Clean Water Revolving Fund guidance for municipal wastewater projects 30 year expected life analysis

Introduction

The Minnesota Public Facilities Authority (PFA) typical loan repayment period for Clean Water Revolving Fund (CWRF) wastewater infrastructure projects is 20 years, based on Minn. Stat. 446A.07, subd. 7(c). This 20-year loan repayment timeframe matches up directly with the Facilities Plan wastewater infrastructure project planning period of 20 years as identified in Minn. R. 7077.0272, subp. 2(D). The Minnesota Pollution Control Agency (MPCA) approved Facilities Plan becomes the basis for development of plans and specifications for the wastewater infrastructure project to be constructed and financed by PFA.

The PFA does have flexibility to use a 30-year loan repayment period for projects that qualify under Minn. Stat. 446A.07, subd. 7(c), as it further reads: "unless the average annual residential wastewater system cost after completion of the project would exceed 1.4 percent of median household income in which case the loan must be fully amortized no later than 30 years after project completion". This possible 30-year loan term was included in changes to this statute on April 8, 2009.

In the fall of 2015, the PFA began to offer 30-year loans to wastewater infrastructure projects. During the spring of 2016, the PFA first requested MPCA staff to review consulting engineer project determinations that were showing that the expected project life would meet or exceed the 30-year period in order to support the PFA decision to offer a 30-year loan repayment period.

This MPCA guidance document has been developed to assist the MPCA CWRF staff engineers review and concur with the consulting engineer determination that a wastewater infrastructure project will have 30 year or more expected life.

Expected life analysis

The suggested method for the consulting engineer to determine an expected life for a wastewater infrastructure project is to calculate a cost weighted average expected useful life by using the as-bid costs for the large item assets of a construction project and assigning each asset an expected useful life value in years and then calculate the average expected useful life of the project with this calculation:

$$\sum \frac{\{(\text{As-bid cost of asset}) \times (\text{Asset expected life})\}}{(\text{Total as-bid project cost})} = \text{Average Expected Useful Life}$$

This method will require the project as-bid costs to be in the form of either a line item type bid or a lump sum bid with a schedule of values. The as-bid costs will be readily available to the project consulting engineer after completion of the project bid process.

The consulting engineer will need to assign an expected life to each of the large project assets. Expected life values for individual assets are available from reference sources. Two reference sources recently used to document expected life values include:

USEPA Asset Management: A Handbook for Small Water Systems (EPA 816-R-03-016), September 2003
Page 9, Estimated Useful Life Table (Current web link is at): http://tinyurl.com/hacs6ex

Massachusetts Water Resource Authority (MWRA), Proposed FY2017 Capital Improvement Program, February 2016, Appendix 10 Expected Useful Life of Capital Projects (Current web link is at): http://www.mwra.state.ma.us/finance/cip.htm

It is expected that there are other reference documents available that express the expected useful life of wastewater infrastructure project assets and components. Should a consulting engineer use other references to document an asset useful life, that practice is acceptable provided that the consulting engineer identifies that reference document source in writing to the MPCA staff engineer.

Where the consulting engineer believes it necessary to use best professional engineering judgement (BPEJ) to assign an asset an expected useful life, the consulting engineer should present their basis for using BPEJ to assign that expected useful life and preferably base that BPEJ on a like or similar asset expected useful life value from an engineering reference document (or source).

A recommended method to complete this analysis is to document the assets, as-bid cost per asset and expected useful life of the asset in a Table (spreadsheet) format. The bottom of the table can document the average expected useful life calculation. See Attachment A at the end of this document for a table example.

Review process

The 30-year expected useful life analysis will follow a four step review process. The steps are:

1. The PFA loan officer will identify a project that will be a candidate for a 30-year loan, and will contact the consulting engineer and the borrower for the project to notify them that an expected useful life analysis will need to be completed.
2. Next, the consulting engineer will complete the useful life analysis and will then submit the analysis to PFA.
3. A PFA loan officer will then send the expected life analysis to the MPCA CWRF engineer assigned to the project, and will request the MPCA CWRF engineer to review and concur with the consulting engineer's expected useful life analysis that shows the expected useful project life will be 30 years or more.
4. The MPCA CWRF engineer will review the project consulting engineer submittal, and if it is shown to have an acceptable expected useful life that is documented at or greater than 30 years, the MPCA can send the PFA loan officer an email concurring with the consulting engineers conclusion that the project expected useful life is at 30 years or greater. An example email for the MPCA CWRF engineer to use to send as a "concur" response to the PFA loan officer, is shown in Attachment B at the end of this document.

