STATE OF NEW HAMPSHIRE

CHAIRMAN
Martin P. Honigberg

COMMISSIONERS
Robert R. Scott

EXECUTIVE DIRECTOR
Debra A. Howland

PUBLIC UTILITIES COMMISSION
21 S. Fruit St., Suite 10
Concord, N.H. 03301-2429

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March 26, 2015

Debra A. Howland, Executive Director
New Hampshire Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, New Hampshire 03301

Re: DW 15-046: Pennichuck Water Works, Inc.
Petition for Authority to Issue Long-Term Debt
Staff Recommendation for Approval

Dear Ms. Howland:

On February 4, 2015, Pennichuck Water Works, Inc. (PWW) filed a petition with the Commission seeking authority to borrow a total of $3,500,000 in long-term debt, pursuant to RSA 369. The source of the proposed borrowing is the Drinking Water State Revolving Loan Fund (SRF) administered by the New Hampshire Department of Environmental Services (NHDES). Included with PWW's petition is the direct testimony of Larry D. Goodhue, PWW's Chief Financial Officer, and John J. Boisvert, PWW's Chief Engineer. The proceeds of the financing will be used to install approximately 6,100 linear feet of 36-inch diameter transmission main from Al Paul Lane to the Harris Dam penstock in PWW's core system, referred to as the Raw Water Transmission Main Project (project). The purpose of the project is to provide a fully-independent secondary source of raw water from the Merrimack River to PWW's water treatment facility. Additional information related to the original filing was provided in response to Staff data requests, and those responses are attached to this correspondence. After review of the filing and the attached discovery, Staff recommends that the Commission approve PWW's request subject to the filing of documentation showing evidence of shareholder approval.

According to counsel, under RSA 369:1, public utilities engaged in business in this state may issue evidence of indebtedness payable more than 12 months after the date thereof only if the Commission finds the proposed issuance to be "consistent with the public good." Analysis of the public good consideration involves looking beyond actual terms of the proposed financing to the use of the proceeds of those funds and the effect on rates to insure the public good is protected. See Appeal of Easton, 125 N.H. 205, 211 (1984). "[C]ertain financing related circumstances are routine, calling for more limited Commission review of the purposes and impacts of the financing, while other requests may be at the opposite end of the spectrum, calling for vastly greater exploration of the intended uses and impacts of the proposed financing." Lakes Region Water Company, Inc., Order No. 25,753 (January 13, 2015) at 4-5, citing In re PSNH,

Order No. 25,050, 94 NH PUC 691, 699 (2009). Consistent with past SRF financing dockets, Staff reviewed PWW's filing as a routine financing.

Mr. Boisvert's direct testimony states that the project was identified in the "Water Treatment Plant Evaluation & Capital Improvement Plan" prepared by the consulting firm Fay, Spofford, and Thorndyke (FST) in 2004. Completion of the project enables PWW to operate and manage two completely-separate sources of raw water supply. Currently, the core system draws its source of supply for the water treatment facility from Pennichuck Brook, its primary source, and the Merrimack River, its secondary source. However, even though Pennichuck Brook and the Merrimack River are two different raw water sources drawing from two independent water sheds, they are not considered independent sources because their waters combine in Bowers Pond before being delivered to the water treatment facility, and there is currently no means to separate these raw water supplies prior to the water treatment facility. The proposed project will rectify this situation by providing PWW's operators with three source of raw water supply alternatives: 1) continue the discharge of Merrimack River water into Bowers Pond as a combined source of supply, allowing the reservoirs to be kept full during periods of low flow in Pennichuck Brook; 2) use only Pennichuck Brook as a source of supply; and 3) use only the Merrimack River as a source of supply. The last alternative is especially important in the event that either the water quantity or water quality of Pennichuck Brook become compromised.

Based on FST's 2004 study, the proposed project represents the least cost alternative. Mr. Boisvert further states that PWW is proposing to complete this project in conjunction with the Town of Merrimack's resurfacing of Manchester Street, currently planned for July of 2015. This cooperative effort is anticipated to reduce street reconstruction costs for PWW by an estimated $100,000.

Staff engaged the services of its former Water Division engineer, Douglas W. Brogan, to review the engineering aspects of the project. Mr. Brogan participated in the submission of Staff discovery and reviewed PWW's responses. Mr. Brogan authorized Staff to represent that he believes that the proposed use of the financing is reasonable.

Mr. Goodhue's direct testimony describes the terms of the proposed financing as well as its anticipated financial impact. The proposed financing will carry terms and conditions that the Commission is familiar with from prior SRF borrowings by regulated water utilities. The loan will be for a twenty-year term and at an interest rate based on rates available at the time the loan is closed. The interest rate available at the time of PWW's filing was 3.168%. The loan will not be secured by a pledge of PWW assets, but PWW's corporate parent, Pennichuck Corporation, Inc. (Pennichuck), will provide an unsecured corporate guarantee of repayment. Amounts advanced under the loans by DES during the construction period will bear interest at a rate of 1% per annum, and that accrued interest will be payable upon substantial completion of the project. Payments of principal and interest will then commence six months hence. PWW will provide the Commission with a copy of the loan documents once they have been finalized and executed. Mr. Goodhue states that, in the event the loan proceeds are not sufficient to completely fund the project, PWW is prepared to fund any remaining needs using a mix of PWW's internal cash flow as well as short term borrowings from Pennichuck.

Mr. Goodhue states in his testimony that the SRF financing has been approved by the respective Boards of Directors of both PWW and Pennichuck. However, at the time of PWW's filing with the Commission, approval for the financing had not yet been obtained from its sole shareholder, the City of Nashua. In its response to Staff Data Request 1-1, PWW states that it submitted a request for shareholder approval to the City of Nashua on February 3, 2015. A copy of PWW's request is attached to its data responses (Attachment A). PWW's request has been forwarded to the Pennichuck Special Water Committee of the Board of Aldermen for consideration on April 7, 2015, at which time PWW anticipates that a resolution for approval will be forwarded to the full Board of Alderman for consideration and approval on April 14, 2015. PWW states that once final shareholder approval is received, it will supplement its filing with a copy of the appropriate documentation indicating such approval.

Staff has thoroughly reviewed and supports the financing as presented by PWW. The procurement of this SRF loan ensures that PWW will finance this needed project at the lowest possible cost to customers. PWW has demonstrated that the proposed use of the funds is appropriate and consistent with PWW's duty to provide "reasonably safe and adequate and in all other respects just and reasonable" service to its customers. RSA 374:1.

PWW has requested that the Commission issue an order in this docket in a timeframe that would permit it and NHDES to close on the loan on or before May 1, 2015. This will allow PWW to have the project out to bid in May, a contractor selected in June, commencement of the project by early summer, and completion of the project by the fall of 2015. PWW states that such a timeframe will allow for favorable bid results due to the anticipated construction of the project under favorable weather conditions. Therefore, Staff recommends that since the City of Nashua's approval of the borrowing is not expected until mid-April, the Commission provide its approval of these loans subject to the City's final approval by the Board of Alderman, and that evidence of such approval is provided to the Commission as soon as practical.

Staff has consulted with the Office of Consumer Advocate (OCA) prior to filing this recommendation.[1] The OCA takes no position. Thank you for your assistance in this matter. If there are any further questions or concerns relative to PWW's financing request, please do not hesitate to contact me.

