Phase I Intensive Historic Architectural Survey and Evaluation of the Monticello Electric Company Dam (a.k.a. Mon-Maq Dam), Section 22, T86N-R3W, Jones County, Iowa

by
Richard J. Carlson

William E. Whittaker
Principal Investigator

Technical Report
322

Office of the State Archaeologist
The University of Iowa
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Abstract

The Office of the State Archaeologist (OSA) of the University of Iowa conducted a Phase I intensive historic architectural survey and evaluation of the Monticello Electric Company Dam (a.k.a. Mon-Maq Dam) near Monticello, Jones County, Iowa, in connection with the proposed river restoration, removal of the dam, and access improvements in this area. As a result of the investigation, the Monticello Electric Company Dam (site 53-00900) is evaluated as eligible for listing in the National Register of Historic Places under Criterion A for its association with the Monticello Electric Company and Monticello's long period of independent local production of electrical power, and possibly also under Criterion C as an unusual and intact example of a rock-filled reinforced concrete dam that illustrates the range of experimentation with concrete dam construction in the early twentieth century. If the proposed action is to remove the dam, it is recommended that steps be taken to mitigate the adverse effect on the dam resulting from its removal.

Introduction

The Office of the State Archaeologist (OSA) of the University of Iowa has prepared this report under the terms of a cultural resource survey agreement between OSA and Barr Engineering Co. of Minneapolis, Minnesota. This report records the results of a Phase I intensive historic architectural survey and evaluation of the Monticello Electric Company Dam (also known as the Mon-Maq Dam) in connection with the proposed river restoration, removal of the dam, and access improvements in this area. This project area is situated in Section 22, T86N-R3W, near Monticello, Jones County, Iowa (Figures 1–2). The present survey and evaluation of the dam follows an archaeological investigation of areas near the dam, including the former powerhouse site adjacent to the dam (Whittaker 2008), and a Phase IA historic architectural reconnaissance survey of the dam and areas upstream from the dam (Kendall and Carlson 2015). The dam is best known today as the Mon-Maq Dam. Both this name and the dam's historic name, the Monticello Electric Company Dam, are used in the present report.

The OSA is solely responsible for the interpretations and recommendations contained in this report. All records including maps and figures are curated in the OSA Archives. The Historical Architectural Data Base and the Iowa Site Inventory Form for site 53-00900 are included as the Appendix.

Project Area Description

The project area is situated just outside the City of Monticello, Jones County, Iowa, northeast of the city center. The area is in the NE¼, SE¼ of Section 22, T86N-R3W. Its elevation is approximately 790 ft (241 m) NGVD (Figures 1–2). The dam spans the Maquoketa River just upstream from a narrowing of the river channel between two low bluffs. On the left (north) bank of the river at the end of the dam is a small public park that marks the former location of the powerhouse once associated with this dam. The powerhouse ruins are not evaluated separately from the dam in the present report, but are evaluated as a secondary resource associated with the dam (site 53-00900).

Historic Architectural Assessment

METHODS

The architectural historian visited the Mon-Maq Dam on June 23, 2016. He took notes and photographs of the dam's current condition, and investigated the development of the park area adjacent to the dam since the time of the 2008 archaeological report (Whittaker 2008). The same day, he met with Jones County Conservation Board Director Brad Mormann in the Nature Center in Jones County's Central Park, where he consulted the Jones County Conservation Board's files on the Mon-Maq Dam. Office Manager Jennifer Koopmann provided him with scanned images of several of the historic photographs and other documents relating to the dam's history from these files.

Additional resources consulted to develop the historic contexts for the dam included digitized newspapers from Monticello (Batty Library 2016a) and other cities in Jones County (Batty Library 2016b), as well as books on dam construction and hydroelectric plant construction published in the early twentieth century available at the University of Iowa Libraries.

RESULTS

As a result of the investigation, several themes relevant to the history of the Mon-Maq Dam emerged. These included dam construction methods, the history of electrical power generation in Monticello, and the role of the Hanssen family of contractors and engineers in building engineering structures in Monticello and elsewhere in Jones County. These themes are discussed below.

Dam Construction in the Early Twentieth Century

The Monticello Electric Company Dam, built in 1913–1914, has an unusual construction method, employing a rock-filled core surrounded by a reinforced concrete frame. Most dams of this period—including those documented in Iowa and elsewhere, and those described in contemporary books—were either timber dams or masonry dams, with reinforced concrete quickly surpassing stone in importance in masonry construction around the first decade of the twentieth century. The kind of rock fill seen in the Monticello Electric Company Dam was common in timber crib dams of the nineteenth century, but it is rare in concrete dams constructed in the early twentieth century. Older timber crib dams with rock fill were sometimes encased in concrete in the early twentieth century to strengthen the dam and to prevent water penetration, as happened with the Iowa River Power Dam in Iowa City (Vogel et al. 2004). However, the Monticello Electric Company Dam is the only dam identified in the present survey that was constructed entirely new using a reinforced concrete frame around rock fill. Of the other concrete dams described in the literature of the period or identified in detailed investigations of ca. 1890–1930 dams in Iowa consulted for the present report, all were either solid or hollow concrete dams, with no fill of any kind (Shields and Carlson 2012; Carlson 2014, 2015; McDowell 2009; Nash 2005, 2009; Frizell 1901:15–115; Beardsley 1907:68–70, 90–113, 210–280; Mead 1915:608–646; Lyndon 1916:171–282; Lof and Rushmore 1917:74–91; Wegmann 1922:34–53, 210–298). It is possible that some of the dams identified in historic architectural surveys as concrete or reinforced concrete dams in fact also had rock fill, if the surveyor examined only the exterior of the dam and found no other documentation of the rock fill. However, no documented example of a dam similar in construction to that of the Monticello Electric Company Dam has yet been identified in Iowa.

The Monticello Electric Company Dam is also unusual among low-head dams in Iowa for its great length, 441 ft. A 2010 survey of dams in Iowa recorded 183 low-head dams, of which the length was recorded for 125 (Iowa DNR 2010:22–24). Of the 125 low-head dams with known length, only five are longer than the Mon-Maq Dam, and one is a foot shorter. The longer dams are located along the Cedar River in Black Hawk or Linn County, with the exception of one dam located along the Des Moines River

in Ottumwa. The dam listed as one foot shorter than the Mon-Maq Dam is also located along the Des Moines River in Des Moines. The Mon-Maq Dam is by far the longest of the six low-head dams with recorded lengths that extend along the Maquoketa River. Next in length is the Quaker Mill Dam near Manchester, at 196 ft. Because of its great length, the Monticello Electric Company Dam was built in two stages, one in 1913 and one in 1914.

Monticello Electric Company and Iowa Electric Company

The dam now known as the Mon-Maq Dam was constructed for the Monticello Electric Company, which was formed as a corporation in June 1891. The officers, directors and stockholders of this company were all local Monticello residents (Corbit 1910:476). The object of the corporation was:

> to erect and maintain an electric light and power plant in Monticello. The power is to be furnished by [local miller] Mr. [H. J.] Lang and he puts in that part of the plant at his own expense. The electric light company will furnish the dynamos and circuits and will pay Mr. Lang for furnishing the power [*The Monticello Express (ME)*, 25 June 1891].

After the City of Monticello had agreed to enter into a contract with the Monticello Electric Company for street lighting, the electric company agreed to build a power plant. As described in July 1891, the plant was to be built by the Thomson-Houston Electric Company after specifications by W. G. McConnon, and was to be completed by November 1, 1891 (*ME*, 25 June 1891). According to later reports, the power plant was housed in Lang's mill from the outset (*ME*, 9 October 1913:Section 2:1; *The Monticello Express Centennial Edition* [*MECE*], 10 July 1965:C-17).

Within three years, Monticello had become dependent on its electrical service. When damage to equipment at the power plant shut off electricity to the city for more than a day in January 1894, the newspaper observed that:

> The accident is the first serious one the company has had. Heretofore the lights have never been interrupted for but a few minutes, and then at long intervals. This is a great inconvenience to our people because a great many people depend upon the light. Nearly all of our business houses and a great many residences use electricity exclusively. There are nearly 100 such users in town [*ME*, 4 January 1894].

The water-powered plant was evidently supplemented by a steam plant sometime before 1908, presumably to provide backup power when water levels were insufficient to fully power the plant. In 1908, H. J. Lang sold the mill, water power and steam plant for generating electricity to his son Harry Lang (*ME*, 12 March 1908). For at least a brief period starting the following year, power was supplied to the city not by the Monticello Electric Company, but by H. J. Lang, Jr., owner of the mill and dam. This occurred between about November 1909 and June 1911, but after that, the city entered into a contract with the newly reincorporated Monticello Electric Company to furnish electricity (*ME*, 29 June 1911, 13 July 1911). The reason for this suspension of service and the company's reincorporation was not discovered during the research for the present report.

A history of the company published in 1910 in a history of Jones County describes the power plant as follows:

> The power for generating the electricity is located at the Monticello mills, owned now by Harry Lang, and which for more than twenty years was owned by his father, H. J. Lang. The electric company during the entire period of existence has had a contract with Mr. Lang for furnishing the power for generating the electricity. This is furnished by water power to the extent of one hundred

> and five horse power. There are also used in connection with the business two one hundred horse power engines and boilers, one of them owned by the company and the other by Mr. Lang. The electric company has furnished an all night's service during the entire period of its franchise. At the present time there are three thousand, six hundred incandescent lights wired in the city, and fifteen arc lights are also in operation [Corbit 1910:476–477].

It is not clear when Harry Lang transferred ownership of the mill and dam to the Monticello Electric Company. According to a history of the mill property published shortly after the former mill building was demolished in 1913:

> Many years ago the business of the old mill gave way to the expensive modern improvements devised for flour making, but until about fifteen years ago it was used for the grinding of feed for the farmers, and also in the manufacture of corn meal and buckwheat. Twenty years ago when the electric light plant was installed at Monticello, the water power at the old mill was utilized in the manufacture of electricity, and eventually the mill and its dam and the surrounding acres of land were sold to the electric company. For a time a part of the old mil was utilized as a power house, but eventually the new power house was erected, and the old building became useless and really a menace because of the fire hazard. During the past summer it was razed to the ground [*ME*, 9 October 1913:Section 2:1].

