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Via Hand Delivery

December 21, 2007

S. Derek Phelps
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: **Petition No. 831 - Petition of Waterbury Generation LLC for a Declaratory Ruling for the Construction of an Electric Generating Facility and Associated Transmission Line Tap in Waterbury, Connecticut**

Dear Mr. Phelps:

On behalf of Waterbury Generation LLC ("WatGen"), enclosed are the following three exhibits for inclusion in the record of the above-referenced proceeding:

1. Federal Aviation Administration (FAA) Determination of No Hazard to Air Navigation;

2. Documentation of Historical Industrial Activities at the Ansonia Copper and Brass facility, which was submitted to the State Historic Preservation Officer; and

3. A memorandum summarizing the results of the wetland survey of the proposed transmission line route.

Please feel free to contact me if you have any questions or require additional information. Thank you.

Sincerely,

Joey Lee Miranda

Enclosures

Copy to: Parties and Intervenors of Record

E00115

Federal Aviation Administration
Air Traffic Airspace Branch, ASW-520
2601 Meacham Blvd.
Fort Worth, TX 76137-0520

Aeronautical Study No.
2007-ANE-1639-OE

Issued Date: 10/10/2007

JOHN CAMPBELL PROJECT MGR
WATERBURY GENERATION LLC
C/O FIRST LIGHT POWER RESOURCES SVCS LLC
20 CHURCH STREET
HARTFORD, CT 06103

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Chimney
Location:	WATERBURY, CT
Latitude:	41-32-40.00 N NAD 83
Longitude:	73-2-31.00 W
Heights:	213 feet above ground level (AGL) 475 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

As a condition to this Determination, the structure is marked and/or lighted in accordance with FAA Advisory circular 70/7460-1 K Change 2, Obstruction Marking and Lighting, paint/red lights - Chapters 3(Marked),4,5(Red),&12.

It is required that the enclosed FAA Form 7460-2, Notice of Actual Construction or Alteration, be completed and returned to this office any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part I)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part II)

This determination expires on 04/10/2009 unless:

(a) extended, revised or terminated by the issuing office.
(b) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE POSTMARKED OR DELIVERED TO THIS OFFICE AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission if the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (847) 294 7575. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2007-ANE-1639-OE.

Signature Control No: 537098-100754402 (DNE)
Vivian Vilaro
Technician

7460-2 Attached

FirstLight Power Resources

One Corporate Center
20 Church Street, 16th Floor
Hartford, CT 06103
(860) 895-6900

December 11, 2007

Ms. Karen Senich
Deputy State Historic Preservation Officer
Connecticut Commission on Culture and Tourism
State Historic Preservation Office
59 South Prospect Street
Hartford, CT 06106

RE: ***Documentation of Historical Industrial Activities at the Ansonia Copper and Brass (Holmes, Booth and Haydens Brass Works) facility, Waterbury Generation LLC, 725 Bank Street, Waterbury, CT***

Dear Ms. Senich,

In accordance with your September 18, 2007 request, FirstLight Power Resources Services, LLC as agent for Waterbury Generation, LLC is submitting the attached report prepared by Raber Associates which documents the history and operations of the Ansonia Copper and Brass facility to the professional standards of your office. This report is provided to SHPO for permanent archiving and public accessibility.

Please call Cynthia Vodopivec at (860) 895-6961 with any questions.

Best Regards,

John P. Campbell

John P. Campbell
Sr. Vice President – Asset Operations

Attachment

RABER ASSOCIATES
CONSULTANTS IN THE HISTORICAL AND SOCIAL SCIENCES

DOCUMENTATION

OF

ANSONIA COPPER AND BRASS, INC., PLANT

WATERBURY, CONNECTICUT

Michael S. Raber

Robert B. Gordon

prepared for:
FirstLight Power Resources Services, LLC
20 Church Street, 16th Floor
Hartford, CT 06103

December 2007

81 Dayton Road • • P.O. Box 46
South Glastonbury • • CT 06073
(860) 633-9026 (voice/fax)/msraber@aol.com (e-mail)

DOCUMENTATION OF ANSONIA COPPER & BRASS COMPANY, INC., PLANT

FORMER HOLMES, BOOTH & HAYDENS COMPANY PLANT

Location:	725 Bank Street, Waterbury, CT
U.S. Geological Survey Quadrangle: UTM Coordinates	Waterbury, Conn. 18.663313.4600942
Dates of Construction & Modification:	First built by Holmes, Booth & Haydens c1853-1854, with casting, rolling, and manufacturing facilities. Partly burned 1880, immediately rebuilt on slightly larger scale. Additional Homes, Booth & Haydens expansion c1885-1900 included seamless tube mill & casting house. As part of American Brass Company, storage, casting, and garage buildings added c1912-1915. Most of plant heavily rebuilt c1917 for production of seamless tubing and artillery disc blanks. Pollution control facilities added c1971-1986.
2007 Use:	Production of large-diameter seamless brass tubing.
Significance:	Although primarily a World War I structure with equipment probably installed after 1930, the Ansonia Copper & Brass plant retains the scale of an integrated 19th-century brass mill better than most other extant plants in the Naugatuck Valley, and has part of the original plant's c1853 casting house/foundry and c1880-1886 factories for lamp-burner manufacture. The c1917 components are also well-preserved examples of the steel-framed, sawtooth-roofed mills erected quickly to meet World War I demands.
Project Information:	FirstLight Power Resources Services, LLC, in association with Waterbury Generation LLC, proposed to construct a gas-powered simple-cycle peaking electric power plant at the south end of the plant property, largely within a parking lot adjacent to the main mill with control room and power control modules to be located within mostly-vacant interior manufacturing space. The project requires approval from the Connecticut Department of Environmental Protection and the Connecticut Siting Council, and is subject to review by the Connecticut State Historic Preservation Office (SHPO)[1] SHPO noted that the existing brass mill is eligible for the National Register of Historic Places, and that project development would affect the historic integrity of the complex. Project effects on visible mill components will include removal of a small frame office along the interior south wall, erection of a fence inside the mill, installation of some power plant equipment inside the mill, and construction of equipment south of the mill which will obscure the south façade. To avoid adverse project effects, SHPO requested documentation of the plant to SHPO standards, as well as possible archaeological investigations which if necessary will be addressed in a separate document.

Project Manager, Author and Photographer
Michael S. Raber
Raber Associates
81 Dayton Road, P.O. Box 46
South Glastonbury, CT 06073
860/633-9026

Industrial Historian and Author
Robert B. Gordon
55 South Fair Street
Guilford, CT 06437
203/453-3925

[1] Connecticut Environmental Policy Act and Connecticut General Statutes 221-90(1)(J); Section 16-50p(a)(2) of the Public Utilities Environmental Standards Act (PUESA).

HISTORICAL INFORMATION

The present Large Diameter Tube Mill of Ansonia Copper & Brass, Inc. in Waterbury, Connecticut began as the Holmes, Booth & Haydens Company's brass mill. Through a succession of mergers and reorganizations it was subsequently operated by Benedict & Burnham, the American Brass Company, the Anaconda American Brass Company, ARCO Metals, and finally by Ansonia Copper & Brass. The surviving physical plant includes segments built by Holmes, Booth & Haydens c1853-1900, and by Benedict & Burnham as a branch of the American Brass Company c1912-17. Most of the surviving equipment appears to have been installed by the American Brass Company in the mid-twentieth century. Although primarily a World War I-era mill structure, the plant retains the scale of an integrated 19th-century brass mill better than most other extant plants in the Naugatuck Valley, and is also significant as a well-preserved example of the steel-framed, sawtooth-roofed mills erected quickly to meet World War I demands. In 2007 the mill manufactured seamless copper and copper alloy tubing (Figure 1; Roth *et al.*).

Holmes, Booth & Haydens, 1853-1905

Organization and Initial Owners

This firm was organized in 1853, when Waterbury's brass industry was growing rapidly from its 1830s origins and benefiting from the 1849 opening of the Naugatuck Railroad. The railroad linked Waterbury to Bridgeport and regional rail and water transportation networks, reducing transport costs for raw materials, finished products, and fuel. Rail transport was probably an important factor in the decisions of the firm's organizers, who built their plant south and west of the Naugatuck River, on both sides of the railroad. Unlike all earlier Waterbury brass companies, Holmes, Booth & Haydens never used waterpower to run its rolling mills, relying instead on steam engines fueled by coal or wood (Judd: 26).

The incorporators were Israel Holmes (president and rolling mill superintendent), John C. Booth (secretary and treasurer), Hiram W. Hayden (manufacturing), Henry H. Hayden (sales) and Henry Hotchkiss, who contributed capital and did not participate in the management of the firm. James A. Hayden later joined the company. The initial capital of $110,000 was soon increased to $400,000, very large sums by contemporary capitalization standards of Connecticut corporations. HB&H was organized for casting, rolling, and drawing brass and copper, primarily in sheet and wire form. It produced semi-finished brass and copper for sale to other manufacturers and for use its own use in making fabricated products (Anderson II: 352-3; Judd: 29; Bucki: 14).

The men associated with HB&H brought technical and business expertise as well as product innovation to the firm. Israel Holmes commenced work in the brass business with the Scovilles in 1820. He brought workers and machinery from England to initiate production of wire and tubing in the U.S. He started the Holmes & Hotchkiss firm making these products in 1826. Holmes went to England in 1829 to recruit die sinkers, and in 1831 to recruit a caster, roller, and wire drawer (Bucki). He joined as a partner in the Walcottville Brass Company in 1834. Rolling of nickel silver in the United States began about 1836, probably in Walcottville (now Torrington). In 1845 Holmes became president of the Waterbury Brass Company on East Main Street, which built a rolling mill on the Mad River. In 1869, after sixteen years with HB&H, Holmes left to join the newly-formed Plume & Atwood Company in Thomaston (Lathrop: 54).

Hiram W. Hayden was an inventor with numerous patents. He developed the technique for making brass kettles by spinning rather than by hammering in 1851 while working at the Wolcottville Brass Company (Figure 2; Coe). He designed a breech loading rifle, and machinery for making seamless brass tubing. His interest in photography was probably responsible for HB&H's entry into production of Daguerreotype plates, cameras, lens, and other photographic equipment.

H. S. Chase is an example of how HB&H nurtured new talent. Chase, who served an apprenticeship at HB&H, later founded the Chase Brass Company. Chase Brass built a new mill at the north end of the city in 1910, and remained a major factor in the Waterbury brass industry for decades.

Products, Scale of Operations, and Later Corporate History

From its earliest years, HB&H entered newly-emerging consumer and commercial markets in addition to producing traditional brass mill products. The firm soon brought a French expert on photography, August Brassart, to the United States to supervise production of Daguerreotype plates, which were made of silver-plated copper. By c1854, HB&H developed the then-new technique of making Daguerreotype plates by planishing as an alternative to the older method of first rolling the plates and then polishing them to the requisite smoothness. The planishing technique used a stand of smooth rolls set to make a very slight reduction in the thickness in the last rolling pass. This technique produced the smooth surface required for photographs more rapidly and cheaply than could be attained by polishing. Daguerreotype plates remained a company specialty until c1869. The firm also made brass Daguerreotype lenses (Judd: 28; Box Cameras.com).

Beginning in 1866, HB&H became one of the first American producers of German silver in the United States. German silver is an alloy of copper (52-80%), zinc (10-15%) and nickel (5-35%). It has the appearance of silver because nickel is a powerful coloring agent when added to copper, but is more susceptible than silver to discoloration in acid environments. Hence it is usually electroplated with silver for domestic service. HB&H used it as the base metal for the silver-plated tableware that the firm manufactured until 1886, when it sold this part of its business (Judd: 28).

The firm became a large maker of oil lamps and burners at the time American households were adopting kerosene in place of whale oil as lamp fuel for illumination (Figure 3). Beginning c1881, HB&H made lamps adapted to electricity, and wire for the distribution of electric power. In 1890, an integrated copper wire mill was added as part of the transition to electrical products (Judd: 28).

The scale of the HB&H operations is shown by its production in 1884 of 4.7 million pounds of sheet, wire, and brazed tubing, or slightly more than ten percent of the total U.S. production of 40.4 million pounds of these products (Lathrop: 129). In 1895 HB&H employed 1,012 hands, second in the Waterbury brass industry only to the Scoville Company with 1,600 employed, and manufactured almost 19% of the brazed tubing made in the United States (Lathrop: 141; Bucki: 23).

Although Connecticut brass makers organized to control national prices as early as 1853, competition from brass producers elsewhere in the United States threatened Waterbury's market share and at least some of its individual firms by the end of 19th century. To strengthen Waterbury brass firms' national position, the American Brass Company was established as a holding company in 1899 after six years of study by a committee including HB&H officers. Because of disputes over the control of manufactured brass products, as opposed to primary materials such as brass sheet or tubing, HB&H withdrew from the combination effort c1896; American Brass initially consisted of the Ansonia Copper and Brass Company, Waterbury Brass, and Coe Brass. HB&H joined American Brass in 1901 after resolution of the issue of manufactured products, which were placed under the umbrella of an American Brass subsidiary, the Waterbury Brass Goods Corporation, to operate the pertinent divisions of the American Brass component companies. Waterbury Brass Goods absorbed the HB&H factory departments in 1904, and operated at the HB&H site as a tenant for a number of years (Judd: 3, 55; Bucki: 24; Sanborn Map Company 1922; Figure 14).

Until 1912, American Brass Company's member firms continued to produce primary materials as independent firms. Despite its strong performance into the 1890s, Holmes, Booth & Haydens suffered setbacks in this work which have not been explored for this documentation, and the firm's rolling mill was reportedly in poor condition by the early 20th century. Benedict & Burnham, another American Brass member which operated directly east of HB&H across the Naugatuck River, purchased HB&H's remaining assets in 1905, ending HB&H's independent operations (Judd: 56).

The Holmes, Booth & Haydens Plant

Available graphic material suggests the owners developed a somewhat low-lying site on both sides of the Naugatuck Railroad north of present Washington Avenue, at a bend in the Naugatuck River with a secondary river channel just east of the HB&H lands cutting across the bend.[2] As noted above, no waterpower was developed at this site. Since HB&H made a wide range of small products including lamps, cameras, and tableware, the factory complex included substantial space in multi-story gable-roofed brick buildings for light manufacturing, in addition to its high single-story gable-roofed brick casting shop and rolling mill. The tableware plant and company office were on the west side of the tracks, with all other operations on the east side with the manufacturing and rolling mill spaces immediately adjacent to the railroad for ease in transshipment of supplies and products. By 1868, tracks built by the short-lived Boston, Hartford & Erie Railroad (later part of the New York & New England Railroad which was absorbed by the New York, New Haven & Hartford in 1898) ran immediately west of the plant, and may have been used as part of tableware factory operations. Two successive fires in 1880 destroyed the tableware factory, rolling mill, and the lamp factory which was probably the 2½-story factory immediately south of the rolling mill. The company promptly rebuilt all these facilities, including a 3½-story factory which survives today at the southwest side of the Ansonia Copper & Brass Company plant and was probably used for machine stamping of lamp components. The stamping work would have been done on the ground floor (now used for a machine shop and storage) while the upper floors were used for lighter work, such as assembly of lamps (Figures 4-8; Photographs 10-11, 16-18).

At about the same time as the re-building after the fire, the entire east side of the site was modified by a channelized re-direction of the river for expansion of the Benedict & Burnham plant. The latter firm owned the low ground between the HB&H plant and the original main river channel, and was probably the primary agent in this dramatic landscape change. The high retaining walls defining the river today around the north and east sides of the Ansonia Copper & Brass Company plant probably date to this episode, although the present concrete walls probably replaced original masonry structures (Figures 7, 8, 10).

When HB&H sold the tableware plant in 1886, it evidently expanded its other manufacturing operations with a second 3½-story factory built immediately south of the structure built c1880-81 east of the Naugatuck Railroad (which became part of the New York, New Haven & Hartford in 1887). About half of the c1886 building survives today, including its stair tower, at the south end of the Ansonia Copper & Brass Company plant (Figures 9-12, 15; Photographs 1-3, 10). At the north end of the present plant, HB&H built a series of poorly-documented brick structures c1885-1900, some probably associated with a seamless tube mill added in the early 1890s. The large wood-framed building with monitor roof, which survives today along the river, was also built in the early 1890s and may have first served as a casting house for seamless tube production. Seamless tube operations remained a relatively minor component of HB&H output, however. The firm's late entry into seamless tube production, relative to other Waterbury firms, may have contributed to its financial problems in the early 20th century (Figure 16; Photographs 7-9, 13-14; Judd: 29).