Sincerely,

Jayson P. Laflamme
Utility Analyst, Gas-Water Division

Attachment: Discovery Responses
cc: Service List

[1] The OCA filed a notice of participation on February 12, 2015.

SERVICE LIST - EMAIL ADDRESSES - DOCKET RELATED

Pursuant to N.H. Admin Rule Puc 203.11 (a) (1): Serve an electronic copy on each person identified on the service list.

Executive.Director@puc.nh.gov
achesley@devinemillimet.com
amanda.noonan@puc.nh.gov
carolann.howe@pennichuck.com
donald.ware@pennichuck.com
james.brennan@oca.nh.gov
john.patenaude@pennichuck.com
larry.goodhue@pennichuck.com
mark.naylor@puc.nh.gov
ocalitigation@oca.nh.gov
rorie.patterson@puc.nh.gov
steve.frink@puc.nh.gov
susan.chamberlin@oca.nh.gov
tgetz@devinemillimet.com

Docket #: 15-046-1 Printed: March 26, 2015

FILING INSTRUCTIONS:

a) **Pursuant to N.H. Admin Rule Puc 203.02 (a), with the exception of Discovery, file 7 copies, as well as an electronic copy, of all documents including cover letter with:**

DEBRA A HOWLAND
EXECUTIVE DIRECTOR
NHPUC
21 S. FRUIT ST, SUITE 10
CONCORD NH 03301-2429

b) **Serve an electronic copy with each person identified on the Commission's service list and with the Office of Consumer Advocate.**

c) **Serve a written copy on each person on the service list not able to receive electronic mail.**

DEVINE MILLIMET

ATTORNEYS AT LAW

March 11, 2015

THOMAS B. GETZ
603.695.8542
TGETZ@DEVINEMILLIMET.COM

VIA ELECTRONIC MAIL

Rorie E. Patterson
Staff Attorney
New Hampshire Public Utilities Commission
21 S. Fruit Street, Suite 10
Concord, NH 03301-2429

Re: DW 15-046, Pennichuck Water Works, Inc.
Petition for Approval of SRF Loans
Staff Data Requests – Set 1

Dear Attorney Patterson:

Attached are responses by Pennichuck Water Works, Inc. to the first set of data requests by the Commission Staff dated March 2, 2015.

Please let me know if you have any questions.

Very truly yours,

Thomas B. Getz

TBG:aec

Attachments
cc: Discovery Electronic Service List

PENNICHUCK WATER WORKS, INC.
DW 15-046

Pennichuck Water Works, Inc.'s Responses to
Staff's Data Requests – Set 1
Petition for Approval of SRF Loans

Date Request Received: 3/2/15 Date of Response: 3/11/15
Request No. Staff 1-1 Witness: Larry D. Goodhue

REQUEST: Re: Direct Prefiled Testimony of Larry D. Goodhue, Page 6, Lines 12-13
Please describe the current status of the pending shareholder approval of the proposed financing.

RESPONSE: As indicated in Attachment A, the Company submitted its request for shareholder approval to the City of Nashua on February 3, 2015. The first reading of resolution R-15-114 by the Board of Aldermen was completed on Tuesday February 24, 2015, and was forwarded to the Pennichuck Special Water Committee of the Board of Aldermen for consideration. A meeting of the Special Water Committee is scheduled for April 7, 2015, at which time the action relative to the resolution will be forwarded to the full Board of Aldermen for consideration at the April 14, 2015 Board of Aldermen meeting. A copy of the shareholder approval will be forwarded as soon as it is available.

PENNICHUCK WATER WORKS, INC.
DW 15-046

Pennichuck Water Works, Inc.'s Responses to
Staff's Data Requests – Set 1
Petition for Approval of SRF Loans

Date Request Received: 3/2/15 | Date of Response: 3/11/15
Request No. Staff 1-2 | Witness: Larry D. Goodhue

REQUEST: Re: Schedule LDG-2, Page 1 of 2

Actual net income for the eleven months ended 11/30/14 is indicated as $2,366,238. However, the November '14 monthly financial report for PWW submitted on December 17, 2014 indicates a net income amount of $2,113,776; a difference of $252,462. Please explain.

RESPONSE: An error was made on the amount included on LDG-2 Page 1 of 2 as actual net income for the eleven months ended 11/30/14. The amount included mistakenly related to the preliminary results for the ten months ended 10/31/14. Attachment B to this response is a corrected Schedule LDG-2, which includes the corrected amounts for the eleven months ended 11/30/14, which is consistent with the data included on Schedule LDG-1, as it relates to the Balance Sheet of the Company as of that date.

PENNICHUCK WATER WORKS, INC.
DW 15-046

Pennichuck Water Works, Inc.'s Responses to
Staff's Data Requests – Set 1
Petition for Approval of SRF Loans

Date Request Received: 3/2/15 | Date of Response: 3/11/15
Request No. Staff 1-3 | Witness: Larry D. Goodhue

REQUEST: Re: Schedule LDG-2, Page 2 of 2

Please provide further explanation, including specific amounts, relative to the notation appearing at the bottom of this schedule regarding the "handling of Amortization of acquisition premium" as well as this issue's impact, if any, on the pro-forma schedules contained within the Company's filing.

RESPONSE: This note was included in error on this Schedule. It has no impact on the pro-forma schedules contained within the Company's filing. It relates to questions germane to internal review procedures of various analyses, and questions posed relating to the training of new personnel on the construct and format of petition filing schedules. The revised Schedules attached to this response no longer have this note included upon it.

PENNICHUCK WATER WORKS, INC.
DW 15-046

Pennichuck Water Works, Inc.'s Responses to
Staff's Data Requests – Set 1
Petition for Approval of SRF Loans

Date Request Received: 3/2/15 | Date of Response: 3/11/15
Request No. Staff 1-4 | Witness: John J. Boisvert

REQUEST: Re: Boisvert testimony p.3, line22 through p. 4, line 2

Will there be any easement costs or other exchange of funds between or among PWW, Pennichuck Corp., Southwood or HECOP IV in relation to the proposed main? Please explain.

RESPONSE: The design of the raw water transmission main has progressed to where it has been determined that land or easements within HECOP IV will not be necessary. A transaction between Southwood and PWW relating to the granting of a permanent easement to PWW from Southwood for the proposed main, however, will be required. The exact size and value of the easement has yet to be determined, but will be based on the final design and location of the main.

PENNICHUCK WATER WORKS, INC.
DW 15-046

Pennichuck Water Works, Inc.'s Responses to
Staff's Data Requests – Set 1
Petition for Approval of SRF Loans

Date Request Received: 3/2/15 Date of Response: 3/11/15
Request No. Staff 1-5 Witness: John J. Boisvert

REQUEST: Re: Boisvert testimony p. 5, lines 2-7 and p. 6, lines 11-13

a) Is the existing 30-inch raw water transmission main limiting in any way in relation to the maximum permitted Merrimack River withdrawal of 30 mgd?
b) If so, will the proposed 36-inch main lessen that limitation? Please explain.
c) Are there any plans to increase either the carrying capacity of the raw water transmission main(s) or the pumping capacity of the Merrimack River pumping station in the future? Please explain.

