Exide Environmental Remediation Project on the Mill River and Southport Harbor

Fairfield, Connecticut

A Presentation by the

Harbor Management Commission

September 2020

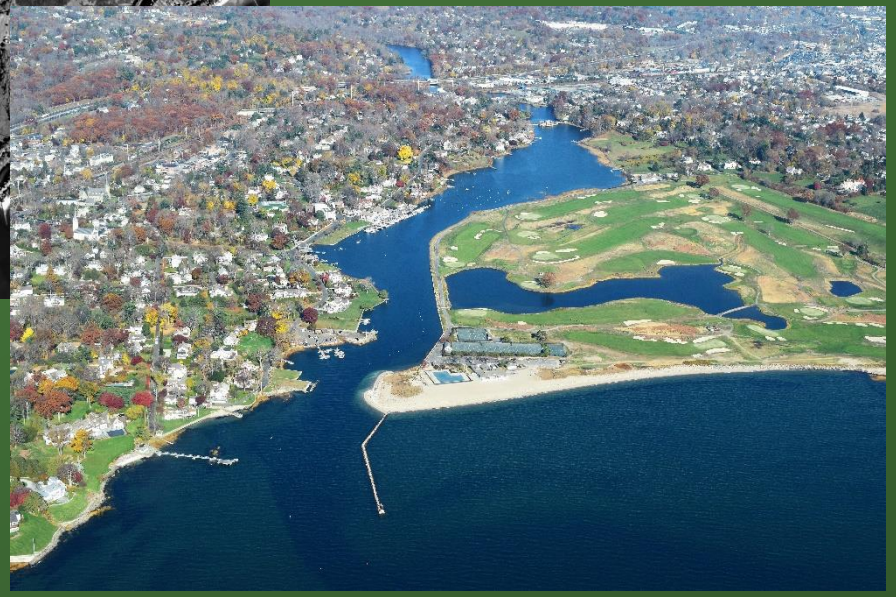
The Town of Fairfield in Southwest Connecticut

Fairfield is a coastal community on the north shore of Long Island Sound. The town has a long and successful history of environmental stewardship, on the part of its officials, agencies, and citizens.

Much of Fairfield's character and quality of life is intrinsically tied to the water and shoreline resources of Long Island Sound and the town's several estuaries, including the Mill River/Southport Harbor estuary.

Mill River

The Mill River is Fairfield's largest watercourse and one of the Town's most significant natural features. The river flows over a winding 8-mile course through the center of Fairfield to Long Island Sound. Before entering the Sound, it gives shape to Southport Harbor, the Town's most scenic and historic waterway. High tides carry saltwater two miles upstream in the river.



Southport Harbor

Southport Harbor at the mouth of the Mill River is one of Fairfield's most valuable natural resources — a center of boating activity in western Long Island Sound and one of the most scenic and historic locations on the Connecticut coast.

The harbor played a prominent role in the development of Fairfield and continues to have a significant influence on the Town's quality of life.

Since 1986, the **Fairfield Harbor Management Commission (FHMC)** has principal responsibility for guiding the harbor's beneficial use and conservation.