American Brass Company and Successors, c1905-Present

Benedict & Burnham made few documented changes to the Holmes, Booth & Haydens plant c1905-1912 as an independent division of American Brass. Faced with a federal antitrust suit, American Brass consolidated the divisions of the holding company to create a single operating company which began in January 1912. As a branch of the operating company, the Benedict & Burnham plant on both sides of the river contained a casting shop, a tube-casting shop, a sheet metal mill, a brass wire mill, a seamless tube mill, a brazed tube mill, a rule mill, a blanking mill, copper wire and rod mills, an insulated wire mill, and a fastener building. In the next few years Benedict & Burnham added a seamless tube mill, a manufacturing, packing and shipping building, a carpenter shop, and an addition to a rolling mill (Pape: 199-201). At least some of these additions, made by c1915, were at the former HB&H site now owned by Ansonia Copper & Brass, including the manufacturing, packing and shipping building which appears to have been a 3-story structure extending from Washington Avenue to the south end of the 3½-story factory built c1886. A brick, monitor-roofed sand casting building on the edge of the river wall, which survives as a former box storage building, was also added

[2] An 1868 map of Waterbury appears to show the bend in the river accurately, but not the HB&H plant (Beers 1868; see Figure 5)

at this time. Other facilities added to the relatively unoccupied end of the site near Washington Avenue included a large 1-story storage shed, two garages, and a laboratory or storage building (Figures 13-14, 16; Photograph 13).

Beginning in 1915, many Connecticut manufacturing firms such as the Winchester Repeating Arms Company undertook large expansions in capacity as war in Europe created a huge increase in demand for their products. Some of these firms found themselves burdened with excess capacity and in financial difficulties after the war. The Waterbury brass industry followed this pattern. Benedict & Burnham undertook a large expansion of physical plant in 1915-1916 with the addition of 21 new buildings, many of which were not completed until c1917 (Figure 14; Pape: 193). Most of the present Ansonia Copper & Brass Company's Waterbury South Plant mill building was built at this time, as steel-framed sawtoothed and gable-roofed structures fitted on three sides between segments of the HB&H buildings erected in the 1880s to the north, west, and east. Much of this extensive reconstruction was devoted to re-activating the rolling mill to make artillery disc blanks, and probably to make large seamless tubing for brass condenser tubes on upright vertical presses, one of which appears to survive (Figure 16; Photograph 39; Judd: 81).

A new use for some of the older HB&H buildings arose in 1914, when the American Brass Company appointed a Miss Nina Keir its welfare secretary and placed her in charge of the company's emergency and first aid hospital. It was located at 721 Bank Street in the former HB&H plant (Pape 203).

In 1922 American Brass, which had plants in Ansonia, Torrington, Buffalo, Detroit, and Kenosha in addition to those in Waterbury, merged with the Anaconda Copper Company (Marcosson: 174). Brass making in Waterbury was then done by the Waterbury Division of the Anaconda American Brass Company. This division operated the South Plant, which incorporated the East mill (formerly Benedict & Burnham) that made small diameter tube and the West mill (formerly HB&H) that specialized in large diameter tube. Much of the existing equipment, discussed below, appears to have been installed by Anaconda in the 1930s. The south wall of the West mill was heavily damaged by the 1955 flood along the Naugatuck River, but was rebuilt. The Anaconda Copper Company, and with it American Brass, was acquired in 1977 by ARCO, an oil company seeking to diversify. The business continued as the ARCO Metals Company, which demolished the early 20th-century structures and part of the c1886 factory at the south end of the plant. ARCO Metals soon moved its brass manufacturing from Waterbury to its plants in the mid-west, selling the West mill of the South Plant to Ansonia Copper & Brass, Inc. Ansonia Copper & Brass now makes one product, seamless copper and copper alloy large-diameter tubing, at the Waterbury plant, which is supplied with billets made at the firm's rod and wire mill in Ansonia (Figures 15-16; Anaconda Copper Company; personal communications, Lawrence J. Ford and Charles Essex).

DESCRIPTIVE INFORMATION

Physical Plant

The plant as operated in 2007 occupies seven acres between the former railroad corridor and the Naugatuck River. The tracks have been removed in all areas adjacent to the plant except at the crossing of the river (Photograph 12). A small portion of the former West mill, including the c1912 masonry sand casting building, is vacant and under separate ownership (Figures 1, 16). As the site never had waterpower, underground components include only water, sewer, or electric utilities, a ramped loading dock at the north end of the mill, and foundations for buildings, mill equipment, and recent pollution-control facilities.

As the proposed power plant will have very limited physical effects on existing mill facilities, this documentation only summarizes extant structures. The principal mill building includes the following main components:

- At the southwest corner, all of the c1880 and part of the c1887 brick factories are timber-framed 3½-story structures approximately 40-42 feet wide and a total of 255 feet long, with segmental-arched windows and slate roofs. The remaining c1887 structure includes dormers. The original 4-story stair tower of each factory survives. Except for parts of the first floor used for machine shop and office space, these structures remain vacant. A 1-story addition was added to the west side of the c1880 factory north of the stair tower c1895, and has some locker and office space (Figures 9, 15-16; Photographs 1-3, 10-11, 16-18).

- On the east side, a portion of the timber-framed, gable-roofed brick foundry survives as a 70-by-56-foot 1-story structure now used for office and locker space. Historical images suggest this section dates to the earliest construction of the mill c1853 (Figures 4, 6-8, 10-13; Photographs 2, 4, 5, 22).
- At the north end, remnants of several late 19th-early 20th century multi-story brick structures, totaling approximately 160 feet in length and 10-45 feet in width. Originally wood-framed with gable roofs and segmental-arched windows, these structures appear to have been lowered, fitted with steel-framed wood shed roofs, and stripped of floor levels c1917 to house electrical and pump equipment used to service the main mill. The 3-story stair tower at this end has retained the most exterior physical integrity (Figures 11-13; Photographs 7-9).
- Steel-framed structures with brick and partial metal walls, approximately 535 and 330 feet long and 156-224 feet wide, which replaced numerous earlier buildings c1917. All have bays approximately 3 stories high defined by riveted composite steel I-beam columns at 20- and 40-fooot intervals, and rectangular arrays of fixed and movable metal sash. The northwest section is 145 by 330 feet, with a metal gable roof and a small monitor over a single bay, and houses most of the hydraulic draw presses described below. The northeast section is approximately 155 by 58 feet, with a steel-framed wood gable roof and a monitor running nearly the full length of this section, above the induction furnaces and horizontal extrusion press described below. A three-story brick approximately 27-by-34shed-roofed addition, immediately north of the northeast gable-roofed section, appears to have been built about the same time and housed the now-inactive vertical extrusion press described below. The remainder of the sections built c1917 consists primarily of two bays with wood sawtooth roofs, one bay approximately 58 by 380 feet and the other approximately 535 by 80 feet. Equipped with overhead traveling cranes, these two bays house all the remaining production equipment described below in the northern two-thirds of the sawtooth-roofed sections. The south end of these sections is today largely vacant, aside from a low 1-story wood office approximately 9 by 32 feet, used for shipping and supervisory work. The office, which may post-date 1955 as it abuts the south mill wall heavily damaged in the flood of that year, is the only notable structure to be removed for power plant installation. Two garage doors near the south end of the mill's east wall allow for shipping of materials and products; another garage door in this wall , just north of the plant office in the former foundry, facilitates delivery of billets from the Ansonia mill (Figures 14, 16; Photographs 1-2, 4-6, 19-26).

Aside from water treatment and pollution control facilities built east of the main mill in the 1970s and 1980s, two other free-standing buildings survive from the plant's pre-World War I history along the river east of the main mill. East of the plant office, a high 1-story, 120-foot long, 48-to-62-foot-wide wood-framed gable-roofed structure with segmental-arched windows and a full-length monitor was originally built in the 1890s for seamless tube casting. At some point, this structure also housed equipment to make wood shipping boxes, as evidenced by remnant line shafting and sheaves (Sanborn Map Company 1895-1922; Figures 13-14, 16; Photographs 14-15; personal communication, Lawrence J. Ford). Southeast of the main mill, a two-section, approximately 128-by-40-foot high-1-story brick gable structure with roof monitors was built c1912 for sand casting. It is no longer on mill property (Photograph 13).

Manufacturing Processes

The manufacturing processes carried on in the Waterbury tube mill in 2007 are basically the same as those described in a document prepared by the ARCO Metals Company, probably about twenty years ago (ARCO). However, one technique then in use, cupping for making very large-diameter tubing, is no longer practiced.

Copper or alloy billets cast in Ansonia are hauled by truck to the Waterbury plant. The ends of the billets are sawn off to remove pipe and dross from the top and the imprint of the casting stool from the bottom. Each billet is then bored and turned in a lathe to give it concentric inside and outside surfaces (Photograph 27). The metal removed in these operations is returned to Ansonia for remelting.

Either of two processes is used to shape the bored billet into a seamless tube. It may be repeatedly drawn cold over mandrels and through dies to reduce its diameter and wall thickness to the required dimensions. Large tubes are cold drawn on a hydraulically-powered draw bench (Photograph 28) Chain draw-benches, which use mechanical rather than hydraulic power to pull the work piece, are used for cold drawing the

smaller diameter tubes (Photograph 29) Between each draw the tube must be annealed to soften it enough for further reduction. A gas-fired furnace is used for these anneals (Photographs 20, 30). Alternatively, billets may be heated and hot extruded into tubing. The bored and turned billets are heated in induction furnaces (Photographs 24, 31) transferred to the press, and forced through the extrusion dies by a hydraulic ram (Photograph 32) to emerge from the back of the machine (Photograph 33). Tubes are given a final anneal in the gas-fired furnace (Photograph 30) under a reducing atmosphere to achieve the desired degree of hardness, usually the full soft condition. Tubes are cleaned after annealing, or at other stages in the process as required, by pickling. Pickling requires immersion of the annealed tube in a dilute sulfuric acid solution to remove surface scale, and is followed by washing with a large flow of fresh water (Webster). Large tanks open at the top are used for pickling (Photograph 34). Waste water from this and other operations is treated in facilities east of the main mill building.

Any damaged metal from the ends of the tubes is cut off in the final processing step. To test the completed tubes for the presence of porosity or seams, water is pumped into them at high pressure in either the large, or small hydraulic testing rigs (Photographs 35-36). Defects are revealed as leaks. A final ultrasonic inspection is made to detect internal flaws. The tubes that pass inspection are then stored in racks awaiting shipment.

The plant contains auxiliary equipment needed for the production machines and materials handling. Overhead traveling cranes are used to shift heavy loads, such as bundles of billets or tubes. Hydraulic power is used to pull the tube through the reducing dies on the large draw bench, and to drive the ram in the extrusion press. This is generated by electrically driven pumps at the north end of the mill (Photographs 23, 37). Some old equipment no longer is use remains in the plant, including the large electric motors on the platform above the pumps (visible in Photographs 23, 37-38), and the obsolete pumping unit shown in Photograph 38). A vertical extrusion press that is no longer used remains in place at the north end of the plant (Photograph 39).

A large number of drawings at the plant, most of which were not inspected for this documentation, probably include data on the origins of equipment still in use. The ultrasonic inspection equipment is relatively new, and may be less than ten years old. The draw benches, extrusion press, and annealing furnace appear to be about 50-75 years old. The Sanborn maps show significant changes in mill layout between 1922 and 1950, which could be associated with the installation of the current tube-making equipment. In this period, the former HB&H buildings on the west side of the now-disused railroad tracks adjacent to the plant were razed. Some of the materials handling equipment, such as the overhead traveling crane in the main mill building, may be original equipment from the c1917 period, when we believe most of the present mill structure was built.

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PERSONAL COMMUNICATIONS

Charles Essex, Mill Superintendent, Large Diameter Tube Mill, Ansonia Copper & Brass, Inc.

Lawrence J. Ford, Vice President-Manufacturing, Ansonia Copper & Brass, Inc.

Debra Perugini, Mattatuck Historical Society

Figure 1. PLANT LOCATION ON U.S. GEOLOGICAL SURVEY WATERBURY, CONN. 7.5-MINUTE QUADRANGLE

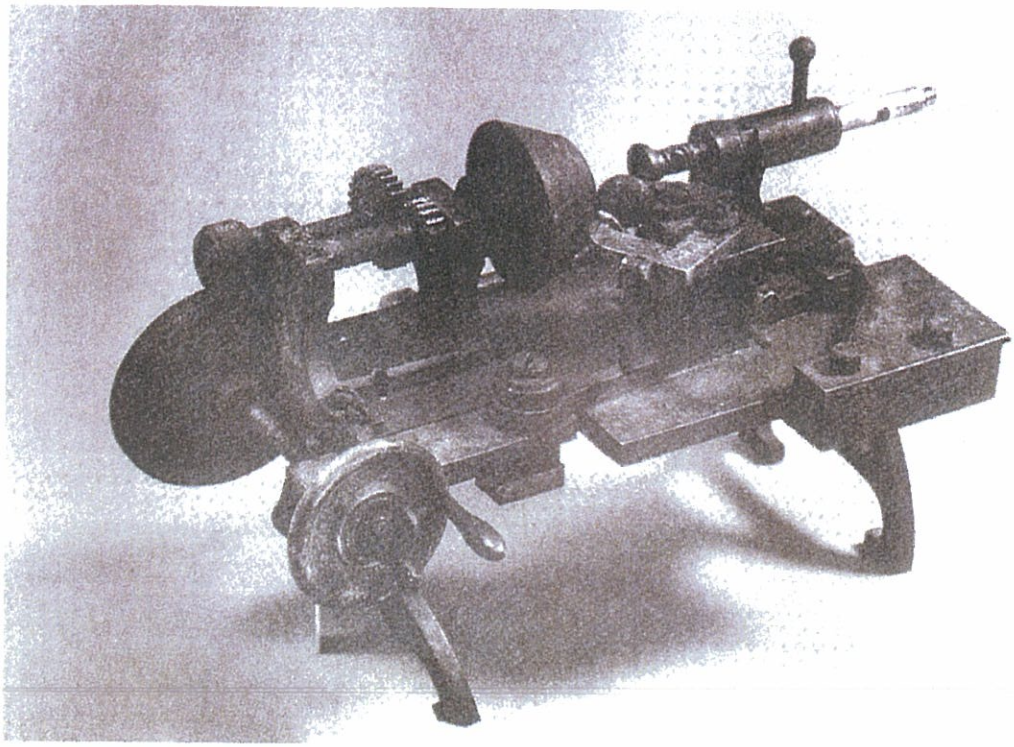


Figure 2. 1851 PATENT MODEL FOR HIRAM HAYDEN SPINNING LATHE FOR FORMING BRASS GOODS
(Source: Bucki: 40)

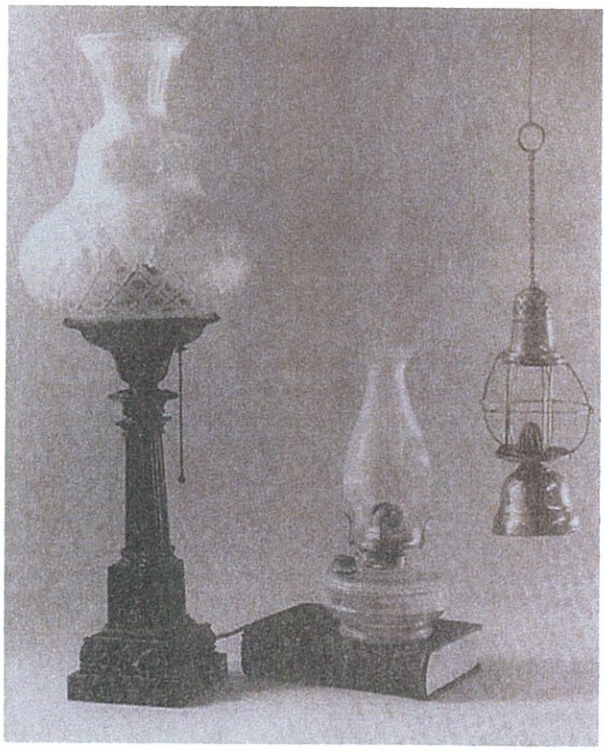


Figure 3. KEROSENE LAMPS MADE c1870 WITH BRASS PARTS, SOME BY HOLMES, BOOTH & HAYDENS
(Source: Bucki: 27)

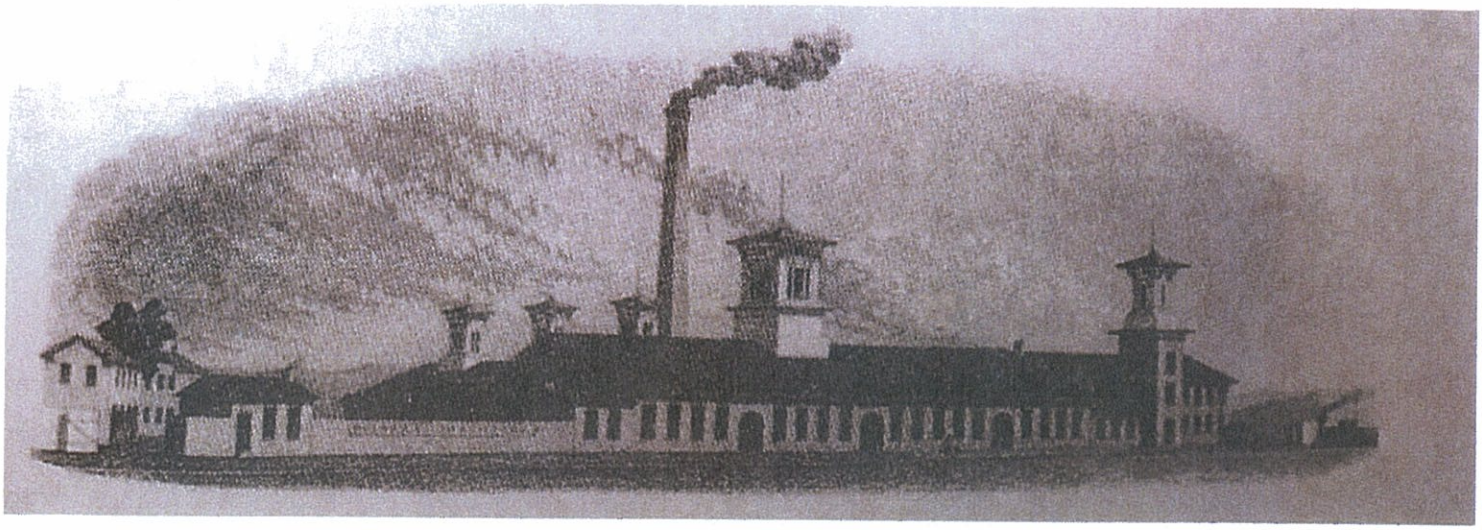


Figure 4. VIEW SOUTHWEST OF HOLMES, BOOTH & HAYDENS PLANT c1858
(Source: Anderson, ed.: 353)
Rolling mill at center, factory for lamps and photographic products at right, casting house/foundry at left center; Naugatuck Railroad fronts the plant, as shown by train at extreme right.

