

**Representative Policy Board
Finance Committee
South Central Connecticut Regional Water District**
Location: via Remote Access**

AGENDA

Regular Meeting of Monday, April 6, 2020 at 5:00 p.m.

1. Safety Moment
2. Approval of Minutes – March 9, 2020 regular meeting
3. Consider and act on recommendation to Representative Policy Board re Completeness, Mode and Date of Public Hearing for the Authority’s Application for a project to complete the North Sleeping Giant Wellfield Improvements
4. Review Quarterly Financial Statements
5. RPB Quarterly Dashboard Report
6. Reminder of special meetings to Review FY 2021 Budget:
 - a. CAC/LUC (joint meeting) – Monday, April 20, 2020 at 5:30 p.m.
 - b. Finance Committee – Wednesday, April 22, 2020 at 5:00 p.m.
7. Attendance at FMA Meetings
 - a. April 16, 2020 – Mr. Slocum
 - b. May 21, 2020 - Mr. Jaser
8. New Business
9. Adjourn

Note: As a reminder, the next regular meeting of the Finance Committee will be held on Monday, May 11, 2020 at 5:00 p.m.

****In accordance with the Governor Lamont’s, Executive Order No. 7B for the Protection of Public Health and Safety during COVID-19 Pandemic and Response, the public hearing will be held remotely under the requirements of Paragraph 1 of Executive Order No. 7B - Suspension of In-Person Open Meeting Requirements. Members of the public may attend the meeting via conference call, videoconference or other technology. For information on attending the meeting via remote access, and to view meeting documents, please visit www.rwater.com and select the green tab “Board Meetings & Minutes,” or for questions, contact the board office at 203-401-2515.**

Jennifer Slubowski is inviting you to a scheduled Zoom meeting.

Topic: RPB Finance Committee Meeting

Time: Apr 6, 2020 05:00 PM Eastern Time (US and Canada)

Join Zoom Meeting

<https://zoom.us/j/399504511>

Meeting ID: 399 504 511

One tap mobile

+16468769923,,399504511# US (New York)

+13126266799,,399504511# US (Chicago)

Dial by your location

+1 646 876 9923 US (New York)

+1 312 626 6799 US (Chicago)

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US

+1 301 715 8592 US

+1 346 248 7799 US (Houston)

+1 408 638 0968 US (San Jose)

Meeting ID: 399 504 511

SAFETY MOMENT

How to cope with Social Distancing

- **Limit news consumption to reliable sources** – balance your time spent watching news and on social media. Try reading, listening to music or learning something new.
- **Create and follow a daily routine** – maintaining a daily routine can help both adults and children preserve a sense of order and purpose in their lives.
- **Stay virtually connected with others** – use phone calls, text messages, and video chat to access social support networks.
- **Rely on pets for emotional support**
- **Maintain a healthy lifestyle** – get enough sleep, eat well and get plenty of exercise
- **Avoid using alcohol or drugs** to cope with the stress of social distancing
- **Use strategies to manage stress and stay positive** – focus on what you can do to help others, use techniques such as meditation and relaxation exercises.

Tap Into
Safety



Regional Water Authority



Service – Teamwork – Accountability – Respect – Safety

Safety is a core company value at the Regional Water Authority .
It is our goal to reduce workplace injuries to zero.

 Regional Water Authority

**Representative Policy Board
Finance Committee
South Central Connecticut Regional Water District
90 Sargent Drive, New Haven, CT 06511**

MINUTES

Regular Meeting of Monday, March 9, 2020 at 5:00 p.m.

ATTENDEES: Finance Committee Members: Tom Clifford, Charles Havrda, Jay Jaser, Jamie Mowat Young (via teleconference), Tim Slocum and Michelle Verderame

FMA Member: Kevin Curseaden

Management: Larry Bingaman, Linda Discepolo and Rochelle Kowalski

OCA: Atty. Jeffrey Donofrio

BlumShapiro: Jessica Aniskoff

1. Safety Moment – Chair Slocum reviewed the Safety Moment distributed to members.
2. Ms. Aniskoff of BlumShapiro, RWA’s external auditor, reviewed the audit plan for the upcoming fiscal year-ending May 31, 2020, which included:
 - a. Audit objectives, procedures, internal controls and procedures
 - b. A written review of management’s responsibilities
 - c. Auditor’s responsibilities
 - d. Areas of focus
 - e. Schedule, Multiple benchmarks from Feb. 20 – Sept. 10 delivery of report to management
 - f. New GASB areas of focus
3. On motion made by Mr. Clifford, seconded by Mr. Jaser, and unanimously carried the committee voted to approve the minutes of its February 10, 2020 meeting.
4. Waiver of Rules Discussion re Branford Hill Service Area Improvements – Management made its case for requesting a waiver of the rules regarding the application for the approval of a project to complete the Branford Hill Service area improvements.

On motion made by Ms. Mowat Young, seconded by Mr. Jaser, and unanimously carried the committee voted to recommend to the RPB a waiver of the rules regarding the application for the approval of a project to complete the Branford Hill Service area improvements.
5. Consider and act to recommend Branford Hill Service Area Improvements Application to RPB – Committee members reviewed the application for the approval of a project to complete the Branford Hill Service Area Improvements for completeness, mode and recommendation to the RPB for a public hearing. On motion made by Mr. Clifford, seconded by Mr. Jaser, and unanimously carried, the committee voted to recommend the application to the RPB.

6. Ms. Kowalski reviewed the Quarterly Report on RPB Approved Projects. She reported:
 - Ansonia-Derby Tank – litigation continues, briefs to be filed in March and April, with a hearing set for May. The city of Derby has extended the purchase and sale agreements related to properties. Three bids have been received on the project.
 - AMI – Remaining installation to be completed 3,944.
 - Brushy Plains Improvements – final phase to be completed by next quarter.
 - RTU Upgrades- First site to be switched to new system March 16 while other sites in progress. Anticipated completion is now set for spring 2021.
7. Mr. Slocum reviewed the Authority meeting attendance for March and April:
 - March 19 – Mr. Havrda
 - April 16 – Mr. Slocum
8. There was no new business to report.
9. At 5:36 p.m., the meeting adjourned.

Timothy Slocum, Chairman

Note: The next meeting of the Finance Committee will take place on Monday, April 6, 2020 at 5:00 p.m. (regular meeting).

Special Meetings to review FY 2021 Budget:

- Monday, April 20, 2020 at 5:30 p.m. (CAC/LUC Joint meeting)
- Wednesday, April 22, 2020 at 5:00 p.m. (Finance Committee)

Note: As a reminder, the next regular meeting of the Finance Committee will be held on Monday, May 11, 2020 at 5:00 p.m.

RECEIVED

By Jennifer Slubowski at 7:54 am, Mar 23, 2020



South Central Connecticut Regional Water Authority

90 Sargent Drive, New Haven, Connecticut 06511-5966 203-562-4020

<http://www.rwater.com>

March 19, 2020

Members of the Representative Policy Board
South Central Connecticut Regional Water District
90 Sargent Drive
New Haven, CT 06511-5966

Subject: Application to the Representative Policy Board For Approval of a
Project for North Sleeping Giant Wellfield Chemical Improvements

Ladies and Gentlemen:

The South Central Connecticut Regional Water Authority requests that the Representative Policy Board (RPB) accept the following enclosed document as complete:

Application for Approval of a Project for North Sleeping Giant Wellfield Chemical Improvements

Based on our conclusion that the proposed actions are consistent with the policies and advance the goals of the South Central Connecticut Regional Water Authority, are in the best interests of our customers, and will have no significant adverse impact on the environment, we are further requesting that the RPB approve this action following a public hearing.

Any questions regarding this Application may be directed to Ted Norris, Vice President of Asset Management or Rose Gavrilović, Director of Capital Planning and Delivery.

Sincerely,

SOUTH CENTRAL CONNECTICUT REGIONAL WATER AUTHORITY

Anthony DiSalvo 

Anthony DiSalvo
David J. Borowy
Joseph A. Cermola
Kevin J. Curseaden
Suzanne C. Sack

Enclosures

Application to the Representative Policy
Board for Approval of a Project for
North Sleeping Giant Wellfield Facility
Chemical Improvements



South Central Connecticut Regional Water Authority
March 19, 2020

**Application to the Representative Policy Board
For Approval of a Project for
North Sleeping Giant Wellfield Facility Chemical Improvements**

Table of Contents

1.0 Statement of Application	2
2.0 Description of Proposed Action	2
3.0 Need for Proposed Action.....	3
4.0 Analysis of Alternatives to the Proposed Action.....	3
5.0 Estimate of the Cost to Be Incurred and/or Saved.....	5
5.1 Capital Cost.....	5
5.2 Operations and Maintenance Costs	5
5.3 Bonds or Other Obligations the Authority Intends to Issue	6
6.0 Preliminary Project Schedule and Permitting	6
6.1 Schedule	6
6.2 Permitting	7
7.0 Statement of the Facts on Which the Board is Expected to Rely in Granting the Approval Sought	7
8.0 Explanation of Unusual Circumstances Involved in the Application.....	7
9.0 Conclusion.....	7

Appendix A: Project Bid Results

Appendix B: Summary of Business Case Evaluation

Appendix C: Association of the Advancement of Cost Engineering (AACE) Standards

1.0 Statement of Application

This is an application of the South Central Connecticut Regional Water Authority (RWA) to the Representative Policy Board (RPB) of the South Central Connecticut Regional Water District for consideration of a project to address chemical feed systems at the North Sleeping Giant (NSG) Wellfield, located in Hamden, CT.

Section 19 of Special Act 77-98 as amended requires the approval of the Representative Policy Board before the Authority commences any capital project costing more than \$2.0 million. The proposed project is estimated to cost approximately \$2.1 million.

The project was first included in the FY 2020 Capital Improvement Budget as a multi-year project spanning two fiscal years. Work planned for FY 2020 included the design, permitting, bidding and initiation of construction, with the project completion planned for FY 2021, at a cost estimated at \$2.1 million, including a 5% contingency.

2.0 Description of Proposed Action

The NSG Wellfield, located in the town of Hamden, consists of five production wells (Wells 1, 1B, 2N, 2R and 4) with a combined capacity of 2.9 MGD. It serves the York Hill Service Area, supplying a population of over 18,000 in Hamden. The chemical treatment building associated with the wellfield was constructed in year 1968 and is in need of rehabilitation. The existing chemical treatment systems consist of chlorination for disinfection, and phosphate for corrosion control, as well as the addition of fluoride.

This project consists of replacement of the fluoride, phosphate, and sodium hypochlorite chemical feed systems with in-kind replacement of the bulk tanks, day tanks, transfer pumps, and metering pumps, as well as new piping and appurtenances for each of the chemicals.

