STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

City of Nashua: Petition for Valuation Pursuant to RSA 38:9

DW 04-048

AFFIDAVIT OF STEPHEN SIEGFRIED

NOW COMES, Stephen Siegfried and states as follows:

I. BACKGROUND

1. I am an Area Manager for Veolia Water North America, and will serve as the Project Manager for the Northeast LLC in charge of operation of the water system to be acquired by the City of Nashua, New Hampshire.

2. I have prepared this affidavit to explain to the Commission that Donald Ware, President of Pennichuck Water Works, stated to me that his testimony to the Commission on September 11, 2007, concerning Pennichuck's use of CMMS was in error, but when I asked in response what he intended to do to correct that mistake, he indicated that he did intend to inform the Commission of his error.

3. Preparing this affidavit is an extraordinary measure. I would greatly prefer that Mr. Ware correct his testimony on his own accord. However, because Mr. Ware indicated to me that he does intend to do so, my choice is either to either bring the errors in his testimony to the Commission's attention, or, allow testimony that I consider to be materially inaccurate remain on the record.

II. DONALD WARE'S PRE-FILED TESTIMONY CONCERNING CMMS

4. On February 27, 2006, Donald Ware first filed testimony critical of Veolia's plans to use CMMS to optimize maintenance. He stated that:

> CMMS - In its proposal to Nashua, Veolia touted its use of a computerized maintenance management system ("CMMS") as a tool that would make their operations efficient. **PWW has used a CMMS package for over five years so Veolia will gain no "operating efficiencies" over Pennichuck's current operations by using a CMMS**.[1]

5. Mr. Ware's testimony that "Veolia will gain no 'operating efficiencies' over Pennichuck's current operation by using a CMMS" demonstrates that he was fully aware of Veolia's proposal, and that he was prepared to testify to the Commission that Pennichuck implements a CMMS program at least comparable to the Synergen CMMS program described in Veolia's proposal.

6. I have attached Volume I, Section 1 of Veolia's proposal to Nashua for reference,[2] that describes in detail the CMMS and Synergen (SPL) program to be used in Nashua. Mr. Ware's reference to the Veolia proposal makes it unlikely that the CMMS program he refers to is not Synergen.

7. Mr. Ware's states, on February 27, 2006, that "PWW has used a CMMS package *for over five years*".[3] This coincides with Pennichuck's purchase of Synergen in 2002, based on the following:

   - In Staff's October 28, 2004 Audit Report in DW 04-056 (attached),[4] Staff notes that "PWW *has purchased* the rights to use components of a Synergen work order system."[5] The Audit Report shows that Synergen

[1] Exhibit 3014, Page 6, Line 1-6 (emphasis added).
[2] Attachment 1, Veolia Water North America Proposal, Volume I, Section 1 (July 14, 2005, as revised September 6, 2005) (hereinafter "Veolia's Proposal").
[3] Exhibit 3014, Page 6, Line 3 (emphasis added).
[4] Attachment 2.
[5] Staff Audit Report, Docket No. DW04-056, Page 45 (October 28, 2004).

was included in the "PWW 2002 Capital Improvements Request/Company Expenditures Authorization form."[6]

- The Audit Report also states that Synergen was purchased because "many of the PWW Fleet department functions are currently done manually so the completion of this project would lead to Synergen computer program tracking"[7] This suggests that Pennichuck purchased Synergen because it wished to use it as a computerized maintenance management system (CMMS) program.
- Pennichuck's Annual Reports for 2003 and 2004 lists *Fixed Asset Additions* for work orders commenced in 2002 and 2003 for Synergen, including: Work Orders 0207764-01 (Fleet Maintenance-Synergen, $15,850.39); 0300914-01 (Fleet Maintenance-Synergen, $25,502.40); 0201707-01 (Enterprise GIS-Synergen, $73,447.99); and 0300860-01 (Enterprise GIS-Synergen, $57,994.08).

This and other information suggests that the Synergen system was the CMMS program that Pennichuck has used "for over five years" according to Mr. Ware's February 27, 2006 testimony.