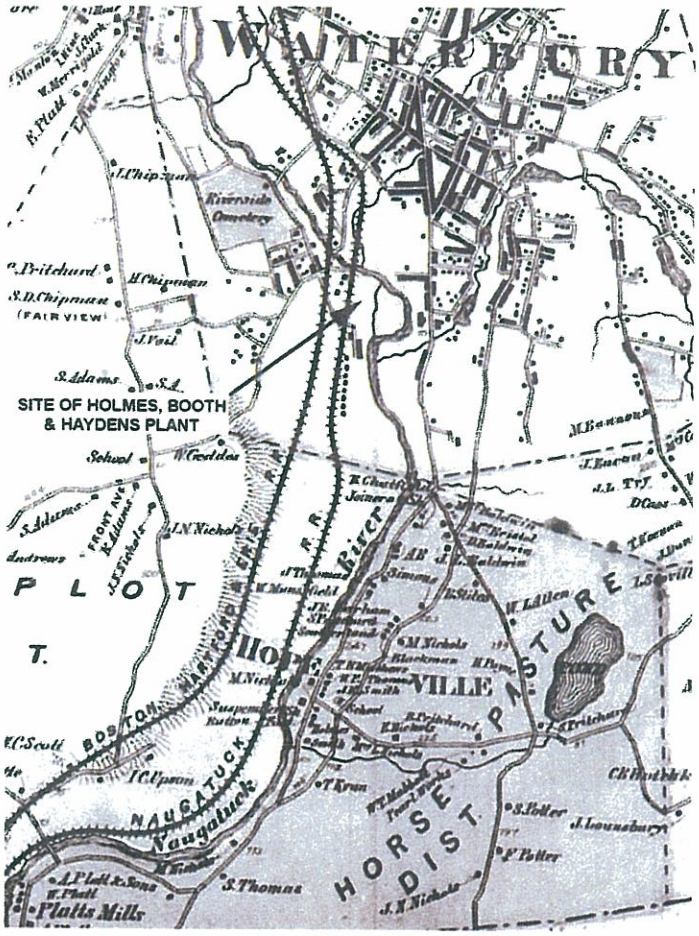


Figure 5. WATERBURY c1868
(Source: Beers)
Holmes, Booth & Haydens plant not shown accurately, but secondary river channel modified c1880 east of plant appears clearly.

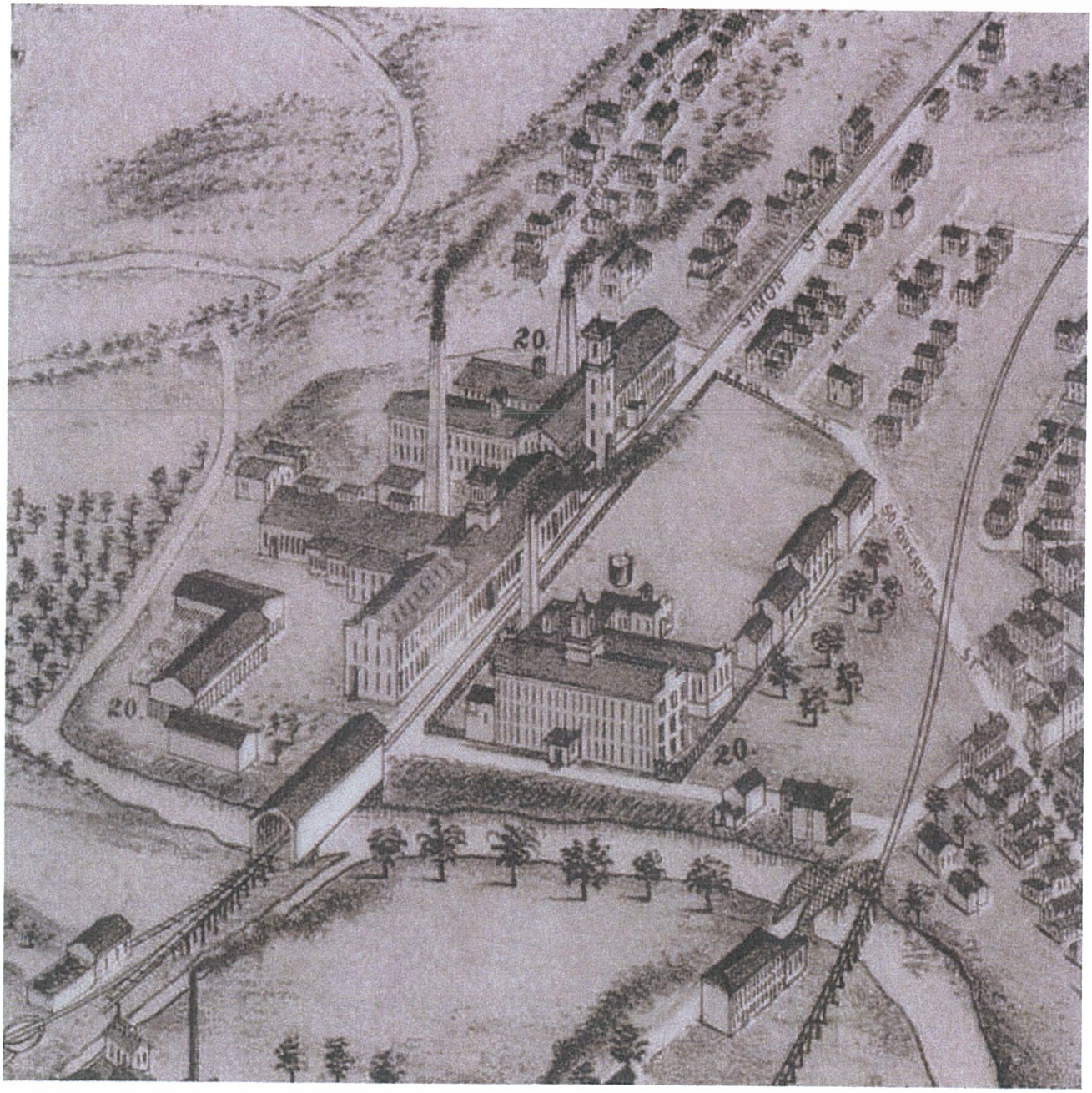


Figure 6. BIRD'S-EYE VIEW TO SOUTHEAST OF HOLMES, BOOTH, & HAYDENS PLANT c1876
(Source: detail from Vogt)
In this earliest known view of entire plant, the tableware factory is shown at lower center west of the Naugatuck Railroad. East of the tracks, rolling mill is at center adjacent to lamp/burner factory to south, and foundry to west. Factory function north of rolling mill has not been identified; buildings at lower left south of Naugatuck River are wire mill (cf. Figure 7). East of wire mill and foundry, secondary channel visible in Figure 7 is clearly shown.

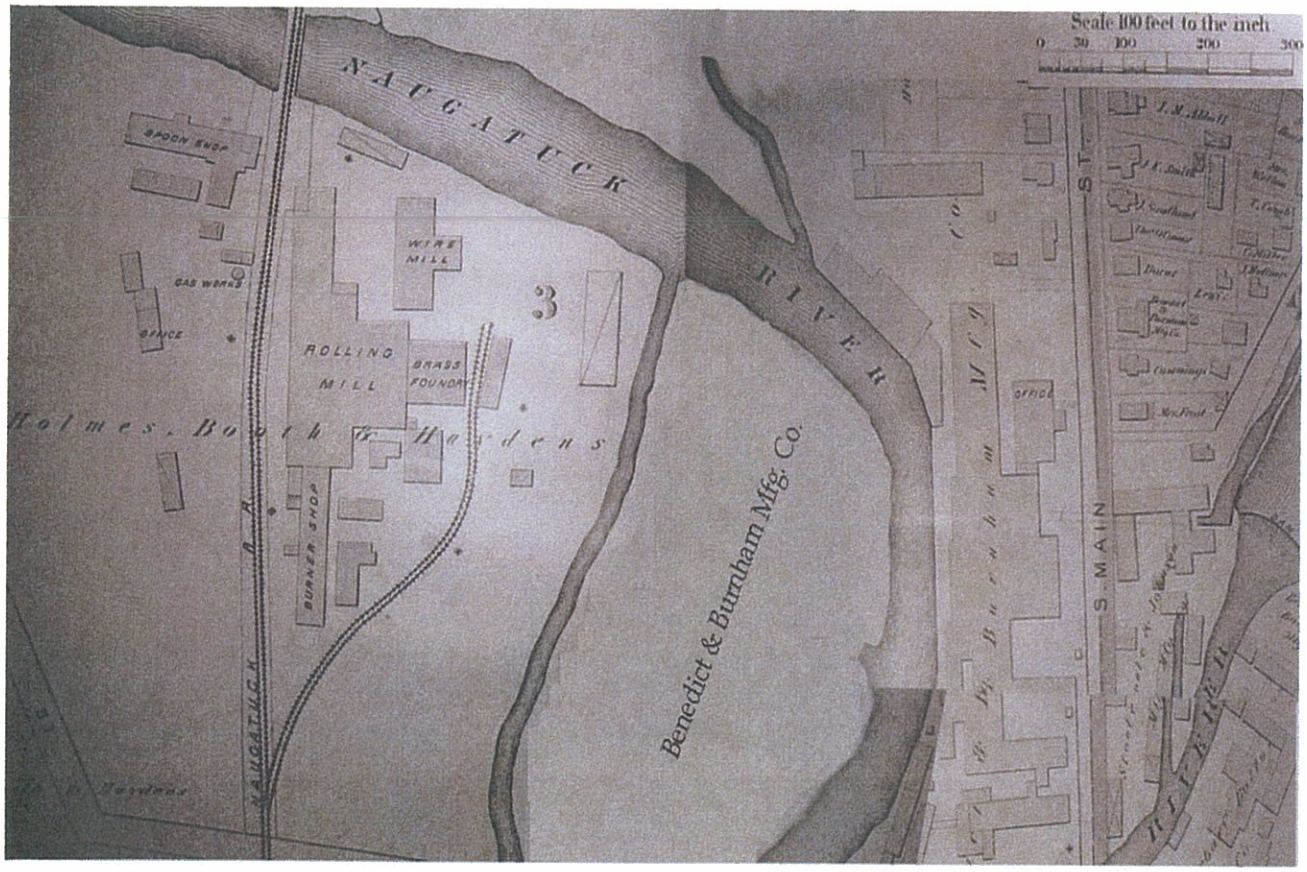


Figure 7. HOLMES, BOOTH & HAYDEN PLANT c1879
(Source: Hopkins)

Plant layout closely matches the view in Figure 6; this is last known image prior to two fires in 1880. Low-lying bend in river between primary and secondary channels is clearly shown.

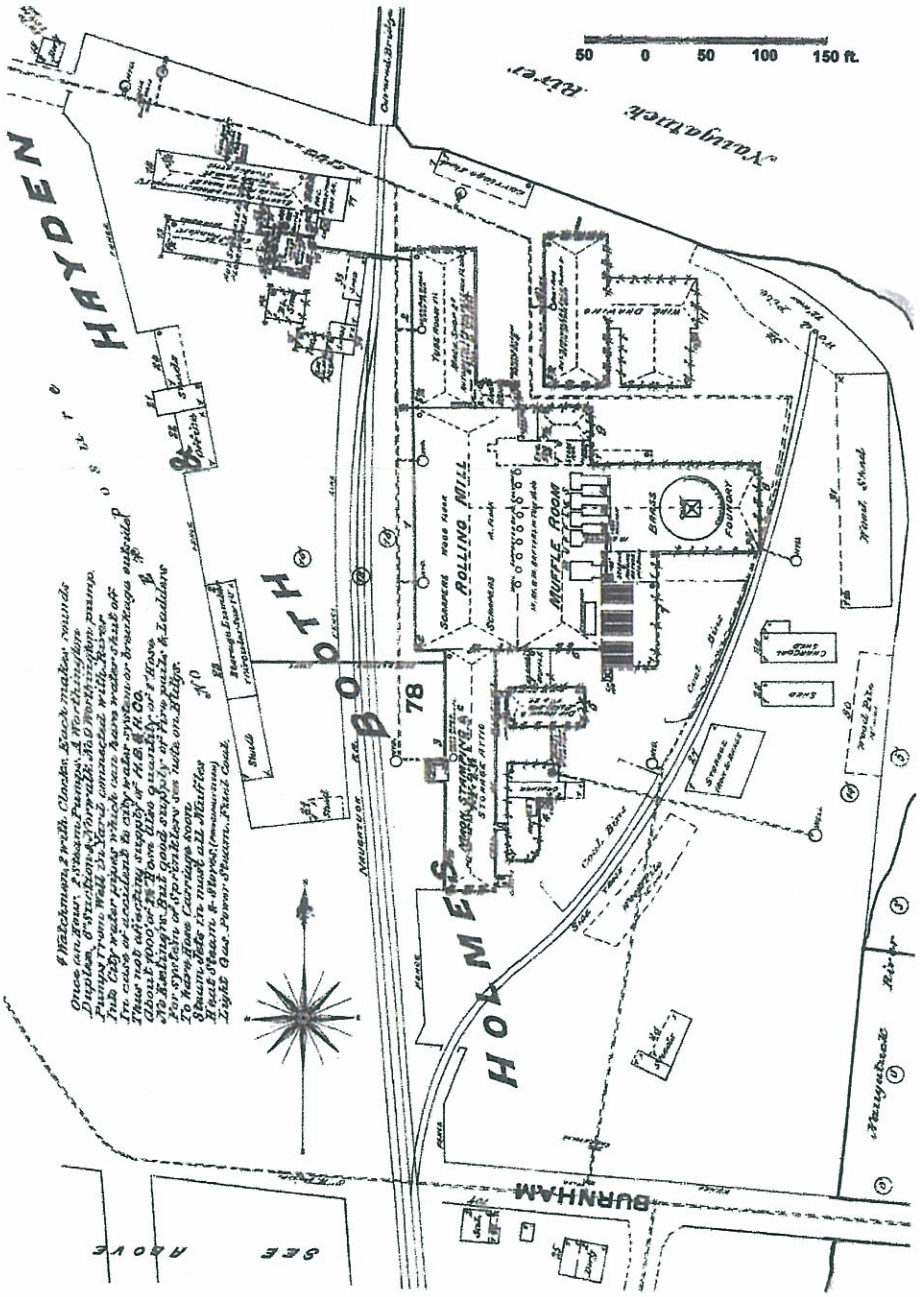


Figure 8. HOLMES, BOOTH & HAYDENS PLANT c1884
(Source: Sanborn Map and Publishing Company)

Plan show facilities rebuilt after two 1880 fires, as well as heavily-engineered re-direction of Naugatuck River probably for expansion of Benedict & Burnham Manufacturing Company plant across the river to east (cf. Figures 6-7). The "machine stamping" building, used to make lamps, burners, and other manufactured products, was raised as shown here to 3½ stories and survives essentially intact today (cf. Figures 4, 6).

