

WAYNE RADIO TRANSMITTER BUILDING  
Vincent Avenue, 0.9 miles west of intersection of  
U.S. Route 202 and the Newark-Pompton Turnpike  
Wayne Vicinity  
Passaic County  
New Jersey

HABS No. NJ-1240

HABS  
NJ  
16-WAYN.V,  
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN BUILDING SURVEY  
National Park Service  
Northeast Region  
Philadelphia Support Office  
U.S. Custom House  
200 Chestnut Street  
Philadelphia, PA 19106

HISTORIC AMERICAN BUILDINGS SURVEY  
WAYNE RADIO TRANSMITTER BUILDING

HABS  
NJ  
16-WAYN.V.  
1-

HABS No. NJ-1240

Location: Vincent Avenue, 0.9 miles west of intersection of U.S. Route 202 and the Newark-Pompton Turnpike, Wayne Vicinity, Passaic County, New Jersey.

USGS Pompton Plains, NJ Quadrangle, Universal Transverse Mercator Coordinates: 18.560120.4530410

Present Owner: New Jersey Department of Transportation  
Trenton, New Jersey

Present Occupant: Vacant

Present Use: Not in use

Significance: The development of broadcast media, radio, and television, mark critical technological and cultural changes in our history. The Wayne Radio Transmitter Building is associated with numerous important trends in the history of radio, including use by the Columbia Broadcasting System, early exploitation of short-wave broadcasting, and use for transmission of the Voice of America.

In 1995, the Wayne Radio Transmitter Building was determined eligible by consensus between the New Jersey Historic Preservation Office and the Federal Highway Administration, and with the concurrence of the New Jersey Department of Transportation. The Wayne Radio Transmitter Building retains integrity sufficient to convey its association with the development of radio technology, and with the use of radio as a broadcast medium.

## PART I: HISTORICAL INFORMATION

The Wayne Radio Transmitter Building currently consists of a single building, constructed circa 1930-1931. The building appears to have been constructed by the Columbia Broadcasting System to house its transmitting equipment for the flagship New York station, WABC. The building functioned as a radio transmission facility from 1931 through circa 1963 for WABC, an international short-wave station, and the Voice of America. It is currently vacant.

The Wayne Radio Transmitter Building is located in Wayne Township, Passaic County, New Jersey. Passaic County is located in the north-central portion of New Jersey, and is bounded by Morris and Sussex Counties to the west; Essex County to the south; Bergen County to the east; and Orange and Rockland Counties of the State of New York to the north. The border between Passaic and Morris Counties is defined by the course of the Pequannock and Pompton Rivers, the former a tributary of the latter. The confluence of the Passaic and Pompton Rivers forms the border among Passaic, Morris, and Essex Counties. Wayne Township is located in the southern portion of Passaic County, and is bounded by the Borough of Totowa and the Passaic River to the south; Haledon and North Haledon to the east; the border of Bergen County to the north; and Pompton Lakes and the Pompton River to the west.

The Wayne Radio Transmitter Building is adjacent to the Pompton River at the westernmost end of Vincent Street, along the west edge of Wayne Township. It is within a designated flood hazard area.<sup>1</sup> Examination of the USGS Pompton Plains, NJ Quadrangle map indicates that the transmitter building is elevated approximately 180-200 feet above sea level, on land designated as marsh. The Wayne Radio Transmitter Building is the only extant building within its immediate area; a small residential development on a gridded street configuration is located approximately 1,000 feet from the Wayne Radio Transmitter Building.<sup>2</sup> This subdivision appears to have been developed by the Broadway Construction Company of Wayne, who mapped the development in February 1926.<sup>3</sup>

Although the "first sophisticated radio transmitter" was put into use in 1906, a significant boom in the use of radio did not occur until the close of World War I.<sup>4</sup> This boom largely occurred between the early 1920s and the early 1930s, a period marked by the formation of three durable radio networks, the National Broadcasting Company (NBC, 1926), the Columbia Broadcasting

---

<sup>1</sup> K. Creran. *Right-of-Way Appraisal Report: Associated Testing Labs*. New Jersey Department of Transportation. October 1994.

<sup>2</sup> USGS Pompton Plains, NJ Quadrangle, 7.5 Minute Series.

<sup>3</sup> "Map Number 45, Wayne, New Jersey. Property of the Broadway Construction Company, Wayne, Passaic County, New Jersey. February 8th, 1926. Map 808." This citation was found in reference to an adjacent property in the Wayne Township Tax Assessor's files.

<sup>4</sup> Eric Foner and John Garraty, eds., *Reader's Companion to American History* (Boston: Houghton Mifflin Company, 1991), 903.

System (CBS, 1927), and the Mutual Broadcasting System (MBS, 1934); the concurrent decline in the number of small and unaffiliated stations, "whose numbers dropped from ninety-eight in 1927 to forty-three in 1933, and continued to decline;" and the development of radio broadcast as a medium carrying advertisements to a mass public.<sup>5</sup> "By 1933, two-thirds of American homes had at least one radio, twice as many as those with telephones."<sup>6</sup>

Important to the history of the Wayne Radio Transmitter Building was the development of CBS. Formed in 1927, the network comprised nineteen stations by mid-1928, when William Paley of Philadelphia was given the company by his father, cigar baron Samuel Paley.<sup>7</sup> William Paley soon proved adept at the broadcasting business. He restructured the affiliate-network arrangement, strengthened programming, and expanded the network. By 1935, CBS was ninety-seven stations strong and claimed to be the largest national network, measured by the number of affiliates. In 1935, while the Great Depression continued to stall the American economy, CBS grossed nearly \$20,000,000 with \$2,270,000 remaining as profit.<sup>8</sup>

One of Paley's first moves was to secure a network-owned flagship station for the New York market. After considering the two independent stations, WOR and WABC, Paley bought WABC in December 1928 for \$390,000.<sup>9</sup> It became CBS's first company station.<sup>10</sup> Later, Paley recalled that the "acquisition gave us a transmitting station and a studio on top of Steinway Hall on Fifty-seventh Street - and also some unusual assets of the WABC company, Atlantic Broadcasting."<sup>11</sup> Payment arrangements made by WABC before CBS bought it, in addition to cash, included barter, which brought chickens and kitchen appliances onto CBS's balance sheet. While he did mention the studio location, Paley did not indicate the location of the WABC transmitter building, and it is not known whether this transmitter building was located at Wayne.

A construction date has not been definitively determined, but two sources indicate that the Wayne Radio Transmitter Building had been built by 1931. The first, a 1957 report retained by the CBS Real Estate Division, indicates that CBS purchased parcels at Wayne in 1931, 1934, and 1936.<sup>12</sup> This record suggests a commitment by CBS to the Wayne site, but a firm conclusion concerning the existence of the Wayne Radio Transmitter Building can not be drawn from this source. The second reference allows a more confident inference.

