Final Report
LEGAL DETERMINATION OF THE NAVIGABILITY
OF THE QUINNBAUGH AND SHEETUCKER RIVERS

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INTRODUCTION

This project report is the culmination of a research effort commissioned by the Joint Highway Research Advisory Council of the Connecticut Department of Transportation and the University of Connecticut. The major objective of this project was to supply information which would assist the Connecticut Department of Transportation and the United States Coast Guard in determining whether the Quinebaug and Shetucket Rivers and their tributaries within the State of Connecticut were "navigable waterways of the United States."

It is essential that a determination of the navigability of these waterways be made, because there are different construction standards for highways built over navigable waters than over nonnavigable ones.

As will be demonstrated in this document, a waterway is legally "navigable" if it is presently used for navigation, or if it has been used in the past or could be used in the future for navigation purposes. In order to ascertain whether any particular waterway is "navigable" is the legal sense, therefore, it is important to determine the historical uses to which the waterway was put. Accordingly, this project report is divided into two major parts: a legal analysis of the present definition of "navigable waterway," and a historical analysis of the uses of the Quinebaug and Shetucket Rivers and their tributaries.

The conclusion of this report contains in capsule form a listing of the various factors indicating the navigable or nonnavigable status of the Quinebaug and Shetucket Rivers and their tributaries. However, as it is not the province of the authors to decide the ultimate question of the actual "navigability" of these waterways, no opinion on this subject is stated.

It should be noted that this introduction, Part I (legal analysis) and the conclusion sections of this report were written by Professor Karla Fox, and Part II (historical analysis) was written by Mrs. Harlow Sheidley. This
fact may aid the reader in determining the identity of references to "this author" or "this researcher" which are contained throughout the report.

Finally, notice should be given that certain material in this report is subject to copyrights, and it will be necessary to obtain permission to publish parts of this report. (See Appendix No. 1, attached.)
Part I

Legal Definition of "Navigable Waterways of the United States"

I. The Development of the Legal Definition of "Navigable Waterways of the United States"

Prior to the founding of the Republic, the States were free to regulate commerce within their borders, and there was no effective mechanism for settling disputes concerning jurisdiction over interstate commerce. Indeed, one of the most important factors for the convening of the Continental Congress was to end trade rivalries between the states.¹

To promote trade between the States and end such practices as enactment of protective tariffs on imports from other States, the United States government was given authority in the Constitution under the so-called "Commerce Clause", "to regulate commerce with foreign nations and among the several States."² After the adoption of the Constitution, there were many unanswered questions as to the application of the Commerce Clause, such as the type of activities which the federal government could regulate, and the limitations of the federal jurisdiction over commerce. One facet of these unanswered questions regarding the scope of the Commerce Clause involved the extent of the federal jurisdiction over commercial navigation. Did the Commerce Clause give the United States government the authority to regulate trade involving movement of goods over waterways, even if this movement occurred entirely within the boundaries of one State?

In 1824, the United States Supreme Court decided Gibbons v. Ogden. The

² Article I, section 8, clause 3, United States Constitution
seminal case concerning the question of the extent of the federal authority under the Commerce Clause over commercial navigation. 3 In Gibbons, the Supreme Court held that the Commerce Clause gave the federal government the power to regulate navigation. 4 Justice Marshall stated in Gibbons that navigation was a part of commerce, and that a state could not regulate navigation to the exclusion of the federal government which was not completely internal to that state. 5 Furthermore, the United States government under the authority of the Commerce Clause could regulate navigation on waterways within a state if use of the waterways was connected with commerce with foreign nations or among the several states.

...In regulating commerce with foreign nations, the power of Congress does not stop at the jurisdictional lines of the several states. It would be a very useless power, if it could not pass those lines. The commerce of the United States with the foreign nations, is that of the whole United States. Every district has a right to participate in it. The deep streams which penetrate our country in every direction, pass through the interior of almost every state in the Union, and furnish the means of exercising this right. If Congress has the power to regulate it, that power must be exercised whenever the subject exists. If it exists within the States, if a foreign voyage may commence or terminate at a port within a state, then the power of Congress may be exercised within a state. 6

Gibbons v. Ogden involved a dispute over the right to operate steamboats between New York and New Jersey. The state of New York granted to Robert Livingston and Robert Fulton an exclusive license to operate steamboats in New York waters. Aaron Ogden was an assignee of Livingston and Fulton's license to operate steamboats between New York and New Jersey. Ogden's

3 22 U.S. (9 Wheat.) 1, 130 (1824)
4 22 U.S. at 194.
5 22 U.S. at 195.
former partner, Thomas Gibbons, began operating steamboats between New York and New Jersey under federal license. Ogden sued Gibbons to enforce the New York "monopoly," but the United States Supreme Court held that Gibbons' federal license was superior to Ogden's state-granted rights.

Gibbons v. Ogden thus established that the federal law held pre-eminence over any attempted state regulation of commerce on navigable waterways, except those waterways which were used only for completely intrastate commerce.\(^5\)

Gibbons left unanswered, however, the questions of what is a "navigable" waterway and when would such "navigable waterways" be subject to federal regulation.

In 1870, the Supreme Court addressed itself to these questions which Gibbons had left unanswered.\(^7\) In The Steamer Daniel Ball v. United States, the Supreme Court established the basic definition of a "navigable waterway of the United States," and delineated the parameters of federal regulation of waterways flowing within a state:

Those rivers must be regarded as public navigable rivers in law, which are navigable in fact, and are navigable in fact when they are used or susceptible of being used, in their ordinary condition, as highways for commerce, over which trade or travel are or may be conducted in the customary modes of trade and travel on water. And they constitute navigable waters of the United States, in contrast distinction from the navigable waters of the states, when they form in their ordinary condition by themselves, or by uniting with other waters, a continued highway over which commerce is or may be carried on with other states or foreign countries in the customary modes in which such commerce is conducted by water.\(^8\)

In the Daniel Ball decision, the Supreme Court held that the United States government could require a license for a steamship which navigated on the

\(^6\) Ibid.

\(^7\) The Steamer Daniel Ball v. United States, 77 U.S. (10 Wall.), 557 (1870).

\(^8\) Ibid at 563.
Grand River in the State of Michigan between Grand Rapids and Grand Haven. The Daniel Ball was required to be licensed even though it traveled entirely within Michigan, and even though it was engaged only in domestic commerce. The Daniel Ball decision reaffirmed and strengthened Gibbons v Ogden's principle that the federal government has the power to regulate commercial navigation carried on entirely within one state. Moreover, it was the first step in the Supreme Court's process of defining, "navigable waterway." The most striking aspect of the Supreme Court's definition was that, not only did it encompass waterways which were being used for trade or travel, but it also defined as "navigable" waterways which were susceptible of being used for trade or travel, whether or not any such activity was occurring.

Four years after the Daniel Ball decision, the definition of a navigable waterway of the United States was expanded and refined in United States v. The Steamer Montello:

(Th)The true test does not depend on the mode by which commerce is, or may, be conducted, nor the difficulties attending navigation....

The capability of the use by the public for the purposes of transportation and commerce affords the true criterion of the navigability of the river, rather than the extent and manner of that use. If it is capable in its natural state of being used for the purposes of commerce, no matter in what mode the commerce may be conducted, it is navigable in fact, and becomes in law a public river or highway.10

The question in The Montello was whether boats navigating the Fox River in Wisconsin were subject to federal regulation. There was evidence the Fox had been extensively used in the fur trade in eighteenth and early nineteenth century, although it could only be navigated by canoes or other shallow vessels, and portage overland was still required. The Fox was subsequently improved, 9

Ibid at 564.

8 U.S. (20 Wall.) 492,491 (1874)
allowing steam boats to pass. The court therefore held that the Fox was navigable, since boats could and had used it in both its unimproved and improved state.

An important expansion of the waterways which are "navigable" occurred in the case of *Economy Light and Power Company v. United States*. In *Economy Light*, the United States government sought to enjoin construction of a dam on the Desplaines River in Illinois, asserting that the river was a navigable waterway of the United States, and that such a dam could not be built without its permission. As in *The Montello*, there was evidence that the Desplaines had been used extensively in the fur trade and as an avenue for settlers during the seventeenth, eighteenth and part of the twentieth centuries. However, unlike the Fox River in *The Montello*, the Desplaines had ceased to be navigated because construction of dams and canals and draining of headwaters had significantly lowered the depth of the river. The fact that the changed character of the river had effectively terminated commercial traffic did not deter the court from finding the Desplaines navigable, however. The *Economy Light* decision formulated the theory of "indelible navigability": if a waterway has ever been "navigable" under the federal definition, it remains "navigable," even though it is not presently used for commerce, or is presently incapable of use because of changed conditions or obstructions.

Both courts found that in its natural state the river was navigable in fact, and that it was actually used for the purpose of navigation and trading in the customary way, and with the kinds of craft ordinarily in use for that purpose on rivers of the United States, from early fur-trading days (about 1675) down to the end of the first quarter of the nineteenth century.  

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11 256 U.S. 113 (1921)  
12 Ibid at 117.
...later, changes occurred in the river, due to the drainage of a swamp in the region of the portage, the clearing away of forests affecting the rainfall and the distribution of the run-off, and thus shortening the duration of the higher stages of water; the construction (under state authority) of the Illinois and Michigan Canal in 1848 and its deepening in 1866 to 1871, which diverted a part of the hill drainage towards the Chicago River; and the construction of the Sanitary and Ship Canal in 1892 to 1894.\textsuperscript{13}

Since about the year 1835 a number of dams have been built in the Desplains, without authority from the United States, and one or more of them still remain; besides, a considerable number of bridges of various kinds span the river. The fact, however, that artificial obstructions exist capable of being abated by due exercise of the public authority, does not prevent the stream from being regarded as navigable in law, if, supposing them to be abated, it be navigable in fact in its natural state. The authority of Congress to prohibit added obstructions is not taken away by the fact that it has omitted to take action in previous cases.\textsuperscript{14}

The Circuit Court of Appeals, in passing upon the question of navigability, correctly applied the test laid down by this court in \textit{The Daniel Ball}, 10 Wall. 557, 563; and \textit{The Montello}, 20 Wall. 430, 440-443; that is, the test whether the river, in its natural state, is used, or capable of being used as a highway for commerce, over which trade and travel is or may be conducted in the customary modes of trade and travel on water. Navigability, in the sense of the law, is not destroyed because the watercourse is interrupted by occasional natural obstructions or portages; nor need the navigation be open at all seasons of the year, or at all stages of the water.\textsuperscript{15}

The \textit{Economy Light} decision thus extended the definition of a "navigable waterway" to formerly navigable waterways admittedly incapable of present use. Under \textit{Economy Light}'s theory of indigible navigability, it is interesting to note that a completely dry piece of land could be classified as a "navigable waterway" if it had once been a riverbed, but erection of a dam stopped the flow of water.\textsuperscript{16}

The present limits of the federal definition of "navigable waterway"

\textsuperscript{13} Ibid at 118.
\textsuperscript{14} Ibid.
\textsuperscript{15} Ibid at 122.
were set in United States v. Appalachian Electric Power Co. In Appalachian Power, like Economy Light, the Federal Power Commission was attempting to enjoin erection of a dam by a power company. The FPC contended that the New River in West Virginia was navigable in the vicinity in which the Appalachian Power Company intended to erect a dam. The lower courts which considered the case found that the New River was not "navigable in fact" under The Daniel Ball criteria, and dismissed the FPC's argument that, in determining whether a waterway is navigable, consideration should be given to the effect of possible reasonable improvements. The Supreme Court, however, extended the scope of its previous rulings by reversing the lower courts and holding that, "A waterway, otherwise suitable for navigation, is not barred from that classification merely because artificial aids must make the highway suitable for use before commercial navigation may be undertaken." The court noted that in deciding whether a waterway may be made navigable, the cost of the improvement must be considered, and a balance made between cost and need at the time the improvement would be useful. While the Appalachian decision established possible future improvements as a criterion for determining navigability, it reaffirmed Economy Light's theory of indelible navigability.

When once found to be navigable, a waterway remains so.... Nor is it necessary that the improvements should be actually completed or even authorized. The power of Congress over commerce is not to be hampered because of the necessity for reasonable improvements to make an interstate waterway available for traffic.

Of course there are difficulties in applying these views. Improvements that may be entirely reasonable in a thickly

17 311 v. S. 397 (1940)
18 311 U.S. 377, 406.
19 Ibid at 407.
20 Ibid at 407-8.
populated, highly developed, industrial region may have been entirely too costly for the same region in the days of the
pioneers. The changes in engineering practices or the coming of new industries with varying classes of freight may affect
the type of the improvement. Although navigability to fix
ownership of the river bed or riparian rights is determined
as the cases just cited in the notes show, as of the formation
of the Union in the original states or the admission to state-
hood of those formed later, navigability, for the purpose of
the regulation of commerce, may later arise. An analogy is
found in admiralty jurisdiction, which may be extended over
places formerly nonnavigable.\textsuperscript{21}

There has never been doubt that the navigability referred
to in the cases was navigability despite the obstruction
of falls, rapids, sand bars, carries or shifting currents.
The plenary federal power over commerce must be able to
develop with the needs of that commerce which is the reason
for its existence. It cannot properly be said that the
federal power over navigation is enlarged by the improvements
to the waterways. It is merely that improvements make
applicable to certain waterways the existing power over
commerce. In determining the navigable character of the
New River it is proper to consider the feasibility of inter-
state use after reasonable improvements which might be made.

Nor is it necessary for navigability that the use should be
continuous. The character of the region, its products and
the difficulties or dangers of the navigation influence
the regularity and extent of the use. Small traffic compared
to the available commerce of the region is sufficient. Even
absence of use over long periods of years, because of changed
conditions, the coming of the railroad or improved highways
does not affect the navigability of rivers in the constitutional
sense. It is well recognised too that the navigability may
be of a substantial part only of the waterway in question.
Of course, these evidences of nonnavigability in whole or
in part are to be appraised in totality to determine the
effect of all. With these legal tests in mind we proceed
to examine the facts to see whether the 33-mile reach of
this river from Alliscovia to Hinton, across the Virginia-
West Virginia state line, has "capability of use by the public
for the purposes of transportation and commerce.\textsuperscript{22}

In addition to the testimony of use in the days before railways
and good roads, there was a demonstration of the possibility
of navigation by a government survey boat with an outboard
motor, 16 feet long, five feet wide, drawing 2-1/2 to 3 feet,

\textsuperscript{21} Ibid at 408.

\textsuperscript{22} Ibid at 409-10.
loaded with a crew of five and its survey equipment. This boat made a round trip from the Harrows, just above Wiley's Falls, to Allison's, a distance of 72 miles one way, in July, 1936, when the river stage was normal summer low water. While the crew was out of the boat and used poles a number of times, there were no carries or portages. Going upstream it was not necessary to pull or push the boat more than a mile and a quarter and not more than a few hundred feet on the return trip.

Use of a stream long abandoned by water commerce is difficult to prove by abundant evidence. Fourteen authenticated instances of use in a century and a half by explorers and trappers, coupled with general historical references to the river as a water route for the early fur traders and their supplies in pirogues and Durham or flat-bottomed craft similar to the keelboats of the Red, sufficed upon that phase in the case of the DesPlaines (in Honeye Light). Nor is lack of commercial traffic a bar to a conclusion of navigability where personal or private use by boats demonstrates the availability of the stream for the simpler types of commercial navigation.

The evidence of actual use of the Radford-Wiley's Falls section for commerce and for private convenience, when taken in connection with its physical condition, makes it quite plain that by reasonable improvement the reach would be navigable for the type of boats employed on the less obstructed sections. Indeed the evidence detailed above is strikingly similar to that relied upon by this Court in United States v. Utah to establish the navigability of the Colorado from Cataract Canyon to the Utah-Arizona boundary line. There had been seventeen through trips over a period of sixty years from the original exploration; and these together with sporadic trips on parts of the stretch, and considerable use—in connection with gold placer mining—of other parts from 1888 to 1915, sufficed to sustain navigability.2

The Appalachian Power decision established that if a waterway is capable of being used for transportation and commerce, it does not make a difference that it is not presently being used for commerce, it needs improvement in order to be susceptible of commercial use, or it is navigable for only part of its course. A waterway is navigable if it is presently being used for navigation or is suitable for such use, or it has been used for navigation or was suitable for navigation in the past, or it could be made suitable

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21 Ibid at 416-17.
for navigation in the future by reasonable improvements.\textsuperscript{24} The Appalachian Power decision was the culmination of the development of the legal definition of "navigable waterway of the United States." However, its definition only provides a guideline for courts or administrative bodies in determining whether a particular waterway, or property which was once a waterway, is "navigable."\textsuperscript{25}

II. Summary of the Current Criteria for Determining "Navigability"

To restate the general rules of navigability as delineated in United States v. Appalachian Power Co.: The Appalachian Power decision established that if a waterway is capable of being used for transportation and commerce, it does not make a difference that it is not presently being used for commerce, it needs improvement in order to be susceptible of commercial use, or it is navigable for only part of its course. A waterway is navigable if it is presently being used for navigation or is suitable for such use, or it has been used or was suitable for navigation in the past, or it could be made suitable for such use in the future by reasonable improvements.