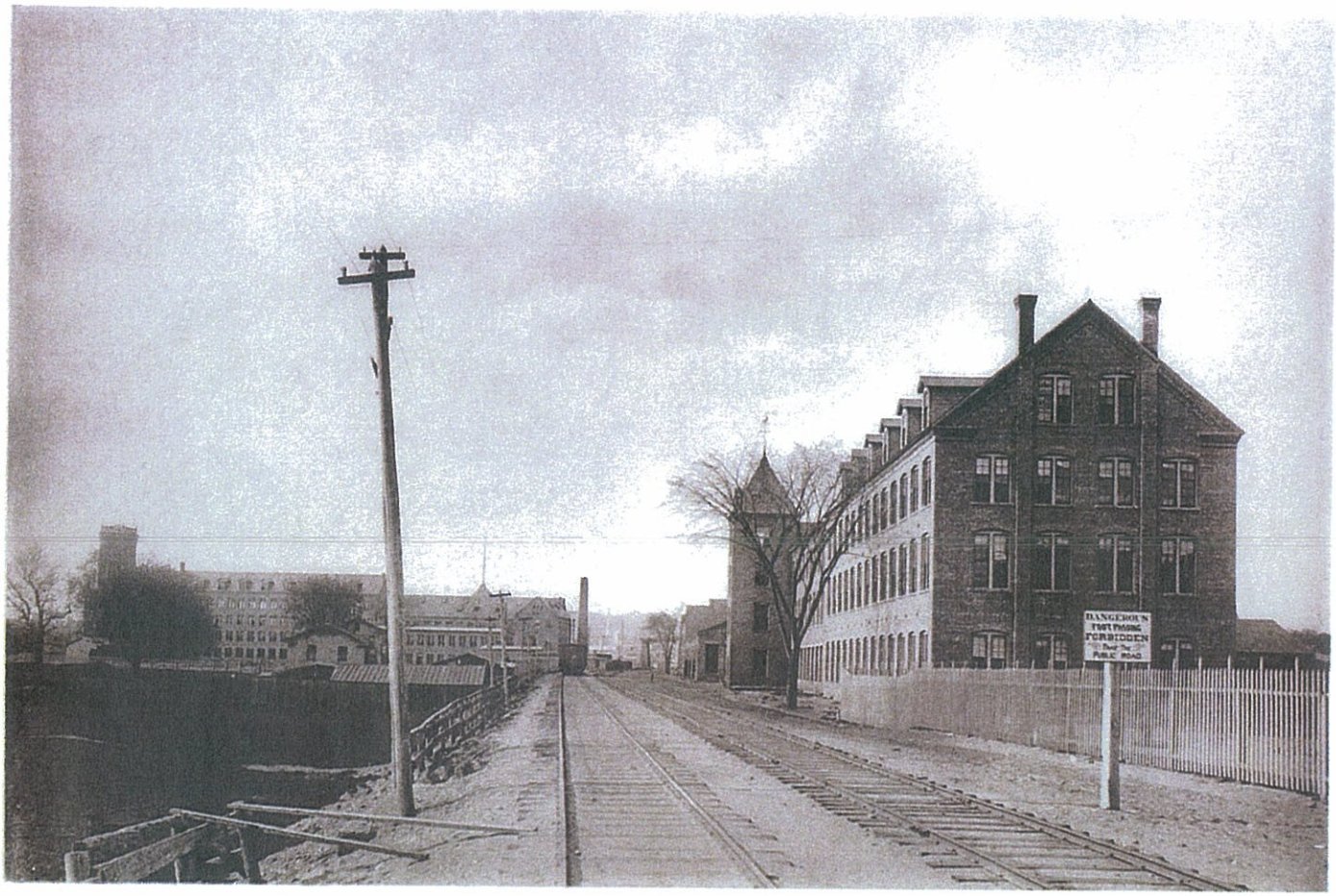


Figure 9. VIEW NORTH c1890 OF HOLMES, BOOTH & HAYDENS PLANT
(image courtesy of Mattatuck Historical Society)

Naugatuck Division of New York, New Haven, & Hartford Railroad is at center. Gable-roofed factory buildings east of the tracks include the building with tower at center built c1880, and a second similar structure at right added c1887 (cf. Figures 8, 10). Part of the latter structure survives today. In background, west of tracks, is plant for tableware manufacture, expanded after Holmes, Booth & Haydens sold this business in 1886. Water in left foreground does not appear to match conditions shown on contemporary maps, and probably represents a flood.

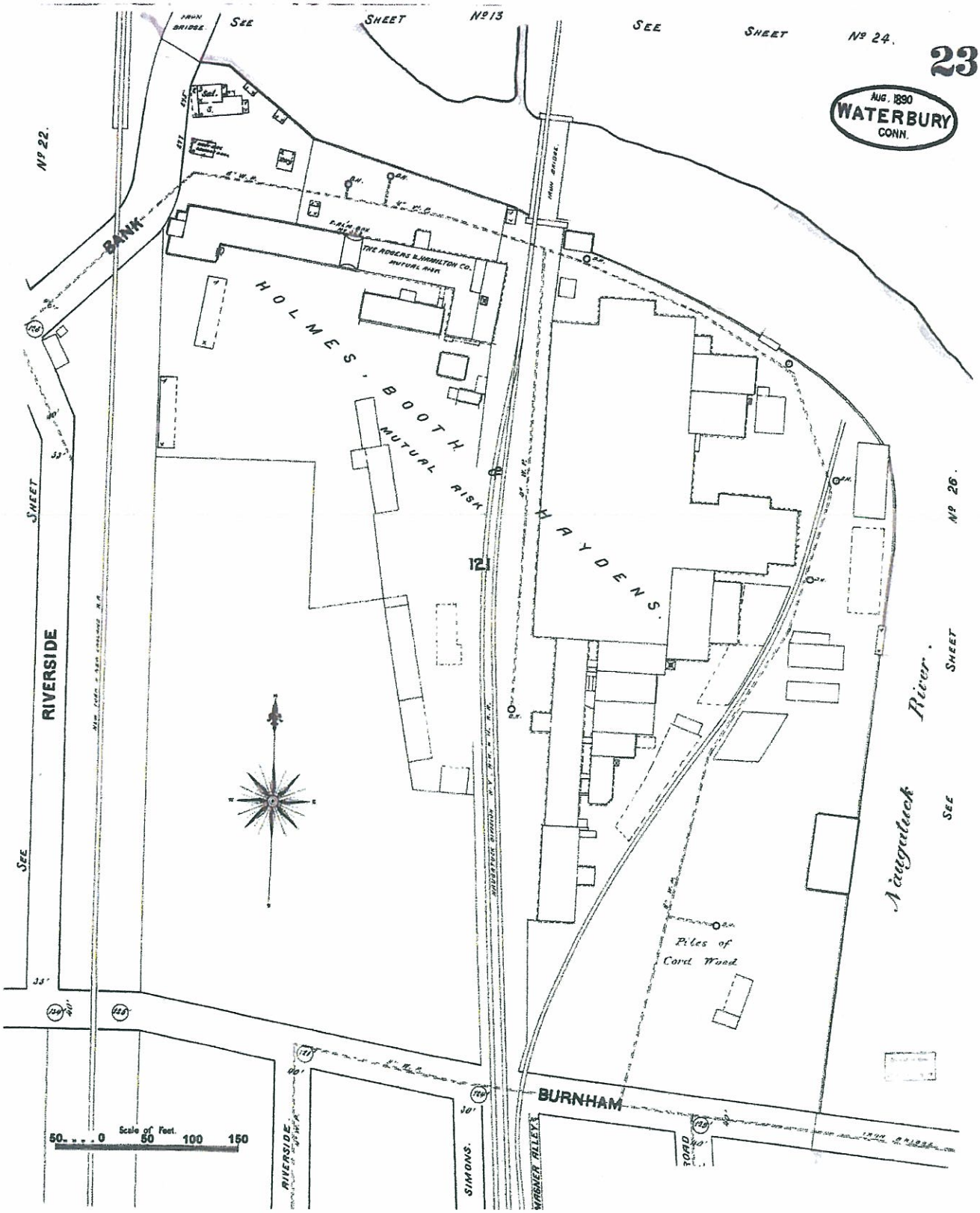


Figure 10. HOLMES, BOOTH & HAYDENS PLANT c1890
(Source: Sanborn Map and Publishing Company)

Major additions c1885-1890 included a second factory building at the south end of the plant east of the railroad tracks, and the expansion of the tableware factory operated by the Rogers & Hamilton Company at the north end of the plant west of the tracks.

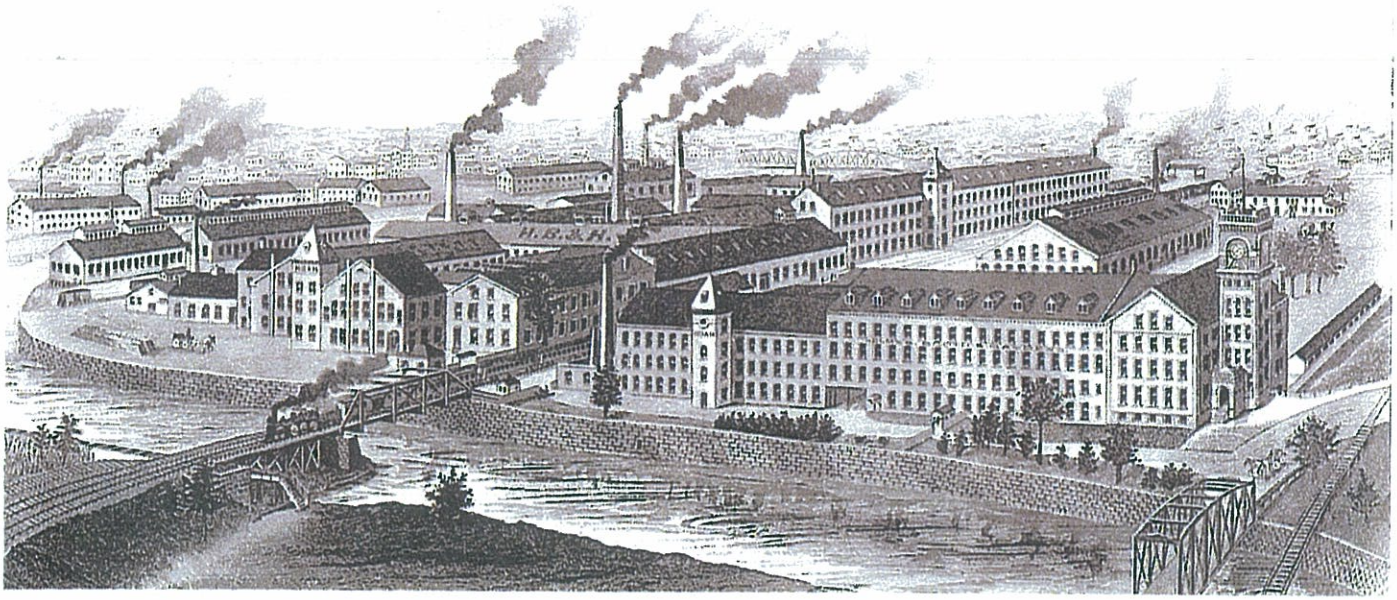


Figure 11. BIRD'S-EYE VIEW TO SOUTHEAST OF HOLMES, BOOTH & HAYDENS PLANT c1896
(Source: Anderson, ed.: 352)

Rail line at center is former Naugatuck Railroad, with site of present Ansonia Copper & Brass, Inc. plant to left of these tracks. Much of the 3½-story line of factory and warehouse structures at right center survive today, as does part of the foundry visible at center-left with "H.B.&H." on roof, but most of the plant was heavily re-built in World War I. The tower at the north end of the plant, at left, remains intact; some of the gable-roofed buildings adjacent to the tower may have been reduced in height and re-fitted with shed roofs during World War I.

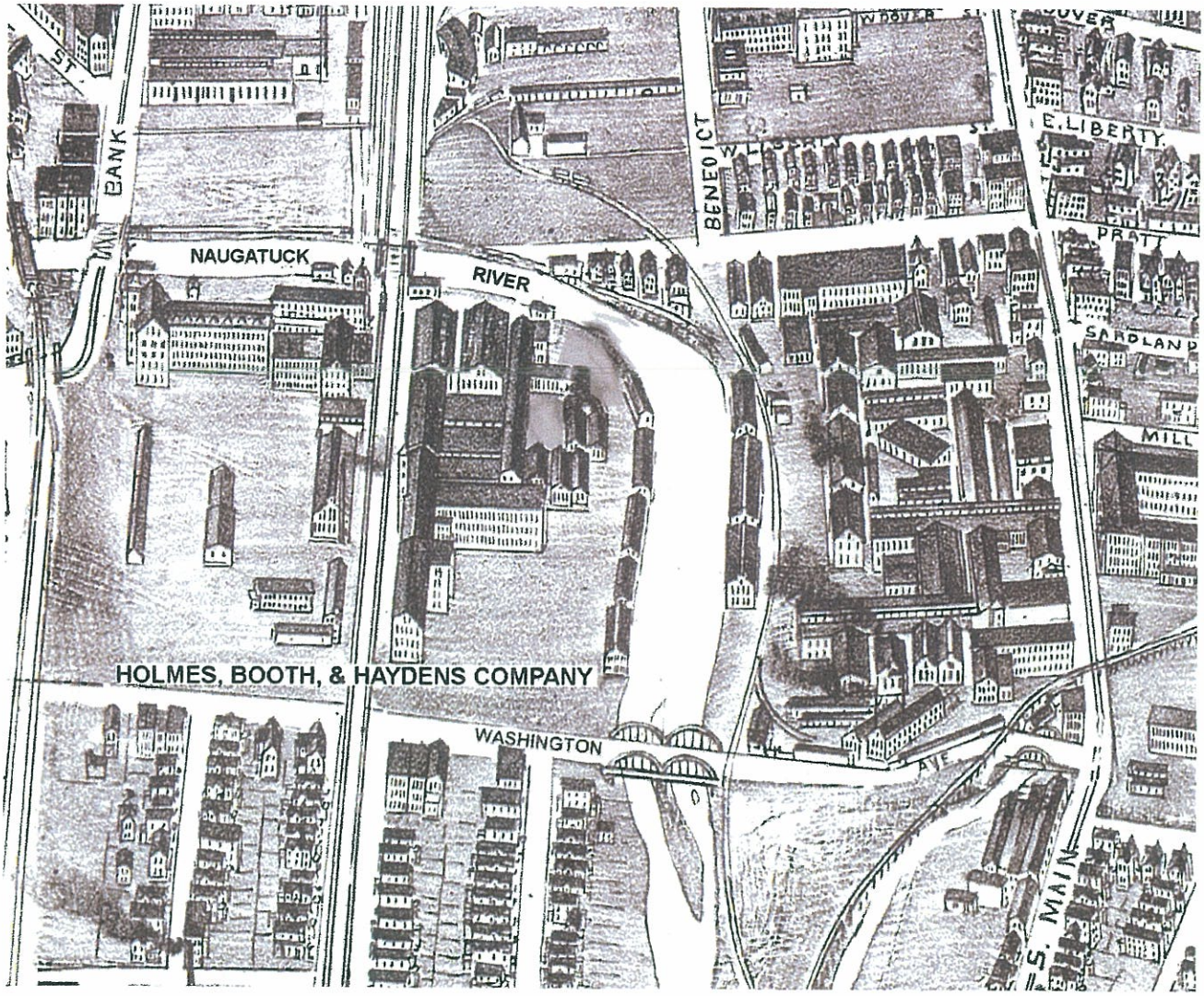


Figure 12. BIRD'S-EYE VIEW TO NORTH OF HOLMES, BOOTH, & HAYDEN PLANT c1899
(Source: Landis & Hughes)

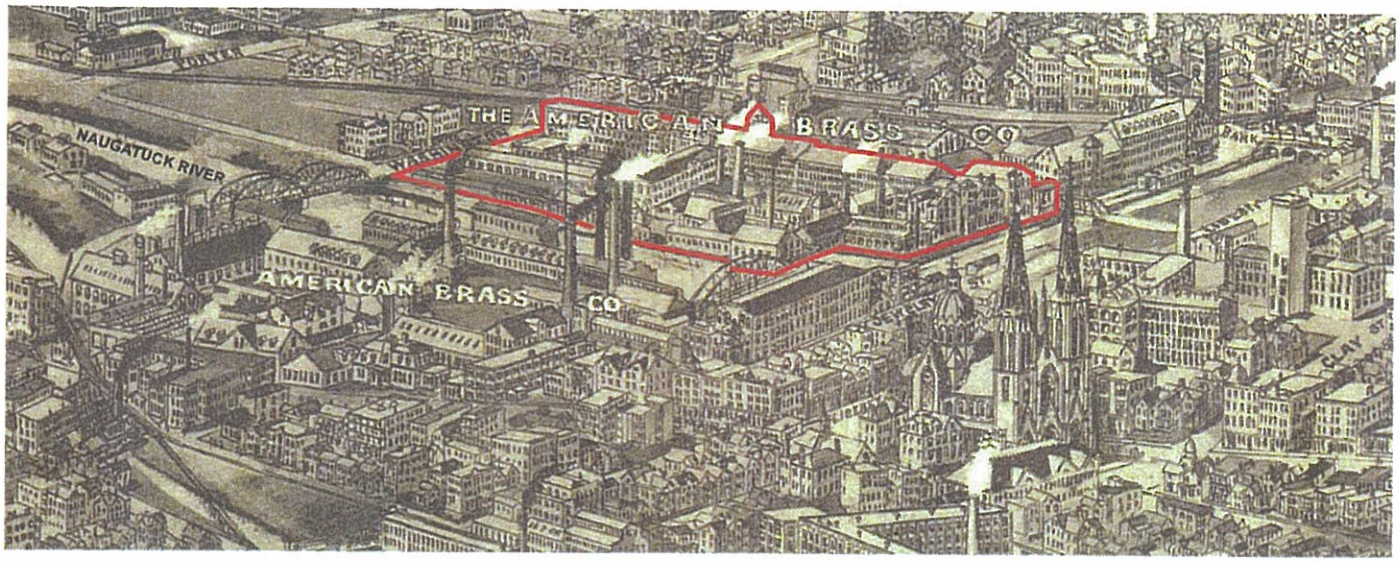


Figure 13. BIRD'S-EYE VIEW TO SOUTHWEST INCLUDING ANSONIA COPPER & BRASS, INC., SITE c1917
(Source: Fowler)

Red lines define limits of current plant site, which in 1917 was part of the Benedict & Burnham branch of the American Brass Company. Storage and warehouse structures added to the south end of the site c1915, north of Washington Avenue, are visible; all were demolished c1978. This image suggests that the extensive reconstruction of the plant for World War I production (cf. Figures 14-15) did not occur until the United States entered the war.