---

<sup>5</sup> Foner and Garraty, *Companion to American History*, 903-5.

<sup>6</sup> Foner and Garraty, *Companion to American History*, 903.

<sup>7</sup> Eric Barnouw, *The Golden Web: A History of Broadcasting in the United States, Volume II - 1933 to 1953* (New York: Oxford University Press, 1968), 56.

<sup>8</sup> Barnouw, *The Golden Web*, 58.

<sup>9</sup> Lewis J. Paper, *Empire: William S. Paley and the Making of CBS* (New York: St. Martin's Press, 1987), 30-31.

<sup>10</sup> Robert Metz, *CBS: Reflections in a Bloodshot Eye* (Chicago: Playboy Press, 1975), 3.

<sup>11</sup> William S. Paley, *As It Happened, A Memoir* (Garden City, N.Y.: Doubleday & Co., 1979), 44.

<sup>12</sup> Charles Ashton, *Eligibility Assessment: Wayne Transmitter Building*, Cultural Resources Group, New Jersey Department of Transportation, May 1995, 2. Elliot Matz, CBS Real Estate Division, Personal Communication with James Parkinson, 14 June 1995.

WAYNE RADIO TRANSMITTER BUILDING  
HABS No. NJ-1240  
(Page 4)

A November 1932 article in *Broadcasting* indicates that the Wayne Radio Transmitter Building, with a new antenna and 50-kilowatt transmitter, had been in service for more than one year. Discussing the antenna, CBS's director of technical operations, Edwin K. Cowan, "declared the efficiency of the station has increased 41 percent . . . since the installation of the 665-foot boom-shaped mast and its new 50 kw. transmitter," giving it "the highest transmission efficiency of any 50 kw. installation in the country."<sup>13</sup> A picture with this article is the same image included in an October 1932, article from *Broadcast News*, which discusses the technical details of the insulators on the antenna. In the *Broadcast News* photograph, the Wayne Radio Transmitter Building is visible in the background of the image; it appears to be the same shape and configuration as the extant building with minor exceptions. Neither the antenna nor the small tuning house at its base are extant.

As significant as the approximate date of construction inferred from this article is the mention of the transmitting power, 50-kilowatts, used by WABC at its Transmitter Building. Transmitting at this power had been technically possible since circa 1924, but it was not until 1927 that the first 50-kilowatt unit was placed into commercial service.<sup>14</sup> Although it is not clear when WABC initially placed its 50-kilowatt unit in service, the article indicates only that it had a new one in 1931, the fact that WABC was transmitting at that power in 1931 indicates the importance of this high-powered station.

In the same year that the first 50-kilowatt transmitter was used commercially, the Radio Act of 1927 authorized the newly created Federal Radio Commission (FRC) to:

. . . classify radio stations; prescribe the kind of service each class should render; assign frequencies to classes and to individual stations; determine each station's power and hours of operation; regulate the kind of apparatus to be used; prescribe regulations to prevent interference; make special regulations with respect to chain broadcasting; hold hearings, summon witnesses, and make such investigations as it deemed necessary for the performance of its duties.<sup>15</sup>

In 1928, the FRC determined that licenses for maximum power channels, those transmitting with 50-kilowatts, would be limited to twenty nation-wide, with the nation subdivided into zones; four 50-kilowatt transmitters were to be licensed in each zone.<sup>16</sup> In 1933, WABC was one of the four stations licensed to transmit at maximum power in the New York zone. WAAF, WJZ, and WOR were the other New York-area stations licensed at this power, although WOR chose to use

---

<sup>13</sup> "Half-Wave Antenna Proved." *Broadcasting* (November 15, 1932): 24.

<sup>14</sup> I. J. Koor, "Some Developments in Broadcast Transmitters," *Institute of Radio Engineers - Proceedings* 18:10 (October 1930), 1623.

<sup>15</sup> Murray Edelman, *The Licensing of Radio Services in the United States, 1927 - 1947: A Study in Administrative Formulation of Policy* (Urbana: The University of Illinois Press, 1950), 5-6.

<sup>16</sup> "More 50 kW. Stations are Seen as Commission Lifts Limitation," *Broadcasting* (October 1, 1933):18.

WAYNE RADIO TRANSMITTER BUILDING  
HABS No. NJ-1240  
(Page 5 )

only 5-kilowatts.<sup>17</sup> After seven years, the FRC was deemed unwieldy and in June 1934, the Communications Act created the Federal Communications Commission (FCC) that exists today.<sup>18</sup>

An advertisement included in the January 15, 1933 issue of *Broadcasting* lists WABC as one of the stations "now equipped" with a Western Electric 50-kilowatt transmitter.<sup>19</sup> Although a picture of the unit is included with the advertisement, there is no way to determine whether the unit pictured is located at the Wayne Radio Transmitter Building. The transmitter unit appears to occupy a substantial amount of floor space. Were it located in the central space of the Wayne Radio Transmitter Building, it would occupy about one-half the space. A CBS advertisement of September 1933, also in *Broadcasting*, confirms that WABC was using a 50-kilowatt transmitter.<sup>20</sup>

The location of the Wayne Radio Transmitter Building within a floodplain and marsh is consistent with generally accepted standards of transmitter location for the period. An article, "How to Pick Proper Transmitter Site," published in the magazine *Broadcasting* in January of 1932, states that:

The ideal location of a broadcast transmitter is in a low area of marshy or "crawfishy" soil or area which is damp the maximum percentage of the time and from a clear view over the entire center of population may be had [sic] . . . [I]t is better to select a site in a low area rather than on top of a hill.<sup>21</sup>

Common, too, for this location would have been an array of copper wires, located approximately one foot underground, radiating horizontally from the base of the antenna tower. These wires, numbering about one hundred, provided proper conductivity for the antenna and probably extended from the tower base about the same distance as the height of the tower.<sup>22</sup>

It appears that WABC was an important station in the national network of CBS - the first owned by CBS proper. It also appears that it was able to gain its flagship position by 1928, and to maintain that position during the 1930s. The association of the Wayne Radio Transmitter Building with the development of short waves, then considered the range between 6,000 and 12,000 kilocycles, as a broadcast medium for international programming, is perhaps of greater significance.

---

<sup>17</sup> Ibid.

<sup>18</sup> Edelman, *The Licensing of Radio Services in the United States*, 7.

<sup>19</sup> *Broadcasting* (January 15, 1933), 2. The records of Western Electric are housed at the AT&T archive in Warren, New Jersey. They are not accessible for this level of detailed research.

<sup>20</sup> *Broadcasting* (September 1, 1933): 25.

<sup>21</sup> A.D. Ring, "How to Pick Proper Transmitter Site," *Broadcasting* (January 1, 1932): 21.

<sup>22</sup> Lucas Bazin. Personal Communication with Charles Ashton. 29 June 1995.

