

United States Department of the Interior
National Park Service

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National Register of Historic Places Multiple Property Documentation Form

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This form is for use in documenting multiple property groups relating to one or several historic contexts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. For additional space use continuation sheets (Form 10-900-a). Type all entries.

A. Name of Multiple Property Listing

Historic and Architectural Resources of Providence (RI) 1636-present

(The Making of a Metropolis 1865-1945; Public Works & Utilities; Sewage Treatment, 1895-1935)

B. Associated Historic Contexts

none

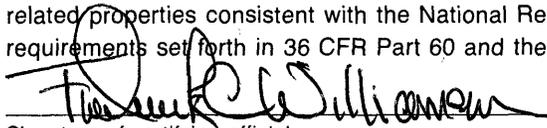
C. Geographical Data

The corporate limits of the City of Providence, Providence County, Rhode Island.

See continuation sheet

D. Certification

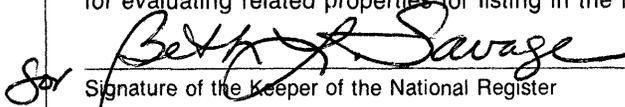
As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards for Planning and Evaluation.


Signature of certifying official

22 Nov 1988
Date

State or Federal agency and bureau

I, hereby, certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.


Signature of the Keeper of the National Register

1-13-89
Date

E. Statement of Historic Contexts

Discuss each historic context listed in Section B.

Introduction: This multiple property listing encompasses historic properties associated with the development of sewage treatment facilities in Providence during the period 1895 to 1935. Construction of a facility to process and treat household and industrial waste was among a variety of public works and utilities developed in Providence as a response to the intensification of urbanization and industrialization that resulted in the effective metropolitanization of the city and its environs in the period from the end of the Civil War to World War II. The properties included in the multiple property listing are representative of the property type defined for this particular aspect of the historic context. The following background and historic context discussions have been developed from Woodward and Sanderson's Providence: A Citywide Survey of Historic Resources, issued by the Rhode Island Historical Preservation Commission in 1986.

Background: The geographical area associated with this historic context constitutes the present city limits of Providence. Initially settled in 1636 under Roger Williams, Providence developed in the 17th century as an agrarian community, the bulk of its small population located on the east side of the Providence River on house lots purposely long and narrow to provide each owner with direct river access. During the 18th century, Providence's strategic location at the head of a natural harbor enabled the town to transform both its economy and its built environment through participation in a variety of maritime activities, including the North American coastal trade, trade with Britain, and the triangular trade among North America, Africa and the Caribbean. Ironically, this century also saw substantial reduction in Providence's town limits, which until 1730 included all of present-day Providence County west of the Blackstone River. Although the community had expanded to the west bank of the Providence River and increased its population, the General Assembly began to set off former Providence lands as new towns in 1731, eventually reducing the town's limits to about 6 square miles.

The maritime economy of Providence suffered under British regulations enforced on all the colonies in the 1760's and 1770's, but proposed during the Revolution by supplying the needs of both American and French navies, add through privateering against British cargo vessels. Emerging from the war with its "ships, fortunes and merchant ranks intact" Providence achieved still greater heights of prosperity as a maritime community in the closing decades of the century.

In 1790, however, the first factory spinning of cotton yarn was achieved at Pawtucket, and by the first decade of the 19th century Providence's financial interests began to shift their attention, and investments, toward industry, most at first located in Providence County but on water privileges outside the town. Continued population growth within Providence made it the

United States Department of the Interior
National Park ServiceNational Register of Historic Places
Continuation SheetSection number E Page E.1

seventh largest community in the U.S. in 1810, but it remained under the traditional town-meeting form of government until 1832. Incorporated as a city that year, Providence was thus provided with the administrative structure necessary to oversee its second, and most enduring, transformation, from seaport town (although it retained many of these activities) to a major industrial center. Much of the labor force of this new industrial base was derived from immigration: from Britain and Canada and Ireland prior to the Civil War; after the Civil War primarily from Italy, and also Portugal, French Canada, Russia, Sweden, Turkey and Germany.

Historic Context: Historic and Architectural Resources of Providence, 1636-present (The Making of a Metropolis; 1865-1945; Public Works and Utilities: Sewage Treatment, 1895-1935.

During the 80 years between the Civil War and World War II, historical development of Providence was characterized by a tremendous intensification of the patterns of urbanization and industrialization that had emerged in the second quarter of the 19th century. After the Civil War, its major industries (metals, jewelry and textiles) increased their dominance of the local economy, augmented by significant production of electrical supplies, rubber goods, silk and innumerable other products. This expanding industrial base rested on an equally-expanding population: between 1865 and 1880, Providence's population doubled, then doubled yet again by 1910 (accounting for most of the 450% increase over the period as a whole). The resulting building boom constructed nearly 30,000 dwellings. Housing and industrial development expanded to remaining rural areas on the inner edges of the city limits, and threatened to advance well beyond. In response, the city re-annexed portions of adjacent towns originally set off in the 18th century: parts of Cranston (1868, 1892), North Providence (1873, 1874) and Johnston (1889, 1919).