RESPONSE:

a) Yes, The 30-inch diameter raw water transmission main is one of the factors that limits the withdrawal from the Merrimack River.

The current capacity of the pumping station is approximately 21 mgd with both pumps running. The two existing (350 hp) pumps were designed based on the head and flow conditions at 21 mgd. This upgrade was completed in 2009 and maximized the capacity of the electrical service leading to the station. Adding additional pumping capacity would require a major upgrade to the electrical service leading to the station.

The river intake structure is not capable of passing more than 21 mgd without drawing in river sediment. In addition, operators are required to reduce station discharge because of river sediment migrating into the withdrawal channel at certain head and flow conditions within the Merrimack River. The Company's 2015 capital budget includes an evaluation of river intake that would lead to recommended options to eliminate sedimentation issues at the stations current capacity and that would ensure function at the 30 mgd permitted withdrawal.

Adding a third pump (after upgrading the electrical service discussed above) to the station to achieve 30 mgd would increase the dynamic head (friction loss only) from 60 feet at 21 mgd to approximately 90 feet at 30 mgd. The additional head would reduce the capacity of the existing pumps by approximately 5.5 mgd such that the remaining space for a third pump in the station would have to be

filled with a 15.5 mgd pump or a redesign of the existing two pumps and the new third pump to achieve 30 mgd. At that time, the Company would have to assess adding additional pipeline capacity to reduce friction head loss with what would be the resulting pump horsepower and the required electric service capacity as well as addressing the intake ability to draw 30 mgd from the river.

b) No. The new 36-inch raw water transmission main (that bypasses Harris and Bowers reservoirs) connects to the existing 30-inch raw water transmission main at its high point. From that point it is a downhill run to where the new 36-inch pipe connects to the raw water feed for the Treatment Facility below Harris dam. The elevation drop overcomes any additional friction loss in the 36-inch pipe even at the maximum permit flow of 30 mgd.

c) Not in the immediate future. The Company will complete an evaluation of the river intake in 2015 to determine what improvements are necessary to eliminate sedimentation issues at current withdrawals and at 30 mgd. Current water system demands do not require withdrawals greater than the current capacity of the station (21 mgd). The existing capacity of the station and the capacity of the Pennichuck Brook reservoirs ensure system demands are satisfied. Increasing the capacity will be something that the Company will continue to monitor and assess as time goes on. If demand conditions increase, there may be a point in time that the station and the raw water transmission main would require an upgrade to a higher capacity.

PENNICHUCK WATER WORKS, INC.
DW 15-046

Pennichuck Water Works, Inc.'s Responses to
Staff's Data Requests – Set 1
Petition for Approval of SRF Loans

Date Request Received: 3/2/15 Date of Response: 3/11/15
Request No. Staff 1-6 Witness: John J. Boaivert

REQUEST: Re: Boisvert testimony p. 6, line 20 through p. 7, line 2

Please provide copies of those portions of the 2004 FST study directly relating to the proposed project.

Response: Attachment C contains sections 4.2 and 4.3 of the 2004 FST Report.

ATTACHMENT A

REQUEST FOR SHAREHOLDER APPROVAL TO THE CITY OF NASHUA

PENNICHUCK

25 MANCHESTER STREET
PO BOX 1947
MERRIMACK, NH 03054-1947
(603) 882-5191
FAX (603) 913-2305

WWW.PENNICHUCK.COM

VIA HAND DELIVERY

February 3, 2015

Stephen Bennett, Esq.
Corporation Counsel
City of Nashua
City Hall
P.O. Box 2019
Nashua, NH 03061-2019

Dear Attorney Bennett:

Introduction. As you know, the City of Nashua, New Hampshire (the "City") is the sole corporate shareholder of Pennichuck Corporation ("Pennichuck"). The City has been the sole shareholder since the acquisition of Pennichuck on January 25, 2012. The purpose for this letter is to request that the City, acting in its capacity as sole shareholder, approve several resolutions authorizing one of Pennichuck's regulated public water utility subsidiaries, Pennichuck Water Works, Inc. ("PWW"), to borrow funds from the State of New Hampshire pursuant to the State Drinking Water Revolving Loan Fund Program (the "SRF Program").

Background. As part of the City's acquisition of Pennichuck, in accordance with special legislation enacted by the State Legislature, and as unanimously approved by the Mayor and Board of Aldermen on January 11, 2011, the corporate structure of Pennichuck and its utility subsidiaries was retained. This corporate structure was retained for several reasons. First, the Mayor and Board of Aldermen desired to maintain stability and continuity for customers and employees of the Pennichuck utilities and the communities they serve. Second, retaining the corporate structure provided continuity for the existing relationships with regulatory agencies and financial/banking partners. Third, the Mayor and Board of Aldermen unanimously agreed that the corporate structure would encourage business-smart decisions and rely upon well-established governance principles of corporate law, pursuant to Pennichuck's Articles of Incorporation and its by-laws.

Shareholder Approval of Borrowings Required. Under Article IX of Pennichuck's Articles of Incorporation, the City, acting in its capacity as Pennichuck's sole shareholder, must approve

> "(3) any action to (A) create, incur or assume any indebtedness for borrowed money or guarantee any such indebtedness of any person, (B) issue or sell any debt securities or warrants or other rights to acquire any debt securities of the [Pennichuck] Corporation or any of its Subsidiaries, or (C) guarantee any debt securities of any person."

Proposed Borrowings from the SRF Program. Pennichuck requests the City's approval for a loan from the SRF Program to PWW. The specifics of this loan are described below.

(1) Under the proposal, PWW would enter into a new long-term loan from the SRF Program for an aggregate total principal amount of $3,500,000, to finance the cost of installing approximately 6,100 linear feet of 36" diameter raw water main from the existing raw water transmission main at Al Paul Lane in Merrimack, NH, to the existing 72" diameter penstock, which feeds raw water into PWW's water treatment plant in the City of Nashua, NH. This project will provide an independent secondary source of raw water into the PWW water treatment plant.

The Lender – the SRF Program. The funds for this loan will be provided by the State of New Hampshire Drinking Water Revolving Loan Fund. The SRF Program is administered by the New Hampshire Department of Environmental Services. The SRF Program provides public and private water systems the opportunity to borrow funds on favorable terms at interest rates that are below commercial loan rates. A copy of the NHDES letter announcing that the PWW project has been selected for funding is attached.

Terms of the SRF Borrowings. The loan will have the favorable terms as indicated below, which will be reflected in its Loan Agreement and Promissory Note issued by PWW, as required by the SRF Program. Amounts advanced pursuant to the loan during the construction period will accrue interest at a rate of 1% per annum, and the total accrued interest will be due upon substantial completion of the project. The terms of the SRF loan will require repayment of the loan principal plus interest over a 20-year period commencing six months after the project is substantially complete. The current interest rate on the SRF Program borrowing is 3.168% per annum. The loan will be unsecured. The corporate parent, Pennichuck, will provide an unsecured corporate guaranty of the repayment of the loan in accordance with the terms of a Guaranty Agreement.