A copy of the "concur" email should be placed in the appropriate project file in the MPCA TEMPO (OnBase) storage system.

Summary

This guidance document has been created to identify the process that will take place when the PFA identifies a project that will be offered a 30-year loan, and will be requesting assistance from the MPCA to review a 30-year useful life project analysis. It identifies a suggested method for the 30-year expected useful life analysis and then describes the steps for the review process for the individual project expected life analysis. It also describes the final documentation of the MPCA CWRF engineer concurring with the project consulting engineer when that step has been completed.

MPCA acknowledgment

The MPCA would like to recognize and thank Paul Saffert, P.E., of Bolton & Menk, Inc. for his permission to include the St. Francis, Minnesota *Expected Life Determination* as the example in Attachment A of this guidance document.

Expected Life Determination Wastewater Treatment Facility St. Francis, Minnesota			
Asset	**Bid Value**	**Expected Life**	**Dollar * Years**
Mobilization	$ 785,000.00	20	$ 15,700,000.00
Demolition	$ 590,000.00	20	$ 11,800,000.00
Pavement	$ 245,000.00	20	$ 4,900,000.00
Earthwork	$ 3,630,000.00	100	$ 363,000,000.00
Site utilities	$ 1,200,000.00	50	$ 60,000,000.00
Grading roads	$ 150,000.00	50	$ 7,500,000.00
Turf establishment	$ 60,000.00	50	$ 3,000,000.00
Concrete	$ 4,960,000.00	50	$ 248,000,000.00
Precast	$ 1,400,000.00	50	$ 70,000,000.00
Masonry	$ 230,000.00	50	$ 11,500,000.00
Structural accessories	$ 110,000.00	20	$ 2,200,000.00
Roofing	$ 226,000.00	20	$ 4,520,000.00
Doors/hardware	$ 56,000.00	20	$ 1,120,000.00
Interior finishes	$ 435,300.00	20	$ 8,706,000.00
Process equipment	$ 2,412,000.00	20	$ 48,240,000.00
Special Systems	$ 487,000.00	20	$ 9,740,000.00
Process piping	$ 855,000.00	50	$ 42,750,000.00
Process valves	$ 400,000.00	20	$ 8,000,000.00
Plumbing/HVAC	$ 1,481,000.00	20	$ 29,620,000.00
Electrical/Controls	$ 2,120,000.00	20	$ 42,400,000.00
Subtotal	**$ 21,832,300.00**		**$ 992,696,000.00**
Average Expected Life of Wastewater Treatment Facility			**45.5 Years**

Using this methodology, the average expected life of the St. Francis Wastewater Treatment Facility is 45.5 years.

45 yrs tal PFA Spreadsheet 8-4-15

Should you have any additional information be required, please do not hesitate to give me a call at 612-840-6068.

Sincerely,
BOLTON & MENK, INC.

Paul Saffert, P.E.
Project Engineer

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Thorson, Randy (MPCA)

From:	Mathisen, Corey (MPCA)
Sent:	Thursday, June 23, 2016 2:07 PM
To:	Sabie, Becky (PFA)
Cc:	Thorson, Randy (MPCA); Freeman, Jeff (PFA); Priebe, Bill (MPCA); Dunn, Bill (MPCA)
Subject:	FW: Saint Francis - Useful Life
Attachments:	St Francis useful life calc from Bolton 8-4-15.pdf

Becky,

I have reviewed the Expected Life Determination for the St. Francis Wastewater Treatment Improvements project completed by Paul Saffert of Bolton & Menk, Inc. on August 4, 2015, (see attached) and I concur with that analysis which concluded the expected life of the project will be longer than the 30 year term of the loan.

Please let me know if you have any questions.

Thanks,
Corey

From: Sabie, Becky (PFA)
Sent: Saturday, March 05, 2016 8:08 AM
To: Mathisen, Corey (MPCA)
Subject: Saint Francis - Useful Life

Hi Corey,

Attached is a copy of a letter we received from Saint Francis' consulting engineer that includes a calculation of the useful life of the facility. The City qualifies for a 30-year term and PFA expects to make a 30-year loan to the City.

Please review Paul Saffert's letter and let me know if you concur with the results.

Thank you for your assistance,

Becky

Becky Sabie | Program Coordinator
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