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NPS Form 10-900-b

OMB No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Multiple Property Documentation Form

This form is used for documenting multiple property groups relating to one or several historic contexts. See instructions in How to Complete the *Multiple Property Documentation Form* (National Register Bulletin 16B). Complete each item by entering the requested information. For additional space, use continuation sheets (Form 10-900-a). Use a typewriter, word processor, or computer to complete all items.

☒ New Submission ☐ Amended Submission

A. Name of Multiple Property Listing

The Historic and Engineering Resources of the Chenango Canal

B. Associated Historic Contexts

The History of Engineering and Navigation of the Chenango Canal

C. Form Prepared by

name/title Anthony Opalka
organization New York State Historic Preservation Office date March 2005
street & number PO Box 189 telephone 518-237-8643
city or town Waterford state New York zip code 12188
Edited by: Mark Peckham

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR part 60 and the secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation. (☐ See continuation sheet for additional comments)

_____ ,Commissioner 5/5/05
Signature and title of certifying official **Date**

New York State Office of Parks, Recreation and Historic Preservation
State or Federal agency and bureau

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

_____ July 6, 2005
Signature of the Keeper Date of Action

The Historic and Engineering Resources of the Chenango Canal
Name of Multiple Property Listing

New York
State

Table of Contents for Written Narrative

Provide the following information on continuation sheets. Cite the letter and the title before each section of the narrative. Assign page numbers according to the instructions for continuation sheets in *How to complete the Multiple Property Documentation Form* (National Register Bulletin 16B). Fill in page numbers for each section in the space below.

Primary location of additional data:

- ☒ State Historic Preservation Office
- ☒ Other State agency
- ☐ Federal agency
- ☐ Local Government
- ☐ University
- ☐ Other:

Name of Repository: New York State Canal Corporation
PO Box 189
Albany, New York 12201

STATEMENT OF HISTORIC CONTEXT/OVERVIEW

There is one historic context identified in this nomination, the History of Engineering and Navigation of the Chenango Canal. The Chenango was one of the nine lateral canals constructed as branches of the Erie or "Grand" Canal in New York State in the period between the 1810s and 1830s and is representative of a period of accelerated canal development throughout the northeastern United States. The Chenango Canal extended 97 miles between Binghamton and Utica and an extension to the Pennsylvania border from Binghamton was begun in 1865 but stopped in 1873 as talk of abandonment of the entire canal grew more serious. Its period of significance begins in 1833 when construction of the canal started, and ends in 1878, when it was abandoned as a navigation canal.

The geographical area covered in this document includes the canal and adjacent land within the four counties of Central New York through which the Chenango Canal traveled: Oneida, Madison, Chenango and Broome. It includes the canal itself, the main trunk of which traveled between Utica and Binghamton, as well as remnants of the extension never completed between the canal's terminus at Binghamton and a destination in Pennsylvania. In addition, essential to the operation of the Chenango was a complex system of reservoirs and feeder canals constructed to maintain the water level at a navigable depth throughout the period of operation. These features occur mainly within Madison County and are also included in this document.

INTRODUCTION

The immediate commercial success of the Erie suggested to decision-makers and the general public of the early-nineteenth century that canals could solve the problem of overland transportation regardless of geography, leading people to ignore the realities of difficult terrain when advocating for the construction of other canals. However, it was the Erie's unique geographical advantage of traversing the Appalachian Mountains' only natural breach at the Mohawk Valley that guaranteed its success, unlike many of the other New York State canals constructed during the period.

The Chenango's lack of success illustrated the limits of canal technology in difficult terrain as advancements in transportation technology were being made. By the time the canal opened in 1837, the railroads, which were better able to negotiate geographically challenging regions and could operate year-round, had already begun to give the canals serious competition.

Because of its low volume of commercial traffic during the entire time it was in operation, (1837-1878), the Chenango failed to generate enough revenue to sustain itself, and was always dependent on funding from the New York State Legislature for both operations and routine maintenance, something the Legislature was not always willing to provide.

Regardless of whether the canal was "successful," however, it did have a significant impact on development of the region it traversed. Prior to the construction of the canal, the valley of the Chenango River was not easily accessible from the rapidly developing parts of the state along the Mohawk Valley. Overland travel was difficult, thereby isolating the Chenango Valley, and because of poor roads, the cost of shipping goods out of the Chenango Valley was high and the time needed to bring local goods to larger markets was great, limiting development in the valley.

Following construction of the canal, however, the cost of shipping goods from the Chenango Valley dropped from $1.25 per 100 pounds to 25 cents per 100 pounds. Transportation time was reduced as well, from between nine and thirteen days to ship goods by wagon from there to Albany, to only four days via the Chenango and Erie canals. As a result, textile manufacturing, burned lime for use in construction cement, lumbering, and other industries grew up along the canal in places where such activities were not feasible prior to its opening. In addition, agricultural products such as apples and hops grown along the canal route could be shipped in much less time than previously possible.

The canal's impact on population growth, however, was perhaps less significant than the impact of the Erie on cities and towns along its route. When the Chenango Canal was under construction, the populations of many places along its route grew to their highest numbers ever. Once the workers left some of the small towns along its route, however, the population dropped, despite the presence of the canal. On the other hand, some already well-established communities along the canal route continued to grow in population and size and became the most important places in the region.

At the north and south ends of the canal, Utica along the Mohawk River and Erie Canal, and Binghamton along the Susquehanna River, became two of the most important cities in the state. In between, Greene and Norwich in Chenango County and Hamilton in Madison County became thriving but small canal-era villages (Norwich was later incorporated as a city). It seems that the Chenango was more viable for the transportation of freight rather than people, given the difficult terrain separating the Mohawk Valley from the Chenango Valley. There were 76 locks between Utica and Solsville, less than 30 miles to the south, and given the time needed for locking, the trip between Utica and Solsville was faster on foot than canal.

Despite these drawbacks, the canal commissioners considered the Chenango Canal the "best built" in the state in the quality of its engineering structures. Because it never produced a positive revenue stream, however, it was not as well maintained as the more commercially viable canals, nor was it ever enlarged as were the Erie and some of the laterals, first between 1835 and 1862, and again in the 1880s and 1890s. While virtually all of the Erie's original ("Clinton's Ditch") features had been replaced and remain today only where the original and enlarged diverged, those of the Chenango date from the early period of nineteenth-century canal building, and illustrate how all canals were originally constructed.

The information contained in this statement was drawn from two major sources. Noble Whitford, an engineer who retired from the New York State Canal System in the early twentieth century, wrote a comprehensive history of the canal system in 1905, just at the time the system was undergoing significant alteration, upgrading and partial replacement through construction of the Barge Canal System. This text, obtained on-line for use here from a transcription provided by the University of Rochester (New York), is considered one of the best sources for understanding the history of the entire system. In 1993, Michele McFee, an archivist at the Binghamton University of the State University of New York, published Limestone Locks and Overgrowth, The Rise and Descent of the Chenango Canal, the most complete history of the Chenango, also extensively consulted for this statement.