Although Harry Lang sold the property, he remained manager of the electric power plant until at least 1925 (*ME*, 30 July 1925).

Through 1915, the Monticello Electric Company remained self-sufficient and independent of the electrical power grid being developed by the Cedar Rapids-based Iowa Electric Company in other cities in Jones County. As one Anamosa newspaper reported in January 1915:

> The Iowa Electric Company plans more extensions and improvements in Jones county. A representative of the company recently stated that the company will build lines into Martelle and Center Junction, and improve other lines so that high voltage can be carried over them. The company now has lines in Oxford Junction, Wyoming, Onslow, Olin, and Anamosa, and when the proposed extensions are built will be furnishing light and power to all the incorporated towns in the county but Monticello [*The Anamosa Eureka [AE]*, 14 January 1915:1].

As late as October 1915, the same newspaper reported that "There is only one electric line in the country that is not controlled by the Iowa Electric Co. That is the plant at Monticello which is owned by home capital" (*AE*, 7 October 1915:1). But just a week later, it was announced that the Iowa Electric Company and the Monticello Electric Company had reached an agreement whereby the Iowa Electric Company would extend its line from Amber to Monticello to furnish current to the Monticello Electric Company. The agreement was expected to give Monticello improved service (*AE*, 14 October 1915:1). Although it was not discovered exactly when this extension was completed, by the time *Poor's Manual of Public Utilities* for the year 1916 was compiled around June 1916—the date of the book's preface—Monticello was included in the list of cities served by the Iowa Electric Company (Poor's Manual Company 1916:1229).

The Monticello Electric Company continued to operate its plant for nearly a decade after it joined the Iowa Electric Company's grid. In 1925, the company was sold to M. A. Harrison and his associates of Waverly, Iowa (*ME*, 30 July 1925). A year later, in June 1926, Harrison transferred his interest to the Iowa Electric Company, which became known as the Iowa Electric Light and Power Company in about 1953 (*MECE*, 10 July 1965:C-17). The Iowa Electric Company and its successors operated the plant in

Monticello until it was abandoned in the 1960s. As described in a 1965 history of electrical power generation in Monticello:

> The powerhouse at the dam furnished all the power for electricity here until about 25 years ago [ca. 1940]. At that time, Monticello was connected with Iowa Electric's grid system, which furnished additional power [sic; as noted above, Monticello joined Iowa Electric's grid in 1915 or 1916, not ca. 1940].
>
> The dam, with its two 90-kilowatt generators, was abandoned about five years ago [ca. 1960]. Last December [1964] the generators were taken out and shipped to a mission station in South America.
>
> The plant here was abandoned when the generators could no longer meet the need and served no practical purpose. Although the 90-kilowatt generators were once sufficient, today the maximum load is approximately 30 times that or 3,000 kilowatts.
>
> Monticello is now served electrically from the Iowa Power Pool, with several alternate sources of supply [*MECE*, 10 July 1965:C-17].

Virtus L. Hanssen and the Hanssen Family

The contractor who built the Monticello Electric Company Dam was Virtus L. Hanssen, a member of the Hanssen family of bridge builders and contractors who lived and worked in Jones County in the late nineteenth and early twentieth centuries. Virtus Hanssen was the grandson of immigrants from Germany who moved to Iowa to farm in about 1854. Virtus's father, Otto P. Hanssen, became a tinner, and after his marriage in 1877 moved from Clinton County to Jones County. He eventually settled in Oxford Junction, where he worked in and later owned a hardware store (Hanssen 2004:1).

An advertisement for O. P. Hanssen's business published in a local newspaper indicates the variety of his business enterprises: "O. P. Hanssen, Dealer in Fancy and Shelf Hardware, Stoves, Pumps, Windmills, Tanks, Repairs, Etc. Contractor for County Bridges, House Moving, Tin Roofing, Spouting, Grading, City Water Works, Etc." (*The Oxford Mirror* [*OM*], 21 February 1901). He sold the hardware store portion of his business in 1903 (*OM*, 2 April 1903). He had moved to South Dakota by 1910, then was back in Iowa by 1920, where he continued to work as a bridge contractor (Hanssen 2004:1; U.S. Bureau of the Census 1920:7A).

Virtus L. Hanssen (1880–1928) was known throughout his adult life primarily as a bridge contractor, although, like his father, he engaged in a variety of related businesses, including serving for a time as president of the Franklin Equipment Company in Monticello. In addition, he had a lengthy career of public service in the 1910s and 1920s. According to his obituary, by the time of his death in 1928 he had served nearly continuously on the Monticello city council from 1916 to 1928 (aside from the years 1922–1924), and had served two terms as city park commissioner. He had also served as a director of the Jones County Fair Association, a director of the Monticello State Bank for more than 15 years, and a trustee of the John McDonald Memorial Hospital from the time it was built. Finally, he had been president of the board of directors of the local Masonic organization since 1916 (*ME*, 3 January 1929:1).

Accounts in local newspapers and contracting journals confirm that the majority of Virtus Hanssen's contracting work was the building of bridges and culverts. The Monticello Electric Company Dam is the only known dam he constructed. By 1900, Otto P. Hanssen and his son Virtus were working together in the bridge-building business. According to one report from May 1900:

> O. P. Hanssen has started the season's work of bridge building, beginning work last Thursday. Virtus Hanssen is in charge of the gang, and they are now working north of Wyoming [*OM*, 10 May 1900].

When Virtus L. Hanssen married Antonia Zak at the end of 1900, the wedding announcement said that "For the past number of years he [Virtus Hanssen] has been working with his father, who conducts an extentive [sic] contracting business and has proven himself not only efficient, but hard working and industrious" (*OM*, 6 December 1900). Virtus Hanssen and his brother Arthur did some railroad contracting work in Minnesota in 1902 (*OM*, 20 February 1902). In 1904, Virtus Hanssen supervised the demolition of a railroad roundhouse in Oxford Junction, and he split the salvaged lumber and rock between himself and his father, who by that time had moved from Oxford Junction to Monticello (*OM*, 29 September 1904). Like his father, Virtus Hanssen also had his hand in the retail hardware business. In 1904, he purchased the tinning department in C. W. McMahan's hardware store (*OM*, 27 October 1904).

It is not known exactly when Virtus Hanssen first gained experience using reinforced concrete as a building material, but one of his earliest uses of the material appears to have been in 1906. In that year, the Oxford Junction newspaper reported that:

> The following from a Wyoming correspondents [sic] refers to the bridge being built near Wyoming [in Jones County] by the Hanssen Bros. of this city: "The new concrete bridge across Little Bear creek, north of town, begins to have the appearance of a substantial structure. We believe this is the first bridge of this kind that the county has put in, and we cannot help but believe it will be a wise investment on the part of the county" [*OM*, 7 June 1906].

The Hanssen Bros. erected another concrete bridge "of the high arch variety" at Anamosa in 1906 (*OM*, 9 August 1906). In early 1907, the firm was identified as the "Hanssen bridge building outfit" and was working on a bridge near Hale (*OM*, 11 April 1907).

In 1908, Virtus Hanssen and his wife moved to Monticello, where his father had moved several years earlier (*OM*, 27 February 1908). Virtus's older brother Arthur was identified at the time of his wedding in 1909 as "the senior member of the firm of Hanssen Bros., bridge builders, cement workers and road builders. He is a good civil and constructing engineer, and had charge of the work during the past summer of building the bridge across the Maquoketa river in the Hard Scrabble district and the construction of the [Monticello] city reservoir" (*OM*, 20 December 1909:1). The Monticello city reservoir was built of reinforced concrete by Hanssen Bros., under the supervision of engineer William Kimball of Chicago (*ME*, 30 September 1909). A long article on this new concrete reservoir was published in 1910 (*ME*, 12 May 1910). Thus by the time he had charge of building the Monticello Electric Company Dam in 1913–1914, Virtus L. Hanssen had had at least seven years of experience building large structures using reinforced concrete.

It should be noted that some of the information on the Hanssen family in the Mon-Maq Dam files of the Jones County Conservation Board is incorrect, specifically dates of construction of some of the projects built by the Hanssen firm. These errors apparently stem from the faulty memory of Arthur Hanssen, who at the age of about 70, in 1949, was interviewed by his son Paul, a civil engineer, about his early construction work. At the time of the interview, Arthur Hanssen also gave his son 17 photographs dating to around the turn of the twentieth century of construction projects he had worked on. It was presumably Arthur Hanssen who assigned the dates to the photographs, which included mistakenly dating the Monticello reservoir to 1900 rather than 1909–1910, and dating the Mon-Maq Dam to 1902 rather than 1913–1914 (Hanssen 2004:1–2, photographs). The 2004 report on the Hanssen family and its construction projects credits Arthur Hanssen with the design and supervision of both the Monticello reservoir and the Mon-Maq Dam, after he had taking a short course in reinforced concrete construction methods at the University of Illinois (Hanssen 2004:2). While it is possible that Arthur Hanssen designed the Mon-Maq Dam, he is not mentioned in

contemporary newspaper accounts of the construction of the dam, which name only his brother Virtus as the superintendent of construction. He also is unlikely to have designed the Monticello reservoir, since its construction was superintended by William Kimball of Chicago, a more likely source of the reservoir's design.

