 - Acceptance Criteria

Property	Test Method	Criteria
Strength (UCS)	ASTM D 1633 Method B	= or > 0.34MPa (50psi)
Hydraulic Conductivity	ASTM 5084 (Flex Wall)	< or = 1×10^{-6} cm/sec
Leachate	Modified SPLP 1312 (as monolithic structural integrity procedure)	Site Specific Leachate Criteria (SSLC)



Bench and Pilot Scale Testing

- Locally available materials utilized as mix “ingredients”
 - Portland Cement
 - Slag (from the adjoining SYSCO site)
 - Quicklime
 - Fly Ash
- Challenges
 - Water Control
 - Recipe blending (order of additives)
 - Project Air Monitoring
 - Maintaining sample homogeneity
 - Extrusion from thin tubes
 - Sample preparation



Pilot Scale Environmental Monitoring

- Baseline and Construction Monitoring
- H&S Monitoring

Pilot Scale (North Pond)



Pilot Scale (North Pond)



Pilot Scale (North Pond)

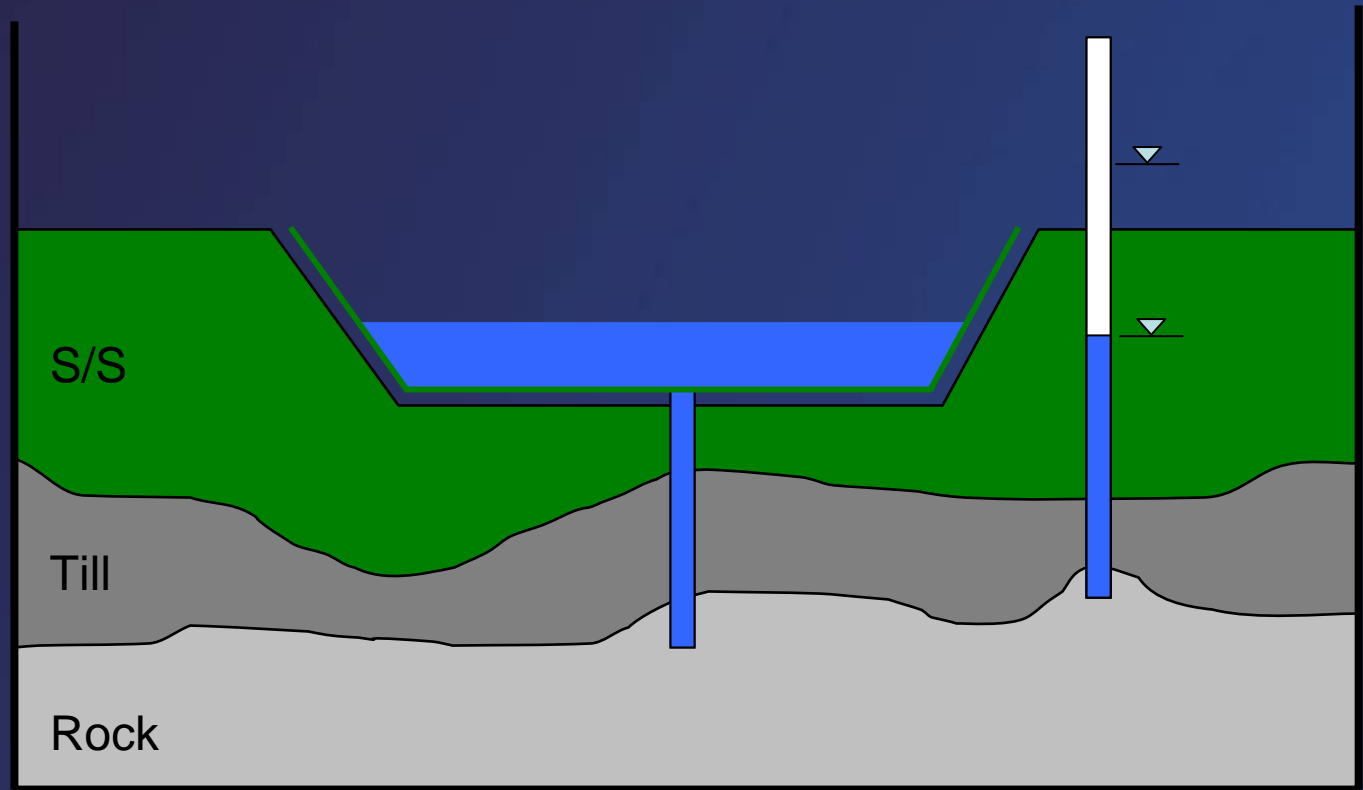


New Channel – Commissioning

- Work sequenced to provide new flow channel as a first priority
- Removes the need for ongoing bypass pumping while remaining sediment is solidified.



New Channel – Uplift Pressure Control



Cooling Pond Project – Winter 2007/08

- Cement and Slag additives
- Strength and Permeability Testing every 250 m³



Cooling Pond Project

- Total Volume Treated – 28,800 m³
- Cell size ranged from 200 to 700 m³



Cooling Pond Project

- Total Number of Cells = 92
- Winter work involved increased effort for water/ice management



Cooling Pond Project



Cooling Pond Project

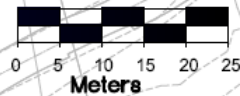


COOLING POND 2007/2008

UPDATED April 3rd 2008



Scale 1:200



Total Area 11543m²
Area S/S 11331m²
Area to be S/S 212m²
98.2% Complete by Area

Note: 51A & 77A are re-mlx areas
61A is a cell over cell
88 overlaps on top of cells 40 & 24

Monument # 201063
5112433.127 N
4601751.044 E
6.126 Elevation



Cooling Pond Project Reporting

- Field Reports
 - Daily Reports
- Quality Reporting
 - Monthly QA/QC Report
 - Monthly Environmental Report
- Final report (including Capping Material)

Cooling Pond Project





Pilot Work Underway.

Flow Diversion contract to be tendered in fall 2008

S/S Contract to be tendered in the winter of 2008/2009

Project Completion March 31, 2014;

Long Term Monitoring to 2033

Questions?