CONSTRUCTION OF THE CHENANGO CANAL

The history of the Chenango Canal began in 1814 when the New York State Legislature appointed a committee to investigate the feasibility of constructing a canal through the Chenango River valley to connect the Susquehanna River near New York State's southern border, with the Mohawk River valley, approximately one hundred miles to the north. This committee was one of several such groups exploring internal improvements in the state, since by this time, New Yorkers had recognized that the state held a unique geographical advantage in the Mohawk Valley for accessing the interior of the new nation west of the Appalachian Mountains. To this end, the state had already begun exploring the feasibility of constructing a canal through the Mohawk Valley and beyond, connecting Lake Erie with the Hudson River near Albany, an effort that had been considered before 1810 but stalled by the War of 1812.

The legislature believed that a canal connecting the Susquehanna with points north in New York through the Chenango Valley could eventually be extended beyond New York's southern border, connecting with canals in Pennsylvania and the coalfields of that state. In 1814, a legislative committee explored both the Chenango Valley route and one further west utilizing the Seneca River and Seneca Lake, the longest of New York's Finger Lakes.

The Erie Canal, construction of which began in 1817, was substantially complete and in use by 1823, and its immediate success caused every area of the state to agitate for the construction of lateral canals, presuming that they too would reap the commercial advancements that accompanied the Erie's opening. According to an article appearing in the *Oxford* (Chenango County) *Gazette*, in November, 1823, quoted in Whitford:

> Few counties can approach the Erie canal with so much ease and facility as Chenango, that are situated so far from it. We may, therefore, justly consider Chenango as destined, at some future period, to become an important branch of that vast inland navigation which secures to New York a proud pre-eminence among the states of the Union. The Chenango river can be made boatable to its source, and by a short canal, the expense of which would be comparatively trifling, may be united with the waters of the Oneida creek, which leads directly into the Erie canal. This has been pronounced by competent judges practicable and safe; and at no distant day will engage the attention of our enterprising citizens.[1]

Despite this enthusiasm, however, a conservative element in the state held a Chenango canal in check for many more years.

In 1824, the Legislature received a petition from the inhabitants of Chenango County, urging the passage of a law authorizing the survey of a canal route from the Erie along the valley of the Chenango to the Susquehanna River. Although the canal committee of the Assembly introduced a bill authorizing such a law, it was not acted upon.

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[1]Noble E. Whitford, History of the Canal System of the State of New York, Together with Brief Histories of the Canals of the United States of America, Volume 1, Chapter XVII, The Chenango Canal, 1905. (http://www.history.rochester.edu/canal/bib/whitford/1906/Chap17.html)

In a recurring pattern of defeat of the idea followed by persistence on the part of residents along the route, in the following year, another petition was presented and another bill introduced. The "great canal law" of 1825 authorized surveys for seventeen proposed canals, including the Chenango. Erie Canal engineer James Geddes surveyed the routes and reported to the Legislature of 1826 that the proposed Chenango Canal would extend from Chenango Point, on the Susquehanna River, to the Erie Canal at Whitesboro, via Norwich. He stated that it would be ninety miles long, with a total lockage of 1,050 feet and would require six miles of feeders. Geddes estimated the cost at $715,478.

The most important arguments against the canal during the pre-construction period were that there would not be a sufficient water supply at its summit level, that tolls might not equal the expense for maintenance and interest on original cost, and that the survey for accurately ascertaining its cost was not complete. In addition, some thought that the State of New York would become the subject of lawsuits for diverting water away from mills.

Oftentimes, when residents along the route were defeated in their desire for a canal, some would pay for new surveys out of their own pockets. They did so in this instance after Geddes' survey was completed and the Legislature refused to authorize the canal. The privately-funded survey, which was conducted during the summer of 1826 and endorsed by two former Erie Canal engineers, examined several water sources along the route and determined that there would be no problems with a canal following the Chenango route. At the same time this survey was presented to the Legislature, two competing surveys were also presented. One proposed a canal from Binghamton through the valley of the Susquehanna and Otsego Lake, and the other to start from the same point, but following a more westerly direction and passing through Cortland County, to intersect the Erie Canal in Onondaga County. The New York State Assembly committee unanimously preferred the more easterly route through the Chenango and Oriskany Creek valleys, with a termination at a point between Utica and Whitesboro.

In the summer of 1827, a detailed survey of the summit level was carried out by Nathan S. Roberts, designer and builder of the five-lock flight at Lockport, one of the last sections of the Erie completed and one of its most difficult and impressive engineering feats. (Lockport Industrial District, National Register, 1975). In his survey, Roberts identified streams, swamps and ponds that could be converted to use as reservoirs for the Chenango Canal. His report was presented to the Legislature in 1828, and stated that adequate water could be supplied to the canal. Again, its cost was estimated to be less than one million dollars.

Whitford states that around the same time, Holmes Hutchinson, another well-known Erie Canal engineer, also examined the route and "fully concurred with Roberts' opinion regarding both adequacy of water supply and course of construction." He also stated that "the Chenango would be one of the most important lateral branches of the Erie canal."[2]

When this report was submitted to the New York State Assembly's canal committee, the group could not agree on the feasibility of the canal and two reports were issued. The majority report opposed the canal because its income would not be sufficient to pay its original cost and interest, whereas the minority reported in favor. The minority report, which was adopted along with a bill authorizing construction, declared the canal feasible and practicable, "and would afford cheap transportation to a rich and populous region; ...it would promote an

[2] Ibid.

extensive trade in coal from Pennsylvania and in return would afford a market for New York products; [and]...there could be no doubt that the revenue would exceed the sum required for maintenance and interest."[3] In the New York State Senate, however, the bill was rejected by a vote of seventeen to twelve.

Still refusing to concede defeat, backers of the Chenango Canal made yet another application to the Legislature in 1829. This time, they included a report by Benjamin Wright, chief engineer of the Erie, who surveyed the route himself in 1828. He concurred with the findings of Roberts and Hutchinson, stating that:

> the valley of the Chenango river, from the town of Madison, presents a formation of ground most extraordinary [sic] favorable for easy excavation of a canal; so much so, that I do not think the whole state of New-York can present a similar continuous distance, where nature has given a formation more favorable for such a work, and more easy and cheaply executed...If a canal is to be made to connect the Erie canal with the Susquehannah, the Chenango valley ought to be the place of location for the first work.[4]

As a result of these findings, the Legislature of 1829 authorized the canal commissioners to begin work upon the Chenango Canal, under the following conditions: if the water supply was adequate without taking waters off the Oriskany or Sauquoit creeks, as they were used for milling purposes; that the cost of the canal would not exceed one million dollars; and that the canal would generate enough revenue to cover the cost of maintenance and interest payments on its debt. This time, the commissioners employed yet another Erie Canal engineer, David S. Bates, for the surveys. He surveyed several different routes, examining intersections with the Erie at Utica, Whitesboro or Oriskany, and provided engineering estimates and costs for each route. The canal commissioners also examined the routes personally, visited water sources, and collected data concerning the probable revenue. Whitford relates that they were comfortable with the adequacy of the water supply, but upon their report to the Legislature of 1830, the commissioners still believed that the canal revenue would not exceed expenses. As a result, the Assembly committee on canals reported unfavorably at this session.

