

State of Vermont  
Water Resources Board

Central Vermont Railway, Inc.  
Replacement of **Failed** Bridge  
Section, Missisquoi River  
Sheldon, Vermont

10 V.S.A. 51024  
Findings of Fact,  
Conclusions of Law,  
and Order

Introduction

On August 29, 1984, the Department of Water Resources and Environmental Engineering issued Stream Alteration Permit SA-6-0055 to the Central Vermont Railway, Incorporated. This permit authorizes the reconstruction of a failed section of an existing railway bridge on the Missisquoi River at Sheldon Junction, Vermont.

On September 12, 1984, the Town of Sheldon appealed the issuance of Stream Alteration Permit SA-6-0055 under the provisions of 10-V.S.A. §1024(a). On September 25, 1984, the Vermont Water Resources Board appointed its Executive Officer, William Bartlett as a hearing referee to hear and determine all matters material or pertinent to this appeal. A public hearing on this appeal was conducted by the hearing referee on September 27, 1984 at Sheldon, Vermont. Appearances at this hearing were entered by the following parties:

- a) Central Vermont Railway, Incorporated
- b) Department of Water Resources and Environmental Engineering
- c) Town of Sheldon
- d) Fay and Etta Chadwick
- e) **Ryllis** Severance
- f) Betty Severance
- g) Carolyn & Raymond **Bushey**
- h) Richard Brouillette
- i) **Carlton McEnany**  
Paul Bouchard  
Marcel Kane,

During the course of this proceeding the following documents were entered into the record:

Exhibit #1: A form entitled "Application for Permission to Alter a Natural Stream" filed on behalf of the Central Vermont Railway, Incorporated by T. J. Fassett dated August 20, 1984.

**Exhibit #2:** A form entitled "Stream Alteration Investigation Report" dated September 16, 1984.

**Exhibit #3:** A series of three drawings entitled "Proposed Repair Work to Piers #1, 2, and 3 abutment" dated August 15, 1984 and further identified as Plans A, B, and C.

**Exhibit #4:** A letter dated July 16, 1984, addressed to the Central Vermont Railway from Robert J. Wernecke on behalf of DuBois and King, Incorporated.

**Exhibit #5:** Stream Alternation Permit #SA-6-0055 signed on behalf of the Department of Water Resources and Environmental Engineering by Barry Cahoon dated August 29, 1984.

**Exhibit #6:** An undated letter received on November 9, 1984, addressed to the Water Resources Board from the Town of Sheldon with an enclosed copy of page 7 of a document entitled "Flood Plain Information Missisquoi River - Black Creek - Tyler Branch, Sheldon, Vermont."

#### Findings of Fact

1. The bridge in question is an existing railroad bridge which spans the Missisquoi River at Sheldon Junction. The bridge was constructed in the early 1900's using a method of construction which cannot be duplicated using contemporary construction materials.
2. The existing bridge spans a distance of approximately 434 feet between the north abutment and the south abutment. The existing bridge is supported by **two existing instream** piers each of which is 13 feet in width. The failed section of the bridge spans a distance of approximately 142 feet:
3. The **bridge** serves a spur line of the Central Vermont Railway. For business reasons unrelated to the bridge, the Railway is considering petitioning for permission to abandon the **spur line** because it is not profitable.
4. The Railway proposes to repair the failed section in accordance with one of three alternative plans as shown by exhibit 3. Each plan is designed to make use of used bridge materials which would be **integrated** into the remaining portion of the existing bridge.
5. Each of the three plans **involves the** construction of additional piers and/or abutments in the Missisquoi River. Plan A calls for the construction of two additional piers, each five feet in width: Plan B calls for the construction of one additional pier, five feet in width and the **expansion** of the northerly abutment. Plan C calls for the construction of two additional piers, each five feet in width.