The project also includes the installation of a new sodium hydroxide chemical feed system (for pH adjustment), inclusive of a bulk storage tank with fill system, day tank, and transfer and metering pumps, with associated piping and appurtenances. The installation of the sodium hydroxide system is for the purpose of helping to achieve consistent targeted pH of 7.5. The raw water pH from each of the NSG Wellfield's five wells varies from a pH of 6.6 to 7.8. An optimal pH of 7.5 is necessary to optimize treatment at this facility to meet current regulatory requirements, as well as plan for future regulations related to the lead and copper rule. Temporary chemical feed systems will be in place during construction so that there will not be interruptions in our ability to provide service to our customers.

Additionally, there are several upgrades to the building that will be completed, including replacement of the exhaust fans, the unit heaters, and emergency eyewash/shower. A new tempered water system will also be installed as part of the new eyewash/shower. Several of the

entry doors to the chemical rooms are in poor condition, creating a security hazard and will also be replaced.

3.0 Need for Proposed Action

The NSG Wellfield is one of RWA's critical facilities and is necessary to provide water to the northern portion of our distribution system. In order to provide high-quality water to our customers in this area, the water quality of the existing wells requires reliable chemical treatment systems. The existing chemical treatment systems at this facility are over 50 years old and are in need of replacement. These systems have experienced leaks and become labor intensive for our treatment operators to maintain. The chemical rooms are very small and difficult to maneuver around and are hazardous for the operators. Piping in the chemical rooms will be reconfigured to increase maneuverability and Operator safety.

This project is necessary to improve the stability and reliability of the water produced and treated at the NSG Wellfield by addressing the known issues associated with the existing chemical feed systems. Furthermore, the addition of a new sodium hydroxide chemical feed system is required to optimize the existing treatment at the wellfield, as well as plan for future regulatory requirements. The project is also necessary to address safety concerns and other upgrades to the existing building.

4.0 Analysis of Alternatives to the Proposed Action

In determining the best course of action to address the chemical addition and improvements to the existing feed system and necessary safety improvement, RWA considered the following alternatives.

- 1. Alternative 1 – Status Quo:** Taking no action is not an acceptable alternative and was dismissed quickly. It does not provide a means to address the known issues with the chemical systems at the NSG Wellfield, nor add the sodium hydroxide chemical feed system for pH adjustment. The safety hazards associated with handling chemicals and poor chemical room layouts would remain.
- 2. Alternative 2 – Construction of a new Chemical Treatment Building at the North Sleeping Giant Wellfield:** This alternative would involve construction of a new Chemical Treatment Building to incorporate addition of pH adjustment chemical feed system along with new chemical feed systems for Fluoridation, Chlorination and Phosphate addition.

This alternative was dismissed because the existing building footprint can be optimized by re-configuring the existing chemical rooms and will incorporate the addition of a new chemical feed system for pH adjustment. The capital investment for a new building is estimated at \$3.75 million, would require extensive permitting and wetlands on the site would make it difficult to re-locate the building on the same site.

- 3. Alternative 3 – Rehabilitation of North Sleeping Giant Wellfield Chemical Improvements:** This alternative, which is the subject of this application, consists of the replacement of all chemical treatment systems (fluoride, phosphate, and sodium hypochlorite) at the NSG Wellfield, inclusive of a bulk storage tank with fill system, day tank, transfer and metering pumps, and associated piping and appurtenances. The alternative also includes installation of a new sodium hydroxide chemical feed system for pH adjustment, as well as addressing several needed building improvements.

This project alternative is estimated to cost \$2.1 million and fully rehabilitates the chemical treatment at the wellfield. It provides for better chemical room layouts and safer working conditions for treatment operators. Additionally, it will provide the new pH adjustment system for optimization of treatment to provide the highest quality of water to our customers in the York Hill Service Area. These improvements will significantly improve stability and reliability of the water produced and treated at the NSG wellfield at the lowest cost to our customers.

4.1 Alternative Selection

The Alternatives Analysis and supporting Business Case Evaluation (BCE), conducted by RWA staff, support the selection of Alternative 3, which includes rehabilitation of the existing North Sleeping Giant Wellfield chemical building and replacement of the chemical systems and associated equipment. This solution provides the most benefit to the RWA and its customers. These benefits include improvements to water quality and reliability, the ability to meet current and future regulatory requirements, replacing aging equipment, and adding additional treatment capabilities through the installation of a new chemical treatment system. In summary, the project associated with Alternative 3 was selected for the following reasons:

- The BCE demonstrates that Alternative 3 will provide a decrease in the annual operation and maintenance costs, reduce the annual risk, and result in the highest Benefit/Cost ratio of the alternatives.
- There will be improved reliability and water quality in the York Hill Service Area, by allowing for control and adjustment of finish water pH.
- A decrease in operation and maintenance costs (approximately \$2,500 annually) will be realized due to the renewal of chemical feed and treatment equipment.
- This alternative significantly improves the operational safety of the facility by improving the layout of piping and chemical feed systems.

5.0 Estimate of the Cost to Be Incurred and/or Saved

5.1 Capital Cost

The project is expected to result in a capital expenditure of approximately \$2,100,000, based on the lowest responsible bid received for this project. A breakdown of the capital cost related to this project is presented in Table 1.

TABLE 1
Capital Cost Breakdown
Construction Estimate

Description	Capital Cost
Previous Expenditures (through February 2020)	\$110,199
Contractor Construction Cost (low bid submitted by Associated Construction Company)	\$1,371,785
Temporary Chemical Systems	\$35,000
Construction Inspection	\$ 226,000
Construction Administration	\$60,000
RWA Costs	
Project Management, Permitting, SCADA Programming, Department Coordination	\$166,000
Subtotal	\$1,968,984
5% Contingency	\$98,450
Total	\$2,067,434
Rounded Total	\$2,100,000

The ancillary costs associated with this project, in addition to the contractor's bid, are significant due to a few factors, including the sequencing and number of chemical systems involved, the length of the actual construction period and RWA's stringent safety requirements. This wellfield is a remote site, which requires full-time inspection and observation while the contractor is working onsite. The sequencing of construction allows the chemical systems to be worked on only one system at a time, causing the extended construction timeline. Also, upgrading of the chemical rooms requires the installation of temporary chemical feed systems to prevent interruption of service and meet system demands.

A 5% contingency of approximately \$98,450 is included in this construction cost estimate. The Association of the Advancement of Cost Engineering (AACE) defines contingency as a specific provision for unforeseeable elements of cost within the defined project scope. Contingency typically ranges from 5% to 20%, based on the design level and complexity of the project. With this project being in the post-bid phase, the 5% contingency allowance was chosen in this case to cover any low unanticipated expenses that should occur.

5.2 Operations and Maintenance Costs

There will be an increase in operation and maintenance expenditures with the addition of a new chemical feed system at the NSG Wellfield. These additional costs will include the cost of the sodium hydroxide chemical itself, as well as the electrical power required to run the transfer and feed pumps. There is also expected to be a decrease in operating costs, mainly due to the reduction in treatment operator labor hours. Under current conditions, operators are frequently called out to the site to address maintenance issues, however, with the new chemical feed systems in place, the number of operator site visits is expected to decrease significantly.

Overall, this project is estimated to slightly decrease operation and maintenance expenditures when compared to the existing operations of the site. The current costs to operate and maintain the site are approximately \$160,480 annually. The estimated decrease in annual operation and maintenance expenditures resulting from this project is approximately \$2,500. Other operational and maintenance costs associated with site and building maintenance are not expected to change due to this project.

5.3 Bonds or Other Obligations the Authority Intends to Issue

The capital cost of the proposed project to implement the chemical feed improvements at the NSG Wellfield project is \$2.1 million. This project is expected to be financed by SCCRWA Water System Revenue Bonds as well as internally generated funds. Assuming all debt financing, the annual average debt service would be approximately \$121,443. As a result, the annual cost of this project to a typical residential customer would be approximately \$0.73, based on the overall project cost of \$2.1 million.

6.0 Preliminary Project Schedule and Permitting

6.1 Schedule

The project schedule is presented below. The project has been designed and bidding completed.

- | | |
|--------------------------------------|-----------------|
| 1. Permit Approvals: | April, 2020 |
| 2. RPB Application Action | June, 2020 |
| 3. Construction Contract Award: | August, 2020 |
| 4. Initiate Construction: | September, 2020 |
| 5. Complete Construction and Project | October, 2021 |

6.2 Permitting

Permitting will be required from the following regulatory agencies:

- The Connecticut Department of Public Health: Project Approval (previously obtained)
- Town of Hamden Building Permit (previously obtained)

7.0 Statement of the Facts on Which the Board is Expected to Rely in Granting the Approval Sought

- The North Sleeping Giant Wellfield's chemical feed systems have exceeded their estimated useful lives.
- This project alternative rehabilitates a critical infrastructure by replacing chemical feed systems that are in poor condition and adds a new pH adjustment chemical feed system to maintain reliable, high- quality water service to over 18,000 customers in the York Hill Service area.
- This project will significantly improve safety, stability and reliability of the water produced and treated at the NSG wellfield.

8.0 Explanation of Unusual Circumstances Involved in the Application

As mentioned previously, this project was included in the FY 2020 Capital Improvement Budget as a multi-year project commencing in FY 2020, with project completion planned for FY 2021. The project has been fully designed and bids have been received. Based on the low bid, the cost is estimated at \$2.1 million including contingency.

9.0 Conclusion

The NSG wellfield was constructed in year 1968 and the chemical feed systems are in need of rehabilitation. The existing chemical treatment systems consist of chlorination for disinfection, and phosphate for corrosion control, as well as the addition of fluoride.

The alternatives analysis and supporting BCE, conducted by RWA staff, support the rehabilitation of the existing North Sleeping Giant Wellfield chemical building and replacement of the chemical systems and associated equipment. This solution provides the most benefit to the RWA and its customers. This project is necessary to improve the stability and reliability of the water produced and treated at the NSG Wellfield by addressing the known issues associated with the existing chemical feed systems. Additionally, the addition of a new sodium hydroxide chemical feed system is required to optimize the existing treatment at the wellfield, as well as plan for future

regulatory requirements. It is also necessary to address safety concerns and other upgrades to the existing building.

The RWA concluded that the proposed action is consistent with, and advances the policies and goals of the South Central Connecticut Regional Water Authority.

APPENDIX A

Project Bid Results

Chemical Improvements at the North Sleeping Giant Wellfield

Bid Opening: 2/6/2020

	The Associated Construction Co.	Holzner Construction
<i>For Construction of the Chemical Improvements at the North Sleeping Giant Wellfield, as detailed on the drawings and described in the project manual</i>	\$ 1,371,785.00	\$ 1,693,000.00

Bid Opening Attendance

Name	Company
Rena Pioselli	Holzner Construction
Robert Rechl	The Associated Construction Co.