III. VEOLIA'S TESTIMONY CONCERNING CMMS

8. On Friday September 7, 2007, during re-direct examination of the Veolia Water witness panel, Nashua's counsel asked Philip Ashcroft and the Veolia witnesses a series of questions related to how Veolia would use Synergen provide the benefits

[6] Staff Audit Report, Docket No. DW 04-056, Page 9 (October 28, 2004).
[7] Staff Audit Report, Docket No. DW 04-056, Page 9 (October 28, 2004).

of Reliability Centered Maintenance (RCM) under the OM&M Agreement with the City of Nashua.[8]

9. Members of the Veolia Water witness panel were asked to read Staff's February 22, 2007 Audit Report concerning Pennichuck's use of Synergen, in particular, Page 85 (42) of the Audit Report (attached).[9] The Veolia panel was asked the following questions:[10]

Q. Now, obviously, Pennichuck's doing the best that it can with the limited resources that it has. But, if this were a Veolia operation, and the system was, after spending $600,000, the system wasn't used and useful, what would happen within the Company?

A. (Ashcroft) There would be a major inquiry into why the money had been spent and not utilized.

Q. Now, would you consider this type of situation consistent with your commitment to provide maintenance that we saw earlier in the contract under that subparagraph (b)?

A. (Ashcroft) Could you rephrase it? I don't understand what you mean by the question.

Q. Well, we all know that commitments can be made in a contract. If this scenario were to play itself out under the Nashua contract, would you consider yourself in compliance?

A. (Ashcroft) Oh, obviously not. And, I'm sure R.W. Beck would be all over that, the oversight contractor.

[8] September 7, 2007, Hearing Transcript, beginning at Page 152, Line 15.
[9] Attachment 3, Staff Audit Report, Docket No. DW 06-073, Page 85 (42) (February 22, 2007); see also September 7, 2007, Hearing Transcript, Page 152-153.
[10] September 7, 2007, Hearing Transcript, beginning at Page 152, Line 10.

IV. DONALD WARE'S REACTION TO VEOLIA'S TESTIMONY

10. Mr. Ware was obviously angered by these questions, and perhaps other questions.[11] Following Veolia's testimony on re-direct, he approached me in front of the hearings room and, stated in an angered tone: "**You tell your attorney that I know more about Synergen than he ever will**." I did not engage Mr. Ware in conversation as I did not believe that this was the appropriate time, place, or emotional state to discuss the matter.

11. Mr. Ware did not suggest that he was unfamiliar with CMMS or Synergen, or that it was not the program referenced in his testimony. To the contrary, I understood his statement to mean that, despite Staff's comments on Pages 47 - 48 and 85 - 86 of its February 22, 2007 Audit Report (Attachment 3), he fully understood Synergen.

V. DONALD WARE'S TESTIMONY ON SEPTEMBER 11, 2007

12. However, on September 11, 2007, during cross examination prior to the morning break, Mr. Ware was asked a number of questions concerning Pennichuck's use of CMMS and Synergen.

13. In his responses, he indicated that he had little or no understanding of Pennichuck's use of Synergen or CMMS programs in general. For example, beginning on Page 54 of the Hearing Transcript, he states that:

[11] See e.g., September 7, 2006, Hearing Transcript, Page 166, Beginning at Line 1: "Q. Mr. Ashcroft, if Veolia came in with a capital project, and it was 53 percent higher than it had been proposed to the client before construction started, would you consider that a successful project and would you pass that cost onto the customer? A. (Ashcroft) Certainly, it's not acceptable. *When we bid for some design/build/operate contracts, which is our general modus operandi, we bid a price and we deliver on that price. If the costs go up, we have to absorb it. And, as for coming in at 53 percent over budget, we just wouldn't accept that. And, clearly, there would be some redirection of someone's career*." (emphasis added).

Q. And, you state that "In its proposal to Nashua, Veolia touted its use of a computerized maintenance management system (CMMS) as a tool that would make their operations efficient." And, you state that "PWW has used a CMMS package for over five years so Veolia will gain no "operating efficiencies" over Pennichuck's current operations by using a CMMS." Is that your statement?

A. Yes.

Q. Okay. And, do you still agree with this statement?

A. Yes.

Q. Now, the CMMS system that you're referring to is the Synergen system?

A. No.

Q. No, it's not. Okay. But you're aware that Veolia is talking about its use of the Synergen system. Is that what you're referring to in your testimony?