Although engineered primarily by private enterprise, the explosive growth of late 19th century Providence relied upon, and was facilitated by, the development of a variety of public services and utilities that provided the important "infrastructure" necessary for the functioning of an industrial metropolis. A municipal water supply was developed, with three major reservoirs constructed between 1868 and 1899. Providence Telephone was incorporated in 1879, and electrical service was offered to the city in 1882. Providence's public transit system,

United States Department of the Interior
National Park ServiceNational Register of Historic Places
Continuation SheetSection number E Page E.2

inaugurated in 1865 with horsecars, was converted to electric trolley service starting in the early 1890's. The city funded the improvement of numerous streets, and constructed Blackstone Boulevard (1892-4) and Pleasant Valley Parkway (1909) to provide additional incentive for development and to improve access.

History of Sewage Treatment in Providence: The growth (numerically, geographically and industrially) that necessitated and benefited from these improvements (as well as an improved "social infrastructure" in the form of schools, fire and police protection) also resulted in increasing amounts of household and industrial waste, a problem which the city was forced to address soon after the Civil War.

The initial approach to the sewage issue in Providence was focused rather directly upon collecting household and industrial waste and depositing it at some remove into the rivers and harbor, where it was assumed that dilution and natural processes (not then fully understood) would render it harmless, or at least take it out of harm's way. In 1869 the City passed an ordinance providing for public construction of sewers, a task subsequently delegated to a Board of Water Commissioners organized in 1873, The Board entrusted the specific planning of a sewer system to Joel Herbert Shedd, then City Engineer and architect of Providence's water supply system. Reporting to the Board in 1874, Shedd observed that "the amount of impurity from our sewers is so small, when compared to the volume of water in the harbor," that the practice of dumping raw waste presented "no great inconvenience." However, Shedd also warned that "it is probable...there will be, before many years, an imperative popular demand for the purification of sewage before its discharge into rivers and harbors."

Within a decade, the tremendous population and industrial growth of Providence had proved Shedd correct. Recognizing the need for some system for treating household and industrial waste, but unsure what the proper method should be, the City Council in Spring, 1884, sent Samuel Gray (who had succeeded Shedd as City Engineer in 1877) to Europe, at that time in the forefront of developments in sanitary engineering. Gray's itinerary included Great Britain, and it was here that he observed the process of chemical precipitation which was in widespread use in that country at the time.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number E Page E.3

Upon his return to Providence, Gray prepared a report for the Board of Water Commissioners, submitted in the late months of 1884. In this report, Gray recommended that the city construct a system of interceptors by which sewage would be collected from neighborhood sewer lines and conveyed to Fields Point, a small peninsula on the west bank of the Providence River, then site of an abandoned military fortification, a smallpox hospital, and a few dwellings. At Fields Point, Gray proposed construction of a chemical precipitation plant. At the plant, chemicals would be introduced into the raw sewage to facilitate the settling-out of solid matter, the clarified effluent (liquid) conveyed to deep water and dumped, and the sludge (solids) pressed into a form suitable for easy removal and disposal.

Gray's proposal was eventually implemented as the "Improved Sewerage System" authorized by the City Council in 1890. Construction of the interceptors began within a year under J. Herbert Shedd, who had resumed the position of City Engineer. Under his supervision, the overall plan of Fields Point was developed along with designs for the precipitation tanks and the pump station planned for Ernest Street, by which sewage from low-lying areas of the city would be lifted into an 88-inch main and conveyed into the treatment plant. Otis Clapp succeeded Shedd as City Engineer in 1898 (although Shedd continued to participate for at least two more years as a consulting engineer), and under him the Fields Point laboratory, chemical building, and sludge press house were designed and built. The plant was put into operation in April 1901.

Within a decade, however, Providence's sewage treatment system began to experience problems. During the first years of operation, sludge generated at Fields Point was carried away for use as fill or fertilizer; subsequently, it was taken by barge and dumped into Narragansett Bay. The chemical precipitation process itself produced a large volume of sludge, relative to other methods, and the continuing growth of Providence (and of its household and industrial wastes) began to put severe pressures on the capacity of Field Point. In 1901 the practice of dumping sludge into the bay became a public issue when Bay oystermen, through their champion, Prof. Frederick Gorman of Brown University's bacteriological laboratory, raised complaints about the effects of sludge dumping on their oyster beds. Although the issue was not immediately resolved, it may have contributed to the introduction, in 1914, of a bill in the state

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

Section number E Page E.4

proposing the creation of a metropolitan sewerage commission. The City of Providence raised vociferous objections, suggesting that what was actually required was more effort on the part of other communities on the Bay, rather than establishment of a metropolitan system. Although this bill failed to pass, the issue remained alive, and was revived again in 1921 with the proposed Metropolitan Sewerage Act. This act simply called for a committee to investigate the region's sewerage problems; however, the City of Providence moved swiftly once again to denounce the measure, basing its arguments this time on what it perceived as a lack of appropriate representation on the proposed sewerage commission.

