

## Water Management Strategy during the Solidification/Stabilization of Contaminated Sediments at the Sydney Tar Ponds Remediation Project

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The Sydney Tar Ponds Remediation Project is the result of nearly 100 years of steel production in Sydney, Nova Scotia. At one time, Nova Scotia produced almost 50% of Canada's steel. When production ceased in 2001, a legacy of contaminated soils, sediments and groundwater remained, bearing such contaminants as PAHs, VOCs, PHCs, PCBs, and heavy metals. What remains today is one million tonnes of contaminated soil and sediment spread over two major sites – the North and South Tar Ponds, and the former Coke Ovens site; an area spanning 168 acres.

Detailed design for this remediation project commenced in October 2006 and has an anticipated construction completion date of 2014. AECOM conducted the preliminary design and the detailed design engineering for the remediation project and is overseeing the work including construction oversight, inspection and contract management.

The primary mechanism for the clean-up is the use of solidification/stabilization (S/S) of the sediments in the Tar Ponds and the highly contaminated soil in the Coke Ovens site. Approximately 700,000 tonnes of sediment and 25,000 tonnes of soil require treatment. The final design for the Tar Ponds will result in a S/S monolith, with a lined channel conveying the incoming surface and cap runoff water through the site and into Sydney Harbour.

Bench scale tests and pilot projects were conducted to support the reagent mix selection and finalization of S/S performance criteria. The complicating presence of high organic matter and water content in the sediment and highly viscous tar material in the soil has led to determining specific processes for material handling, testing and simulation of leaching.

As with many earth work projects; water is a significant construction issue with impacts on the effectiveness of S/S treatment, the dispersion of contaminants and capital cost. Water sources for the project include; tidal waters within the Tar Ponds, surface water from Coke Oven Brook and Wash Brook, groundwater and precipitation all of which must be considered in the water management approach during remediation. During the remediation process, the objective is to restrict the flow of contaminated water from

reaching Sydney Harbour in order to mitigate impacts to aquatic life, which in Cape Breton is a local resource. The water management strategy of the project includes vertical cut-off walls, by-pass pumping systems, diversion ditches, water treatment, sedimentation control, water dissipation structures, and extensive monitoring in an effort to mitigate the impacts noted above.

This presentation will review the water management strategy and challenges to Canada's largest remediation project.

### Stephen Pinto

Stephen Pinto is an environmental scientist and professional agrologist with the Environmental Division at AECOM. He has over 10 years of environmental experience conducting environmental site investigations and remediation of soil, groundwater, surface water, and sediment contamination. Presently he is the Environmental Coordinator for the Sydney Tar Ponds Remediation Project. He has worked at a wide variety of sites at both urban and remote locations throughout British Columbia, Alberta and Nova Scotia.

After completing the upstream remediation at the Rock Bay Remediation Project in Victoria's Inner Harbour, Mr. Pinto joined AECOM to become the Environmental Coordinator for one of Canada's largest coal tar contaminated sites, the Sydney Tar Ponds. He helped in the environmental design, construction tendering documents and preparation of Environmental Protection Plans. Mr. Pinto is the main communication link between the contractors, the client and the regulators on environmental issues. Also, he is in charge of ensuring that all environmental protection measures are being carried out according to the Environmental Protection Plan and oversees a team of environmental professionals who are field representatives that monitor and oversee construction and remediation operations.