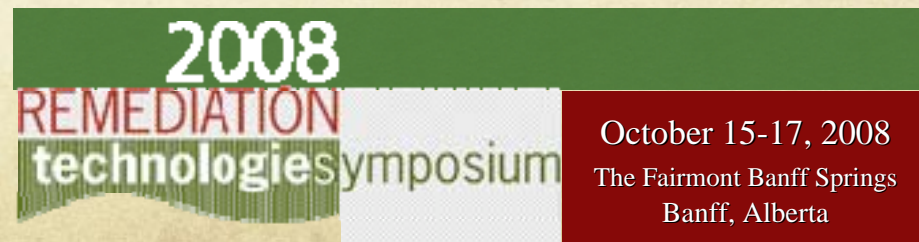




Sydney Tar Ponds & Coke Ovens Remediation Project

Roger Larkin, P.Eng.
Project Director



SYDNEY







PREVENTATIVE WORKS

INTERCEPTOR SEWER



PREVENTATIVE WORKS

INSTALLATION OF VICTORIA RD. WATERMAIN & COKE OVENS BROOK
REALIGNMENT



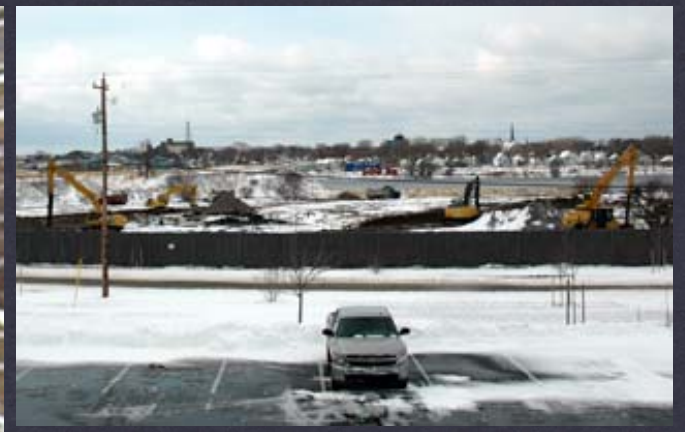
PREVENTATIVE WORKS

BATTERY POINT BARRIER



PREVENTATIVE WORKS

DEMOLITION & DISPOSAL OF COOLING POND



Cooling Pond

First Aboriginal Set Aside in Nova Scotia — \$ 6 M Contract out Fall 2007 completed Spring 2008