In 1831 and 1832, bills were again put before the Legislature, to be passed by one house and rejected by the other. Again in 1833, a bill for authorization of the Chenango Canal was introduced, and the Assembly committee on canals issued a favorable report, stating that the water supply would be adequate and that the canal would cost less than one million dollars to build.

While such a cost would seem to argue in favor of the canal, the committee estimated the annual cost for maintenance of the canal at $87, 916 against income of $34,512. Advocates of the canal argued that income would amount to $126,821, suggesting that the commissioners had failed to take into account the fact that shipping coal from Pennsylvania would greatly increase the revenue the canal would generate, citing the privately constructed and profitable Delaware and Hudson Canal as an example. This report recommended construction of the Chenango Canal.

Despite contradictory claims of the canal's profitability, on the recommendation of Governor William L. Marcy, on February 23, 1833, the Legislature passed an act authorizing its construction...

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[3] Ibid.
[4] Ibid.

> from Binghamton, in the county of Broome, up the valley of the Chenango river, to its head waters, and thence by the most advantageous route, to the Erie canal, without taking any of the waters of the Oriskany or Sauquoit creeks...The said commissioners, in determining the route and termination of the said canal at the Erie canal, shall be influenced by a regard for economy, public utility, and the relinquishment of damages, and the amount of gifts, grants and donations...The canal shall be constructed of the same width and depth as the Erie canal; and the locks shall be made of wood, supported by stone walls, . . . unless the said commissioners shall deem locks of a different construction, cheaper, and more useful.[5]

The commissioners of the canal fund were authorized to borrow a sum not exceeding one million dollars for the construction of the waterway, and finally, the governor signed the bill and it became law. Not surprisingly, its passage resulted in demonstrations of support throughout the Chenango Valley, including parades, fireworks, and in one village, a ball attended by 500 people.[6]

On April 12, 1833, the canal commissioners appointed John B. Jervis as chief engineer. In the fall of that year, he reported the results of his surveys and estimates. He included information on various places considered for entrance of the Chenango into the Erie Canal, as well as water sources, including artificial reservoirs that would be constructed, and the Chenango River. After determining the specifications for canal locks, to be made of wood, masonry and hydraulic cement, contracts were let on the northern part of the canal. Estimates came in at twice the project cost, but the commissioners decided to press ahead with construction without limiting the cost of the canal.

Construction began in the fall of 1833 after the route was finalized. Despite the number of surveys conducted before the canal was authorized, there were unanticipated construction contingencies encountered on site as hundreds of workers fanned out along the canal path. Among the problems were gravelly soils unsuited for the canal because of their instability, 25 feet of solid rock that needed to be blasted for two of the three miles at the summit, as well as narrow valleys between the Chenango River and walls of solid rock that were barely wide enough to accommodate the canal in various locations along the southern portion of the canal. Other problems that only became apparent later included stagnant water in canal basins, as well as a curve in the canal's path in Norwich that was too narrow for two boats to pass, requiring correction several years after the canal's opening.

In the spring of 1834, the northern terminus of the Chenango Canal was fixed at Utica after Jervis had considered nearby Whitesboro, Oriskany, Rome, Durhamville, and on the west side of Oneida Creek. As the original entrance to the Erie had first been planned for Whitesboro, residents of the larger city of Utica offered to raise funds to pay the cost of changing the route and terminus to Utica. The money was never paid, however, because the canal committee acknowledged that the canal should have terminated at Utica originally, and forcing the city to pay while comparable cities did not would not have been fair to the city of Utica. This contrasts with the village of Sherburne, at the approximate midpoint of the canal, where residents did indeed pay over $10,000 to the state to reroute the canal through the village, which it would have originally bypassed.

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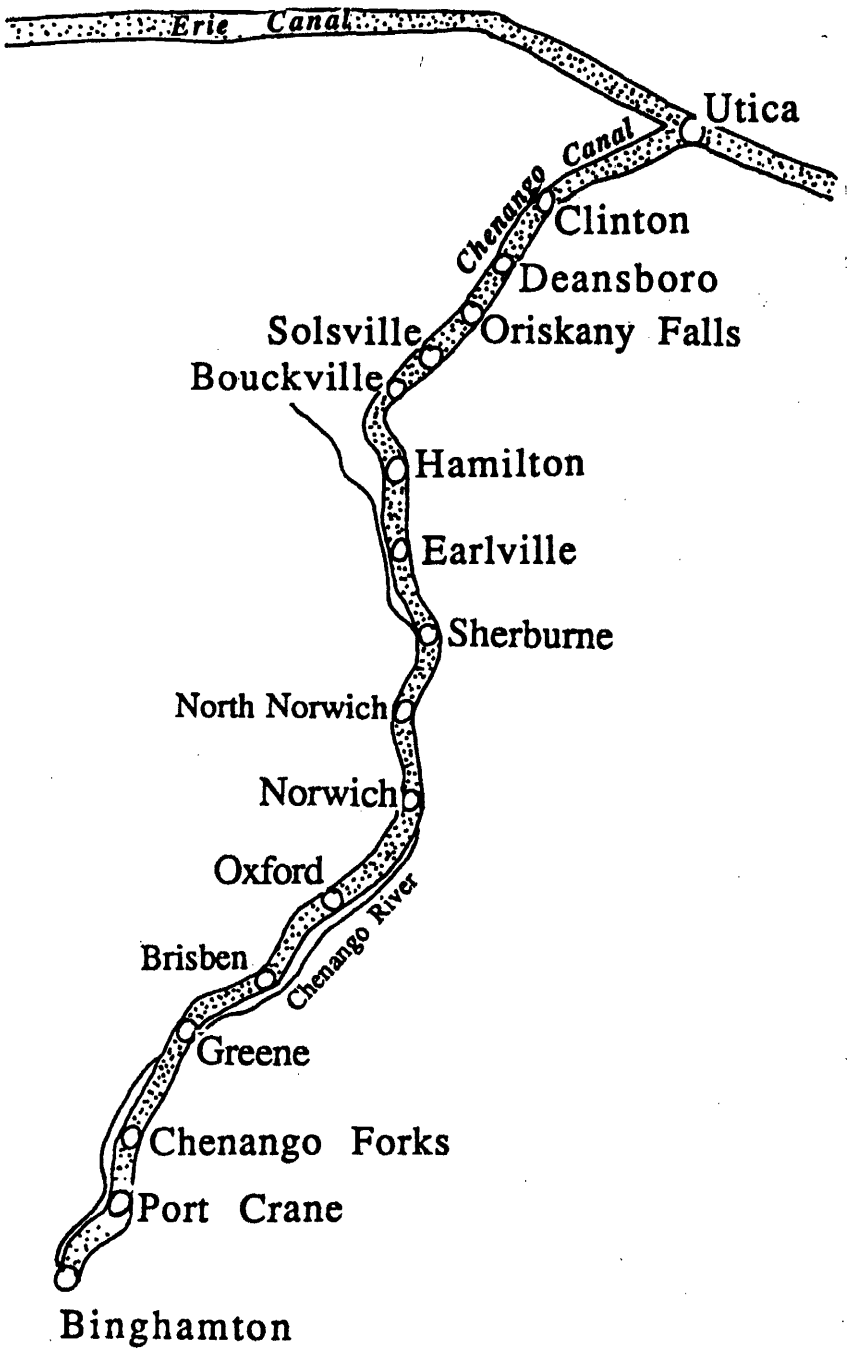
[5] Ibid.