A waterway may be navigable for only part of its course.\textsuperscript{26} There is a presumption that if the waters at a certain point are navigable, all of the waters below it are navigable.\textsuperscript{27} It has also been held that an admittedly

\textsuperscript{24} Rochester Gas and Electric Corp. v. Federal Power Commission, 334 F. 2d 594, 595 (1967)
\textsuperscript{25} 311 U.S. at 404.
\textsuperscript{27} Rochester Gas and Electric Corp. v. FPC, 344 F. 2d 594, 595.
non-navigable tributary of a navigable waterway will be deemed "navigable", since it is a headwater, and its use would affect downstream navigability.\(^\text{28}\)

In regards to the type and purpose of use, as distinguished from the type of physical characteristics, which will render a stream navigable, the courts have interpreted the commerce clause broadly. The Daniel Ball\(^\text{29}\) established that a waterway was "navigable" under the Commerce Clause, if it was used for trade or travel. Thus, it is not absolutely necessary that it be shown that navigation on a waterway was for the purpose of trade, although it is much easier to prove the applicability of the Commerce Clause, and therefore the existence of federal jurisdiction, when there is evidence of some type of trade.\(^\text{30}\)

The Supreme Court ruled as late as 1971 that the most important single criterion for establishing navigability is whether the waterway was used as a highway.\(^\text{31}\)

The United States strongly contests the finding of the Special Master that the Great Salt Lake was navigable. Although the evidence is not extensive, we think it is sufficient to sustain the findings. There were, for example, nine boats used from time to time to haul cattle and sheep from the mainland to one of the islands or from one of the islands to the mainland. The hauling apparently was done by the owners of the livestock, not by a carrier for the purpose of making money. Hence it is suggested that this was not the use of the lake as a navigable highway in the customary sense of the word. That is to say, the business of the boats was ranching and not carrying waterborne freight. We think that is an irrelevant detail. The lake was used as a highway and that is the gist of the federal test.

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\(^\text{28}\) PPC v. Union Electric Co., 381 U.S. 90, 95-96 (1964)

\(^\text{29}\) The Daniel Ball, 77 U.S. 597,563.


\(^\text{31}\) Utah v. United States, 303 U.S. 9, 11 (1971)
It is suggested that the carriage was also limited in the
sense of serving only the few people who performed ranching
operations along the shores of the lake. But that again
does not detract from the basic finding that the lake served
as a highway and it is that feature that distinguishes between
navigability and non-navigability.32

In United States v. Utah, the Supreme Court showed that in determining
the navigability of waterways, it has rejected a commerce-navigation nexus
requirement in favor of the Daniel Ball idea of federal dominion over highways
of travel.33

The United States government may assert its jurisdiction over navigable
waterways, at any time, even though it refrained from doing so in the past,
and even though past actions of federal officials had tended to indicate that
the waterway was non-navigable.34

It is important to emphasize that this discussion of the status of
navigability is directed to a finding of a definition of "navigability" under
the Commerce Clause jurisdiction of the United States government, not its
admiralty jurisdiction. In order for the United States to exert its admiralty
jurisdiction under Article III, section 2, of the United States Constitution,
it is necessary for it to show that a waterway is capable of being used for
public commercial transportation.35 The Commerce Clause, however, gives the
federal government greater jurisdictional powers, which it may exercise when

30 Ibid. (italics added)
33 238 U.S. 64, 82
34 Adams v. Montana Power Company, 328 F. 2d 437, 439-41 (1975); and Guinn,
n. 29, supra, p. 575.
36 Ibid.
the only evidence of navigability is use by pleasure craft or other types of private use. 36

III. Findings of Navigability in Particular Circumstances

The type of vessels historically used in navigation, changes in the configurations of waterways and even the purposes of navigation can affect whether a particular waterway is deemed a "navigable waterway of the United States." 37

As early as 1884, the Supreme Court in Ex Parte Boyer established that an artificial canal located within a single state was a navigable waterway of the United States. 38 Following the rationale of the Boyer decision, it has been held that side canal connected to a navigable waterway will be deemed navigable. 39 Once a canal or other waterway becomes "navigable", it remains so, even if it is plugged or drained. 40

A waterway or body of water which is completely landlocked will still be deemed a "navigable waterway of the United States," if it is used as a highway either for public or private purposes. 41

An admittedly non-navigable stream will be deemed a navigable waterway subject to federal regulation if it is the headwater of a navigable stream. 42

It does not matter what type of craft is used to navigate a waterway, and use by fur traders in canoes has been found sufficient to make a stream a navigable waterway of the United States. 43 While there is a split of authority

37 109 U.S. 230, 632 (1884)
39 United States v. Sexton Cove, supra, n. 37
40 Utah v. United States, 403 U.S. at 11
41 FPC v. Union Electric Co., 381 U.S. at 94-95.
42 Economy Light v. U.S., 256 U.S. at 117.
on the use of pleasure craft as evidencing navigability, the prevailing view seems to be that this use will be considered to make a waterway navigable. 43

"Navigability for pleasure is as sacred in the eye of the law as navigability for any other purpose." 44 Similarly, the prevailing view seems to be that navigation of waterways by ferries will make the waterways "navigable," although there is some contrary opinion. 45

The flotation of logs on a waterway have been found to make it navigable, on the grounds that the logs will be used in commerce, and the waterway is being used as a highway to ship them. 46

The foregoing special circumstances have illustrated only a few of the situations where there is a question as to whether a waterway will be considered a "navigable waterway of the United States." To make such a determination, each case must be determined on its merits.

IV. An Analysis of Connecticut Law Concerning "Navigable Waterways"

Connecticut Light and Power v. Federal Power Commission

A. Case Law Prior to Connecticut Light and Power Company versus Federal Power Commission

Connecticut courts have adopted a definition of a navigable waterway as one which is used or may be used as a highway for commerce, 47 or one in

44 Ibid.
47 Edward Balg Co. v. Hartford Electric Light Co., 106 Conn. 315, 325 (1927)
which the public passes or repasses in boats in the prosecution of useful occupations. 18

In the past, it has been specifically held by the Federal District Court for the District of Connecticut that federal court has the power to enjoin the building or maintenance of a bridge over navigable waters. 19

The federal court has this power, even if the bridge was constructed by special authorization of the Connecticut General Assembly. 50

The federal court has this power due to the doctrine of preemption, developed in Gibbons v. Ogden, whereby the federal government has priority over the state government in questions concerning navigable waterways. 51

The Connecticut definition of what constitutes a navigable waterway seems to be narrower than the federal definition. In Town of Wethersfield v. Humphrey, 52 the Connecticut Supreme Court limited the definition of a navigable body of water to those which are used for the purposes of commerce:

This cove cannot be said to be navigable, by any craft whatever though at times, a fish-boat, or skiff, or Indian canoe may be pushed through its waters; or, in the winter months occasionally, a small sea-boat is laid up to avoid the ice of the river. But this is not navigation. That only is such, and those only are navigable waters, where the public pass and repass upon them, with vessels or boats, in the prosecution of useful occupations. There must be some commerce or navigation which is essentially valuable. A hunter or fisherman, by drawing his boat through the waters of a brook or shallow creek, does not create navigation, or constitute their waters channels of commerce. 53

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18 Town of Wethersfield v. Humphrey, 30 Conn. 218, 227 (1930)
50 Peru v. Shore Line Railway Co., Fed. Cas. no. 758 (1868)
51 22 U.S. 1; see discussion pp. 3-5
52 20 Conn. 218 (1850)
53 20 Conn. at 227
The Wethersfield case, though old, is the leading Connecticut Supreme Court case on the issue of navigability. However, under the Gibbons doctrine of preemption just discussed, the more expansive federal doctrine takes precedence over the state definition. Thus, use of pleasure craft or shallow boats on small coves or tributaries will make those waters navigable.

B. Connecticut Light and Power Company versus Federal Power Commission

An extremely recent case, decided by the Federal Second Circuit Court of Appeals in late June of 1977, has defined many of the parameters of the definition of "navigable waterway" as it pertains to Connecticut law.

This case, Connecticut Light and Power Company versus the Federal Power Commission, concerned a dispute over whether certain portions of the Housatonic River in northwestern Connecticut were a "navigable waterway of the United States." A copy of this decision is attached in Appendix II. Connecticut Light and Power Company contended that the Housatonic was non-navigable, while the Federal Power Commission maintained it was, and that CLAP should apply to it for a license before constructing a dam.

The two determinative factors in the Second Circuit's decision in CLAP v. FPC were evidence of actual navigation of the Housatonic and the flotation of logs on the river. The actual navigation of the Housatonic by watercraft was of three types: commercial (use of boats, rafts, etc. to reach an Indian trading post), navigation for travel purposes, and navigation for purely recreational purposes, including canoe trips and practice outings by the Yale

54 557 F. 2d 349 (1977)
55 Ibid at 354-55.
The court seemed to give equal weight to each type of navigation by watercraft. It rejected any implication that the traffic on the river had to be commercial in nature, citing United States v. Utah. The court also rejected the notion that the physical characteristics and topography of the Housatonic made it unsuitable for navigation, citing the rationale developed in the series of cases stretching from The Montello, to Economy Light, to Appalachian Power, that the test of whether a waterway is navigable is whether it could be easily navigated if obstructions were removed. For the Second Circuit court, the most important question was the Supreme Court's question in Utah v. United States; is the Housatonic a highway for transportation, has it been in the past, or could it be in the future? The court also relied strongly on evidence of navigability on the fact that the Housatonic was used in the past for the flotation of logs.

CL&P v. FPC deals with a Connecticut river system and with the present legal definition of what constitutes a "navigable waterway of the United States." As was decided over one hundred years ago in another Connecticut case, Baird v. Shore Line Railway Co., the federal court's determination of whether a waterway is a navigable waterway of the United States is controlling. Therefore, on authority of CL&P v. FPC, among the important criteria to be examined in deciding whether any Connecticut waterway such as the Shetucket or Quinebaug

56 Ibid.
57 Ibid at 357. U.S. v. Utah is discussed supra at pp. 11, 13, 14
58 Ibid at 356-57; see discussion supra for The Montello, pp. 7-8; Economy Light, pp. 7-8; and Appalachian Power, pp. 7-8.
59 Ibid at 355, 357.
60 Fed. cases no. 758 (1868), n. 42, supra
or its tributaries are navigable, are its use as a highway for commercial or noncommercial transportation, for recreation by any type of watercraft, or for flotation of logs.

C. Connecticut Statutory Law

The only section of the Connecticut General Statutes which deals at all with the definition of the term navigable waterway is section 12-127. This section divides all waters of the state into two groups: "federal waters," which are navigable waters of the United States, and "state waters," which are all waters which are not "federal waters." No further definition of "state" and "federal" waters is given. This section plainly shows that it is necessary to refer to the case law in order to ascertain a definition of navigable waterways.

Examination of the Private and Special Acts of the Connecticut General Assembly was undertaken in order to gain insight into the "navigability," in the legal sense, of the Shetucket and Quinebaug Rivers and their tributaries. Only a couple of acts could be inferred to have a direct bearing on navigability. In May, 1715, the General Assembly passed an act to prevent obstruction of the Shetucket and Quinebaug. The stated purpose of the act was to prevent interference with fish spawning.

In 1773, the General Assembly passed another law prohibiting the placing of hedge or bush seines in the "Shetucket" and Quinebaug Rivers or the drawing or driving of seines or other fish-craft in these rivers. The purpose of this act was to prevent over-fishing of the rivers, not to allow navigation. However,

60a The Public Records of the Colony of Connecticut contained in volume covering statutes enacted between Oct. 1706 and Oct. 1716.
60b . , contained in volume covering statutes enacted between Oct. 1772 and April 1776.
If the seines (fish nets) were drawn in the river by boats, as is indicated by the word "Fishcraft," that would indicate commercial use of the waterways which would make them "navigable" under federal law. Other indirect evidence of navigation contained in the Private and Special Acts is discussed in the Historical Analysis section of this report.\textsuperscript{61}

\textsuperscript{61} See pp. 13, 16, 23, 24, 31-33
Part II

The History of Navigation on the Quinebaug and Shetucket Rivers and Their Tributaries

Harlow Sheidley

I. Introduction

The Shetucket River is formed by the confluence of the Willimantic and Natchaug rivers south of Willimantic and is the principal tributary of the Thames River. It drains an area of about 1,363 square miles, 74% of which form the basin of its principal tributary, the Quinebaug. From its origin, the Shetucket flows southeast for approximately 20 miles through a narrow valley to its mouth in Norwich. It has a fall of 142 feet. Its depth, except at mill ponds, is considered "shallow." Its main tributaries beside the Quinebaug are Little River, Natchaug River and Willimantic River. Apart from the area drained by the Quinebaug, the basin of the Shetucket includes the towns of Andover, Ashford, Chaplin, Coventry, Mansfield, Scotland, Sprague, Willington, Windham, and parts of Bolton, Canterbury, Columbia, Eastford, Ellington, Franklin, Hampton, Hebron, Lebanon, Lisbon, Norwich, Pomfret, Stafford, Tolland, Union, Vernon, and Woodstock. For purposes of this report, the historic use of the river and its tributaries was investigated only above the point of its junction with the Quinebaug, in accordance with a map provided the researcher at the outset.

The Quinebaug River rises from a pond in Union, Connecticut, and flows in a northerly direction for about eight miles to East Hampton, Massachusetts.
then east for twelve miles to Southbridge, from whence it flows southeast for thirteen miles to its confluence with the French River. From this point it follows a generally southerly course for 43 miles to its confluence with the Shetucket in Taftville, Connecticut. It has a total fall of approximately 670 feet. Its too has a shallow depth which does not exceed twelve feet even in mill ponds. Its principal tributaries are the French River, Five Mile River, Moosup River, and Pachaug River. Research was confined to Connecticut, where its basin includes the towns of Brooklyn, Griswold, Killingly, Plainfield, Pomfret, Putnam, Sterling, Thompson, and parts of Canterbury, Hampton, Lisbon, North Stonington, Preston, Union, Voluntown, and Woodstock.

The legal determination of the navigability of any waterway in the United States necessitates the investigation of the actual use to which it was put by man in the past in an attempt to discover if it was used for the transportation of goods or persons; if, in fact, it ever was a highway of commerce. It was with this aim in mind that the researcher explored general histories of Connecticut, general and specialized economic histories, local town and county histories, newspapers, the public records of the colony and state, Federal documents, the Connecticut archives, account books, and other manuscript resources, and consulted by telephone or in person interested historians and librarians. Needless to say, in the six weeks time allotted for research, all available material could not be examined, and what follows might more properly be designated a preliminary investigation of the historic uses of the Quinebaug and Shetucket river systems.
II. Indians

John William DeForest's study of the Indians of Connecticut stands as a classic. Though he cites no specific instance of use by the Indians of the waterways under consideration, he offers generalizations from which the historian may logically infer that these rivers were used for transport by native Americans. In discussing Indian fishing habits he states:

They fished in various ways: with hooks, spears and nets; in canoes and along the shore; on the sea, and in the ponds and rivers... ; and, in their canoes, they often dragged the sturgeon to land with nets stoutly made of wild hemp.70

From this it is possible to conclude that, in the process of fishing, at least, the Indians navigated most of the waters of Connecticut, including the Quinebaug and Shetucket. The reader must be cautioned, however, that this is not a statement of fact, but of conjecture. Not only does DeForest not specify the rivers included in the present study, but he also acknowledges that Tolland and Windham counties, which include most of the area in question, were but sparsely populated.71

Daniel Gookin, who accompanied the "Indian Apostle" John Eliot on his missionary activities in the second half of the seventeenth century, ought to have been familiar with Indian ways. He wrote:

For their water passage, travels, and fishing, they make boats or canoes.... [Some] are so light, that one man will ... ordinarily carry one of them upon his back several miles, that will transport five or six people. When, in their hunting or wars, they are to pass falls of rivers, or necks of land, into other rivers or streams, they take up their canoes upon their backs, and others carry their arms or provisions; and so embark again, when their difficulty is past, and proceed in their journey or voyage.72
Eliot and Gookin established praying towns in Massachusetts, so Gookin's observations would pertain to Indians of that state. Yet one was in the present town of Woodstock, Connecticut, formerly part of the Bay Colony, and it is not inconceivable that he was describing activities in Muddy Brook and Little River, which are tributaries to the Quinebaug, or in the Quinebaug itself. Such generalizations and speculations do not, however, constitute proof of navigation.

