

application	Containment and Dewatering of Dredged Material
location	Vernon, VT
product	Mirafi® Geotubes®

THE CHALLENGE

Vermont Yankee Nuclear Power Plant in Vernon, Vermont is located on the Connecticut River. This plant, which started commercial operation on February 28, 1973 is a GE Mark 1, BWR 1593 MWT nuclear reactor. The plants cooling system makes direct use of the Connecticut River in the fall and winter months when the additional heat of the discharge would not impact the environment. The cooling water is drawn into the intake and circulated through the plants cooling system. Over the years, natural river sedimentation accumulated in an area in front of the intake causing concern that the critical flow cross section was being severely impacted. The plant needed to dredge away the sediment to increase the capacity of the critical cross section flow.

THE DESIGN



Figure 1: Geotubes in spoils area. Each tube contained 500-600 CY of spoils.

A hydrographic survey, conducted by Normandeau Associates, an environmental consulting firm, and under the direction of Tom Osterhoudt, Project Manager for Vermont Yankee, confirmed that the area was in need of immediate dredging to maintain the critical cross section throughout the winter. Permits for the removal of 10,700 cubic yards of maintenance material were applied for and received from the New England Division of the Army Corps of Engineers and the State of Vermont Water Quality Division in Mid-October, 1997. Although scheduled to be permitted in late 1997, with the work to be done in Spring of 1998, concern for the minimum cross sectional flow prompted Vermont Yankee Management to explore the possibility of dredging the minimum area that could be accomplished during the fall, prior to the river ice setting in and with the plant in full operation. Twelve Geotubes were to be fabricated at 300 feet long and 30

feet in circumference by TC Mirafi.

CONSTRUCTION

Inner Space Services, Inc. was chosen as the dredging contractor. Because of the fast approaching Winter, Inner Space suggested the use of TC Mirafi Geotubes as a means for dredge spoils containment. These tubes would be used instead of the originally designed settling basin. Due to limited area for the containment basin and the time and costs of building a settling basin, the Geotubes were granted approval by the permitting agencies. This not only added to the expediency of the project but provided an environmentally

JOB OWNER:

Vermont Yankee Nuclear Power Corporation

ENGINEER

Vermont Yankee Project Engineering

CONTRACTOR:

**Inner Space Services, Inc.
Braintree, MA & Gorham, ME**



Figure 2: Geotubes being filled with dredged material from the plant's intake area.

clean and cost effective way to handle the dredged material.

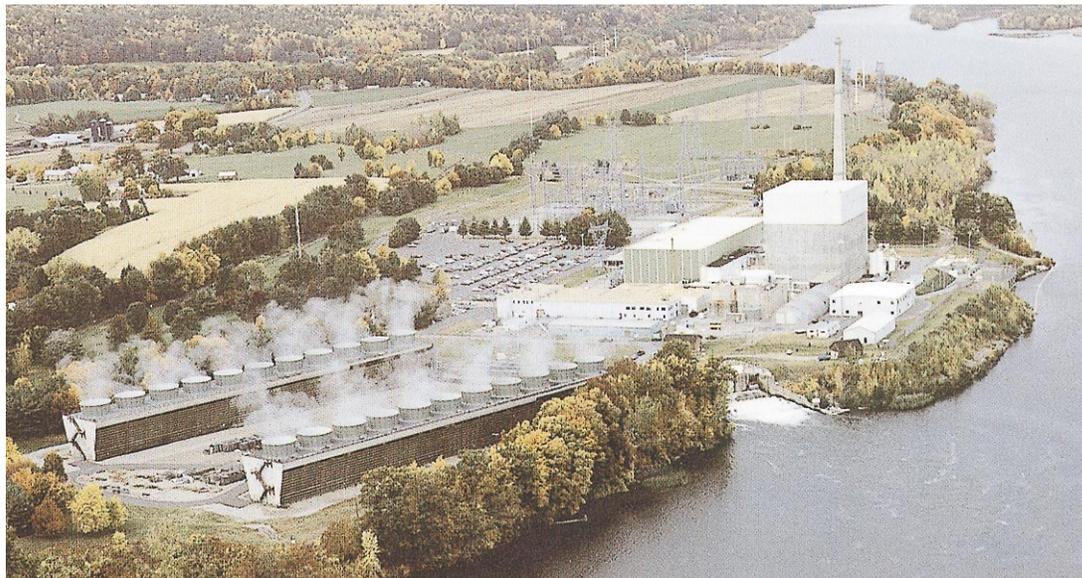
PERFORMANCE

The successful use of these tubes allowed for a high quality environmental handling of all effluent materials and discharge, more efficient spoils containment and an overall expediency to the project. Six thousand cubic yards were pumped by the contractor. Safety, security and production were high priorities. Under the supervision of Mr. Osterhoudt and the expertise of Inner Space, the project came to a successful completion in late December of 1997, just as ice was setting into the river. The critical cross section of the intake was increased by a factor of five and the newly maintained dredge area will be monitored for information on the accretion of new materials.

Figure 3: Dredge material pumped out of intake lagoon 2200 LF to field where 12 300" long by 30' circumference Geotubes were placed.



Figure 4: Vermont Yankee Nuclear Power Plant, Vernon, VT



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