[6] McFee, Michele A., Limestone Locks and Overgrowth, The Rise and Descent of the Chenango Canal. Fleischmanns, new York: Purple Mountain Press, 1993, p. 152.

By October 1836, the canal was essentially complete and watered, although it did not open to navigation until the following May. According to Whitford, the final count of structures was as follows: 17-1/2 miles of feeders and 7 reservoirs; 114 composite and 2 stone lift-locks; 1 guard-lock; 19 aqueducts; 52 culverts; 21 waste-weirs; 56 road bridges; 106 farm bridges; 53 feeder bridges; 12 dams, and 11 lock houses.



Chenango Canal 1837–1878

The first year of operation of the Chenango Canal proved to be a disappointment, as toll revenue amounted to only $10,813. The next year, however, saw a nearly two-fold increase in revenue, and no engineering problems with the canal itself were recorded. However, many in the region served by the Chenango Canal believed that the tolls on the canal were too high, thereby diverting commercial traffic southward to the Susquehanna River. Following a petition to the canal board, tolls were reduced and made equal to those of the Erie.

In 1838, a law was passed authorizing a survey of the feasibility of extending the Chenango to Pennsylvania. The plan was revived several times between 1838 and the 1860s, and construction was actually underway in the late 1860s. However, due to the fact that its cost continued to increase throughout the period and the canal was likely to be abandoned, the project was finally abandoned in 1873.

One of the most important considerations leading up to the construction of the Chenango Canal had been the concern about the adequacy of the water supply. After it was opened, however, Whitford states that the commissioners reported "the reservoirs had furnished not only an abundance for this canal, but had contributed essentially towards keeping up a supply for the Erie, water having been drawn for this purpose at frequent intervals, generally as often as two or three times a week, for a period of from six to nine hours."[7]

Throughout the 1840s, there was very little legislative activity concerning the Chenango Canal. In 1842, the canal experienced its first severe damage, caused by a freshet. Dams were broken and walls were damaged, causing the canal to take on significant quantities of earth and gravel, but repair was carried out with little disruption of service on the canal. In the same year, the legislature enacted the "Stop Law" that terminated state-funded public improvements across the state. While this law caused the enlargement of the Erie Canal then underway to come to a complete halt, it did not have much of an effect on the Chenango as the canal was so new, few repairs were needed. In 1843, the Kingsley brook reservoir, once thought to be one of the most important of the system, was so damaged by a flood as to require about $8,000 to make repairs, but because the commissioners believed it was not essential, it was not restored at that time.

In 1849, the canal commissioners, while noting that the Chenango was the best-constructed canal in the state, stated that several wood structures were reaching the end of their lives and needed to be replaced. In the following year, extensive repairs were undertaken, listed by Whitford as the complete overhaul and gate replacement at many locks, reconstruction of the aqueduct over the Chenango River at Greene, and reconstruction of many bridges. Between 1850 and 1855, when a new contracting system was instituted on the Chenango, a new trunk was built for the aqueduct near Oxford, eight miles of towpath were raised and repaired, and new docking was installed in one area.

Despite these attempts at making the Chenango Canal more usable, as early as 1853, some were arguing for its abandonment. One newspaper writer suggested giving the canal to the Utica and Binghamton Railroad. "Why not make the canal a railroad track? If the state would dispose of the canal in that way, we do not doubt a large majority of the people along the route would rejoice greatly."[8]

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[7] History of the Canal System of the State of New York.

[8] Limestone Locks and Overgrowth, p. 204.

With the institution of a contracting system for canal repairs, it became possible to compare expenditures over time, something that seemed to reiterate the concerns of the early skeptics. For example, in 1837, the cost for maintenance had been $19,508, or $201 per mile, and in 1855 it was $49,187, or $486 per mile. Tolls did not keep pace with these expenses, with the sum of $10,812.72 collected in 1837, the first year of operation and in 1855, $20,036.66, with a maximum of $32,272.80 in 1848.

McFee argues that enlargement of the Erie in the period between 1835 and 1862 helped hasten the decline of the laterals, ironically underway as the Chenango was under construction. She states that

> ...larger boats accommodated on the new Erie could not fit on the smaller canals, which consequently lost the business of many shippers. The enlargement of the Erie also affected the lateral canals' ability to compete with the railroads, which had already whittled away at canal trade. Larger boats could travel the Erie, but goods transferred to the lateral canals had to be moved onto smaller boats. The railroads had no such problem: they could simply transfer any of their cars to their branch lines.[9]

In 1857, the resident engineer recommended replacing 45 bridges with Whipple truss bridges, patented in 1841, and soon after, the standard bridge of the entire canal system. At the same time, he suggested the need for a weigh-lock on the canal to protect the state from fraud.

The engineer's report of 1859 is quoted extensively in Whitford and is quoted here. It details the deteriorated condition of the Chenango Canal, and points to the lack of investment on the part of the state in this lateral, providing an early glimpse into the reasons for the canal's abandonment nineteen years later:

> The size of the prism of the canal when constructed, was 26 feet on bottom, side slopes 2 to 1, surface water width 4 feet above bottom, 42 feet. The locks were 15 feet in width on bottom, and 16 feet on top, and 90 feet length of chamber; the other structures in the same relative proportion, so that two boats drawing 3 ½ feet of water (14 feet wide, according to law) could pass each other.
>
> ...It was the duty of the officers to keep the canal in this form, but instead, it has been allowed to fill up in the prism from year to year, and the surface of water raised by putting boards on the aqueducts, waste weirs, &c., and raising the lock gates until the surface is very near 5 feet above bottom. The consequence of this is, that the water runs over the lining of the impermeable wall built on the inside of the banks, and renders the loss of water immense, which is very disastrous to navigation in dry seasons.
>
> ...The banks have never been kept to a corresponding height, on the contrary have been left to be worn down, so that danger of breaks in a sudden rise is imminent. The boatmen and forwarders have kept pace with this state of things; every new boat is built a little larger, wider, and deeper. The raising of the water has given increased bottom width, and a greater depth, so that a boat is not considered loaded, unless it can carry from 100 to 110 tons of freight. When the canal was built 65 tons was considered a good load. One difficulty exists in running large class boats on a small canal; the locks are on the composite plan, wood chambers, stone at head and foot. The frost and water, by 20 years action, have pressed in the sides and wings of some

[9] Ibid., p. 205.

of them to 14 feet, 6 inches; so that modern boats 14 feet 6 inches and 14 feet 8 inches in width, find trouble in getting through. This is one of the great causes of complaint by persons navigating this canal, and some remedy should be applied to correct it. There is another difficulty with boats which are not fit to run, having served their time, become decayed and worthless, when a rush of freight comes, are gotten up and loaded in some way, and after going a short distance sink, and hinder navigation for days. The remedy for this is easy, by having the collectors refuse them a clearance.