Approval by the Pennichuck Board of Directors. The Pennichuck Board of Directors has approved the loan to PWW to finance the project listed above and the guarantee of the loan by Pennichuck, and recommends that the City authorize (i) PWW to enter into the Loan Agreement and the Promissory Note, and (ii) Pennichuck to enter into the Guaranty Agreement.

Other Approvals. As a regulated public utility, PWW must obtain approval of the loan from the New Hampshire Public Utilities Commission ("NHPUC"), which will approve the loan if it finds the loan to be consistent with the public good. PWW has filed a petition for approval with the NHPUC and expects the NHPUC to consider the petition promptly. Under the SRF Program, the loans must also be approved by the Governor and Executive Council.

Lower Costs Are Good for Customers. Pennichuck Corporation and its Board of Directors have determined that the capital project to be financed by the SRF Program loan will allow PWW to continue to provide safe, adequate and reliable water service to its customers on a cost-effective basis. The terms of the financing through the SRF Program is very favorable compared to other alternatives and will result in lower financing costs that would be available under other debt options. These lower financing costs will be passed on to customers.

Requested Approvals. For the reasons described above, Pennichuck Corporation respectfully requests that the City, acting in its capacity as sole shareholder of Pennichuck Corporation and pursuant to Article IX(3) of Pennichuck Corporation's Articles of Incorporation, authorize the following actions:

RESOLVED, that the City hereby approves the borrowing by Pennichuck Water Works, Inc. of up to $3,500,000 from the State of New Hampshire pursuant to the State Drinking Water Revolving Loan Fund Program to finance the cost of installing approximately 6,100 linear feet of raw water transmission main in Merrimack and Nashua, NH;

RESOLVED, that the City hereby approves the guaranty by Pennichuck Corporation of the payment by Pennichuck Water Works, Inc. of the loan authorized in the prior resolution; and

RESOLVED, that the City hereby authorizes Pennichuck Corporation and Pennichuck Water Works, Inc., their Board of Directors and Officers to take any and all actions required to obtain all necessary approvals with respect to the actions described in these resolutions and to execute and deliver such documents as are necessary to effect the State Drinking Water Revolving Loan Fund loan and the Guaranty described in these resolutions.

Respectfully submitted,

PENNICHUCK CORPORATION

By: _____
Larry D. Goodhue
Chief Financial Officer

PENNICHUCK WATER WORKS, INC.

By: _____
Larry D. Goodhue
Chief Financial Officer

cc: Mayor Donnalee Lozeau

The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

September 4, 2014

John Boisvert, Chief Engineer
Pennichuck Water Works
25 Manchester Street
Merrimack, NH 03054

Subject: Drinking Water State Revolving Loan Fund (DWSRF)
FY 2014 Project Priority List

Dear John:

The purpose of this letter is to inform you that the FY 2014 DWSRF Project Priority List has been finalized and that the following projects are eligible for funding:

Public Water System	Project Description	Project Amount
Pennichuck Water Works	Distribution Main Replacement 2015	$3,400,000
Pennichuck Water Works	Raw Water Transmission Main	$5,500,000
PEU-Locke Lake	Winwood/Monroe Water Main Phase 2	$400,000
PEU-Gage Hill	Gage Hill Water Main Replacement	$550,000
PEU-Farmstead	Farmstead CWS Derry Interconnection	$165,000
PEU-W&E	Water Main Replacement Phase 2	$450,000
Pittsfield Aqueduct Company	Catamount Road Water Main Phase 1	$165,000

The next step to move forward with project funding is to submit a final application. The documents are listed on the enclosed checklist and available on line at http://des.nh.gov/organization/divisions/water/dwgb/capacity/dwsrf.htm

Funding for these projects is available until June 30, 2015. However, we encourage you to move forward at this time to seek the authority to borrow. Please be advised that the current interest rates (enclosed) will be effective until October 2014, at which time they will be adjusted based on the prevailing market rate. From this point forward any non-construction work completed after the date of the public hearing (8/7/14) is eligible for reimbursement.

We ask that you keep us informed of progress made toward seeking the authority to borrow. Should your project not move forward, please contact us as soon as possible. If you have any questions, please contact me at 271-2948 or richard.skarinka@des.nh.gov.

Sincerely,

Richard Skarinka, P.E
Drinking Water and Groundwater Bureau

cc: Donald Ware, Pennichuck Water Works, Inc.

Attachments: Final Application Checklist
Charge Rates

ATTACHMENT B

CORRECTED SCHEDULE LDG -2

Pennichuck Water Works, Inc.
OPERATING INCOME STATEMENT **Schedule LDG-2**

For the Eleven Months Ended November 30, 2014

	Account Number	ELEVEN MONTHS 11/30/14	PRO FORMA ADJUSTMENTS		PRO FORMA 11 MONTHS 11/30/14
Water Sales	460 to 462	$ 25,786,809	$ -		$ 25,786,809
Other Operating Revenue	471	334,101	-		334,101
Total Revenues		26,120,910	-		26,120,910
Production Expenses	601 to 652	3,759,740	-		3,759,740
Transmission & Distribution Expenses	660 to 678	1,655,096	-		1,655,096
Engineering Expenses	660	874,383	-		874,383
Customer Acct & Collection Exp	902 to 904	406,136	-		406,136
Administrative & General Expense	920 to 950	5,526,246	-		5,526,246
Inter Div Management Fee	930	(1,864,731)	-		(1,864,731)
Total Operating Expense		10,356,869	-		10,356,869
Dep Exp/Acq Adj Expense	403 & 406	3,960,723	38,500	(2)	3,999,223
Amortization Expense:CIAC	405	(542,663)	-		(542,663)
Amortization Expense	407	1,374,571	-		1,374,571
Gain on Debt Forgivness	414	(49,431)	-		(49,431)
Property Taxes	408.1	4,052,717	100,170	(2)	4,152,887
Income Tax	409 to 410	2,367,290	(98,847)	(3)	2,268,443
Total Operating Deductions		11,163,207	39,823		11,203,030
Net Operating Income		4,600,833	(39,823)		4,561,010
Other Income and Deductions		12,000	-		12,000
					-
Interest Expenses		2,499,057	110,880	(1)	2,609,937
Net Income		2,113,776	(150,703)		1,963,072

Notes:

1 - To record the change in interest expense associated with SRF financing.
2 - To record the impact of assets on depreciation and property taxes.
3 - To record the tax impact resulting from additional expenses.

