NOWPARC

REMEDIATION PROJECT * THUNDER BAY HARBOUR

Environment Canada / Environnement Canada · Abitibi Consolidated · CN · Northern Wood · Ontario Ministry of Environment

NOWPARC Scheduled Start Dates

Rockfill Containment Berm
August 1997

✦

Environmental Dredging
October 1997

✦

Sediment Treatment
Summer 1998

✦

Fish Habitat Compensation
Summer 1998

✦

Environmental Clay Barrier
Summer 1998

✦

Clean Fill Placement
Fall 1998

✦

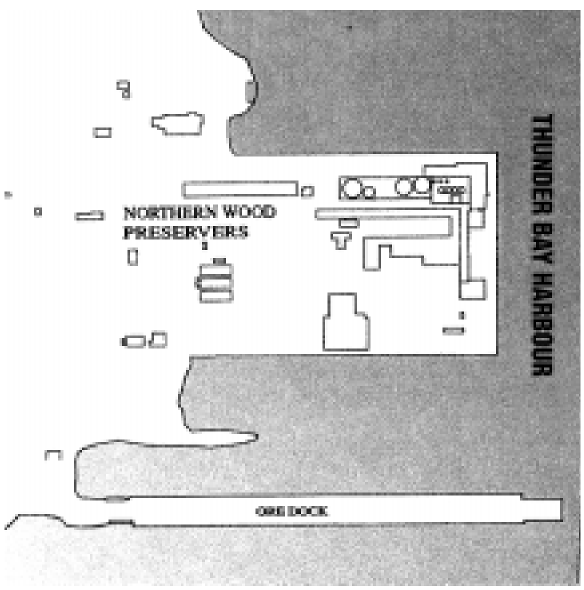
Storm Water Control
Fall 1998

UPDATE # 1 APRIL 1998

Contaminated Sediment Remediation Project
Thunder Bay Harbour Clean-Up
Ontario, Canada

History of Sediment Contamination in Thunder Bay Harbour

Site studies and surveys have shown concern over elevated levels of polycyclic aromatic hydrocarbons (PAHs) at the Northern Wood Preservers (NWP) site. These contaminants, along with chlorophenols, dioxins and furans have affected the harbour's water quality, benthic community structures and sediment quality.



Sediment contamination around Northern Wood Preservers contributed to the International Joint Commission's (IJC) identification of Thunder Bay Harbour as an Area of Concern. In order to delist Thunder Bay Harbour as an Area of Concern, government agencies, industry and the public have partnered to develop a Remedial Action Plan that identifies water use goals and initiatives for the remediation of the Harbour.

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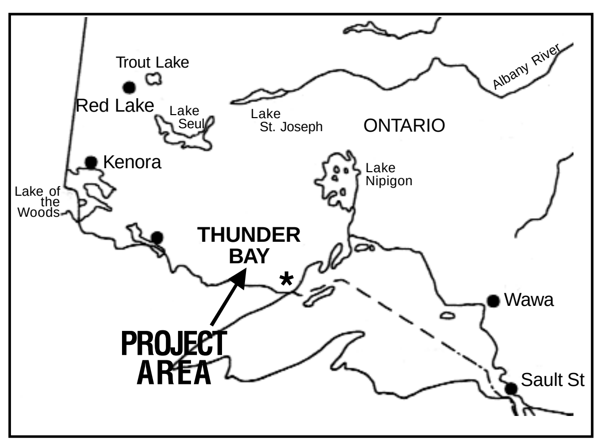
Abitibi-Consolidated Inc., Northern Wood Preservers Inc., and Canadian National Railway Co., are working together with Environment Canada and the Ministry of Environment to remediate the area around Northern Wood Preservers. The project, referred to as the Northern Wood Preservers Alternative Remediation Concept (NOWPARC), is a plan to isolate the contaminant source, clean-up the contaminated sediment, and enhance fish habitat.



Approximately 11,500 m^3 of contaminated sediment will be removed from within the confines of the rockfill berm. By November 23, 1997, when ice conditions forced the cessation of dredging in the harbour, roughly 1500 m^3 of contaminated sediment had been removed. The remainder of the contaminated sediment behind the berm is scheduled to be dredged in May and June of 1998.

Environmental Monitoring

Operational & performance standards were used to evaluate the performance of the dredging activities and to ensure environmental compliance. Environment Canada, Ministry of the Environment and Ministry of Natural Resources staff set site-specific water quality guidelines for turbidity, total suspended solids and total organic carbon. Results of monitoring indicate that both the dredging and berm construction activities were in compliance with the water quality guidelines.

Rockfill Containment Berm

Construction of the rockfill containment berm began on August 28, 1997 and was completed on December 13, 1997. The berm is 1000 meters in length and runs parallel to the shipping channel, connecting the old Ore Dock to the northwest corner of the NWP site. The rockfill containment berm was placed to encompass the most toxic zone of sediment contamination.

Approximately 268,000 tonnes of shale was placed on a 2:1 slope in water depth ranging from 1 to 7 meters. Shale was placed from two land access points. Approximately 21,000 tonnes of riprap (armour stone) was then placed on the outside face of the shale to provide protection against wave action and serve as fish habitat in the future. Four fish shoals were also constructed in the shallow waters at the north end of the berm, for the creation of fish habitat.

Monitoring instrumentation was installed at the north and south ends of the berm.
Slope inclinometers measured lateral movement of the berm and piezometers measured how the berm settled. Both instruments indicated that the stability of the berm is within design specifications.

Environmental Dredging

Dredging was carried out over two periods in 1997 using a 5.5 m^3 Cable Arm Environmental Bucket.

From October 20 to November 1, 1997, approximately 1,500 m^3 of contaminated sediment was removed to prepare the lake bottom for berm construction. The migration of resuspended sediment was minimized though the use of an impermeable polyethylene silt curtain which was anchored to the harbour bottom. The dredged material was placed in a sealed dump scow and then pumped to a ship anchored in place against the old Ore Dock for storage until treatment scheduled to start in the summer of 1998.

Sediment Treatment

Treatment of the dredged sediment is expected to commence in the summer of 1998 and be completed by the fall of 1999. The technology used for the treatment will be selected from 7 bids that were received from vendors representing several classes of treatment technologies.

Isolation Barrier

A clay isolation barrier will be constructed to prevent the movement of contaminants from soil and groundwater into the harbour. A Request for Tender is expected to be released in the spring of 1998.

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