National Register of Historic Places Evaluation

The Monticello Electric Company Dam is evaluated as eligible for listing in the NRHP under Criterion A as the most important surviving component of the electric power plant of the Monticello Electric Company, which was the sole provider of electricity to Monticello from 1891 to late 1915 or early 1916, a year after the dam was completed. In 1915 or 1916, Monticello joined the electric grid being formed by the Iowa Electric Company of Cedar Rapids, but the Monticello plant continued to be owned by local interests until it was sold in 1925, and it continued to provide power to the grid until the 1960s. The only other important component of the Monticello Electric Company's power plant, the former powerhouse at the north end of the dam, has been removed, with only a few foundations remaining intact to mark its former location. The company also occupied a succession of offices in Monticello, but the limited information on these offices available suggests that the company rented space in buildings not built specifically for the company. The locations and current status of these office buildings could not be readily determined, so these buildings were not investigated as part of the present survey. However, to the extent these buildings survive at all, they would not convey the significance of Monticello's long period of independent local production of electrical power as well as the dam, which was an integral part of the power plant.

The dam may also be eligible under Criterion C as an example of experimentation in reinforced concrete dam construction in the early twentieth century. No other dam similar in construction to the Monticello Electric Company Dam was identified in a survey of previously recorded dams in Iowa, and none was identified in the literature on dams and hydroelectric plant construction published in the early twentieth century that was consulted for the present survey. The use of rock fill encased in reinforced concrete is therefore unusual, and is likely to be an important illustration of experimentation with the relatively new material of reinforced concrete in dam construction in the early 1910s. More information on the construction of early twentieth century concrete dams in Iowa is needed before the significance of the Monticello Electric Company Dam under Criterion C can be evaluated conclusively. The compilation of such extensive information was beyond the scope of the present report, and was not considered necessary for the purposes of the present report because the dam was already evaluated as eligible under Criterion A.

Summary and Recommendations

The Office of the State Archaeologist (OSA) of the University of Iowa conducted a Phase I intensive historic architectural survey and evaluation of the Monticello Electric Company Dam (a.k.a. Mon-Maq Dam) near Monticello, Jones County, Iowa, in connection with the proposed river restoration, removal of the dam, and access improvements in this area. As a result of the investigation, the Monticello Electric Company Dam (site 53-00900) is evaluated as eligible for listing in the NRHP under Criterion A for its association with the Monticello Electric Company and Monticello's long period of independent local production of electrical power, and possibly also under Criterion C as an unusual and intact example of a rock-filled reinforced concrete dam that illustrates the range of experimentation with concrete dam construction in the early twentieth century. If the proposed action is to remove the dam, it is recommended that steps be taken to mitigate the adverse effect on the dam resulting from its removal.

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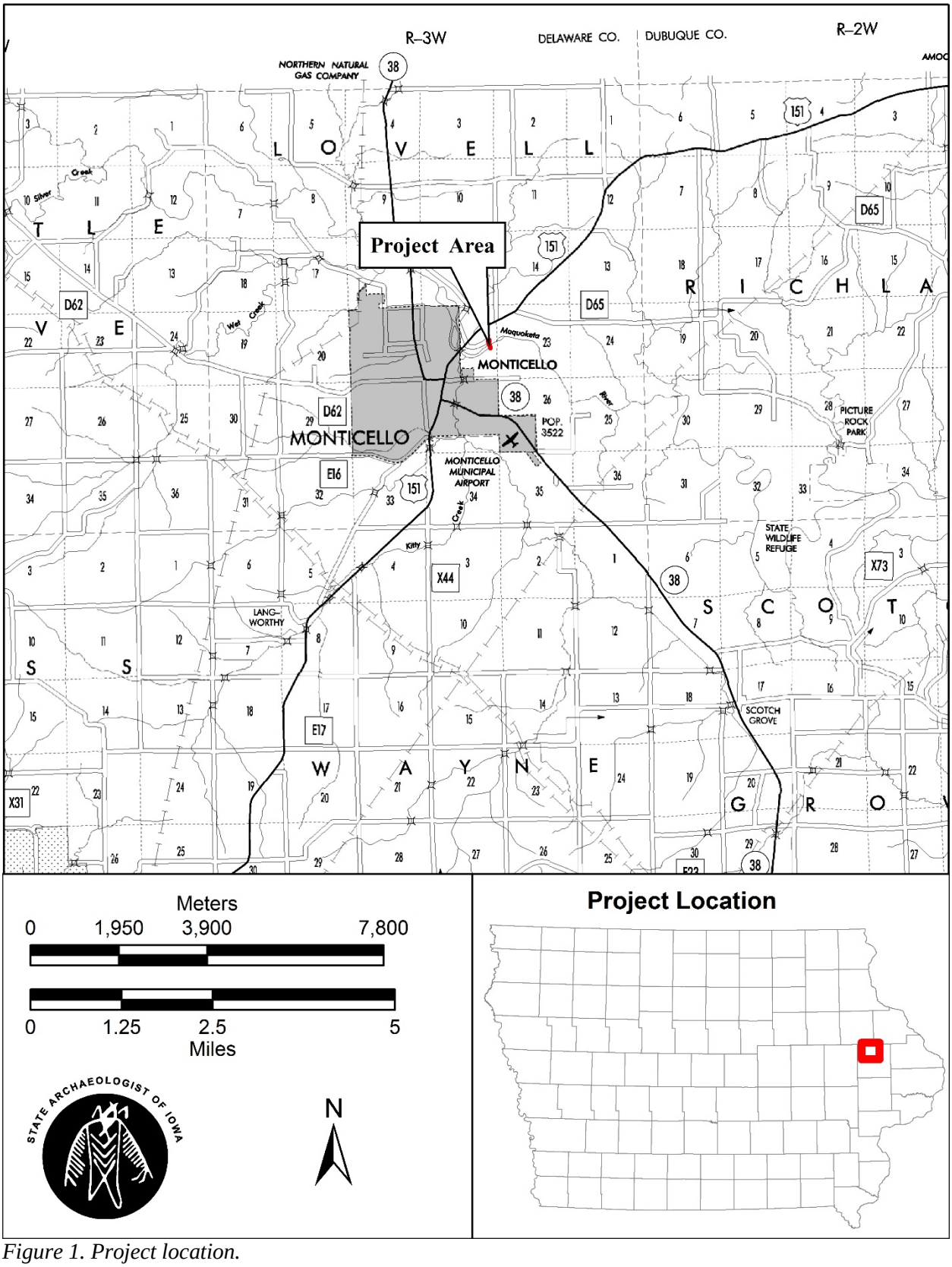

Figure 1. Project location.
From 2005 Jones County Highway Map, Iowa Department of Transportation, Ames.

Figure 2. Project location in relation to surrounding topography.
From USGS Monticello, Iowa (1980), 7.5' series quadrangle map. Scale 1:24,000.

Figure 3. Project area photographs.
Upper: Monticello Electric Company Dam (Mon-Maq Dam) facing south-southwest. Lower: north end of dam and former powerhouse base and race wall, facing northwest.

Appendix: Historical Architectural Data Base and Iowa Site Inventory Forms

HADB No. 53-020

Iowa Site Inventory Form

53-00900

Historical Architectural Data Base

Data Entry Form for Studies and Reports

Doc. No.: 53-020

Source of Study: ☐ Certified Local Government Project ☒ Section 106 Review & Compliance Project ☐ Historical Resource Development Program Project ☐ Other

Project Reference #: _____

Authors/Editor/Compiler/Originator:
Carlson, Richard J.

Author Role: ☒ Consultant ☐ Private Researcher/Writer ☐ Teacher ☐ Student ☐ Project employee/volunteer ☐ Site Administrator ☐ Other: _____

Title of Work:
Phase I Intensive Historic Architectural Survey and Evaluation of the Monticello Electric Company Dam (a.k.a. Mon-Maq Dam), Section 22, T86N-R3W, Jones County, Iowa

Year Issued: 2016

Type of Work Performed:
(*check one only*)

Survey:

- ☐ Windshield survey minimum level documentation
- ☐ Reconnaissance survey to make recommendations for intensive survey(s).
- ☒ Intensive survey
- ☐ Mixed intensive and reconnaissance survey

Plan:

- ☐ Planning for Preservation/Survey
- ☐ Community Preservation Plan

Property Study:

- ☐ Iowa Historic Property Documentation Study
- ☐ Historic American Building Survey (HABS)
- ☐ Historic American Engineering Record (HAER)
- ☐ Management or Master Plan
- ☐ Historic Structure Report
- ☐ Feasibility/Re-use Study
- ☐ Architectural/Engineering Plans and Specs.

National Register:

- ☐ Multiple Property Documentation Form

Other (e.g., private research, school project, video): _____

Site Inventory Form

State Historical Society of Iowa
(November 2005)

State Inventory No. 53-00900 ☒ New ☐ Supplemental
☐ Part of a district with known boundaries (enter inventory no.) ____
Relationship: ☐ Contributing ☐ Noncontributing
☐ Contributes to a potential district with yet unknown boundaries
National Register Status:(any that apply) ☐ Listed ☐ De-listed ☐ NHL ☐ DOE
9-Digit SHPO Review & Compliance (R&C) Number ____
☐ Non-Extant (enter year) ____

1. Name of Property

historic name Monticello Electric Company Dam

other names/site number Mon-Maq Dam

2. Location

street & number spans the Maquoketa River opposite 21462 River Road
city or town Monticello ☒ vicinity, county Jones
Legal Description: (If Rural) Township Name Lovell; Township No. 86N; Range No. 3W; Section 22; Quarter NE; Quarter of Quarter SE
(If Urban) Subdivision ____ Block(s) ____ Lot(s) ____

3. State/Federal Agency Certification [*Skip this Section*]

4. National Park Service Certification [*Skip this Section*]

5. Classification

Category of Property (Check only one box)
☐ building(s)
☐ district
☐ site
☒ structure
☐ object

Number of Resources within Property

If Non-Eligible Property Enter number of:		*If Eligible Property, enter number of:* Contributing	Noncontributing	
__	buildings	1	__	buildings
__	sites	1	__	sites
__	structures	__	__	structures
__	objects	__	__	objects
__	Total	2	__	Total

Name of related project report or multiple property study (Enter "N/A" if the property is not part of a multiple property examination).