Similar circumstantial evidence may be gleaned from local histories. Florence Crocutt discusses the Nipmuck path and draws the conclusion that, though it was probably an overland route, "a watercourse route by Norwich reservoir, Byron Brook, and Shetucket River to the mouth of Little River seems possible."[113] D. Hamilton Nurd mentions Indian fishing in the Pachaug before its waters were deflected by the mills of white settlers, though he also indicates that the fishing in this location (near the falls at Jewett City) was probably from shore.[114] Ellen D. Learned reports that as late as 1800 Mohegans still made their "annual pilgrimage up the Quinebaug,"[115] though this could easily and probably does mean along the banks, not in the river. In response to a series of questions sent to Connecticut towns by the Connecticut Academy of Arts and Sciences in 1800, Hezekiah Ripley reported a story that was then still current among Wampanoags that at one time Mohegans from a high hill had stoned their enemies who were ascending the Shetucket in canoes.[116] Thus, though the record does not establish early navigation of the Shetucket and Quinebaug river systems, it is highly suggestive that the Indians did at least occasionally use these rivers to transport persons and goods.

However, the somewhat romantic myth of Indians constantly canoeing up and down rivers as a favorite mode of travel needs to be dispelled. Harrel Ayres'[117]
thoughtful study of Indian paths in southern New England gives a clue to the reconstruction of travel routes and settlement patterns of the early white settlers of Connecticut. Indian trails offered the pioneer a chart through the wilderness:

... they were along the easiest courses for foot travel; they reduced water crossings to the fewest and best fording places; the Indians knew the good camping places, and where and how to forage for food. ... The forays may be waded in normal weather; no raft building was required.77

III. Early Settlement and Eighteenth Century

The Indians of Connecticut settled primarily along the shores and the Connecticut River.78 As with the Indians, the advantages offered by these locations, including that of commercial navigation, attracted the first white settlers, and the interior of eastern Connecticut was not settled until the late seventeenth and early eighteenth centuries. Richard L. Bushman considers it fortunate that "all but a few towns in the seventeenth century were on a navigable river or on the sea," since it facilitated trade.79 Yet it seems much more likely that Timothy Dwight, the satiric observer of the economic and social life of eighteenth- and nineteenth-century Connecticut, was more correct in his evaluation that settlement patterns were more than a matter of luck. On a journey to Berwick made in 1795 and 1796, he had occasion to dwell on the advantages offered settlers by the Connecticut River valley. Its rich alluvial land and the fact that the river "presented them advantageous means of transportation and commerce" explained why "the counties of Hampshire, Hartford, and Middlesex were extensively planted many years before those of Worcester, Windham, and Tolland."80 Nineteenth-century historians accept this as a logical premise that needs no further explanation. Richard M. Bayles, for example, states simply that,
Remote from the sea shore, and possessing no navigable lakes or rivers, it was perfectly reasonable this territory [Windham County] should be for a time overlooked. . . . Accessibility by water was to the first settlers an almost absolutely essential feature, in any site chosen by them for the planting of a little colony.61

Yet, as population pressed on available land supplies, settlements extended inland. Water continued to be a valuable resource in these later plantations for farming, fishing, and powering the towns' all-important saw and grist mills. The question remains, however, whether these lesser rivers and streams were also used for purposes of commercial transport. Scholars have offered conflicting interpretations.

It has been explained that Windham, chosen to be the shire town of the newly organized county owed its prominence to the fact that it early attracted enterprising settlers because of its proximity to the markets of Norwich and New London.82 A look at the map and the direct route offered by the She-Wacket from the northwest and the Quinebaug from the northeast invites the hypothesis that inland farmers canoed or rafted their excess produce to those port towns to exchange them for imported goods brought there either directly or indirectly via the intra-colonial coasting trade. In an excellent discussion of the trade of early eighteenth-century Connecticut, Glenn Weaver explains that Connecticut merchants, prior to 1750, were dependent on the sedentary merchants of other colonies. He cites Thomas Hanocock of Boston, who traded with Derby, Lyme, and Lebanon and who "sent his small coasting vessels far up the rivers of Connecticut with dry goods, powder, shot, glass, and pepper."83 "The rivers of Connecticut" is of course a generalization, and Weaver nowhere asserts that the coasting vessels penetrated all the way to Lebanon on the Yantic and its tributaries. But his statement does suggest the extensive use of the smaller rivers of Connecticut for purposes of trade. George Rogers Taylor, writing on the history of transportation in the United States, seems to support this hypothesis. As he explains it, surplus crops were of little value unless they could reach a
market, and only a few products could support the expense of overland transportation. He concludes, therefore, that rivers, prior to the transportation revolution, "proved the only economical routes of commerce for early inland settlements." Since few rivers could support sea-going vessels because of swift currents, shallow water, narrow channels, and high banks, "the great bulk of the products of the country was floated down the streams and rivers on crude rafts and flatboats." Albert L. Olson, writing specifically about Connecticut, is less optimistic about the prospect for the inland farmer:

Transportation costs were high and only farmers who lived within carting distance of rivers were able to reach the larger towns and seaports whose merchants readily bought up supplies.

Yet even his pessimistic picture assumes that goods were carried down rivers to market towns. None of these writers has specified just which rivers the inland towns used for this purpose. If indeed rivers were being used for commercial transport, the Quinebaug and Shetucket would seem to be likely candidates. In 1749, the colony, in response to a series of questions from the board of trade including questions on geography, named the Connecticut, Stratford, and New London rivers as the major rivers of Connecticut, but also mentioned the Shetucket and Quinebaug, the only other rivers included in the response. The respondents did not say that the Shetucket and Quinebaug were navigated in any way, but clearly, from their perspective, these rivers carried some unusual significance. Again, however, any conclusions of navigation from such testimony would be conjectural and not based on established fact.

The only bold statement of extensive navigation uncovered by this researcher was made by Susan J. Griggs. She asserts first that "The Quinebaug, like many other large streams, had been used as a waterway from early times," and a little later she adds, "From the early settlement of Pomfret, flat boats had navigated the river to and from Norwich." Her reliability is open to
serious question by the historian, however. Not only does she offer no documen-
tary support for her statement, but also it is generally acknowledged that
flatboats, when used for transport, did not sail up river, but were sold for
lumber at the downriver market, while goods were brought up river on keelboats,
rafts, or other, smaller craft. Further, it is highly improbable that if
flatboats went up river from Norwich to Pomfret, they would have carried a
heavy load like bricks, as she claims. At any rate, it is a fact that entrepre-
neurs, by the early nineteenth century, were hoping to move bricks downstream
from Pomfret to Norwich — not vice versa. Other scholars, while not postulating such extensive use of the rivers, have
maintained that they were used in a more limited fashion. Harold Weigold
depicts the early isolation of the town of Tolland, which is watered by the
Willimantic; he notes that what little travel was done was either on foot
"or by canoe on the water." However, he presents no documentation to support
his statement. Though speaking of an earlier period than that of the settle-
ment of eastern Connecticut, Charles F. Carroll similarly states that "the
eyear settlers found that the canoe, which the New England Indians had been
using for centuries, was the best means of carrying passengers through the
forest," and avows that such canoes were also used to carry firewood, clay,
thatch, and fur. Assertions of this kind are more a matter of logical
conjecture than of fact.

Still other historians are equally convinced that river navigation for
commercial purposes was never a significant factor in the towns of eastern
Connecticut. Available documents and manuscripts that this researcher has
thus far been able to examine yield no positive evidence of actual commercial
navigation and inferentially suggest an overwhelming concern with overland
travel. This does not, however, preclude the possibility that these rivers
were in fact navigated.
William Weedon, an economic and social historian of New England, finds that the rivers of New England not only did not control but hardly affected the settlement of the colonies, partially because of their "rugged descents and rapids," which implies non-navigability. John Gaspare Saladin, one of the most recent and thorough students of the economic history of Connecticut in the late colonial and early national periods, finds that river travel was negligible and that the Shetucket and Quinebaug rivers were not used at all.

The preference for overland travel is expressed in individual ingenuity and initiative and in actions both towns and colony took to secure and maintain overland transportation routes between the towns as well as within them. For example, Woodstock was formally settled by residents of Roxbury, Massachusetts, in 1686 and 1687, and as early as 1688 a committee to state and lay out the highways recommended not only numerous roads between various home lots and important locations within the settlement, but also recommended the building of a highway "to lead to the road called Connecticut Road," which connected Boston and Hartford. By 1693, James and James Corbin were carrying surplus produce and furs overland by cart to Boston to exchange for necessities. Learned calls the cart a veritable institution of Woodstock, because it was the settlement's "avenue of communication with the outer world." By 1700 a cart bridge was erected over Muddy Brook, a tributary of the Quinebaug, which indicates that road use extended beyond horse and foot travel quite early.

Similarly, Learned reports that the road between Canterbury and Woodstock passed near Edward Spalding's house north of Canterbury, and that his residence soon (shortly after 1707) became "a place of entertainment for travelers - his first barrel of rum coming up from Norwich on horseback, lashed between two poles and dragged behind the rider." Not one part of the journey, then, was made up the Quinebaug. Residents of nearby Foxcroft found their most accessible market to be Providence and undertook to replace the bridle path with a cart
road sufficient to accommodate teams. They began construction in 1708, and the way was opened in 1721. The time lapse indicates that the construction of the road was difficult, yet it was deemed preferable to exploiting the Quinebaug to reach the market at New London. As Larned concludes, by 1706, Windham County had eight towns, each of which was connected by public roads with the leading centers of New England: Boston, Hartford, and Providence.

Other historians agree that overland transportation was of primary significance. Flinny LeRoy Harwood states that goods from Windham and Tolland counties reached New London first by narrow trails and later by highways. Robert Owen Decker concurs. Daniel L. Phillips allows that transportation by ox-team was expensive, but was Preston’s communication with the outside world until the railroad era. Numerous other statements confirm this opinion that roads, however crude, not rivers, provided the crucial link between inland towns and distant markets. As Albert E. Van Deusen explains, then, in the first half of the eighteenth century many roads were laid out, mostly east of the Connecticut River, to provide better communication for the towns of eastern Connecticut with Norwich, Providence, Stonington, and Boston.

He returns, however, to the familiar stress on water transport when he goes on to remark that the very crude conditions of the roads were conducive to water travel. "Fortunately," he says, "Connecticut... had three large river systems plus innumerable small streams, navigable in the small boats then used." He then describes one type of "Connecticut River flatboat," a pole boat capable of floating in only one foot of water when loaded. Though he makes no substantive statement that these boats were used in the Quinebaug and Shetucket rivers or their tributaries, it would seem not totally impossible. The absence of positive proof does not establish the negative case.

The public records of the colony and various petitions and memorials
to the General Assembly, however, appear to support those historians who find
that these rivers were not navigated for commercial purposes and that their
significance lay elsewhere. Even before the settlement of most of the towns
through which the rivers under study pass, the General Court directed "that
the present roads from plantation to plantation shall be reputed the country
roads or King's highway," which indicates an early concern with overland
communication between towns. 108

Public roads were notoriously bad, and partially owing to the expense
of maintaining them, especially in areas where spring freshets and floods
destroyed bridges, towns often neglected to keep them in good repair. Thus,
in May, 1696, the Court of Election stepped in:

Complaint being made in Court that posts and other travellers
meet with great difficulty in journeying as they pass
through this Colonie, especially in the township of Stoning-
ton, which difficultie doth arise either for want of stated
highways or for want of clearing and repairing highways where
stated, and erecting and maintaining sufficient bridges where
need requires; for remedy whereof the select-men in each
town in this Colonie situate in the accustomed roads are
hereby required upon sight of publication hereof forthwith
to take effectual care that as convenient highways as may
be for the advantages of posts and other travellers in their
journeying as aforesaid be laid out through their several
township, and being laid out that they be sufficiently
cleared and made good with sufficient causes and bridges
as need shall require. . . . 109

This act of course did not resolve the difficulties of overland transportation;
it merely demonstrates its early significance. The act closes with the words,
"for the ease and convenience of travellers and carriers of burthens," 110
another indication that goods were coming to market overland, though of course
that in no way precludes the possibility of river commerce.

Throughout the eighteenth century, individuals memorialized the General
Assembly to intervene when towns failed to maintain roads and bridges or to
compensate them when they had undertaken projects on their own initiative.
Thus, the Assembly resolved in response to a petition of residents in May
1735, that the town of Windham be ordered to maintain a bridge over the Shetucket between Windham and Lebanon, because "there is great necessity that a good bridge at all times hereafter be there maintained." 111 In May, 1740, Jabez Pitch of Canterbury asked that he be allowed to collect tolls on the bridge he had built over the "Quinnebaug," because he had built it "for the benefit of travellers 4s." and he wished to be recompensed for the cost. The Assembly granted his petition and fixed the toll rates. The tolls indicate that it was used to cart goods, since different rates were established for a person on foot, for a man and horse, and for a team. 112 In May, 1742, Samuel Morris of Thompson Parish in Woodstock was partially exempted from taxation for maintaining a bridge "over the river easterly of his house. . . ." Just which river this was is unclear, but it was certainly either the Quinebaug or one of its tributaries. 113 In October, 1737, William Whitney of Norwich was allowed to charge a toll on the bridge he had built over the Shetucket because he had incurred extraordinary expense due to the loss of timber in the floods "last winter season. . . ." 114

Such petitions and resolves, incidentally, indicate that these rivers often flooded and either damaged or carried away bridges with them. Thus for example, Windham was ordered in May, 1771 to build and maintain "a good and sufficient cart bridge" over the "Shetucket" to replace the bridge "lately carried away by the flood in the winter passed." 115 Floods of sufficient strength to carry away bridges were not infrequent. They most often occurred in precisely the season when the rivers would most likely be deep enough to navigate. Though navigation may still have been possible, after reading enough such descriptions one cannot help doubting that many would have risked the destruction of their marketable goods to try it. The evidence suggesting a preference for overland transit, however primitive, becomes even less surprising. Still, it must be remembered that spring freshets and floods were
not always so destructive.

As early as May, 1703, Peter Aspinwall of Woodstock asked for compensation in land in return for his bridging the "Queensbaug." Lack of a bridge near the road to Boston had proved both a burden to himself and travellers because "the 64 River is not always fordable, but is Exceeding high and Swift." This not only indicates that the orientation of trade and travel was not along the Quinebaug to Norwich at this date, but overland to Boston; it also shows that the condition of the river was not conducive to commercial travel. It should, however, be borne in mind that a petitioner seeking compensation would present himself in the best light as working under great difficulties to further the public interest. It would be most unusual for such a petitioner to portray the river as meek and mild and easily fordable, in view of the land he sought.

One must be cautious, then, in evaluating such evidence; yet the prevalence of similar petitions supports the hypothesis that overland transport, not river travel, was the preferred mode. Abel Wright petitioned the Assembly to allow him to purchase land from the Indians in Kent in compensation for a bridge he had built in the 1730's on his own initiative over the "Weillamantic" when he had been a resident of Wethersfield. He stated that he had built the bridge because once when fording the river a friend had drowned and he himself nearly had. "I" memorialized observing the danger that persons who had occasion to pass the 64 River were continually exposed..." built the bridge at his own expense. In 1714 Miles Jordan and Francis Smith of Plainfield petitioned that a bridge be built over the "Wesysga River" because it was not always fordable, and when it was, it was dangerous. Similarly, residents of Pomfret and Killingly memorialized for a bridge over the Quinebaug because in certain seasons of the year it was impassable and lives were endangered in passing and
repassing the river. In 1761, residents of four towns petitioned that the town of Canterbury be made to build and maintain a bridge over the Quinebaug because the former bridge had been ruined by ice falling over a dam that Canterbury had allowed to be built. In May, 1773, the General Assembly investigated the need for a bridge over the Matchaug by examining a series of depositions made by residents of Mansfield, Ashford, and Windham. The former bridge had been washed away by a flood. They explicitly stated that the only remaining bridge was too far from the highway between Ashford and Canada Society to be useful and that the highway was not only used locally to transact business between towns but also was used to carry goods to and from Rhode Island and Massachusetts. Since the bridge had gone, persons were forced to ford the river and were "much exposed to be drowned." In October, 1773, the Assembly ordered Mansfield to build this bridge. This confirms both the prevalence of overland travel and the danger of river travel.

Such evidence is, of course, impressionistic, in the sense that it selectively covers a span of years and deals overtly with overland travel, not river transport. The researcher did not undertake to examine every available document pertaining to bridges on these rivers, and any negative conclusions on river transport are admittedly inferential. Yet the material does confirm to her satisfaction the case of those historians who hold that, for eastern Connecticut, significant commercial transportation was not done by river.