APPENDIX B

Summary of Business Case Evaluation



Summary of Business Case Evaluation

North Sleeping Giant Wellfield Facility Improvements

Option	Project Name	Life Cycle Costs - Annuitized Cost Stream	Risk Reduction Effectiveness Factor ¹	Benefit Cost Ratio ¹
Alternative 1	Status Quo	NA	NA	NA
Alternative 2	Construction of a new treatment building	\$249,347	57.66	38.68
Alternative 3	Rehabilitation of North Sleeping Giant Wellfield Chemical Improvements	\$124,998	115.02	50.57
Alternative 4				

¹ Higher value is more cost effective

APPENDIX C

**Association for the Advancement of
Cost Engineering (AACE) Standards**

AACE International Recommended Practice No. 18R-97

**COST ESTIMATE CLASSIFICATION SYSTEM – AS APPLIED IN
ENGINEERING, PROCUREMENT, AND CONSTRUCTION FOR
THE PROCESS INDUSTRIES**

TCM Framework: 7.3 – Cost Estimating and Budgeting

Acknowledgments:

Peter Christensen, CCE (Author)
Larry R. Dysert, CCC (Author)
Jennifer Bates, CCE
Dorothy J. Burton
Robert C. Creese, PE CCE
John K. Hollmann, PE CCE

Kenneth K. Humphreys, PE CCE
Donald F. McDonald, Jr. PE CCE
C. Arthur Miller
Bernard A. Pietlock, CCC
Wesley R. Querns, CCE
Don L. Short, II

COST ESTIMATE CLASSIFICATION SYSTEM – AS APPLIED IN ENGINEERING, PROCUREMENT, AND CONSTRUCTION FOR THE PROCESS INDUSTRIES

TCM Framework: 7.3 – Cost Estimating and Budgeting



February 2, 2005

PURPOSE

As a recommended practice of AACE International, the Cost Estimate Classification System provides guidelines for applying the general principles of estimate classification to project cost estimates (i.e., cost estimates that are used to evaluate, approve, and/or fund projects). The Cost Estimate Classification System maps the phases and stages of project cost estimating together with a generic maturity and quality matrix, which can be applied across a wide variety of industries.

This addendum to the generic recommended practice provides guidelines for applying the principles of estimate classification specifically to project estimates for engineering, procurement, and construction (EPC) work for the process industries. This addendum supplements the generic recommended practice (17R-97) by providing:

- a section that further defines classification concepts as they apply to the process industries;
- charts that compare existing estimate classification practices in the process industry; and
- a chart that maps the extent and maturity of estimate input information (project definition deliverables) against the class of estimate.

As with the generic standard, an intent of this addendum is to improve communications among all of the stakeholders involved with preparing, evaluating, and using project cost estimates specifically for the process industries.

It is understood that each enterprise may have its own project and estimating processes and terminology, and may classify estimates in particular ways. This guideline provides a generic and generally acceptable classification system for process industries that can be used as a basis to compare against. It is hoped that this addendum will allow each user to better assess, define, and communicate their own processes and standards in the light of generally-accepted cost engineering practice.

INTRODUCTION

For the purposes of this addendum, the term process industries is assumed to include firms involved with the manufacturing and production of chemicals, petrochemicals, and hydrocarbon processing. The common thread among these industries (for the purpose of estimate classification) is their reliance on process flow diagrams (PFDs) and piping and instrument diagrams (P&IDs) as primary scope defining documents. These documents are key deliverables in determining the level of project definition, and thus the extent and maturity of estimate input information.

Estimates for process facilities center on mechanical and chemical process equipment, and they have significant amounts of piping, instrumentation, and process controls involved. As such, this addendum may apply to portions of other industries, such as pharmaceutical, utility, metallurgical, converting, and similar industries. Specific addendums addressing these industries may be developed over time.

This addendum specifically does not address cost estimate classification in nonprocess industries such as commercial building construction, environmental remediation, transportation infrastructure, "dry" processes such as assembly and manufacturing, "soft asset" production such as software development, and similar industries. It also does not specifically address estimates for the exploration, production, or transportation of mining or hydrocarbon materials, although it may apply to some of the intermediate processing steps in these systems.

The cost estimates covered by this addendum are for engineering, procurement, and construction (EPC) work only. It does not cover estimates for the products manufactured by the process facilities, or for research and development work in support of the process industries. This guideline does not cover the

significant building construction that may be a part of process plants. Building construction will be covered in a separate addendum.

This guideline reflects generally-accepted cost engineering practices. This addendum was based upon the practices of a wide range of companies in the process industries from around the world, as well as published references and standards. Company and public standards were solicited and reviewed by the AACE International Cost Estimating Committee. The practices were found to have significant commonalities that are conveyed in this addendum.

COST ESTIMATE CLASSIFICATION MATRIX FOR THE PROCESS INDUSTRIES

The five estimate classes are presented in figure 1 in relationship to the identified characteristics. Only the level of project definition determines the estimate class. The other four characteristics are secondary characteristics that are generally correlated with the level of project definition, as discussed in the generic standard. The characteristics are typical for the process industries but may vary from application.

This matrix and guideline provide an estimate classification system that is specific to the process industries. Refer to the generic standard for a general matrix that is non-industry specific, or to other addendums for guidelines that will provide more detailed information for application in other specific industries. These will typically provide additional information, such as input deliverable checklists to allow meaningful categorization in those particular industries.

ESTIMATE CLASS	Primary Characteristic	Secondary Characteristic			
	LEVEL OF PROJECT DEFINITION Expressed as % of complete definition	END USAGE Typical purpose of estimate	METHODOLOGY Typical estimating method	EXPECTED ACCURACY RANGE Typical variation in low and high ranges [a]	PREPARATION EFFORT Typical degree of effort relative to least cost index of 1 [b]
Class 5	0% to 2%	Concept Screening	Capacity Factored, Parametric Models, Judgment, or Analogy	L: -20% to -50% H: +30% to +100%	1
Class 4	1% to 15%	Study or Feasibility	Equipment Factored or Parametric Models	L: -15% to -30% H: +20% to +50%	2 to 4
Class 3	10% to 40%	Budget, Authorization, or Control	Semi-Detailed Unit Costs with Assembly Level Line Items	L: -10% to -20% H: +10% to +30%	3 to 10
Class 2	30% to 70%	Control or Bid/Tender	Detailed Unit Cost with Forced Detailed Take-Off	L: -5% to -15% H: +5% to +20%	4 to 20
Class 1	50% to 100%	Check Estimate or Bid/Tender	Detailed Unit Cost with Detailed Take-Off	L: -3% to -10% H: +3% to +15%	5 to 100

- Notes: [a] The state of process technology and availability of applicable reference cost data affect the range markedly. The +/- value represents typical percentage variation of actual costs from the cost estimate after application of contingency (typically at a 50% level of confidence) for given scope.
- [b] If the range index value of "1" represents 0.005% of project costs, then an index value of 100 represents 0.5%. Estimate preparation effort is highly dependent upon the size of the project and the quality of estimating data and tools.

Figure 1. – Cost Estimate Classification Matrix for Process Industries
CHARACTERISTICS OF THE ESTIMATE CLASSES

The following charts (figures 2a through 2e) provide detailed descriptions of the five estimate classifications as applied in the process industries. They are presented in the order of least-defined estimates to the most-defined estimates. These descriptions include brief discussions of each of the estimate characteristics that define an estimate class.

For each chart, the following information is provided:

- **Description:** a short description of the class of estimate, including a brief listing of the expected estimate inputs based on the level of project definition.
- **Level of Project Definition Required:** expressed as a percent of full definition. For the process industries, this correlates with the percent of engineering and design complete.
- **End Usage:** a short discussion of the possible end usage of this class of estimate.
- **Estimating Methods Used:** a listing of the possible estimating methods that may be employed to develop an estimate of this class.
- **Expected Accuracy Range:** typical variation in low and high ranges after the application of contingency (determined at a 50% level of confidence). Typically, this results in a 90% confidence that the actual cost will fall within the bounds of the low and high ranges.
- **Effort to Prepare:** this section provides a typical level of effort (in hours) to produce a complete estimate for a US\$20,000,000 plant. Estimate preparation effort is highly dependent on project size, project complexity, estimator skills and knowledge, and on the availability of appropriate estimating cost data and tools.
- **ANSI Standard Reference (1989) Name:** this is a reference to the equivalent estimate class in the existing ANSI standards.
- **Alternate Estimate Names, Terms, Expressions, Synonyms:** this section provides other commonly used names that an estimate of this class might be known by. These alternate names are not endorsed by this Recommended Practice. The user is cautioned that an alternative name may not always be correlated with the class of estimate as identified in the chart.

CLASS 5 ESTIMATE	
<p>Description: Class 5 estimates are generally prepared based on very limited information, and subsequently have wide accuracy ranges. As such, some companies and organizations have elected to determine that due to the inherent inaccuracies, such estimates cannot be classified in a conventional and systemic manner. Class 5 estimates, due to the requirements of end use, may be prepared within a very limited amount of time and with little effort expended—sometimes requiring less than an hour to prepare. Often, little more than proposed plant type, location, and capacity are known at the time of estimate preparation.</p> <p>Level of Project Definition Required: 0% to 2% of full project definition.</p> <p>End Usage: Class 5 estimates are prepared for any number of strategic business planning purposes, such as but not limited to market studies, assessment of initial viability, evaluation of alternate schemes, project screening, project location studies, evaluation of resource needs and budgeting, long-range capital planning, etc.</p>	<p>Estimating Methods Used: Class 5 estimates virtually always use stochastic estimating methods such as cost/capacity curves and factors, scale of operations factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, and other parametric and modeling techniques.</p> <p>Expected Accuracy Range: Typical accuracy ranges for Class 5 estimates are - 20% to -50% on the low side, and +30% to +100% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.</p> <p>Effort to Prepare (for US\$20MM project): As little as 1 hour or less to perhaps more than 200 hours, depending on the project and the estimating methodology used.</p> <p>ANSI Standard Reference Z94.2-1989 Name: Order of magnitude estimate (typically -30% to +50%).</p> <p>Alternate Estimate Names, Terms, Expressions, Synonyms: Ratio, ballpark, blue sky, seat-of-pants, ROM, idea study, prospect estimate, concession license estimate, guesstimate, rule-of-thumb.</p>

