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Reuse and the Benefit to Community

Iron Horse Park Superfund Site

Introduction

The Iron Horse Park Superfund site has been a hub of industrial and rail-related business since 1911. Today, it is also a leading example of contaminated-site revitalization and transformation. Decades of improper handling of materials and waste disposal practices impacted soil, sediment, groundwater and surface water. Collaboration among EPA, the Massachusetts Department of Environmental Protection (MassDEP), the town of Billerica and site stakeholders allowed for the continued use of the site during cleanup. Additional collaboration with renewable energy developer Urban Green Technologies (UGT) and other stakeholders facilitated the development of solar power infrastructure at the site.

Coordination of cleanup activities to minimize disruption to businesses as well as an innovative solar power project on top of a capped landfill illustrate how Superfund cleanups can generate lasting economic benefits for communities. Today, nine new and long-time businesses operate at the site, while the site's three solar power installations are an important local energy resource.

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 Iron Horse Park area's cleanup and reuse, illustrating the beneficial effects of Superfund redevelopment.

Figure 1. Sign and solar panels at the entrance to the Iron Horse Park site.

Beneficial Effects

- **Three solar projects, with a total capacity of 16 megawatts, provide power to four school systems and the local government.**
- **Nine commercial and industrial businesses are currently active at the site. In 2016, they generated over $57.1 million in annual sales.**
- **Site businesses employ over 350 people, providing annual employment income of $21.3 million to the local community.**
- **In 2017, site property parcels have a total property value of nearly $21.2 million and will generate over $360,000 in tax revenues.**

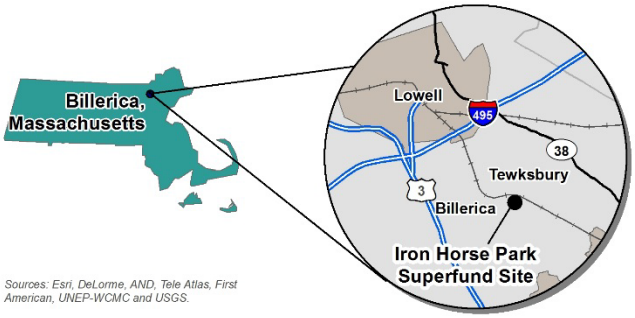

Figure 2. Site location in Billerica, Massachusetts.

Site History

This 553-acre industrial complex is located near where Billerica borders the neighboring town of Tewksbury. It includes manufacturing, railyard maintenance, and storage facilities as well as wetlands. Middlesex Canal, a 27-mile waterway that dates to the 1800s, extends across the site (Figure 3). Residential areas and wetlands surround the area.

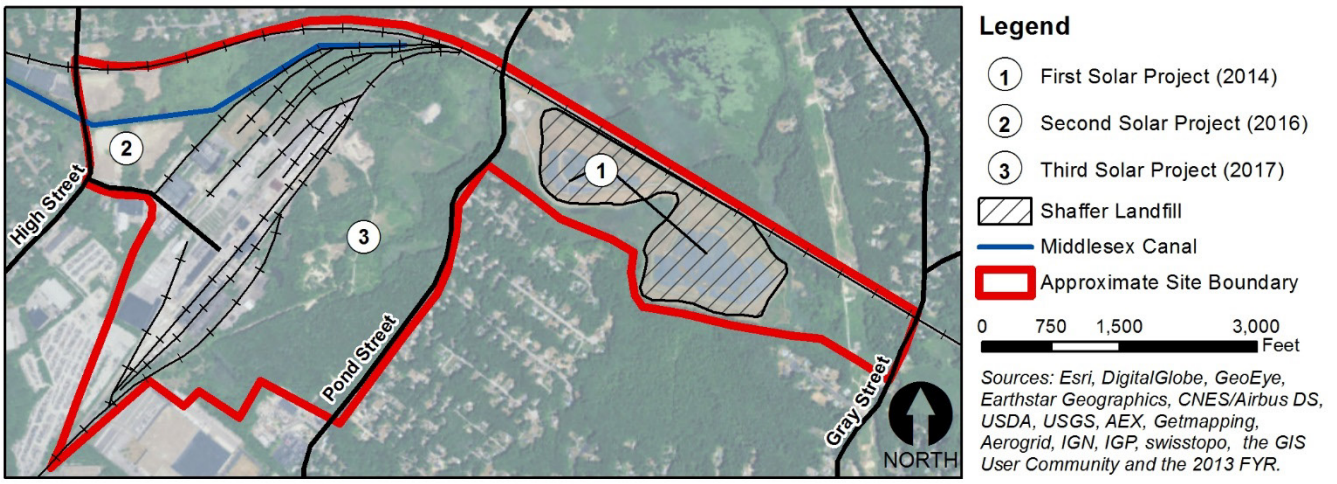

Figure 3. Iron Horse Park site features.