...The farmers and persons living upon the line of canal have been constantly encroaching upon the banks and lands of the State, until in many places the fences are so close to the inner angle of the towing path that it is almost impossible to pass two teams, and they have enjoyed the privilege so long with such impunity, that they consider their rights infringed upon if requested to remove the obstruction, and threaten prosecution to any one interfering with their fences.

...About two and a half years since a circular was prepared under the direction of the acting Canal Commissioner, to the effect that all fences and other obstructions on the towing path side of the canal, should be removed to the limits of the State property. Nearly all agreed that as soon as their fences required repairing or rebuilding, they would do so, but there is no abatement of the nuisance, and the remedy now to apply is to direct the contractors to remove the fences, &c., and hold them to pay the expense. If the property is not worth enough, sue and recover damages against the land owners.[10]

In the same document, the engineer reported that masonry throughout the Chenango Canal stone structures had failed, to the point where nearly all cement had fallen out and that an aqueduct across the Chenango River was in danger of collapse. In 1861-62, this aqueduct was reconstructed, just as more serious talk of abandonment of the Chenango was rising because of the condition of the canal.

The need for increased water was noted, and the engineer recommended that the Kingsley Brook reservoir, which had failed twenty years earlier, be reconstructed. More than one hundred locks needed to be rebuilt or the canal would need to be abandoned, because of its condition, and in the next year, reconstruction of six locks was begun. The condition of the canal was described as "extremely serious" and the division engineer stated that:

This canal, with its 116 locks, is in the poorest condition, (so far as its capacity for business is concerned), of any of the canals in this division. It can only be made useful by the strictest enforcement of the repair contracts, together with a steady and uniform annual expenditure of at least $50,000, for the renewal of its locks and other important structures. [11]

In 1864, work on reconstruction of the Kingsley Brook Reservoir began, and at the same time, the canal was dredged. For a brief time, the Chenango showed some increase in business, but the general feeling was that the canal was in decline. Within the next two years, eight locks were repaired and six more repair contracts were advertised.

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[10] History of the Canal System of the State of New York.
[11] Ibid.

In 1865, the most serious flooding ever to be recorded devastated central and southern New York State. All canals in the region were damaged, but especially the Chenango, as the waters of the Chenango River overflowed their banks and inundated the southern portion of the nearby canal. Repairs were made and the canal opened for the year in June of 1865. In the same year, the Chenango Canal Extension was begun, to connect Binghamton with the coalfields of northern Pennsylvania.

By the late 1860s, 11 locks were rebuilt, but the commissioners' reports of the period continue to describe deterioration of the canal, including the fact that locks were failing more quickly than they could be repaired, and talk of abandonment did not subside. Serious deterioration plagued the canal, including damage to 25 locks in 1869, but inexplicably, reconstruction to increase their capacity was begun in 1870. Scattered repairs continued to be made, without the benefit of serious appropriations; rather, modifications were carried out as ordinary repairs.

By 1871, however, discussion of abandonment once again began to accelerate. In that year, the canal commissioner of the middle division of the state system stated that the canals had outlived their usefulness and had been superseded by the railroads, which by then were even threatening the canals' utility in carrying coal. He said that tolls amounted to only three percent of the revenue needed to maintain the canal and structures such as locks and aqueducts. However, work on the extension south of Binghamton continued.

In 1872 the Legislature gave the city of Binghamton the right to use a portion of the canal bed as a street, and in the following years, expenditures were confined to repairs to breaches and the patching of locks and bridges. Canal staff was also cut by the elimination of two of the three superintendents of the Chenango. And in 1874, by a four-to-one margin, voters of the state approved a constitutional amendment that permitted the disposition of all publicly owned canals of the state except the Erie, Oswego, Champlain and the Cayuga and Seneca.[12]

An unsatisfactory report was handed to the state legislature in February of 1876 regarding abandonment of the lateral canals, and as a result, a special commission was appointed to report to the lawmakers. According to Whitford, this commission favored

> ...abandonment of laterals in general, [but] declared the necessity of retaining the reservoirs and a portion of the Chenango canal as a source of water-supply for the Erie. The commissioners...made a thorough investigation of conditions along the lateral canals, visiting the localities and taking testimony from people concerned in the traffic as well as from those having charge of the maintenance. Their report declared that the business of the Chenango canal was gone and that the structures were so dilapidated as to be able to last but a few years longer, with a possibility of failure at any time, which only a vast expenditure could repair. Accordingly they recommended that the whole canal – both the existing channel between Utica and Binghamton and the uncompleted extension to the state line – be abandoned, excepting a portion in Utica for the accommodation of the insane asylum and the part needed to supply water to the Erie.

[12] Limestone Locks and Overgrowth, p. 207.

The commissioners recommended that the portion of the summit level of the Chenango be retained between Solsville and the connections to the reservoirs to the south. They directed that a bulk-head be constructed where the canal crossed the Oriskany Creek so that water could be carried from the Chenengo to the Oriskany and on to the Rome level of the Erie Canal to feed water to the larger canal, which would continue to operate after abandonment of the laterals.

The New York State Legislature passed a law in 1877 that stipulated that the reservoirs and feeders that had fed the Chenango would need to be maintained by the state for purposes of operating the Erie Canal. In that year, the canal commissioner stated that

> this rather 'worthless ditch' has been a source of much perplexity, and an expense of nearly $4,000 for about six weeks' navigation, in October and November, 1876, and maintenance of bridges and other work necessary during the fiscal year of 1877...There was no navigation upon this canal during the calendar year of 1877, for the reason that no dependence could be placed on the various dilapidated structures holding out for a week without expending an amount of money in its preparation unwarranted by its business of previous years, or prospects of the future...It will be a good riddance for the State when the time arrives for the sale of what is left of the old Chenango canal.[13]

Again in 1878, the city of Binghamton was authorized to take possession of canal lands within city limits, fill in and grade them for a street, and to remove all encroachments upon canal lands. The canal closed in May of 1878, and by the end of the year, the canal between the summit level at Hamilton and the Oriskany Creek had been converted to a reservoir and feeder system for the Enlarged Erie by constructing a dam at the Village of Hamilton and diverting the water northward. All lakes, streams and feeder canals that had originally been employed to supply the Chenango Canal became part of this new reservoir system for the Erie. The 31-mile stretch included 82 locks, 4 aqueducts, 20 culverts, 9 waste-weirs and 79 bridges that were so badly deteriorated as to be unusable even before formal abandonment. In addition, over the next few years, bridge abutments were lowered and new bridges were built at a lower level. In 1882, materials in lock walls were sold at public auction.

Because no parties were interested in purchasing the canal, the state granted title to adjacent landowners south and north of the summit, with the exception of portions in Norwich, Oxford and Greene, which were given to those villages for public uses. A short piece of the canal in Utica also remained open for a short time. At the same time the Chenango Canal closed in 1878, several other lateral canals were abandoned by the state, including the Chemung, near Elmira in the Southern Tier, and the Genesee Valley, running south from Rochester.

At the end of the nineteenth century, officials of the state of New York began to explore the feasibility of enlarging the Erie once again or abandoning it altogether and replacing it with a canal that could accommodate larger vessels. In 1903, the voters of the state approved a construction project that called for the reuse and enlargement of four of the state's original ten canals: the Erie, the Champlain, the Oswego, and the Cayuga & Seneca.