“Broadcasting by short-wave began experimentally during 1924 . . . [and] moved along slowly until the early 30’s, when it became more active in both England and Germany.”<sup>23</sup> Countries maintaining colonial outposts and complex military systems, England and Germany as well as France, Holland, and Italy, “became interested in short-wave international broadcasting.”<sup>24</sup> Interpreted in another light, short-wave stations became “thinly disguised instruments of colonial policy.”<sup>25</sup>

Important to the early development of American short-wave radio was a regulation imposed by the FRC in 1928 that designated all frequencies above 1,500-kilocycles for “continental point-to-point services to compete with established wire lines.”<sup>26</sup> This regulation stifled the development of short-wave for broadcast, prescribing that these bands be used for individual-to-individual radio contact, rather than the large audiences that broadcasting reached. This regulation came under attack from the radio industry in 1932, and it appears that restrictions on use of the short-wave broadcast range were loosened soon thereafter.

Following the ten-year period of slow development, the years from 1935-1937 saw heightened activity. By 1937, there were over three-hundred short-wave stations broadcasting from England, Germany, Italy, and the United States in at least five languages.<sup>27</sup> CBS and the Wayne Radio Transmitter Building were associated with these important events in the history of short-wave radio.

CBS began transmitting short-wave programming under the station sign W2XE (later WCBX) in either 1929 or 1930. However, “the first few years of this operation consisted of experiments of a technical nature,” and were part of the decade-long slow development of the medium.<sup>28</sup> “In 1932, W2XE . . . installed a new 1000-watt station and in 1937, a 10,000-watt station.”<sup>29</sup> While it is not known whether the 1,000-watt (1-kilowatt) transmitter was located at Wayne, it does appear plausible that some of CBS’s technical experiments may have been conducted at the Wayne Radio Transmitter Building. This is speculation and has not been substantiated by documentary research.

It is known, however, that the 10,000-watt (10-kilowatt) transmitter installed in 1937 was located at the Wayne Radio Transmitter Building. A *Broadcast News* article of 1937 discussed the transmitting equipment installed at the Wayne Radio Transmitter Building, in addition to the

---

<sup>23</sup> A.B. Chamberlain, “CBS International Broadcast Facilities,” *Institute of Radio Engineers - Proceedings* 30:3 (March 1942): 118.

<sup>24</sup> James Wood, *History of International Broadcasting* (London: Peter Peregrinus, 1992), 135.

<sup>25</sup> Holly Cowan Shulman, *The Voice of America: Propaganda and Democracy, 1941 - 1945* (Madison: University of Wisconsin Press, 1990), 4.

<sup>26</sup> “Commission Plans Short Wave Probe.” *Broadcasting* (December 31, 1932): 31.

<sup>27</sup> Chamberlain, “CBS International Broadcast Facilities,” 119.

<sup>28</sup> *Ibid.*

<sup>29</sup> *Ibid.*

WAYNE RADIO TRANSMITTER BUILDING  
HABS No. NJ-1240  
(Page 7 )

AM radio equipment present at the building since 1931. In addition to the broadcast range intended for use by the domestic market, AM radio within 550-1500 kilocycles, new radio equipment installed in 1937 transmitted in a broadcast range including frequencies at 6120, 11830, 15270, and 21520 kilocycles, reaching audiences from Australia to Britain to Brazil under the station sign W2XE.<sup>30</sup>

Pictured in this article is the equipment, an "RCA ET4310, 10-kilowatt short wave transmitter."<sup>31</sup> This was a freestanding unit located on the first floor of the Wayne Radio Transmitter Building, in either the southwest or northeast corner. The photograph appears to show vinyl flooring in a checkerboard pattern. The window sash appear to be double-hung and possibly twelve-over-twelve. Two male technicians are in the image; one sits at a typewriter speaking into a microphone and the other is standing with a clipboard by the transmitter unit. "The transmitter housing proper is approximately 9-1/2 ft. long, 7 ft. high, and 4 ft. deep."<sup>32</sup>

In an article published by *Electronics* magazine in December 1937, the transmitter equipment is the subject of a detailed discussion.<sup>33</sup> This article indicated that the installation at the Wayne Radio Transmitter Building led the American radio industry in the transmission of international short-wave programming when placed in service, and stated that a minimum of three broadcasters had competitive short-wave transmission facilities close to completion when the W2XE station was completed.

Technically the new equipment of W2XE . . . marks a definite turning point in the development of equipment of this type . . . . It is the first high-power short-wave transmitter designed from beginning to end specifically for broadcast use.<sup>34</sup>

CBS used the Transmitter Building for the AM signal WABC for approximately ten years; it "was discarded" on 18 October 1941.<sup>35</sup> On that date, transmission of the WABC signal began from a small man-made island located in Long Island Sound, approximately one mile off of New Rochelle, with a new 50-kilowatt unit manufactured by the Federal Telephone & Radio Company.<sup>36</sup> A contemporary account reported that the population of the primary service area

---

<sup>30</sup> John Taylor, "W2XE Short Wave Transmitter", *Electronics* (December, 1937): 23.

<sup>31</sup> "Improved Service for CBS Foreign Listeners: New Facilities Provide Entertainment for Many Lands" *Broadcast News* (November, 1937): 4.

<sup>32</sup> Taylor, "W2XE Short Wave Transmitter," 26.

<sup>33</sup> Taylor, "W2XE Short Wave Transmitter," 23-27.

<sup>34</sup> Taylor, "W2XE Short Wave Transmitter," 23.

<sup>35</sup> E.M. Ostlund, "WABC - Key Station of the Columbia Broadcasting System: A Radio Station on its Own Island," *Electrical Communication* 21:1 (1942), 62.

<sup>36</sup> The siting of the new WABC transmitter in the midst of the Long Island Sound reflects the development of siting practice. From marshy soils, preference was now given to location near or in salt water; the conductivity gained with underground copper cables in a marsh was improved by siting the facility in a salt water environment. [Lucas Bazin. Personal Communication with Charles Ashton, 29 June 1995.]

increased to fifteen-million people, two to ten times the population reached when the transmitter was located in Wayne.<sup>37</sup>

On 1 January 1942, the CBS short-wave stations WCBX (formerly W2XE) and WCRC inaugurated transmission from new facilities at Brentwood, New York.<sup>38</sup> This Brentwood facility was located on an 1,100-acre parcel purchased by the Mackay Radio & Telegraph Company in 1934.<sup>39</sup> The station sign WCBX had been transmitted from the Wayne Radio Transmitter Building, while WCRC had previously been transmitted from the Philadelphia region.<sup>40</sup> A journal article from 1942 stated that the transmitter located at Wayne was underpowered; as its replacement at Brentwood was a 50-kilowatt unit, it seems reasonable to assume that the 10-kilowatt RCA transmitter installed in 1937 was still in use in 1942.<sup>41</sup>

If the Wayne Radio Transmitter Building was vacated following the relocation of the WABC and WCBX (W2XE) transmission equipment, it stood empty for a very short while. By 1941, as American entry into World War II loomed closer, the short-wave capabilities proven effective at the Wayne Radio Transmitter Building became an important component of United States foreign policy.