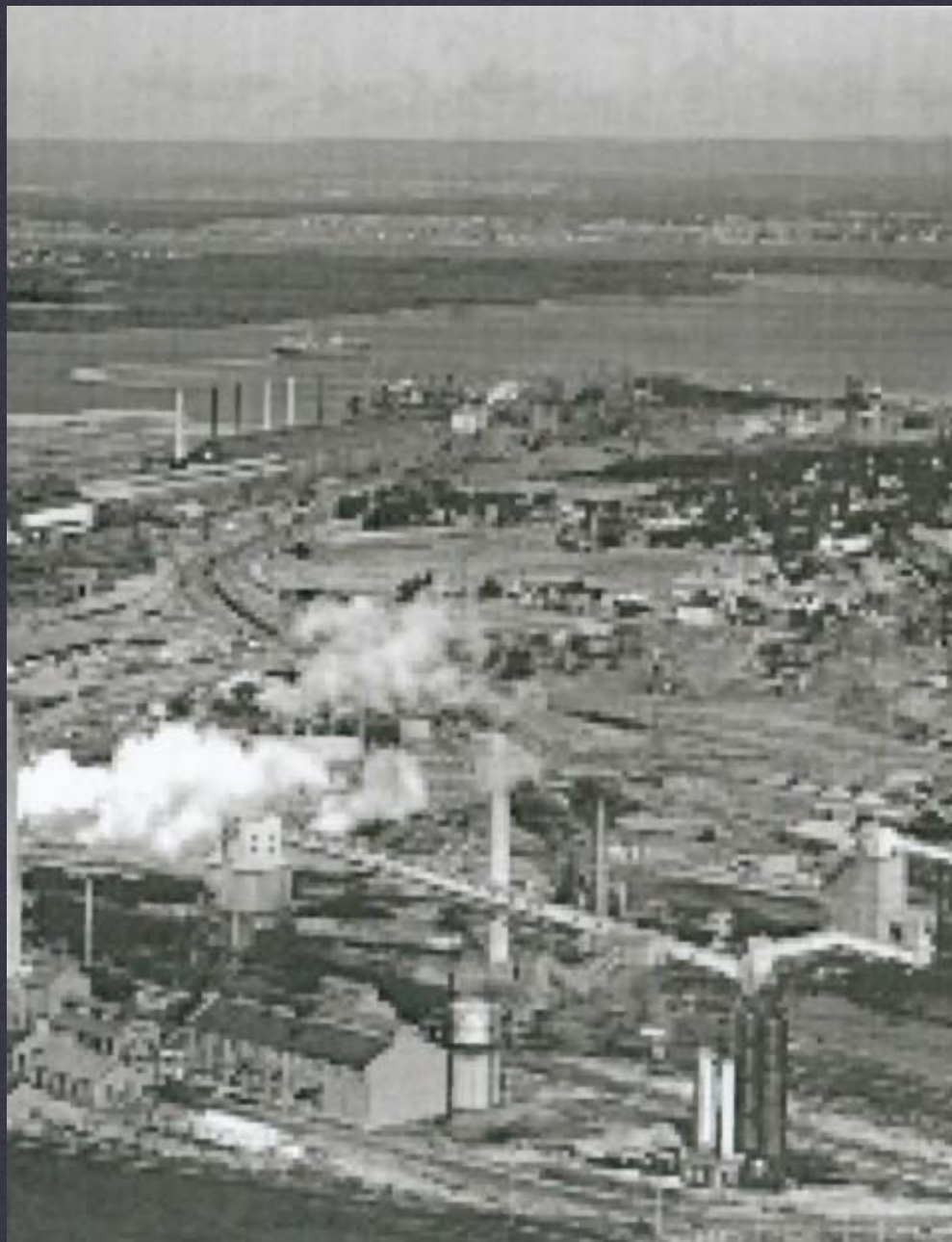
Cooling Pond

First Aboriginal Set Aside in NOva Scotia — \$ 6 M Contract out Fall 2007 completed SPring 2008



Cooling Pond

First Aboriginal Set Aside in Nova Scotia — \$ 6 M Contract out Fall 2007 completed Spring 2008



- **Coke Oven site closed in 1988 after almost 100 years of coke production**
- **280,000 cu m of soil on the site is contaminated, primarily with petroleum hydrocarbons, PAHs, metals and other byproducts from the coking process**
- **No PCBs**

Coke Ovens Site



- 72 hectare (178 acres)
- old infrastructure reduced to ground level
- groundwater contaminated with metals & DNAPLs (dense non-aqueous aqueous phase liquids)
- close proximity to local residents

Coke Ovens Site



- 33 hectares (81 acres)
- received industrial discharge from upstream activities
- 700,000 tonnes of PAH contaminated sediments,
- 45,000 tonnes of sediments with 50+ ppm PCBs,
- and metals....