Industrial activities at the site, including manufacturing and railyard maintenance, began in the early 1900s. Boston and Maine Railroad first purchased the land in 1911, and sold or leased parcels and buildings to companies over time. The company operated an oil and sludge recycling area on part of the property in the late 1930s. Firms operating on site disposed of industrial and sanitary wastewater as well as stormwater in lagoons on site. Periodically, they dredged these lagoons and placed the dredged material in adjacent stockpiles.

In 1944, Johns-Manville Products Corporation purchased 70 acres of the site for the manufacture of structural insulating board containing asbestos. The firm also generated asbestos sludge and other asbestos mill wastes, which it disposed of in landfills on site.

Figure 4. Workers at the Boston and Maine railroad shops dismantled a railroad wrecking crane in this 1942 photo.

Improper materials handling and waste disposal practices contaminated site soil, sediment, groundwater and surface water with heavy metals, polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs). In 1984, EPA conducted a short-term cleanup and capped a 13.3-acre asbestos landfill. EPA then investigated additional areas of contamination in the industrial park and Shaffer Landfill, and placed the site on Superfund program's National Priorities List (NPL) later that year.

Site Cleanup and Transformation

To manage the cleanup, EPA divided the Iron Horse Park site into four areas, or operable units (OUs). These OUs include the Boston and Maine wastewater lagoons, a 15-acre former wastewater lagoon area (OU1); Shaffer Landfill, a 60-acre landfill on the southeast side of the site (OU2); and remaining source areas (OU3). EPA later created OU4 to address site-wide surface water, sediment and groundwater not addressed as part of the other OUs.

Each OU has been addressed separately. EPA selected cleanup plans for OUs 1 through 4 in records of decision in 1988, 1991, 2004 and 2011, respectively. Cleanup activities included the removal of contaminated soil, sediment and soil treatment, landfill closure and capping, marsh restoration, and construction of new wetland habitat.

Today, remedy construction for OUs 1, 2 and 3 is mostly complete. At OU1, discharges to the lagoons ended in 1992. Cleanup involved the excavation and off-site treatment of contaminated soil and sediment. At OU2, Shaffer Landfill stopped accepting waste in 1986. EPA, MassDEP and a group of potentially responsible parties reached an agreement to clean up Shaffer Landfill in 2000. Landfill capping finished in 2003. Maintenance of the landfill remedy includes gas collection and flare system monitoring, groundwater monitoring, leachate collection, and institutional controls. The remedy for OU3 included capping of several landfills, institutional controls and groundwater monitoring. In 2017, EPA will conduct the final inspection of two landfills in OU3 as well as the sampling necessary to complete the remedy design for OU4. Long-term groundwater monitoring is ongoing.

Figure 5. Slope grading on Shaffer Landfill.

Figure 6. Construction of the cap over Shaffer Landfill.

Throughout the cleanup process, industrial and railroad-related businesses have continued to operate on site. Cleanup activities have generally been focused on areas away from industrial park facilities and have not disrupted ongoing business operations at the site.

In addition to allowing for continued industrial use, the cleanup has incorporated reuse planning efforts. EPA coordinated with prospective purchasers and developers to facilitate industrial and solar development. First, during the finalization of the record of decision for OU3, lumber wholesaler Cooperative Reserve Supply expressed interest in purchasing property and integrating remedy construction as part of its development efforts. EPA coordinated with the firm, sharing information about requirements for capping the contaminated area. EPA issued a prospective purchaser agreement to the firm to address liability concerns.

Figure 7. Wetlands restoration area adjacent to Shaffer Landfill.

Protecting Purchasers from Future Liability

Prospective purchaser agreements played an important role in enabling the site's redevelopment. Nationally, EPA has taken additional steps to make the acquisition and redevelopment of Superfund sites easier for prospective purchasers. Under the Brownfields Revitalization Act, a prospective purchaser need no longer negotiate an agreement with EPA. In lieu of a signed agreement, the purchaser can meet requirements to become a bona fide prospective purchaser. For more information about these requirements, see https://www.epa.gov/enforcement/bona-fide-prospective-purchasers.