G. Steadman photo

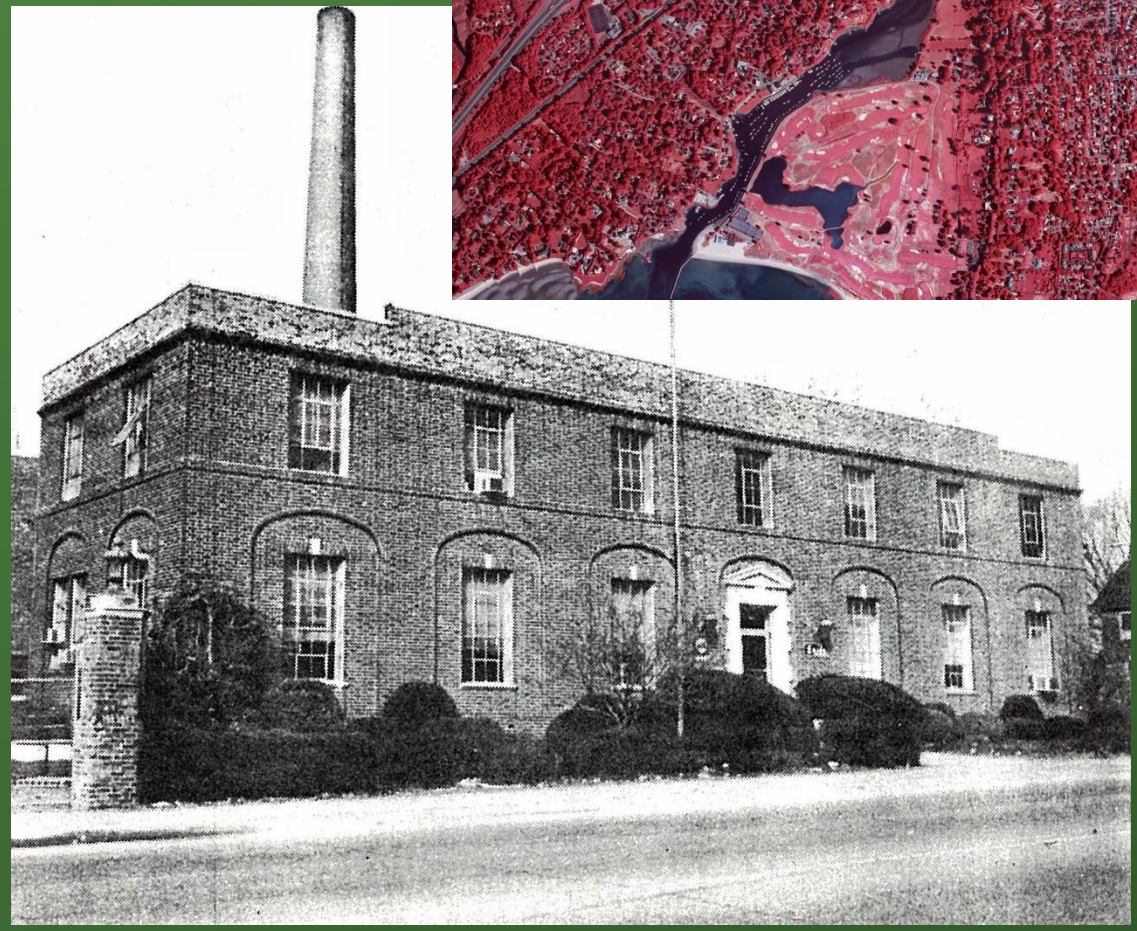
Google Earth

Electric Storage Battery Company

In 1951, the Electric Storage Battery Company opened a factory in Fairfield on a site adjoining the Mill River at 2190 Post Road. The company manufactured car batteries using acids and lead and assured the Town it would not discharge industrial waste into the river.

When the plant closed in 1981, it left behind a severely damaged ecosystem and an estimated 37 tons of lead in the Mill River.

Successful cleanup of the Exide site and Mill River over many years with much controversy is an important chapter in the history of Fairfield. There's much to learn from what happened here.



Early Discharge Standards at Battery Plant Site

1951-1967: Little or no treatment

1967: CT Water Resources Commission issues order to treat lead-bearing discharges with “accepted” technology; level of treatment intended to reduce lead concentration to about 5 ppm

1972: Federal Water Pollution Control Act Amendments establish nationwide discharge permit program

1974: CT DEP begins CT discharge permit program and issues permit requiring lead concentration of 1 ppm

1979: CT DEP re-issues discharge permit and requires lead concentration of 0.5 ppm

"River Tests Ominous"

By the 1960s, the effects of lead pollution in the river were obvious. A long and contentious process ensued to clean up the site and river at the insistence of the Town's citizens and elected officials. In 1965, the Fairfield Conservation Commission was established and took a leadership role.

FAIRFIELD, CONNECTICUT — WEDNESDAY, MAY 2, 1979

River tests ominous?

By DANIEL B. WASSERMAN

Mill River pollution study set

JUL 2 1980

The Fairfield Citizen — July 30, 1970

State to probe 'mystery' pollution

Pollution report

By FREDERICK REISS

State verifies lead data

AUG 22 1979

July 26, 1978

Mill River test results bottled as incomplete

State sets Mill River testing

JUN 27 1979

CITIZEN-NEWS, Wednesday, December 12, 1979

DEP 'loaned' sensitive files on river pollution to ESB

FAIRFIELD CITIZEN-NEWS, Wednesday, February 25, 1981

Exide may close; lead still a liability

By FREDERICK REISS

Lead in river discussed

By ROGER V. AUTUORI

FEB 20 1980

FAIRFIELD CITIZEN-NEWS, Wednesday, April 8, 1981

Clean-up of Mill River lead could take years

By FREDERICK REISS

Early Remediation Efforts

1979: Conservation Commission report describes significant lead pollution in Mill River; CT DEP tests confirm report.