Rejected "as a formal instrument of foreign policy" by President Roosevelt prior to American involvement in World War II, by 1941 the dissemination of propaganda assumed sufficient urgency to prompt the formation of the Foreign Information Service (FIS), specifically commissioned to "fight Nazi propaganda with American propaganda."<sup>42</sup> On December 26, 1941, less than three weeks after "Pearl Harbor transformed propaganda broadcast," John Houseman was invited to assist with the propaganda machine being assembled by the FIS in New York.<sup>43</sup>

On 24 February 1942, the Voice of America made its first broadcast.<sup>44</sup> It was, unfortunately, not a momentous event as many voices emanated from United States short-wave transmitters. This

---

<sup>37</sup> Ostlund, "WABC - Key Station," 67.

<sup>38</sup> "Recent Telecommunications Developments," *Electrical Communications* 20:3 (1942), 230.

<sup>39</sup> Haraden Pratt, "Plant Facilities of the Mackay Radio & Telegraph Company in the New York Area," *Electrical Communication* 20:1 (1941), 33.

<sup>40</sup> Chamberlain, "CBS International Broadcast Facilities," 119.

<sup>41</sup> *Ibid.* Examination of period technical journals indicates that the power ratings for transmitter units typically stepped up from 1-kilowatt, to 10-kilowatts, to 50-kilowatts. Only one mention was found of power ratings between 10 and 50-kilowatts; this was a 1925 reference to a 40-kilowatt unit located at Bound Brook, N.J., operated by WJZ, which is known to have installed a 50-kilowatt unit by 1933 (see note 16).

<sup>42</sup> Shulman, *Voice of America*, 5.

<sup>43</sup> Shulman, *Voice of America*, 25. John Houseman's experience with radio broadcasting included the program *War of the Worlds* with Orson Welles, which caused residents in sections of New Jersey to flee their homes fearing the fictional invasion by aliens invented by Welles.

<sup>44</sup> Joseph O'Connell, Voice of American Public Affairs Office, Washington, District of Columbia. Personal Communication with James Parkinson. 31 May 1995. R.N. DeHart, "WOOC . . . WOOW: International Broadcast Stations Installed by CBS at Wayne, N.J.," *Broadcast News* (June 1945): 1.

WAYNE RADIO TRANSMITTER BUILDING  
HABS No. NJ-1240  
(Page 9 )

problem was soon fixed by expanding the network. By early March 1942, FIS leased its first commercial station, WLWO in Cincinnati, Ohio, owned by the Crosley Radio Corporation, an important midwestern radio company. This was followed by the lease of General Electric and Westinghouse facilities in June, and CBS and NBC facilities in September. The FIS was renamed the Office of War Information (OWI) this same month. The final privately-owned station was leased by the end of 1942, bringing under OWI control all fourteen American short-wave transmitters.<sup>45</sup>

It appears that the Wayne Radio Transmitter Building was leased to the OWI with other CBS facilities in September 1942. Further, it appears that the Wayne Radio Transmitter Building housed one of the fourteen international short-wave transmitters located in the United States at that date. Finally, it appears probable that the 10-kilowatt transmitter unit installed by CBS in 1937 was used by the Voice of America until the end of 1943, when new high-powered transmitting equipment was installed by the OWI at Wayne.

Between July and December 1943, construction, installation, and testing was completed for two 50,000-watt (50-kilowatt) transmitters at the Wayne Radio Transmitter Building.<sup>46</sup> These broadcast OWI programming over the WOOC and WOOW stations, and again brought activities at the Wayne Radio Transmitter Building to the fore of short-wave radio development. It was not until a number of years later that significantly higher-powered transmitter units were placed in service.

An article published by *Broadcast News* details the transformation undertaken at the Wayne Radio Transmitter Building in 1943 as a result of the new OWI transmitter units. It appears that few substantial changes were made to the fundamental design of the building. The opening between the vestibule and transmitter room on the first floor was enlarged, allowing the vestibule area to function as an extension of the transmitter room, and six inches were added to the floor height on the first floor to provide trenches for switching circuitry between transmitter units and power supply units that occupied nearly the whole of the central space of the first floor.

Photographs of the primary functional spaces were included with this article, as was a plan of the first floor, and a section through the building. Shown in the photographs are the large banks of equipment that comprised the transmitter panels and the control console located on the raised floor in the vestibule. The transmitter panels reflect the streamlined Moderne style typical of machinery, automobiles, trains, and diners, of this period. Strong horizontal lines created by polychromatic bands of varying widths, rounded corners and trademark emblems, and a profusion of switches, dials, and handles celebrate the sophistication and importance of these

---

<sup>45</sup> Shulman, *Voice of America*, 26-7.

<sup>46</sup> DeHart, "WOOC . . . WOOW," 3.

machines. All of this sharply contrasts with the utilitarian appearance of the Wayne Radio Transmitter Building itself.

The plan and section included with the article indicate that the Wayne Radio Transmitter Building has been very little-altered since 1945. Room layouts, partitions, and structure appears to be very similar to those of 1945. With the exception of the radio equipment, now gone, and indication that an office was an 'Antenna Switching Room', it seems that the building is essentially the same.

Deep internal strife and struggles over control led to the dismantling of the OWI in August 1945. The Voice of America remained on the air, but the content and administration changed dramatically. Between 1945 and 1947, staff and funding declined, but the assumption of a new propaganda effort renewed both; "[t]he tone of the Voice hardened, and it concentrated its efforts on Russia and eastern Europe."<sup>47</sup> The Voice of America budget went from elimination by Congress in 1946 to "\$16.1 million in 1948. By 1952 the Voice was broadcasting in forty-six languages, twenty of which were spoken in iron or bamboo curtain countries."<sup>48</sup> In 1953, a substantial reorganization removed the Voice of America from the State Department and placed it under a newly formed agency, the United States Information Agency (USIA), where it remained in 1995.<sup>49</sup>

The Wayne Radio Transmitter Building was leased from CBS by the Voice of America between 1948 and 1963. In 1948, two RCA 50-kilowatt transmitters were operated by CBS for the Voice of America at Wayne, WABC-5 and WABC-6.<sup>50</sup> It appears possible, but has not been determined, that these two transmitter units were the ones installed in 1943. By 1952, a new antenna had also been installed.<sup>51</sup>

In 1954, the Voice of America consolidated its functions at Greenville, North Carolina. The Greenville facility "was to be the main VOA transmitting station on the US mainland, and it was to be the headquarters of the SW [short-wave] relay providing programme feeds to other transmitting stations."<sup>52</sup> Apparently, the Wayne Radio Transmitter Building remained in use following this consolidation.<sup>53</sup> Another expansion, in 1963, saw placement of short-wave transmitters at points in Sri Lanka, Liberia, England, Costa Rica, and the Philippines, mirroring the containment policy in place since the late-1940s.<sup>54</sup>

---

<sup>47</sup> Shulman, *Voice of America*, 189.