Title	*Historical Architectural Data Base Number*
Carlson 2016, Technical Report 322	53-020

6. Function or Use

Historic Functions (Enter categories from instructions)	**Current Functions** (Enter categories from instructions)
10D03 INDUSTRY/energy facility/hydroelectric dam	70 NOT IN USE
____	____
____	____

7. Description

Architectural Classification (Enter categories from instructions)	**Materials** (Enter categories from instructions)	
01 NO STYLE	foundation	10B CONCRETE/poured
____	walls (visible material)	10B CONCRETE/poured
____	roof	N/A
____	other	04 STONE

Narrative Description (☒ SEE CONTINUATION SHEETS, WHICH MUST BE COMPLETED)

8. Statement of Significance

Applicable National Register Criteria (Mark "x" representing your opinion of eligibility after applying relevant National Register criteria)

☒ Yes ☐ No ☐ More Research Recommended	A	Property is associated with significant events.
☐ Yes ☒ No ☐ More Research Recommended	B	Property is associated with the lives of significant persons.
☐ Yes ☐ No ☒ More Research Recommended	C	Property has distinctive architectural characteristics.
☐ Yes ☐ No ☐ More Research Recommended	D	Property yields significant information in archaeology or history.

County Jones Address spans the Maquoketa River opposite 21462 River Road
City Monticello Site Number **53-00900** District Number ___

Criteria Considerations

- ☐ A Owned by a religious institution or used for religious purposes.
- ☐ B Removed from its original location.
- ☐ C A birthplace or grave.
- ☐ D A cemetery
- ☐ E A reconstructed building, object, or structure.
- ☐ F A commemorative property.
- ☐ G Less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance (Enter categories from instructions)

12 ENGINEERING

Significant Dates

Construction date
1914 ☐ check if circa or estimated date
Other dates, including renovation

Significant Person
(Complete if National Register Criterion B is marked above)
N/A

Architect/Builder
Architect
unknown
Builder
Hanssen, Virtus L.

Narrative Statement of Significance (☒ SEE CONTINUATION SHEETS, WHICH MUST BE COMPLETED)

9. Major Bibliographical References

Bibliography ☒ See continuation sheet for citations of the books, articles, and other sources used in preparing this form

10. Geographic Data

UTM References *(OPTIONAL)*

	Zone	*Easting*	*Northing*		*Zone*	*Easting*	*Northing*
1	15	650801	4678571	2			
3				4			

☐ See continuation sheet for additional UTM references or comments

11. Form Prepared By

name/title Richard J. Carlson/Architectural Historian
organization Office of the State Archaeologist date 6/20/2016
street & number 700 Clinton Street Building telephone 319-384-0732
city or town Iowa City state IA zip code 52242-1030

ADDITIONAL DOCUMENTATION (Submit the following items with the completed form)

FOR ALL PROPERTIES

1. ***Map:*** showing the property's location in a town/city or township.
2. ***Site plan:*** showing position of buildings and structures on the site in relation to public road(s).
3. ***Photographs:*** representative black and white photos. If the photos are taken as part of a survey for which the Society is to be curator of the negatives or color slides, a photo/catalog sheet needs to be included with the negatives/slides and the following needs to be provided below on this particular inventory site:

Roll/slide sheet # N/A Frame/slot # ___ Date Taken ___
Roll/slide sheet # ___ Frame/slot # ___ Date Taken ___
Roll/slide sheet # ___ Frame/slot # ___ Date Taken ___

☐ See continuation sheet or attached *photo & slide catalog sheet* for list of photo roll or slide entries.
☒ Photos/illustrations without negatives are also in this site inventory file.

FOR CERTAIN KINDS OF PROPERTIES, INCLUDE THE FOLLOWING AS WELL

1. ***Farmstead & District:*** (List of structures and buildings, known or estimated year built, and contributing or noncontributing status)
2. ***Barn:***
   a. A sketch of the frame/truss configuration in the form of drawing a typical middle bent of the barn.
   b. A photograph of the loft showing the frame configuration along one side.
   c. A sketch floor plan of the interior space arrangements along with the barn's exterior dimensions in feet.

State Historic Preservation Office (SHPO) Use Only Below This Line

Concur with above survey opinion on National Register eligibility: ☐ *Yes* ☐ *No* ☐ *More Research Recommended*
☐ *This is a locally designated property or part of a locally designated district.*

Comments: _____

Evaluated by (name/title): _____ *Date:* _____

Monticello Electric Company Dam	Jones
Name of Property	County
spans the Maquoketa River opposite 21462 River Road	Monticello
Address	City

7. Narrative Description

Dam. The Monticello Electric Company Dam (now better known by is modern name, the Mon-Maq Dam) is one of the longest low-head dams in Iowa (Figures 1–8). Its length was recorded as 441 feet in a 2010 survey of Iowa dams, slightly shorter than the 460 feet reported at the time it was built (Iowa DNR 2010:23). The dam is constructed of a rock-filled core encased in a reinforced concrete shell. The rock core was described at the time the dam was built as about 10 feet wide at the base and about half that width at the top. The reinforced concrete that surrounds the rock core is reportedly 16 inches thick ("Great Improvement at the Dam," *The Monticello Express*, August 28, 1913, p. [5]). The result is a dam profile with a straight downstream face of moderate to steep pitch. A reinforced concrete apron extends about 20 feet downstream from the dam. The upstream face of the dam was not clearly visible at the time of the field investigation because the water impoundment upstream from the dam extended up to the dam's crest, but it appears to have a slope at least as steep as the downstream face. Abutments on each side of the dam are constructed of reinforced concrete. The south abutment is relatively small, only slightly taller than the dam itself, while the north abutment is formed by the tall wall of the race adjacent to the powerhouse. The dam is counted as one contributing structure.

Powerhouse ruins. The ruins of a powerhouse formerly associated with the dam are located on the north (left) bank of the Maquoketa River near the north end of the dam (Figures 9–14). The remains of the powerhouse and associated structures were described in some detail in an archaeological survey report of the Mon-Maq Dam area (archaeological site 13JN371) completed in 2008 (Whittaker 2008). Most of the features described in that report remain extant and visible above grade, although a few have been modified or covered by fill since 2008 in order to develop a public park on the powerhouse ruins.

Only one of the features identified in 2008 was evaluated as warranting further archeological research. The other components of the site were remnants of the early twentieth century powerhouse formerly on the site that were considered too recent to be likely to meet NRHP eligibility criteria (Whittaker 2008:58). The feature evaluated as warranting further investigation was Foundation 17, a stone foundation that appears to have been part of the nineteenth century mill that preceded the powerhouse on this site. Foundation 17 has been covered by fill and capped by a narrow concrete strip in order to protect its integrity, but it reportedly remains extant below grade (Mormann 2016).

Although no built features of the powerhouse formerly associated with the dam remain standing above the foundation level, the powerhouse was built at about the same time as the dam, and its ruins are sufficiently intact to demonstrate the relationship between the dam and the former powerhouse. The powerhouse ruins are therefore counted as a contributing site.

Integrity. This dam retains a high degree of integrity of *location*, since it has not been moved since it was constructed in 1913–1914. Its integrity of *setting* remains moderate to high. The loss of the powerhouse formerly associated with the dam, and its replacement by a public park that retains many foundations and other features of the former powerhouse, has compromised the dam's integrity of setting. However, the dam remains in a semi-rural setting just outside of Monticello and continues to span the Maquoketa River, so in other respects its integrity of setting has remained essentially unchanged. Its integrity of *design*, *materials*, and *workmanship* also remain high. The dam appears today essentially as it did when it was first constructed, and it is not known to have undergone any major repairs or other

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changes. Because the dam continues to span the river in its original location, even if it has lost its original function, and because it retains all of the engineering features that identify it clearly as an early twentieth century dam, its integrity of *feeling* and *association* are also moderate to high.

8. Statement of Significance

The Monticello Electric Company Dam, known today as the Mon-Maq Dam, was built in 1913–1914 for the Monticello Electric Company to power its hydroelectric plant (non-extant). The dam is evaluated as eligible for listing in the National Register of Historic Places (NRHP) under Criterion A for its association with electrical power generation in Monticello. It may also be eligible under Criterion C for its unusual engineering features, specifically its use of a rock-filled core enclosed by a reinforced concrete shell.

Earlier Mills and Dams on the Site

A dam has been located on or near the site of the present dam since 1853. The first saw mill and dam near this site were built in 1853 for D. S. Dewey. The mill burned in 1856, and in 1858 it was rebuilt, this time with a grinding stone for corn. In 1859, Dewey built a part of the mill building that stood until 1913, when it was removed by the electrical power company that then owned the mill site. Substantial additions were made to the mill building around 1866, and in 1869 Dewey sold his interest in the mill. During the next 14 years the mill and dam were owned and operated by a succession of individuals and firms. In 1883, the property was sold to H. J. Lang, who owned it until the early twentieth century. In 1888, Lang:

> remodeled the interior of the mill and enlarged it, making the work floor 44x56 feet. He put in a Hunter centrifugal reel for bolting, a new wheat scourer and a brush machine and his line of business was such that it was necessary to operate the mill both night and day, in order to accommodate its patrons.
>
> But it is a matter of history that the big flouring mills of the wheat centers crippled the country mills until there were many of them abandoned. Mr. Lang, very early and discreetly, measured the force of the new order of things, and turned his water power to the better advantage of manufacturing electricity ["The Old Mill, a Landmark for Fifty Years Has Been Destroyed," *The Monticello Express*, October 9, 1913, Section 2, p. 1].

The same article noted that the "dam has been taken out many times" since 1853. At least two new dams were built for H. J. Lang, one in about 1896 and another in 1904. The ca. 1896 dam had timber posts spaced three feet apart, but this did not prove sufficient to withstand ice and high water damage, so in 1904 Lang drove two rows of pilings with posts spaced only one foot apart ("Home News" column, *The Monticello Express*, April 14, 1904, p. [5]). But the dam continued to experience extensive damage during high water. In 1909, 50 feet of the dam was washed out in a heavy rain storm ("Home News" column, *The Monticello Express*, June 10, 1909, p. [5]).