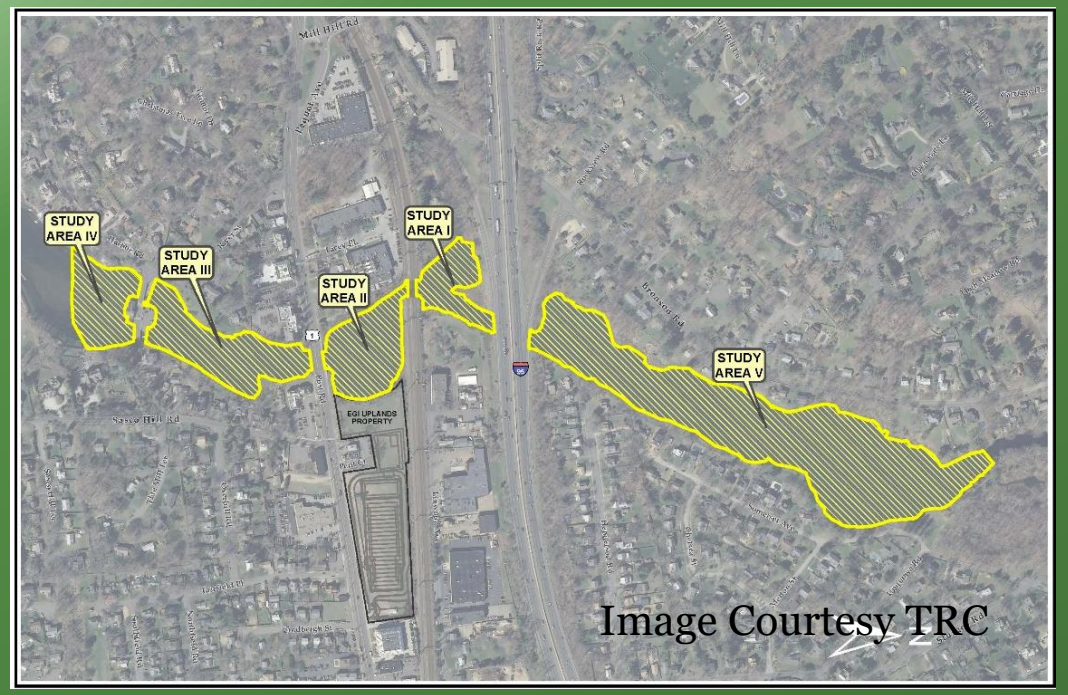
1981: Battery factory shuts down.

1982: CT DEP issues Consent Order requiring Exide Corporation (then-owner of the site) to remove 4,100 cy of contaminated sediment from the river.

1983: Exide dredges 4,400 cy yards of contaminated sediment from river; some lead found at 600,000 ppm; factory site remediation begins.

1983-1989: Follow-up studies show increased lead pollution in river, likely additional discharges from the factory site.

1989: DEP Administrative Order requires Exide to determine source and degree of pollution.



Remediation: 1990s to Present

1992: Exide submits engineering report to DEP.

1998: DEP requires additional studies.

2008: DEP and Exide sign Consent Order for environmental cleanup; Exide begins sediment mapping; cleanup levels of 220 mg/kg to 400 mg/kg of lead are set.

2012: Draft Sediment Remedial Action Plan (SedRAP) presented by DEEP and Exide to Town at public meeting; Town agencies, citizens, and organizations object to lack of Town input.

2012-2013: Collaborative meetings and consultations involving Town agencies and stakeholders, DEEP, and Exide; Town and stakeholder intervention in NPDES permit process; resolution of conflicts; completion of SedRAP and issuance of environmental permits.

2014-2017: River cleanup and successful remediation in compliance with SedRAP and permits.

Exide/Mill River Remediation Project: A Model for Environmental Cleanup

Project included: hydraulic dredging of lead-contaminated sediment from 5 river project areas; sediment pumped via floating pipeline to temporary processing facility on former battery plant site; dredged sediment de-watered on-site; filtrate water treated and discharged back into river; de-watered sediment trucked to landfills for proper disposal.

To Mitigate Water Quality Impacts:

1. Pre-construction baseline monitoring of water quality conditions, including turbidity conditions.
2. Establishment of threshold water quality values to be maintained throughout the project, including acceptable Nephelometric Turbidity Units (NTUs).
3. Design and employment of BMPs during all operations, including double-wall dredge pipe and turbidity curtains.
4. River monitoring, including turbidity monitoring, 24/7 during operations; dredging suspended at 10 NTUs over background.
5. Discharge monitoring at water treatment facility.
6. Post-construction confirmation monitoring of river conditions and groundwater.

Hydraulic Dredging of Lead-Contaminated Sediment

Precision dredging guided by GPS removed contaminated sediment and pumped it in slurry to processing plant. 11+ acres dredged to average depth of 2.3 feet; restrictions imposed to protect fisheries; BMPs for water quality.

Photo Courtesy TRC

Sediment Processing Facility

Sediment processing facility established on former battery factory site; sediment de-watered in geotextile bags (“geotubes”); filtrate water collected in sump and directed to onsite water treatment plant; 39 bags used to de-water approximately 27,000 cy of sediment.