<sup>48</sup> Ibid.

<sup>49</sup> Ibid. Wood, *History of International Broadcasting*, 108.

<sup>50</sup> Ashton, *Eligibility Assessment*, 7.

<sup>51</sup> Ashton, *Eligibility Assessment*, 7. Ashton's information is drawn from an interview with Mr. Martin Manning, archivist at USIA.

<sup>52</sup> Wood, *History of International Broadcasting*, 110.

<sup>53</sup> Ashton, *Eligibility Assessment*, 7.

<sup>54</sup> Wood, *History of International Broadcasting*, 110.

As part of this 1963 expansion, domestic transmitter facilities were consolidated and the Wayne site was among the locations closed. The USIA retains reports of that year, indicating that two 50-kilowatt short-wave transmitters were housed at the Wayne Radio Transmitter Building. Three buildings were located on CBS's parcel: the Transmitter Building, a rigger's shack, and a garage. Four curtain antennae, all owned by the USIA, were also on the parcel.<sup>55</sup>

In circa 1964, Associated Testing Labs (ATL), a New Jersey corporation, purchased the twenty-acre property from CBS.<sup>56</sup> ATL was owned by Kidde Industries, a large conglomerate. A long-time employee of ATL, George Murphy, provided information concerning the condition of the building at that date, and detailed subsequent alterations.

When ATL purchased the property, the building was vacant and in disrepair. Two antennae on the property were removed immediately; concrete anchor pads for the antennae were left in place. Surrounding the property was a chain-link fence. Murphy stated that it appeared possible that a second chain-link fence was once in place -- he recalled seeing small concrete footers with evidence of vertical metal poles remaining in the concrete.

No radio equipment was in the building when ATL took possession, and the company altered the building little during the time that they owned it. Murphy catalogued alterations made by ATL as including the addition of the rear concrete masonry unit garage; replacement of the original green-colored Spanish tile roofing with the present asphalt shingles; removal of large metal jalousies from window openings on the north elevation of the basement story; and placement of plywood over the trenches in the central first floor area. The unusual asphalt coating applied to the exterior was in place when ATL acquired the property.

ATL's business entails simulating environmental conditions, such as heat, moisture, or vibration, to determine a product's ability to resist these conditions. "We drop things on the floor," according to Murphy. For these simulations, ATL appears to have constructed rooms in which to heat electronic and mechanical devices. A control mechanism called an "Automatic Vibrator Exciter Control," found in the attic space of the Wayne Radio Transmitter Building was used by ATL, and is not associated with the transmitter functions of the building.

Murphy reconstructed a time-line of ATL's use of the Wayne Radio Transmitter Building. From circa 1964 through circa 1967, ATL used the building for testing only. Following this period, the building served as records storage, from circa 1967 through circa 1973, when ATL moved their main office to the building. From circa 1973 through 1986, it was the only facility that ATL maintained. In 1984, a flood damaged the basement of the building; eight feet of

---

<sup>55</sup> Ashton, *Eligibility Assessment*, 7.

<sup>56</sup> George Murphy, Associated Testing Labs, Wayne, New Jersey. Personal Communication with James Parkinson, 9 June 1995. This information and the remainder of this section, unless otherwise noted, are from the Murphy interview.

## WAYNE RADIO TRANSMITTER BUILDING

HABS No. NJ-1240

(Page 12 )

water ran through the basement. Two years later, because of this incident, ATL vacated the Wayne Radio Transmitter Building and moved to a new facility located on N.J. Route 23, in Wayne Township.

Tax records at the Wayne Township Municipal Building indicate that the New Jersey Department of Transportation assembled this 49.52-acre parcel from two smaller lots. One, the Wayne Radio Transmitter Building, was purchased from Walter Kidde & Co., Kidde Industries, and Associated Testing Laboratories in 1993.

### PART II: DESCRIPTIVE INFORMATION

The Wayne Radio Transmitter Building is a single building. Extensive regrading and site work have lowered the grade of the immediately surrounding site, and modern resources related to the Transmitter Building, such as a chain-link fence and concrete masonry unit garages, have been removed. The overall dimensions of the Transmitter Building are roughly 61' wide (east-west) x 65' deep (north-south). Inclusion of the modern concrete masonry unit garage addition at the north elevation brings the depth of the building to approximately 89'.

The Transmitter Building is two-and-one-half stories tall. The basement story is level with the surrounding grade. Located adjacent to the Pompton River, the basement of the Wayne Radio Transmitter Building frequently floods, and in one basement room water seeps up through the floor, forming a permanent puddle. A shallow foundation, approximately 18" below grade, consists of a poured concrete pad. The first story is one flight above grade, reached by one of two exterior stairs or one of two interior stairs. An attic half-story has a small platform supporting ventilation equipment. The attic does not appear to have housed other equipment.

Exterior walls are constructed of load-bearing brick masonry, arranged in running bond. Applied to the exterior brick is a thin layer of material that appears to be an asphalt coating with a small-gauge aggregate embedded in the surface. In many locations, this coating has spalled, exposing the underlying brick. In other locations, this spalling has removed the fired facing of the brick. The south elevation is the entrance facade, with formally composed stairs and fenestration creating the principal designed elevation of the building.

The stairs on the south elevation commence at the center of the facade with nine treads rising from grade to a landing that extends nearly the full width of the elevation, meeting two more stairs at its eastern and westernmost points. After a short landing, fourteen stairs rise, returning to the center of the facade at the first story, which is a recessed section that functions as the entrance. A brick parapet with concrete coping defined the edges of the lower stairs and landings; the final fourteen-stair rise to the upper landing had a metal hand railing -- both the rail and the coping have been removed.

## WAYNE RADIO TRANSMITTER BUILDING

HABS No. NJ-1240

(Page 13 )

The south elevation is comprised of three elements. The west and east sides contain two-story projections with one bay on the basement story and two bays on the first story. A concrete belt course, wrapping the whole building, coincides with the sill of the basement story window openings. At each first story window opening is a blind lunette and a concrete sill. The third element of this south elevation is a recessed section containing a double-leaf door opening topped with a blind lunette - both doors are gone - and two slender, rectangular, flanking window openings. One window opening is largely filled with plywood while the other has been reopened in preparation for demolition. No sash remains extant on this elevation. Although most fixtures have been removed, there remain in place some conduits for light fixtures that appear to have been simple and utilitarian in nature. The roof is a low-pitch hipped roof covered with asphalt roofing shingles. A simple fascia board defines the border between the roof and walls.

