

\$60M To Clean N.H. Basin

First of many contractors start on pollution control program for the Winnepesaukee River Basin area

Above: Seaward's Insley 2250 digs sewer line near part of firm's "train" on Wolfeboro Railroad.

Below: Seaward project mgr. Marty Hubbard and supt. Ralph Lyford with their company's rolling stock.



WHAT DO THE Aquadahton Indians, the Wolfeboro Railroad, the N.H. Water Supply and Pollution Control Commission, and four contractors have in common?

Answer: The Winnepesaukee River Basin Program — perhaps the most unique construction project in New England.

It's a \$60 million regional pollution control project involving eight communities in the Lakes Region, a project aimed at upgrading the quality of famed Lake Winnepesaukee and one that is already producing results.

The NHWSPCC (even as an acronym it's a long handle) is the owner, operator and maintainer of the developing sewerage system. And that's unique, because no other such system is owned by the state.

The four contractors are the first to work on the 50 miles of sewers, force mains and 15 pumping stations that will gather wastewater from as far north as Meredith and as far south as Northfield, and convey it to a new regional treatment plant proposed for Franklin. Eventually, the first four will be joined by perhaps a dozen more contractors, since there will be as many as 16 contracts let on this job.

Three of the contractors are literally "workin' on the railroad." A good portion of the sewer and force main parallels the Wolfeboro Railroad — through some pretty wild country, too — and the pipe is being buried only 16 feet from the tracks. This led to an unusual arrangement



Above left: Seaward's Trackmobile hauls side-dumping RR cars full of gravel for backfilling a 60-inch sewer being placed as part of a \$1.4 million contract.

Above right: further along on the job, Seaward's Cat 235 excavator works on a four-barrel siphon crossing of the Winnepesaukee River.

Left: Daniel D'Onfros & Sons uses a Link-Belt K360 to excavate for a 30-inch, mile-long ductile iron force main as part of its \$688,000 contract.

between the state and itself, and prompted one contractor to buy his own train.

And the Aquadahtons? Well they're involved because they left a lot of things in the way of some of the sewers — tools, cookware, weapons and the like.

The Aquadahtons were an offshoot of the Algonquin Indians living in the Lakes Region a couple of centuries ago. Fed up with the white man moving in on them, and the Iroquois Indians who constantly attacked them, the Aquadahtons departed the area. But they didn't take all their things, and the discovery of artifacts from their culture is considered to be a major archaeological find. And it turns out the new sewers in some spots go right through their old camping grounds.

Normally, this would mean continual delays for the contractors as archaeologists and historians slowly sifted through areas suspected of containing artifacts. Fortunately in this case, the State of New Hampshire's NHWSPCC has its own archaeologist, a Dr. Howard Sargent, who manages to keep ahead of the contractors. Sargent and his coworkers have been able to perform their tasks without delaying the project.

Delays, in fact, are practically unheard of in this job, which has progressed so smoothly it is expected to be finished five years ahead of the date originally set as a target. When originally conceived, the Winnepesaukee River Basin project was to have been finished around 1985. Now, planners are talking about a 1979-1980 com-

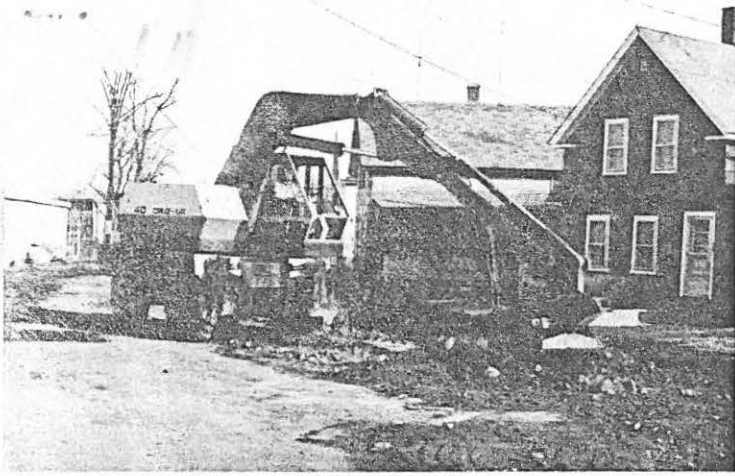
pletion. Part of the credit for this, according to Laconia Public Works Director Frank DeNormandie, lies with the fact the state is building the system.