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Monticello Electric Company

The Monticello Electric Company was formed in 1891 to generate electric light and power for Monticello residents. The plant was to be completed by November 1, 1891 ("The Electric Light Assured," *The Monticello Express*, July 23, 1891, p. [5]). H. J. Lang's mill was reportedly used as the company's powerhouse from the outset (Corbit 1910:476; "The Old Mill, a Landmark for Fifty Years Has Been Destroyed," *The Monticello Express*, October 9, 1913, Section 2, p. 1; "Electric Lights First Used in City in 1891," *The Monticello Express Centennial Edition*, July 10, 1965, p. C-17).

Within three years, Monticello had become dependent on its electrical service. When damage to equipment at the power plant shut off electricity to the city for more than a day in January 1894, the newspaper observed that:

> The accident is the first serious one the company has had. Heretofore the lights have never been interrupted for but a few minutes, and then at long intervals. This is a great inconvenience to our people because a great many people depend upon the light. Nearly all of our business houses and a great many residences use electricity exclusively. There are nearly 100 such users in town ["Accident to the Electric Lights," *The Monticello Express*, January 4, 1894, p. [5]].

A history of the Monticello Electric Company published in 1910 in a history of Jones County describes the power plant as follows:

> The power for generating the electricity is located at the Monticello mills, owned now by Harry Lang, and which for more than twenty years was owned by his father, H. J. Lang. The electric company during the entire period of existence has had a contract with Mr. Lang for furnishing the power for generating the electricity. This is furnished by water power to the extent of one hundred and five horse power. There are also used in connection with the business two one hundred horse power engines and boilers, one of them owned by the company and the other by Mr. Lang. The electric company has furnished an all night's service during the entire period of its franchise. At the present time there are three thousand, six hundred incandescent lights wired in the city, and fifteen arc lights are also in operation [Corbit 1910:476–477].

It is not clear when Harry Lang transferred ownership of the mill and dam to the Monticello Electric Company. According to a history of the mill property published shortly after the former mill building was demolished in 1913:

> Many years ago the business of the old mill gave way to the expensive modern improvements devised for flour making, but until about fifteen years ago it was used for the grinding of feed for the farmers, and also in the manufacture of corn meal and buckwheat. Twenty years ago when the electric light plant was installed at Monticello, the water power at the old mill was utilized in the manufacture of electricity, and eventually the mill and its dam and the surrounding acres of land were sold to the electric company. For a time a part of the old mill was utilized as a power house, but eventually the new power house was erected, and the old building became useless and really a menace because of the fire hazard. During the past summer it was razed to the ground ["The Old Mill, a Landmark for Fifty Years Has Been Destroyed," *The Monticello Express*, October 9, 1913, Section 2, p. 1].

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Although Harry Lang sold the property, he remained manager of the electric power plant until at least 1925 ("Electric Plant Sold Yesterday," *The Monticello Express*, July 30, 1925, p. [5]).

Construction of the Present Dam

After "a considerable section of the dam" went out in March 1913 as the result of high water in the Maquoketa River, the Monticello Electric Company began carrying out plans to strengthen or replace the old wooden dam ("Home News" column, *The Monticello Express*, March 27, 1913, p. [7]). The original plan may have been to strengthen the existing dam by adding an apron, a suggestion reported in May 1913 ("Home News" column, *The Monticello Express*, May 22, 1913, p. [7]). As late as July 1913, the planned improvement was "the rebuilding of a part of the dam and the material strengthening of all other parts" ("Home News" column, *The Monticello Express*, July 24, 1913, p. [7]).

In the end, however, an entirely new dam was constructed a short distance downstream from the earlier dam. Because of the great length of the dam—reported in newspapers at the time to be 460 ft, although said to be only 441 ft in a recent dam survey (Iowa DNR 2010)—it was constructed in two stages, one built in 1913 and the second in 1914. As described in the local newspaper in August 1913:

> The Monticello Electric Co. is having a stretch of 225 feet of reinforced concrete dam put in at its power station. The work is under the supervision of Virtus Hanssen, who has a gang of nearly twenty men at work. The dam is being constructed immediately below the present one and is of the same height.
>
> A row of piling has been driven to the rock possibly 20 feet from the present structure. Within that enclosure there is being erected a stone formation, about ten feet in width at the base and of half that width at the top. This is covered with reinforced concrete sixteen inches thick, which extends in that thickness beyond the piling which it surrounds. The structure when thus completed forms not only a strongly re-enforced dam but an apron as well which conducts the water twenty feet on its way without giving it an opportunity by eddies and swirling pools to undermine the dam.
>
> The owners and the contractors have great confidence in the probable success of their enterprise. The cost of the construction this season will be more than $8,000. If it should withstand the ice gorges in the winter and the heavy floods of the early summer, and thus demonstrate its strength, the remainder of the dam amounting to 235 feet will be reconstructed in a similar manner a year hence ["Great Improvement at the Dam," *The Monticello Express*, August 28, 1913, p. [5]].

Although the article did not state which half of the dam was constructed first, historical photographs of the dam while under construction indicate that the south half was built first, in 1913, and the north half adjacent to the powerhouse was constructed the following year (Figure 15). The first stage of the dam was completed in October 1913:

> With a week of good weather, V. L. Hanssen will complete the improvements on the dam planned for this season. He has great confidence in the permanency of the enforced concrete he has put in. The electric company has spent $10,000 in improvements this season ["Home News" column, *The Monticello Express*, October 2, 1913, p. [5]].

The dam evidently performed well over the winter and spring, since the remainder of the dam was planned for completion in 1914:

> The Monticello Electric Co. is preparing to complete the construction of its concrete dam, during the coming season. It will be recalled that it did about $10,000 worth of work on the dam, last summer, and during the coming season it expects to duplicate the work on the half of the dam that has not been reconstructed. Last winter and spring were not hard on Iowa water powers, because the ice breakups were not severe. It looks, however, as though V. L. Hanssen had made a dam that will resist more than the ordinary destructive force of both floods and ice ["Home News" column, *The Monticello Express*, April 23, 1914, p. [5]].

V. L. Hanssen and his crew were still at work on the second stage of the dam in August 1914 ("O. H. Soetje Badly Injured," *The Monticello Express*, August 20, 1914, p. [5]). A month later, heavy rains washed away some preliminary work, setting back the schedule, but in October Hanssen stated that he expected to finish the work by November 1 ("Home News" column, *The Monticello Express*, September 17, 1914, p. [5]; "Home News" column, *The Monticello Express*, October 15, 1914, p. [7]). The dam was essentially completed by early November, at which time the local newspaper described it as follows:

> The new concrete dam across the Maquoketa, [sic] river on the site of the old dam, is completed, with the exception of a flood gate which will be in place before the winter is here in earnest. One half of this dam was constructed last year for the Monticello Electric Co. by V. L. Hanssen, and the remainder was completed during this summer and fall. The improvement cost the company between $15,000 and $18,000. It is expected to be of an enduring nature and conserve the water that was wasted through the leaks in the old dam. The dam is a long one, necessarily so because of the width of the river bed at that point ["Home News" column, *The Monticello Express*, November 5, 1914, p. [5]].

Historical photographs showing the construction of the dam are included as Figures 15–17, while Figure 18 shows the dam within a few years after it was completed.

Virtus L. Hanssen

The contractor who built the Mon-Maq Dam, Virtus L. Hanssen, was a member of the Hanssen family of bridge builders and contractors who lived and worked in Jones County in the late nineteenth and early twentieth centuries. A biography of Virtus Hanssen and his family is provided in the Technical Report that accompanies the present Iowa Site Inventory Form (Carlson 2016). Briefly, Virtus Hanssen (1880–1928) was the son of Otto P. Hanssen, who advertised himself in 1901 in his local newspaper as "O. P. Hanssen, Dealer in Fancy and Shelf Hardware, Stoves, Pumps, Windmills, Tanks, Repairs, Etc. Contractor for County Bridges, House Moving, Tin Roofing, Spouting, Grading, City Water Works, Etc." (advertisement for O. P. Hanssen, *The Oxford Mirror* [Oxford Junction, Iowa], February 21, 1901, p. [4]). Virtus Hanssen and his brother Arthur worked together in the bridge building and construction business in the early twentieth century, first with their father and then together, with Arthur as the senior partner, until Arthur left the business shortly after his marriage in 1909.

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It is not known exactly when Virtus Hanssen first gained experience using reinforced concrete as a building material, but one of his earliest uses of the material appears to have been in 1906. In that year, the Oxford Junction newspaper reported that:

> The following from a Wyoming correspondents [sic] refers to the bridge being built near Wyoming by the Hanssen Bros. of this city: "The new concrete bridge across Little Bear creek, north of town, begins to have the appearance of a substantial structure. We believe this is the first bridge of this kind that the county has put in, and we cannot help but believe it will be a wise investment on the part of the county" ["Local Matters" column, *The Oxford Mirror* [Oxford Junction, Iowa], June 7, 1906, p. [4]].

The Hanssen Bros. erected another concrete bridge "of the high arch variety" at Anamosa in 1906, and built the Monticello city reservoir of reinforced concrete in 1909–1910 under the supervision of engineer William Kimball of Chicago ("Local Matters" column, *The Oxford Mirror* [Oxford Junction, Iowa], August 9, 1906, p. [4]); "Home News" column, *The Monticello Express*, September 30, 1909, p. [5]; "Monticello's Concrete Water Reservoir," *The Monticello Express*, May 12, 1910, p. [7]). Thus by the time he had charge of building the Monticello Electric Company Dam in 1913–1914, Virtus L. Hanssen had had at least seven years of experience building large structures using reinforced concrete.