By the mid-1920's, the continued and increasing inadequacy of the Fields Point plant led the City Council to an investigation of alternatives and to the Commissioner of Public Works' admission, in the Providence Journal, that the facility was fundamentally obsolete. In truth, the chemical precipitation process, as developed in Great Britain and adopted by a very few U.S. cities (Worcester and Providence being the most prominent) had proved a rather unsatisfactory method of treatment, due not only to the large amount of sludge produced, but also to the high cost of chemicals. As other methods were developed, use of the chemical precipitation process, never extensive, declined significantly between 1910 and 1930 (although with improved technology, it experienced a revival in the 1930's). With this in mind, the Joint Standing Committee on Sewers of the Providence City Council in 1925 conducted a tour of eight U.S. cities to learn more about sewage treatment methods that might be used to prevent, or at the very least decrease, pollution in the harbor and Bay.

The process viewed with most enthusiasm by the Committee was that of activated sludge, then "the latest development in sewage disposal". In this process, sewage is first passed through primary settling tanks, in which larger solids are removed. It then flows to aeration tanks, where it is mixed with biologically active sludge and with oxygen provided by compressed air. The activated sludge contains bacteria which with the introduction of air, oxidize organic matter in the sewage. After aeration, the sewage flows to final settling tanks, where the sludge settles out and the effluent is channeled off. A portion of the activated sludge is returned into the treatment process to replenish the supply of bacteria, and the rest is dewatered and removed for disposal.

United States Department of the Interior
National Park ServiceNational Register of Historic Places
Continuation SheetSection number E Page E.5

As a result of the City Council's investigation, the decision was eventually made to convert the Fields Point plant from the chemical precipitation process to the activated sludge process. Although planning began in the late 1920's, most of the actual work was accomplished between 1930 and 1934, during which time major physical changes were made at the facility. Old settling tanks were rebuilt for aeration, new final settling tanks, or clarifiers, were constructed, and a grit chamber was built to provide preliminary treatment (removal of grit and other heavy solids prior to aeration). Since chemicals no longer played a part in the treatment process, the Chemical Building was remodelled to house large air compressors, or "blowers." At the same time, the mechanical presses in the Sludge Press House were replaced with more modern vacuum filters.

Despite the extensive remodeling of Providence's sewage treatment plant, the opinion remained in some quarters that the problems of pollution in the harbor required a metropolitan solution. In the late 1930's, a \$427 million public works program was proposed by the state's Democratic administration (to be augmented, if approved, with a 45% matching grant from the federal Public Works Administration). The proposed program included \$12 million in state funds for a metropolitan sewerage system. The proposal was "decisively" defeated in the November, 1938 referendum, not only in cities which had their own sewage treatment systems, but also in communities "which had been promised the greatest benefits".

In the end, a metropolitan solution to the pollution of Providence Harbor and Narragansett Bay was not implemented until the creation of the Narragansett Bay Commission in 1982. In the intervening decades, the Field Point plant experienced almost continuous remodeling. Major modifications occurred in 1947-49, in 1955-56 (at which time the step-aeration process, developed in New York City, was introduced), and in 1963. The facility is currently undergoing extensive new construction, as well as reconstruction, under the guidance of the Environmental Protection Agency.

The construction and operation of a sewage treatment system constitutes one of a variety of ways in which Providence addressed the enormous physical and social challenges posed by the city's explosive growth between the Civil War and World War II. Some of the "infrastructure" emerging from this period was largely the work of private enterprise, for example the streetcar

**United States Department of the Interior
National Park Service**

**National Register of Historic Places
Continuation Sheet**

Section number E Page E.6

system, telephones and electric power. Most, however, was undertaken by the city itself, to improved both the social environment (through schools, expanded police and fire protection) and the physical environment (clean water, parks, improved streets, bridges and harbor improvements) of Providence.

Providence's sewage treatment system was successful in that its implementation ended the discharge of raw waste in the immediate environs of the city. The fact that the original process used at Fields Point was not an unqualified success speaks not to the supposed "incompetence" of Samuel Gray or others involved in its implementation. Rather, it speaks to the fact that sewage treatment was, at the end of the 19th century, still a relatively new problem in sanitary engineering, one which has been addressed with increasing sophistication in the 20th century. The willingness of the City to countenance the costly conversion of Fields Point to a new process in the 1930's demonstrated the continued concern for public welfare and well-being which had initially prompted the development of municipal solutions to a wide range of social and environmental issues after the Civil War.

