

Introduction

The Materials Technology Laboratory Superfund site is located in Watertown, Massachusetts. Facilities established in 1816 on site and used through 1995 focused on weapons production and research. Cooperation among the U.S. Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (MassDEP), the U.S. Army, the town of Watertown, the Massachusetts Department of Conservation and Recreation (DCR) and property owners resulted in the area's successful cleanup and reuse. Stakeholders recognized that consideration of reuse during cleanup planning could enhance the protection of public health and the environment while also addressing other community priorities.

Today, site uses include the Arsenal on the Charles mixed-use complex, which features a healthcare services company, an arts center, restaurants, a childcare facility, a fitness center and several other businesses. The town owns and operates the historic Commander's Mansion on site for special events, weddings and meetings. Other uses include Squibnocket Park (also called Charles River Park) and a yacht club. These uses provide the community with local services and recreation opportunities while also recognizing and preserving the area's rich history. The current owner of the Arsenal on the Charles also has plans to renovate and further develop areas of the site. Its plans include a walking mall, a parking garage and integrated stormwater management.

Superfund site restoration and reuse can revitalize local economies with jobs, new businesses, tax revenues and local spending. Cleanup may also take place while active land uses remain on site. This case study explores the Materials Technology Laboratory site's cleanup and reuse, illustrating the beneficial effects of Superfund redevelopment. Site businesses employ about 2,600 people, providing estimated annual employment income of over \$376 million and generating \$505 million in annual sales revenue.

Beneficial Effects

- Site businesses employ about 2,600 people, providing estimated annual employment income of \$376 million and generating over \$505 million in annual sales revenue.
- Site properties have a combined 2017 assessed value of about \$187 million, and generate \$4.5 million in annual property tax revenues.
- The Arsenal on the Charles is a designated historic district that serves as a cultural and entertainment hub for employees, visitors and community members.
- The nonprofit Mosesian Center for the Arts is home to the award-winning Watertown Children's Theatre as well as the New Repertory Theatre.
- Site reuses also include a fitness center, childcare facilities, several restaurants and recreation areas along the Charles River.

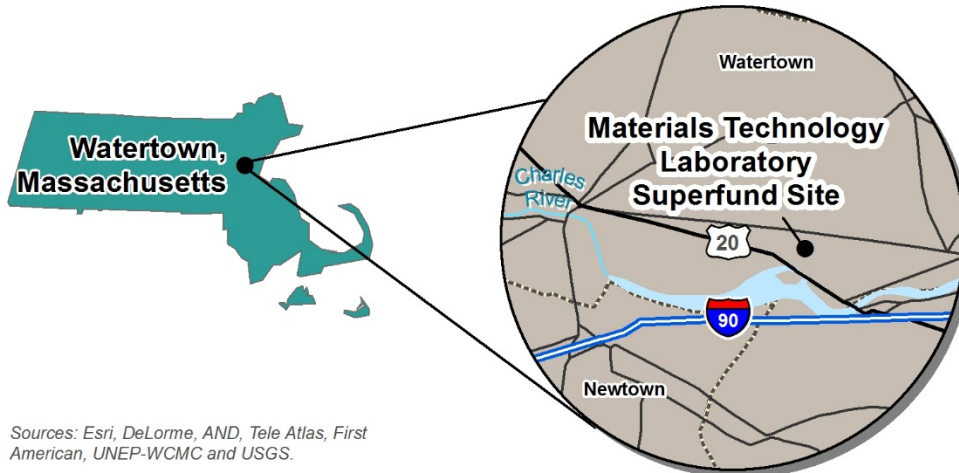


Figure 1. Location of the Materials Technology Laboratory Superfund site in Watertown, Massachusetts.

Site History

The 48-acre area is located in Watertown, Massachusetts, about 6 miles northwest of Boston. Residential and commercial areas border the site to the west. Commercial areas border it to the north and east. The Charles River is located south of the site. Current site features include civic and commercial areas, restaurants, meeting and event space, Squibnocket Park and a yacht club. According to the 2016 U.S. Census, about 35,000 people live in Watertown.

The site was originally part of a larger 131-acre facility known as the Watertown Arsenal, which was built in 1816 and originally used for storage, cleaning, repair and issuance of small arms. From the mid-1800s until after World War II, facility operations expanded to include ammunition production, materials testing, and manufacture of breech-loading steel guns and cartridges for field and siege guns. Arms manufacturing continued until an operational phasedown in 1967. At the time of the phasedown, much of the Watertown Arsenal property was transferred to General Services Administration (GSA). In 1968, GSA sold about 55 acres to the town of Watertown for commercial, residential and recreational use. The remaining 48 acres were converted into the Materials Technology Laboratory.