A. My understanding is that Veolia uses the -- one part of Synergen, which is an ERP program. There is a part that can carry that's similar to the OPS32 program that we use, which is a maintenance – computerized maintenance program. And, so, they happen to use that part that's attached to Synergen. We have a different program, OPS32.

Q. Is that a -- where do you use that?

A. We use it to govern all of our operation and maintenance planning.

Q. So, you were making no reference to the Synergen system whatsoever in this –

A. No. We have OPS32. It's a work order driven computer management system that's identical to the Synergen add-on to the program for CMMS.

Q. Mr. Ware, is OPS32 a work order system?

A. Yes, it is.

Q. So, Mr. Ware, your company spent over $600,000 using Synergen. What are you using it for?

A. I am probably not the best person to answer that. Mrs. Hartley is very familiar with the Synergen program. But, so, I think it would -- that would be better directed to her. I could give you --

[…] [brief recess]

Q. So, Mr. Ware, I just want to make sure we're absolutely clear on this. It's your opinion that the OPS32 system you've referred to is a work order system?

A. Yes, Mr. Richardson. The program develops work orders that our people complete in the field, and then bring it back. And, then, that information out of the OPS32 work order program that was generated out of there is then entered into Synergen for purposes of developing our final financials.

Q. And, as the Chief Engineer, you indicated you're not familiar with how the Synergen system is being used?

A. That is correct.

Q. And, this is a system that the Company spent over $600,000 implementing?

A. Yes. We have IT staff that works with our administrative staff that oversees our IT operations and makes those decisions.

14. Mr. Ware's testimony that "I am probably not the best person to answer" what Pennichuck is using Synergen for and that he is "not familiar with how the Synergen system is being used"[12] appears to be at odds with his February 27, 2006 testimony offering his opinion that understood Veolia's proposal to Nashua concerning the Synergen CMMS program and its capabilities. His own statements show that he has little or no knowledge of Synergen's capabilities, and,

[12] September 11, 2007 Hearing Transcript, Pages 56 & 57.

as set forth below, his testimony concerning OPS 32 he later would admit to me was “a mistake”.

VI. DONALD WARE’S TESTIMONY CONCERNING OPS 32

15. As shown above, Mr. Ware testified that the CMMS program Pennichuck uses is OPS 32. However, OPS 32 is not a CMMS program, nor is it intended to be used as one.

16. OPS 32 is a plant process monitoring database program that reports and tabulates information such as flow rates, chemical parameters, tank levels and pressures. Nor is OPS 32 a work order system, as it does not schedule maintenance activity or perform any analysis of maintenance. Physical Assets maintenance activity and schedules for pumps, motors, process equipment, pipe, tanks, rolling stock, are not loaded into OPS 32.

17. During a break, I contacted several other professionals, including Ms. Alyson Willans, who has extensive experience using Synergen, OPS 32 and CMMS programs. Because Veolia Water is the largest user of Synergen in North America, and is also one of the largest users of OPS 32, I contacted other industry professionals, including Melanie Hazlett, Marketing Manager for OPS Systems Inc., the manufacturer of the OPS 32 program.

18. Ms. Hazlett, Ms. Willans and the other professionals I contacted all confirmed that OPS 32 is not a CMMS program, and provided documentation confirming that OPS 32 is an “[o]perations software [that] provides simple, efficient management of your operating data including Data Entry, Reports, and Graphs.”[13]

[13] See Attachment 4, OPS 32 information.

19. I have attached some promotional material showing OPS 32 is useful for reports concerning operating data. However, in my experience, confirmed by my discussions with Ms. Hazlett, Ms. Willans and the other professionals I contacted, OPS 32 is not a CMMS program as it does not provide any analysis to optimize maintenance, maintenance costs or life cycle costs, and does not generate or perform any function related to work orders.

20. Because I was aware that OPS 32 is not a CMMS program, during cross examination and during a break in the hearings, I suggested a number of questions to Mr. Richardson designed to give Mr. Ware the opportunity to correct his testimony and show that OPS 32 is not a CMMS program. However, as shown below, Mr. Ware declined to correct his testimony.[14]

Q. Mr. Ware, I want to ask you some questions about the OPS32 system. Is that a system that Pennichuck uses to produce schedules of predictive and preventative maintenance that's required?