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[13] History of the Canal System of the State of New York.

Under this plan, the western portion of the existing Erie Canal was largely reused, while east of Syracuse, the entire canal was abandoned and a new canal was built, incorporating parts of a straightened, widened and deepened Mohawk River, and Oneida Lake. The three other canals were similarly reconstructed.

The new network was called the Barge Canal System, with each canal designated as a "division" of the system. Construction began in 1905, at the time Whitford was developing his history of the state canals, and the system was fully opened in 1918. The five-mile summit level of the old Chenango Canal and adjacent reservoirs were retained for use in the Barge system. The aqueduct carrying the Chenango over the Oriskany Creek between Bouckville and Solsville was removed and water from the canal spilled directly into the Oriskany Creek that traveled northward to the Barge Canal. The feeder system of the Chenango continues to function to the present time and is maintained by the New York State Canal Corporation.

Since the end of World War II, and more particularly since the opening of the Saint Lawrence Seaway in 1959, the historic canal system of New York State has seen diminished commercial traffic in all sections. Presently, the canals are used by recreational boaters in greater numbers than ever before, and in an effort to connect the twentieth-century system to its nineteenth-century roots, the "division" designation was dropped. The canals are now called by their historic names--the Erie, the Champlain, the Oswego and the Cayaga & Seneca—and are maintained by the New York State Canal Corporation, a subsidiary of the New York State Thruway Authority.

F. Associated Property Types

PROPERTY TYPE: Prism and towpath

I. DESCRIPTION: The prism is a continuous ditch in which canal water flowed. In some areas it was stone-lined, and in other areas it was lined with impervious clays. At the time of construction of the canal, the prism was 40 feet wide at the top, 28 feet wide at the bottom, and water in the channel was 4 feet deep. Along the entire length of the canal was the towpath on a raised berm on one side of the canal, on which horses and mules towing boats, as well as people, walked. On the opposite side of the canal was another raised berm, known as the heel path. Both berms served to protect the canal from overflowing its banks and flooding adjacent land.

II. SIGNIFICANCE: The canal was 97 miles long and the word "canal" commonly refers to the prism and towpath. It is the essence of the canal. The Chenango Canal prism is significant in two contexts: (1) it reflects the settlement, community development, and the development of a major water transportation system in the Chenango River and Oriskany Creek Valleys and (2) it is representative of the engineering features of the early New York State canal system. It meets National Register Criterion A for its contribution to and association with broad patterns of our history, particularly the history of transportation, and National Register Criterion C because it embodies the distinctive engineering characteristics of early canal design in the first half of the 19th century. The canal prism was an engineering feature that required precise survey and construction in order to hold water and be able to retain a depth of 4 feet to accommodate boats of a certain size. The berm on either side of the canal needed to be constructed of suitable materials compacted in a manner that would allow for a stable surface as well as protection from flooding of adjacent lands.

III. REGISTRATION REQUIREMENTS: In general, to qualify for registration, the prism must be discernable in the landscape. It could range from a shallow depression to a water-filled ditch. If it has been built upon since abandonment of the canal, as has occurred in certain locations, it should not be considered for registration.

PROPERTY TYPE: Lock

I. DESCRIPTION: A lock is a stone structure within the path of the canal that is closed off with gates, allowing for the boat to be raised or lowered between differing levels of the canal. There were 114 locks built in the Chenango Canal. According to McFee, "Almost all the locks of the early canals in the New York system were of similar construction. The lock chamber--that part of the lock between the two massive [gates]--was 90 feet long and 15 feet wide, although the wall extended another 30 feet beyond the gates to protect the banks from the surge of water when the boat was released from the locks. The locks were constructed with wood-lined chambers supported by a dry wall of stone masonry on the sides, excepting about eight feet below the upper gates. This part of the wall, which connected with the wall forming the breast of the lock, was laid in quick lime mortar. Plank boards lined the chambers and kept them watertight.

"The big wooden gates were made of heavy, nine-inch-square framing material with vertical planking two inches thick. Within the larger gates was a small sluice or paddle gate that could be opened or closed from above, allowing water to enter or leave the chamber slowly. The large gates could then open more easily

without the weight of water behind them. A long iron rod ran from the sluice gate to the top of the lock. The lock tender would open and close the paddle gates as needed with a wrench that fit the top of the rod.

"The huge doors were held closed in a V position by the water pushing them against the miter sill, a wooden or masonry triangle on the bottom of the lock chamber. The V always pointed upstream. Lock tenders moved the gates with leverage from the balance beam, a 19-foot-long piece of wood that extended beyond the lock chamber. A quoin post attached to the beam was round against the masonry and square against the gate. Just above the planking an iron collar was bolted into the top of the masonry wall with an adjustable nut that tightened or loosened the gates so they could fit watertight. The gate swung back into a recess in the wall when the lock was open."

(McFee, Michele A., Limestone Locks and Overgrowth, The Rise and Descent of the Chenango Canal, Fleischmanns, New York, 1993, p. 89)

II. SIGNIFICANCE: Locks meet National Register Criterion A for their contribution to and association with broad patterns of our history, particularly the history of canal transportation. Locks are integral features of canals and are also significant under Criterion C for engineering. They are the most numerous of all engineering features of the canal and with the exception of aqueducts, are the largest. Locks were designed to use available materials and trades and move boats of specific dimensions through from one level of the canal to another, using minimal volumes of water. Additionally, the Chenango Canal locks provide insight into the early generation of locks on the Erie and other New York State canals as they were never enlarged as were other canal locks in the state.

III. REGISTRATION REQUIREMENTS: In general, to qualify for registration, locks must retain a portion of their original stonework, on site and in place so that the feature can be understood as a lock. If the chamber and prism have been filled but the top portion of the lock stonework is visible, the feature should be considered eligible for registration.

PROPERTY TYPE: Feeder Canals and Reservoirs

I. DESCRIPTION: Feeder canals and reservoirs are natural or man-made bodies of water that supply water to the canal, particularly at the summit level. Feeder canals carry water stored in holding ponds to the canal. There were 17 miles of feeder canals and reservoirs built to serve the Chenango Canal; most were concentrated in the summit area within Madison County.

