

**Sylvester's (I-61)
Nashua, New Hampshire
30 June 1985**

Location and Nature of Site

The Sylvester (Gilson Road) site is a six-acre open dump located behind the C & S Disposal Company garage on Gilson Road in Nashua, New Hampshire. The site is a former sand pit which was excavated in places to elevations below the seasonal high groundwater levels.

During the late 1960's, the operator of the pit began an unapproved and illegal waste disposal operation. Household refuse, demolition materials, chemical sludges, and hazardous liquid chemicals were dumped at the site at various times. Sludges and hazardous liquids were either mixed with the trash, allowed to percolate into the ground adjacent to the old sand pit, or stored in steel drums which were buried or placed on the ground surface. The State of New Hampshire was finally able to stop operations in October 1979.

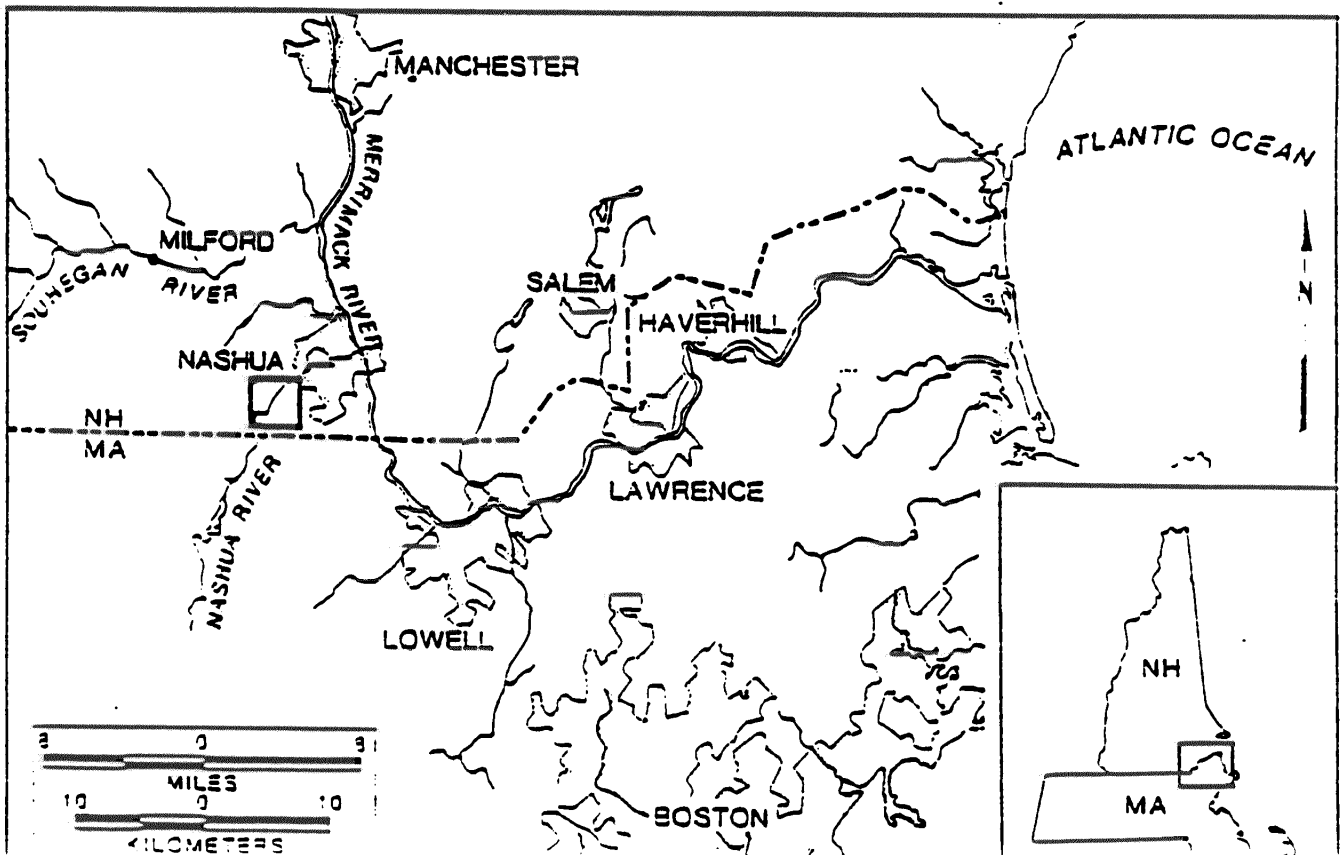
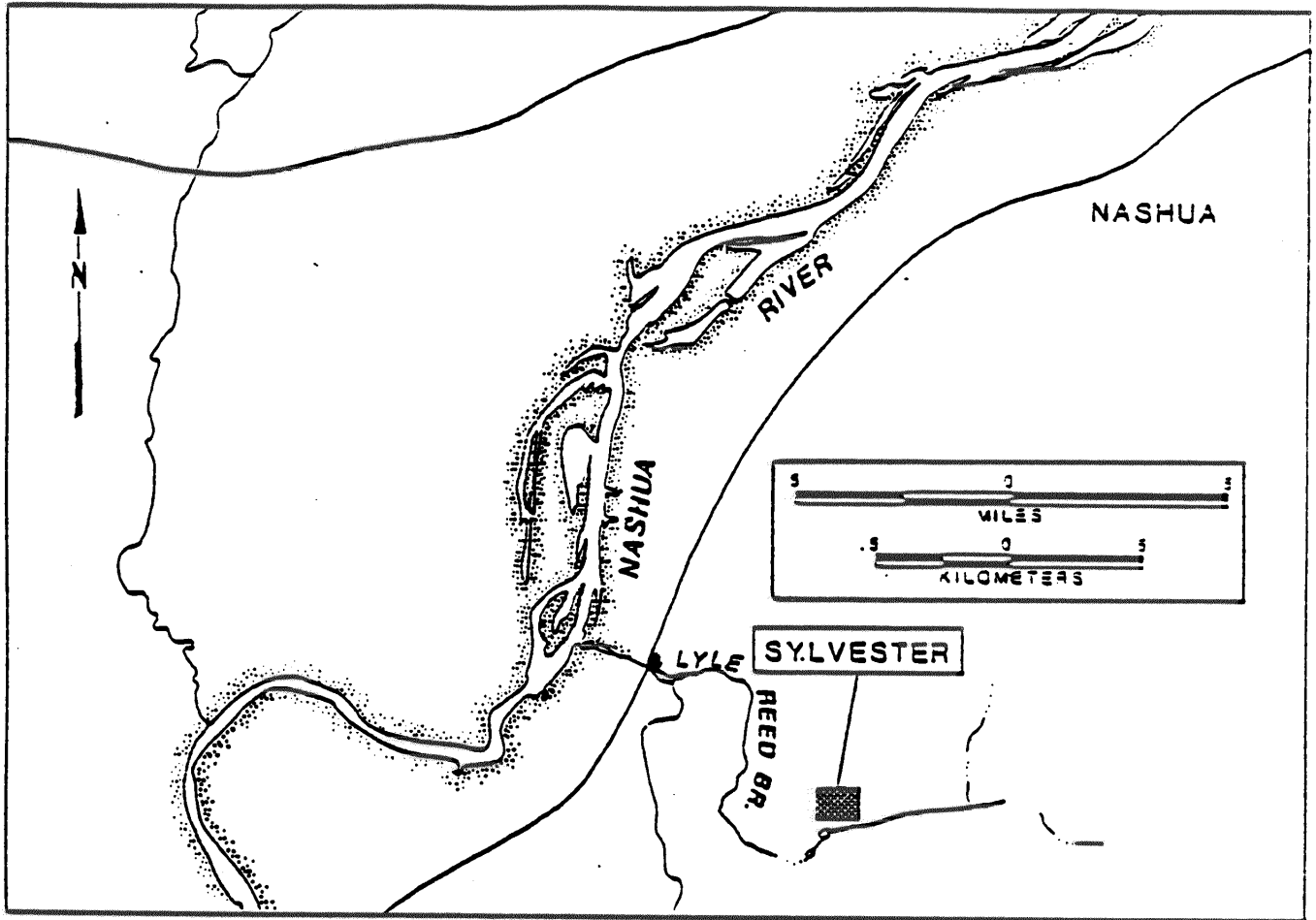
It is estimated that the site was used for hazardous waste disposal for approximately five years. Although the total volume of waste disposed of at the site is unknown, the quantity is believed to be quite substantial; over 1,000 steel drums were found and removed from the site in 1980.