The east elevation reflects the arrangement of important interior spaces more closely than the south elevation. To the south of this elevation is a projecting two-story, one-bay section that reflects the composition of the south elevation. The center of this elevation is a two-and-one-half-story, three-bay section with fenestration irregular in size and arrangement, a low-pitch end-gable roof, and two I-beams used as a hoist extending from this elevation. The north portion is a two-story, one-bay section, and extending to the north is a modern concrete masonry unit garage. A small shed-roof structure, perhaps the enclosure of a bulkhead basement entrance, projects east from the basement story.

On the east elevation, most sash have been removed or altered for functional purposes. A single window opening, located at the southern bay of the center section in the basement story, retains its sash, which is six-over-six, double-hung wood. Each element of the wood sash, muntins, frame, tracks, and flashing, has been covered with copper sheeting. Other window openings have no sash or have been covered with plywood. One opening, filled with plywood, has a small square opening made in the plywood for ventilation of an interior space. A round duct is visible within the square opening. At the gable-end of the attic half-story is a rectangular louvered vent. A steel-frame ladder extends up from the center window opening of the first story of the center section to this vent and to the I-beam extending out from the attic story. Smaller gauge diagonal braces support this I-beam.

The north elevation is a two-story hipped-roof section with a large, modern, shed-roof addition. Extending through the roof plane of this section is a large louvered stack with a hipped roof. The first story has one door and two window openings arranged irregularly. No sash remains intact. Extending from grade to a first story door opening at the east side of this elevation is a steel frame, double-run stair with pipe railings and two square steel support posts. In the basement story are four openings; one is a window opening with no sash, of similar scale as window openings throughout the building. The other three openings are enclosed by the modern addition, and are large, approximately six feet by ten feet. The center opening is a metal-framed door opening, while the flanking two openings are metal-frame window openings. These

WAYNE RADIO TRANSMITTER BUILDING  
HABS No. NJ-1240  
(Page 14 )

flanking window openings contained large metal jalousies in 1963, but were removed. The addition is constructed of concrete masonry units, and is set on a poured concrete pad. It has a wood-frame roof structure with wood sheathing, and rolled asphalt roofing. Two small rectangular openings and one fan are located high in the west wall of this addition.

The west elevation is similar to the east elevation in its fundamental composition. Two two-story, one-bay, hipped-roof sections, one of which projects slightly, flank the larger two-and-one-half story, three-bay, end-gable center section. On this elevation is a roughly square brick chimney stack, embedded at the juncture of the center and southern sections. The stack is the steam furnace stack, and it reaches approximately the height of the roof ridge of the center section. Attached above the opening for the vent at the attic half-story are metal frame brackets that are missing the spotlight once mounted there. Finally, extending at grade in a northwesterly direction from the building, approximately from the base of the stack, is a concrete conduit that housed either cables for outgoing transmission to the antennae, or an incoming power supply.

The interior arrangement of space, on the basement and first stories, is keyed to the functions contained in large center section of the building.

In the basement, ceilings are over 18' high and are supported by concrete encased steel beams running east-to-west at the center section, and north-to-south at the flanking sections. Non-bearing partition walls are square terra-cotta tiles or concrete masonry units. The floors are poured concrete, and the sills of window openings are located approximately nine feet from the floor, well above eye level. The southern section of the basement is divided into three spaces with a stair extending to the first floor. At the east side is an unfinished rectangular room with two window openings; at the center is a windowless room with wood shelving; and at the west is an unfinished rectangular room with two window openings and a furnace. The stack opens into this room at a small square metal door near the northwest corner of this room.

The center section of the basement is divided into two rectangular spaces. The eastern space has two door openings, one to the western space and one leading outside. The door opening to the exterior is closed with a large, metal-clad sliding door hung from an overhead metal track. Through this door is the enclosed shed-roof bulkhead visible at the east elevation. The western space is divided into two spaces; the smaller of these is a wood frame room at the northeast corner of the space, raised approximately eighteen inches on a poured concrete foundation, which has modern electrical equipment attached to wood frames on two of its walls. In the remainder of this room, there are two fuse boxes and one modern telephone switching box.

The final section on the basement is the northern section, which is divided into four spaces. At the west is a square room containing two windows, one to the outside, and one to the adjacent narrow access hall, and two doors; three poured concrete steps rise from this room to meet a narrow access hall that has three large openings, one door and two windows, which meet the modern concrete masonry unit garage visible at the north elevation. Parallel to and south of this

narrow access hall is another narrow space, the base of the large louvered ventilation stack at this northern section. It is not accessible at the basement level, but has modern stainless steel ducts attached to it at the ceiling of the narrow access hall. At the east is another square room containing a stair to the first floor, a small wood frame room, and shelving. The wood frame room is insulated and sheathed with modern materials; it is ventilated to the outside with a round duct visible at the east elevation.

The first floor has a poured concrete floor, and is divided in a similar manner as the basement with the exception of the center section, which is a single open space.

At the southern section of the first floor, an office is located at the southeast corner of the building. The office has two exterior window openings and one square window opening to the main center section; it appears that this last opening was a fixed, single light. Adjacent to, and west of, this office, is the stair from the basement and a small storage closet. These spaces, the office, stair, and closet, comprise the eastern projecting block visible from the south and east elevations.

At the center of this southern section is a vestibule, accessible directly from the front doors, that opens onto the central space of the first floor. This is not a symmetrical room; it is open into the west projecting block, as visible from the south and west elevations. A 6" poured concrete step extends into this room from the central space. At the west end of the south section, the southwestern-most point of the building, is a small rectangular room, noted on the plan published in 1945 as an "Antenna Switching Room."<sup>57</sup> It has two exterior window openings and one door opening, and is a finished space with carpeting and plaster and painted walls. No sash remains, but between the furring strips to which metal screen lathe is nailed and the brick walls is a fine gauge copper screen.

The focal point of the first floor, and indeed of the whole building, is the room at the center section of the first floor, measuring approximately 48' x 34'. The ceiling is approximately 18' high, defined by ceiling material dropped from the rafters at the attic. A large hole has been opened through the ceiling near the southwest corner of this room.

The floor is poured concrete with a very specific and functionally determined arrangement of channels, bolt holes, and ramps on a portion of the floor raised approximately 6" above the original floor. This flooring was poured in 1943 to allow for the placement of the two modulator-power supply units, the three r-f channels, switching circuitry, and control consoles. A large modern airhandling unit sits at the west end of this room; extending out from this unit, and vertically to run along the ceiling, are stainless steel ducts. This unit has been largely dismantled.

---

<sup>57</sup> DeHart, "WOOC . . . WOOW," 2.