Figure 2. Built in 1862, Building 43 is one of the oldest buildings on site. Originally, it was part of the Seacoast Gun Carriage Complex.

In 1960, the Army's first material research nuclear reactor was completed at the site. The reactor was used in molecular and atomic structure research activities until 1970, when it was deactivated. The research reactor was decommissioned under the jurisdiction of the Nuclear Regulatory Commission in 1992 and the structure was demolished in 1994.

In 1987, the Army discovered contamination during a site inspection. EPA placed the site on the Superfund program's National Priorities List (NPL) in 1994.

Site Cleanup

To manage investigations and cleanup, EPA divided the site into three areas, or operable units (OUs). OU1 included most unobstructed soil except for a small area known as Area I near building 131, which was delineated as OU3, and all underlying groundwater contamination. OU2 is a two-mile stretch of the Charles River next to the former Arsenal. OU1 and OU3 cleanup included the removal and off-site disposal of contaminated material, backfilling with clean soil, and institutional controls for OU1 to prevent residential use and exposure to contaminants underneath buildings. Institutional controls were not required for OU3 because soil was cleaned up to residential standards. For OU2, EPA determined after further investigation that no further action was needed.

Prior to cleanup, the town of Watertown formed a Reuse Committee in April 1989 and prepared a reuse planning and feasibility study for the site to identify community impacts from the closure of the Materials Technology Laboratory. The reuse plan, completed in 1993, divided the site into commercial and residential development zones. In January 1994, a Restoration Advisory Board was established to facilitate communication with the community. Restoration Advisory Board members included EPA, the Army, state regulatory officials and community representatives. Between 1991 and 1995, the Army conducted several cleanup activities unrelated to the Superfund process, decommissioning the nuclear reactor in 1994 and addressing interior building surfaces.





EPA selected the final remedies for OU1 and OU3 in the site's 1996 Record of Decision. Recognizing the community's redevelopment priorities, EPA took the site's reuse plan into account during cleanup planning. To do this, EPA divided OU1 into reuse zones. Zones 1, 2 and



Figure 3. The former West Timber Storehouse was built in 1851. It is the oldest structure in the Arsenal on the Charles complex and currently occupied by office space, Bright Horizons and athenahealth.



Legend

-  Materials Technology Laboratory (USARMY) site
-  ① Arsenal on the Charles Complex
-  ② Commander's Mansion
-  ③ Squibnocket Park

0 200 400 800
Feet

Sources: Google, Esri, DeLorme, AND, Tele Atlas, First American, UNEP-WCMC and USGS.

Figure 4. Site layout.

4 (Commander's Mansion) were designated as commercial areas and open space. Zone 3 was designated as a residential area. Zone 5 included undeveloped land that would later become Squibnocket Park. Soil cleanup was expedited in OU3 to enable residential reuse. The remedial action for OU1 (except for Zone 5) and OU3 finished in 1998. In November 1999, EPA took 36.6 acres of the site off the NPL.

While OU1 and OU3 cleanup efforts were ongoing, the community established the Watertown Arsenal Development Corporation (WADC) in May 1997. The WADC prepared an economic development plan for the Arsenal properties. In August 1998, the Army sold 29.4 acres of the site to the WADC for \$7.6 million and transferred another 7.2 acres to the town of Watertown. The WADC parcel was sold to O'Neill Properties in the summer of 1998 for about \$24 million. This included \$1 million for the construction of an arts center and \$955,000 for the renovation of the town-owned Commander's Mansion property. The developer also agreed to provide space for the arts center and to cover some of its operating costs. O'Neill Properties made a series of major improvements to its property, renovating many of the buildings, roadways and utilities, and adding parking areas. The Arsenal on the Charles was designated as a historic district in 1999. In 2001, following the project's completion, the developer sold the property to Harvard University.

Cleanup activities in Zone 5 in 1997 and 2001 included soil excavation and a clean fill cover. Institutional controls prevent disturbance of the cover. In March 2005, the remaining 11 site acres were transferred to Massachusetts DCR for what would become Squibnocket Park (also known as Charles River Park) and an area leased to the Watertown Yacht Club. At the time of each transfer, the Army issued a "Grant of Environmental Restriction and Easement" to MassDEP. The grant provided a way to put in place and enforce the institutional controls required for these areas. The WADC operated until 2005. EPA took the rest of the site off the NPL in September 2006.