Figure 2a. – Class 5 Estimate

CLASS 4 ESTIMATE	
<p>Description: Class 4 estimates are generally prepared based on limited information and subsequently have fairly wide accuracy ranges. They are typically used for project screening, determination of feasibility, concept evaluation, and preliminary budget approval. Typically, engineering is from 1% to 15% complete, and would comprise at a minimum the following: plant capacity, block schematics, indicated layout, process flow diagrams (PFDs) for main process systems, and preliminary engineered process and utility equipment lists.</p> <p>Level of Project Definition Required: 1% to 15% of full project definition.</p> <p>End Usage: Class 4 estimates are prepared for a number of purposes, such as but not limited to, detailed strategic planning, business development, project screening at more developed stages, alternative scheme analysis, confirmation of economic and/or technical feasibility, and preliminary budget approval or approval to proceed to next stage.</p>	<p>Estimating Methods Used: Class 4 estimates virtually always use stochastic estimating methods such as equipment factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, the Miller method, gross unit costs/ratios, and other parametric and modeling techniques.</p> <p>Expected Accuracy Range: Typical accuracy ranges for Class 4 estimates are -15% to -30% on the low side, and +20% to +50% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.</p> <p>Effort to Prepare (for US\$20MM project): Typically, as little as 20 hours or less to perhaps more than 300 hours, depending on the project and the estimating methodology used.</p> <p>ANSI Standard Reference Z94.2-1989 Name: Budget estimate (typically -15% to + 30%).</p> <p>Alternate Estimate Names, Terms, Expressions, Synonyms: Screening, top-down, feasibility, authorization, factored, pre-design, pre-study.</p>

Figure 2b. – Class 4 Estimate

CLASS 3 ESTIMATE	
<p>Description: Class 3 estimates are generally prepared to form the basis for budget authorization, appropriation, and/or funding. As such, they typically form the initial control estimate against which all actual costs and resources will be monitored. Typically, engineering is from 10% to 40% complete, and would comprise at a minimum the following: process flow diagrams, utility flow diagrams, preliminary piping and instrument diagrams, plot plan, developed layout drawings, and essentially complete engineered process and utility equipment lists.</p> <p>Level of Project Definition Required: 10% to 40% of full project definition.</p> <p>End Usage: Class 3 estimates are typically prepared to support full project funding requests, and become the first of the project phase "control estimates" against which all actual costs and resources will be monitored for variations to the budget. They are used as the project budget until replaced by more detailed estimates. In many owner organizations, a Class 3 estimate may be the last estimate required and could well form the only basis for cost/schedule control.</p>	<p>Estimating Methods Used: Class 3 estimates usually involve more deterministic estimating methods than stochastic methods. They usually involve a high degree of unit cost line items, although these may be at an assembly level of detail rather than individual components. Factoring and other stochastic methods may be used to estimate less-significant areas of the project.</p> <p>Expected Accuracy Range: Typical accuracy ranges for Class 3 estimates are -10% to -20% on the low side, and +10% to +30% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.</p> <p>Effort to Prepare (for US\$20MM project): Typically, as little as 150 hours or less to perhaps more than 1,500 hours, depending on the project and the estimating methodology used.</p> <p>ANSI Standard Reference Z94.2-1989 Name: Budget estimate (typically -15% to + 30%).</p> <p>Alternate Estimate Names, Terms, Expressions, Synonyms: Budget, scope, sanction, semi-detailed, authorization, preliminary control, concept study, development, basic engineering phase estimate, target estimate.</p>

Figure 2c. – Class 3 Estimate

CLASS 2 ESTIMATE	
<p>Description: Class 2 estimates are generally prepared to form a detailed control baseline against which all project work is monitored in terms of cost and progress control. For contractors, this class of estimate is often used as the "bid" estimate to establish contract value. Typically, engineering is from 30% to 70% complete, and would comprise at a minimum the following: process flow diagrams, utility flow diagrams, piping and instrument diagrams, heat and material balances, final plot plan, final layout drawings, complete engineered process and utility equipment lists, single line diagrams for electrical, electrical equipment and motor schedules, vendor quotations, detailed project execution plans, resourcing and work force plans, etc.</p> <p>Level of Project Definition Required: 30% to 70% of full project definition.</p> <p>End Usage: Class 2 estimates are typically prepared as the detailed control baseline against which all actual costs and resources will now be monitored for variations to the budget, and form a part of the change/variation control program.</p>	<p>Estimating Methods Used: Class 2 estimates always involve a high degree of deterministic estimating methods. Class 2 estimates are prepared in great detail, and often involve tens of thousands of unit cost line items. For those areas of the project still undefined, an assumed level of detail takeoff (forced detail) may be developed to use as line items in the estimate instead of relying on factoring methods.</p> <p>Expected Accuracy Range: Typical accuracy ranges for Class 2 estimates are -5% to -15% on the low side, and +5% to +20% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.</p> <p>Effort to Prepare (for US\$20MM project): Typically, as little as 300 hours or less to perhaps more than 3,000 hours, depending on the project and the estimating methodology used. Bid estimates typically require more effort than estimates used for funding or control purposes.</p> <p>ANSI Standard Reference Z94.2-1989 Name: Definitive estimate (typically -5% to + 15%).</p> <p>Alternate Estimate Names, Terms, Expressions, Synonyms: Detailed control, forced detail, execution phase, master control, engineering, bid, tender, change order estimate.</p>


Figure 2d. – Class 2 Estimate

CLASS 1 ESTIMATE	
<p>Description: Class 1 estimates are generally prepared for discrete parts or sections of the total project rather than generating this level of detail for the entire project. The parts of the project estimated at this level of detail will typically be used by subcontractors for bids, or by owners for check estimates. The updated estimate is often referred to as the current control estimate and becomes the new baseline for cost/schedule control of the project. Class 1 estimates may be prepared for parts of the project to comprise a fair price estimate or bid check estimate to compare against a contractor's bid estimate, or to evaluate/dispute claims. Typically, engineering is from 50% to 100% complete, and would comprise virtually all engineering and design documentation of the project, and complete project execution and commissioning plans.</p> <p>Level of Project Definition Required: 50% to 100% of full project definition.</p> <p>End Usage: Class 1 estimates are typically prepared to form a current control estimate to be used as the final control baseline against which all actual costs and resources will now be monitored for variations to the budget, and form a part of the change/variation control program. They may be used to evaluate bid checking, to support vendor/contractor negotiations, or for claim evaluations and dispute resolution.</p>	<p>Estimating Methods Used: Class 1 estimates involve the highest degree of deterministic estimating methods, and require a great amount of effort. Class 1 estimates are prepared in great detail, and thus are usually performed on only the most important or critical areas of the project. All items in the estimate are usually unit cost line items based on actual design quantities.</p> <p>Expected Accuracy Range: Typical accuracy ranges for Class 1 estimates are -3% to -10% on the low side, and +3% to +15% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.</p> <p>Effort to Prepare (for US\$20MM project): Class 1 estimates require the most effort to create, and as such are generally developed for only selected areas of the project, or for bidding purposes. A complete Class 1 estimate may involve as little as 600 hours or less, to perhaps more than 6,000 hours, depending on the project and the estimating methodology used. Bid estimates typically require more effort than estimates used for funding or control purposes.</p> <p>ANSI Standard Reference Z94.2 Name: Definitive estimate (typically -5% to + 15%).</p> <p>Alternate Estimate Names, Terms, Expressions, Synonyms: Full detail, release, fall-out, tender, firm price, bottoms-up, final, detailed control, forced detail, execution phase, master control, fair price, definitive, change order estimate.</p>

Figure 2e. – Class 1 Estimate

COMPARISON OF CLASSIFICATION PRACTICES

Figures 3a through 3c provide a comparison of the estimate classification practices of various firms, organizations, and published sources against one another and against the guideline classifications. These tables permits users to benchmark their own classification practices.



AACE Classification Standard	ANSI Standard Z94.0	AACE Pre-1972	Association of Cost Engineers (UK) ACostE	Norwegian Project Management Association (NFP)	American Society of Professional Estimators (ASPE)
Class 5	Order of Magnitude Estimate -30/+50	Order of Magnitude Estimate	Order of Magnitude Estimate Class IV -30/+30	Concession Estimate	Level 1
				Exploration Estimate	
				Feasibility Estimate	
Class 4	Budget Estimate -15/+30	Study Estimate	Study Estimate Class III -20/+20	Authorization Estimate	Level 2
Class 3		Preliminary Estimate	Budget Estimate Class II -10/+10	Master Control Estimate	Level 3
Class 2	Definitive Estimate -5/+15	Definitive Estimate	Definitive Estimate Class I -5/+5	Current Control Estimate	Level 4
Class 1		Detailed Estimate			Level 5

Figure 3a. – Comparison of Classification Practices

AAACE Classification Standard	Major Consumer Products Company (Confidential)	Major Oil Company (Confidential)	Major Oil Company (Confidential)	Major Oil Company (Confidential)
Class 5	Class S Strategic Estimate	Class V Order of Magnitude Estimate	Class A Prospect Estimate	Class V
			Class B Evaluation Estimate	
Class 4	Class 1 Conceptual Estimate	Class IV Screening Estimate	Class C Feasibility Estimate	Class IV
			Class D Development Estimate	
Class 3	Class 2 Semi-Detailed Estimate	Class III Primary Control Estimate	Class E Preliminary Estimate	Class III
Class 2	Class 3 Detailed Estimate	Class II Master Control Estimate	Class F Master Control Estimate	Class II
Class 1		Class I Current Control Estimate	Current Control Estimate	Class I

Figure 3b. – Comparison of Classification Practices

AAACE Classification Standard	J.R. Heizelman, 1988 AAACE Transactions [1]	K.T. Yeo, The Cost Engineer, 1989 [2]	Stevens & Davls, 1988 AAACE Transactions [3]	P. Behrenbruck, Journal of Petroleum Technology, 1993 [4]
Class 5	Class V	Class V Order of Magnitude	Class III*	Order of Magnitude
Class 4	Class IV	Class IV Factor Estimate	Class II	Study Estimate
Class 3	Class III	Class III Office Estimate		Budget Estimate
Class 2	Class II	Class II Definitive Estimate	Class I	Control Estimate
Class 1	Class I	Class I Final Estimate		

[1] John R. Heizelman, ARCO Oil & Gas Co., 1988 AAACE Transactions, Paper V3.7

[2] K.T. Yeo, The Cost Engineer, Vol. 27, No. 6, 1989

[3] Stevens & Davis, BP International Ltd., 1988 AAACE Transactions, Paper B4.1 (* Class III is inferred)

[4] Peter Behrenbruck, BHP Petroleum Pty., Ltd., article in Petroleum Technology, August 1993

Figure 3c. – Comparison of Classification Practices

ESTIMATE INPUT CHECKLIST AND MATURITY MATRIX

Figure 4 maps the extent and maturity of estimate input information (deliverables) against the five estimate classification levels. This is a checklist of basic deliverables found in common practice in the process industries. The maturity level is an approximation of the degree of completion of the deliverable. The degree of completion is indicated by the following letters.