WAYNE RADIO TRANSMITTER BUILDING  
HABS No. NJ-1240  
(Page 16)

On the east wall are three openings, the one door opening at the south side has a fifteen-light transom; the lights have been painted, and plywood covers the outside of the transom. Sash from the two window openings has been removed, leaving copper flashing exposed, and in some places the metal frame is still visible. A steel-frame ladder on this east wall extends from the floor through the dropped ceiling to provide access to the attic. The north wall has one door, located at the northeast corner, and three ventilation openings. One ventilation opening is located at the center of the wall near the floor level; this is the largest opening and exhausts directly into the large louvered ventilation stack. The other two openings are smaller, located near the outer walls, and set into the wall itself, apparently related to the large airhandling unit in the room.

The west wall of the center section has three window openings, each the same size, and each missing its sash. The south wall has two door openings, one a large central opening that appears to have had no doors attached, and another to the east, now missing its single leaf door. Two square window openings are in this wall, one to the office at the southeast corner, and the other to the vestibule west of the central door; each appears to have been single-light sash.

The northern section of the first floor comprises four spaces, mirroring the arrangement at the basement. At the northeast corner is a square room containing the stair to the basement level, two window openings, and three single-leaf doors. The door at the north wall of this room opens to meet the exterior metal-frame staircase rising from grade. At the center of the northern section are two narrow spaces, one an access hall, and the other a non-accessible space below the large louvered ventilation stack. At the northwest corner of the building is a square room with one window, located in the west wall, used as a bathroom. It contains two toilet stalls, sinks, a shower, and a closet. Fixtures have been removed or destroyed in place.

The building's attic space is located above the central room. It is accessed by the previously-mentioned ladder located on the east wall of the central room of the first floor. The framing members for the roof are visible, as is the roof sheathing. A rolled steel I-beam serves as the ridge beam, extending east-to-west, and rolled steel rafters are attached to this ridge beam with eight rivets apiece. The toe of each rafter appears to sit within a pocket made in the brick wall. On top of each rafter are wood shims, and wood planking serves as the roof sheathing to which the asphalt shingles are applied. It has not been determined whether an intermediate membrane was used, but it seems reasonable to assume that roofers' felt was used. A small platform is located at the east end of the attic, supporting ventilating equipment. A piece of machinery, an "Automatic Vibration Exciter Control" made by MB Manufacturing of New Haven, Connecticut, is located on this platform.

Extending through the east wall of the attic, approximately one-half-way into the attic, are two rolled steel I-beams, used at the east elevation for block-and-tackle hoisting of equipment. The larger of the two beams, with a web of approximately eighteen inches, extends into the attic to its terminus at the only truss in the attic. This truss is comprised of two rafters as the diagonal

chords in compression, and ten additional members arranged to provide a counter-balance to the I-beam. Each of these ten additional members is less substantial than the rafter members. Each appears to be a thin rolled steel piece attached by rivets on a plate. The smaller I-beam extending through the east wall is located toward the south of the attic; this terminates at the same rafter, but is tied to the structure of the roof with a simple perpendicular member.

### PART III: SOURCES OF INFORMATION

#### A. Bibliography:

##### 1. Primary and Unpublished Sources:

Ashton, Charles H. *Eligibility Assessment: Wayne Transmitter Building*. Cultural Resources Group, New Jersey Department of Transportation. May 1995. (On file at the New Jersey Department of Transportation.)

Bartholomew, Daniel. University of Washington, Milo Ryan Phonoarchive. Seattle, Washington. Personal Communication with James Parkinson. 12 June 1995.

Creran, K. *Property Description, Right-of-Way Appraisal: Associated Testing Labs*. New Jersey Department of Transportation. October 1994. (On file at the New Jersey Department of Transportation.)

Hockheiser, Sheldon. AT&T Archive. Warren, New Jersey. Personal Communication with James Parkinson. 15 June 1995.

Manning, Martin. United States Information Agency Archive. Washington, District of Columbia. Personal Communication with James Parkinson. 15 June 1995.

Matz, Elliott. Columbia Broadcasting System Real Estate Division. New York, New York. Personal Communication with James Parkinson. 14 June 1995.

McKinney, Douglas. Columbia Broadcasting System Archives. New York, New York. Personal Communication with James Parkinson. 14 June 1995.

Murphy, George. Associated Testing Labs. Wayne, New Jersey. Personal Communication with James Parkinson. 9 June 1995.

O'Connell, Joseph. Voice of America Public Affairs Office. Washington, District of Columbia. Personal Communication with James Parkinson. 31 May 1995.

Sivowitch, Elliott. Smithsonian Institute, Division of Electricity and Modern Physics. Washington, District of Columbia. Personal Communication with James Parkinson. 14 June 1995.

Smith, Phyllis. David Sarnoff Research Center. Princeton, New Jersey. Personal Communication with James Parkinson. 13 June 1995.

Wayne Township Tax Records. (On file at the Wayne Township Tax Assessor's Office. Wayne Township Municipal Building. Wayne, New Jersey.)

2. Secondary and Published Sources:

Barnouw, Eric. *A Tower in Babel: A History of Broadcasting in the United States, Volume I - to 1933*. New York: Oxford University Press, 1966.

----- *The Golden Web: A History of Broadcasting in the United States, Volume II - 1933 to 1953*. New York: Oxford University Press, 1968.

Chamberlain, A.B. "CBS International Broadcast Facilities." *Institute of Radio Engineers - Proceedings* 30:3 (March 1942): 118-129. (On file at the Moore Library of the University of Pennsylvania.)

"Commission Plans Short-Wave Probe." *Broadcasting* (December 31, 1932): 31. (On file at the Philadelphia Free Library Microfilm Room, *Broadcasting*, Reel 1.)

DeHart, R.N. "WOOC . . . WOOW: International Broadcast Stations Installed by CBS at Wayne, N.J." *Broadcast News* 41 (June, 1945): 18-26.

Edelman, Murray. *The Licensing of Radio Services in the United States, 1927-1947: A Study in Administrative Formulation of Policy*. Urbana: The University of Illinois Press, 1950.

Foner, Eric, and John A. Garraty, editors. *Reader's Companion to American History*. Boston: Houghton Mifflin Company, 1991.

Pratt, Haraden. "Plant Facilities of the Mackay Radio & Telegraph Company in the New York Area." *Electrical Communication* 20:1 (1941), 32-43. (On file at the Moore Library of the University of Pennsylvania.)

"Half-Wave Antenna Proved." *Broadcasting* (November 15, 1932): 24. (On file at the Philadelphia Free Library Microfilm Room, *Broadcasting*, Reel 1.)

WAYNE RADIO TRANSMITTER BUILDING

HABS No. NJ-1240

(Page 19)

"Improved Service for CBS Foreign Listeners, New Facilities Provide Entertainment for Many Lands." *Broadcast News* 27 (November, 1937): 4-6, 28.