The notable historian of Norwich and New London, Frances Maywaring Calkins, devotes ten pages in her history of Norwich to a discussion of bridges and their destruction by spring floods, freshets, and ice. She summarizes:

In reviewing the history of these short-lived bridges, and observing the tendency of the smaller ones to swing aside at every flood and scatter themselves in fragments over the land, and of the larger ones to embark on desperate voyages to the ocean, hurried onward
by thronging blocks of ice or furious torrents, we
might be tempted to think that Norwich stood pre-
eminent, at the summit of misfortune in this
respect.184

She goes on to say that this was a situation not unique to Norwich; that
Canterbury, in 1780, sent Norwich a petition lamenting the unequal burden
some towns bore because of the necessity to maintain bridges over numerous
rivers. The towns held a committee to confer on measures for relief —
Caulkins says to no avail, though in fact relief was granted Canterbury in
1782 and Norwich in 1783 by the General Assembly.185 They were allowed to
hold lotteries to build certain bridges because both towns had to maintain
so many. Canterbury was given this lottery privilege partly because the
bridge to be built was of little service to the town but was of "great
utility and Service to the Public in General ..."186 In October, 1789,
Mansfield was also allowed to hold a lottery due to the unusual number of
bridges it had to maintain. The General Assembly took into account that
Mansfield contained more than twenty highways that crossed rivers, seven of
which had been swept away in one flood.187 At any rate, Caulkins' description
of rivers littered with the debris of bridges and burdened with ice makes one
seriously question the feasibility of inland navigation. That rivers were
perceived as barriers to be bridged rather than as commercial pathways to be
exploited is substantiated by petitions involving the setting off of separate
parishes that mention not only the distance of the petitioners from the church
but frequently, also, the rivers that had to be crossed.188

The public record, however, in an act of May, 1721, does yield evidence
of wide use of boats and canoes in the first quarter of the eighteenth century:

Whereas the taking and using of boats and canoes, without
liberty from the owners, is too frequently practiced in
this government in such places where such boats and canoes
are used: For prevention whereof,
Be it enacted by the Governor, Council and Representa-
tives, in General Court assembled, and by the authority of
the same, That whatsoever shall take and use any kind of boat
or canoe, other than such as shall be taken up going adrift
and loose from any shoal, without liberty from the owner,
he or they so offending shall for every such offence forfeit
the sum of five shillings to the owner thereof, over and above
the damages the said owner shall sustain by his boat or canoe
being taken as aforesaid; to be recovered by an action of
debt.189

This indicates not only theft but extensive use of boats and canoes on the
rivers of Connecticut. It does not, however, specify the Quinebaug, Shetuket,
or any of their tributaries, nor does it indicate that the boats and canoes
were being used for commercial purposes.

IV. Ferries

Undoubtedly, canoes, boats, and rafts were used as ferries to cross those
of the rivers under study that were too large, swift, or deep to ford. To
this historian, ferry passage, like bridges, is evidence that the rivers were
not commercially navigated. In such instances, goods and persons were not
going down river, but, in the absence of bridges, a craft of some type was
being used to get the goods and persons travelling overland from one bank to
the other. It is understood, however, that ferry passage may constitute legal
evidence of navigability.

William A. Countryman asserts that "Ferries were an absolute necessity in
the early days of travel. . . . Early settlers pontooned across the rivers,
creeks and shallows of Connecticut, or poled themselves around or over the
turbulent waters, or rowed in shallows. . . ."130 His sweeping generalization
needs to be tempered by Ayres' observation cited above (see note 16) that
settlers followed Indian paths that led them to the fordable places in rivers.
Nevertheless, the record reveals that ferries were indeed used on some of the
rivers of the Shetuket and Quinebaug system, and it is likely that further
research would uncover even more ferries of a more purely local nature.

Communication between Hither Place and Ponde Place in Windham was made difficult by the Natchaug, and in 1692 the town granted John Larabee certain privileges for keeping a ferry across the river, probably near Mansfield Hollow. He charged two pence a head for people, four pence for horse and man. It is interesting to note, however, in light of the foregoing discussion of overland travel, that the town appointed a committee in 1695 to build a bridge to replace the ferry that would accommodate man, beast, and load.\[131\]

Caulkins, in describing the first cart bridge built (circa 1717) over the Shetucket just above its juncture with the Quinebaug, says that previously the river had been crossed in a scow or ferry boat.\[132\] This may have been the ferry kept by Hugh Amos over the "Showtucket" beginning in 1671.\[133\]

Clarence Winthrop Bowen states that there was a ferry over the Quinebaug below "High Falls" in the Woodstock area operating in 1711.\[134\]

The diary kept by Mrs. Mehitable Chandler Colt of a journey made from New London to Woodstock and back in 1729, quoted by Larned, reveals that there was a ferry across the Quinebaug in 1729, though just where is not clear.\[135\]

Perhaps it was the ferry kept by Samuel Shepard of Plainfield, operating over the Quinebaug between Canterbury and Plainfield beginning in 1722.

That year he petitioned the Assembly to allow him to charge a fee for carrying "horse and man" across the river. He had the fortune to live near the river "by the Country road..." and for some years "upon Curtisle" had provided "a boat y' is convenient to carry horse & man..." The petition indicates that this was a sideline occupation, because he had to attend to the ferrying at the expense of his other business. Therefore he asked that the ferry "be stated to me and reasonable Fees for the Same." In fact, if he were not granted four pence for horse and man he would no longer provide the service.\[136\]
He was given his desired tolls and the exclusive privilege of ferrying the river between the two towns, providing he kept a good vessel suitable for horse and man and that he would be on hand when needed.\textsuperscript{137}

The previously cited petition of Peter Aspinwall of Woodstock, May, 1703, asking for the right to build a bridge across the "Queensbaug," indicates by inference that he, too, operated some sort of ferry service. He stated that the lack of a bridge had been a burden to himself partially because: "the Complainant who lives on the East Side the 6th River... hath been very much hindered & troubled to help travellers over the same River..."\textsuperscript{138}

In October, 1729, the General Assembly passed "An Act in addition to an Act entitled An Act for the Encouragement of the Post Office," which allowed free ferry passage to public officials. It opened by stating that "the privileges of ferries are a growing and profitable estate to the owners."\textsuperscript{139} Apparently some individuals sought to profit from the growing communication between towns provided by overland transport. In fact, the owners of ferries and the owners of toll bridges could be in competition. Joseph Williams and Timothy Pierce had erected a bridge over the Quinebaug between Canterbury and Plainfield and were granted the right to charge tolls. In response to their petition, the Assembly resolved in October, 1730 that no ferry or boat for the "transportation of travellers" could be kept within one mile of this bridge for as long as it remained a toll bridge.\textsuperscript{140}

In October, 1750, the General Court passed "An Act for stating the Fares of the Ferries in this Colony in Proclamation Money." The bill had been continued from the May session of 1749. In the early bill a rate was stated for the "Quinebaug Ferry at [Read's]." This ferry was omitted from the bill
in October. Nevertheless it suggests that a ferry had been in use as late as 1749 over the Quinebaug, though exactly where is not determined. The bill as enacted lists only one ferry in operation by this date over any of the rivers of the systems under study and that is one over the "Shetucket" - probably in or near Norwich, as it is listed among the ferries "on New London River." According to Larned, however, the flood of 1807 damaged or destroyed the bridges in Canterbury, necessitating, temporarily, the use of a ferry. One can infer, considering the frequency of flood damage to bridges, that this case in Canterbury was not unique and that there probably was ferry service on others of the rivers under study, or at other places on the Quinebaug, long after 1749. Finally, Title LXVII, Chapter I, Section 3 of the statute laws of 1808 provided that although each ferry keeper was to have sole privileges of transporting passengers and their horses, the order was not to infringe on the right of individuals to use their own or neighbors' boats and canoes in passing "to their own business and labour." One may posit from this law, that small vessels were frequently employed locally on the rivers of Connecticut, though it may be questionable that such use constitutes navigation. Clearly, however, ferries were used on the Quinebaug, Shetucket, and Hetchuck rivers, and probably were on some others. It is also likely, though not established, that individuals often used canoes for small distances in their routine affairs.

V. Logging

The flotation of logs down a river may be construed as evidence of commercial navigability. Aside from the timber of bridges going downstream, this researcher has been unable to uncover evidence either that logs were or were not ever floated on these rivers. Additional investigation needs to be
done to determine the point. The most likely approach would be to read the newspapers for all the townships included in the two river basins and to examine the account books of sawmill operators. However, some evidence has been uncovered that indicates that if the rivers were used for the flotation of logs, such use was not significant. Again, the evidence is circumstantial and does not constitute proof in the negative.

There is no question that the local sawmills were important to new settlements and continued to be so. As N. V. Arnold has said:

At the falls of the streams the saw-mill and grist-mill was not long in being erected, and around some of these privileges the pre-revolutionary country villages grew up. 115

The question remains whether the rivers under study provided the means by which logs were transported to the mills. John Winthrop, Jr. of New London certainly must have thought the Quinebaug would be important in this respect. He had early established a sawmill in New London and in 1653 purchased a large tract of land on the Quinebaug from "Hymns alias James ... sachem of Quinebaug." The tract ran south from the falls at Danielson on both sides of the river and encompassed much of today's southern Killingly, Brooklyn, Plainfield, and Canterbury. The deed of transfer specifically mentions the usefulness of the sawmill at "Pequot" [New London] and stipulates that "for the supply whereof, I [James] consider, I have swamps of timber very convenient..." 116 Arnold asserts that Winthrop intended to float the logs downstream. 117 This is inferential, but logical, especially since the deed mentioned convenience. No evidence, however, has been found that Winthrop ever did float logs down the Quinebaug.

If the Quinebaug and Shetucket ever were used to float logs, such use was not deemed important in the eyes of the legislators of the colony or state. In May, 1752, the General Assembly passed "An Act to prevent secret Trespasses
in taking up and disposing of Saw Mill Logs and other Timber, Shingles and Staves, floating or floated down Connecticut River. It is possible to infer that such objects were floated down that river in sufficient quantity to require legal protection against theft. The law was extended to cover Windsor-Ferry River in October, 1759, and to the "Ousstannick river" in 1807, yet it never was extended to include the Shetucket, Quinebaug, or their tributaries.

Local histories occasionally provide clues that indicate logs were transported overland. At some point in the 1680's John Holmes of New Bux bury (Woodstock) was granted three hundred and four acres of land laid aside for town use for running the sawmill, "provided he leave convenient way to carry timber to mill." John Way, Jr., of Woodstock, noted in his diary on December 16, 1710, that he had cut and sledded timber. Panfret provided a road to the mill of Abel Lyon soon after it was established in 1707, though such a road might have been used only to transport the sawed planks and not the logs. Both Caukins and Joan Waffie agree that the extensive shipbuilding industry of Norwich was supplied with local lumber, which would preclude the necessity of log drives on the Quinebaug and Shetucket for that industry at least.

Finally, the researcher was able to examine account books of two sawmill operators, that of Silas Bundy of Thompson for the years 1797-1814 and that of Joseph Kennedy of Voluntown for the years 1781-1832. The exact location of the mills was not mentioned, though they were both within the Quinebaug basin. Bundy explicitly charged customers not only for finding logs, but also for "sledding logs," "carting wood," "fetching log," or simply, as an entry reads, "Logs to mill." In addition he also frequently charged customers for their use of his cart and oxen or horse. The most frequent charge, however,
was only for "soying" logs. It is possible that some logs came by water
and equally possible that those who incurred no overland transportation charges
provided their own entirely. Kennedy's entries yield no clue how logs got
to his mill, though he too charged customers for the use of his cart and oxen
for trips to Preston, Providence, Norwich, "Pawtucket," and "Stongington,"
which again suggests the significance of overland travel. From the evidence
thus far examined, then, no conclusion can be reached. Logs may have floated
down each and every one of the rivers under consideration, though the evidence
does suggest that such use would not have been extensive.

VI. Fishing

Not only were the rivers of eastern Connecticut valued for the water power
they provided early mills and for watering farm land, but also for fishing,
especially for anadromous fishes like shad and salmon. In response to the
letter sent by the Connecticut Academy of Arts and Sciences in 1800, Hezekiah
Frost of Canterbury mentioned the profitability of shad "stakes" on the
"Quinebaug" as well as the trout in Blackwell's Brook, and in a postscript he
commented that fish companies frequently caught salmon, bass, and alewives. Rev. Aaron Putnam of Pomfret in his response commented on the shad and salmon
fishery in his town. In 1781, Samuel Peters noted that there were numerous
fish on the Quinebaug. J. R. Cole notes that shad and salmon fishing had at
one time been important on the Willimantic as far north as Tolland, and
Culkins comments on the former importance of shad fishing on the Shetucket in
the Norwich area. Learned remarks that in the 1750's Voluntown chose a
committee to remove obstructions on the Noosup so that fish could pass up
stream. Pease and Miles' Gazeteer of 1819 stated that "the Shetucket, the
Quinebaug, and their tributaries, afford some excellent shad and salmon fisheries."
thereby including the whole river system under study. 163

The significance of fishing is reflected in early legislation designed to keep the rivers free from obstructions to protect the fishing of those living upstream. In May, 1715, the General Court passed "An Act to prevent Nuisances by Hedges, Weeds and other Incumbrances, obstructing the passage of Fish in Rivers." The act was specifically applicable to the "Quinebaug," "Shetucket," and Windsor Ferry rivers and provided penalties for persons who erected obstructions without first obtaining permission of the county court. 164 In 1719, the Court extended this act to cover "all the streams that empty themselves into the said rivers." 165 In May, 1755 and October, 1759, the Assembly made additions to the act both to make it more enforceable and to make the penalties stiffer. 166 In 1766, the October session of the Court considered a memorial from inhabitants of Plainfield, Canterbury, and Killingly, stating in essence that the intent of the law was to prevent the obstruction of the passage of fish but that the New London County Court was quite lenient in granting persons the right to raise obstructions to the detriment of upstream fishermen, who now caught hardly any fish at all. 167 In response, the legislatures repealed that part of the act which empowered the county courts to license persons to raise obstructions during the season when fish were spawning. 168 In May, 1773, the General Assembly stated, in exasperation, that "the course of fish up Shetucket River, and up Quinebaug River, is continually interrupted by the drawing of seines and other fish-craft," which proved injurious to the public, and so it proceeded to enact still stronger penalties. 169 The importance of fishing on these rivers, then is clearly established.

The question remains whether boats were used in fishing the rivers of the Shetucket and Quinebaug basin. Logic dictates that individuals used boats
to fish, though that is not a matter of fact but only of conjecture. A report on salmon fishing in New England made by the Commissioner of Fish and Fisheries for 1872-1873 reveals that boats were used in some places to cast drift-nets and also in fishing by dip net, though it does not mention specifically any of the rivers under study. It also indicates that fishing methods included clubbing, spearing, various kinds of nets, fish traps, and weirs. A more recent study states that "Drifting for salmon was practiced in all the rivers. . ." If boats were used to cast drift-nets and if drifting were done on all the rivers, then it is quite possible that boats were used in fishing these rivers. Finally, an item in the Norwich Courier, December 2, 1869, taken from an article by H. L. Beade of Lisbon entitled "The Fisheries in Our Rivers," read:

Silas Beade, who owned a fishery ground six miles above Norwich, not any better than others, rented his grounds, the parties furnishing seine and boats, for $100 per year. It appears, then, that boats were used in some instances in association with fishing. Whether such use constitutes evidence of commercial navigation and renders the rivers "navigable" is open to question. Further, it must be remembered that, from the evidence thus far examined, it remains unclear just how extensive fishing involving boats actually was.

VII. Nineteenth Century Perceptions and Use of the Rivers

Whatever scanty evidence exists to suggest that the Quinebaug, Shetucket, and their tributaries may have been used for purposes of commercial transportation, the record is clear that by the end of the Revolutionary era and throughout the nineteenth century contemporaries did not think of them in such terms. They were described and valued as mill streams that provided water power for early "manufactories," most notably textile mills, just as they continued to
provide power for grist and sawmills.

The anecdotal historian, Peters, wrote in 1781:

The eastern river is called the Thames, as far as it is navigable, which is only to Norwich, fourteen miles from its mouth. Then dividing, the greatest branch, called Quininaug, rolls rapidly from its source 100 miles distant through many towns and villages, to their great pleasantness and profit. On it are many mills and iron-works, and in it various kinds of fish, but no salmon, for want of proper places to nourish their spawn.173

In 1789, Jedidiah Morse published *The American Geography*. Though his work is more scholarly than Peters', it essentially coincides with Peters'
evaluation of the use of the river. The Thames was one of the three principal rivers of Connecticut, he wrote, but was navigable only fourteen miles to Norwich. The Quinebaug "tumbles over many falls, and affords a vast number of mill seats." Like Peters, he ignored the use of the Shetucket, merely offering a description of the stream.174

In 1800, as has been mentioned, the Connecticut Academy of Arts and Sciences sent a questionnaire to every town in Connecticut in order to gather information for a projected statistical history of the state. A copy of the questionnaire is attached to this report. Several questions concerned navigation. Question four specifically asks the use to which the rivers were put - mentioning navigation, mills, irrigation of farm land, and fishing.