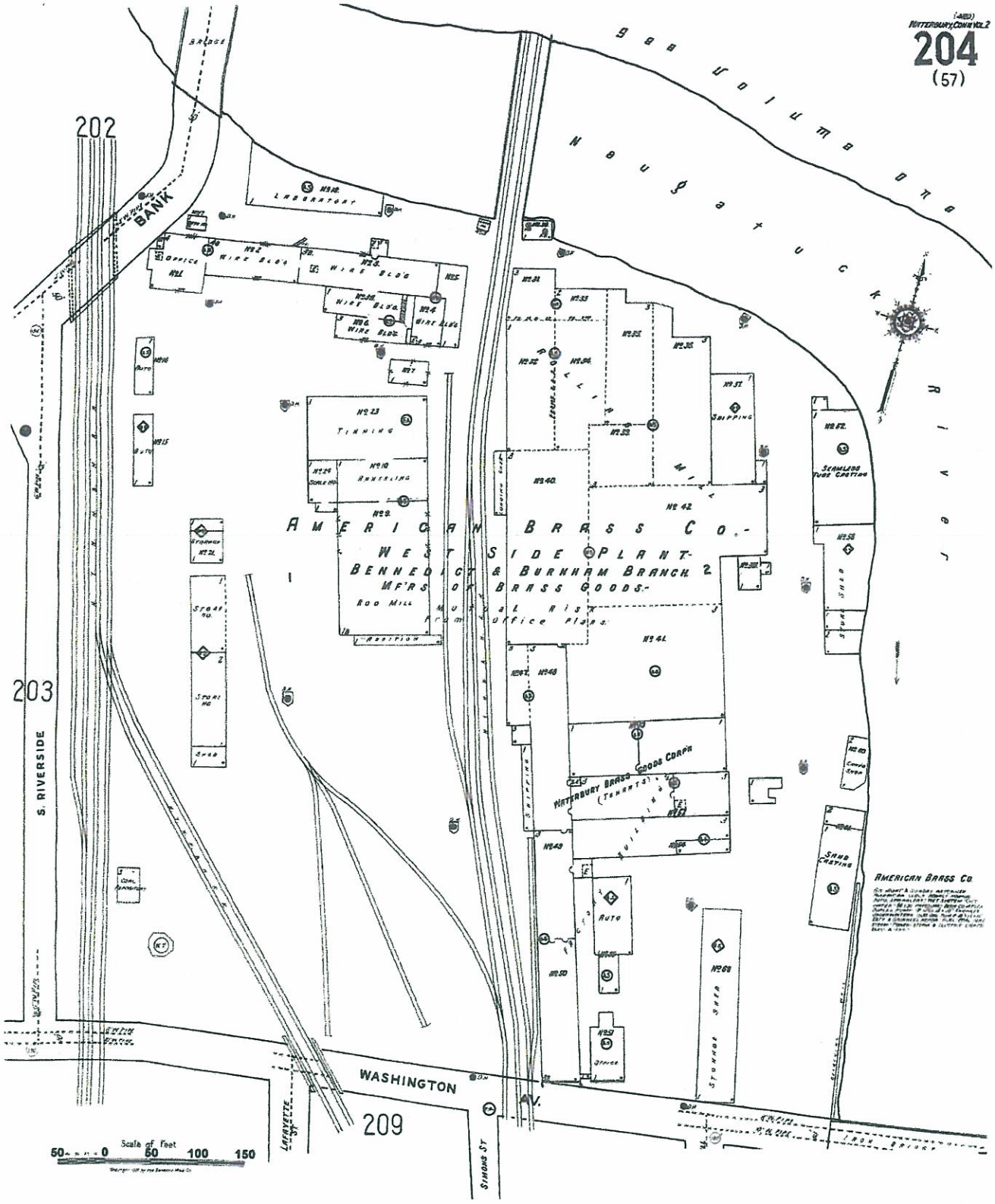


Figure 14. BENEDICT & BURNHAM BRANCH WEST SIDE PLANT, AMERICAN BRASS COMPANY, c1922
(Source: Sanborn Map Company)

This plan reflects the extensive reconstruction of the plant c1917, and shows the portion of the site occupied by Waterbury Brass Goods Corporation for many years beginning c1904. The east side of the site, now operated by Ansonia Copper & Brass, Inc., is substantially like the plant shown here aside from the c1978 demolition of structures reflected in Figure 15. Many of the interior partitions, which appear on insurance maps through 1977, have been removed.

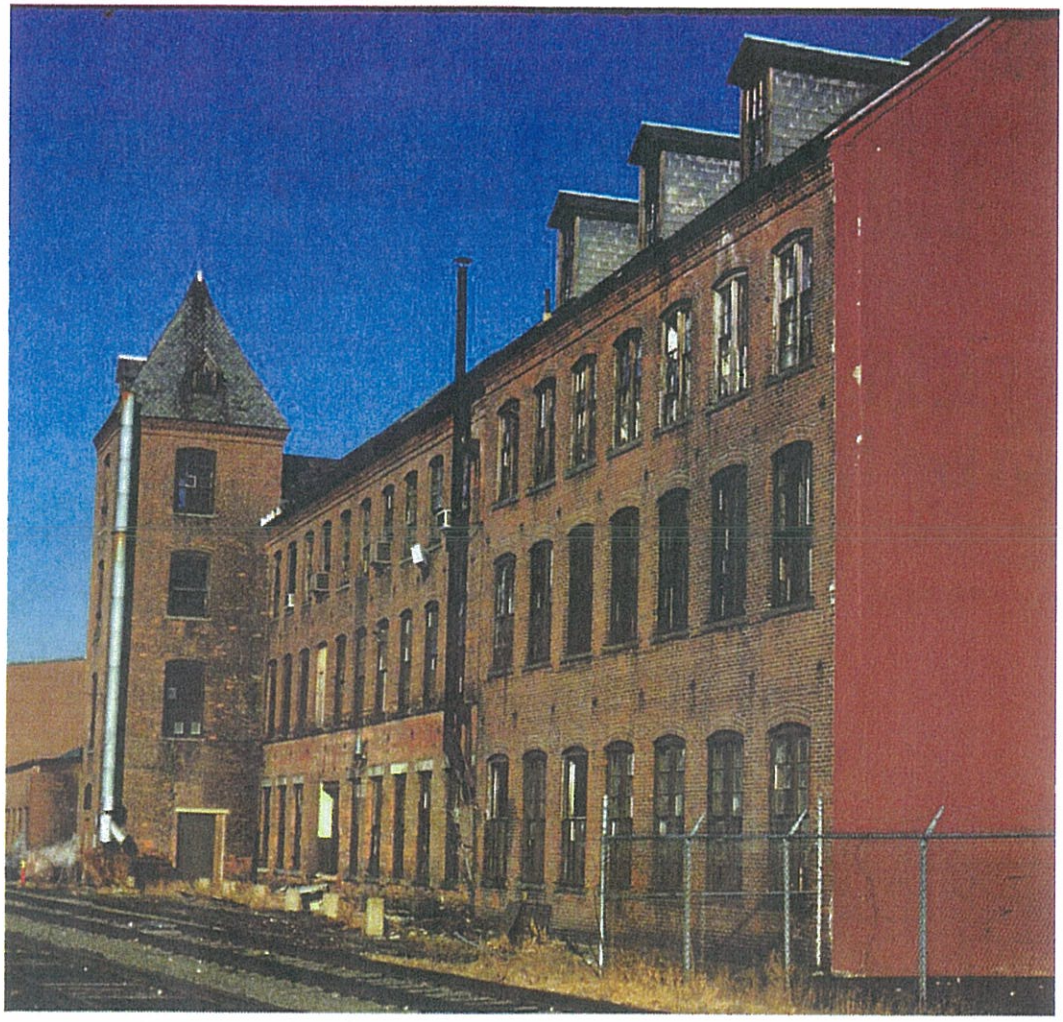


Figure 15. VIEW NORTHWEST c1980 OF c1880 (LEFT) AND c1887 FACTORIES
(image courtesy of Mattatuck Historical Society)

This picture was taken shortly after the south end of the c1887 factory was removed, when the tracks of the former Naugatuck Branch of the New York, New Haven & Hartford Railroad remained in place. The rail corridor today is heavily overgrown and the tracks are largely removed.

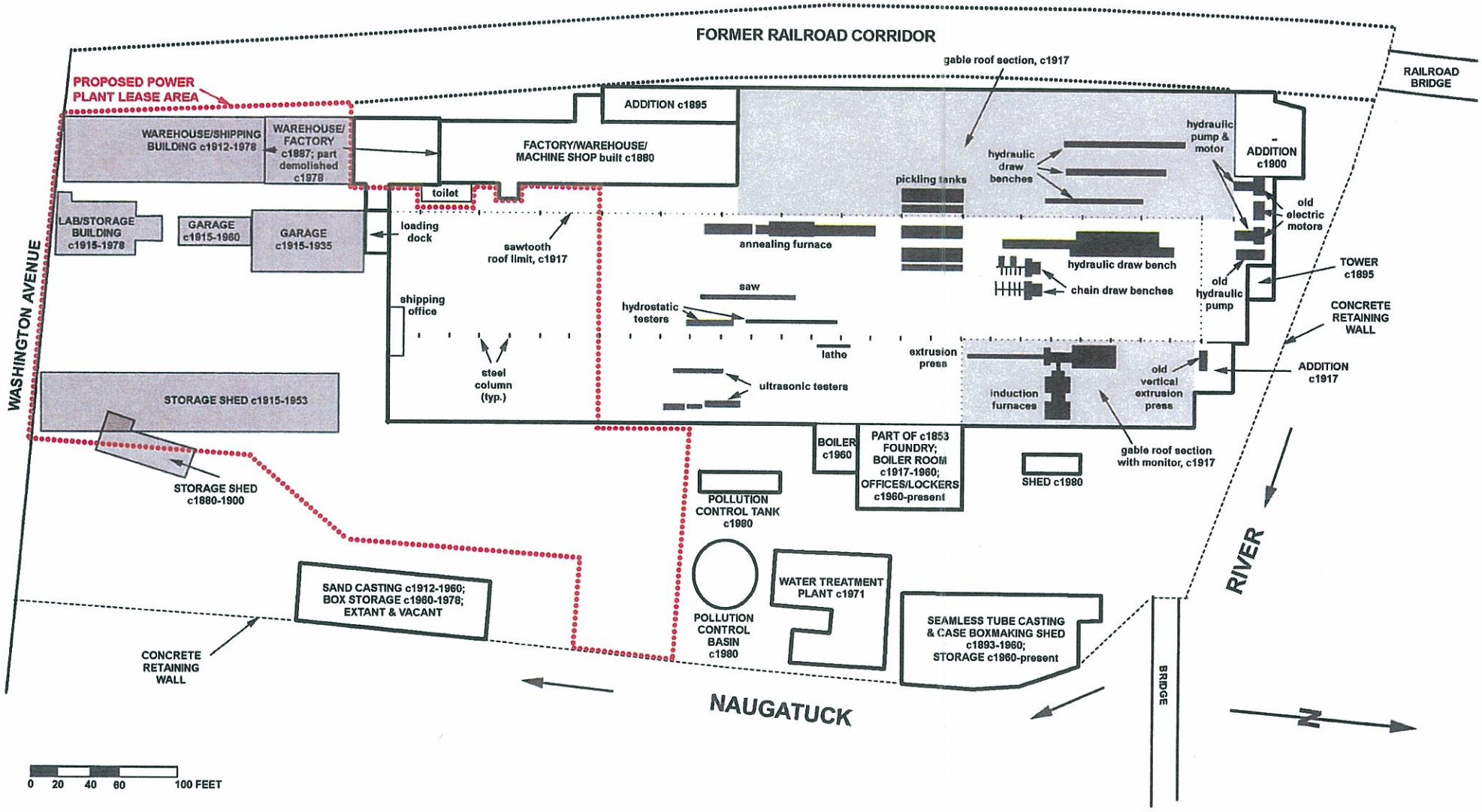


Figure 16. EXISTING CONDITIONS, PRINCIPAL EQUIPMENT, AND MAJOR DEMOLISHED STRUCTURES WITHIN PROPOSED POWER PLANT LEASE AREA
(Principal sources: Sanborn maps, The American Brass Company, Fuss & O'Neill)

INDEX TO PHOTOGRAPHS

Photographer: Michael S. Raber November 2007

1 View north of south end of main mill (right), loading dock (left center), and truncated end of c1887 factory building (left).

2 View northwest of south end of main mill, with stair tower of c1887 factory building (left) and remnant of c1853 foundry now used for office and locker space (right).

3 Detail to northwest of truncated end of c1887 factory building and its stair tower.

4 View northwest of gable-roofed remnant of c1853 foundry now used for office and locker space (center) behind pollution tank; part of pollution control basin is at right.

5 View southwest of remnant of c1853 foundry now used for office and locker space.

6 View northwest of gable-roofed main mill section which houses extrusion press and induction furnaces.

7 View southwest of main mill northwest corner. Section in foreground probably built c1900 with gable roof, and lowered c1917 with a shed roof; this section now houses transformers (see Photograph 23).

8 View southwest of central section of main mill north façade, including c1895 stair tower; section at right originally built late 19th century with gable roof, and lowered c1917 with a shed roof.

9 Detail to west of c1895 stair tower at north end of main mill.

10 View southwest of stair tower and south half of c1880 factory building, with part of c1887 factory building at extreme right with dormers, and 1-story c1895 addition at left.

11 Detail to northeast showing junction of c1880 factory building (upper right), c1895 addition (foreground), and southwest corner of c1917 gable-roofed section of main mill.

12 View north of bridge carrying track of former Naugatuck Branch of New York, New Haven & Hartford Railroad. Most track on this section of the branch has been removed and/or built over.

13 View southeast of c1912 sand casting shop, later used for box storage. This building is now on property not owned by Ansonia Copper & Brass, Inc.

14 View southeast of c1895 building erected for seamless tube casting, and later used for manufacture of wood boxes.

15 Interior detail to southeast of c1895 seamless tube casting building. Overhead shafting and sheaves are surviving components of power system for woodworking equipment used to make boxes for product shipment.

16 Detail to north of first floor interior of c1880 factory, now used as machine shop.

17 Detail to south of second floor interior of c1880 factory.

18 Detail to south of attic of c1880 factory.

19 View north of central bay of main mill interior, with two overhead cranes visible.

20 View northwest of main mill interior, with annealing furnace (center right) below sawtooth roof; northeast corner of former exterior wall of c1880 factory is visible at extreme left.

21 View southwest of northeast corner of former exterior wall of c1880 factory, from sawtooth-roofed central bay of main mill.