Supporting Calculations:

Interest Expense:

New SRF debt	$ 3,500,000
Interest Rate	3.168%
Annual Interest	$ 110,880

Depreciation

Additions:

	Asset Cost			Depreciation	
		Merrimack Raw Water Main	Total	Rate	Amount
Structures & Improvements	$ -	$ -	$ -	2.62%	$ -
Transmission & Distribution Mains	$ -	$ -	$ -	1.60%	$ -
Power Generation Equipment	$ -	$ -	$ -	4.50%	$ -
Pumping Equipment	$ -	$ -	$ -	5.50%	$ -
Supply Main	$ -	$ 3,500,000	$ 3,500,000	1.10%	$ 38,500
Totals	$ -	$ 3,500,000	$ 3,500,000	-	$ 38,500

Retirements: - N/A

	Asset Cost			Depreciation	
			Total	Rate	Amount
Structures & Improvements	$ -	$ -	$ -	2.62%	$ -
Transmission & Distribution Mains	$ -	$ -	$ -	1.60%	$ -
Power Generation Equipment			$ -	4.50%	$ -
Pumping Equipment	$ -	$ -	$ -	5.50%	$ -
Supply Main	$ -	$ -	$ -	1.10%	$ -
Totals	$ -	$ -	$ -	-	$ -
	$ -	$ 3,500,000	$ 3,500,000	-	

Pro Forma Depreciation **$ 38,500**

Property Taxes

Town	$ 22.02	$ 22.02	Using Merrimack rate for Calc of Proforma Tax
State of New Hampshire	$ 6.60	$ 6.60	
Total Tax Rate	$ 28.62	$ 28.62	
Pro Forma Property Taxes	$ -	$ 100,170	$ 100,170

ATTACHMENT C

SECTIONS 4.2 AND 4.3

2004 FST REPORT

4.2 Merrimack River Intake

4.2.1 Introduction

The Merrimack River Intake (MRI) was installed in 1985 to pump water from the Merrimack River, at an elevation of about 91 feet mean sea level (MSL), through approximately 8,500 feet of 30-inch diameter ductile iron pipe into Bowers Pond, at an elevation of about 160 feet MSL. The MRI contains two vertical turbine pumps, 200 hp 6 MGD and 350 hp 13 MGD, that are typically operated 5 months per year from July to December to help augment water supply from the Pennichuck Brook pond system. See previous figure located in Water Supply Section for historical operation of MRI from July 2001 to May 2003. A general building layout is presented in a figure at the end of this section.

Several options were evaluated to:

- increase pump reliability and redundancy
- increase pump capacity to permitted withdrawal, and
- increase the pump capacity to pump water directly to the water treatment plant assuming a new raw water transmission line is installed by-passing Bowers Pond and Harris Pond in case of contamination of the ponds.

4.2.2 Description of Options

Option 1

- Add 350 hp 13 MGD pump

Option 2

- Replace the 6 MGD pump with a 350 hp 13 MGD pump and add a 350 hp 13 MGD pump

Option 3

- Replace the 6 MGD pump with a 350 hp 13 MGD pump, add a 350 hp 13 MGD pump and add about 3,000 feet of 30-inch raw water transmission line between the MRI and the railroad track crossing (see figure at end of section).

Option 4

- Add 600 hp 18 MGD pump and add about 3,000 feet of 30-inch raw water transmission line between the MRI and the railroad track crossing.

Option 5

- Replace the 6 MGD pump with a 600 hp 18 MGD pump, add a 600 hp 18 MGD pump and add about 3,000 feet of 30-inch raw water transmission line between the MRI and the railroad track crossing .

All options include modifications to the yard piping, interior mechanical piping, addition of field instruments to monitor water quality, and SCADA.

The pump combinations and resultant pump capacities to Bowers Pond and to the WTP, assuming the raw water transmission line is installed from the existing 30-inch transmission line along Manchester Street to the WTP, for the different options are summarized in the following table. The transmission line option from Manchester Street to the WTP is discussed further in the Raw Water Transmission Line (Bowers Pond By-Pass) section of this report.

Table 4-3: Pump Combinations for Options

Option	Description	Bowers Pond (MGD)	WTP (MGD)	Cost (mil.$)
1	(1) 6 MGD, (2) 13 MGD	20	15	0.67
2	(3) 13 MGD	23.3	18.2	0.85
3	(3) 13 MGD & 30-inch pipe	30	25	2.29
4	(1) 6 MGD, (1) 13 MGD, (1) 18 MGD & 30-in pipe	30	25	2.14
5	(1) 13 MGD & (2) 18 MGD & 30-inch pipe	35	30	2.34

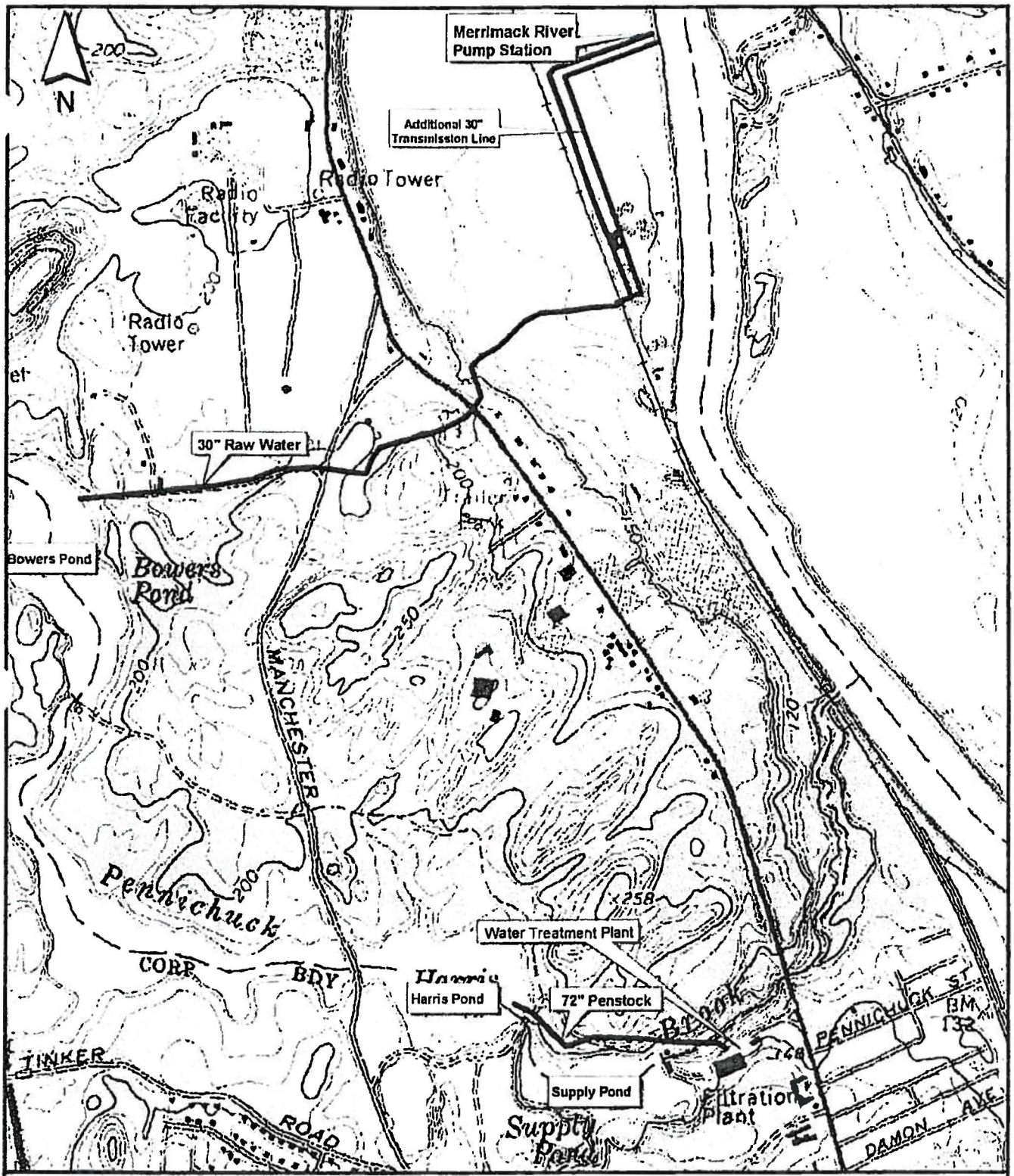
The pump output is reduced when pumping directly to the WTP because an additional 40 feet of lift is required to pump over the high point on Manchester Street and because of friction loss from the additional length of pipe. The table at the end of this section presents the advantages, disadvantages and costs of each option.