It should be noted that some of the information on the Hanssen family in the Mon-Maq Dam files of the Jones County Conservation Board is incorrect, specifically dates of construction of some of the projects built by the Hanssen firm. These errors apparently stem from the faulty memory of Arthur Hanssen, who at the age of about 70, in 1949, was interviewed by his son Paul, a civil engineer, about his early construction work. At the time of the interview, Arthur Hanssen also gave his son 17 photographs dating to around the turn of the twentieth century of construction projects he had worked on. It was presumably Arthur Hanssen who assigned the dates to the photographs, which included mistakenly dating the Monticello reservoir to 1900 rather than 1909–1910, and dating the Mon-Maq Dam to 1902 rather than 1913–1914 (Hanssen 2004:1–2, photographs). The 2004 report on the Hanssen family and its construction projects credits Arthur Hanssen with the design and supervision of both the Monticello reservoir and the Mon-Maq Dam, after he had taking a short course in reinforced concrete construction methods at the University of Illinois (Hanssen 2004:2). While it is possible that Arthur Hanssen designed the Mon-Maq Dam, he is not mentioned in contemporary newspaper accounts of the construction of the dam, which name only his brother Virtus as the superintendent of construction. He also is unlikely to have designed the Monticello reservoir, since its construction was superintended by William Kimball of Chicago, a more likely source of the reservoir's design.

Later History of the Monticello Electric Company and Successor Firms

As described in greater detail in Carlson (2016), the Monticello Electric Company was the sole provider of electricity to Monticello until late 1915 or early 1916, when the Cedar Rapids-based Iowa Electric Company added Monticello to its expanding grid. In October 1915, it was announced that the Iowa Electric Company and the Monticello Electric Company had reached an agreement whereby the

Iowa Electric Company would extend its line from Amber to Monticello to furnish current to the Monticello Electric Company. The agreement was expected to give Monticello improved service ("Will Extend Lines," *The Anamosa Eureka*, October 14, 1915, p. 1). Monticello was listed among the cities served by the Iowa Electric Company by June 1916 (Poor's Manual Company 1916:1229).

The Monticello Electric Company continued to operate its plant for nearly a decade after it joined the Iowa Electric Company's grid. In 1925, the company was sold to M. A. Harrison and his associates of Waverly, Iowa ("Electric Plant Sold Yesterday," *The Monticello Express*, July 30, 1925, p. [5]). A year later, in June 1926, Harrison transferred his interest to the Iowa Electric Company, which became known as the Iowa Electric Light and Power Company in about 1953 ("Electric Lights First Used in City in 1891," *The Monticello Express Centennial Edition*, July 10, 1965, p. C-17). The Iowa Electric Company and its successors operated the plant until it was abandoned in the 1960s. As described in a 1965 history of electrical power generation in Monticello:

> The powerhouse at the dam furnished all the power for electricity here until about 25 years ago [ca. 1940]. At that time, Monticello was connected with Iowa Electric's grid system, which furnished additional power [sic; as noted above, Monticello joined Iowa Electric's grid in 1915 or 1916, not ca. 1940].
>
> The dam, with its two 90-kilowatt generators, was abandoned about five years ago [ca. 1960]. Last December [1964] the generators were taken out and shipped to a mission station in South America.
>
> The plant here was abandoned when the generators could no longer meet the need and served no practical purpose. Although the 90-kilowatt generators were once sufficient, today the maximum load is approximately 30 times that or 3,000 kilowatts.
>
> Monticello is now served electrically from the Iowa Power Pool, with several alternate sources of supply ["Electric Lights First Used in City in 1891," *The Monticello Express Centennial Edition*, July 10, 1965, p. C-17].

Recent History of Dam and Powerhouse

By 1970, the powerhouse was largely in ruins (Whittaker 2008:15, 23). Shortly after 2008, the powerhouse ruins were landscaped into a public park, and an observation deck was built overlooking the Maquoketa River near the north end of the dam. The dam has been targeted for removal for reasons of public safety, river ecology, fish and aquatic habitat, and reduced maintenance.

National Register of Historic Places Evaluation

The Monticello Electric Company Dam is evaluated as eligible for listing in the NRHP under Criterion A as the most important surviving component of the electric power plant of the Monticello Electric Company, which was the sole provider of electricity to Monticello from 1891 to late 1915 or early 1916, a year after the dam was completed. In 1915 or 1916, Monticello joined the electric grid being formed by the Iowa Electric Company of Cedar Rapids, but the Monticello plant continued to be owned by local interests until it was sold in 1925, and it continued to provide power to the grid until the

1960s. The only other important component of the Monticello Electric Company's power plant, the former powerhouse at the north end of the dam, has been removed, with only a few foundations remaining intact to mark its former location. The company also occupied a succession of offices in Monticello, but the limited information on these offices available suggests that the company rented space in buildings not built specifically for the company. The locations and current status of these office buildings could not be readily determined, so these buildings were not investigated as part of the present survey. However, to the extent these buildings survive at all, they would not convey the significance of Monticello's long period of independent local production of electrical power as well as the dam, which was an integral part of the power plant.

The dam may also be eligible under Criterion C as an example of experimentation in reinforced concrete dam construction in the early twentieth century. No other dam similar in construction to the Monticello Electric Company Dam was identified in a survey of previously recorded dams in Iowa, and none was identified in the literature on dams and hydroelectric plant construction published in the early twentieth century that was consulted for the present survey. The use of rock fill encased in reinforced concrete is therefore unusual, and is likely to be an important illustration of experimentation with the relatively new material of reinforced concrete in dam construction in the early 1910s. More information on the construction of early twentieth century concrete dams in Iowa is needed before the significance of the Monticello Electric Company Dam under Criterion C can be evaluated conclusively. The compilation of such extensive information was beyond the scope of the present report, and was not considered necessary for the purposes of the present report because the dam was already evaluated as eligible under Criterion A.

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spans the Maquoketa River opposite 21462 River Road	Monticello
Address	City

9. Major Bibliographic References

Carlson, Richard J.
2016 *Phase I Intensive Historic Architectural Survey and Evaluation of the Monticello Electric Company Dam (a.k.a. Mon-Maq Dam), Section 22, T86N-R3W, Jones County, Iowa*. Technical Report 322. Office of the State Archaeologist, The University of Iowa, Iowa City.

Corbit, R. M. (editor)
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Monticello Electric Company Dam	Jones
Name of Property	County
spans the Maquoketa River opposite 21462 River Road	Monticello
Address	City

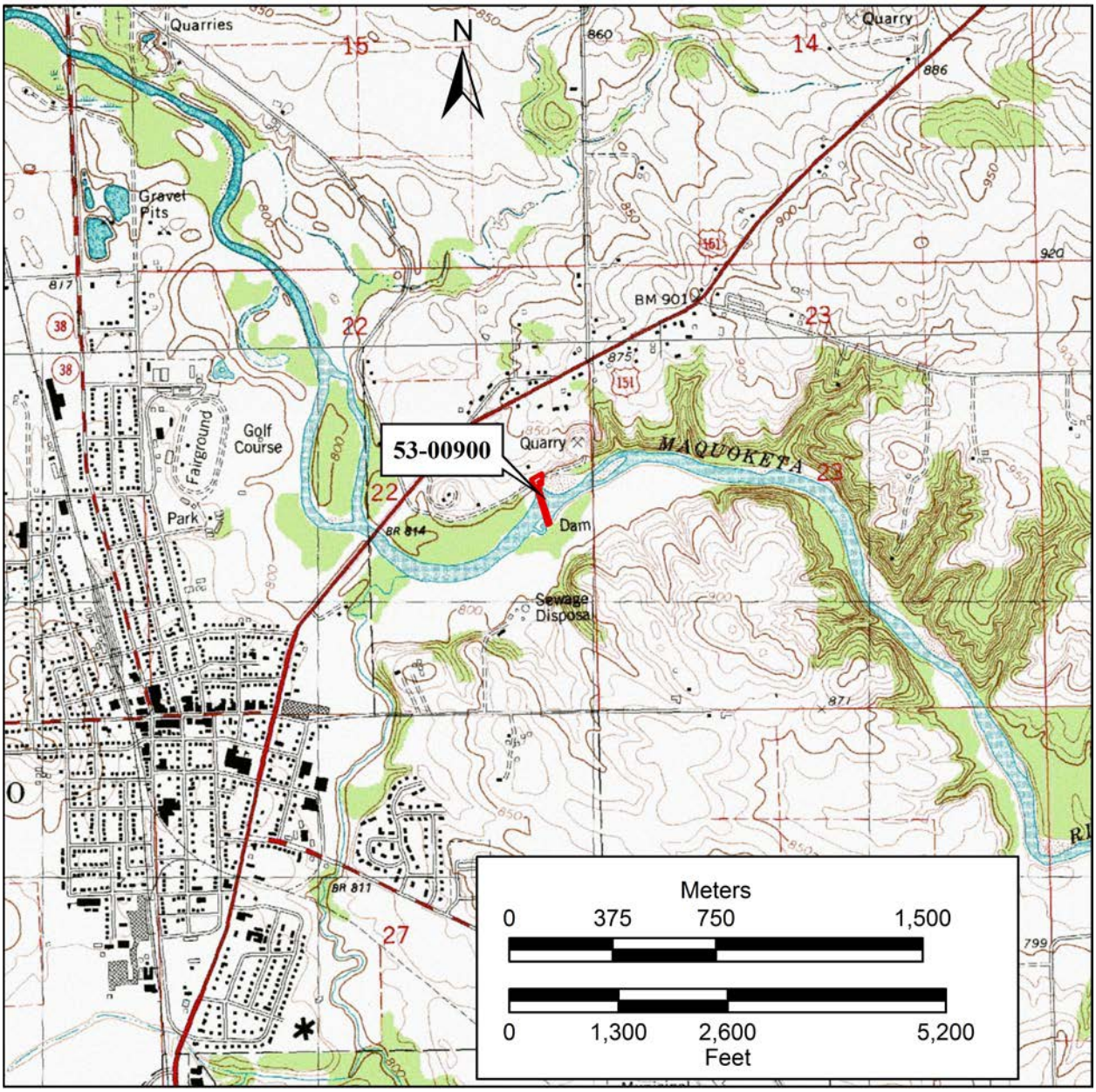

Figure 1. Location of the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa. Source: USGS Monticello, Iowa (1980), 7.5' series quadrangle map. Scale 1:24,000.