Questions five, six, and seven all ask for the distance from navigable water of resources or products of the town. At least thirty towns replied, and the researcher read either in published form or in manuscript the responses pertaining to the area within this river system: those from Bolton, Canterbury, Coventry, Franklin, Lisbon-Hanover, Lisbon-Newent, Pomfret, Preston, Tolland, Union, Willington, and Windham.175 None of the replies stated that the town's rivers were navigable. The rivers were valued either because they provided rich
"intervals" for farming or because they gave power to fulling, grist, saw, iron, and oil mills. The Reverend Ebenezer Kellog of Bolton noted that wood products were "transported" to Hartford and Windsor, ten to twelve miles away, presumably in response to the query about the distance from navigable water. Transportation was overland, because he referred to the wood's being "carried" to market.176 Dezekiah Frost of Canterbury noted that there were ten sawmills, nine grist mills, and two fulling mills in town. "Howlands brook", alone, had seven mill seats. Blackwell's Brook was noted for trout fishing, and the Quinebaug provided excellent shad fisheries. He gave a detailed account of farming activities. He did not specify the distance from navigable waters, though he did state the mileage to Norwich, Providence, and Boston and did remark that Little River and the Quinebaug both ran in a southerly direction and joined the Shetucket in Lisbon, which "run into Norwich Landings" he probably considered Norwich Landing the head of the nearest navigable water.177 Jesse Root of Coventry described the "meandering" Skunkamaug, the Hop, and Lake "Wongumboog." "Ther is," he wrote, "a number of gristmills, Saw Mills, fulling mills, one paper mill, clothiers works, & Carding Machines," which were undoubtedly powered by the streams in town. He made no mention of navigability.178 The writer from Preston said that the Pachaug and its tributaries abounded with mill seats. He described Norwich Landing as the head of navigation, to which the Quinebaug, Shetucket, and "waters from the Northwest" were tributaries.179 Andrew Lee of Lisbon-Hanover called Little River "a small creek." He stated the distance from navigable water to be nine or ten miles and mentioned that oxen were used to transport produce.180 David Hale of Lisbon-Newent valued the Quinebaug for the fertile lands it provided and the fishing it offered. He did not mention mill sites or navigable waters.181 The respondent from Windham, like so many, detailed his rivers: the Mattauch and Willimantic formed the Shetucket which emptied into the Cove at Norwich Landing. One senses
that these writers took it for a given that Norwich Landing was the head of navigation. He did, however, relate the story mentioned above of Indian canoes ascending the Shetucket. The author from Tolland noted the distance to Connecticut River was fifteen miles. The Willimantic was prized for salmon fishing, and the numerous unnamed smaller streams for their mill seats. In Willington, the Willimantic, Pewston, and Roaring Brook were valued both for farming and mill power. The author added, "from navigable water about 26 miles from Hartford and about the same distance from Norwich." The writer from Pomfret considered the town fortunate because the Quinebaug provided valuable mill rights due to the "considerable Cataracts, [made] by water falling from the tops of large Rocks, in the Channel thereof." And there were various mills on the other streams as well, including "massa-moquet." The town was 28 or 35 miles from navigable waters. He also detailed destruction of bridges due to cakes of ice, floods, and freshets. In Union the Quinebaug, Bigelow River, Roaring Brook, and Stenton Brook provided water power. The writer said the town was well watered in "all ways." which could conceivably imply navigation, since the questioners had included navigation as one of the uses of waters on which they wished information. Yet later he wrote that the town was 40 miles from navigable water and noted that the streams in town were not large, so that bridging was not expensive. The respondent from Franklin stated that the Sunaquetumscoot or Saw-mill Brook and Beaver Brook provided power for numerous mills, though the Shetucket had none. The distance from navigable waters was eight miles. Clearly, then, by contemporaries in the early nineteenth century, the Quinebaug, Shetucket, and their tributaries were not perceived as navigable, but were valued for other reasons. The Connecticut River and the Thames River were the nearest navigable waterways for northeastern Connecticut.
The trend to designate these rivers "mill streams" accelerated throughout the nineteenth century as the industrial revolution gathered momentum and mill dams multiplied. Navigation was not a factor. If indeed the rivers had been commercially navigable in the past, the mill dams now obstructed any but the most local use. Pease and Miles in 1839 considered the "Housatonic," the Connecticut, and the Thames the three great rivers of Connecticut. The Connecticut was extensively navigable, and they felt that the tributaries of the Housatonic ought to be improved by canals to extend navigation of that river further inland. The Thames was navigable to Norwich; in discussing its tributaries they do not mention the desirability of improving them for inland navigation. In this gazetteer each town is described, including, among other things, its rivers, the mills located there, its proximity to public roads and turnpike roads (overland transport once again is all-important), and its agricultural pursuits. The tributaries of the Quinebaug and Shetucket are generally described, as in the case of Ashford, as "scarcely deserving the character of rivers [;] the most considerable are the Bigelow, Mount Hope and Still Rivers." Blackwell Brook in Brooklyn is inconsiderable, the "matchaung" in Griswold is "sluggish." Both the Quinebaug and Shetucket are considered large; however, Pease and Miles are primarily interested in the water power afforded by a river. Thus, the primary tributaries of the Quinebaug are described as the French, the Moosup, the Little, and other small streams all of which "abound with numerous sites for hydraulic works." Likewise, the Matchaung and the Willimantic, tributaries to the Shetucket, provide "many valuable water privileges." The Hop in Columbia is also described as a mill stream.

Like Pease and Miles, John Hayward, in his mid-century gazetteer, detailed the navigability of the Connecticut River, called Norwich the head of navigation.
on the Thames, and made no mention of navigability regarding the Quinebaug or Shetucket. Again, he was preoccupied with water power. In describing Windham County he wrote:

The Quinebaug and Shetucket, with their branches, intersect this county, and afford many valuable privileges for mills. The valley of Quinebaug River comprises the best land in the county. The inhabitants of this county are more extensively engaged in the manufacturing business than in any other county in the state.

Narrating the rise of textile manufacturing in the first decade of the nineteenth century, Learned states that people established "manufactories... on every fall [in Windham County] that could turn a mill wheel." Her summary is an eloquent expression of the problem posed by these rivers and its final resolution:

The river question, so perplexing in early times, was settled forever... Those "tedious" and turbulent streams which had caused so much expense and contention, could be made to run mills instead of running off with bridges.

Both Learned and Arnold agree that raw goods and supplies for the mills were brought overland by ox and horse teams.

VIII. Attempts to Improve the Quinebaug for Navigation; the Canal

Saladino and Caullkins both date the rise of Norwich as a commercial center to the decades after the 1750's, because it was tied to a back country that, once it had gone through the difficulties attendant on early settlement, was relatively fertile and productive and could therefore supply merchants with products for the West Indian and coastal trades. According to Saladino, prior to this period, eastern Connecticut was a "rieff" of Boston and Newport, and some evidence has already been presented showing that towns early laid out routes to Boston, Providence, and Hartford. Saladino also claims, convincingly, that Norwich was able to control the trade of eastern Connecticut after the
1750's because roads and cart bridges between the port and the hinterland provided the farmer a ready means by which to get his surplus produce to market. 203

It will be remembered, however, that overland transportation was both crude and expensive. Therefore, it is not at all surprising to find the first attempt to improve the Quinebaug in order to make it navigable occurred precisely at the moment Norwich was approaching its commercial ascendancy. During the May session of 1763, the General Assembly considered a memorial signed 9 May 1763 by more than forty persons from the towns of Woodstock, Killingly, Pomfret, Plainfield, Canterbury, Preston, Voluntown, and Norwich requesting permission to hold a lottery to raise money for the purpose of making the Quinebaug navigable to Norwich Landing. (In actuality, this project would have included that portion of the Shetucket below the mouth of the Quinebaug.) They informed the Court that the Quinebaug, from y⁸ Falls called Denelows Falls in Killinglee in Said River until y⁹ Falls Enters itself into y⁸ Core & Norwich about 30 miles up said river is So flat and Level that y⁹ Same may easely be Made Paseable for Botes & Bateauz [battœux] to Pase up & Down Said River from Said falls to Said Landing with y⁹ Expense of aboute four hundred & fifty Pounds to be Lev'd oute in Cleaning y⁹ Same which when Done Would be of Grate Service & Benefitt to y⁹ towns Near & adjoining to Said river as Well as advance y⁹ Publick Good & Benefitt of Said Colony. . .204

To the historian, this petition constitutes evidence that the river was not then commercially navigable in any significant manner and could not have been navigated without improvements. The desire to exploit the waterway remained intense, however. According to Charles Rufus Harte, as early as 1805 Benjamin Cargill of Pomfret investigated the feasibility of constructing a canal on the Quinebaug from the Falls in Rutland to Norwich, but his project failed because he could not obtain adequate engineering aid.205 The project
still did not die. Timothy Dwight wrote that:

It [the Quinebaug] is supposed to be capable of being rendered navigable for boats as far as Woodstock, with no other serious difficulty except what arises from its length. A project for this purpose has been formed, and will hereafter perhaps be carried into execution. 206

In February of 1822, a meeting was held in Norwich where it was voted "to ascertain the practicability of having a Canal" from Worcester County, Massachusetts, "to the head of navigation of the River Thames,"

and a committee was chosen for that purpose. 207 The Norwich Courier, in the twenties, became a relentless booster of the project. Its columns indicate both that goods coming to market were coming overland and not by water and further that some goods, such as timber and bricks, never reached market because of the expense of such transportation - further evidence that the Quinebaug was not in fact navigated. 208 The organizational meeting of the Quinebaug Canal Association held in Brooklyn, August 17, 1825 resolved "that it is practicable to construct a Canal from the tide waters of Norwich through the County Windham into the State of Massachusetts." 209 By September 7, 1825, the Courier was calling for a survey of the canal route, 210 and on November 23, it reported that Col. James F. Baldwin had already completed part of the survey and that he was encouraged by his findings. 211 On December 7, the Courier announced that Baldwin had completed his survey, though he would not make it public. 212 In March, 1826, a notice appeared stating that the Quinebaug Canal Association would present the legislature with a petition for an act of incorporation "for a canal from the tide waters at Norwich, along the banks or near the Quinebaug River, to some part of the County of Worcester ... with a view ... to continue the same to Boston." 213

The project for a canal, then, provides some evidence that the river was
not used for commercial navigation, as do the frequent promotional columns in the *Courier*. Similarly, the petition for incorporation submitted to the General Assembly in May, 1826 yields testimony that goods were not reaching market by the water route, and could not, unless a canal were constructed:

And your petitioners [sic] would further state, that
altho the farms contiguous to the projected canal are fertile and productive; yet the distance, the cultivators are compelled to carry their products, in seeking a market, renders these farms far less valuable, than others much less fertile, which are nearer a market. Much produce is now grown, which will not pay the transportation to market & is consumed on the farm with but little profit. These wills will be done away, in great measure, when the object of the said association shall be carried into effect.214

The reader is again cautioned that all evidence concerning the canal does not constitute absolute proof that the river was not ever used in the first part of the nineteenth century for commercial purposes - an occasional canoe might have been employed to reach the navigable waters in Norwich. What it does establish, to the satisfaction of this researcher, is that if canoes were used on the Quinebaug to transport goods at this period it was done only rarely.

Not only would farmers benefit from a canal, the petition continued, but so would the manufacturing interest. The petitioners talked of the textile industries on the Quinebaug and its tributaries, "all of which will be in a short distance of the contemplated canal. These establishments . . . transport annually not less than twenty three hundred tons to and from their works." Anticipating the increase in manufacturing on the Quinebaug due to the repeal, in May, 1825, of the statute prohibiting the erection of dams that obstructed the passage of fish up river, the petitioners predicted "the necessity of some more convenient mode of conveying heavy articles than is now possessed." 215
The Canal Association asked either for an appropriation from the Treasury or for an act of incorporation that would include banking privileges. The Quinebaug Canal was incorporated without banking privileges in May, 1826. In May, 1827, the Quinebaug Canal Bank was incorporated.

The researcher has been unable to locate Baldwin's actual survey but has examined a copy of his descriptive report and estimate of construction costs submitted to the Association on May 4, 1826. It indicates that the river bed itself was to be used in two sections. Though the canal project provides at least inferential evidence that the river was not commercially navigated, the fact that the canal was incorporated, though never built, and the fact that actual use of the river bed in Connecticut as a portion of the canal was contemplated, might render the Quinebaug River as capable of being navigated, and therefore legally navigable, even if such navigation never took place. The relevant distinction is one between legal navigability and actual commercial navigation.

Some evidence also exists that indicates a similar project was contemplated to render the Skungasag River navigable. According to Cole, advertisements in Tolland County's National Phoenix in the year 1830 reveal that leading merchants of Tolland village were promoting a canal project:

...in short, it was predicted by the far-saying business men of the place, that Tolland would in time become a port of entry, and vessels would be seen unloading their cargoes upon the banks of the Skungasag.

Weigold relates an anecdote supporting Cole. Supposedly a citizen of Norwich was consulted in an ironic fashion to this project, by a resident of Tolland who informed him that the day when Tolland would be a port of entry was near at hand and that "the small craft from the city of Norwich have already found their way amongst us, and their larger vessels will
doubtless follow in their wake. He222 Unless the Tolland man was merely returning insult for irony by alluding to the visitor from Norwich as a "small craft," his statement seems to indicate upriver navigation from Norwich to Tolland, presumably via the Shetucket, Willimantic, and Southington rivers. Weigold, however, offers no documentation for his anecdote, and no other evidence has been found to support the case; therefore it does not constitute reliable or convincing proof of navigation. The canal project itself was never realized.

The same is true of the Quinebaug Canal, and in 1832 petitioners, speaking on behalf of those to whom the charter privileges of the canal had been granted, asked the General Assembly to

grant us an act of incorporation authorizing us to construct a rail road from the waters of Long Island Sound through the city of Norwich, & through the State of Connecticut, to such place as shall be found best to accomplish the object of opening a communication from the Sound to the city of Boston.223

The petition was granted, and the Boston, Norwich, and New-London Rail Road Company was incorporated in May, 1832.224 In 1836 it merged with the Boston and Worcester Railroad, and the combined line became the Norwich and Worcester Railroad Company.225 The advent of the railroad, then, ended the canal project and the attempt to render the Quinebaug navigable. Though the efforts of navigation suggests quite strongly that the Quinebaug was not navigated for commercial purposes, the evidence examined does not constitute absolute proof that it was not.

IX. Government Publications

Several documents of the federal government support the evidence that shows the rivers of the Quinebaug and Shetucket basin were not commercially navigated.
In 1961 the government published a list of bridges over the navigable waters of the United States. The researcher read every entry dealing with states on the Atlantic coast. Only bridges over the Shetucket were included. No mention was made of any of its tributaries, including the Quinebaug, nor was there any reference to the tributaries of the Quinebaug.

On the Shetucket four bridges were listed; all of them were in Norwich. They were located at 0.1, 0.2, 0.2 and 0.3 miles from its mouth. Though bridges over the Shetucket above this point were then in existence, none was listed. Further, the Shetucket had already been deemed navigable for one half mile from its mouth. Therefore one can conclude that an agency of the government has determined that the Shetucket above its tidal reach, the Quinebaug, and their tributaries are not navigable. This, of course, does not constitute conclusive proof that these rivers were not ever navigated for commercial purposes.

In 1916 the House of Representatives received from the Secretary of War a report made by the Corps of Engineers on a preliminary examination of the Shetucket, Quinebaug, and French rivers that had been made "with a view to securing slack water navigation between Norwich, Connecticut and Worcester, Massachusetts." Like previous evidence discussed, this report demonstrates that these rivers were not perceived as avenues of commerce:

The Shetucket, Quinebaug, and French Rivers have the characteristic in common that they are all typical New England mill streams, flowing with a steep slope through narrow valleys between granite hills. Each is crossed by numerous dams built for the development of power, usually with moderate head, at the mills that are scattered along their courses. These mills, it may be said, form the chief productive activity of the region through which the streams flow.

The steep falls and narrow banks are conditions that would make extensive navigation difficult and that contributed to the destructiveness of the various
floods and freshets already discussed. Yet the fall of the rivers is precisely what made them useful as a source for water power for textile and other mills.

This same document states that these rivers never had been navigated:

Except in the every limited tidal reach of the Shetucket River, immediately at its confluence with the Thames, no portion of any of the streams is now, or ever has been, used for navigation. ... Nor are the rivers subject to rises that could make navigation possible either in their natural condition or in their present artificial state, for the slope of the streams is too steep to back the water over the rapids and falls.231

The researcher does not know on what evidence that writer based his conclusion; it is not documented and cannot stand as definitive proof that the Shetucket, Quinebaug, and French rivers were never navigated. It does, however, support the evidence thus far examined that indicates that navigation, if it took place at all, was never significant. But the report goes on to state:

In a few of the mill ponds one may, to be sure, find a skiff kept for fishing and such purposes, and on very rare occasions a trip has been made for sport down the Quinebaug in a light canoe, carried around the dams and rapids; but these are very exceptional and incidental uses of the stream.232

This evidence does establish that canoes and light craft had been used occasionally on the rivers. The researcher recognizes that this might constitute evidence for their legal navigability. After detailing the locks, dams, and dredging that would be necessary, the writer does admit, "These measures would secure slackwater navigation on the Shetucket and Quinebaug Rivers."233

Though the Army Corps of Engineers recommended that the project not be undertaken, and it was not, because of the cost and because it "would seriously conflict with valuable established water-power rights on streams that are now navigable,"234 the fact that the engineers deemed it theoretically possible, though not practical, to render the Shetucket and Quinebaug navigable may constitute evidence that these rivers are legally navigable. To this researcher
it provides further testimony that they were not used significantly for purposes of navigation.