A. Yes, it is.

Q. Okay. And, does it record the staff hours spent performing those maintenance activities?

A. No, it does not.

Q. Okay. And, does it -- do you have all of the assets loaded in the OPS32 system?

A. The assets that were maintained in the field, hydrants, gates, pumping stations, all the pumping equipment, treatment equipment is all in OPS32.

[14] September 11, 2007, Hearings Transcript, Page 67.

Q. Does it provide you with a maintenance calendar that says what days or what times you should be performing certain activities?

A. Yes, there is a scheduler in the program.

Q. And, do you use that schedule?

A. Yes, we do.

Q. Okay. And, does it track your inventory?

A. No, it does not.

Q. Okay. And, you indicated already that it generates work orders, I believe?

A. Yes, it does.

Q. Okay. And, does it -- does it give you the location of the assets?

A. I believe that it does. When the schedule is set out by the maintenance person that he gives work orders that are generated out of it, that would indicate the locations. Everything goes out on Palm Pilots that are carried out into the field for the people to complete the work order information on the Palm Pilot.

21. Mr. Ware's responses directly conflict with the actual use and capabilities of OPS 32. However, even if OPS 32 has all of the capabilities Mr. Ware claims, it would still not be a CMMS program comparable to Synergen. As Mr. Ware acknowledges, the system does not record labor or labor costs, does not track inventory. Because it contains no records related to labor, inventory and other costs, it cannot be used to evaluate maintenance costs, failures, criticality, life cycle costs, or any of the other capabilities in Synergen that Veolia Water described in its proposal to Nashua and that are required under the OM&M Agreement.

VI. DONALD WARE'S CONFESSION TO ME THAT HIS TESTIMONY CONCERNING OPS 32 WAS INACCURATE

22. The following morning, September 12, 2007, Mr. Ware approached me at the back of the hearing room. He indicated that he had "made a mistake, we use MP2 not OPS 32 as the maintenance management program"

23. I asked Mr. Ware if he was going to correct his testimony. He indicated that he did not intend to correct it.

VII. EVEN IF PENNICHUCK USES MP2 AS DESCRIBED BY DONALD WARE, IT IS NOT A CMMS PROGRAM

24. MP2 is a maintenance program that is obsolete and has not been supported by the manufacturer for at least 5 years. MP2 does not have the higher level functional ability to manage performance, maintenance cost and cost analysis described in Veolia Water's proposal to Nashua.

25. For the purposes of explanation only, I will assume Mr. Ware's description of Pennichuck's use of OPS 32 accurately describes its use of MP2. Even accepting for the sake of argument that Mr. Ware testimony is accurate, Pennichuck cannot use MP2 as a CMMS system because, according to his description, it contains no information concerning costs for labor or inventory. Furthermore, as should be apparent from the two most recent Staff Audits, the Company does not even accurately its historic cost data in a computerized system, and resorts to manual, hand written calculations on printed spreadsheets.

26. A fully functional CMMS program should include not only this information but also the ability to analyze factors such as failure frequency, criticality, and many other variables in the Synergen system used by Veolia to optimize performance

and minimize failures or interruptions in service and reduce life cycle costs. The system described by Mr. Ware appears to be merely an electronic maintenance calendar that sends out pre-determined reminders without any analysis.

27. This is the exact opposite of Veolia Water's approach described in its proposal. Perhaps more importantly, neither the OPS 32 nor the MP2 program as described by Mr. Ware are capable of performing CMMS at the level required under Veolia Water's OM&M Agreement with the City of Nashua. For example, under the OM&M Agreement, Veolia is required to establish an inventory control system to "account for the existing materials and parts; optimize the stocking of materials and parts; calculate the costs of materials and parts used for work orders; and control the ordering of materials and parts"[15] that is "capable of tracking specific equipment, budgets and project costs."[16] Veolia must also establish a Predictive Maintenance Program with "a specific testing schedule and conducted in accordance with the approved RRRMP for the Managed Assets components" based on an initial Conditions Assessment Study to be completed during transition services;[17] establish a system to rank and prioritize work orders "based on importance to process operation and impact on permit requirements";[18] record the performance, costs and locations of all maintenance activities.[19]