Monticello Electric Company Dam	Jones
Name of Property	County
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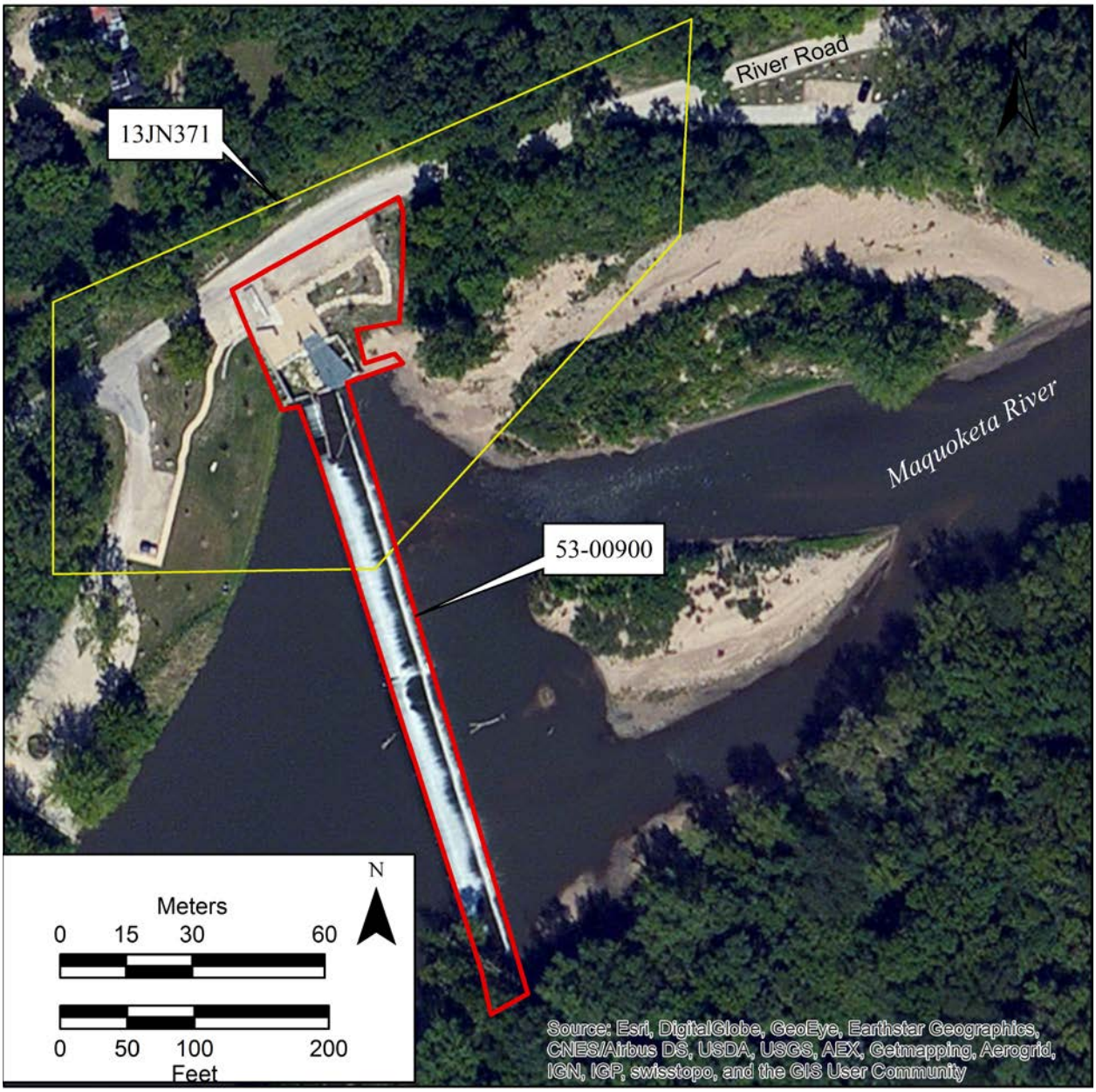

Figure 2. Location of the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa. Base map: Microsoft Bing aerial 2016. The dam and the former powerhouse ruins to the north (site 53-00900) are outlined in red; the extent of the archaeological site associated with the former mill and powerhouse (site 13JN371) is outlined in yellow.

Monticello Electric Company Dam	Jones
Name of Property	County
spans the Maquoketa River opposite 21462 River Road	Monticello
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Figure 3. The Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing south. Photograph by Richard Carlson, June 23, 2016.

Figure 4. The Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing south-southeast. Photograph by Richard Carlson, June 23, 2016.

Monticello Electric Company Dam	Jones
Name of Property	County
spans the Maquoketa River opposite 21462 River Road	Monticello
Address	City

Figure 5. South abutment of the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing south. Photograph by Richard Carlson, June 23, 2016.

Figure 6. North abutment of the Monticello Electric Company Dam (site 53-00900) and former race wall and powerhouse base, near Monticello, Iowa, facing northwest. Photograph by Richard Carlson, June 23, 2016.

Monticello Electric Company Dam	Jones
Name of Property	County
spans the Maquoketa River opposite 21462 River Road	Monticello
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Figure 7. Sluice gate in the race wall at the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing northwest. Photograph by Richard Carlson, June 23, 2016.

Figure 8. Former race location and north end of the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing southeast. Photograph by Richard Carlson, June 23, 2016.

Monticello Electric Company Dam	Jones
Name of Property	County
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Figure 9. Former race wall and modern observation deck at the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing southwest. Photograph by Richard Carlson, June 23, 2016.

Figure 10. Catwalk over former race and the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing south-southeast. Photograph by Richard Carlson, June 23, 2016.

Monticello Electric Company Dam	Jones
Name of Property	County
spans the Maquoketa River opposite 21462 River Road	Monticello
Address	City

Figure 11. Catwalk and the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing southeast. Photograph by Richard Carlson, June 23, 2016.

Figure 12. Former race walls and observation deck at the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing northeast. Photograph by Richard Carlson, June 23, 2016.

Monticello Electric Company Dam	Jones
Name of Property	County
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Address	City

Figure 13. Powerhouse site and parking lot by the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing southwest. Photograph by Richard Carlson, June 23, 2016.

Figure 14. Powerhouse site by the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing northwest. Photograph by Richard Carlson, June 23, 2016.

Monticello Electric Company Dam	Jones
Name of Property	County
spans the Maquoketa River opposite 21462 River Road	Monticello
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Figure 15. Historical photograph of the construction of the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing southwest. The photograph is mistakenly dated to 1902, but it more likely dates to late summer or fall of 1913, shortly before the first stage of construction (the south half of the dam) was completed. Source: Mon-Maq Dam files, Jones County Conservation Board, Central Park, Center Junction, Jones County, Iowa.

Monticello Electric Company Dam	Jones
Name of Property	County
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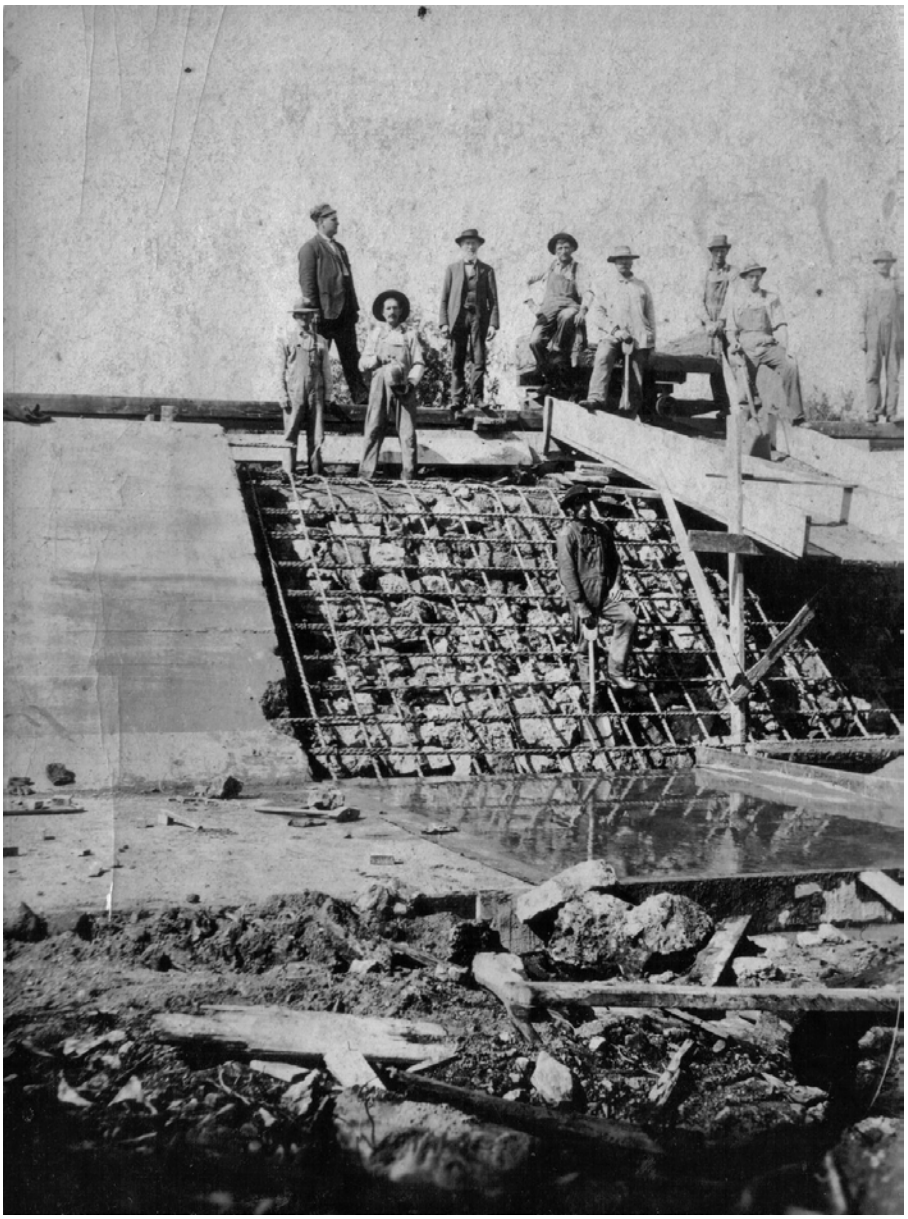

Figure 16. Historical photograph of the construction of the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing west. The photograph is mistakenly dated to 1902, but it must date to 1913 or 1914, when the dam was constructed. A more precise date of construction cannot be determined based on the photograph, since it is not clear if the work site shown is in the south or the north half of the dam. This photograph shows the dam's rock fill, reinforced concrete encasement, and reinforced concrete apron. Source: Mon-Maq Dam files, Jones County Conservation Board, Central Park, Center Junction, Jones County, Iowa.