United States Department of the Interior
National Park ServiceNational Register of Historic Places
Continuation SheetSection number F Page F.1

Description:

The property type consists of buildings and structures designed and built to function in the processing and treatment of sewage, constructed in Providence between 1895 and 1935. Examples of this property type include both sewage pumping stations and structures that housed equipment or machinery used in the treatment of sewage. The buildings and structures are sited according to the purposes for which they were originally constructed. Materials and methods of construction reflect functional requirements as well as the availability of materials and the nature of construction practices of their time. In many cases, buildings also display at least on the exterior attributes of architectural form or style reflective of the built environment of the community at large. Due to the on-going and increasing public concerns for proper processing and disposal of sewage, extant examples of this property type are expected to have been mechanically, and in some cases structurally, altered at one or more times in order to sustain their functional viability. Some buildings and structures will maintain their original function (although with modern machinery or equipment) while others will have been converted to other uses as a result of changes in the treatment process. It is not expected that original machinery or equipment importantly associated with sewage treatment during the period of significance will be present.

Significance:

Properties significant under Criterion A will have been designed and constructed under the auspices of the City of Providence between 1895 and 1935 as part of the city's sewage treatment system. They will therefore be associated with the intensification of urbanization and industrialization in Providence between 1865 and 1945. They represent one of a variety of public services and utilities developed in Providence during the period to improve environmental conditions or to facilitate or enhance community growth. The date of construction, as well as dates of subsequent alteration within the period of significance, will associate each property with one or more points of evolution within the sewage treatment system. Properties significant under Criterion C may possess distinctive characteristics of buildings and structures designed and built in the late 19th and early 20th centuries for industrial use or specifically for handling sewage. As a form of civic architecture, they may also have distinctive

**United States Department of the Interior
National Park Service**

**National Register of Historic Places
Continuation Sheet**

Section number F Page F.2

characteristics of construction or style that illustrate how such characteristics were utilized to design and construct facilities intended not only to be useful but also to enhance the visual environment of their time and place.

Registration Requirements:

Properties will have been built between 1895 and 1935 under the auspices of the City of Providence for the development or improvement of sewage processing and treatment. They are in their original locations. They retain sufficient integrity to convey their original visual character. If altered in terms of structure, the alterations must have occurred within the period of significance, must reflect an important event or development in the history of the sewage treatment system during that period, and must not have been extensively obscured or lost as a result of still later alterations outside the period of significance.

G. Summary of Identification and Evaluation Methods

Discuss the methods used in developing the multiple property listing.

See continuation sheet

H. Major Bibliographical References

See continuation sheet

Primary location of additional documentation:

- State historic preservation office
 Other State agency
 Federal agency

- Local government
 University
 Other

Specify repository: Narragansett Bay Commisison; Providence Dept. of Public Works

I. Form Prepared By

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**United States Department of the Interior
National Park Service**

**National Register of Historic Places
Continuation Sheet**

Section number G Page G.1

Resources included in this multiple property listing were initially identified by the Rhode Island Historical Preservation Commission (SHPO) during its review of proposed plans for upgrading what is now the Metropolitan Providence Wastewater Collection and Treatment facility operated by the Narragansett Bay Commission. Subsequent investigations (on which this document is based) included site inspections at Fields Point and at the Ernest Street, Washington Park and Reservoir Avenue pump stations. Information obtained from site visits and conversations with Bay Commission engineering and operations staff was extensively supplemented with documentary research in Bay Commission files, the City Archives and the Providence Public Library.

The historic context in which these resources are evaluated is derived from the Rhode Island State Plan for Historic Resources, and is more specifically based upon the city-wide survey of historic resources in Providence published by the Rhode Island Historical Preservation Commission in 1986. That the Providence sewage treatment system was originally developed under City auspices beginning in the early 1890's permitted analysis to focus on the events and developments outlined in the section entitled "Making a Metropolis 1865-1945", and in particular the emergence of city-wide public works and utilities which attended the urbanization and industrialization of the period, of which city sewage treatment facilities were an important example.

Definition of property type is derived from function, i.e. utilization in the sewage treatment process as part of the development of sewage treatment facilities by the city of Providence. This property type is closely associated with the historic context and illustrates buildings and structures that were (and in some instances still are) important elements of the system. The standards for integrity were based on the National Register standards for assessing integrity. Information from field inspection and research has also been used to determine the manner in which alterations are interpreted in the assessment of integrity.

United States Department of the Interior
National Park Service

**National Register of Historic Places
Continuation Sheet**

Section number H Page H.1

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