EPA also coordinated with developers on plans to support energy infrastructure at the site. While Shaffer Landfill was not developable for conventional uses, it drew the attention of alternative energy developer UGT as a potential location for solar power infrastructure. EPA worked with UGT on plans that would maximize use of the available land, account for the landfill's steep slopes, and ensure the integrity of the landfill cap. EPA determined that installation of a large solar array would not require substantial modifications to the landfill. Resulting plans had strong support from the town of Billerica, MassDEP, and National Grid, the electric utility.

Following the plan's approval in 2012, UGT began construction of the 6-megawatt, 25-acre array in 2013. To account for the landfill's steep slopes, UGT installed the array's 20,000 panels in small sub-arrays rather than one large installation. To ensure the integrity of the cap, UGT installed the panels on ballasted racks instead of a more traditional rack system that would pierce the cap. EPA provided project developers with a comfort letter indicating that they had submitted plans to EPA and were coordinating development with the Agency. In addition, the letter provided the developers with EPA statutory and policy information to help them make informed decisions and facilitate the reuse of the property.

Figure 8. Completed solar panel array near the Iron Horse Park entrance.

Since project construction finished in 2014, two additional solar projects have followed. The second was a 4-megawatt array located near the entrance to the Iron Horse Park facility. Completed in 2017, the third project is partially located on top of a former asbestos landfill. Through a virtual net metering agreement, the 6-megawatt project will provide the energy for four school systems and the local government.[1]

[1] Solar Power World. Massachusetts schools, town cut costs with brownfield solar project. February 23, 2017. Accessed at: http://www.solarpowerworldonline.com/2017/02/massachusetts-schools-town-cut-costs-brownfield-solar-project.

Local Impacts

Today, the Iron Horse Park site supports a busy industrial complex and a solar energy facility. The site's railroad heritage also lives on; materials are offloaded from the rail line, stored and transferred to trucking operations. In addition, on-site wetlands have been created and restored. This section describes the beneficial effects of the continued use and reuse at the site.

Pan Am Railways

Pan Am Railways is a successor to the original site operator, Boston and Maine, which Pan Am purchased when it went bankrupt in 1983. This freight rail operation provides services throughout the Northeast. With three subsidiaries that operate on site – Maine Central Railroad Company, Boston and Maine Corporation and Springfield Terminal Railway Company – the firm employs over 300 people, contributes $16.5 million in estimated annual employment income and generates $37.5 million in estimated annual sales.

Figure 9. Pan Am Railways facility.

Cooperative Reserve Supply

This lumber wholesaler contributes over $1 million in estimated annual employment income and generates nearly $11.4 million in estimated annual sales.

Figure 10. Cooperative Reserve Supply facility.

Atlantic Forest Products

This wholesale building material manufacturer has six East Coast locations.[2] The Billerica location generates $2.5 million in estimated annual sales.

Figure 11. Shaffer Landfill, adjacent to the railroad.

Forest Technology Sales

This lumber wholesaler contributes over $554,000 in estimated annual employment income and generates $900,000 in estimated annual sales.

Greater Boston Transload

Business and employment data were not available for this freight trucking company.

Sanford Contracting

This structural steel and pre-cast concrete contractor contributes nearly $3.2 million in estimated annual employment income and generates about $4.9 million in estimated annual sales.

Figure 12. Middlesex Canal signage.

[2] http://www.atlanticforest.com/locations/billerica-ma.

Success of Solar Power

EPA, UGT and the town of Billerica held a ceremony marking the completion of the first of Iron Horse Park's three solar projects in August 2014. The project has yielded several economic benefits for the community, including energy savings, jobs and tax revenues. Under a payment in lieu of taxes agreement with the town of Billerica, UGT will contribute nearly $3 million in property taxes over 25 years. UGT also agreed to pay $400,000 in unpaid taxes owed on the site. The project created an estimated 50 jobs during construction. Combined with construction of two subsequent arrays on the site, the total on-site solar capacity is now 16 megawatts. Construction of the solar infrastructure also included improvements to wetland habitat and Middlesex Canal streambanks.

Why Are Wetlands Economically Important?

Wetlands provide a wide variety of benefits, including flood control, water quality improvement, fish and wildlife habitat, and recreation amenities. Replacing the water treatment services they provide with manmade facilities would be expensive. Worldwide, wetlands are estimated to provide $14.9 trillion in ecosystem services. To learn more, see EPA's Economic Benefits of Wetlands fact sheet at https://www.epa.gov/sites/production/files/2016-02/documents/economicbenefits.pdf.