Jackson, Charles S. *The Singack and Mead's Basin Brickyards in Wayne Township*. Wayne, N.J.: Wayne Township Historical Society, 1978.

Jenner, Ralph L. "Insulation for Vertical Radiators." *Broadcast News* 22 (October 1932): 12-15.

Kohlhaas, H.T. "Milestones of Communications Progress." *Electrical Communication* 20:3 (1942), 142-181. (On file at the Moore Library of the University of Pennsylvania.)

Koor, I.J., and C.J. Burnside. "Some Developments in Broadcast Transmitters." *Institute of Radio Engineers - Proceedings* 18:10 (October 1930), 1623-1637. (On file at the Moore Library of the University of Pennsylvania.)

Metz, Robert. *CBS: Reflections in a Bloodshot Eye*. Chicago: Playboy Press, 1975.

"More 50 Kw. Stations are Seen as Commission Lifts Limitation." *Broadcasting* (October 1, 1933): 18. (On file at the Philadelphia Free Library Microfilm Room, *Broadcasting*, Reel 1.)

Paley, William S. *At It Happened, A Memoir*. Garden City, N.Y.: Doubleday & Co., 1979.

Ostlund, E.M. "WABC - Key Station of the Columbia Broadcasting System: A Radio Station on its Own Island." *Electrical Communication* 21:1 (1942), 61-72. (On file at the Moore Library of the University of Pennsylvania.)

Paper, Lewis J. *Empire: William S. Paley and the Making of CBS*. New York: St. Martin's Press, 1987.

Shulman, Holly Cowan. *The Voice of America: Propaganda and Democracy, 1941-1945*. Madison: The University of Wisconsin Press, 1990.

Taylor, John P. "W2XE Short Wave Transmitter." *Electronics* (December 1937): 23-27.

Wood, James. *History of International Broadcasting*. London: Peter Peregrinus, Ltd., 1992.

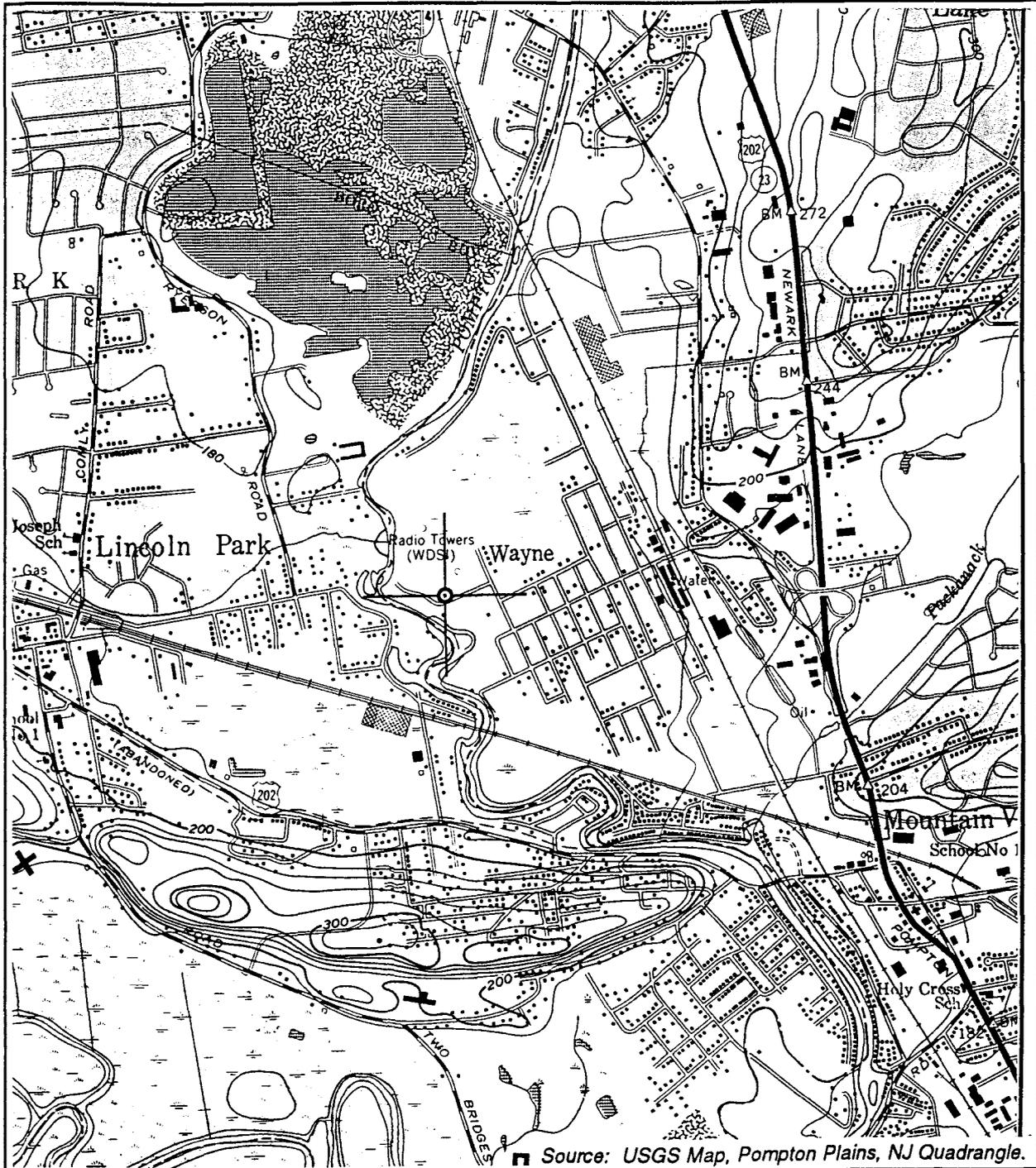
**B. Likely sources not yet investigated:**

Files of the Federal Communications Commission (FCC) housed at the FCC, Washington, D.C., and the National Archives, College Park, Maryland.

**PART IV: PROJECT INFORMATION**

Documentation of the Wayne Radio Transmitter Building has been undertaken in compliance with Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended. This property, owned by the New Jersey Department of Transportation, has been found eligible for listing on the National Register of Historic Places by consensus between the New Jersey State Historic Preservation Office, the Federal Highway Administration, and with the concurrence of the New Jersey Department of Transportation. It will be the site of a federal undertaking in the form of wetlands remediation following construction of Route I-287 (3) in New Jersey. This undertaking will result in an adverse effect upon the Wayne Radio Transmitter Building.

Prepared by: James T. Parkinson  
Title: Historian  
Affiliation: Cultural Resources Group  
Kise Franks & Straw  
Philadelphia, Pennsylvania  
Date: September 1995



LOCATION MAP



NORTH

0 1000 2000



scale: 1 inch = 2,000 feet

WAYNE RADIO TRANSMITTER BUILDING

HABS No. NJ-1240

(Page 22)