- None (blank): development of the deliverable has not begun.
- Started (S): work on the deliverable has begun. Development is typically limited to sketches, rough outlines, or similar levels of early completion.
- Preliminary (P): work on the deliverable is advanced. Interim, cross-functional reviews have usually been conducted. Development may be near completion except for final reviews and approvals.
- Complete (C): the deliverable has been reviewed and approved as appropriate.

General Project Data:	ESTIMATE CLASSIFICATION				
	CLASS 5	CLASS 4	CLASS 3	CLASS 2	CLASS 1
Project Scope Description	General	Preliminary	Defined	Defined	Defined
Plant Production/Facility Capacity	Assumed	Preliminary	Defined	Defined	Defined
Plant Location	General	Approximate	Specific	Specific	Specific
Soils & Hydrology	None	Preliminary	Defined	Defined	Defined
Integrated Project Plan	None	Preliminary	Defined	Defined	Defined
Project Master Schedule	None	Preliminary	Defined	Defined	Defined
Escalation Strategy	None	Preliminary	Defined	Defined	Defined
Work Breakdown Structure	None	Preliminary	Defined	Defined	Defined
Project Code of Accounts	None	Preliminary	Defined	Defined	Defined
Contracting Strategy	Assumed	Assumed	Preliminary	Defined	Defined
Engineering Deliverables:					
Block Flow Diagrams	S/P	P/C	C	C	C
Plot Plans		S	P/C	C	C
Process Flow Diagrams (PFDs)		S/P	P/C	C	C
Utility Flow Diagrams (UFDs)		S/P	P/C	C	C
Piping & Instrument Diagrams (P&IDs)		S	P/C	C	C
Heat & Material Balances		S	P/C	C	C
Process Equipment List		S/P	P/C	C	C
Utility Equipment List		S/P	P/C	C	C
Electrical One-Line Drawings		S/P	P/C	C	C
Specifications & Datasheets		S	P/C	C	C
General Equipment Arrangement Drawings		S	P/C	C	C
Spare Parts Listings			S/P	P	C
Mechanical Discipline Drawings			S	P	P/C
Electrical Discipline Drawings			S	P	P/C
Instrumentation/Control System Discipline Drawings			S	P	P/C
Civil/Structural/Site Discipline Drawings			S	P	P/C

Figure 4. – Estimate Input Checklist and Maturity Matrix

REFERENCES

ANSI Standard Z94.2-1989. **Industrial Engineering Terminology: Cost Engineering.**
AACE International Recommended Practice No.17R-97, **Cost Estimate Classification System.**

CONTRIBUTORS

Peter Christensen, CCE (Author)
Larry R. Dysert, CCC (Author)
Jennifer Bates, CCE

Dorothy J. Burton
Robert C. Creese, PE CCE
John K. Hollmann, PE CCE
Kenneth K. Humphreys, PE CCE
Donald F. McDonald, Jr. PE CCE
C. Arthur Miller
Bernard A. Pietlock, CCC
Wesley R. Querns, CCE
Don L. Short, II

TO: RPB Finance Committee Members

Thomas P. Clifford III	Jamie Mowat Young
Charles Havdra	Timothy Slocum
Jasper J. Jaser	Michelle Verderame
Vincent Marino	

FROM: Rochelle Kowalski
Vice President of Finance and Controller

DATE: March 31, 2020

SUBJECT: Quarterly financial statements for fiscal year 2020 (ending May 31, 2020)

Attached are the following financial reports regarding the third quarter of fiscal year 2020. i.e., the quarter ended February 29, 2020:

- Statements of net position as of February 29, 2020 and February 28, 2019;
- Schedule A-1 & A-2: Statements of revenues, expenses and changes in net position as of February 29, 2020, maintenance test, and commentary;
- Schedule B: Operating and maintenance expenses;
- Schedule C: Capital budget report;
- Schedule D: Investment earnings report - comparison of investment rates of return

The reports bulleted above incorporate the Authority's experience from June 2019 through February 2020. For the remainder of fiscal year 2020, the reports include the projections shown on schedules A-2 and B which use the assumptions explained below.

Schedule A-2: Statements of Revenues, Expenses and Changes in Net Position

Section of page entitled “Nine months Ended February 29, 2020”

The figures shown present June to February 2020 as well as comparative budget vs. actual results for the nine months ended February 29, 2020.

Section of page entitled “Year Ending May 31, 2020”

The “budget” column is the budget for fiscal year 2020, as approved by the Five-Member Authority.

Assumption 1

The column labeled *Assumption 1* presents earned metered water revenues that reflect nine months (June through February 2020) of consumption and three months of budgeted consumption for (March 2020 through May 2020).

Other revenues and expenses shown in this column reflect nine months of results and three months, as projected.

Assumption 2

The column labeled *Assumption 2* projects consumption for the months of March 2020 through May 2020 at 2% below budget. Operating expenses for “pump power” and chemicals for these same months are adjusted to reflect the 2% decrease.

Assumption 3

The column labeled *Assumption 3* projects consumption for the months of March 2020 through May 2020 at 4% below budget. Operating expenses for “pump power” and chemicals for these same months are adjusted to reflect the 4% decrease.

Section of page entitled “Maintenance Test”

The maintenance test reflects the same three assumptions described above except that water sales are not accrued revenue, but cash collections from June through February 2020, plus projected cash collections for March 2020 through May 2020. Management projects cash collections by applying historical collection patterns to billings. Management assumes that the billings are collected over the course of the subsequent twelve months.

Schedule B: Operating and Maintenance Expense

This schedule provides details of the operating and maintenance expense for the third quarter of fiscal year 2020, as well as projections for March 2020 through May 2020 under the three assumptions presented above.

Schedule C: Capital Budget Report

This schedule shows capital expenditures for June through February 2020, as well as projections for the full fiscal year 2020.

Schedule D: Interest Earned

Compared here are “budgeted” versus “actual” interest rates earned on the Authority’s invested funds.

Attachments

REGIONAL WATER AUTHORITY
STATEMENTS OF NET POSITION
AS OF FEBRUARY 29, 2020 AND 2019

Assets	FY 2020	FY 2019	Y/Y Variance	Liabilities and Net Assets	FY 2020	FY 2019	Y/Y Variance
Utility plant				Liabilities			
Property, plant and equipment in service	\$ 877,065,933	\$ 861,914,480	\$ 15,151,454	Revenue bonds payable, less current portion	\$ 516,180,000	\$ 496,190,000	\$ 19,990,000
Accumulated depreciation	(356,728,866)	(335,565,044)	(21,163,822)	Net premiums and discounts from revenue bonds payable	46,643,624	59,859,470	(13,215,846)
Utility plant in service	520,337,067	526,349,435	(6,012,368)	DWSRF loans payable, less current portion	21,374,208	19,353,273	2,020,935
Land	28,090,328	28,015,380	74,948	Net pension liability	17,122,195	15,633,774	1,488,421
Construction work in progress	25,522,529	15,753,079	9,769,450	Net OPEB obligation	20,030,271	23,652,026	(3,621,755.00)
Total utility plant, net	573,949,924	570,117,895	3,832,029	Total noncurrent liabilities	621,350,298	614,688,543	6,661,755
Nonutility land, at cost	64,983,522	64,930,464	53,058	Current liabilities			
Goodwill	14,423,704	14,423,704	-	Current portion of revenue bonds payable	19,765,000	17,645,000	2,120,000
Current assets				Current portion of DWSRF loans payable	1,033,618	883,499	150,119
Cash and cash equivalents	49,364,205	43,389,262	5,974,943	Accounts payable	3,721,795	3,086,119	635,676
Investments	100,000	200,000	(100,000)	Notes payable	5,745,476	18,106,219	(12,360,743)
Accounts receivable, less allowance for doubtful accounts	12,812,957	12,978,250	(165,293)	Customer deposits and advances	2,708,649	2,005,229	703,420
Accrued revenue	14,810,774	15,069,578	(258,804)	Other accrued liabilities	7,425,160	7,596,420	(171,260)
Accrued interest receivable	114,208	152,697	(38,489)	Total current liabilities	40,399,697	49,322,485	(8,922,787)
Materials and supplies	1,391,473	1,487,966	(96,493)	Liabilities payable from restricted assets			
Prepaid expenses and other assets	3,705,954	2,909,502	796,451	Accounts payable for construction	919,442	1,197,571	(278,128)
Total current assets	82,299,570	76,187,256	6,112,314	Accrued interest payable	1,864,921	2,046,173	(181,252)
Long-Term Note Receivable	500,000.0	500,000.00	-	Customer deposits and advances	1,000,703	1,723,105	(722,402)
Pension Assets				Total liabilities payable from restricted assets	3,785,066	4,966,849	(1,181,783)
OPEB Assets				Other liabilities	185,257	1,152,585	(967,328)
Restricted assets	104,718,565	99,262,826	5,455,739	Total liabilities	665,720,318	670,130,462	(4,410,143)
Regulatory assets	10,703,911	10,557,736	146,175	Deferred inflows of resources			
Total assets	851,579,196	835,979,881	15,599,315	Deferred inflows related to pensions	1,221,466	2,996,248	(1,774,782)
Deferred Outflows of Resources				Deferred inflows related to OPEB	3,059,186	170,587	2,888,599
Deferred charge on refunding	18,870,004	18,413,096	456,908	Net Assets			
Deferred charge on pension plans	2,923,318	1,568,335	1,354,983	Invested in capital assets, net of related debt	61,485,229	55,847,981	5,637,248
Deferred charge on OPEB plans	1,151,455	821,989	329,466	Restricted assets	101,433,499	94,795,887	6,637,612
				Unrestricted assets	41,604,275	32,842,137	8,762,138
				Total net assets	204,523,003	183,486,005	21,036,998
Total	\$ 874,523,974	\$ 856,783,302	\$ 17,740,672	Total liabilities and net assets	\$ 874,523,974	\$ 856,783,302	\$ 17,740,672

REGIONAL WATER AUTHORITY

SCHEDULE A-2

February 29, 2020

(\$000 Omitted)