6. The use of Plan B is precluded by condition #2 of Stream Alteration Permit #SA-6-0055 (Exhibit #4) because "the low **steel**" on the replacement section would extend below the 100 year flood elevation of 347.7 **NGVD**.
7. Both natural **and man-made** obstructions to flood flows are affecting flooding and its impact in the vicinity of **the** bridge in question. Piers for bridges are one of many examples **of a** man-made obstructions. During floods such piers can, under some circumstances, "collect" various types of buoyant material such as ice, trees, brush and other debris. (Exhibit 6).
8. The potential impact of the proposed construction of two new piers **as envisioned** by Plans A & C was analyzed on behalf of the Railway by a registered professional engineer experienced in hydraulic analysis. That analysis (Exhibit #4) indicates that the addition of two piers, each five feet in width, would raise flood stages in a **fluvial** flood situation by approximately 0.1 inches. The same analysis, after **noting** that the evaluation of ice jam type floods is less definitive, predicts that the addition of two piers each five feet in width **would** raise flooding 0.1 foot in an ice jam condition. The analysis also concludes that piers spaced 40 to 50 feet apart **would** not significantly **obstruct** ice flows.
9. The hydraulic analysis (Exhibit 4) concludes that one or **two** additional five foot wide piers spaced as shown on any of the three **plans** (exhibit 3) would not significantly obstruct ice or other buoyant materials.
10. The primary **cause of** ice jam related flooding in the vicinity of the bridge is the change of gradient from being relatively steep **to being** relatively flat which occurs immediately upstream. The effect of this change is that ice **tends to** accumulate in ice jams in the vicinity of the bridge and periodic floods result.
11. The Town of Sheldon and many of the owners of property adjacent to the Missisquoi River in the vicinity of the **bridge** object to the construction of **any additional piers** in the **Missisquoi** River on the grounds that any added obstructions will increase the frequency and severity of flooding due to the ice jams.
12. The proposed construction **will disturb** a very limited portion of the stream bed and there is no evidence to show that it would not have any significant adverse impact on fish or **wildlife** habitat.

#### Conclusions of Law

1. The Central Vermont Railway bridge is located in Sheldon Junction, an area in **which the** public safety as well as the rights of **riparian** property owners is periodically affected.

due to both **fluvial** flooding and flooding attributable to the obstruction of buoyant materials, typically by the formation of ice jams due to **both** natural and man-made obstructions.

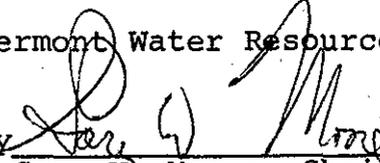
2. The primary cause of ice jam type flooding is natural obstructions.
3. The Central Vermont Railway bridge is one of several man-made obstructions in Sheldon Junction which further affects flooding to some degree.
4. The proposed reconstruction of a portion of the Central Vermont Railway bridge will not increase the existing flood hazard in Sheldon Junction and therefore will not affect the public safety in that regard or significantly damage the rights of **riparian property** owners.
5. **The proposed** reconstruction of a portion of the Central Vermont Railway bridge will not significantly damage fish or wildlife.,

Order

On the basis of the above Findings of Fact and Conclusions of Law the Water **Resources** Board affirms the decision of the Department of Water Resources regarding the issuance of Stream Alteration **Permit** #SA-6-0055 to the Central Vermont Railway Incorporated. The appeal of the Town of Sheldon is denied.

Done this 28th day of November, 1984, at Berlin, Vermont.

Vermont Water Resources Board

By   
 Gary W. Moore, Chairman

Board members participating:

William D. Countryman  
 William **Boyd Davies**  
 Catherine B. Rachlin  
 W. Byrd LaPrade

State of Vermont

Water Resources Board

Central Vermont Railway, 'Inc.  
Replacement of Failed Bridge  
Section, Missisquoi River  
Sheldon, Vermont

10 V.S.A. §1024  
Preliminary Findings of  
Fact

Introduction

On August 29, 1984, the Department of Water Resources and Environmental Engineering issued **Stream Alteration** Permit SA-6-0055 to the Central Vermont Railway, Incorporated. This permit authorizes the reconstruction of a failed section of an existing railway bridge on the Missisquoi River at Sheldon Junction, Vermont.

On September 12, 1984, the Town of Sheldon appealed the issuance of Stream Alteration Permit SA-6-0055 under, the provisions of 10 V.S.A. 51024(a). On September 25, 1984, the Vermont Water Resources Board appointed its Executive Officer, William Bartlett as a hearing referee to hear and determine all matters material or pertinent to this appeal. A public hearing on this appeal was conducted by the hearing referee on September 27, 1984 at Sheldon, Vermont. Appearances at this hearing, were entered by the following parties:

- a) Central Vermont Railway, Incorporated
- b) Department of Water Resources and Environmental Engineering
- c) Town of Sheldon
- d) Fay and Etta Chadwick
- e) Pyllis Severance
- f) Betty Severance
- g) Carolyn & Raymond Bushey
- h) Richard Brouillette
- i) **Carlton McEnany**
- j) Paul Bouchard
- k) Marcel Kane

During the course of this proceeding the following documents were entered into the record:

Exhibit #1: A form entitled "Application for Permission to Alter a Natural Stream" filed on behalf of the Central Vermont Railway, Incorporated by T. J. Fassett dated August 20, 1984.