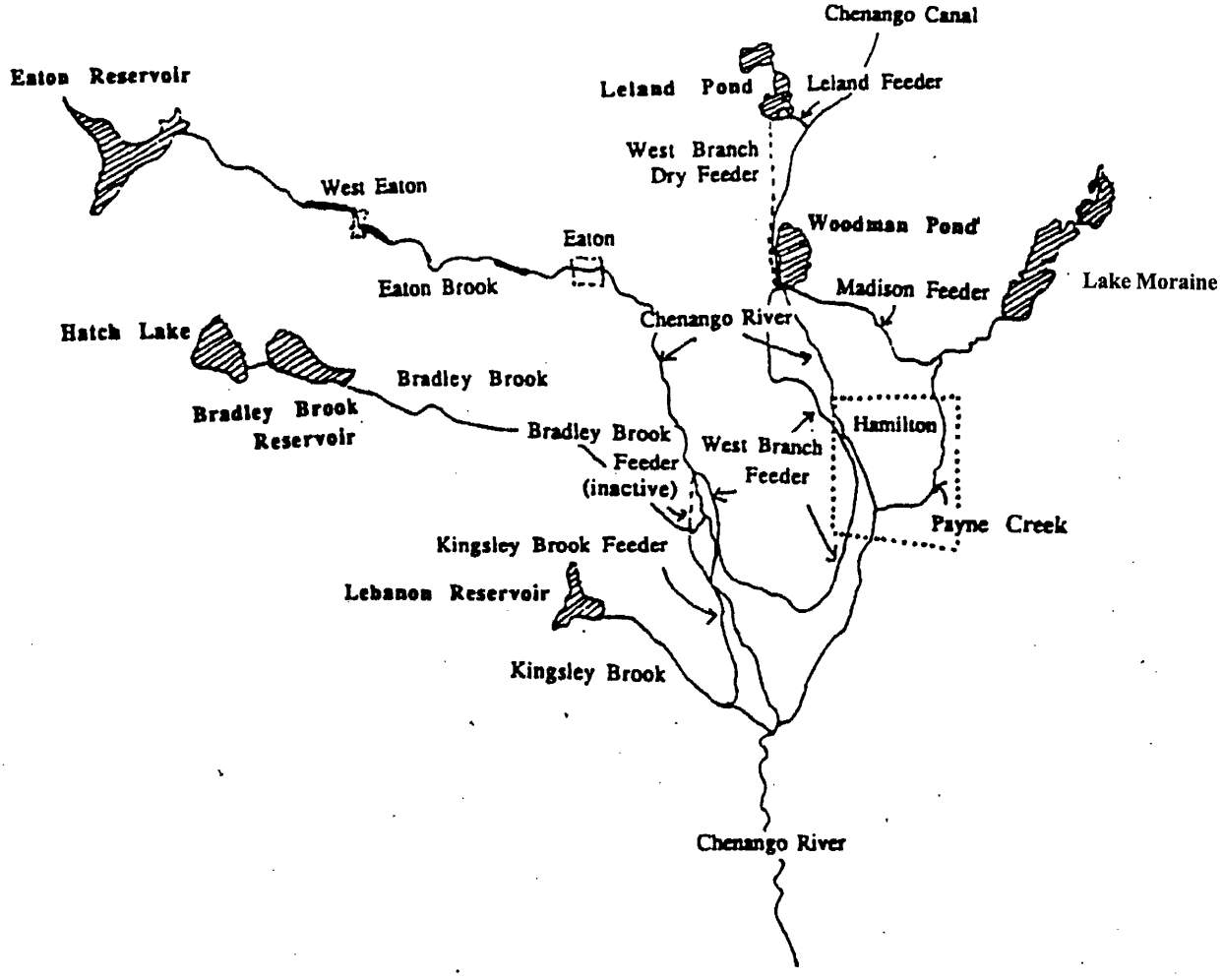
II. SIGNIFICANCE: The feeder canals and reservoirs are significant under National Register Criterion A for their contribution to and association with broad patterns of our history, particularly the history of canal transportation, and under Criterion C as an outstanding work of engineering. John B. Jervis, the construction engineer of the Chenango, stated that "the most distinctive feature of the Chenango Canal is the resort to artificial reservoirs to supply its summit with water." Because there was not yet an engineering standard for such operations and canal technology was evolving mainly through experimentation, this system was unique in the United States. According to McFee, the system held back a billion gallons of water. "A particular problem on the Chenango was the rapid descent and short levels (the flat areas between locks) of the first eight miles north of the summit. Here there were 39 locks and the waste from 37 short levels discharged a

high volume of surplus water on the levels below, which had to be rapidly drained to even lower levels," (while simultaneously being replaced from the feeders).

(McFee, p. 69)

III. REGISTRATION REQUIREMENTS: In order to be considered eligible, a feeder canal must retain evidence of a prism in the case of a dug feeder canal. The feature could be watered or dry. Reservoirs, either man-made or natural lakes, must also retain their configuration from the canal era. A significant portion of this system of reservoirs and feeder canals remains in use as part of the feeder system for the 20th-century New York State Barge Canal and may be eligible for listing in both contexts. Others have been abandoned and are currently dry streambeds but would also be considered eligible.

The Chenango Canal Summit Level Feeder and Reservoir System



(McFee, p. 66)

PROPERTY TYPE: Lock Keeper's House

I. DESCRIPTION: A lock keeper's house is a residence constructed near a lock by the State of New York to house the lock keeper, whose function it was to operate the locks on demand. There were 11 of these structures built along the Chenango Canal. Because the locks were so closely space in many locations, there was no need to have a lock house at each lock, since many lock keepers maintained more than one lock.

II. SIGNIFICANCE: Lock keeper's houses are significant under National Register Criterion A for their contribution to and association with broad patterns of our history, particularly the history of canal transportation, and under Criterion C as a building type specific to canals. They were modest frame houses, vaguely Greek Revival in style, and are rare along the Chenango Canal: there were only 11 constructed and only one is definitively known to survive. Others may survive in an altered or moved condition, but none has shown up in surveys. Lock keepers' house sites may possess archeological significance in the context of the Chenango Canal.

III. REGISTRATION REQUIREMENTS: In order to be considered eligible, a lock keeper's house must remain in its setting adjacent to a lock. In a case where there is no lock keeper's house but one was known to have existed there, archeological remains of the house may be considered eligible for registration under Criterion D.

PROPERTY TYPE: Dam

I. DESCRIPTION: A dam is a structure built to control the flow of water into the feeder canals or the mainline of the canal itself. Along the Chenango Canal, there were 12 dams constructed, most of which controlled water flow in the feeder system.

II. SIGNIFICANCE: Dams are significant under National Register Criterion A for their contribution to and association with broad patterns of our history, particularly the history of canal transportation, and under Criterion C as an example of an engineering feature necessary for the operation of canals. They were required for control of the flow of water in the canal, particularly in the summit area where the reservoirs and feeders were most numerous.

III. REGISTRATION REQUIREMENTS: In order to be considered eligible, a dam must remain in its setting adjacent to the canal or feeder and retain a significant portion of its original construction materials and configuration.

PROPERTY TYPE: Culvert

I. DESCRIPTION: A culvert is a stone drain built to divert a stream under the canal when it was not needed as a water source. There were 52 of these structures constructed in conjunction with the Chenango Canal.

II. SIGNIFICANCE: Culverts are significant under National Register Criterion A for their contribution to and association with broad patterns of our history, particularly the history of canal transportation, and under Criterion C as an example of an engineering feature necessary for the operation of canals. While one of the most significant features of the Chenango was its intricate system of feeder canals and streams, not all those streams that intersected the canal were needed to supply water. According to McFee, "if streams were not diverted, they would collect on one side of the bank and wear it down."(p. 117) Therefore, culverts were integral to the operation of the canal as control of the amount of water in the prism was of utmost importance.

III. REGISTRATION REQUIREMENTS: In order to be considered eligible, a culvert must remain in its setting under the canal or feeder and retain a significant portion of its original construction materials and configuration.