**STATEMENTS OF REVENUES, EXPENSES
AND CHANGES IN NET ASSETS**

	Eight Months Ending February 29				Twelve Months Ending May 31			
	FY 2019 Actual	FY 2020 Budget	FY 2020 Actual	(Under)Over Budget	Budget	Assumption 1	Assumption 2	Assumption 3
Operating Revenues								
Metered Water Revenues	\$ 76,009	\$ 79,900	\$ 78,643	\$ (1,257)	\$ 105,736	\$ 104,480	\$ 104,131	\$ 103,782
Fire Service	8,443	9,016	9,036	20	12,083	12,103	12,103	12,103
Wholesale Water	746	630	671	41	819	860	860	860
Other revenue - water	2,690	2,678	2,509	(169)	3,510	2,743	2,743	2,743
Other revenue - proprietary	6,722	6,889	7,742	853	9,274	10,248	10,248	10,248
Total Operating Revenues	94,609	99,113	98,602	(511)	131,421	130,434	130,085	129,736
Operating Expenses								
Operating and Maintenance	41,618	45,695	41,462	(4,233)	61,049	59,570	59,473	59,453
Expenses associated with other revenue-water	1,308	1,415	1,235	(180)	1,891	1,863	1,863	1,863
Expenses associated with other revenue-proprietary	1,839	2,320	2,410	90	2,968	4,317	4,317	4,317
Provision for uncollectible accounts	462	750	916	166	975	991	991	991
Depreciation	17,700	18,900	18,900	-	25,200	25,200	25,200	25,200
Payment in lieu of taxes	6,338	6,546	6,325	(221)	8,724	8,415	8,415	8,415
Amortization Pension Outflows/Inflows	(204)	277	277	0	449	449	449	449
Amortization OPEB Outflows/Inflows	-	(271)	(271)	(0)	(362)	(362)	(362)	(362)
Total Operating Expenses	69,061	75,631	71,253	(4,378)	100,893	100,442	100,345	100,325
Operating Income	25,548	23,482	27,349	3,868	30,528	29,992	29,740	29,411
Nonoperating income and (expense)								
Interest Income	3,346	3,310	3,445	135	4,393	4,428	4,428	4,428
(Loss)/Gain on disposal of assets	114	-	133	133	-	(100)	(100)	(100)
Interest Expense	(19,104)	(19,354)	(18,439)	915	(25,701)	(24,223)	(24,223)	(24,223)
Amortization of bond discount, premium issuance cost and deferred losses	2,752	2,867	2,641	(226)	3,774	3,381	3,381	3,381
Intergovernmental revenue	600	-	180	180	-	480	480	480
Total nonoperating income & (expense)	(12,293)	(13,177)	(12,040)	1,137	\$ (17,534)	\$ (16,035)	\$ (16,035)	\$ (16,035)
(Expense) income before contributions	13,255	\$ 10,305	15,309	\$ 5,005	\$ 12,993	\$ 13,957	\$ 13,705	\$ 13,376
Capital contributions	1,773		884					
Change in net assets	15,029		16,193					
Total net assets - beginning of fiscal year	168,457		188,331					
Total net assets - end of reporting month	\$ 183,486		\$ 204,524					

MAINTENANCE TEST

	Twelve Months Ending May 31			
	Budget	Assumption 1	Assumption 2	Assumption 3
Revenue Collected:				
Water Sales	\$ 116,162	\$ 114,412	\$ 114,195	\$ 113,978
Interest Income	1,915	1,790	1,790	1,790
BABs Subsidy	654	655	655	655
Allocation from Rate Stabilization Fund	829	-	-	-
Other Net	7,271	6,811	6,811	6,811
Common Non-Core	(250)	(243)	(243)	(243)
Total	126,581	123,425	123,208	122,991
Less:				
Operating and Maintenance Expenses	(61,049)	(59,570)	(59,473)	(59,453)
Common Non-Core	128	110	110	110
Depreciation	(6,417)	(6,417)	(6,417)	(6,417)
PILOT Payments	(8,724)	(8,415)	(8,415)	(8,415)
Net revenue available for debt service (A)	50,519	49,133	49,013	48,816
Debt service payments (C)	\$ 44,315	\$ 41,488	\$ 41,488	\$ 41,488
Debt service @ 114% (B)	\$ 50,519	\$ 47,297	\$ 47,297	\$ 47,297
Difference (A-B)	\$ (0)	\$ 1,837	\$ 1,717	\$ 1,520
Coverage (B/C)	114%	118%	118%	118%

REGIONAL WATER AUTHORITY
REVIEW OF FINANCIAL DATA
February 29, 2020 (FY 2020)

SCHEDULE A-1 - COMMENTARY

STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION

Operating Revenues

FY20 revenue for water, including wholesale and fire service, is under budget by \$1,195k (approx. 1.3%) primarily due to lower than anticipated water billings. Metered water revenue is under budget by \$1,257k.

Total net other revenue is \$774k above budget primarily due to higher other proprietary revenue.

Operating Expenses

Operating and Maintenance Expenses are currently under budget due to the following:

Payroll is under budget primarily due to head count under runs and other factors.	\$ (1,657,000)
Employee Benefits are under budget primarily due to the mix of retiree vs. active medical and lower than anticipated costs.	(236,000)
General & Admin is under budget across multiple areas primarily due to timing.	(99,000)
Transportation is under budget primarily due to claim reimbursements and Captive vehicle insurance.	(143,000)
Material from inventory is under budget largely due to expenditures associated composite manhole covers.	(159,000)
Pump Power is under budget primarily due to timing.	(149,000)
Chemicals Expense is under budget primarily due to timing.	(74,000)
Collection Expense is under budget due to the timing of the affordability fund contributions and year-to-date collections related expenses.	(132,000)
Business Improvement is under budget due to lower than anticipated costs and timing.	(221,000)
Public/Customer Information is under budget primarily due to timing.	(134,000)
Outside Services are under budget in multiple areas.	(693,000)
Insurance Premiums are under budget primarily due to current reserve requirements.	(209,000)
Worker's Compensation, Pre-Captive is above budget due to reserve requirements.	181,000
Training and continued education is under budget due to lower than anticipated costs and timing.	(137,000)
RPB Fees are under budget primarily due to vacancies and consultation fees.	(53,000)
Info. Technology Licensing & Maintenance Fees are under budget largely due to timing.	(62,000)
Maintenance & Repairs are under budget primarily due to timing.	(181,000)
All Other	(75,000)
	<u>\$ (4,233,000)</u>

Interest Income

Interest Income is over budget due to higher interest on arrears.

PROJECTED MAINTENANCE TEST

The projected coverage is 1.18. with no draw.

REGIONAL WATER AUTHORITY
 STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET POSITION
 FOR THE MONTHS ENDING FEBRUARY 29, 2020

Schedule A-1

	FY 2019 Actual	FY 2020 Budget	FY 2020 Actual	(Under)Over Budget
Operating revenues				
Metered water revenues	\$ 76,009	\$ 79,900	\$ 78,643	\$ (1,257)
Fire service	8,443	9,016	9,036	20
Wholesale	746	630	671	41
Other revenue - water	2,690	2,678	2,509	(169)
Other revenue - proprietary	6,722	6,889	7,742	853
Total operating revenues	94,609	99,113	98,602	(511)
Operating expenses				
Operating and maintenance expense	41,618	45,695	41,462	(4,233)
Expense associated with other revenue - water	1,308	1,415	1,235	(180)
Expense associated with other revenue - proprietary	1,839	2,320	2,410	90
Provision for uncollectible accounts	462	750	916	166
Depreciation	17,700	18,900	18,900	-
Payment in lieu of taxes	6,338	6,546	6,325	(221)
Amortization Pension Outflows/Inflows	(204)	277	277	0
Amortization OPEB Outflows/Inflows		(271)	(271)	(0)
Total operating expenses	69,061	75,631	71,253	(4,378)
Operating income	25,548	23,482	27,349	3,868
Nonoperating income and (expense)				
Interest income	3,346	3,310	3,445	135
(Loss) Gain on disposal of assets	114		133	133
Realized and unrealized (losses) gains on investments			-	
Interest expense	(19,104)	(19,354)	(18,439)	915
Amortization of bond discount, premium, issuance cost and deferred losses	2,752	2,867	2,641	(226)
Intergovernmental revenue	600		180	180
Total nonoperating income and (expense)	(12,293)	(13,177)	(12,040)	1,137
Income (expense) before contributions	13,255	\$ 10,305	15,309	\$ 5,005
Capital contributions	1,773		884	
Change in net assets	15,029		16,193	
Total net assets - beginning of fiscal year	168,457		188,331	
Total net assets - end of reporting month	\$ 183,486		\$ 204,524	

	Budget FY 2020 @114%	Projected FY 2020 @114%	(Under)Over FY 2020 @114%
FY 2020 MAINTENANCE TEST (Budget vs. Projected)			
Revenue Collected:			
Water sales	116,162	114,412	\$ (1,750)
Interest Income	1,915	1,790	(125)
BABs Subsidy	654	655	1
Allocation from Rate Stabilization Fund	829		(829)
Other Net	7,271	6,811	(460)
Common Non-Core	(250)	(243)	7
Total	126,581	123,425	(3,156)
Less:			
Operating and maintenance expenses	(61,049)	(59,570)	1,479
Common Non-Core	128	110	(18)
Depreciation	(6,417)	(6,417)	-
PILOT (A)	(8,724)	(8,415)	309
Net Avail for Debt Service (B)	\$ 50,519	49,133	\$ (1,386)
Debt Service Payments (C)	\$ 44,315	41,488	\$ (2,827)
Debt Service @ 114% (D)	\$ 50,519	47,296	\$ (3,223)
Difference (B-D)	\$ (0)	\$ 1,837	
Coverage (B/C)	114%	118%	

REGIONAL WATER AUTHORITY

SCHEDULE A-2

February 29, 2020

(\$000 Omitted)