28. These contractual requirements are best summarized in Veolia's May 22, 2006 Testimony of Philip Ashcroft et al., Page 14 of Exhibit 1013, which states:

[15] Exhibit 1005B, Page 52, Appendix D, Section 9 (c).
[16] Exhibit 1005B, Page 52, Appendix D, Section 9 (c).
[17] Exhibit 1005B, Page 52, Appendix D, Section 9 (d).
[18] Exhibit 1005B, Page 52, Appendix D, Section 9 (e).
[19] Exhibit 1005B, Page 52, Appendix D, Section 9 (g) & (h); Exhibit 1005B, Page 11, Section 6.3 (a); Exhibit 1005B, Page 49, Appendix D, Section 5 (n).

Q. How will the Northeast LLC improve asset management?

A. The Northeast LLC will apply its tools to optimize the service life of the assets. The Northeast LLC's tools include a comprehensive asset management program ("CMMS"), a work management system, the hydraulic model, life-cycle costing, geographic information system ("GIS") and pipe evaluation model. The criticality of each asset will be determined and a maintenance program tailored to the specific asset needs will be implemented. The maintenance program will be based on maintenance data from Veolia Water's numerous projects throughout the United States and can be accessed through the CMMS.

The Northeast LLC will also use life cycle costing to determine the timing of replacing an asset. There is an optimum point of replacement versus continued maintenance and reliability considerations.

The Northeast LLC will also put in place a comprehensive underground asset management program using its pipe evaluation model and criteria for prioritizing water main replacement. This includes a sophisticated water main break model to predict remaining service life and apply life cycle costing to time the capital replacement. The Northeast LLC will also evaluate pipe samples in its laboratory to help determine pipe condition and predict remaining service live[s].

29. I believe the following statement captures the difference between the CMMS program to be implemented by Veolia Water, and the system described by Mr. Ware.

> Saying that a computerized maintenance management system (CMMS) is just another scheduling tool is tantamount to saying that the Titanic was just another boat. While maintenance scheduling is arguably its most important aspect, CMMS has many additional features that can help a company manage its maintenance function. CMMS is using software to effectively and efficiently plan and execute tasks meant to maintain a company's operations to ensure maximum uptime of equipment critical to the production of finished goods. To successfully plan a maintenance

procedure, the user needs accurate information on the equipment to be maintained, its components, and ongoing production or workload requirements. The maintenance skills and time available must be matched against the workload, equipment items, and availability. Parts and supplies must be procured in advance, in a well-planned fashion, to complete maintenance tasks on schedule. While maintenance may be complex, managing it should not be."
- Joseph J. Strub, July 2003

FURTHER, the Affiant sayeth not.

Stephen Siegfried

THE STATE OF TEXAS ,
COUNTY OF Harris **, SS.**

Subscribed and sworn to before me this 25 day of September, 2007, by Stephen Siegfried.

Seal:

DONNA ERFESOGLOU
Notary Public, State of Texas
My Commission Expires
December 19, 2010

Donna Erfesoglou
~~Justice of the Peace~~/Notary Public
My Commission expires: 12-19-2010

Volume I Technical Proposal

SIEGFRIED ATTACHMENT 1

Submitted to:

City of Nashua
New Hampshire

RFP1305-061505

Operation and Maintenance of the Water Utility

July 14, 2005

VEOLIA Water

SECTION ONE
Operations Plan (Base Proposal)

VEOLIA WATER'S COMMITMENT TO THE CITY OF NASHUA
Delivering the Best Value Through Innovative Approaches

In your Request for Proposal (RFP), the **City of Nashua, New Hampshire,** defined an ambitious plan and approach to take control of the water systems and facilities that serve your community. These water treatment, storage and supply system assets are now owned by a private entity, and the City plans to acquire these assets from the current owner and operator through the eminent domain process.

Veolia Water North America – Northeast, LLC (Veolia Water) discusses in this section our detailed plan and approach for addressing the Base project defined by the City for the day-to-day operation, maintenance and management (O&M) of the water supply facilities for your community. The focus of this work will be on delivering the City's water customers' high quality drinking water that is in full compliance with all applicable standards, laws, rules and regulations. In tandem with these goals is the mandate to provide for uninterrupted water service, protection of the watershed, with no affects on the quality of water or the level of service delivered.