Chemical Hazards

Proximity to Marine Waters

The primary pathway of offsite contamination is through the groundwater. Surface water runoff from the site flows into the disposal area and is not a direct pathway to marine waters. The major portion of the groundwater from the site flows approximately 200 meters in a northwesterly direction toward Lyle Reed Brook, and is then carried as surface water into the Nashua River. The balance of the groundwater flow from the site continues beneath the brook toward the Nashua River.

Flow from the Lyle Reed Brook enters the Nashua River approximately 11



kilometers upstream of the confluence with the Merrimack River. Nineteen to 21 kilometers further down the Merrimack River is the Pawtucket Dam at Lowell, Massachusetts. Dilution calculations carried out in 1981 indicated that, if nothing was done, contamination of the Nashua River by the Sylvester site would affect the water quality on the Merrimack River as far south as Lowell, where there are anadromous fish runs.

Contaminants and Concentrations

Groundwater monitoring wells near the site and between the site and Lyle Reed Brook were found to have concentrations of up to 1,200 ppm tetrahydrofuran; 100 ppm toluene; 48 ppm methylene chloride; 33 ppm methyl isobutyl ketone; 48 ppm acetone; and lesser amounts of vinyl chloride; chloroform; 1,1,1-trichloroethane; trichloroethylene; benzene; and xylene. Heavy metals in wells nearest the site included 1,700 ppb arsenic, 10 ppb cadmium, and 500 ppb lead.

Surface water contamination measured in Lyle Reed Brook included 2,700 ppb toluene; 7,650 ppb tetrahydrofuran; 20 ppb ethyl benzene; 16 ppb xylenes; and trace amounts of benzene.

Physical Extent of Contamination

The contaminated groundwater zone is approximately 200 to 210 meters wide at the disposal site, with little or no additional lateral dispersion as the contaminant plume migrates northwest. In November 1982, there was evidence that the leading edge of the plume extended beyond Lyle Reed Brook, with the most contaminated zone extending from the disposal site to within 30 meters of the brook.

Duration of Contaminant Release

Volatile organic contaminants in groundwater from the site, first detected in Lyle Reed Brook in March 1980, steadily increased until completion of an underground slurry wall at the site in November 1982. The slurry wall prevented the most contaminated part of the groundwater plume from reaching Lyle Reed Brook. However, the part of the plume which had already reached the brook and beyond was not contained. Estimated travel time for the forward edge of the groundwater plume which escaped the slurry wall to the river is two to five years, or 1982-1985. A quarterly monitoring program has not detected any contaminants in the Nashua River, either because the plume has not reached there or because of dilution.

Marine Resources

Resources at Risk

This site impacts the anadromous fish resources of the Nashua and Merrimack Rivers. The Merrimack River Basin Fisheries Restoration Program involves several hatchery operations and the planned construction of fish passage devices at damsites along the Merrimack River by the year 2000. Target species are the Atlantic salmon and the American shad. The plan calls for achieving return runs of 3,000 adult Atlantic salmon and 1,000,000 adult American shad to the mouth of the Merrimack River.

The mainstream of the Merrimack River is expected to provide spawning and nursery habitat for alewives, blueback herring, American shad, striped bass, and sea lampreys after installation of fish passages. Atlantic salmon will only use the area as a migratory route to the headwaters of the Merrimack above Manchester.

The Nashua River will provide suitable habitat for shad, alewives, bluebacks, and sea lampreys' spawning and nursery use following restoration. Atlantic salmon parr will also use these tributaries as nursery grounds. Four fish passages are planned for construction on the Nashua River dams as part of the overall restoration plan.

The U.S. Fish and Wildlife Service operates the Nashua National Fish Hatchery. It is located on the Nashua River near its confluence with the Merrimack River. This hatchery is actively trying to re-establish anadromous fish runs in the Merrimack River.

The New Hampshire Department of Fish and Game (DF&G) operates a hatchery at Milford on the Souhegan River which produces coho salmon, Atlantic salmon, sea run brook trout, and steelhead trout. The Sylvester site may impact fry and juvenile hatchery fish released by the facility once they enter the mainstream waters below the Nashua River or if they enter the Nashua River for nursery use.

The potential exists for damage to Atlantic salmon and American shad hatchery operations conducted on the Merrimack River by the U.S. Fish and Wildlife Service and New Hampshire DF&G. Specifically, contaminated groundwater from the Sylvester site is hypothesized to be a direct threat to developing demersal eggs of American shad that may spawn in the Nashua River and Lyle Reed Brook. Alewives, blueback herring, and rainbow smelt also have demersal-type eggs.