In December, 1930, the Secretary of War submitted a "308" report prepared by the Corps of Engineers on the Thames River, "covering navigation, flood control, power development, and irrigation." The Chief of Engineers concluded "that further improvement of the main stream [the Thames] or extension of navigation to the tributaries is not warranted." Such a statement implies that the tributaries of the Thames - those explicitly mentioned are the Shetucket, Quinebaug, Hatchaunt, and Wiliamsantic rivers - were not then navigable without such improvement. The report also reviewed the project of 1915-1916 mentioned above and recommended against it at this later date, partly because of cost and partly because no public interest was displayed in such an undertaking. The document also demonstrates the extensive industrial development on the rivers and notes the dams then in existence that would hinder navigation. A copy of this list is appended to the present report and may be consulted for the location of these man-made obstructions. The list is not complete for 1977, but constitutes the only research possible in the time allotted on such obstructions. Further evidence of dams and other hindrances to navigation may be found in the canoeing guides discussed below.

Evidence provided by the federal government, then, indicates that the Quinebaug and Shetucket and their tributaries were not navigable, though such evidence does not constitute conclusive proof that they were never navigated. These documents do indicate that portions of the Shetucket, Quinebaug, and French rivers could be made navigable, though that project was never undertaken. Finally, a report made by a firm of engineers in 1946 entitled An Economic and Engineering Survey of All Navigable Waters in the State for the Connecticut Port Survey Commission referred to Norwich as the "head of
navigation" repeatedly, which suggests that for the purposes of this report, at least, the waters of the Quinebaug and Shetucket river basins were not considered navigable.\(^238\) On the maps bound with the study the Quinebaug and Shetucket are not shown, though the Thames is.

X. Current Recreational Use - Canoeing

Many of the rivers under study are currently navigated for recreational purposes in canoes and kayaks. A canoeist's guide written in 1935 warns, however, that in the small rivers the water runs out very fast and renders the streams canoeable for only six weeks a year. Such conditions are a further indication that these rivers were not extensively, if ever, used for commercial purposes, because they would not have provided a reliable means of transportation.\(^239\) The guide, entitled *Quick-Water and Smooth*, states also that "the spring canoeist must be prepared for an occasional wetting, as well as for frequent minor damage to his craft."\(^240\)

Nevertheless, the guide, which reveals in its preface that the waterways described have actually been canoed,\(^241\) offers evidence that, on the rivers it designates, downstream travel has occurred. Whether canoeing for pleasure renders the rivers legally navigable is another question. The authors do not recommend the French River, due to pollution and numerous portages necessitated by dams "about every mile."\(^242\) Yet presumably even the French admits of travel by canoe. The Hop River, they report, is navigable from Andover to the Willimantic River.\(^243\) The Hatchaug is "probably navigable" (it was not run by the writers) from Phoenixville for nine or ten miles south, where navigation becomes difficult due to the presence of four power dams and one water reservoir before reaching the city of Willimantic.\(^244\) The Quinebaug is canoeable, but the run is difficult in places due to dams and pollution.\(^245\)
The Willimantic and the Shetucket are canoeable from Stafford Springs to Greenville.

In 1965 the Appalachian Mountain Club published a canoeing guide which it acknowledged to have been an outgrowth of *Quick-Water and Smooth*. It includes rivers not mentioned in the 1935 guide, and from the detailed descriptions offered one can infer with a high degree of certainty that the compilers canoed the rivers or received descriptions from persons who had. The Appalachian Mountain Club guide also remarks on the difficulty of keeping descriptions current, since dams may be added or removed, and "some of the smaller streams may have become overgrown, and canoeists planning to use them should go prepared with axe, saw, and machete or clippers." The researchers read the 1971 edition. Most of the Quinebaug, it reports, "can be done at any season," though rocks, rapids, and dams present difficulties. The Pequag is navigable and consists mainly of three "pleasant" mill ponds. Others listed as canoeable are Moosup River, Five Mile River, French River, Shetucket River (because of its size canoeable in any season), Willimantic River, Hop River, Hatcham River, and Mount Hope River.

The researcher confirmed through an interview with an active canoeist that the Shetucket, Quinebaug, Willimantic, Hatcham, and Hop rivers at least have indeed been canoed over portions of their courses. Finally, for the past three years, the Joshua's Tract conservation organization has sponsored the "Shetucket River Days" canoe race down the Shetucket from Lauter Park in Willimantic to Baltic. It is worthy of note that the cooperation of the operators of three dams up river from the course of the race has been enlisted to ensure adequate water levels. Clearly, in any case, if recreational canoeing constitutes evidence of navigability, it is possible to conclude that the Quinebaug, Shetucket, and many of their tributaries are navigable.
XI. Summary

It must be emphasized again that in six weeks time the research was of necessity limited. However, a wide range of materials was sampled and this preliminary study has turned up only two positive statements of commercial navigation: that of Griggs that the Quinebaug was navigated from Norwich to Pomfret by flatboats from the time of early settlement, and that of Welgold reporting an anecdote in which it was stated that small craft from Norwich had found their way to Tolland. As has been explained, both statements are of questionable reliability and do not, in the estimation of this writer, establish that the Quinebaug, Shetucket, Willimantic, and Skungasaug were commercially navigated, as they imply. An inferential case has been made that the rivers probably were used by Indians and by white settlers in fishing. It is also a matter of record that the Quinebaug, Shetucket, and Hatchaug were crossed by ferries. No evidence has been found of log flotation on any of the rivers, but it has not been established that it did not in fact occur. Recreational canoeing definitely takes place on most of the rivers under study.

Evidence so far uncovered points toward the conclusion that significant commercial navigation did not occur on the Quinebaug and Shetucket rivers or their tributaries, overland transportation being the usual mode by which farmers brought their goods to market. Nevertheless, it appears entirely possible and even probable that light craft were used locally by individuals in pursuit of routine business and not unlikely that logs may have been floated short distances.

The question of the historic uses to which the rivers were put is indeed complex, then, and not completely answered by this report. Further research would be of use. Of primary importance would be an investigation of probate
inventories of residents of the townships of northeastern Connecticut from settlement through the nineteenth centuries. Such an investigation would reveal what types of craft were owned and commonly used. A prevalence of canoes would provide inferential evidence of local navigation, while if keel boats or flatboats were found it would provide inferential evidence of extensive commercial navigation. Similarly, more account books should be examined. Those of prominent merchants and inland shopkeepers might reveal more directly how goods were being transported and might unexpectedly show water transportation. Those belonging to operators of saw mills might establish log flotation. Likewise, newspapers might provide similar kinds of information. Travel accounts and personal diaries, too, might yield unexpected and valuable information as might town records. Finally, more extensive research into the uses to which the Indians put the rivers needs to be conducted, especially in their early contacts with white, since it might establish that the Indians used the rivers in trading with the early settlers. More research, then, will be required to establish conclusively whether or not the rivers of the Quinebaug and Shetucket basins were in fact used as highways of commerce.
Conclusion

A waterway is navigable in a legal sense if it is presently being used for navigation or is suitable for such use, if it has been used for navigation or was suitable for such use in the past, or if it could be made suitable for such use in the future. If a waterway is capable of being used for transportation and commerce, it does not make a difference that it is not presently being used for commerce, it needs improvement in order to be susceptible of commercial use or it is navigable for only part of its course. The early cases dealing with the question of navigability turned on the question of whether the waterway was used for commercial or transportation purposes. Later cases held that recreational use or the flotation of logs would indicate navigability.

Using as a test the strongest indices of navigability, i.e., actual past or present use of waterways for commercial or transportation purposes, the case for finding the Quinebaug and Shetucket navigable is not strong. There does not seem to be conclusive evidence that these waterways were used by Indians or settlers for the purposes of commerce, transportation or the flotation of logs. There may have been some ferry or flatboat traffic on these waterways, and fishing boats may have been used.

Under the criteria of suitability for navigation by improvement and recreational use, the case for finding these waterways navigable seems much stronger. There is no doubt, in view of the 1826 petition by the Quinebaug Canal Association, that some of the inhabitants of the Quinebaug-Shetucket region viewed the Quinebaug as potentially navigable. The Quinebaug, therefore, could be viewed as navigable under the "susceptible of navigation" criterion of the Appalachian Power case. Moreover, there is no doubt that parts of the Quinebaug and Shetucket River systems are in fact being presently navigated
for recreational purposes. Although the recent GAP v. FTC decision did not
turn solely on recreational use of the Hoosacpic, it would seem to indicate
that a waterway can be found navigable solely on the basis of recreational use.

All relevant legal authority and all secondary, as well as many primary,
historical authority has been examined during the conduct of this research
project. It is hoped that the results of the project will be adequate to enable
a final determination of navigability by the appropriate agencies.
Citations


64. Ibid., p. 7.


71. Ibid., p. 57.


90. Norwich Courter, 17 August 1825; 7 September 1825; 14 September 1825.


96. Ibid., p. 35.

97. Ibid., p. 43.

98. Ibid., p. 193.

99. Ibid., pp. 206-207.

100. Ibid., p. 299.


106. Ibid., p. 94.

107. Ibid., p. 94.


110. Ibid., p. 247.


113. Ibid., p. 471.

114. Ibid., pp. 150-153.


117. Ibid., 369.

118. Ibid., 296.

119. Ibid., 299. No date on MS.


122. Ibid., 294.
123. Ibid., 297; Connecticut, Public Records Colony, XIV:176.
128. See for example Larned, Windham, I:119; Cole, Tolland, 238.
133. Ibid., p. 97.
137. Ibid., 137.
138. Ibid., 294.
139. Ibid., 169.
143. Larned, Windham, II:424.
     (Hartford, Conn.: Hudson and Goodwin, 1808), p. 315.
145. H. V. Arnold, History of Danielson, Conn., to the Year 1882
     (Larimore, N.D., 1905), p. 21. The author is writing specifically
     of the falls in the Killingly area, but his generalization is accurate.
     Local histories abound with descriptions of saw and grist mill
     sites. Their communal importance is attested to by the early
     date after settlement such mills were established and by
     the special privileges often granted the mill operators. See, for
     example, Larned, Windham, I:28, 90.
146. Quoted in Larned, Windham, I:15.
150. Ibid., p. 666.
152. Bowen, Woodstock, p. 60.
154. Calkins, Norwich, p. 595; Joan Horst, To the Beat of a Drum: A History
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155. "Account Book of Silas Bundy," Connecticut State Library MS Collection,
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159. Samuel Peters, General History of Connecticut (1781), ed. Samuel Jarvis
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     of Hebron, Connecticut, ed. Kenneth Walter Cameron (Hartford:

161. Caslkins, Norwich, p. 17.

162. Larned, Windsor, I:541.


180. Lee, "Lisbon (Hanover)," pp. 16, 17.
181. Hale, "Lisbon (Newent)," p. 26 and passim.
186. Wales, Union, pp. 3, 4, 10.
187. Hott, Franklin, pp. 5, 6, 8.
188. Pease and Miles, Gazetteer, p. 7.
189. Ibid., p. 207.
190. Ibid., p. 208.
192. Ibid., pp. 209, 205.
193. Ibid., p. 209.
194. Ibid., pp. 203, 205.
195. Ibid., p. 212.


204. Connecticut State Library, *Connecticut Archives, "Lotteries and Divorces,"* series 1, I:29. See also document 30, in which the memorialists pledged to buy any tickets that remained unsold after five months if the lottery were granted.


206. Dwight, *Travels*, III:92. The date is unclear. This entry occurs on a journey made in 1800, but Dwight reworked his travel journals to preparing them for publication. He died in 1817, and this volume was not published until 1822.

207. *Norwich Courier*, 6 March 1822.

208. For examples, see *Norwich Courier*, 17 August 1825, 20 July 1825, 14 September, 1825, 30 November 1825.


212. *Norwich Courier*, 7 December 1825.


215. Ibid.
216. Ibid.
220. Conn. Light and Power Co. v. PCC, 557 F. 2d 349 (1977), see nn. 54-59, supra.
221. Cole, Tolland, p. 78.
222. Weigold, Tolland, p. 185.
225. Director of the Norwich and Worcester Rail-Road Company, Annual Report, 1847, pamphlet in Connecticut State Library ([Commonwealth of Massachusetts, 1847]), p. 3.
226. United States Army Corps of Engineers, Bridges over the Navigable Waters of the United States: Part 1, Atlantic Coast (Washington, D.C.):
227. Ibid., p. 105.
229. H. Doc. 996, 64th Cong., 1st sess.
230. Ibid., p. 5.
231. Ibid., p. 8.
232. Ibid., p. 8.
233. Ibid., p. 10.
234. Ibid., p. 3.
236. Ibid., p. 2.
237. Ibid., p. 11.


240. Ibid., p. 10.
241. Ibid., p. 9.

242. Ibid., p. 95.
243. Ibid., p. 102.
244. Ibid., p. 134.
245. Ibid., pp. 167-168.
246. Ibid., p. 224.


248. Ibid., p. 167. For a description of the Connecticut portion of this river, including details of obstacles such as bridges, dams, and rapids, see pp. 170-172.

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Industry
Lotteries and Divorces
Trade and Maritime Affairs
Travel, Highways, Ferries, Bridges, and Taverns.
Appendix I

Map of the Thames River Basin

Appendix II

CLAF v. FTC (1977)
Opinion of the
United States Court of Appeals
for the Second Circuit

Reported in 557 F. 2d 349
UNITED STATES COURT OF APPEALS
FOR THE SECOND CIRCUIT

No. 748—September Term, 1976.
(Argued April 4, 1977 Decided June 27, 1977.)

Docket No. 76-4212

THE CONNECTICUT LIGHT AND POWER Co.,
Petitioner,
v.
FEDERAL POWER COMMISSION,
Respondent.

Before:
OAKES, Circuit Judge,
WYNNER* and HOLDEN,** District Judges.

Petition to review orders of the Federal Power Commis-
sion, holding that the petitioner's four hydroelectric proj-
ects on the Housearika River are subject to the Commis-
sion licensing jurisdiction under the Federal Power Act.
Orders affirmed.

* Senior Judge of the United States District Court for the District of
Massachusetts, sitting by designation.
** Chief Judge of the United States District Court for the District of
Vermont, sitting by designation.
JAMES R. MCLINTOCK, JAMES L. ACKERMAN, RENARD J. KOBASKA of Day, Berry & Howard, Hartford, Conn., for Petitioner.


HOLDEN, District Judge:

This petition to review orders of the Federal Power Commission was brought by Connecticut Light and Power Company (CL & P). The petitioner challenges the authority of the Commission to license four hydroelectric projects on the Housatonic River as it flows through the State of Connecticut. The petitioner is joined in this effort by the Candlewood Lake Authority as an intervenor. The Commission, by its orders of May 24, 1976, affirmed the initial decision of the administrative law judge that the projects are located on navigable waters of the United States within the meaning of Section 3(8) of the Federal Power Act, 16

1 The Candlewood Lake Authority is a quasi-governmental agency comprised of five towns bordering Candlewood Lake, which is a large artificial lake that forms the upper reservoir of the Barkley River Project. The area around the lake is a well-developed recreational and residential community. The Authority has interceded on the ground that assertion of FPC licensing jurisdiction would affect the interests of the member towns and of the lake itself by the proposed impoundment of a recreational project. Section 3(8) of the Act, 16 U.S.C. § 796(8), requires that all projects licensed "shall be such as in the judgment of the Commission will be best adapted to a comprehensive plan . . . for other beneficial public uses, including recreational purposes . . . ." The Authority also claims that assertion of Commission licensing jurisdiction would involve a taking of the local governmental functions of a recreational area by a private power company and a federal energy agency. The intervenor joins the petitioners in their opposition to the assertion of licensing jurisdiction by the Commission and in their argument that the federal courts fail to support the finding that the Housatonic River was or is navigable. Candlewood Lake Authority makes essentially the same claims as opposed as does the petitioner.

U.S.C. § 796(8) and that all projects affect the interest of interstate commerce within the meaning of Section 23(b) of the Act, 16 U.S.C. § 817. Application for rehearing was denied by the Commission on July 23, 1976.

2 16 U.S.C. § 796(8) provides as follows:

The words defined in this section shall have the following meaning, for purposes of this chapter, to wit:

(8) "Navigable waters" means those parts of streams or other bodies of water over which Congress has jurisdiction under its authority to regulate commerce with foreign nations and among the several States, and which either in their natural or improved condition substantially contribute, as a navigation route for vessels, to the commerce of the United States. Such waters shall not include areas of standing water, ponds, lakes, or bodies of water which are not connected with a navigable river or stream, but so far as said water is connected with a navigable river or stream, shall be deemed to be a part of such river or stream.

3 16 U.S.C. § 817 provides as follows:

§ 817. Projects not affecting navigable waters; necessity for federal license.