Harvard Publishing owned the Arsenal on the Charles from 2001 to 2013. It operated Harvard Business School Publishing Corporation facilities at the complex. A range of small businesses were also located there during this time.

athenahealth purchased the Arsenal on the Charles complex in May 2013. Since purchasing the property, athenahealth has provided several community amenities at the complex, including a farmer's market and a frisbee golf course, as well running areas for a local cross-country club. athenahealth is currently working on plans for several additions and changes to site facilities, including a walking mall, parking garage and integrated stormwater management system. The company is planning to update utilities along Kingsbury Avenue and connect them to the town's stormwater management system. The project is currently in the design phase. athenahealth is aware of use and construction restrictions at the site and will continue to work with EPA, the Army and MassDEP during all renovation and construction activities.



Figure 5. View of the Charles River from Squibnocket Park.

Beneficial Effects

Today, the site supports a thriving commercial and cultural center that is home to a healthcare provider, an arts center, restaurants, a childcare facility, a fitness center and several other businesses. The site also includes the Commander’s Mansion, Squibnocket Park and the Watertown Yacht Club. This section describes the beneficial effects of these reuses.

Table 1. Site Business/ Economic Information (2016/2017)^a

Federal Facility	Businesses	Total Employees	Total Annual Employment Income	Total Annual Sales	Total Market Value Land & Improvements	Total Property Tax
Army MT Lab	15	2,670	\$377 million	\$505 million	6,210	\$4.5 million
^a See Technical Appendix.						

Arsenal on the Charles Mixed-Use Complex

This 757,244-square-foot facility currently has nine tenants, including the organizations described below.

athenahealth

This business is a leading provider of cloud-based services for electronic health record, practice management and care coordination. It was voted Forbes “Most Innovative Growth Company” and a Deloitte “Fast 500 Company” in 2014 and was recognized as Boston Business Journal’s Best Place to Work in 2015. athenahealth employs 2,300 people at the Watertown location. In 2017, the company provided almost \$360 million in employment income and generated about \$468 million in sales revenue (see Technical Appendix).



Figure 6. The athenahealth building also houses Liaison International, Inc.

Liaison International Inc.

This software company generated over \$15 million in sales revenue. Their focus is higher education admissions and services for colleges. Software services include student application processing and support, enrollment marketing services and consulting and training.



Figure 7. Mosesian Center for the Arts is a non-profit organization.

Mosesian Center for the Arts, Watertown Children’s Theatre and New Repertory Theatre

This 30,000-square-foot community arts center is located in a renovated Arsenal building. The nonprofit Mosesian Center for the Arts is home to the 380-seat Main Stage theater, the 100-seat Black Box theater, exhibition galleries, two rehearsal halls, classrooms and resident artist studios. Offerings include visual and performing arts productions, classes and workshops for all ages, literary/art discussions, and world-class theatrical and musical performances. The Center is home to the award-winning Watertown Children’s

Theatre as well as the New Repertory Theatre. In 2017, the three organizations generated over \$3 million in sales revenue and provided about \$1.1 million in employment income.

Boston Sports Club

This fitness center offers state-of-the-art facilities, exercise programs and personal training. The gym includes a swimming pool, sauna, racquetball court, free weights and exercise classes. In 2017, the facility provided about \$650,000 in employment income. It generated nearly \$4 million in sales revenue.

Bright Horizons Global Headquarters and Childcare Facility

The global headquarters for Bright Horizons Family Solutions is located at the site. The company is a leading provider of early education and preschools, employee-sponsored child care, educational advisory services and other work/life solutions. The Bright Horizons preschool offers infant, toddler, preschool and pre-kindergarten classes. In 2017, the two facilities provided over \$6.3 million in total employment income. Their combined annual sales revenue was about \$11 million.

Commander's Mansion

This 27-room mansion is located on a 7.2-acre parcel owned by the town. It is a historic landmark that is available for meetings and other functions. The mansion was built in 1865 by Major Thomas Rodman, the commanding officer of the Arsenal, for use as his residence. It was placed on the National Registry of Historic Places in 1976. The property was renovated in 1999 with the nearly \$1 million provided by O'Neill Properties and a \$150,000 historic preservation grant from the Massachusetts Historic Commission. The mansion generated \$440,000 in sales revenue in 2017.

Squibnocket Park

This community park is part of a larger green space and bike/pedestrian trail network that runs along the Charles River. Two acres of the 11-acre parcel are leased to the Watertown Yacht Club, a private marina that has been in operation since 1940. The yacht club generated sales revenue of nearly \$140,000 in 2017.



Figure 8. The Boston Sports Club includes a fitness center and Mixstirs, a juice and smoothie bar.



Figure 9. Bright Horizons is located at 200 Talcott Avenue, one of the oldest standing industrial buildings in the Arsenal.