Routine hatchery activities related to spawning and rearing of Atlantic salmon at the Nashua National Fish Hatchery may be affected by contaminants entering the hatchery water intake.

Ability to Document Injury or Loss

Although monitoring wells situated nearest the site and Lyle Reed Brook indicate significant concentrations of volatile organics and heavy metals, there is no conclusive evidence that the site has caused serious injury to the fishery resources of the Nashua River or mainstream of the Merrimack.

The discharge from the Sylvester site is only one contributing source to the pollutant loading of the Nashua River system. The combined effects of all pollutants in the Nashua River may be contributing to a general reduction in the extent of nursery grounds, including those of the Atlantic salmon.

Any documentation of the deleterious effects of the site on the restoration efforts of Atlantic salmon and American shad will be extremely difficult to substantiate. This fact is attributable not only to the pollutant contributions from other waste sites in the area, but also to the impact of offshore commercial fishing of shad and salmon. Evaluation of the results of the restoration effort will be further complicated by increasing recreational fishing activities on the mainstream and its tributaries.

Feasibility of Habitat or Resource Restoration

Assuming that contamination of sediments is not significant, habitat restoration is highly feasible. Renewal and treatment of the contaminated groundwater plume should significantly lower the concentrations in the Nashua and Merrimack Rivers to acceptable levels. Considering that a fishery restoration program is planned and in progress, the timely cleanup of the site should be highly beneficial to the overall program.

Site-Related Actions

Summary of EPA/State Response Actions

The dumping at the site was first discovered in late 1970. After several court appearances and court actions, an injunction was issued in 1976 to remove all hazardous waste material from the site. However, operations continued, and in November 1978, State of New Hampshire personnel observed drums being stored at the site. A court order was issued in October 1979 prohibiting all further disposal of hazardous wastes on the site.

Between June 1980 and June 1982, EPA, first under Section 311 of the Clean Water Act and later under CERCLA, installed a system to temporarily pump and recirculate contaminated groundwater. In 1980, the City of Nashua and the State of New Hampshire contributed to fencing the site, removal of 1,300 drums, and installation of alternate water supply lines to individuals with contaminated wells.

In August 1981, the State of New Hampshire, under a cooperative agreement with EPA, began the design and construction of a slurry wall and

cap to permanently contain contaminated groundwater on-site and a feasibility study to evaluate alternatives for treating contaminated groundwater.

Present Stage of EPA Action at the Site

The State of New Hampshire has the lead on this site and has named it the priority site for the state. Remedial action is well underway. The 20-acre slurry wall was completed in November 1982. The groundwater treatment system is currently under construction and is scheduled for completion by September 16, 1985. The treatment operations should begin by mid-October 1985 and are expected to operate for 1.7 years. This site has progressed beyond where NOAA might play a part in remedial action discussions.

Responsible Parties with Adequate Means Identified

No responsible parties with adequate means have yet been identified. Mr. William Sylvester, owner of the property, does not have sufficient financial assets for EPA to recover cleanup costs. Cannon Engineering and C & S Disposal have also been named as having disposed of hazardous materials at the site. EPA has taken the lead in investigating these and additional responsible parties.

Interest of Co-Trustees in Damage Assessment Investigations

The State of New Hampshire, EPA, and U.S. Department of the Interior are primarily interested in cleaning up this site before it can adversely affect the current and planned restoration of anadromous fish runs in the Merrimack River. Damage to existing resources is probably limited to a contribution to the general degradation of water quality in the Merrimack River. The only direct effects that might be assessed would be on the U.S. Fish and Wildlife Service hatchery operation in the Nashua River.

Site Chronology

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| 1970's | First discovery of illegal dumping activity at the site. |
| 1976 | Court injunction to remove all materials from site ignored by operator. |
| 1975 -1979 | Hazardous wastes dumped at site. |
| Nov. 1978 | State of New Hampshire observes drums being stored on site. |
| Oct. 1979 | Court order issued prohibiting disposal of hazardous wastes on the site. |
| June 1980 | City of Nashua and State of New Hampshire contractors remove 1,314 drums from site. |

- July 1981 Groundwater testing shows contamination plume under site moving toward Lyle Reed Brook and Nashua River.
- Aug. 1981 Cooperative Agreement between EPA and New Hampshire Water Supply and Pollution Control Commission to do RI/FS and cleanup.
- Nov. 1982 Completion of slurry wall to contain contaminated groundwater plume on site.

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