**Exhibit #2:** A form entitled "Stream Alteration Investigation Report" dated September 16, 1984.

**Exhibit #3:** A series of three drawings entitled "Proposed Repair Workers #1, 2, and 3 abutment" dated August 15, 1984 and further identified as Plans A, B, and C.

**Exhibit #4:** A letter dated July 16, 1984, addressed to the Central Vermont Railway from Robert J. Wernecke on behalf of DuBois and King, Incorporated.

**Exhibit #5:** Stream Alteration Permit #SA-6-0055 signed on behalf of the Department of Water Resource's and Environmental / (Engineering by Barry Cahoon dated August 29, 1984.

#### Preliminary Findings of Fact

1. The bridge in question is an existing railroad bridge which spans the Missisquoi River at Sheldon Junction which was constructed in the early 1900's using a method of construction which cannot be duplicated using contemporary construction materials.
2. The existing bridge spans a distance of approximately 434 feet between the north abutment and the south abutment. The existing bridge is supported by two existing **instream** piers each of which is 13 feet in width. The failed section of the bridge spans a distance of approximately 142 feet.
3. Prior to its recent failure, the bridge serviced a spur line of the Central Vermont Railway. For business reasons unrelated to the bridge, the Railway is considering petitioning for permission to abandon the spur line because it is not profitable.
4. The, **Railway** proposes to repair the failed section in accordance with one of three alternative plans as shown by exhibit 3. Each plan is designed to **make** use of used bridge materials which would be integrated into the remaining portion of the existing bridge.
5. Each of the three **plans involves** the construction of additional piers and/or abutments in the Missisquoi River. Plan A **calls** for the construction of two additional piers, each five feet in width. Plan B calls for the construction of one additional pier, five feet in width and the expansion of the northerly abutment. Plan C calls for the construction of two additional piers each five feet in width.
6. The use of Plan **B** is precluded by condition #2 of Stream Alteration Permit #SA-6-0055, (Exhibit #4) because "the low steel" on the replacement section would extend below the 100 year flood elevation of 347.7 NGVD.
7. The potential impact of the proposed construction of two new piers as **envisioned** by Plans A & C was analyzed on behalf of the Railway by a registered professional engineer

experienced, in hydraulic analysis. That analysis (Exhibit, #4) indicates that the addition of two piers each five feet in width would raise flood stages in a fluvial flood situation by approximately 0.1 inches. The same analysis, after noting 'that the evaluation of ice jam type floods is less definitive, predicts that the addition of two piers each five feet in width would raise flooding 0.1 foot in -an ice jam condition. The analysis also concludes that piers, spaced 40 to 50 feet apart would not significantly obstruct ice flows.

8. The primary cause of ice jam related flooding in the vicinity of the bridge is the change of gradient which occurs immediately upstream. Here' the gradient changes from being relatively steep to being relatively flat. The effect of this change is that ice tends to accumulate and periodic floods result.
9. The Town of Sheldon and many of the owners of property adjacent to the Missisquoi River in the vicinity of the bridge object to the construction of any additional piers in the Missisquoi River on the grounds that 'any added obstructions will increase the frequency and severity of flooding due to the ice jams.
10. The proposed construction would not have any significant adverse impact on fish or wildlife habitat'.

The above Preliminary Findings of Fact are issued in accordance with 10 V.S.A. §905(c)(3) by the referee appointed by the Vermont Water Resources Board. All parties in interest to this proceeding, as identified above, have the opportunity to file exceptions to these findings, to request additional findings or request that a further hearing be held by the Vermont Water Resources Board. In order to be considered by the Water Resources Board any such exceptions or requests must be received by this office on or before November 14, 1984. All correspondence regarding this matter should be addressed to the Vermont Water Resources Board, State Office Building, Montpelier, Vermont 05602 (telephone 802-828-2871).

Done this 26th, day of October, 1984, at Montpelier, Vermont.

For the Vermont Water Resources Board



William A. Bartlett,  
Hearing Referee