The Tar Ponds



- tidal estuary
- north part of North Pond constantly under water
- several sewer outfalls
- coarser grained sediments in depths from 1 to 4 m
- 18.6 hectares
- 280,000 cu m

North Pond



- tidal estuary fed by 2 significant surface water flows
- fine grained sediments in depths from 1 to 2 m
- 12.2 hectares
- 270,000 cu m

South Pond

Cooling Pond

Coke Ovens Brook

S/S Ponds

Channels

MPF

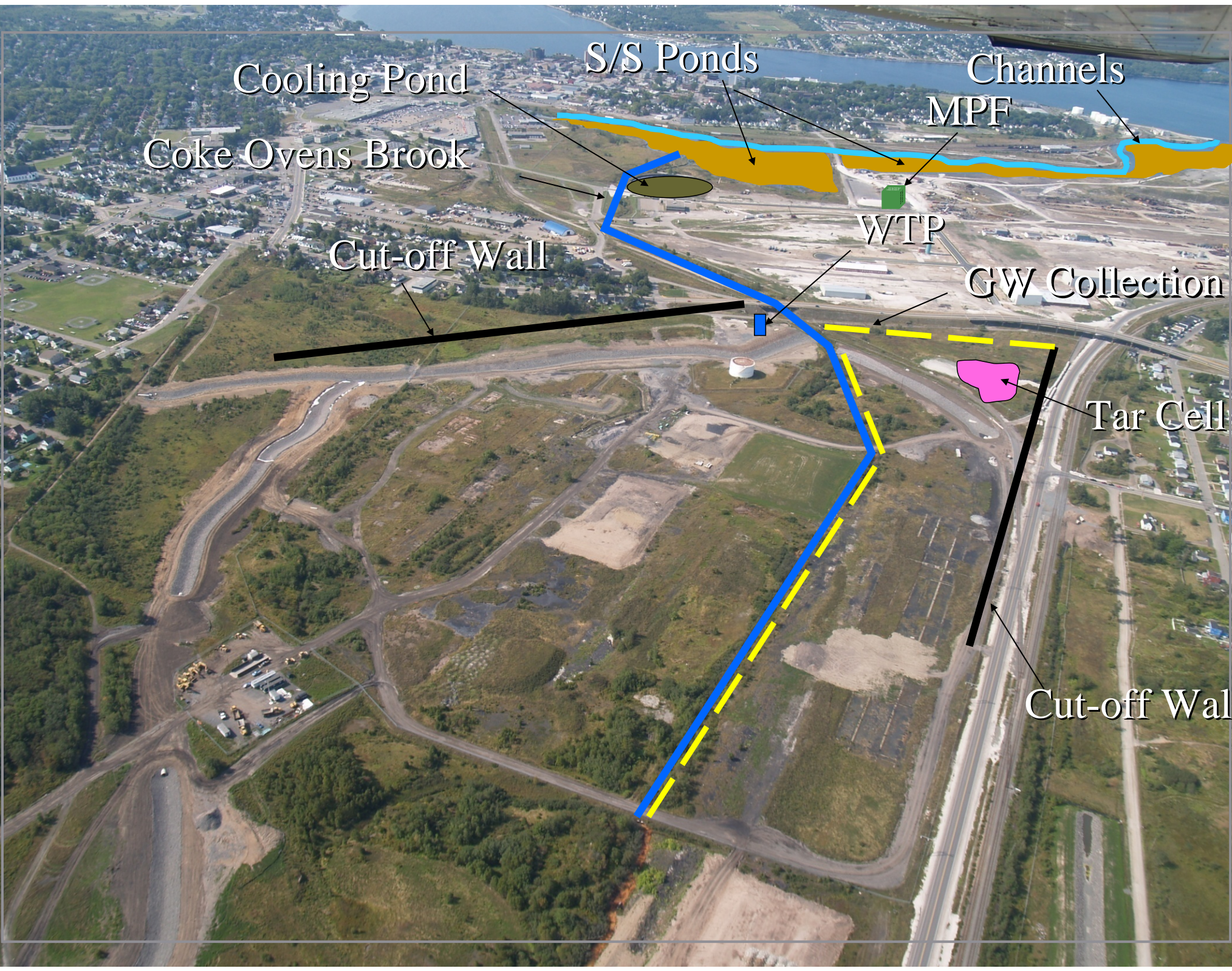
WTP

GW Collection

Tar Cell

Cut-off Wall

Cut-off Wall



Material Processing Facility

- \$8 M contract under construction
- Debris cleaning
- Equipment & vehicle wash area
- Location of amenities centre
- Additional tender to operate — spring 2009