In this section of our Proposal, Veolia Water defines a clear plan and approach to meeting the City's plan and goals, as they were defined in your RFP. Section Three addresses our proposed Management and Staffing Approach, and Section Four completes our Base Proposal with a discussion of the Transition Plan.

Section Five of this Technical/Management Proposal provides a discussion of the experience of our firm, as well as that of our proposed primary subcontractor for this project, Dufrense-Henry. This volume concludes with our Alternative Proposal, Section Six, which outlines our plan and approach to provide the City with the opportunity for enhanced savings and greater value from this new relationship. The approaches that we define in that section are those which our firm has applied in our work on similar projects, such as Indianapolis, Indiana.

In 2002, Veolia Water began a $1.5 billion, 20-year contract with the City of Indianapolis for O&M, Capital Program Management and Customer Service of the City's waterworks system, which currently serves more than 1.2 million people.

Challenges and Solutions of the Watershed Management Program

Challenges	Solutions
The ponds have serious water quality issues, especially during the summer -- temperature fluctuation, iron and manganese, turbidity, and taste and odor precursors.	Outline recommendations in the Capital Plan. Implement a source water quality plan and implement Process Control Management Plans to ensure finish water quality is maintained.
Not all of the watershed is within the City of Nashua.	Work with neighboring municipalities, as well as local and state regulatory groups, to develop and implement best management practices.
Safe water yields are exceeded in the summer months.	Work with the City of Nashua in implementing City Capital projects to increase water availability; pond dredging, additional Merrimack River water, potential for developing well sources, other.

2.2 – Water Quality Plan

Water Quality Issues Affecting the Nashua Water Works

The Nashua Water Works contains a mixture of both surface water and groundwater. The core system, drawing source water from the Supply Pond and Harris Pond and peak usage from the Merrimack River, is faced with numerous actual and potential water quality issues, including:

- Algal Blooms and Algal Toxins – These can contribute significantly to taste and odor problems.
- Disinfectant Byproducts – These are caused by the high levels of silt and organics in the watershed and pond system mixing with the treatment chemical chlorine in the water plant.
- Mixing Merrimack River Water with the Pond System – This problem causes a number of issues such as temperature and flow fluctuations, spikes in turbidity, de-stratification of the ponds resulting in the release of organics such as phosphorus, nitrogen and ammonia, as well as iron.

The community water systems within the Nashua Water Works are well systems. Well systems have different water quality issues such as:

- Well head protection
- Iron and Manganese
- Arsenic
- Taste and odor issues

Veolia Water will use its expertise and experience in water operations to ensure that the Nashua Water Works' water quality is maintained and improved, and that safe, compliant, reliable and aesthetically pleasing water is provided at all times.

Objectives of the Water Quality Plan

Veolia Water's objectives regarding the Nashua Water Works water quality issues are as follows:

- Regulatory Compliance - Maintain Regulatory Compliance 100% of the time.
- Source Water Management - Manage source water use to maximize both water quality and water production.
- Wellhead Protection - Work with the City to update or develop well head protection plans.
- Operational Controls - Institute operational controls to limit watershed water quality impacts.
- Distribution System Flushing - Use a flushing program to maintain water quality throughout the distribution system.
- Capital Planning - Propose capital improvements that will limit the development of taste and odor precursors in the pond system, and propose projects that will improve water quality through the treatment facility.
- Public Education - Work with local watershed and environmental groups to protect the watershed and educate the public about the importance source water quality.

Veolia Water will work closely with local environmental and conservation organizations to educate the public about the watershed and about their water use practices. Through this collaboration, we will investigate the water quality issues that are most prevalent in the Nashua area. In due course, an effective and long-term water quality management program will be developed and engaged.

Methodology for Implementing the Water Quality Plan

The solution to water quality issues will not come without commitment, dedicated expertise and investment. Management of these issues will involve coordination between plant operations, field services and asset management and City Capital investment with the common goal of providing a product that not only meets regulatory requirements, but minimizes any aesthetic concerns.