**STATEMENTS OF REVENUES, EXPENSES
AND CHANGES IN NET ASSETS**

	Eight Months Ending February 29				Twelve Months Ending May 31			
	FY 2019	FY 2020	FY 2020	(Under)Over	Budget	Assumption 1	Assumption 2	Assumption 3
	Actual	Budget	Actual	Budget				
Operating Revenues								
Metered Water Revenues	\$ 76,009	\$ 79,900	\$ 78,643	\$ (1,257)	\$ 105,736	\$ 104,480	\$ 104,131	\$ 103,782
Fire Service	8,443	9,016	9,036	20	12,083	12,103	12,103	12,103
Wholesale Water	746	650	671	41	819	860	860	860
Other revenue - water	2,690	2,678	2,509	(169)	3,510	2,743	2,743	2,743
Other revenue - proprietary	6,722	6,889	7,742	853	9,274	10,248	10,248	10,248
Total Operating Revenues	94,609	99,113	98,602	(511)	131,421	130,434	130,085	129,736
Operating Expenses								
Operating and Maintenance	41,618	45,695	41,462	(4,233)	61,049	59,570	59,473	59,453
Expenses associated with other revenue-water	1,308	1,415	1,235	(180)	1,891	1,863	1,863	1,863
Expenses associated with other revenue-proprietary	1,839	2,320	2,410	90	2,968	4,317	4,317	4,317
Provision for uncollectible accounts	462	750	916	166	975	991	991	991
Depreciation	17,700	18,900	18,900	-	25,200	25,200	25,200	25,200
Payment in lieu of taxes	6,338	6,546	6,325	(221)	8,724	8,415	8,415	8,415
Amortization Pension Outflows/Inflows	(204)	277	277	0	449	449	449	449
Amortization OPEB Outflows/Inflows	-	(271)	(271)	(0)	(362)	(362)	(362)	(362)
Total Operating Expenses	69,061	75,631	71,253	(4,378)	100,893	100,442	100,345	100,325
Operating Income	25,548	23,482	27,349	3,868	30,528	29,992	29,740	29,411
Nonoperating income and (expense)								
Interest Income	3,346	3,310	3,445	135	4,393	4,528	4,528	4,528
(Loss)/Gain on disposal of assets	114	-	133	133	(100)	(100)	(100)	(100)
Interest Expense	(19,104)	(19,354)	(18,439)	915	(25,701)	(24,521)	(24,521)	(24,521)
Amortization of bond discount, premium issuance cost and deferred losses	2,752	2,867	2,641	(226)	3,774	3,555	3,555	3,555
Intergovernmental revenue	600	-	180	180	-	480	480	480
Total nonoperating income & (expense)	(12,293)	(13,177)	(12,040)	1,137	\$ (17,534)	\$ (16,059)	\$ (16,059)	\$ (16,059)
(Expense) income before contributions	13,255	\$ 10,305	15,309	\$ 5,005	\$ 12,993	\$ 13,933	\$ 13,681	13,352
Capital contributions	1,773		884					
Change in net assets	15,029		16,193					
Total net assets - beginning of fiscal year	168,457		188,331					
Total net assets - end of reporting month	\$ 183,486		\$ 204,524					

MAINTENANCE TEST

	Twelve Months Ending May 31			
	Budget	Assumption 1	Assumption 2	Assumption 3
Revenue Collected:				
Water Sales	\$ 116,162	\$ 114,412	\$ 114,195	\$ 113,978
Interest Income	1,915	1,790	1,790	1,790
BABs Subsidy	654	655	655	655
Allocation from Rate Stabilization Fund	829	-	415	895
Other Net	7,271	6,811	6,811	6,811
Common Non-Core	(250)	(243)	(243)	(243)
Total	126,581	123,425	123,623	123,886
Less:				
Operating and Maintenance Expenses	(61,049)	(59,570)	(59,473)	(59,453)
Common Non-Core	128	110	110	110
Depreciation	(6,417)	(6,417)	(6,417)	(6,417)
PILOT Payments	(8,724)	(8,415)	(8,415)	(8,415)
Net revenue available for debt service (A)	50,519	49,133	49,428	49,711
Debt service payments (C)	\$ 44,315	\$ 41,488	\$ 41,488	\$ 41,488
Debt service @ 114% (B)	\$ 50,519	\$ 47,297	\$ 47,297	\$ 47,297
Difference (A-B)	\$ (0)	\$ 1,837	\$ 2,132	\$ 2,415
Coverage (B/C)	114%	118%	119%	120%

REGIONAL WATER AUTHORITY
 OPERATING AND MAINTENANCE EXPENSES
 FEBRUARY 29, 2020 (FY 2020)
 (\$000 Omitted)

SCHEDULE B

	EIGHT MONTHS ENDING FEBRUARY 29				YEAR ENDED MAY 31, 2020			
	FY 2019	FY 2020	FY 2020	(Under)	PROJECTED ACTUAL			
	Actual	Budget	Actual	Over	Budget	Assump 1	Assump 2	Assump 3
1 Payroll	\$ 17,236	\$ 18,525	\$ 16,867	\$ (1,657)	24,787	22,854	22,854	22,854
2 Employee Benefits Allocation	5,870	6,280	6,044	(236)	8,376	8,020	8,020	8,020
Pension	2,662	2,949	2,949	-	3,932	5,296	5,296	5,296
3 Administrative Building Space Alloc	728	790	802	12	1,029	976	976	976
4 General & Administrative	996	1,074	976	(99)	1,368	1,528	1,528	1,528
5 Transportation Allocation	507	595	453	(143)	797	746	746	746
6 Tools & Stores Allocation	238	272	246	(27)	358	311	311	311
7 Utilities & Fuel	928	990	963	(27)	1,293	1,288	1,288	1,288
8 Material From Inventory	320	343	185	(159)	412	282	282	282
9 Pump Power Purchased	2,071	2,094	1,945	(149)	2,800	2,809	2,750	2,738
10 Chemicals	1,412	1,405	1,331	(74)	1,815	1,840	1,802	1,794
11 Road Repairs	172	150	171	21	200	200	200	200
14 Postage	198	247	221	(26)	329	295	295	295
15 Printing & Forms	70	88	67	(21)	116	150	150	150
17 Collection Expense	492	600	468	(132)	810	636	636	636
18 Business Improvement	304	437	216	(221)	518	423	423	423
19 Public/Customer Information	207	328	194	(134)	450	459	459	459
20 Outside Services	1,874	2,420	1,727	(693)	3,431	3,250	3,250	3,250
21 Insurance Premiums	1,010	1,116	907	(209)	1,493	1,388	1,388	1,388
22 Worker's Compensation, pre-Churc	(45)	40	221	181	54	199	199	199
23 Damages	44	45	31	(14)	60	51	51	51
24 Training & Cont. Education	155	286	149	(137)	411	326	326	326
25 Authority Fees	99	101	99	(2)	134	132	132	132
26 Consumer Counsel	39	47	15	(32)	63	38	38	38
27 RPB Fees	70	118	65	(53)	158	120	120	120
28 Organizational Dues	68	117	138	21	140	150	150	150
29 Donations	7	29	19	(10)	35	39	39	39
34 Central Lab/Water Quality	316	287	324	37	380	419	419	419
40 Environmental Affairs	46	70	63	(7)	96	91	91	91
44 Info. Technology Licensing & Maintenance Fees	1,290	1,543	1,481	(62)	2,055	2,010	2,010	2,010
45 Maintenance and Repairs	2,234	2,309	2,127	(181)	3,150	3,247	3,247	3,247
	<u>\$ 41,618</u>	<u>\$ 45,695</u>	<u>\$ 41,462</u>	<u>\$ (4,233)</u>	<u>\$ 61,049</u>	<u>\$ 59,570</u>	<u>\$ 59,473</u>	<u>\$ 59,453</u>

	Period Ending February 28, 2020			Period Ending May 31, 2020		
	Budget	Expenditures	(Under)/Over	Budget	Projected	(Under)/Over
I. NATURAL RESOURCES						
Watershed Protection	110	99	(11)	110	110	-
Land Management	20	2	(18)	20	20	-
Hamden Middle School Remediation	762	718	(44)	855	855	-
Lake Whitney Dam & Spillway Improvements	340	546	206	650	650	-
Tunnel & Diversion Rehabilitation	7	3	(4)	20	20	-
Wepawaug Dam Spillway Face Improvements	-	7	7	10	12	2
Fence & Guardrail Replacements	80	49	(31)	120	120	-
Miscellaneous Natural Resources	78	29	(49)	90	74	(16)
Prior Year	-	-	-	-	-	-
TOTAL	1,396	1,453	56	1,875	1,861	(14)
II. PUMPING						
Variable Frequency Drive Replacement Program	110	244	134	320	320	-
MCC Replace/Improvements -Northwest Cheshire Pump Station	102	51	(51)	250	210	(40)
Burwell Hill Pump Station Equipment Replacement	120	96	(24)	1,000	400	(600)
Lake Gaillard Pump Station Improvements	125	3	(122)	500	40	(460)
Spring Street Pump Station Equipment Replacement- West Haven	275	287	12	275	290	15
High Rock Pump Station Roof Replacement	2	-	(2)	2	2	0
Prior Year	-	-	-	-	-	-
TOTAL	734	681	(53)	2,347	1,262	(1,085)
III. TREATMENT						
Filter Media Replacement	240	299	59	425	505	80
LGWTP - Process Valve Replacements	827	780	(47)	827	800	(27)
LGWTP - Chemical Feed Improvements	75	52	(23)	615	100	(515)
LGWTP - Backwash Polymer System Upgrades	45	48	3	200	505	305
LGWTP -Roof Replacements	15	2	(13)	200	500	300
LGWTP -Electrical Upgrades	-	6	6	40	40	-
LGWTP -Local Control Console Upgrade	15	-	(15)	50	25	(25)
LGWTP -Structural Improvements	10	1	(9)	50	50	-
LSWTP - Electrical Upgrades	270	6	(264)	400	110	(290)
LSWTP -Hypochlorite System	433	311	(122)	535	535	-
LSWTP -Chemical Treatment	80	17	(63)	250	100	(150)
LSWTP -HVAC Replacement	175	55	(120)	175	175	-
LWWTP Improvements	8	2	(6)	75	65	(10)
LWWTP Alum Residuals Centrifuge Control System Upgrade	-	-	-	42	42	-