22 View east of truncated end of gable-roofed c1853 foundry building, below sawtooth-roofed east bay of main mill.

23 View northwest of c1900 section at north end of main mill, modified with a shed roof. In right foreground is blue hydraulic pump driven by gray electric motors to supply motive power to draw bench and extrusion press equipment (see Photographs 28, 31-33); older disconnected electric motor at right is on a platform above the modern equipment.

24 View south of c1917 east bay of main mill, in steel-framed section with wood gable roof and full monitor, under which can be seen end of extrusion press (right) and induction furnaces (center).

25 View southeast of shipping/supervisor office at south end of main mill.

26 View southwest of south end of main mill, with shipping/supervisor office at left.

27 View northwest of large lathe used for turning and boring the cast billets. Bored billets awaiting turning are in the right foreground; finished billets area at the left. The lathe operator uses the power hoist suspended from the overhead steel beam for shifting work pieces.

28 View northeast of large draw bench with hydraulic power used for cold drawing large diameter tubing. The mandrel over which the tube is drawn is visible on the right end of the bench. The power hoist used for shifting work pieces can be seen in the background.

29 View northwest of back ends of the two chain draw benches used for making small diameter tube.

30 Detail view northwest of gas-fired furnace used for annealing tubes between successive draws, and at the completion of drawing. The composition of the atmosphere within the furnace is controlled to minimize formation of scale on the brass.

31 View southwest of a machined billet ready to be loaded into one of the induction furnaces for heating prior to extrusion in the press visible in the background.

32 View southwest of the hydraulic ram of the extrusion press forcing a hot billet into the front end of the die chamber of the extrusion press. Once the ram has entered the die chamber it will force the hot metal to flow through a smaller diameter opening at the other end of the chamber, thereby reducing it to the diameter of the tube.

33 View north of a completed tube emerging from the back end of the extrusion press. The long table in the foreground holds the finished tubes as they cool. Two overhead traveling cranes used for handing machine equipment and bundles of tubes are visible at the top of the picture.

34 View southeast of pickling tanks holding dilute sulfuric acid used to remove scale from the tubes after annealing.

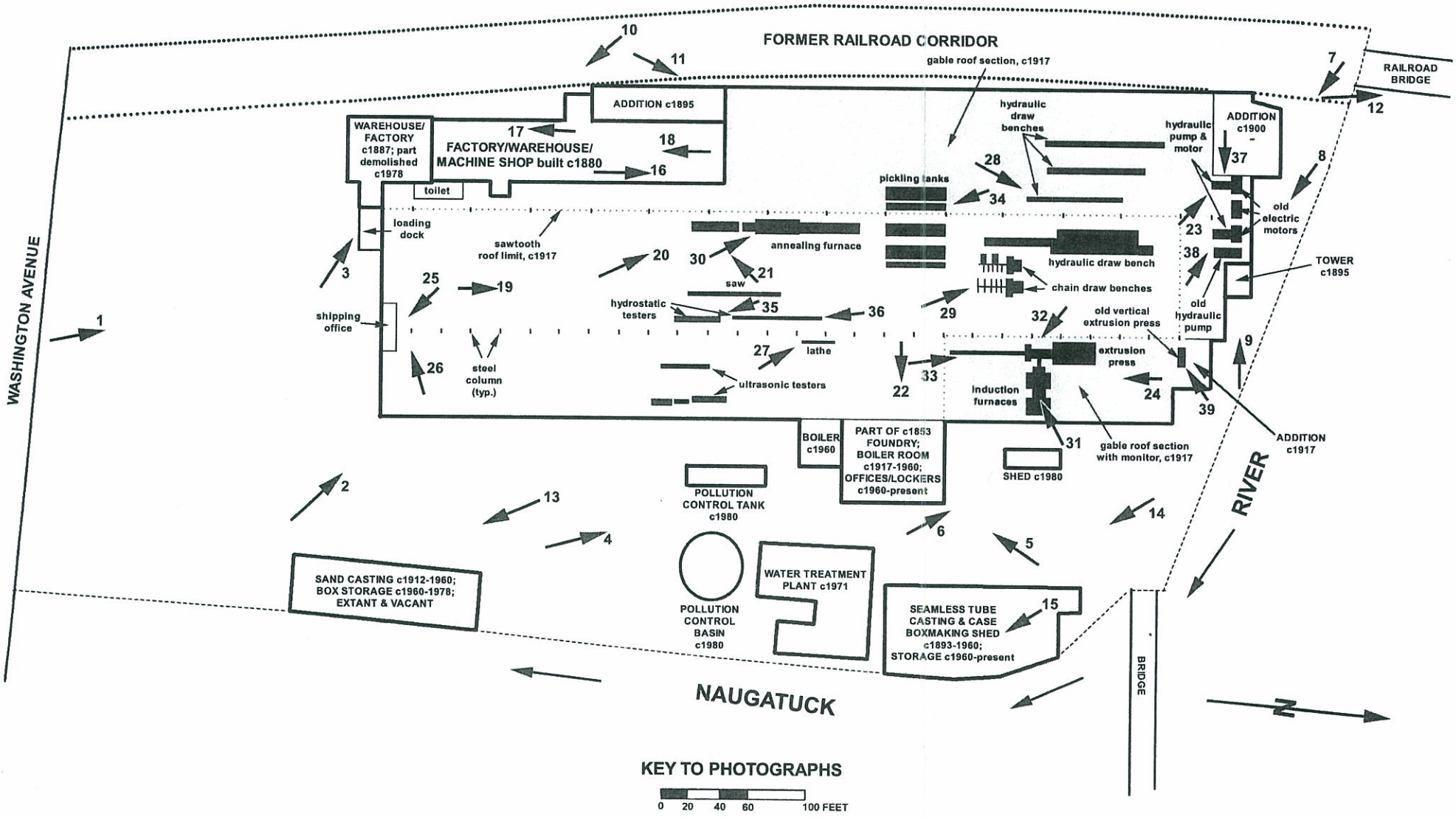
35 View southeast of hydraulic test bench for large diameter tubing. Once filled with water under high pressure, any leaks in the tube show up as jets of escaping water.

36 View south of hydraulic test bench for small diameter tubing. Racks of drawn tubes can be seen at the right. The end of the factory building beyond this equipment, visible in the background, is now largely vacant.

37 View east of hydraulic pumps (blue) driven by electric motors (grey) supply motive power to the large draw bench and the extrusion press. Three electric motors no longer in use and disconnected from pumps are on the platform above the modern equipment.

38 View northwest of old hydraulic pump (right) with its piping in the foreground. The disused electric motors in Photograph 37 are visible in the background.

39 View southwest of disused vertical extrusion press at the north end of the plant. Metal was forced downward through extrusion dies, and was received in a pit beneath the press.


FORMER RAILROAD CORRIDOR
RAILROAD BRIDGE
WASHINGTON AVENUE
ADDITION c1895
WAREHOUSE/ FACTORY c1887; part demolished c1978
FACTORY/WAREHOUSE/ MACHINE SHOP built c1880
toilet
loading dock
sawtooth roof limit, c1917
gable roof section, c1917
hydraulic draw benches
hydraulic pump & motor
ADDITION c1900
pickling tanks
old electric motors
annealing furnace
hydraulic draw bench
chain draw benches
TOWER c1895
saw
hydrostatic testers
shipping office
old vertical extrusion press
old hydraulic pump
extrusion press
steel column (typ.)
lathe
ultrasonic testers
induction furnaces
BOILER c1960
PART OF c1853 FOUNDRY; BOILER ROOM c1917-1960; OFFICES/LOCKERS c1960-present
SHED c1980
gable roof section with monitor, c1917
ADDITION c1917
RIVER
POLLUTION CONTROL TANK c1980
SAND CASTING c1912-1960; BOX STORAGE c1960-1978; EXTANT & VACANT
POLLUTION CONTROL BASIN c1980
WATER TREATMENT PLANT c1971
SEAMLESS TUBE CASTING & CASE BOXMAKING SHED c1893-1960; STORAGE c1960-present
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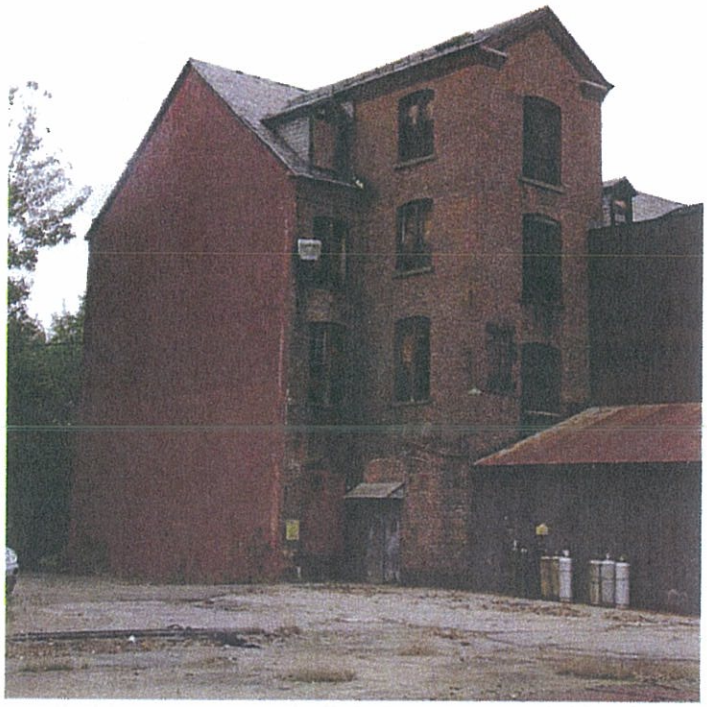
PHOTOGRAPH 1

PHOTOGRAPH 2



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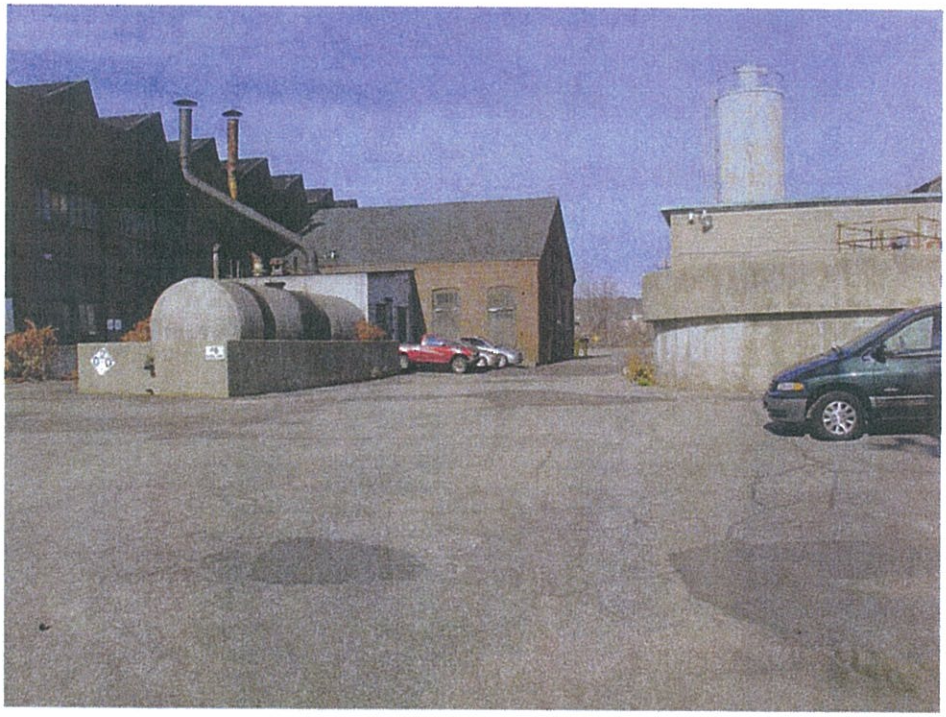

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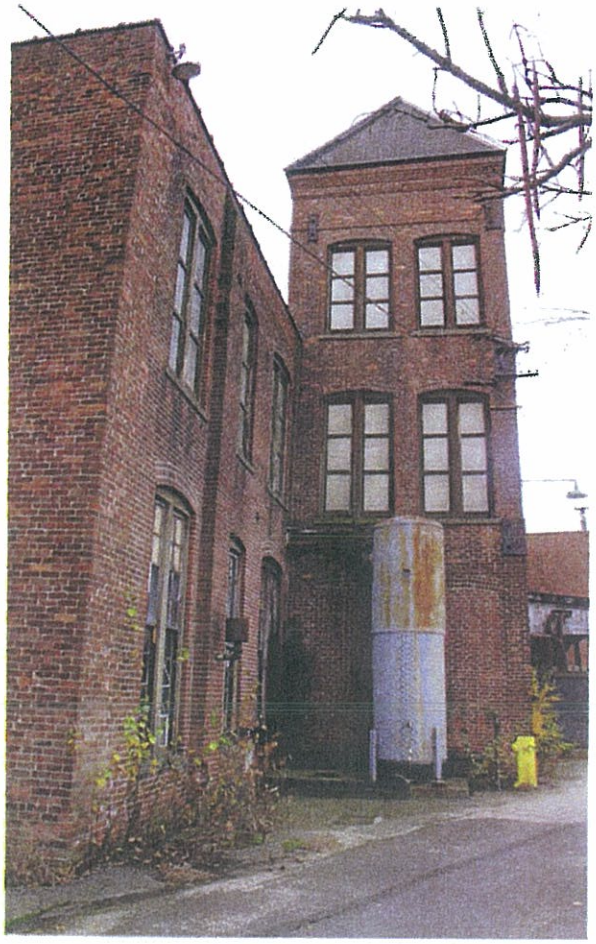

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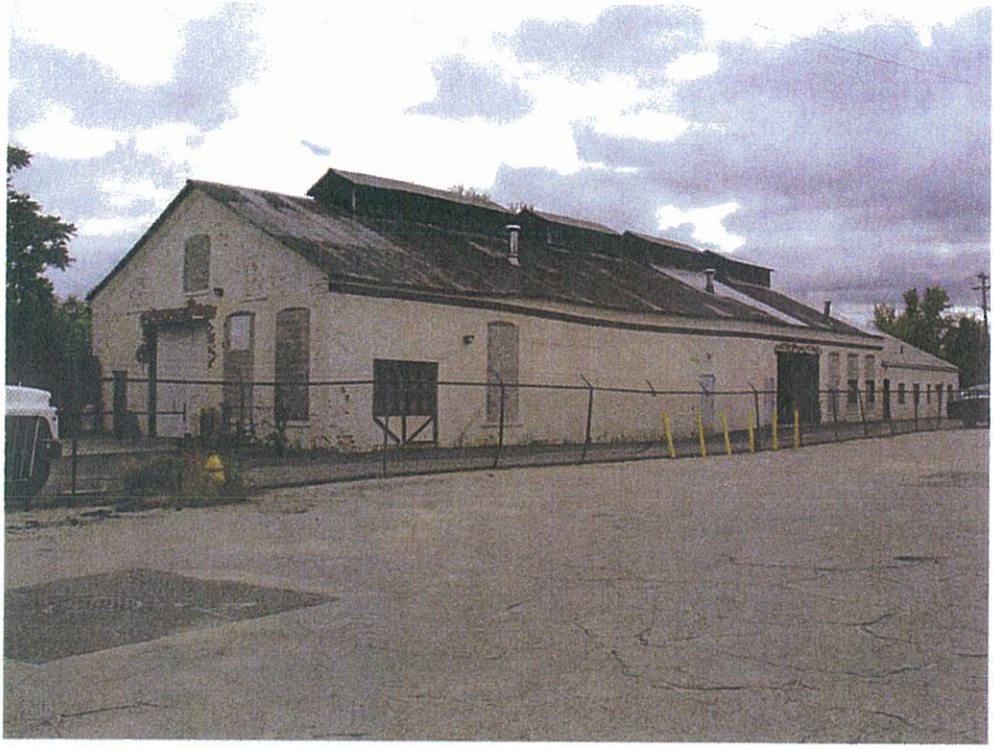