S/S =

Solidification / Stabilization

- Versatile 1950 technology
- Involves mixing cement into contaminated material & works to protect the environment & personal health
- Immobilizes hazardous contaminants to prevent escape into environment
- Performance criteria includes uncompressed compressive strength (50 psi, 0.34 mpa), permeability (10⁻⁶ cm/sec), & pass/fail SPLP (Synthetic Precipitation Leachate Procedure) leachate test

**Construction beginning early 2009, channels
constructed using S/S, followed by S/S of
remainder of ponds**

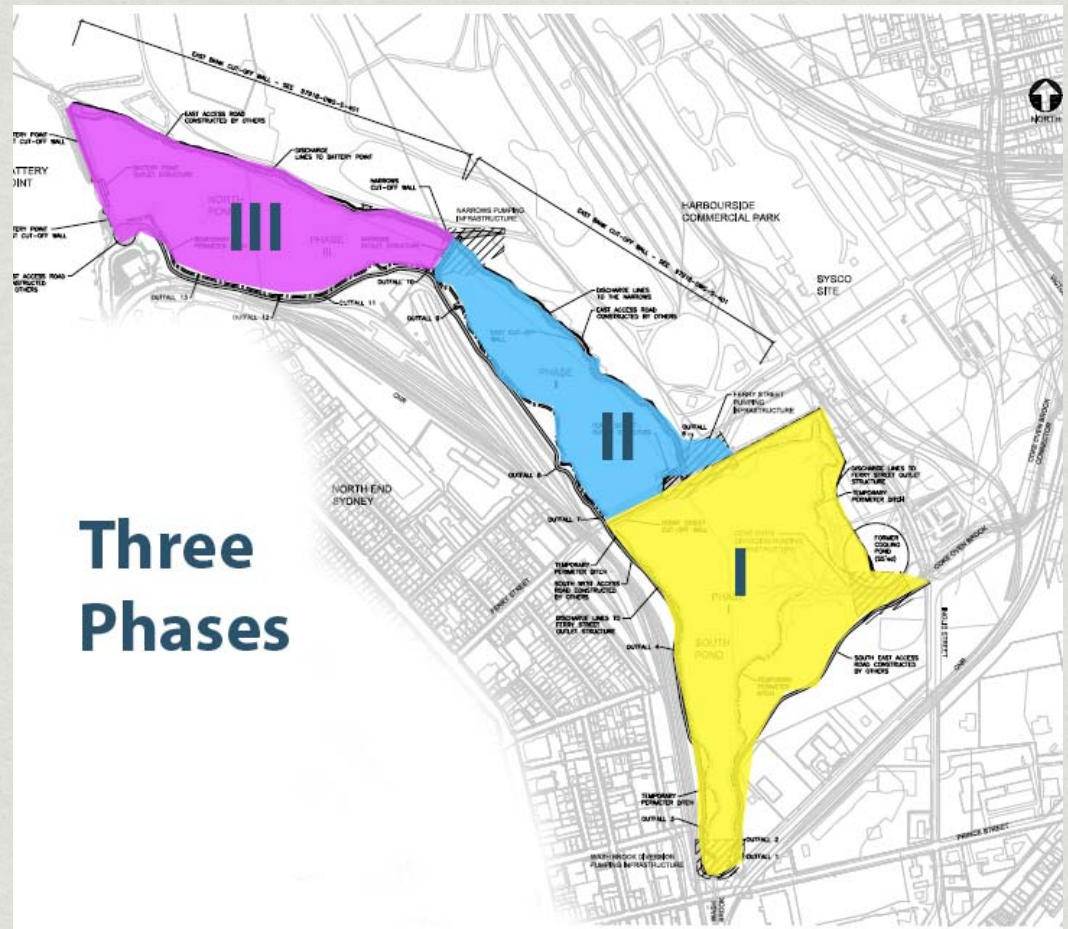


Tar Ponds

Solidification/Stabilization & Channel Construction

Tar Ponds — Flow Diversion

- ❁ Divert incoming water from Wash Brook & Coke Ovens Brook as well as the tidal estuary
- ❁ Install three stage pumping system with energy dissipation cells to bypass North & South Tar Ponds
- ❁ Tender out fall 2008