"There have been no stumbling blocks, political or otherwise," said DeNormandie, whose city is one of the eight communities in the regional system, "mainly because the state is running the project. The Commission (NHWSPCC) selects the design engineers, supervises the construction, then operates and maintains the system with its own personnel. The communities are charged according to the strength and quantity of sewage they contribute to the system."

Special legislation was passed to initiate the unique state-owned sewerage system, DeNormandie said, and the legislation contains provisions for individual community input through membership on an Advisory Board. The Board reviews all expenditures of the NHWSPCC and can contest any in court, if it decides to.

An advantage to state involvement in this project is the state's ownership of the railroad that the sewer parallels.

The state-owned Wolfeboro Railroad is principally a freight-carrying line with an occasional passenger train containing foliage sightseers or special tour groups. With construction going on in its right-of-way, the state has scheduled all freight trains to pass through only between 4:30 PM and 7:00 AM. Hence, the contractors are free to move their equipment right up to the tracks during the day without worrying about freight trains barreling



Top: D'Onfros' Drott 40 performs cleanup chores in a residential section near Lake Winnisquam.

Upper middle: the Leominster, Mass. firm used this John Deere 644 loader for cleanup work and backfilling the force main.

Lower middle (left): Arthur Sinclair (l.), supt. of Laconia sewers, and Virgil D'Onfros, supt. for D'Onfros & Sons Inc.

Lower middle (right): Politos' Koehring 666 backfills a 60-inch sewer pipe at one end of a steel trench box.

Bottom: at the other end of that trench box, Politos' Bucyrus-Erie 40-H excavates and installs the large-diameter pipe. The Shrewsbury, Mass. contractor chose not to ride the rails but instead built an access road beside the tracks to enable his big excavators to work together in speedy harmony.



through the work area.

Two of the contractors have taken advantage of the unused track during the day by using it themselves.

Daniel D'Onfros & Sons Inc. of Leominster, Mass. has a \$688,000 contract to build a mile-long, 30-inch force main alongside the railroad tracks. To facilitate bringing the heavy sections of ductile iron pipe to the crew installing it, the firm rented a High-Rail vehicle — a flatbed truck with an undercarriage that mounts on rails. In addition, the Leominster contractor built a construction access road alongside the tracks for his Link-Belt K360 cable backhoe, which dug the entire pipe trench, and his John Deere 644 loader used for backfilling the installed pipe. A Drott 40 backhoe also used the road on cleanup chores.

Another contractor, Seaward Construction of Kittery, Maine, took a different approach to working along the railroad. This firm bought a train.

Seaward has a \$1.4 million contract to install 60-inch reinforced concrete pipe. It, too, built an access road alongside the track. The main purpose of the road is to move digging equipment to the job and allow access for materials vendors, such as trucks from New England Concrete Pipe Corp., suppliers of the 60-inch pipe. But to handle the huge quantities of excavated trench material, and the gravel backfill, Seaward decided to use the rails.

The Kittery firm bought a "locomotive" tractor called a Trackmobile which can operate either on the highway or the railroad, and some used rolling stock. Seaward uses its train to haul excavated material from the trench to dumping areas, and to deliver backfill gravel to the pipe crews. The rolling stock includes a flatcar for hauling precast manholes, and four Magor side-dumping hopper cars. The latter are activated by compressed air which is supplied by a 750 cfm Sullair compressor towed by the Trackmobile. During backfilling, the Magors simply discharge their loads directly into the pipe trench.

Seaward is using two crews on its 5600-foot-long job.

A Cat 235 excavator is working on one crew which is constructing a crossing of the Winnepesaukee River. The crossing involves a four-barrel siphon — with 16-, 24-, 30-, and 36-inch pipe — a 2-inch electrical conduit and a 3-inch water main. To ease pipe placement, the contractor fabricated a giant steel template which keeps the pipes aligned while they are being encased in concrete.