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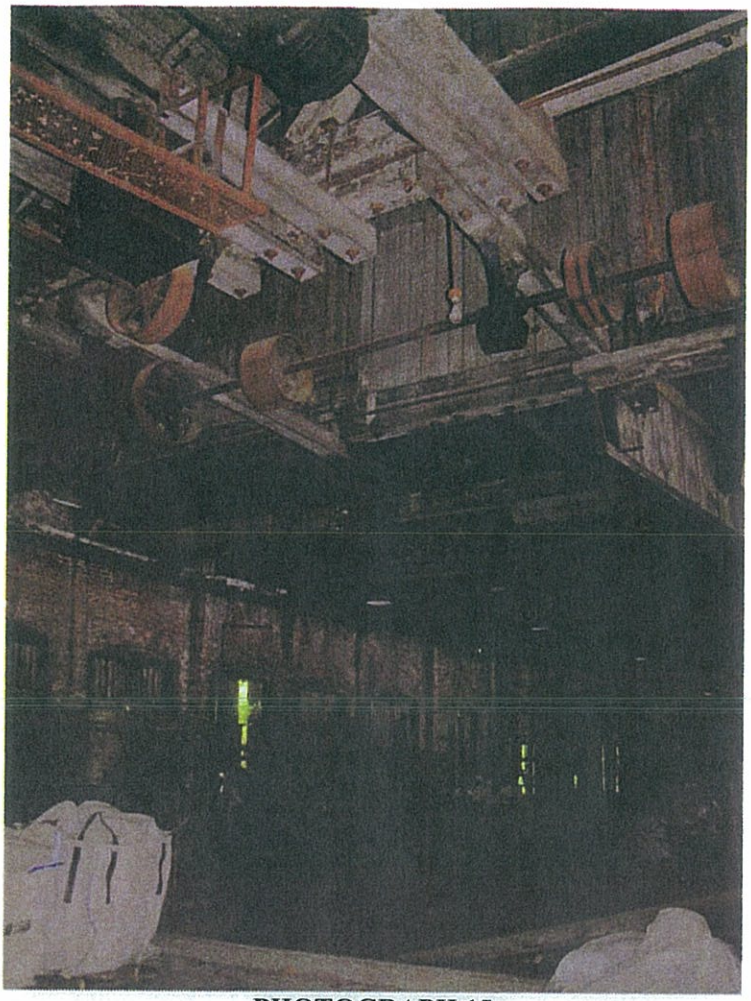

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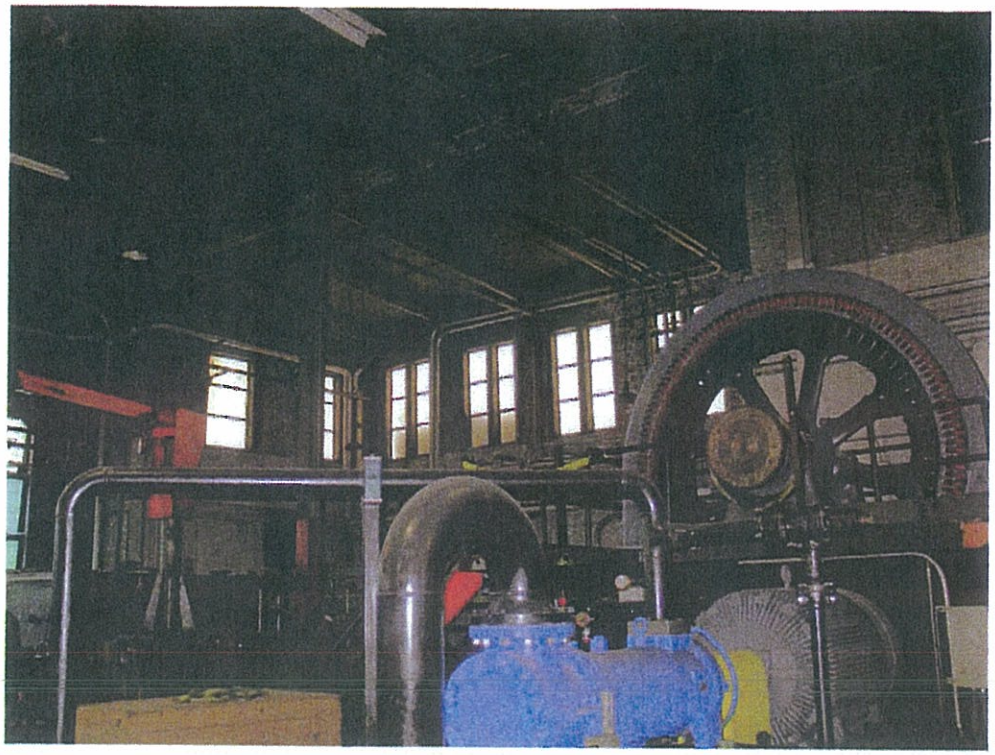

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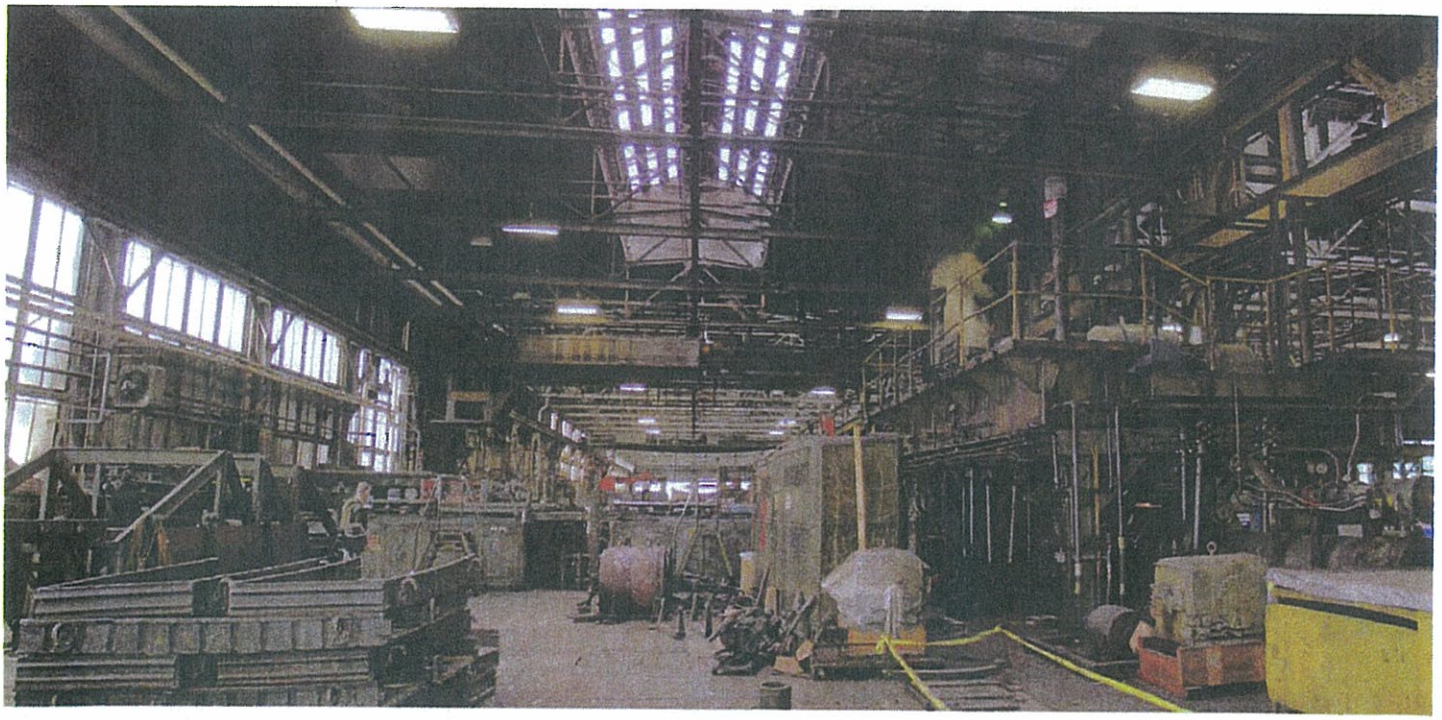

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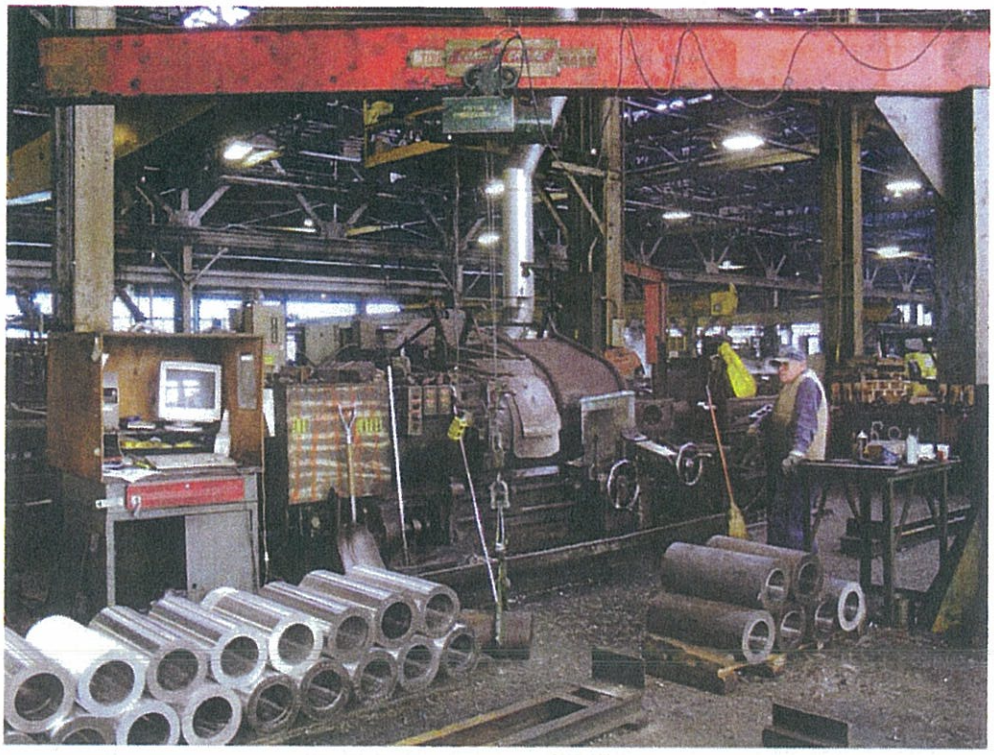

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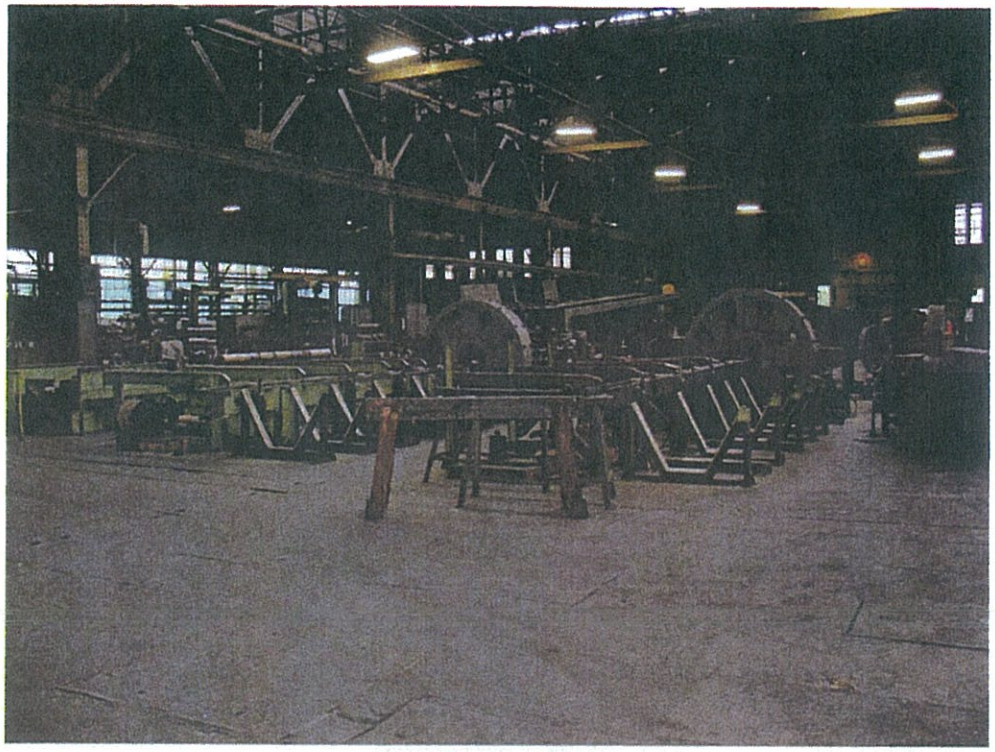

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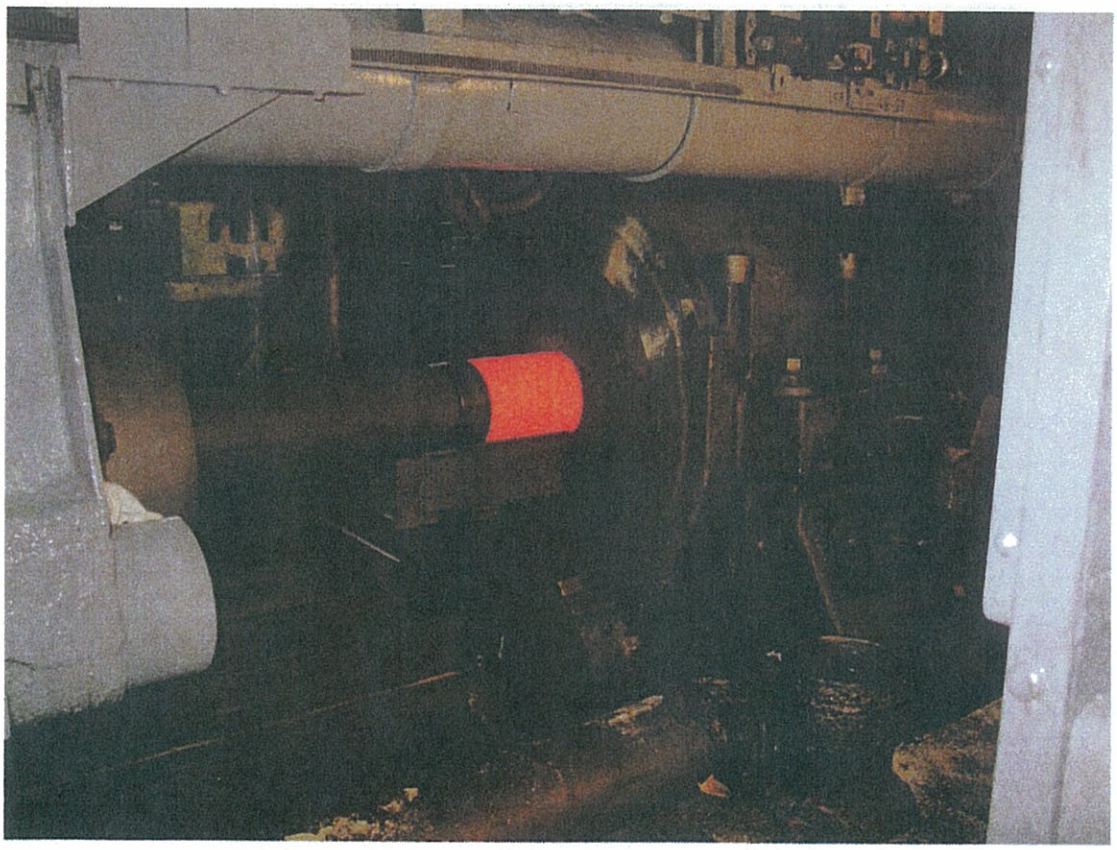
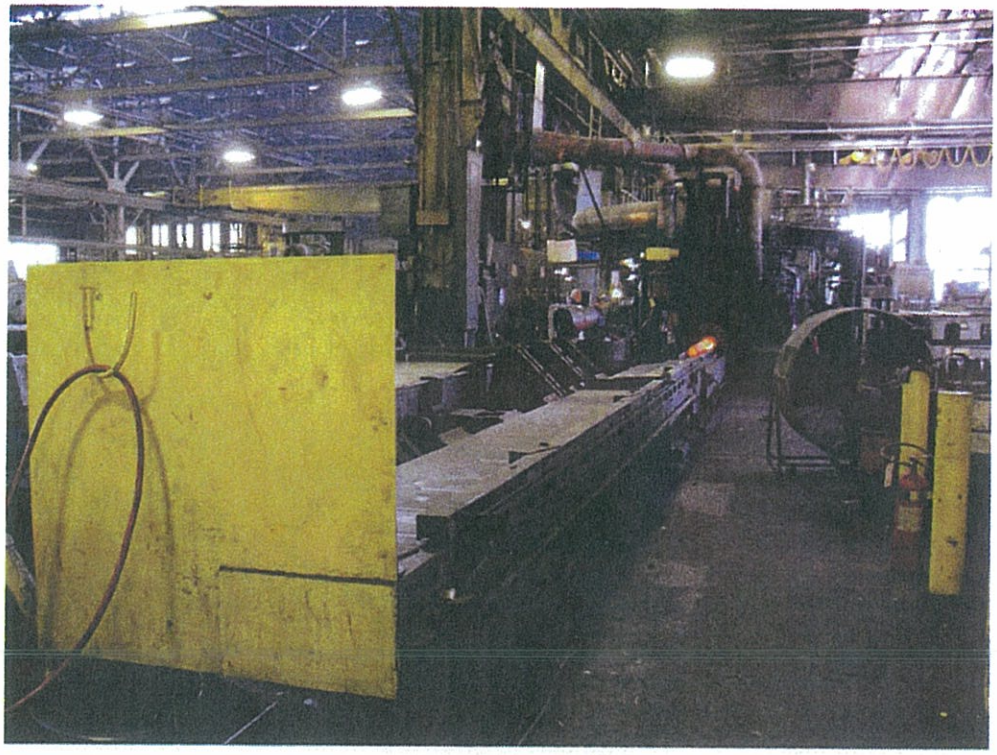
PHOTOGRAPH 30