PROJECT

Solidification / Stabilization

Field Trials show encouraging results from mixes

DATE

SUMMER & FALL 2008

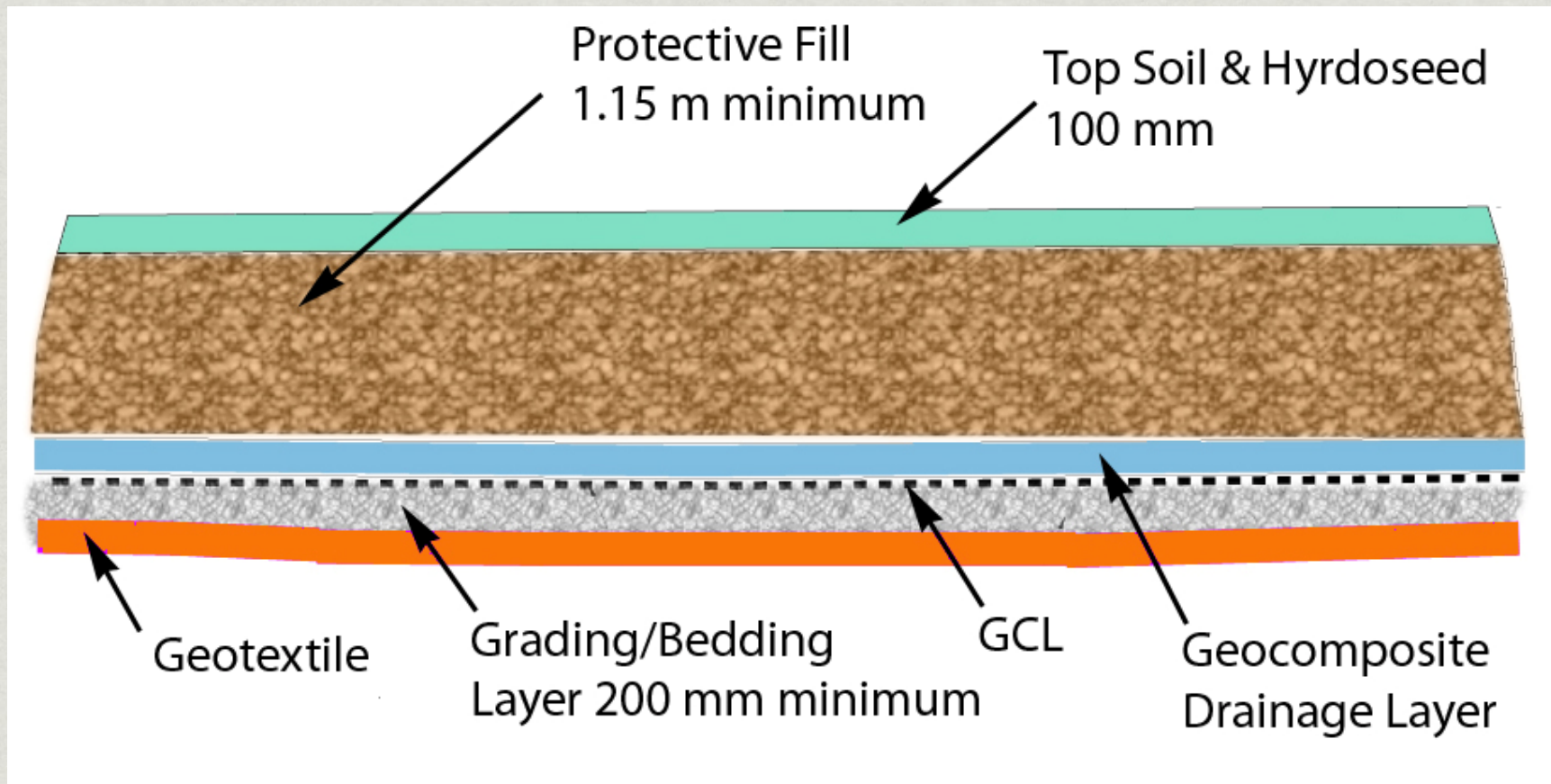
Tar Ponds — Ferry Street Bridge

- Build new Ferry Street Bridge & approaches
- 30m span over new channel will incorporate sewer interceptor
- Harmonizes with downtown improvements linking two urban growth areas
- Tender out 2009

CONCEPT



Tar Ponds Cap



- Multilayered engineered cap completes remedy after S/S
- Design criteria – 10^{-6} permeability limits & drainage features
- Cap constructed of natural & geosynthetic materials

Tar Cell

- 25,000 tonnes of coal tar and mixed debris
- Former in-ground pit
- S/S activities will generate air quality concerns for nearby residents
- Tender out in fall 2008



Coke Oven Brook Connector

- ❁ Removal of contaminated sediments in upper brook
- ❁ Protection of S/S channel from coal tar contamination
- ❁ Ensures conveyance of clean water
- ❁ Tender out late 2008



Coke Oven

— Groundwater Collection

- System to collect contaminated groundwater prior to any discharge & migration off site
- Approximately 1 km
- Tender out late 2008



Coke Oven - Water Treatment Plant

- Designed to treat 300 LPM groundwater
- Tender out spring 2009
- Additional tender to operate
- To operate a minimum of 25 years



Coke Ovens — Vertical Cut-off Walls

- \$ 1.9 M contract under construction
- Manage groundwater flow within site
- Divert clean groundwater around site
- A portion of wall is bentonite slurry & a low permeability clay

TYPICAL



Coke Ovens Surface Cap

- multilayered cap to act as a barrier to protect the underlying materials
- 0.3 m grading layer to meet site elevations
- 0.2 m clay cap
- topsoil
- hydroseeding
- Tender out spring 2009



Engineered Landfill

- Existing engineered landfill with approximately 20,000 cu m capacity to be upgraded
- Waste disposal site for non-hazardous construction & demolition debris recovered & cleaned in Material Processing Facility during remediation
- Additional tender for operation out in 2009



Additional Procurement

- Independent Environmental Effects & Surface Water Compliance Monitoring Consultant Services - Awarded fall 2008
- Independent Quality Assurance Consultant Services - Two awarded summer 2008; one RFP out fall 2008
- Monitoring Well Decommissioning, Installation & Protection - standing offer in place summer 2008
- Construction Access Roads - tender out fall 2008
- General Site Maintenance - standing offer out fall 2008



Future Land Uses

Parks, sports fields, golf, light industrial ...



Questions?