4.2.3 Findings and Recommendations

The addition of two (2) 13 MGD pumps to the existing 13 MGD pump and the installation of 3,000 feet of 30-inch raw water transmission line (Option 3) provides additional pump redundancy and reliability and allows PWW to pump water from the Merrimack River at the current maximum permitted withdrawal rate of 30 MGD. It would also provide for pumping 25 MGD directly to the WTP in case of contamination of the Pennichuck Pond system if the Bowers Pond By-Pass pipe is installed. This is the desired option but is one of the more costly options estimated at about $2.29 million.

A review by PWW of permitted withdrawals from 1998 through 2002 shows that during the months of July and August, permitted withdrawal exceeded 20 MGD in just 2 of the five years. The review also determined the peak month of record for withdrawal to be 20.2 MGD, indicating that a MRI capacity of 20 MGD would be sufficient for the short term. Furthermore, the outcome of the proposed "New Hampshire In-Stream Rule" remains uncertain and potentially may reduce the permitted withdrawal from the Merrimack River.

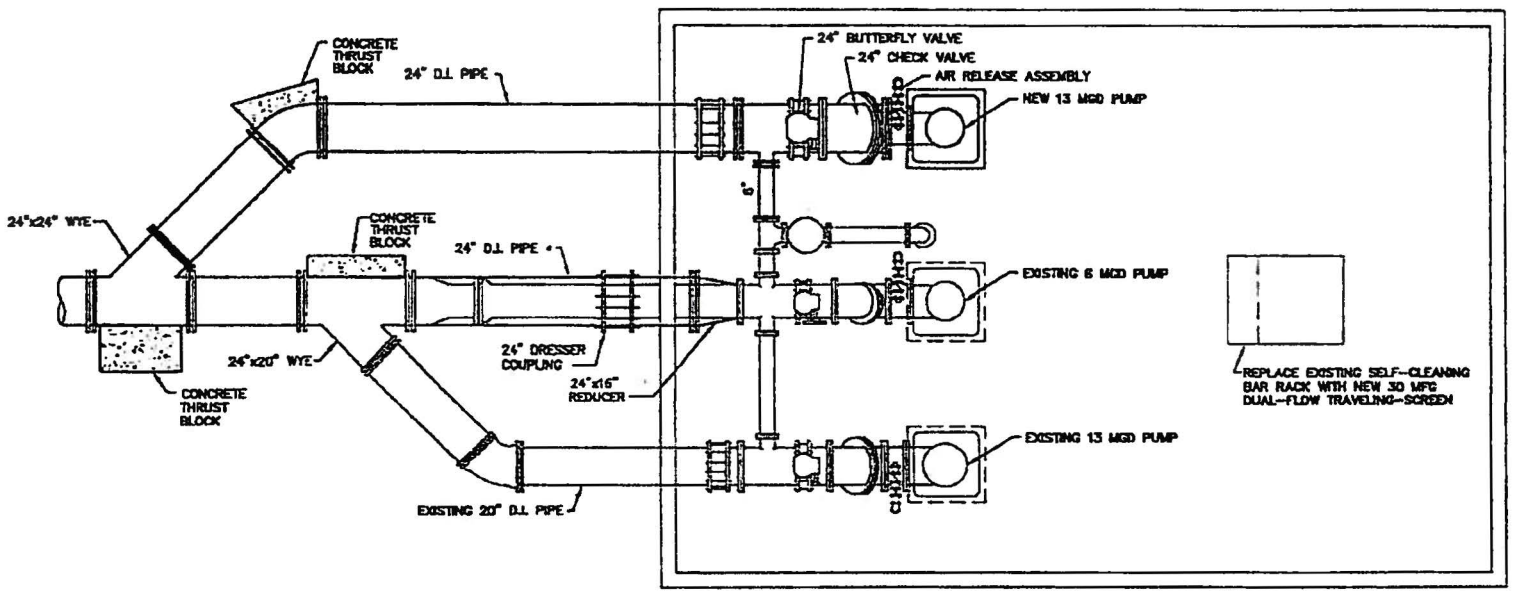
Therefore, at this time, it is recommended that a second 13 MGD pump be installed (Option 1) to increase the capacity of the MRI to 20 MGD and improve pump redundancy and reliability while minimizing capital cost ($0.67 million). The third 13 MGD pump and the 30-inch transmission line proposed as part of Option 3 is not considered a priority improvement at this time and may be installed later in the CIP should funds become available.



Merrimack River Intake Improvements

500 0 500 1000 Feet

FAY, SPOFFORD & THORNDIKE



* IF 6 MGD PUMP CHANGED TO 13 MGD PIPING

YARD PIPING IMPROVEMENTS
MERRIMACK RIVER INTAKE

FAY, SPOFFORD & THORNDIKE, LLC

MERRIMACK RIVER INTAKE PUMPING
PENNICHUCK WTP
NASHUA, NH

Option	Option 1	Option 2
Description	Pump 20 mgd to Bowers Pond or 15.5 mgd to WTP (2) 13 MGD pumps operating	Pump 23.3 mgd to Bowers Pond or 18.2 mgd to WTP (3) 13 MGD pumps operating
Location	Merrimack River Intake (MRI)	MRI
Pumps	Add one (1) new 13 mgd pump with 350 HP Electric Motor to one (1) existing 13 mgd pump and one (1) existing 6 mgd pump	Replace existing 6 mgd pump with one new 13 mgd pump and add a second new 13 mgd pump each with 350 HP Electric Motors for a total of three (3) 13 mgd pumps (one existing)
Station Piping	Install 24" DI piping inside and yard piping outside existing pumping station, butterfly valve and check valve to the one new pump.	Install 24" DI piping inside and yard piping outside existing pumping station, butterfly valve and check valve to the two new pumps.
Raw Water Transmission Piping	None	None
Construction Impact	Install one new 13 mgd pump, 350 HP motors, starters, controls, piping, valves in existing locations, misc. station improvements.	Install two new 13 mgd pumps, 350 HP motors, starters, controls, piping, valves in existing locations, remove old 6 mgd pump and piping, misc. station improvements.
Manufacturer	Peerless Pump	Peerless Pump
Power Requirements	480v, 3 ph, 60 Hz	480v, 3 ph, 60 Hz
Maintenance	Routine checks on new pumps, motors, controls, piping, and SCADA.	Routine checks on new pumps, motors, controls, piping, and SCADA.
Advantages	1) Increased capacity from MRI to 20 mgd. 2) Maximum HP of motors 350 HP.	1) Increased capacity from MRI to 23.3 mgd. 2) Lower pumping head for new pumps. 3) Redundancy to 20 mgd w/ one pump offline.
Disadvantages	1) Does not have capacity to pump 30 MGD maximum permitted withdrawal rate from the Merrimac River. 2) Requires yard piping changes at MRI. 3) No redundancy to 20 mgd w/ one 13 mgd pump offline.	1) Does not have capacity to pump 30 MGD maximum permitted withdrawal rate from the Merrimac River. 2) Requires yard piping changes at MRI. 3) Less flexibility in transferring water during low river flow conditions without 6 mgd pump.
Rating	Neutral	Neutral/Advantageous
Total Est. Capital Cost	$352,000	$562,000
Annual O&M Costs	$104,000 (5 months @ 10 MGD)	$109,000 (5 months @ 10 MGD)
Net Present Value: Life Cycle Cost, 20yrs @ i=8%	$1,369,000	$1,634,000