PHOTOGRAPH 31

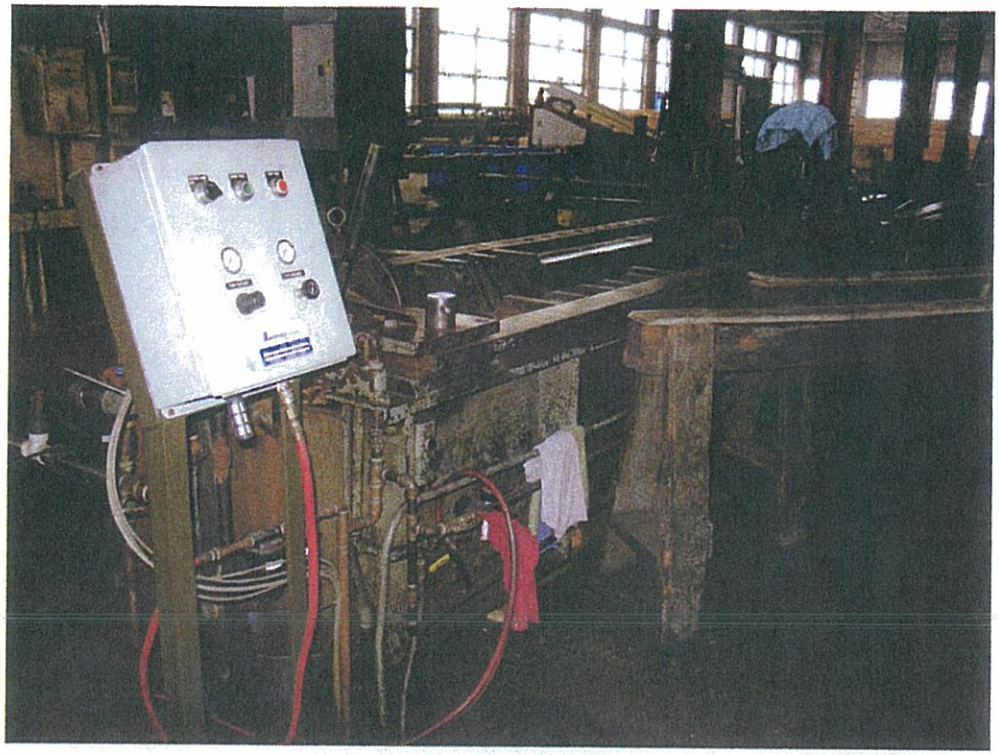


PHOTOGRAPH 32



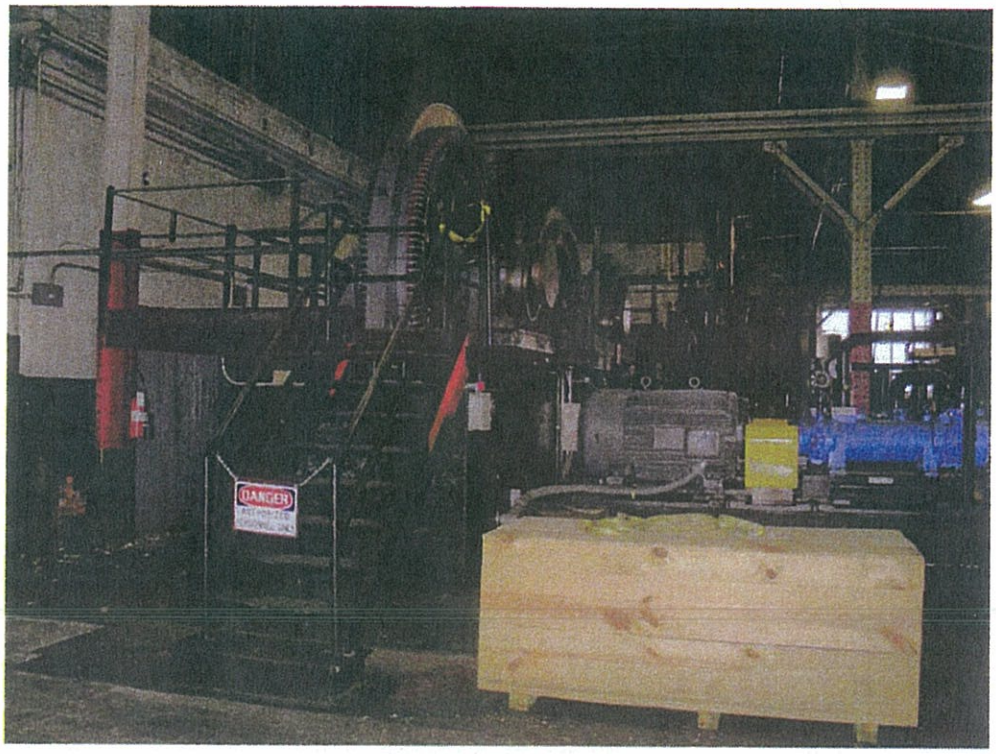
PHOTOGRAPH 33

PHOTOGRAPH 34



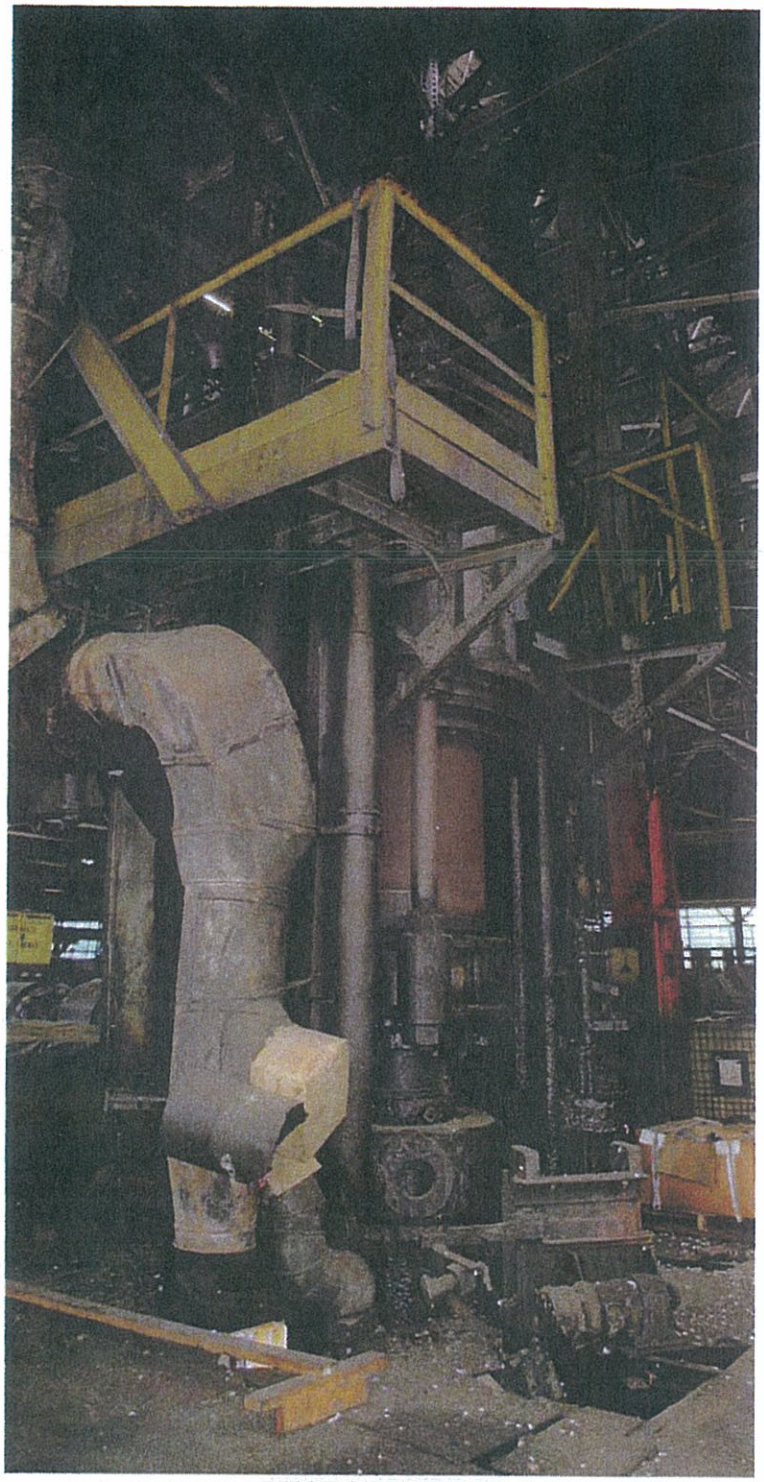
PHOTOGRAPH 35

PHOTOGRAPH 36



PHOTOGRAPH 37

PHTOGRAPH 38



PHOTOGRAPH 39

TRC
650 Suffolk Street
Lowell, Massachusetts

Main 978-970-5600
Fax 978-453-1995

Memorandum

To: Waterbury Generation, LLC

From: Colin Duncan, Senior Soil and Wetland Scientist

Subject: Site Reconnaissance Summary of Proposed Waterbury Generation Transmission Line – Waterbury, CT

Date: 14 December 2007

CC: Michael Anderson

Project No.:

Existing Wetland Conditions

A field inspection of the 1.8 mile transmission corridor associated with Waterbury Generation Project Site was conducted by Colin Duncan, TRC Senior Soil and Wetland Scientist on November 29, 2007. The objective of the inspection was to determine the extent of wetlands and watercourses (if any) located on the transmission corridor and to document existing wildlife and vegetation. Photos of the route are presented in Appendix A.

Based on direct observations along the corridor and the Wetland Zone Map from the City of Waterbury GIS database, no wetlands occur within the transmission line corridor. However, a drainage ditch (as indicated by a blue "water" line) is shown along the existing railroad tracks which parallels the transmission line north of South Leonard Street. In addition, the transmission line is proposed to cross the Naugatuck River and terminate at the Baldwin substation, located east of the river. The railroad tracks and the parallel proposed transmission corridor contains narrow bands of sparse vegetation, consisting mainly of non-native, invasive species including tree-of-heaven (*Ailanthus altissima*), Japanese knotweed (*Polygonum cuspidatum*), spotted knapweed (*Centaurea maculosa*), along with black cherry (*Prunus serotina*), white ash (*Fraxinus americanum*), black locust (*Robinia pseudoacacia*), gray birch (*Betula populifolia*) and grasses.

The drainage ditch paralleling the railroad tracks is mostly void of vegetation, and what vegetation is present on the banks is predominantly upland species described above. The ditch contained no water at the time of the site visit, and appears to only flow in response to storm events. Since, in accordance with the Chapter 440 – Inland Wetlands and Watercourses Act, Section 22a-28 et seq., the ditch does not contain two or more of the following characteristics: (A) Evidence of scour or deposits of recent alluvium or detritus, (B) the presence of standing or flowing water for a duration longer than a particular storm incident, and (C) the presence of hydrophytic vegetation, it does not qualify as an intermittent watercourse.

The southern portion of the proposed transmission line draws close to the Naugatuck River along Municipal Road, and then crosses the river to reach the existing Baldwin Substation. Here the riparian zone associated with the river has been reduced to a steep bank (~10 feet high) vegetated with tree and shrub species. All but one or two of the approximately two dozen poles

needed for the transmission line will be located in upland areas that are more than 100 feet from the Naugatuck River. The one or two exceptions will be located in areas where there are other existing structures.

According to the Flood Zone Map from the City of Waterbury GIS database, a portion of the land around the railroad tracks is within the 500-year floodplain associated with the Naugatuck River. The 100-year floodplain is mapped as occurring immediately adjacent to the Naugatuck River, not in the vicinity of the tracks but further to east along Municipal Road.

Wildlife

Given the industrial nature of the project area, the wildlife habitat can be considered low quality. Wildlife species typical of urban industrial areas that may occur within the project area include the common crow, pigeon, European starling, common grackle, and various songbirds. Mammalian species that may occur include the raccoon, gray squirrel, and various rodents. In addition, according to the Connecticut Department of Environmental Protection Natural Diversity Data Base (CT NDDB) map, there are no federal or state protected species or significant natural communities located at or in the vicinity of the project area. The Naugatuck River most likely serves as a wildlife corridor through this industrial area. It is not anticipated that the proposed project will affect the water quality or habitat value of this river.

Regulatory Requirements

The Connecticut Siting Council has exclusive jurisdiction over the location and type of electric generating and transmission line facilities and has determined that the Project is eligible for a Petition of Declaratory Ruling. The Project is being submitted for review pursuant to the Council's declaratory ruling process, and, therefore, is not subject to the municipal regulate and restrict order process set forth in Connecticut General Statutes section 16-50x (d).

Summary

No wetlands were identified along the 1.8 mile transmission corridor. Proposed construction of a few poles may occur within 100 feet of the Naugatuck River, in areas where there are other existing structures.

The Connecticut Siting Council has exclusive jurisdiction over the siting of electric generating and transmission line facilities. Regulations governing petitions from the Council supersede all local regulatory provisions. However, as a courtesy, it is recommended that applications are forwarded to local municipalities including any inland wetland agencies for review and comment.

1. Transmission line route toward Washington St./Station site; view to north

2. Transmission Line route south of Washington St.; view south

3. Transmission line route north of rail overpass; view to south

4. Ditch along east side of railroad tracks; view to north

5. Ditch and culvert along local access drive off Railroad Hill Dr.; view to south

6. Transmission line route east of tracks, north of So. Leonard St.; view to south

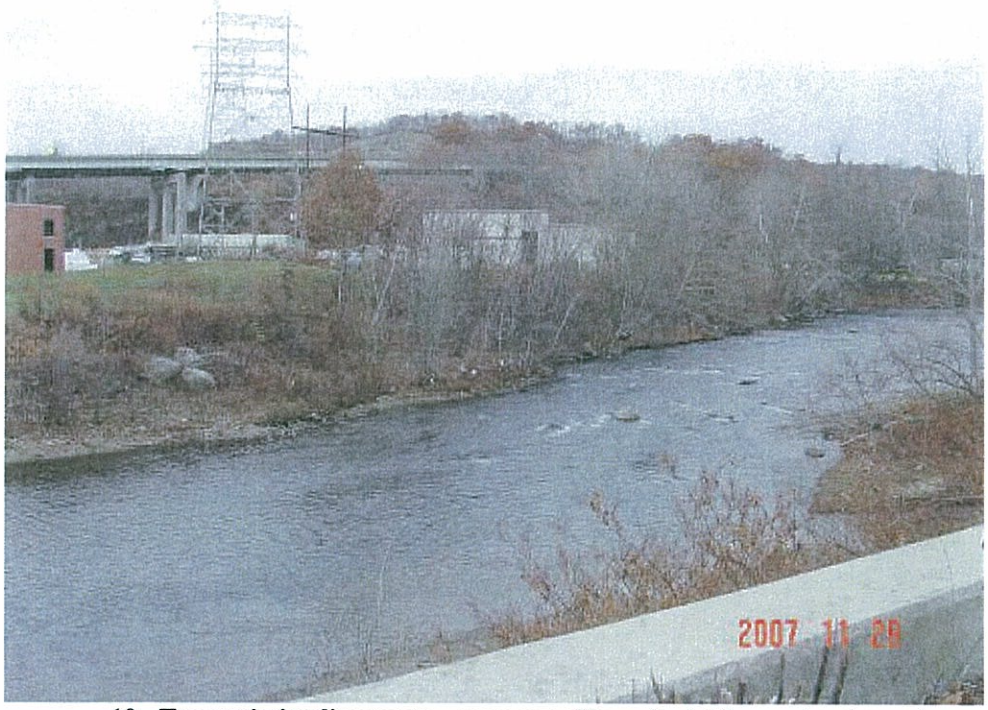
7. Ditch along west side rail tracks; view to north

8. Ditch culvert beneath rail tracks on west (right) and east (left) side of tracks

9. Transmission line route east of rail tracks (right) from So. Leonard St.; view to north

10. Transmission line route east of rail tracks (left) from So. Leonard St.; view to south

11. Transmission line route (left) along Municipal Dr. and Naugatuck River (right); view to north



12. Transmission line route – span over Naugatuck River; view to west