Veolia Water's plan to achieve the objectives proposed includes the following:

- Developing Watershed Management and Source Water Quality Plans.
- Capital planning to improve water quality and to meet all current and pending drinking water rules and regulations.
- Developing and implementing Process Control Management Plans (PCMPs) for all treatment facilities. PCMPs are used to ensure that all operational and water quality parameters are maintained within set parameters. PCMPs are discussed further in the Plant Operations Plan and in the Regulatory Compliance Plan.
- Developing and implementing an employee training program – latest treatment techniques, best practices, laboratory sampling and analysis, safety, other.
- Developing and implementing a distribution system flushing program to minimize any aesthetic issues generated in the distribution system.

Benefits of the Water Quality Plan

The benefits of Veolia Water's water quality plan include:

- **Providing the highest quality water** to the customers of the Nashua Water Works, building customer confidence and satisfaction.
- **Limiting taste and odor and other water quality problems** through effective watershed management and focused operational controls.
- **Addressing color or clarity concerns** generated either in the treatment facilities or the distribution system.

Veolia Water is committed to maintaining and improving water quality in the Nashua Water Works. Through operational controls and City capital investment, Veolia Water will ensure that the water works meets the expectations of the City and its customers with regard to water aesthetics and water quality.

Veolia Water's Experience in Large Water System Water Quality

In Indianapolis, Indiana, Veolia Water accepted the challenge of resolving significant taste and odor problems related to algae growth, atrazine, and geosmin and methylisoborneol (MIB) in the drinking water supply reservoirs. By focusing efforts on controlling the growth of nuisance algae, by instituting carbon feed protocols, and by using reservoir water quality analysis effectively, Veolia Water significantly reduced the number of customer complaints and significantly improved the aesthetic water quality. We continue to work to ensure that water quality is maintained and improved, both within the watershed and within the treatment plant and distribution system. Our success in Indianapolis has been based on partnering with the community to solve technical problems as follows:

- Veolia Water worked hand-in-hand with a Technical Advisory Group (TAG), made up of scientists and engineers representing local industries, environmental organizations and universities, to seek advice on technical water quality issues and prioritize the needs of the water system. Veolia Water reached out to include the regulatory personnel from various agencies to provide a forum for addressing complex water quality issues that cross multiple jurisdictional boundaries.
- Veolia Water formed a research partnership with Indiana University-Purdue University at Indianapolis (IUPUI). The Central Indiana Water Resources Partnership (CIWRP) relationship is based on Veolia Water's long-term commitment to invest in the improvement of the source water quality and the expectation that this investment will result in improvements to both the source water and finished drinking water quality in Central Indiana. This partnership has been a huge success in helping develop and implement improved watershed management programs.

Veolia Water expects to implement similar activities and initiatives for the Nashua Water Works, and some of key approaches that we are proposing are discussed in Section Two of this Volume, our Community Relations plan and approach.

Challenges and Solutions for the Water Quality Management Plan

Challenges	Solutions
Source water may contain compounds that present water quality issues.	Conduct jar tests to optimize selection of most effective treatment chemicals. Implement PCMP to

Challenges	Solutions
	optimize plant operations to mitigate water quality issues. Work with watershed stakeholders on long-term watershed improvements.
Water Quality issues may require capital improvements, operational process improvements, or additional source water protection measures.	Leverage Veolia Waster's extensive expertise to develop the most cost effective solution. Identify improvements to meet regulatory requirements or for needed capacity upgrades.
Problems related to stagnant water or high turbidity may occur in the distribution system.	Develop and implement a flushing program to minimize problems associated with distribution system flows. Recommend capital improvements to resolve inherent flow problems.

2.3 – Asset Management Plan

A major benefit of our asset management program will be to minimize the required City capital investment. Minimizing City Capital investment is absolutely essential to control rate increases required to support ongoing City Capital investment. An example would be to perform timely maintenance on critical plant and field equipment, which extends service life and allows for deferment of City Capital investment.

The second major benefit of our asset management program will be to increase reliability of critical plant equipment and provide uninterrupted quality water service for the customers.

Another benefit of our asset management program is to enable the City to use the "Modified Approach" to GASB34. To use the "Modified Approach," an accurate assessment of the condition of the asset and the remaining service life must be made. The benefits of using the "Modified Approach" to GASB34 are as follows:

- Record annual depreciation costs.
- Improved balance sheet asset value.
- Improved borrowing and bonding capacity.
- Greater understanding of infrastructure condition.
- Improved long-term financial management of infrastructure assets.