	Period Ending February 28, 2020			Period Ending May 31, 2020		
	Budget	Expenditures	(Under)/Over	Budget	Projected	(Under)/Over
West River WTP-Dissolved Air Flotation (DAF)	90	6	(84)	250	150	(100)
West River WTP-Effluent Pipe Injection	137	32	(105)	411	404	(7)
West River WTP-Chemical System Improvements	16	12	(4)	25	25	-
West River WTP-Dehumidification Unit	34	5	(29)	103	103	1
Seymour Wellfield Back-Up Well and Metering	950	677	(273)	950	800	(150)
Groundwater Treatment Fac Generator Replace Seymour Wellfield	61	52	(9)	400	100	(300)
NSG Wellfield Facility Improvements	95	89	(6)	210	100	(110)
SSG Wellfield Chemical Systems Improvements	15	1	(14)	75	5	(70)
Treatment Facility Roof Replacements	100	2	(98)	150	150	-
LSWTP - Residuals Building Improvements	3	-	(3)	3	3	0
Well Rehabilitations	110	192	82	200	350	150
WRWTP Backwash & Surface Wash Pump Repl	205	251	46	1,100	700	(400)
Groundwater Treatment Plant Facilities Improvements	8	-	(8)	8	12	4
Miscellaneous Treatment	-	-	-	44	44	-
Prior Year	-	(1)	(1)	-	(1)	(1)
TOTAL	4,017	2,896	(1,121)	7,812	6,497	(1,316)
IV. TRANSMISSION AND DISTRIBUTION						
Pipe	3,834	3,116	(718)	4,115	4,292	177
Valve Replacements	200	191	(9)	300	270	(30)
Service Connections	1,350	2,208	858	1,800	2,700	900
Hydrants & Connections	95	88	(7)	125	125	-
Meters	35	117	82	50	648	598
Sanitary Survey Improvements	105	185	80	200	415	215
Grand Avenue Pipe Bridge & Main Replacement	115	35	(80)	405	405	-
Brushy Plains System Upgrade-Phase II	415	493	78	415	750	335
Branford Hill Service Area Improvements	1,100	1,711	611	1,200	2,200	1,000
Northern Service Area Expansion	15	10	(5)	50	50	-
Ansonia-Derby Tank	110	73	(37)	195	100	(95)
North Branford Tank Structural Improvements	79	63	(16)	309	70	(239)
West Avenue Tank Painting	212	97	(115)	677	900	223
WRWTP -Finished Water Reservoirs Improvements	20	17	(3)	150	45	(105)
Saltonstall Ridge Tank Power Vent	100	2	(98)	100	100	-
Meriden Bi-Directional Interconnection	-	1	1	125	1	(124)
Rt. 80 and Benham Street PRV Chambers	10	3	(7)	50	10	(40)
Underground Chamber Improvements	45	5	(40)	150	55	(95)
Transmission Distribution Facilities Asphalt Replacement	90	103	13	135	135	-

	Period Ending February 28, 2020			Period Ending May 31, 2020		
	Budget	Expenditures	(Under)/Over	Budget	Projected	(Under)/Over
Water Quality Improvements	150	16	(134)	150	150	-
Western Service Area Bulk Fill Station, Ansonia	5	2	(3)	95	95	-
Lake Saltonstall WTP FWR Roof Improv Valve Replac	-	106	106	125	176	51
Miscellaneous Transmission and Distribution	-	66	66	-	66	66
Prior Year	-	8	8	-	8	8
TOTAL	8,085	8,716	631	10,921	13,766	2,845
V. GENERAL PLANT						
SAP Business Enhancements	75	-	(75)	500	175	(325)
System-Wide Radio Telemetry Unit (RTU) Upgrade	1,348	1,087	(260)	2,217	1,500	(717)
SCADA Upgrades	90	76	(14)	120	120	-
LIMS Upgrades	473	315	(158)	690	690	-
Information Systems	360	315	(45)	540	540	-
Miscellaneous IT	10	7	(3)	10	10	-
Equipment	642	466	(176)	902	749	(153)
90 Sargent Drive	119	78	(41)	255	180	(75)
Prior Year	-	49	49	-	49	49
TOTAL	3,117	2,394	(723)	5,234	4,013	(1,220)
VI. hiTechFOCUS	3,110	2,244	(866)	3,425	2,244	(1,181)
VII. CONTINGENCY	612	-	(612)	4,143	-	(4,143)
SUBTOTAL	21,071	18,383	(2,688)	35,757	29,643	(6,114)
VIII. STATE & REDEVELOPMENT PIPE	2,100	1,531	(569)	3,000	1,800	(1,200)
TOTAL	23,171	19,914	(3,257)	38,757	31,443	(7,314)

Investment Earnings Report
Comparison of Investment Rates of Return

Fund Type	Balance @ February 29, 2020	Budgeted Return	Rate of Return February 29, 2020	Rate of Return Fiscal Year to Date
Less than Six Months				
Revenue Investment (A)	\$ 27,171,522	2.44%	1.65%	1.98%
Revenue (B)	4,844,878	0.00%	0.00%	0.20%
Rate Stabilization (A), (E)	10,000,000	2.44%	1.65%	1.98%
Operating Reserve (A)	6,435,679	2.44%	1.65%	1.98%
Capital Contingency (A)	5,005,834	2.44%	1.65%	1.98%
Debt Reserve (A)	13,862,675	2.44%	1.65%	1.98%
Debt Reserve (C)	6,624	1.86%	1.03%	1.34%
Debt Service (A)	15,443,134	2.44%	1.65%	1.98%
Debt Service (C)	7	2.44%	1.03%	1.34%
Debt Service (D)	305,150	0.00%	0.00%	0.00%
PILOT (A)	2,733,166	2.44%	1.65%	1.98%
General Fund (A)	10,626,128	2.44%	1.65%	1.98%
Sub-Total	\$ 96,434,797			
Six Months or more				
Operating Reserve	3,750,000	1.99%	1.97%	1.92%
Capital Contingency	1,000,000	1.80%	2.00%	1.96%
Debt Reserve	6,819,804	1.98%	2.13%	2.10%
Sub-Total	\$ 11,569,804			
Other				
Construction (A)	\$ 37,988,671	2.44%	1.65%	1.98%
Construction (C)	534,033	1.86%	1.03%	1.34%
Construction (D)	112,794	0.00%	0.00%	0.00%
Growth Fund	5,688,664	0.00%	1.39%	1.33%
Interim Financing	896	0.00%	1.23%	1.41%
Sub-Total	\$ 44,325,058			
Total	\$ 152,329,659			

(A) Investments are in the Connecticut Short Term Investment Fund (STIF).

(B) Overnight investment sweep. Balances earn credits to offset bank fees.

(C) Investments are in the First American Government Obligation Fund.

(D) Cash Balance as of February 29, 2020.

(E) On February 29, 2020, a \$500k investment was in transit and has been invested in the STIF.

Fund	Budgeted Interest (Cash Basis) as of February 29, 2020	Interest Received (Cash Basis) as of February 29, 2020	(Under)/ Over
Debt Reserve	328,985	328,741	(244)
Operating Reserve	155,643	158,000	2,357
Capital Contingency	91,005	98,620	7,615
PILOT	42,547	49,267	6,720
Debt Service	304,482	269,630	(34,852)
Revenue	150,331	205,147	54,816
Rate Stabilization	180,880	140,243	(40,637)
General	184,501	157,156	(27,345)
Sub Total	<u>1,438,374</u>	<u>1,406,804</u>	<u>(31,570)</u>
Construction	694,285	684,247	(10,038)
Growth Fund	-	65,086	65,086
Interim Financing	-	13	13
Total	<u>2,132,659</u>	<u>2,156,150</u>	<u>23,491</u>

**Representative Policy Board
Dashboard Metric**

Metrics	Quarter ended 8/31/19 (1Q FY 2020)	Quarter ended 11/30/19 (2Q FY 2020)	Quarter ended 2/29/20 (3Q FY 2020)
Customer/Stakeholders			
<i>Combined Customer Satisfaction & Reputation (Note 1)</i>	Target: 96% +/-2% Results: 96.1%* *Period ending March 2019, most recent available	Target: 96% +/-2% Results: 96.2%* *Period ending September 2019, most recent available	Target: 96% +/-2% Results: 96.2%* *Period ending December 2019, most recent available
<i>Underlying Credit Rating</i>	S&P rating AA- , affirmed 6/2019 Moody's rating Aa3 , affirmed 6/2019	S&P rating AA- , affirmed 10/2019 Moody's rating Aa3 , affirmed 10/2019	S&P rating AA- , affirmed 10/2019 Moody's rating Aa3 , affirmed 10/2019
<i>Water Rates</i>	Update to be provided with the next Official Statement	Rates as of Sept. 2019, prepared for refinancing	Update to be provided with the next Official Statement
Financial Metrics (Note 2)			
<i>Accrued Water Revenues to Budget (000 omitted)</i>	Budget: \$29.054 million Result: \$27.880 million	Budget: \$55.931 million Result: \$55.036 million	Budget: \$79.900 million Result: \$78.643 million
<i>Other Net Revenues to Budget (Note 3)</i>	Budget: \$1.505 million Result: \$1.651 million	Budget: \$3.111 million Result: \$3.550 million	Budget: \$4.66 million Result: \$5.32 million
<i>Net Other Revenue Projection as % of Total Revenues</i>	See above metric and Note 3	See above metric and Note 3	See above metric and Note 3
<i>O&M Expenditures to Budget (Note 4)</i>	Budget: \$15.299 million Result: \$13.571 million	Budget: \$30.302 million Result: \$27.285 million	Budget: \$45.695 million Result: \$41.462 million
<i>Capital Expenditures to Budget (Note 5)</i>	Budget: \$5.808 million Result: \$5.328 million	Budget: \$14.075 million Result: \$12.211 million	Budget: \$20,459 million Result: \$18.382 million
<i>Cash Collections (Water and Fire Service)</i>	Budget: \$30.883 million Result: \$29.724 million	Budget: \$60.317 million Result: \$58.701 million	Budget: \$91.57 million Result: \$91.04 million
<i>Coverage</i>	Budget: 1.14 w/draw Projected: 1.14 w/draw	Budget: 1.14 w/draw Projected: 1.14 w/draw	Budget: 1.14 w/draw Projected: 1.18 w/o draw
<i>Draw Requirement</i>	Budget: \$829,000 Result: \$465,000	Budget: \$829,000 Projected: \$0	Budget: \$829,000 Projected: \$0
System Metrics			
<i>Average Daily Production (Draft) to Budget (MG/D)</i>	Budget: 52,348 MGD Result: 51,816 MGD	Budget: 48,361 MGD Result: 47,106 MGD	Budget: 45,139 MGD Result: 43,986 MGD
<i>Disinfection By-products</i>	Target: 90% Result: 96%* * As of June 30, 2019, updated quarterly based on calendar year	Target: 90% Result: 99%* * As of Sep 30, 2019, updated quarterly based on calendar year	Target: 90% Result: 100%* * As of Dec 31, 2019, updated quarterly based on calendar year
<i>Net Unaccounted For Water (annualized)</i>	Target: 10.0% Result: 10.65% as of 5/31/2019	Target: 10.0% Result: 11.7% as of 8/31/2019	Target: 10.0% Result: 8.55% as of 11/30/2019
<i>Reservoir Levels (% full)</i>	87% vs. 74% LTA	79% vs. 66% LTA	92% vs. 82% LTA

Notes:

Note 1: FY 2020 metric is Northeast Average for Customer Billing & Payment

Note 2: Preliminary FY 2019 results updated to reflect final numbers. FY 2019 budget reflects original (vs. revised) budget

Note 3: FY 2019 includes all other revenues. FY 2020 includes other proprietary and forestry

Note 4: Excludes impact of governmental accounting standards for pension and opeb. Includes expenses funded from non-revenue fund sources. Revised FY 2019 budget was \$58.017 million

Note 5: Excludes State and Redevelopment and contingency