Figure 10. The Commander's Mansion provides space for weddings, special events and meetings.



Figure 11. Walking path and open space in Squibnocket Park.

"It's hard to believe this once abandoned and contaminated campus is now the beautiful headquarters of athenahealth, and we are not done with improvements. Our plans include a master development plan that will improve the infrastructure and green space as well as add retail businesses, making the Arsenal a wonderful place for the entire community to enjoy."

- Mark Blair, Executive Director, athenaEnvironment, athenahealth, Inc.

Property Values and Tax Revenues

On-site properties help generate property tax revenues that support local government and public services. Today, site properties have a combined value of over \$187 million. In 2017, site properties generated over \$4.5 million in total property tax revenues. Some on-site businesses also generate tax revenues through the collection of sales taxes, which support state and local governments.¹



Figure 12. From left to right: Entrance sign on North Beacon Street, historic building at 343 Arsenal Street, community garden facilitated by athenahealth.

Conclusion

The Materials Technology Laboratory site illustrates how Superfund cleanup and redevelopment can provide multiple benefits to a wide range of stakeholders. The successful cleanup protects public health while preserving the rich history of the area, including historic buildings and infrastructure. Continued redevelopment at the site enables businesses and services to respond to community priorities, enhancing cultural resources and quality of life in the area. Cleanup and redevelopment was made possible by cooperation among a diverse group of stakeholders, including EPA, the Army, the town of Watertown, MassDEP, Massachusetts DCR and property owners, including current property owner athenahealth. At Superfund sites across the country, such collaborative relationships help ensure the protectiveness and stewardship of site remedies as well as communities' economic vitality over the long term.

*For more information about EPA's Superfund Redevelopment Initiative, visit:
<https://www.epa.gov/superfund-redevelopment-initiative>.*

¹ The Massachusetts sales tax rate is 6.25 percent. There are no state or county sales taxes in Watertown. For more information, see <http://www.mass.gov/dor/all-taxes/sales-and-use>.



In May 2017, Administrator Scott Pruitt established a task force to restore EPA's Superfund program to its rightful place at the center of the Agency's core mission to protect health and the environment.

<https://www.epa.gov/superfund/superfund-task-force>



www.epa.gov

Reuse and the Benefit to Community Materials Technology Laboratory (U.S. Army) Superfund Site

Technical Appendix

Employment Information for On-Site Jobs

EPA obtained the data included in this appendix directly from reputable sources and reported the data as presented by those sources. Information on the number of employees and sales volume for on-site businesses came from the Hoovers/Dun & Bradstreet ([D&B](#)) database.¹ EPA also gathered information on businesses and corporations from D&B. D&B maintains a database of over 225 million active and inactive businesses worldwide.

When Hoovers/D&B database research was unable to identify employment and sales volume for on-site businesses, EPA used the ReferenceUSA database.² These databases include data reported by businesses. Accordingly, some reported values might be underestimates or overestimates. In some instances, business and employment information came from discussions with business representatives. While sales values typically exceed estimated totals of annual income, sales can sometimes be lower than estimated income. This could be attributed to a number of business conditions and/or data reporting.

Wage and Income Information for On-Site Jobs

EPA obtained wage and income information from the U.S. Bureau of Labor Statistics (BLS). Part of the U.S. Department of Labor, the BLS is the principal federal agency responsible for measuring labor market activity, working conditions and price changes in the economy. All BLS data meet high standards of accuracy, statistical quality and impartiality.

EPA used the BLS Quarterly Census of Employment and Wages database to obtain average weekly wage data for businesses at the Materials Technology Laboratory Superfund site. Average weekly wage data were identified by matching the North American Industry Classification System (NAICS) codes for each type of business with weekly wage data for corresponding businesses in Middlesex County. If weekly wage data were not available at the county level, EPA sought wage data by state or national level, respectively. In cases where wage data were not available for the six-digit NAICS code, EPA used higher-level (less-detailed) NAICS codes to obtain the wage data.

To determine the annual wages (mean annual) earned from jobs generated by each of the selected businesses at the Materials Technology Laboratory (U.S. Army) Superfund site, EPA multiplied the average weekly wage figure by the number of weeks in a year (52) and by the number of jobs (employees) for each business.