It shall be unlawful for any person, State, or municipality, for the purpose of developing electric power, to construct, operate, or maintain any dam, water conduit, reservoir, power house, or other works incidental thereto across, along, or in any of the navigable waters of the United States . . . , except under and in accordance with the terms of a permit or valid existing right-of-way granted prior to June 10, 1930, or a license granted pursuant to this chapter. Any person, corporation, or municipality intending to construct a dam or other project works across, along, over, or in any such stream or part thereof, other than those defined in this chapter as navigable waters, and over which Congress has jurisdiction under its authority to regulate commerce with foreign nations and among the several States, shall before such construction:

file declaration of such intention with the Commission; thereafter, the Commission shall cause immediate investigation of such proposed construction to be made, and if upon investigation it shall find that the interests of interstate or foreign commerce would be affected by such proposed construction, shall not construct, maintain, or operate such dam or other project works until it shall have applied for and shall have received a license under the provisions of this chapter. If the Commission shall not so find, and if any

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The source and headwaters of the Housatonic River are in western Massachusetts. The river flows a total distance of 132 miles and enters Connecticut 83 miles above the mouth where it enters Long Island Sound at Stratford, Connecticut. From the Massachusetts-Connecticut state line the river flows southerly to Balls Bridge, 52.9 miles upstream from Stratford, thence southerly to the tidewater at the twin cities of Shelton and Derby, 13.3 miles upstream, where the tidal reach of the river extends southerly to the mouth at Stratford.1

The four projects under review are owned and operated by the CL & P: Balls Bridge, original construction in 1903; Rocky River, 44.3 miles upstream, erected in 1929; Shepaug, 30 miles upstream and constructed in 1953; and Stevenson, 19.3 miles upstream, constructed originally in 1919, but enlarged in 1936. Rocky River is a seasonal pumped-storage hydroelectric facility; the other three projects are run-of-river hydroelectric facilities.

After inquiry by the Commission concerning whether CL & P proposed to file applications to license the project, and a subsequent communication proposing a shortened license term unless applications were promptly filed, CL & P filed notices and applications to license the projects.2

The public lands or reservations are affected, permission is granted to erect a dam and other project works in such stream and compliance with State laws. (June 10, 1929, ch. 323, § 25(a), 41 Stat. 1093; June 26, 1929, ch. 675, § 17, 42 Stat. 488.)

1 Connecticut Light & Power's description of the Housatonic River is in its initial brief, adopted by the Administrative Law Judge in his decision (Joint Appendix, p. 19).

2 The Housatonic River has its source in western Massachusetts and enters Connecticut at Mile 83.5. From the Massachusetts-Connecticut state line, the river flows southerly through Connecticut to Balls Bridge (Mile 52.9) and thence southerly to the tidewater at the twin cities of Shelton and Derby at Mile 13.2. From Shelton and Derby, the tidal reach of the river extends southerly to its mouth where the Housatonic River enters Long Island Sound at Stratford, Connecticut, approximately forty miles east of the City of Bridgeport.

applied under protest for licenses for Balls Bridge, Rocky River, and Shepaug in 1906 and for Stevenson in 1907. On December 27, 1973, following this court’s decision in Parrington River Power Co. v. F.P.C., 455 F.2d 86 (2d Cir., 1972), CL & P filed notice of withdrawal of the applications, contending that the Commission lacked licensing jurisdiction over the projects. The proceedings now under review were ordered to be conducted by the Presiding Administrative Law Judge to determine disputed questions of fact on the issue of Commission’s licensing jurisdiction over the four projects. After extended hearings and a detailed report of the facts, the law judge concluded that Housatonic River constituted navigable waters as defined in the Federal Power Act and all projects are subject to the licensing jurisdiction of the Federal Power Commission. The correctness of that decision is the question for review.

Res Judicata and Estoppel

At the outset we are called upon to consider the petitioner’s claim that the Commission is barred by the operation of res judicata and collateral estoppel from finding the Housatonic navigable. The claim is based on a 1932 order of the FPC in Electric Power Inc., 11 F.P.C. 1568, following the declaration of intention to construct the Shepaug project, filed by the CL & P’s predecessor.

The first sentence of Section 23(h) makes it unlawful for any person, state or municipality to construct a dam to develop electric power in any of the navigable waters of the United States except by a license granted under the Federal Power Act. This provision is followed by the provision that any person, state or municipality intending to construct a dam or other project in any stream "other than
those defined in this chapter as navigable waters, and over which Congress has jurisdiction, under its authority to regulate commerce—shall before such construction the power for the issuance of a license, as described in the third section of Section 195(b)(1) provide;

If the commission shall find that the project will be in the public interest and the public welfare, the license, at the discretion of the said electric power company, and over which Congress has jurisdiction, under its authority to regulate commerce, shall before such construction the power for the issuance of a license, as described in the third section of Section 195(b)(1) provide; or such dam or other project works in such stream upon completion with State laws.

The commission shall not find as an electric power company, the commission determined, that the power for the issuance of a license, as described in the third section of Section 195(b)(1) provide; or such dam or other project works in such stream upon completion with State laws.

After considering the findings, the commission determined, that the power for the issuance of a license, as described in the third section of Section 195(b)(1) provide; or such dam or other project works in such stream upon completion with State laws.

The commission determined, that the power for the issuance of a license, as described in the third section of Section 195(b)(1) provide; or such dam or other project works in such stream upon completion with State laws.

Hence it is, and hereby is, declared that the power for the issuance of a license, as described in the third section of Section 195(b)(1) provide; or such dam or other project works in such stream upon completion with State laws.
Federal Trade Commission v. Motion Picture Advertising Service Co., Inc., 344 U.S. 392, 398 (1933) (issue of unfair competition not controlled by prior administrative determination as to conspiracy to restrain trade).

CL & IP advance the further argument that the 1932 declaration of intention to construct the Sheepanp project afforded the opportunity to litigate the issue of navigability. Hence it is urged that we are precluded from consideration of the issue in the context of the licensing applications for all projects on the river, by operation of collateral estoppel. The argument is not persuasive. The doctrine is operative only as to facts that were actually litigated and decided. Facts which might have been decided, but were not, are not precluded. Last Chance Mining Co. v. Tyler Mining Co., 157 U.S. 683, 687 (1895); Restatement, Judgments § 68.

Nor are we convinced that the findings issued in consequence of the declaration of intention by Electric Power, Inc. to construct the Sheepanp project, bar the Commission's reconsideration of the effect of the post-1935 construction on interstate commerce. At the time of the 1932 determination the Commission did not have the benefit of the enlightenment on the expanded jurisdictional base that was subsequently provided by the Supreme Court in Federal Power Commission v. Union Electric Co. (Taum Sauk), 381 U.S. 90 (1965).7

7 In Fenn Rock the Court stated: The scope of this language is not restricted by the earlier clause in § 24(1) limiting the effort to requirements to projects on navigable waters 'over which Congress has jurisdiction under its authority to regulate commerce that is tributary of river systems accumulating supervisory power to protect or improve downstream navigability or water resources generally. This language merely designates those who must file a declaration of intention—those who would breathe a water power project on a navigable stream within the jurisdiction of Congress are required to declare their intention so that the Commission may determine the necessity for a license. Congress thus

The Commission's determination of lack of interstate effect as to Sheepanp did not reach the question of navigability. Its conclusion, that commerce was not affected, did not constitute permission to maintain the project license-free in perpetuity. It is contrary to the purpose of the Act, that "a determination of lack of effect on commerce would forever悬 the Commission of jurisdiction . . ." Nautila Power and Light Co. v. Federal Power Commission, 384 F.2d 290, 210 (4th Cir. 1967) (Sobeloff, J.).

Navigability

Since the question of the navigability of the Housatonic River is not precluded by the Commission's prior findings on the 1932 declaration of Electric Power, Inc., we turn to the record to determine whether the Commission's decision on the prime issue is supported by substantial evidence. Such is the standard of review prescribed in Section 335 of the Act. (16 U.S.C. § 825b (b)). E.g. Gasawville Utilities Department v. Florida Power Corp. 402 U.S. 515 (1971); Rican Hudson Preservation Conference v. Federal Power Commission, 450 F.2d 467 (2d Cir.), cert. denied 407 U.S. 926 (1972).

The report of the administrative law judge attributes the navigability of the Housatonic to several factors: its past and present suitability for use as a hostable water and the history of the river in the transport of logs from upstream logging operations to downstream markets. The appellant does not challenge the navigability of the river from Shelton Dam, 12.5 miles upstream, to Long Island Sound. The question is the substantially of the evidence

prohibits to invoke its full authority over commerce, without qualification, to determine what projects on navigable streams are required to be licensed. See U.S. 90-97 (reductions omitted).
concerning the navigability of the Housatonic from Bulls Bridge, some 53 miles upstream from the mouth, to Otter Rock, 33 miles to the south.

The evidence is replete with historical material which records transportation on the Housatonic (since 1840 the Housatonic) by rafts, canoes and small boats from colonial days to recent times. And there is historical data of use of the river from as far north as Pittsfield, Massachusetts, to Long Island Sound. The record contains historical documentation of the fact that the river was used for the navigation of boats, rafts and other "sumptuous" craft for access to the Indian trading post established at Goodyear Island below New Milford. There are other historical writings that report the Indians in the Housatonic Valley "used the river as a highway to the shores of the Sound." The administrative judge further reported evidence of hunting by small craft on the Housatonic. Some of such testimony was elicited from witnesses presented by CL & P and the intervenor.

The Commission's affirmative determination of navigability does not rest entirely on the evidence of boatable navigation. The resolution of the issue is also founded on evidence of flotation of logs incident to logging operations along the Housatonic.

There is a persuasive historical account written by a reputable historian, contemporary to the events recorded, which states:

At the commencement of the rise of the waters in the spring, thousands of logs of pine and hemlock have been thrown into this river, and floated down its current from Great Barrington and Sheffield [Massachusetts] for years, over the falls at Canaan, to New Milford and Derby, where they have been converted into boards, planks, shingles, etc., for market in Connecticut and New York. The rise of the water has commonly carried them safely over the rocks in the stream. Their

---

10 Two Centuries of New Milford, Connecticut, prepared under the direction of the historical committee of citizens of New Milford, Grafton Press, New York, 1907, contains an historical record (Page 1725) of a recently married couple who passed their "Honeymoon"—in a small boat and punted up the (Green) river this being at the time, the only means of conveying heavy articles to the settlements above.

12 The administrative law judge reported the evidence of recent navigation by lock as follows:

(1) Transportation by boats. The record is not wholly devoid of contemporary or recent events, nor of firsthand accounts, and it may be useful to begin with these.
passage over the Falls has often been witnessed with amazement. This trade has carried a very great portion of the pine timber from the south part of the County. (Emphasis in original). 13

The Commission found this historical account to be confirmed by various historical records and state papers, including two enactments by the Connecticut General Assembly in the late eighteenth and early nineteenth centuries. The earliest of these authorized the clearing of rocks and other obstructions in a stretch of the river from New Town (mile 20) to a point above the Great Falls at New Milford to aid navigation and to construct locks at some points—

13 Entry written by the Reverend Chester Dewey for the History of the County of Berkshire, published in 1829.

The recollections of Frank Shows, a long-time resident of the Hoosic in the 19th century, constituted further evidence of the rafting of timber during the spring floods. In a published speech by Samuel Church in 1831 in Salisbury, Connecticut, the creation of a paper mill "at the great falls of the Hoosic" was referred to. Mr. Church, speaking at the 100th anniversary of the First Annual Town Meeting of the Town of Salisbury, noted that an extensive lumber business had been entered around 1754; "Pine timber in large quantities, and of excellent quality, was by the spring floods annually drifted down the river from the town above..."

In a 1726 deed conveyed by the Indian, Waramaug, to one Benjamin Franklin and his associates and recorded in the office of the Secretary of State of the State of Connecticut, a portion of the Hoosic River (formerly the Stratford Great River) north of New Milford was referred to as the "Moss Swamp." The deed expressly granted the right to the "use and benefit of the said Great River to pass and repass in at any time and at all times with Rafts tree long (sic) or what Else so ever..." Referring to the conveyance in his History of Connecticut, Connecticut, published in 1826, Edward C. Stearns, D.D., stated that "(The Moss Swamp was so named because timber for masts was there cut and floated down the river.)"

There is also reference to Moss Swamp in the history of the exploits of Mathew Lyon. They Found A Way by Irving Hunt Berry and William H. Currier, 1885, Hartford: Stephen Daye Press.

"Provided nevertheless that nothing in this Act be construed in the least degree to affect the rafting of Timber and Lumber down the present Bed or Channel of said River and the Fishing thereof." 14 The subsequent enactment of May 1907 extended prior legislation "regulating the floating of logs and other timber, shingles and staves down the Connecticut river... to the floating of logs, lumber, shingles and staves down the Otsatunkic River." Statute Laws of the State of Connecticut, Book 1, 1890.

The Commission's reliance on historical data and ancient documents is legally justified. Such reference is commonly made in proceedings where navigability is in issue. The objection that the evidence accepted by the administrative judge is impermissible hearsay is unavailing. Evidence contained in public records and reports, recorded deeds affecting interest in real property and learned historical treatises are exceptions to the hearsay rule. Federal Rules of Evidence 803 (5)(14)(18)(20); 5 Wigmore, Evidence §§1597-1598. The importance of such evidence in proceedings under the Federal Power Act was observed by Judge Bazelon in Montana Power Co. v. Federal Power Commis sion, 150 F.2d 491, 498 (D.C. Cir. 1945):

[It] is settled that historical works generally considered authentic are admissible in evidence, especially in cases such as this one which must delve into the relatively ancient and obscure origins of commerce on the nation's rivers. (Footnote omitted). At any rate, we do not think the hearsay rule is applicable to administrative proceedings, so long as the evidence upon which an order is ultimately based is both substantial and has probative value.

It is so here; the instant proceedings are well within the pattern of Montana Power.\textsuperscript{13}

The Commission recognized that the evidence of navigability was "not overwhelming." This does not drain it of substance. Despite the petitioner's efforts to discredit the reliability of its sources, the evidence is persuasive against the negative approach adopted by petitioner's experts.

The main effort of the petitioner's resistance to the Commission's decision on navigability of the Housatonic is based on the physical characteristics and topography of the river bed. We are referred to the steep gradient of the flow of the river in Connecticut and the numerous rapids, waterfalls and boulders which interdict any significant commerce on regular travel. And it is said that its irregular flow from spring floods to low water is inadequate to support commercial use.

To appraise the evidence of navigability on the natural condition only of the waterway is erroneous. Its availability for navigation must also be considered. "Natural and ordinary conditions" refers to volume of water, the gradients and the regularity of the flow. A waterway otherwise suitable for navigation is not barred from that classification merely because artificial aids must make the highway suitable for use before commercial navigation may be undertaken. (Footnote omitted).

\textsuperscript{13} The petitioner attacks the historical evidence of navigation on the Housatonic that underlies the formation of the Union on the premise that the underlying grant of power in the Commerce Clause recognizing commerce among the several states. We think the Commission adequately disposed of the objection on the strength of The Montello, 87 U.S. 409 (20 Wall) (1874). There the use of the Fox River in the necklace of lakes in the northwest for trade after the exploration of the Mississippi and its tributaries by Marquette and Joliet were deemed important to the court as the basis of navigability.
was undefined and not made in the sense of definition provided in Section 3(8) of the Act.

Against this, the Commission concluded the substantial evidence of use of the Housatonic for boating and the flotation of logs was more convincing. "(T)he use to which streams may be put vary from the carriage of ocean liners to the floating out of logs..." Appalachian Power Co. supra at 405. And the lack of commercial traffic does not preclude "a conclusion of navigability where personal or private use by boats demonstrates the availability of the stream for the simpler types of navigation." Id. at 416, citing United States v. Utah, 283 U.S. 64, 82 (1931).

The Commission's findings cannot be overturned because the river was navigated primarily at early stages in the economic development of western Connecticut. Nor is its determination undermined because extensive improvement for purposes of river traffic became impracticable by reason of the availability of more efficient means of interstate transport. Rochester Gas and Electric Corp. v. Federal Power Commission, 344 F.2d 594, 597 (1965). "When once found to be navigable, a waterway remains so." United States v. Appalachian Power Co., supra, 311 U.S. at 406.

As we have seen from that which is written above, substantial evidence was presented of the historic use of the Housatonic from its headwaters to Long Island Sound. The Commission's reliance on this proof is sound in fact and well founded in law. The logging factor on the issue of navigability was recognized by the Supreme Court in Appalachian Power Co., supra at 411 and in St. Anthony Water Power Co. v. St. Paul Water Commissioners, 163 U.S. 340, 359 (1897). More recently it has had dominant effect. See State of Wisconsin v. Federal Power Commission, 214 F.2d 344, 347 (7th Cir. 1954); Wisconsin Public Service Corp. v. Federal Power Commission (Tennahawk). 147 F.2d 745, 747 (7th Cir.), cert. denied 323 U.S. 751 (1944). The total record presented in this review revisits the scenes and struggles of the early settlers along the historic Housatonic Valley, the river's part in the economic development of the region it serves and the complex physical characteristics, including gradient, the nature of its flow and physical obstruction. The fabric of the proof sustains the ultimate finding of the Commission that the Housatonic River from the site of the Falls Bridge project to Long Island Sound was used and is suitable for transporting property in interstate and foreign commerce within the meaning of the Federal Power Act.