PROPERTY TYPE: Waste-weir

I. DESCRIPTION: A waste-weir is a small dam built into the wall of the canal to collect excess water. There were 21 of these structures built along the Chenango Canal, and according to McFee, "waste weirs allowed for the release of excess water through a wooden spillway, generally placed between stone abutments built into the side of the canal bank. Between the stone walls at the top of the bank was a frame holding 'gates' that consisted of a series of horizontal boards on edge even with the level of the canal. When water needed to be released from the canal, a board, or gate, was removed, lowering the waste-weir spillway. A wooden platform was built over the gates to allow for a worker to adjust the level, and a towpath bridge provided passage across for teams of horses or mules."(pp. 117-118)

II. SIGNIFICANCE: Waste-weirs are significant under National Register Criterion A for their contribution to and association with broad patterns of our history, particularly the history of canal transportation, and under Criterion C as an example of an engineering feature necessary for the operation of canals. Like culverts, waste-wiers were integral to the operation of the canal as control of the amount of water in the prism was of utmost importance.

III. REGISTRATION REQUIREMENTS: In order to be considered eligible, a waste-weir must remain in its setting adjacent to the canal and retain a significant portion of its original construction materials and configuration.

PROPERTY TYPE: Aqueduct

I. DESCRIPTION: An aqueduct is a structure used to carry the canal across a natural waterway. It is larger than a culvert, and there were 19 built along the Chenango Canal. They ranged in size from a small wooden trough set between two stone banks to a large structure constructed on 25-foot-high stone piers where the canal crossed the Chenango River near Greene.

II. SIGNIFICANCE: Aqueducts are significant under National Register Criterion A for their contribution to and association with broad patterns of our history, particularly the history of canal transportation, and under Criterion C as an example of an engineering feature essential for the operation of canals. Because water flow needed to be controlled within the prism, where another waterway that would interfere with the flow intersected the canal's path, the canal was carried over the other body of water by the aqueduct.

III. REGISTRATION REQUIREMENTS: In order to be considered eligible, an aqueduct must remain in its setting in the path of the canal and retain enough of its original construction materials and configuration for its function to be understandable.

PROPERTY TYPE: Bridge

I. DESCRIPTION: A bridge is a structure used to carry roads, railroad tracks or footpaths across the canal or feeder canals. There were 56 road bridges, 106 farm bridges, and 53 feeder bridges constructed in the Chenango Canal system. Road, railroad, and footbridges are self-explanatory; farm bridges were constructed in instances where a farmer's property was bisected by the canal and one portion of the farmer's land needed to be connected to the other.

II. SIGNIFICANCE: Bridges are significant under National Register Criterion A for their contribution to and association with broad patterns of our history, particularly the history of canal transportation, and under Criterion C as an example of an engineering feature essential for the operation of canals. Because the canal was constructed through existing settlements in many cases, existing roads needed to be restored. Railroads, which were constructed after the canal was in place, also needed to be made continuous. In many places, the canal crossed land that had been subdivided and farmed before it existed, and owners needed to be able to access land bisected by the canal.

III. REGISTRATION REQUIREMENTS: In order to be considered eligible, a bridge must remain in its setting crossing the canal and retain its original construction materials and characteristics from the canal period.

PROPERTY TYPE: Canal Boat

I. DESCRIPTION: Canal boats on the Chenango Canal were built of wood with iron fastenings and were typically rectangular in form with rounded bows and sterns and "barn door" rudders. Two methods of construction were prevalent: plank-on-frame and slab-sided. Overall dimensions conformed to the dimensions of the canal locks.

II. SIGNIFICANCE: When extant, canal boat remains are significant under National Register Criterion A for their association with canal transportation, Criterion C in representing the technology of canal boat design and construction and in some instances Criterion d for their capacity to yield information bearing on the cargoes carried on the canal and the lifeways of their owners.

III. REGISTRATION REQUIREMENTS: Canal boat remains may be encountered wherever they were abandoned, often on the bottom of the canal where it is still watered or buried where the canal has been filled. In order to be considered eligible, a boat must remain a significant degree of its original construction materials and characteristics from the canal period.

G. Geographical Data

The geographical limit of this document includes the entire length of the Chenango Canal path between the City of Binghamton, Broome County, and the City of Utica, Oneida County as constructed following 1833. In addition, this also includes the complex system of reservoirs and feeder streams and canals, particularly near the summit level in Madison County, as well as the short-lived extension that was originally intended to travel to the coal fields of Pennsylvania, begun in 1865 and abandoned in 1873.

H. Summary of Identification and Evaluation Methods

The multiple property documentation of the Chenango Canal grew out of an effort by the Madison County Historical Society to document and list in the National Register certain parts of the historic canal in Madison County. At first, a five-mile section of the canal in the county that remains in public ownership was to be considered for listing. This section, at the summit level of the canal, is watered and is still used as a feeder for the New York State Barge Canal System, an early-twentieth-century system that substantially replaced its nineteenth-century counterpart, of which the Chenango was one component.

The decision was made to produce a Multiple Property Document rather than the five-mile summit nomination only because there is the expectation that other intact parts of the Chenango Canal, both in Madison County and in the other three counties could be considered for listing in the near future. Consequently, the State Historic Preservation Office undertook the production of this Historic Context Statement.

This document presents an extensive history of the Chenango Canal, based in large part on the work of three studies. First was the work of Nobel E. Whitford, an engineer for the nineteenth-century system who, around 1905, undertook the writing of an extensive history of the nineteenth-century system, just as it was being replaced in the early twentieth century by the New York State Barge Canal System. In 1993, Michele A. McFee, an archivist at Binghamton University of the State University of New York, authored Limestone Locks and Overgrowth: The Rise and Descent of the Chenagno Canal. Her work includes material not included in Whitford's, and provides more commentary about the lives of people who worked on the canal or were otherwise affected by its existence. She also includes information on construction techniques and engineering features that are not extensively described in Whitford, as well as a fairly extensive survey of features extant at the time she wrote. In 1995, with the assistance of a grant from the Preservation League of New York State, the Chenango County Historical Society sponsored an updated survey of the canal within that county, and in 2002, Madison County Historical Society undertook a similar survey within that county. These two counties represent all but about 30 miles of the 97-mile canal, and both surveys, conducted by Emanuel and Cynthia Carrington Carter, historic preservation consultants based in Syracuse, document every remaining structure associated with the canal that could be seen above ground.

The requirements for integrity were developed based on the typical characteristics of the property types across the entire historic canal system in New York State. Because of the significance of the canal system, most remaining features should be found to meet the integrity requirements for the appropriate property types.

I. Major Bibliographical References

McFee, Michele A., Limestone Locks and Overgrowth, The Rise and Descent of the Chenango Canal. Fleischmanns, New York: Purple Mountain Press, Ltd., 1993.

Whitford, Noble H., History of the Canal System of the State of New York, Together with Brief Histories of the Canals of the United States and Canada. Albany, New York: Brandow Printing, 1914. (on-line version consulted at the following address: http://www.history.rochester.edu/canal/bib/whitford/1906/Contents.html)