www.tarpondscleanup.ca

1.902.567.1035



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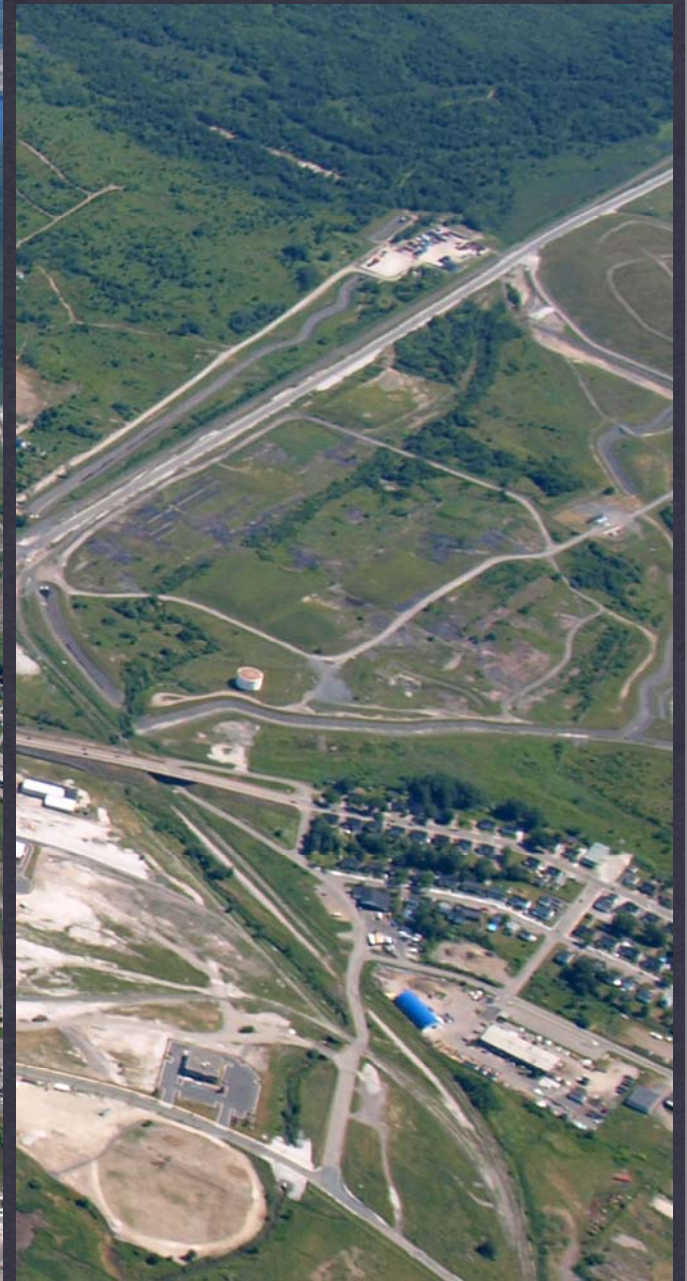
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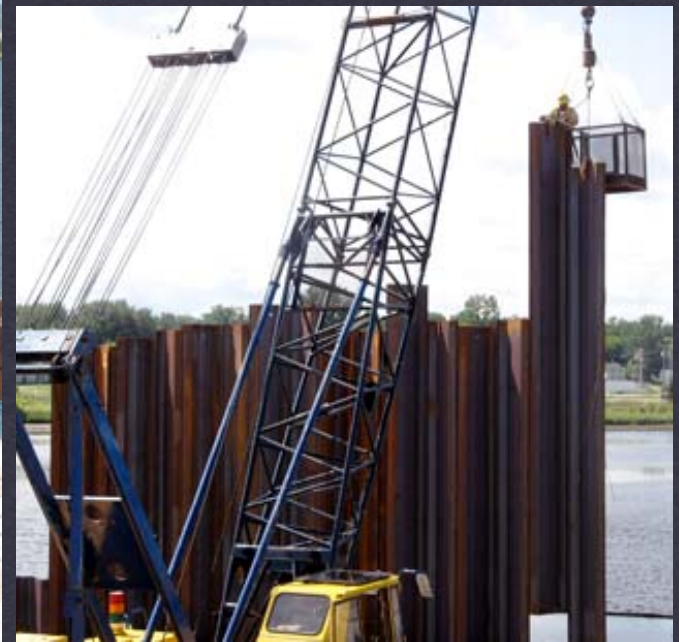
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Sydney Tar Ponds Agency



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ROGER LARKIN

1.902.567.1035