MERRIMACK RIVER INTAKE PUMPING
PENNICHUCK WTP
NASHUA, NH

Option	Option 3	Option 4
Description	Pump 30 mgd to Bowers Pond or 25 mgd to WTP (3) 13 MGD pumps operating	Pump 30 mgd to Bowers or 25 mgd to WTP 13 MGD and 18 MGD operating
Location	MRI	MRI
Pumps	Replace existing 6 mgd pump with one new 13 mgd pump and add a second new 13 mgd pump each with 350 HP Electric Motors for a total of three (3) 13 mgd pumps (one existing)	Add one 18 mgd pump with 600 HP Electric Motor to existing 6 mgd and 13 mgd pumps
Station Piping	Install 24" DI piping inside and yard piping outside existing pumping station, butterfly valves and checkvalves to the two new pumps. Install new venturi meter.	Install 24" DI piping inside and outside existing pumping station, butterfly valve, and check valve. Install new venturi meter.
Raw Water Piping	Install parallel 30" raw water piping from MRI to RR crossing at WWTP, 3,000 feet.	Install parallel 30" raw water piping from MRI to RR crossing at WWTP, 3,000 feet.
Construction Impact	Install two new 13 mgd pumps, 350 HP motors, starters, controls, piping, valves in existing locations, remove old 6 mgd pump and piping, misc. station improvements.	Install new power service, new pump, motor, starters, controls, piping, valves, misc. station improvements.
Manufacturer	Peerless Pump	Peerless Pump
Power Requirements	480v, 3 ph, 60 Hz	4160v, 3 ph, 60 Hz
Maintenance	Routine checks on new pumps, motors, controls, piping, and SCADA.	Routine check on new pump, motor, controls, piping, and SCADA
Advantages	1) Increased capacity from MRI to 25 mgd. 2) Lower pumping head for new pumps. 3) More reliability with 3 pumps	1) Increased capacity from MRI to 25 mgd. 2) Lower pumping head for new pump. 3) Allows continued use of existing 13 mgd pump and piping. 4) Lower pumping head for existing 13 mgd pump.
Disadvantages	1) Higher Capital Cost. 2) Requires yard piping changes at MRI and additional raw water transmission pipe. 3) Less flexibility in transferring water during low river flow conditions without 6 mgd pump.	1) Requires increase in electric service voltage to station. 2) Higher operating power costs. 3) Higher power demand charge. 4) Requires yard piping changes at MRI and additional raw water transmission pipe.
Rating	Advantageous	Neutral/Disadvantageous
Total Est. Capital Cost	$2,044,000	$1,878,000
Annual O&M Costs	$112,000 (5 months @ 10 MGD)	$114,000 (5 months @ 10 MGD)
Net Present Value: Life Cycle Cost, 20yrs @ i=8%	$3,140,000	$2,996,000

MERRIMACK RIVER INTAKE PUMPING
PENNICHUCK WTP
NASHUA, NH

Option	Option 5
Description	Pump 35 mgd to Bowers or 30 mgd to WTP (2) 18 MGD pumps operating
Location	MRI
Pumps	Replace 6 mgd pump with one new 18 mgd pump and add second new 18 mgd pump with 600 HP Electric Motors, for a total of three (3) pumps including existing 13 mgd pump
Station Piping	Install 24" DI piping inside and outside existing pumping station, butterfly valves and check valves to the two new pumps. Install a new 30 inch venturi meter in the existing chamber.
Raw Water Piping	Install parallel 30" raw water piping from MRI to RR crossing at WWTP, 3000 feet.
Construction Impact	Install new power service, new pumps, motors, starters, controls, piping, valves in existing locations, remove old 6 mgd pump and piping, new 35 mgd dual-flow screen, misc. station improvements.
Manufacturer	Peerless Pump
Power Requirements	4160v, 3 ph, 60 Hz
Maintenance	Routine checks on new pumps, motors, controls, piping, and SCADA.
Advantages	1) Increased capacity from MRI to 30 mgd. 2) Allows for pumping 30 MGD directly to WTP assuming raw water transmission line is installed. 3) Lower pumping head for new pumps. 4) More reliability with three pumps.
Disadvantages	1) High Capital Cost 2) Requires increase in electric service voltage to the station. 3) Higher operating power costs. 4) Higher power demand charge. 5) Less flexibility in transferring water during low river flow conditions without 6 mgd pump. 6) Requires yard piping changes at MRI and additional raw water transmission pipe.
Rating	Neutral/Disadvantageous
Total Est. Capital Cost	$2,342,000
Annual O&M Costs	$134,000 (5 months @ 10 MGD)
Net Present Value: Life Cycle Cost, 20yrs @ I=8%	$3,665,000

4.3 Raw Water Transmission Line

4.3.1 Introduction

PWW receives nearly all of its supply through the Pennichuck Brook chain of ponds. If there is a contamination event, such as a spill on the Everett Turnpike or the Manchester Road bridge, there is no redundant water supply other than Supply Pond. Supply Pond has a limited volume of approximately 50 million gallons and could also be contaminated since it is located downstream of Harris Pond.

Several options were evaluated to:

- provide water supply reliability
- provide water supply redundancy

4.3.2 Description of Options

Option 1

- Do nothing

Option 2

- Install 3,000 feet of 42-inch pipe in Manchester Street and 3,300 feet of 42-inch pipe and connect to the 72-inch penstock (see figure at end of this section).

Option 3

- Install 7,000 feet of 42-inch pipe south from MRI adjacent to the railroad track across Route 3 to the WTP.

The following table presents estimated capital costs for the Merrimack River transmission line options evaluated.