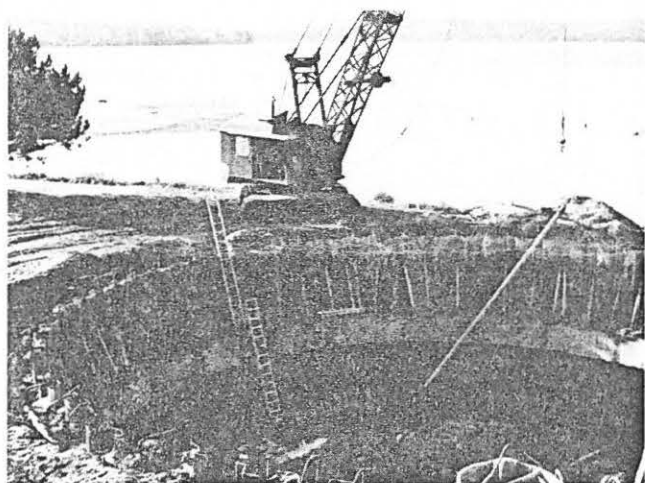
The other crew is installing the 60-inch sewer along the railroad right-of-way using an Insley 2250 backhoe to



Top left: Polito used this Michigan 75 loader for backfilling the pipe.

Top right: John Osborne (left), NHWSPCC resident engineer, and Polito supt. Al D'Onfros discuss sewer job.

Lower left: at the existing Laconia sewage plant, Catamount Construction installed circular sheeting supported by internal concrete ring beams, avoiding cross braces that would have hampered excavation.



Laconia DPW Director Frank DeNormandie reviews job with NHWSPCC project mgr. Dan Collins.

excavate and a Michigan 75B loader to backfill. A Case 450 bulldozer is maintaining the company's construction road.

A third contractor, Joseph Polito & Sons Inc. of Shrewsbury, Mass., has not found it necessary to ride the rails as it places a 60-inch interceptor. Polito is relying on the access road it built paralleling the railroad, and two big machines working together, to speed its project.

In an unusual operation, the contractor is using a Bucyrus-Erie 40-H backhoe at one end of a steel trench box to excavate and set 60-inch pipe, while a Koehring 666 backhoe at the other end backfills the pipe. Rarely do two large machines such as these form a working partnership, and the marriage is hastening Polito's progress.

The fourth contractor on the Winnepesaukee project is not on the railroad but in the yard of the existing Laconia wastewater treatment plant. Catamount Construction Co. of Tewksbury, Mass. is building a large pumping station there which will feed wastewater into the force main under construction by D'Onfros. The \$900,000 station has to bottom out about 34 feet below the existing ground. What makes this troublesome is the fact that Lake Winnisquam is only yards away. Faced with digging the hole with that much head of water on the excavation, Catamount decided to use a two-stage wellpoint system supplied by Clark Dewatering Co. of Bolton, Conn., and an unusual configuration for sheeting around the hole.

The steel sheeting is circular in plan, not the usual square or rectangular. What's more, there are no walers or internal cross braces to support the sheeting against external soil pressure. Instead, Catamount has cast horizontal reinforced concrete ring beams around the interior of the sheeting. The beams — ultimately there will

be three, at top, middle and bottom of the hole — use the inherent strength of a hoop to hold back soil pressure. Using them allows the contractor to eliminate the internal braces that always get in the way of excavation, and has made clamshelling by the firm's Northwest crane easier and faster.

After the pumping station has been built, Catamount plans to pull the sheeting and demolish the concrete ring beams.

The massive pollution control program, although still in its infancy, has already produced results, according to Dan Collins, project manager for the NHWSPCC.

Collins said that the first work undertaken was the upgrading of the old Laconia wastewater treatment plant, formerly a primary treatment plant for the City alone.

"The old plant was converted two years ago to advanced treatment," said Collins, "employing a physical/chemical process that substantially improved the effluent. Already we have seen an improvement in Lake Winnisquam, which takes water from the Winnepesaukee River. Last year, for example, we used only ten percent of the amount of copper sulfate we formerly used to control algae in the lake.

"The completion of this project," he said, "will result in even greater improvements of water quality in the Winnepesaukee River Basin."

(In addition to Frank DeNormandie and Dan Collins, who granted interviews for this article, we'd like to give a special note of thanks to John Osborne, resident engineer for the NHWSPCC, who introduced us to the various contractors, and to the contractors themselves, as represented by their field superintendents: Dave Redmond (Catamount), Virgil D'Onfros (D'Onfros), Ralph Lyford and Marty Hubbard (Seaward), and Al D'Onfros (Polito).)

—Paul Fournier