Since we affirm the Commission's jurisdiction on the primary issue of navigability, it is not essential to reach the secondary and independent jurisdictional base of its authority on the effect of the Shepaug and Stevenson projects on interstate commerce under Section 3(8) of the Act.

The order of the Commission is affirmed.

16 This doctrine has evolved from the settled concept that the floating of logs on interstate rivers constitutes interstate commerce. Enchomino River Co. v. Minerside, 293 U.S. 406 (1935); Champion Laundry Co. v. Beaulac, 299 U.S. 346 (1927); St. Anthony Falls Power Co. v. St. Paul Water Commissioners, supra.
Appendix III

Partial List of Man-Made Obstructions on the Rivers of the Thames River Basin
Including the Quinebaug, Shetucket, and Some of Their Tributaries

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Location</th>
<th>Mile from mouth</th>
<th>Owner</th>
<th>Purpose for which used</th>
<th>Head of dam in feet</th>
<th>Elevation</th>
<th>Flood</th>
<th>Cost of dam</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>59</td>
<td>Warehills</td>
<td>11.1</td>
<td>A. Thistle Co.</td>
<td>Sawmill</td>
<td>139.5</td>
<td>139.5</td>
<td>1,900</td>
<td>3,900</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Osceola</td>
<td>10.4</td>
<td>J. D. House</td>
<td>Sawmill</td>
<td>134.0</td>
<td>134.0</td>
<td>1,050</td>
<td>2,050</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>Otsego</td>
<td>12.6</td>
<td>A. Thistle Co.</td>
<td>Mill</td>
<td>135.2</td>
<td>135.2</td>
<td>1,200</td>
<td>2,400</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Lakeville</td>
<td>13.0</td>
<td>J. D. House</td>
<td>Mill</td>
<td>135.2</td>
<td>135.2</td>
<td>1,200</td>
<td>2,400</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Orange</td>
<td>13.5</td>
<td>J. D. House</td>
<td>Mill</td>
<td>135.2</td>
<td>135.2</td>
<td>1,200</td>
<td>2,400</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Colchester</td>
<td>14.0</td>
<td>J. D. House</td>
<td>Mill</td>
<td>135.2</td>
<td>135.2</td>
<td>1,200</td>
<td>2,400</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Enders</td>
<td>14.5</td>
<td>J. D. House</td>
<td>Mill</td>
<td>135.2</td>
<td>135.2</td>
<td>1,200</td>
<td>2,400</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# List of water-power developments on Quabbin River (Thames River Basin)

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Location</th>
<th>Mile from mouth</th>
<th>Owner</th>
<th>Purpose for which used</th>
<th>Horse power</th>
<th>Cost in $</th>
<th>Horse power (electric power)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>Quabbin</td>
<td>0.32</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
<td>31.6</td>
<td>40,950</td>
<td>2,000,000</td>
<td>Slingman races: Canal in French River shore Dam No. 38.</td>
</tr>
<tr>
<td>42</td>
<td>Pawtucket</td>
<td>0.57</td>
<td>The Whiting Co.</td>
<td>Electric power</td>
<td>22.6</td>
<td>30,920</td>
<td>2,000,000</td>
<td>Slingman races: Canal in French River shore Dam No. 38.</td>
</tr>
<tr>
<td>43</td>
<td>Narragansett</td>
<td>0.84</td>
<td>The Whiting Co.</td>
<td>Electric power</td>
<td>19.9</td>
<td>27,550</td>
<td>1,700,000</td>
<td>Slingman races: Canal in French River shore Dam No. 38.</td>
</tr>
<tr>
<td>44</td>
<td>Kingston</td>
<td>1.02</td>
<td>The Whiting Co.</td>
<td>Electric power</td>
<td>17.9</td>
<td>22,510</td>
<td>1,300,000</td>
<td>Slingman races: Canal in French River shore Dam No. 38.</td>
</tr>
<tr>
<td>45</td>
<td>New London</td>
<td>1.19</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
<td>16.9</td>
<td>20,910</td>
<td>1,000,000</td>
<td>Slingman races: Canal in French River shore Dam No. 38.</td>
</tr>
<tr>
<td>46</td>
<td>Old North</td>
<td>1.34</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
<td>15.9</td>
<td>17,490</td>
<td>900,000</td>
<td>Slingman races: Canal in French River shore Dam No. 38.</td>
</tr>
<tr>
<td>47</td>
<td>Westport</td>
<td>1.51</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
<td>14.9</td>
<td>14,910</td>
<td>600,000</td>
<td>Slingman races: Canal in French River shore Dam No. 38.</td>
</tr>
<tr>
<td>48</td>
<td>Westfield</td>
<td>1.67</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
<td>13.9</td>
<td>12,810</td>
<td>400,000</td>
<td>Slingman races: Canal in French River shore Dam No. 38.</td>
</tr>
<tr>
<td>49</td>
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<td>1.84</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
<td>12.9</td>
<td>11,290</td>
<td>200,000</td>
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<td>50</td>
<td>Westfield</td>
<td>2.00</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
<td>11.9</td>
<td>9,510</td>
<td>100,000</td>
<td>Slingman races: Canal in French River shore Dam No. 38.</td>
</tr>
<tr>
<td>51</td>
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<td>2.16</td>
<td>The Connecticut Light &amp; Power Co.</td>
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<td>7,790</td>
<td>50,000</td>
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<td>Electric power</td>
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<td>20,000</td>
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<td>Westport</td>
<td>2.48</td>
<td>The Connecticut Light &amp; Power Co.</td>
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<td>4,410</td>
<td>20,000</td>
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<td>54</td>
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<td>Westport</td>
<td>2.80</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
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<td>1,220</td>
<td>20,000</td>
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</tr>
<tr>
<td>56</td>
<td>Westport</td>
<td>2.96</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
<td>5.9</td>
<td>670</td>
<td>20,000</td>
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</tr>
<tr>
<td>58</td>
<td>Westport</td>
<td>3.28</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
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<td>100</td>
<td>20,000</td>
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<td>20,000</td>
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<td>Westport</td>
<td>3.60</td>
<td>The Connecticut Light &amp; Power Co.</td>
<td>Electric power</td>
<td>1.9</td>
<td>0</td>
<td>20,000</td>
<td>Slingman races: Canal in French River shore Dam No. 38.</td>
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</tbody>
</table>

# List of water-power developments on Nashaqu and Still Rivers (Thames River Basin)

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Location</th>
<th>Mile from mouth</th>
<th>Owner</th>
<th>Purpose for which used</th>
<th>Residual</th>
<th>Horse power</th>
<th>Cost in $</th>
<th>Remarks</th>
</tr>
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<tbody>
<tr>
<td>61</td>
<td>Nashaqu</td>
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<td>City of Winsted, Vt.</td>
<td>Public water supply</td>
<td>4.9</td>
<td>182,900</td>
<td>440,000</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Still River</td>
<td>0.31</td>
<td>City of Winsted, Vt.</td>
<td>Public water supply</td>
<td>4.9</td>
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<tr>
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<td>0.47</td>
<td>City of Winsted, Vt.</td>
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<td>4.9</td>
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<td>440,000</td>
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</tr>
<tr>
<td>64</td>
<td>Still River</td>
<td>0.63</td>
<td>City of Winsted, Vt.</td>
<td>Public water supply</td>
<td>4.9</td>
<td>182,900</td>
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<td>0.79</td>
<td>City of Winsted, Vt.</td>
<td>Public water supply</td>
<td>4.9</td>
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<tr>
<td>66</td>
<td>Still River</td>
<td>0.95</td>
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<td>182,900</td>
<td>440,000</td>
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</tr>
<tr>
<td>67</td>
<td>Still River</td>
<td>1.11</td>
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<td>440,000</td>
<td></td>
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<tr>
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<td>Still River</td>
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<td>City of Winsted, Vt.</td>
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<td>182,900</td>
<td>440,000</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>Still River</td>
<td>1.43</td>
<td>City of Winsted, Vt.</td>
<td>Public water supply</td>
<td>4.9</td>
<td>182,900</td>
<td>440,000</td>
<td></td>
</tr>
</tbody>
</table>

# List of water-power developments on Eastford and Whiting Rivers (Thames River Basin)

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Location</th>
<th>Mile from mouth</th>
<th>Owner</th>
<th>Purpose for which used</th>
<th>Horse power</th>
<th>Cost in $</th>
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</tr>
</thead>
<tbody>
<tr>
<td>70</td>
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<td>0.00</td>
<td>Eastford Water Co.</td>
<td>Public water supply</td>
<td>4.9</td>
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<td>440,000</td>
</tr>
<tr>
<td>71</td>
<td>Whiting</td>
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<td>Whiting Water Co.</td>
<td>Public water supply</td>
<td>4.9</td>
<td>182,900</td>
<td>440,000</td>
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# List of water-power developments on Thompson River (Thames River Basin)

<table>
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<tr>
<th>Serial No.</th>
<th>Location</th>
<th>Mile from mouth</th>
<th>Owner</th>
<th>Purpose for which used</th>
<th>Horse power</th>
<th>Cost in $</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
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<td>Thompson</td>
<td>0.00</td>
<td>Thompson Water Co.</td>
<td>Public water supply</td>
<td>4.9</td>
<td>182,900</td>
<td>440,000</td>
</tr>
</tbody>
</table>
Appendix IV

Circular Letter Sent to Connecticut Towns
in January 1800

by the Connecticut Academy of Arts and Sciences

Report of Connecticut Towns

In January 1800, the Connecticut Academy of Arts and Sciences sent a circular letter to each town in Connecticut. With the answers to thirty-two questions, they proposed to publish a Statistical History of Connecticut.

Unfortunately, only three appeared: A Statistical Account of Several Towns in the County of Litchfield, by James Morris, which included Litchfield, Washington and Norfolk; A Statistical Account of Middlesex County, which included Middletown, Chatham, Haddam, East Haddam, Saybrook and Durham; and A Statistical Account of the City of New Haven, by Timothy Dwight.

For one reason or another the entire project was not completed. Some thirty manuscripts, replies by various persons, are now in the possession of The Connecticut Historical Society. The Acorn Club, as a contribution to Connecticut history, proposes to publish these manuscripts, and if demand warrants, all those now extant will be printed.* Information on the series and additional copies of this circular letter ($50 each) may be secured by addressing The Connecticut Historical Society, Hartford 3, Connecticut.

* In the interest of economy, long “essays” and superior figures are not reproduced and spelling in most instances is modernized, without disturbing the original flavor or intent.
To the Governor, Assembly, etc.,

The subject of the collection and preparation of useful knowledge, and of promoting the manufactures of the country, claims and requires your attention, as the key to the prosperity and well-being of the whole community. In the present situation of the nation, the cultivation of agriculture, commerce, and manufactures, are essential to our national prosperity and peace. Therefore, I am authorized by the General Assembly of the State of Connecticut, to submit to you, the following:

1st. The importance of the collection and preparation of useful knowledge, and of promoting the manufactures of the country. This can be achieved by the establishment of a Society, which shall have for its object the collection and publication of useful knowledge, and the encouragement of manufactures.

2nd. The necessity of the settlement of the western territories. The Western states are rich in natural resources, and their settlement can greatly contribute to the wealth and prosperity of the nation.

3rd. The importance of the discovery and improvement of new minerals. The nation's wealth and progress are dependent on the discovery and improvement of new minerals.

4th. The necessity of the improvement of our waterways. The improvement of our waterways is essential to the commerce and transportation of the nation.

5th. The importance of the agricultural progress. The development of agriculture is crucial to the well-being of the nation.

6th. The need for the establishment of schools and libraries. The establishment of schools and libraries is essential to the education and cultural development of the nation.

7th. The importance of the improvement of our forests. The improvement of our forests is crucial to the protection of the nation's natural resources.

8th. The necessity of the establishment of a system of schools. A system of schools is essential to the education and cultural development of the nation.

9th. The importance of the improvement of our roads. The improvement of our roads is crucial to the commerce and transportation of the nation.

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10th. Manures; the best for particular soils, and the best time and mode of applying them—a stable manure, lime, lime stone, shells, ashes, salt, compost, marl, swamp, creek and sea mud, plaster of paris, and sea weed—the preparation best suited for particular crops—the best means of increasing manures—the effects of irrigation or watering lands.

11th. The best seed time and harvest time—best time and modes of preparing lands for seeding, best modes of exterminating weeds and of preserving grains from insects. The effects of a change of seed.

12th. Mode of cultivation whether by oxen or horses—the expense, advantages and disadvantages of each—Number of teams—the number and kinds of wagons, carts, ploughs, harrows, drills, winnowing and threshing machines now in use—improvements in them both as to utility and cheapness. Fences; the materials and mode of erecting them, kinds most used—increase or decrease of timber for fencing—the best kinds of treer or shrubs for hedges, and the means of propagating them.

13th. Uncommon fruits and garden vegetables, native or imported—The soils on which particular fruits and vegetables best flourish, and the best modes of cultivating them—quantity of cider made annually—quantity exported—best mode of making, improving and preserving it; best mode of preserving apples and other fruits during the winter—improvements by ingrafting and inoculation—best time and mode of pruning—state of gardening.

14th. Number of tenants on leased lands; quantity of lands leased and the rent; the state of cultivation of leased lands compared with that in the hands of proprietors. Emigrations from the Town or Society. The number of persons convicted of capital crimes, and instances of suicide, within twenty years, or since the Town was settled, and whether committed by natives or foreigners. The time when pleasure carriages were first used.

15th. Number of sheep and swine, quantity of pork, beef, butter and cheese annually sent to market; the best mode of multiplying, improving, feeding and fattening sheep, swine, neat cattle and horses; their diseases, description of them, and the best mode of preventing and curing them.

16th. Manufactures; distinguishing the kinds and quantity made in families and in manufactories; the market for them. The history of any useful manufacture including its increase and decline, and the causes.

17th. Breweries; time of their introduction—the kinds and quantity of beer made.

18th. Fisheries; the kinds, quantity and value of fish taken—best mode of curing them; the market. The years when shell and other fish have been unusually lean or sickly, and when they have declined, disappeared or perished, from causes known or unknown. The best mode of multiplying and preserving shell fish.

19th. Ship building; its increase or decline—harbors, depth of water, direction of the channels, obstruction, land marks and direction for entrance; the year when the first vessel was built, and the progress of trade. The means of facilitating transportation by land or water.

20th. Roads and Bridges; the present state of them, annual expence and mode of defraying it; description of bridges remarkable for elegance or utility; the best mode of securing bridges from the effects of frost, floods and sea worms; the kinds of timber not subject to be eaten by sea worms.

21st. Ferries; their situation, and whether public or private property—The places near them, where bridges may be erected, and probably made permanent.

22d. Wild animals, now or heretofore known; their increase or decrease, and from what causes—new species, migration and natural history of birds.

23d. Natural history of plants, their kinds, whether noxious or useful; new species, time of their introduction, their progress; effects of the barberry and other noxious plants, and the best modes of exterminating them.

24th. Places of public worship; their number, and the
denomination to which they belong—the rise of congregations and various sects, the names of the successive clergymen, the time of their settlement and exit—notice of any eminent clergymen; the salaries of clergymen and the funds by which religious worship is maintained.

25th. Academies and Schools; in what manner supported; number of winter and summer schools—the time they are kept in each year, whether by male or female instructors—number of scholars, salaries or wages of teachers; kinds of knowledge taught; improvements in the mode of instruction; prices of board and expences of schooling.

26th. Poor; their number, whether natives or foreigners; their former occupations, the expence of maintaining them, the mode best calculated to unite humanity with oeconomy in their support—the means by which they were reduced to want, or inability to labour.

27th. Free blacks; their number, vices and modes of life, their industry and success in acquiring property; whether those born free are more ingenious, industrious and virtuous, than those who were emancipated after arriving to adult years.

28th. Inns or Taverns—their number.

29th. Climate and Diseases; variations in seasons and in diseases from clearing lands, draining swamps and the like causes; the diseases most prevalent in high and low situations, near streams of running water, or marsh and stagnant water, on the north and south sides of hills and mountains, and on different soils; remarkable instances of diseases and mortality among animals of various kinds. Meteorological observations. Register of marriages, births and deaths, noting the sex, occupations, ages and diseases of those who die. Remarkable instances of longevity; the local situation—the occupation and the habits of life of those who arrive to a great age, as also their temper, whether cheerful or melancholy, quiet or discontented.

30th. Remarkable seasons or occurrences in the natural world, as tempest, rain, hail, snow, and inundations by which injury has been sustained, the time when they happened;

Every piece of information on the subject specified will contribute to the great object in view, and will be gratefully received by this Academy.

By order of the Academy,

SIMEON BALDWIN,
Recording Secretary.