Figure 13. Wetlands at the site.

Property Values and Property Tax

Properties cleaned up under the Superfund program and kept in use provide tax revenues for local municipalities, providing funding for public services such as schools, local government operations and transit. The 2017 value of land and improvements at the Iron Horse Park site was $21.2 million. The properties contributed $362,000 in annual property taxes. On-site businesses also generate tax revenues through the collection of sales taxes, which support state and local governments.[3]

Conclusion

Coordination of cleanup at the Iron Horse Park site has minimized potential impacts of remedial activities on ongoing business operations, supporting continued economic activity. Collaboration among EPA, MassDEP, the town of Billerica and other site stakeholders resulted in a cleanup approach that protects public health and the environment and supports the reuse of capped landfills to support solar energy production. Looking forward, collaboration among EPA and other stakeholders will ensure that this Superfund cleanup continues to yield valuable benefits for the Billerica community.

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

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

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.[4] 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 the Hoovers/D&B database lacked employment and sales volume for on-site businesses, EPA used the Manta database.[5]

These databases include data reported by businesses. Accordingly, some reported values might be underestimates or overestimates.

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 Iron Horse Park 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 Iron Horse Park 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.

[4] http://www.dnb.com/
[5] https://www.manta.com/ 398736

Table 1. Iron Horse Park Superfund Site: Information for On-site Businesses

On-site Business	NAICS Code[a]	NAICS Title	Number of Employees[b]	Average Weekly Wage (2015)[c]	Annual Wage (Mean Annual) per Employee	Total Annual Income[d]	Annual Sales (2016)[b]
Atlantic Forest Products LLC	444110	Home Centers	1	$683	$35,516	$35,516	$2,500,000[e]
Boston & Maine Corp.	333120	Construction Machinery Manufacturing	200	$1,139	$59,228	$11,845,600	$29,937,500[f]
Cooperative Reserve Supply, Inc.	423310	Lumber, Plywood, Millwork and Wood Panel Merchant Wholesalers	15	$1,332	$69,264	$1,038,960	$11,370,000
Forest Technology Sales, Inc.	423310	Lumber, Plywood, Millwork and Wood Panel Merchant Wholesalers	8	$1,332	$69,264	$554,112	$900,000
Greater Boston Transload	484121[g]	General Freight Trucking, Long-Distance, Truckload	NA	NA	NA	NA	NA
Maine Central Railroad Company	482111	Line-Haul Railroads	70	$852	$44,304	$3,101,280	$4,236,061[f]
Pan Am Railways, Inc.	482111	Line-Haul Railroads	9	$852	$44,304	$398,736	$1,941,480[f]
Sanford Contracting, Inc.	238120	Structural Steel and Precast Concrete Contractors	30	$2,041	$106,132	$3,183,960	$4,870,000
Springfield Terminal Railway Co.	482111	Line-Haul Railroads	25	$852	$44,304	$1,107,600	$1,386,500[f]
Total			**358**			**$21,265,764**	**$57,141,541**

[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 2015 Average Weekly Wage data.

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

[e] Data are from the Manta website.

[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 business. 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] NAICS code assumed based on business type.

NA = Not available.

Property Values and Local Tax Revenue Generated from Property Taxes

EPA obtained data on the most recently assessed values for property parcels at the Iron Horse Park Superfund site in February 2017 through property records accessible through the town of Billerica's online property appraisal database.[6] EPA also calculated property tax for the site parcels based on rates available on the town of Billerica's website.[7]

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

Parcel ID No.	Total Assessed Value of Land and Improvements (2017)	Total Property Tax (2017)
RAIL_ROW	[no record]	Not available
RAIL_ROW	[no record]	Not available
16-119-0	$555,400.00	$18,572.58
16-132-0	$2,656,000.00	$88,816.64
16-43-0	$1,947,500.00	$65,124.40
17-1-1	$1,342,900.00	$44,906.58
17-1-2	$137,900.00	Not available
17-2-1	[no record]	Not available
17-2-2	$1,182,600.00	Not available
17-43-1	$368,800.00	$12,332.67
18-19-1	$8,088,400.00	Not available
23-34-3-2	$443,100.00	Not available
23-34-4	$3,801,700.00	$127,128.85
24-185-0	$72,900.00	Not available
24-200-0	$242,000.00	Not available
26-119-0	$347,600.00	$4,897.68
Total	**$21,186,800**	**$361,779**

[6] http://billerica.patriotproperties.com/search.asp

[7] http://billerica.patriotproperties.com/default.asp