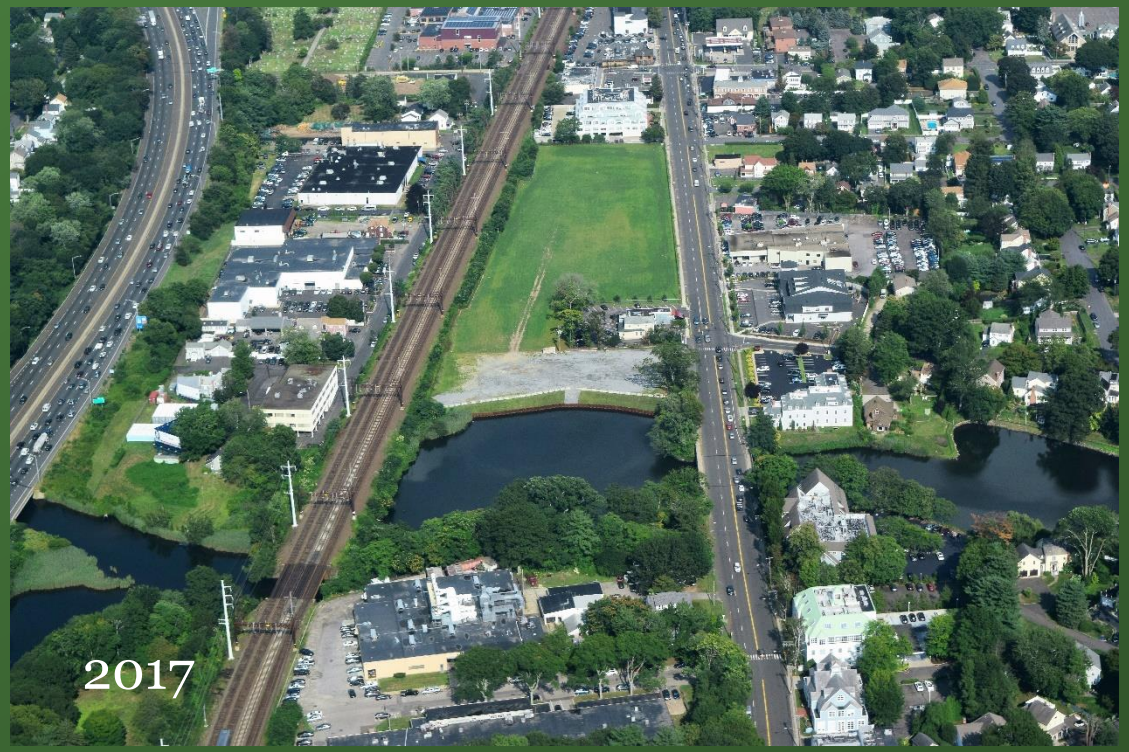
Water Treatment System

On-site water treatment system treated more than 100 million gallons of filtrate from the geotubes prior to discharging water back to river. Water treatment monitoring conducted according to NPDES permit; lead amounts in treated water significantly below permitted limits (7-11% of permitted limits).

Photo Courtesy TRC

Project Completion

Following de-watering process, sediment was tested and classified for disposal as solid or hazardous waste and trucked to four different out-of-state landfills; sediment load-out involved 1,154 truck loads and 32,000 tons of de-watered sediment. All aquatic and upland confirmation samples met SedRAP and permit requirements; final Implementation Report submitted to DEEP and approved in 2017.



Lessons and Conclusions

- Community groups and individuals can make a difference.
- Laws and regulations are not sufficient to solve complex environmental problems; public interest and involvement are essential.
- Legal intervention and a public hearing may be necessary – be aggressive in getting a place at the table.
- Trust and respect among stakeholders and credibility of participants is essential.
- Long-term commitment is needed to advance stewardship initiatives and must be sustained when controversy, other obstacles, and frustrations occur.
- Continued community outreach and expansion of knowledge and understanding are critical.

Lessons and Conclusions (Cont.)

- Involving the community, its agencies and people, in the remediation planning process was critical.
- Dialogue instead of presentations; “people to people” communication contributed to project success.
- Technical information transmitted to the public in an understandable way was most helpful.
- Ability to communicate and work with people is just as important as technical knowledge.
- The Harbor Management Plan is an important tool for advancing water quality initiatives.

Power Point presentation by Geoff Steadman and Mary Hogue

Acknowledgments

Town of Fairfield

Board of Selectmen, First Selectman Michael Tetreau

Fairfield Delegation, CT General Assembly

Harbor Management Commission

Conservation Commission

Shellfish Commission

CT Department of Energy & Environmental Protection

Remediation Division

Water Permitting and Enforcement Division

Land and Water Resources Division

Fairfielders Protecting Land and Neighborhoods (FairPLAN)

Mill River Wetland Committee

Exide Group Incorporated and its engineers and consultants

Special thanks and recognition to Thomas J. Steinke, Town Conservation Director from 1971 to 2014. Successful cleanup of the Exide site and Mill River is due in large part to his meticulous and unrelenting research, analysis, and advocacy.