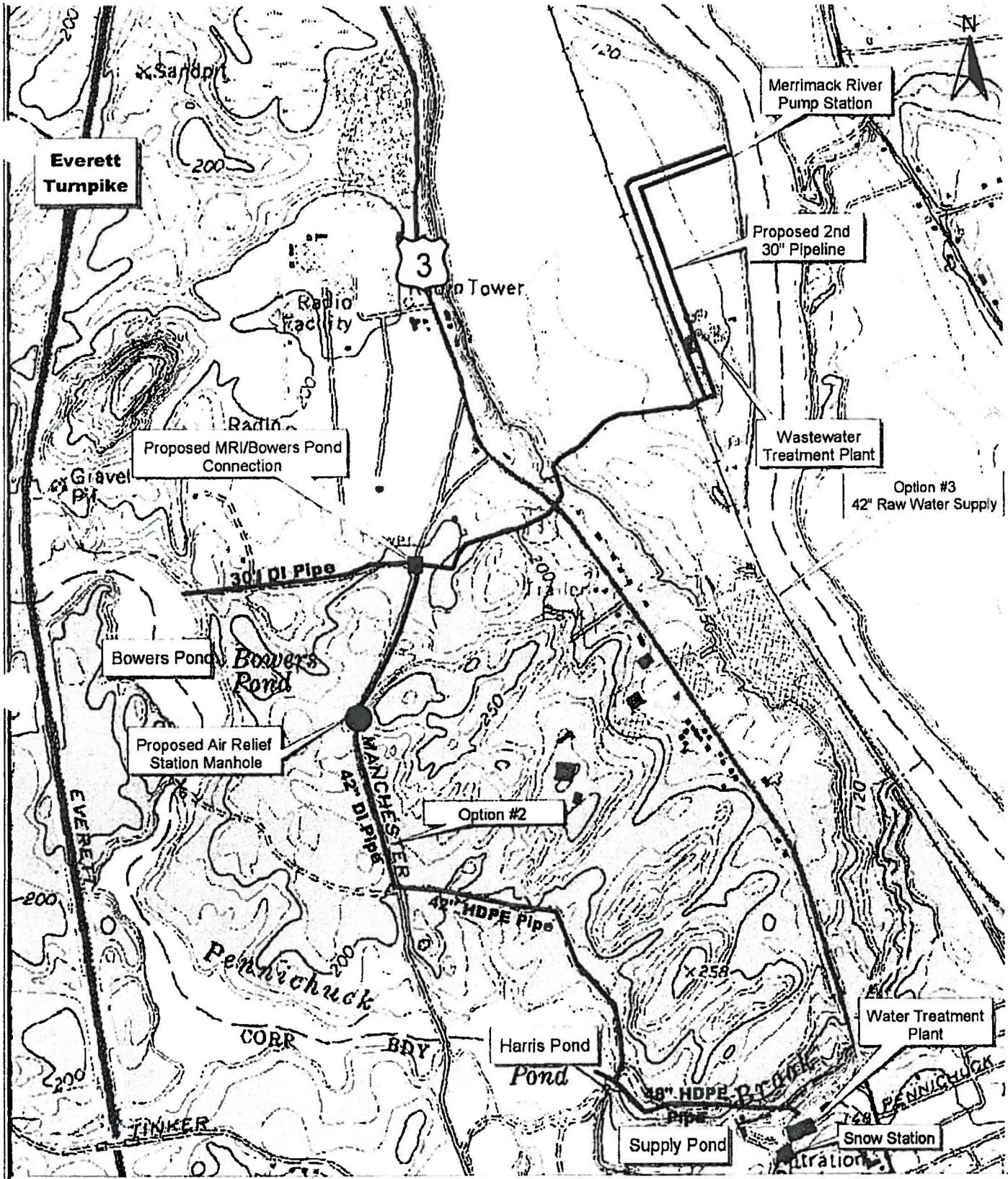
Table 4-5: Merrimack River Transmission Line Options and Costs

Option	Description	Estimated Cost (Million $)
1	Do nothing	0
2	Transmission Line along Manchester Street (6,300 feet)	4.1
3	Transmission Line along Railroad Tracks (7,000 feet)	6.0

The table at the end of this section presents the advantages, disadvantages and costs of each option.

4.3.3 Findings and Recommendations

Option 2 is the most cost effective route for the installation of approximately 6,300 feet of 42-inch pipe to by-pass Bowers and Harris Pond's providing PWW with the flexibility to pump water directly to the WTP from MRI. As discussed in Section 4.1 Raw Water Supply, the introduction of Merrimack River water into the pond system is beneficial to overall water quality because it adds oxygen and nitrate to the bottom layer of the pond system minimizing the development of anoxic conditions. Therefore, although a direct connection to the WTP is desired to protect against a contamination event in the pond system, it is not considered a priority improvement. The 42-inch transmission line may be installed later in the CIP should funds become available.



Raw Water Transmission Options

FAY, SPOFFORD & THORNDIKE

RAW WATER TRANSMISSION LINE EVALUATION
(BOWERS POND BY-PASS)
PENNICHUCK WTP
NASHUA, NH

Option	Option 1	Option 2	Option 3
Description	No by-pass pipe constructed	Provide raw water transmission main to bypass Bowers and Harris Pond	Provide raw water transmission main to bypass Bowers and Harris Pond
Location	Not Applicable	Merrimack River Intake (MRI) transmission main to WTP raw water gravity line.	MRI transmission main along railroad tracks to WTP.
Raw Water Transmission Piping	None	3,000 feet of 42-inch DI transmission line in Manchester Street and 3,300 feet of 42-in HDPE transmission line from 30-in MRI/Bowers Pond transmission main to the WTP raw water gravity line	7,000 feet of 42-inch HDPE transmission line along railroad tracks, across Route 3 into plant.
Construction Impact	None	Requires installation of an isolation valve structure with 2 butterfly valves at the connection of the 42-in bypass pipe to the existing 30-inch MRI transmission main, air release valve and structure, connection to 72-inch or existing Harris intake structure.	Requires installation of an isolation valve structure with 2 butterfly valves at the connection of the 42-in bypass pipe to the existing 30-inch MRI transmission main, pipe-jacking installation of 48-inch Sch. 40 steel sleeve under Route 3, connection to 42-inch yard piping.
Maintenance	None	Routine checks of isolation valves, air release valve and piping.	Routine checks of isolation valves, air release valve and piping.
Advantages	1) Least cost alternative 2) Does not require construction activity on the existing 30-inch MRI transmission main or the 72-inch WTP raw water gravity main/Harris intake structure.	1) Allows redundancy of supply around Bowers Pond in case of contamination. 2) Allows redundancy of supply around Harris Pond in case of contamination. 3) Allows plant to treat water directly from Merrimack River if Pennichuck Brook Pond system is contaminated.	1) Allows redundancy of supply around Bowers Pond in case of contamination. 2) Allows redundancy of supply around Harris Pond in case of contamination. 3) Allows plant to treat water directly from Merrimack River if Pennichuck Brook Pond system is contaminated.
Disadvantages	1) No redundancy of supply around Bowers Pond in case of contamination. 2) No redundancy of supply around Harris Pond in case of contamination. 3) WTP cannot get water directly from Merrimack River if Pennichuck Brook system is contaminated.	1) High cost. 2) Requires tie-ins to the existing MRI transmission main and WTP raw water gravity main/intake structure. 3) Requires replacing existing pumps at the MRI pump station w/higher head pumps to get water to WTP directly by-passing Pennichuck Brook pond system in case of contamination.	1) High cost. 2) Requires tie-ins to the existing MRI transmission main and WTP raw water gravity main/intake structure. 3) Requires replacing existing pumps at the MRI pump station w/higher head pumps to get water to WTP directly by-passing Pennichuck Brook pond system in case of contamination. 4) Requires easements from Railroad & NHDOT.
Rating	Neutral	Advantageous/Neutral	Disadvantageous
Total Est. Capital Cost	$0	$4,098,000	$6,000,000
Annual O&M Costs	$0	$2,700	$2,700
Net Present Value: Life Cycle Cost, 20yrs @ i=8%	$0	$4.124 mil	$6.025 mil