Monticello Electric Company Dam	Jones
Name of Property	County
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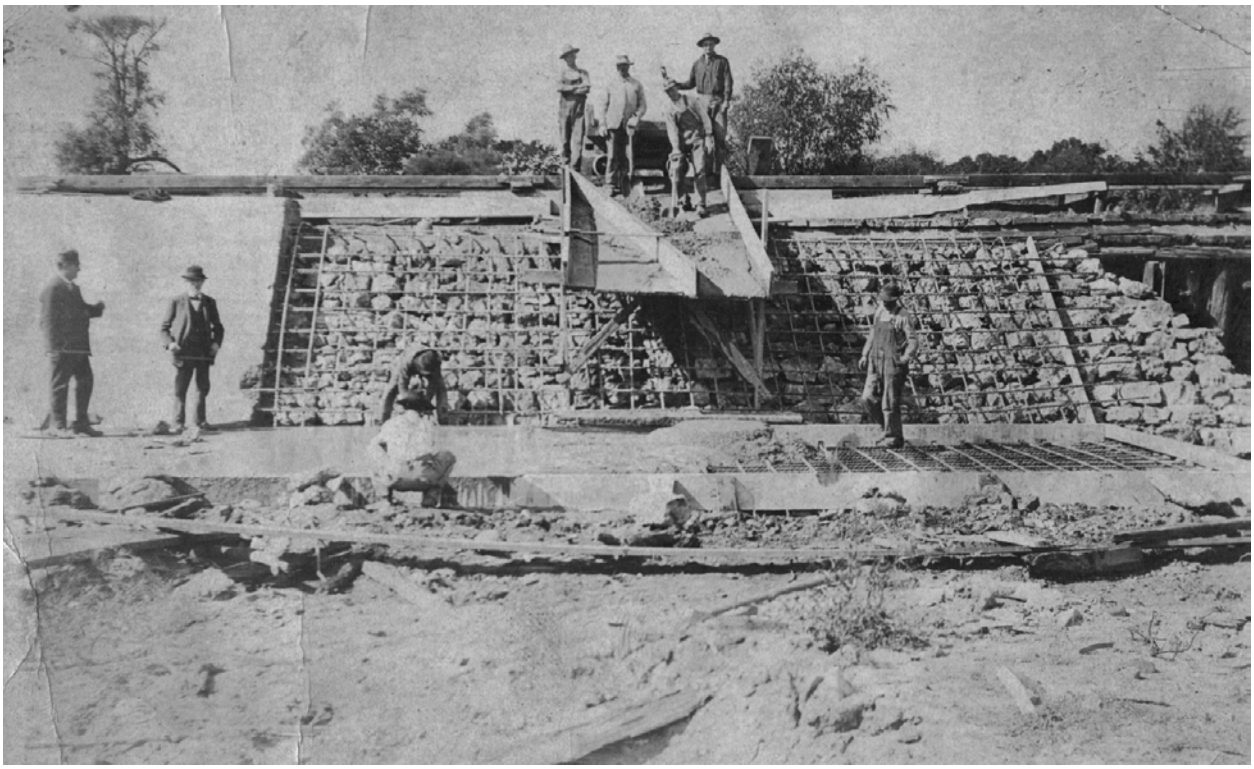

Figure 17. Historical photograph of the construction of the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing west. The photograph is mistakenly dated to 1902, but it must date to 1913 or 1914, when the dam was constructed. A more precise date of construction cannot be determined based on the photograph, since it is not clear if the work site shown is in the south or the north half of the dam. This photograph shows the dam's rock fill, reinforced concrete encasement, and reinforced concrete apron. Source: Mon-Maq Dam files, Jones County Conservation Board, Central Park, Center Junction, Jones County, Iowa.

Monticello Electric Company Dam	Jones
Name of Property	County
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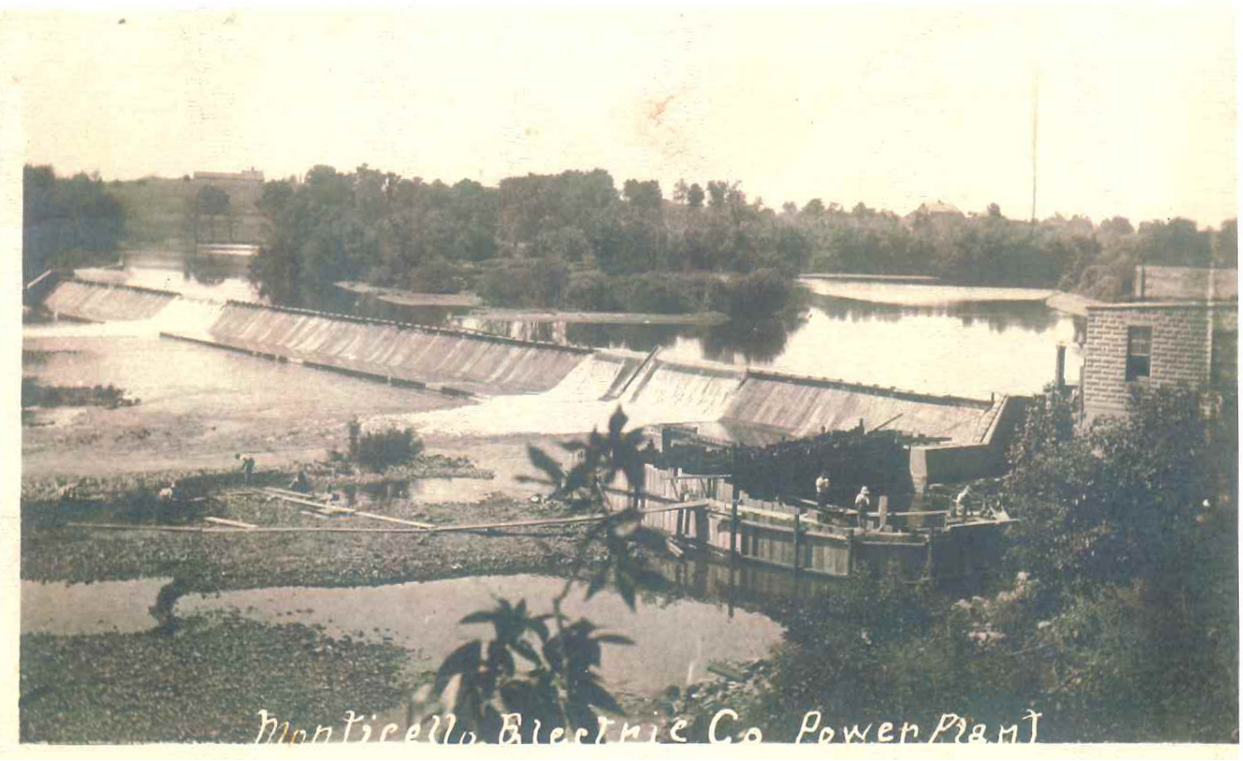

Figure 18. Historical photograph of the Monticello Electric Company Dam (site 53-00900), near Monticello, Iowa, facing southwest. The date of this photograph is unknown, but it was taken after the dam was completed in 1914. It also likely was taken before 1921, since it does not appear to show the turbine house built over the race shown on Sanborn fire insurance maps to have been built between 1914 and 1921 (Sanborn Map Co. 1914:1, 1921:7). The construction work in the foreground may be related to the construction of the power plant's tail race. Source: Mon-Maq Dam files, Jones County Conservation Board, Central Park, Center Junction, Jones County, Iowa.

Phase I Intensive Historic Architectural Survey and Evaluation of the Monticello Electric Company Dam (a.k.a. Mon-Maq Dam), Section 22, T86N-R3W, Jones County, Iowa 53-020

Kind of Work Produced:
(*fill in one section only: Report or Monograph or Chapter, etc.*)

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Place issued: Iowa City, IA

Client: Barr Engineering

If applicable, include:

Series Title: Technical Report

Volume #: N/A Report #: 322

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Thesis: Degree (check one): ☐ Ph.D. ☐ LL.D. ☐ M.A. ☐ M.S. ☐ B.A. ☐ B.S.

Name of College/University: _____

Paper: Meeting: _____

Place: _____

Other: _____

Geographic Scope of Study:

☒ City/town ☐ Township(s) ☐ County ☐ Region of Iowa ☐ Statewide ☐ Other: _____

State:	IA	__	__	__
County:	Jones	_____	_____	_____
Town:	Monticello	_____	_____	_____
Township:	____	____	____	____
Range:	___	___	___	___

Time Focus: (check any decades that receive particular attention)

☐ before 1830 ☐ 1830s ☐ 1840s ☐ 1850s ☐ 1860s ☐ 1870s ☐ 1880s ☐ 1890s

☐ 1900s ☒ 1910s ☐ 1920s ☐ 1930s ☐ 1940s ☐ 1950s ☐ 1960s ☐ 1970s ☐ 1980/later

Keyword: (Index of any subjects, topics, or people given prominent attention in the report)

Monticello, Iowa _____

Mon-Maq Dam _____

Monticello Electric Company _____

Iowa Electric Company _____

Hanssen, Virtus L. _____

Hanssen, Otto P. _____

dams, reinforced concrete _____