¹ <http://www.dnb.com>

² <http://resource.referenceusa.com>

Table 1. Materials Technology Laboratory (U.S. Army) Superfund Site: Information for On-Site Organizations and Businesses

On-Site Business	NAICS Code ^a	NAICS Title	Number of Employees ^b	Average Weekly Wage (2016) ^c	Annual Wage (Mean Annual) per Employee	Total Annual Income ^d	Annual Sales (2016) ^b
athenahealth, Inc.	511210	Software Publishers	2,300 ^e	\$3,009	\$156,468	\$359,876,400	\$468,237,511 ^f
Branch Line Restaurant	722511	Full-Service Restaurants	8	\$457	\$23,764	\$190,112	\$116,120 ^g
Bright Horizons Children's Centers LLC	624410	Child Day Care Services	27	\$538	\$27,976	\$755,352	\$1,229,000 ^h
Bright Horizons Family Solutions, Inc.	624410	Child Day Care Services	200 ^h	\$538	\$27,976	\$5,595,200	\$10,064,103 ^f
Kennedy Brothers Physical Therapy	621340	Offices of Physical, Occupational and Speech Therapists, and Audiologists	2	\$881	\$45,812	\$91,624	\$100,000
La Casa De Pedro, Inc.	722511	Full-Service Restaurants	4	\$457	\$23,764	\$95,056	\$343,060
Liaison International, Inc.	541511	Custom Computer Programming Services	50	\$2,769	\$143,988	\$7,199,400	\$15,620,000
Mixstirs	445230	Fruit & Vegetable Markets	3 ^h	\$727	\$37,804	\$113,412	\$465,000 ^h
New Repertory Theatre Inc	711410	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	7	\$1,692	\$87,984	\$615,888	\$2,020,000
PR Restaurants, LLC	722511	Full-Service Restaurants	24	\$457	\$23,764	\$570,336	\$1,901,000 ^h
The Dorothy and Charles Mosesian Center for the Arts, Inc.	711190	Other Performing Arts Companies	5	\$1,540	\$80,080	\$400,400	\$865,900
Town of Watertown - Commanders Mansion	921110	Executive Offices	2	\$1,329	\$69,108	\$138,216	\$441,000 ^h

On-Site Business	NAICS Code ^a	NAICS Title	Number of Employees ^b	Average Weekly Wage (2016) ^c	Annual Wage (Mean Annual) per Employee	Total Annual Income ^d	Annual Sales (2016) ^b
Town Sports International, Inc. - Boston Sports Club	713940	Fitness and Recreational Sports Centers	34	\$368	\$19,136	\$650,624	\$3,754,000 ^h
Watertown Children's Theatre	711310	Promoters of Performing Arts, Sports, and Similar Events with Facilities	3	\$777	\$40,404	\$121,212	\$177,500
Watertown Yacht Club, Inc.	713990	All Other Amusement and Recreation Industries	1	\$388	\$20,176	\$20,176	\$139,300
Total			2,670			\$376,433,408	\$505,473,494

^a NAICS code provided in the D&B database, unless otherwise noted.

^b Data are from the D&B database, unless otherwise noted.

^c Average weekly wage per employee based on BLS 2016 Average Weekly Wage data.

^d Total annual income figures derived by multiplying "Number of Employees" by "Annual Wage (Mean Annual) per Employee."

^e Employee number provided by athenahealth representative in September 2017.

^f Annual sales value calculated using the "Sales Per Employee" method. In cases where information sources do not provide annual sales data, an estimated annual sales value was calculated using the "Sales Per Employee Method." This method involves dividing the company-wide sales value by the number of employees that work at all branches of the business. That value equals an estimated business sales value per employee for the entire company. That value is then multiplied by the number of employees at the on-site business location to calculate an estimated annual sales value for the site-specific business location.

^g While sales values typically exceed estimated totals of annual employee income, annual reported sales can sometimes be lower than estimated annual income. This atypical condition of estimated income exceeding sales can be a result of business conditions, estimated business wages not accurately reflecting actual wages for the site-specific business, annual sales being under-reported, a business loss for the year or a combination of those factors.

^h Data are from the ReferenceUSA database.

Property Values and Local Tax Revenue Generated from Property Taxes

EPA obtained data on the most recently assessed values for property parcels at the Materials Technology Laboratory (U.S. Army) Superfund site in August 2017 through property records accessible through Watertown's online property appraisal database.³ EPA also calculated the 2017 property tax values for the site parcels based on the municipality's 2017 tax rates.⁴

Table 2. Property Value and Tax Summary for Taxes Payable in 2017

Parcel ID No.	Acreage	Total Assessed Value of Land and Improvements (2017)	Total Property Tax (2017)
1301 1 2	6.4	\$7,973,600	\$0
1401 0 0	7.1	\$1,241,300	\$0
1301 1 1	28.8	\$178,177,700	\$4,511,459
Total	42.3	\$187,392,600	\$4,511,459

³ <https://www.mapsonline.net/watertownma/index.html>

⁴ <http://www.watertown-ma.gov/index.aspx?NID=63>