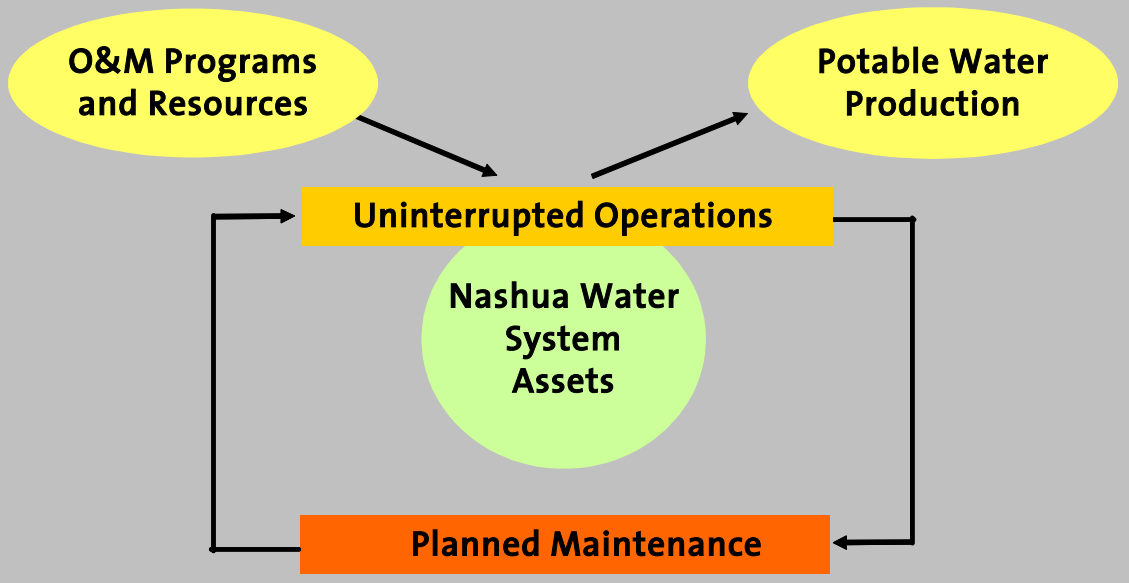
In operating and managing the Nashua water system assets, Veolia Water will employ Total Asset Management.

Asset Management, essentially, is a proven methodical approach to managing the asset's life cycle. Veolia Water's Asset Management program brings together financial, engineering, economic, operating, managerial, and maintenance practices to determine the most cost-effective means of owning, managing and operating the water system.

Overall Asset Management Strategy

Figure I.1-1, next page, represents how Veolia Water's approach to Asset Management delivers customers quality services and targets programs and resources to ensure uninterrupted water production. Figure I.1-1 also shows how uninterrupted operation of the water production facilities generates a demand for planned maintenance.

Figure 1-1. Veolia Water's Asset Management Strategy



Integrating O&M programs into an Asset Management solution ensures uninterrupted quality potable water service.

Asset Management Essentials	
O&M Staffing	• Fully certified and properly trained • Integrated with engineering to bring lifecycle knowledge and experience through the duration of the project • Employed from transition, allowing single-point accountability through the term of the project
Operations	• Operating strategies that are science- and engineering-based, allowing us to identify and mitigate risks at project startup • Lifecycle costing reduces process management costs and improves performance reliability • Understand and anticipate operational challenges and mitigate them through process optimization
Maintenance	• Proactive maintenance significantly reduces costs associated with corrective maintenance • Equipment savings are passed on to City through our lifecycle costing strategy
Preventive Maintenance	• Extends life, performance reliability and efficiency of equipment and manages wear-related failures • Reduces the need for costly corrective maintenance
Equipment Repair & Replacement	• Ensures long-term integrity of equipment • Obsolescent machinery is replaced with improved functionality
Permit Compliance	• Guaranteed full compliance with EPA Safe Drinking Water Act and NHDES standards
Contract Compliance	• Guaranteed full compliance with the service agreement
Information Technology	• Our CMMS can be integrated with the City's information, ensuring effective project management and performance monitoring • CMMS tracks O&M performance, allowing us to provide efficient delivery of services while protecting the City's infrastructure investment over the long term
Safety	• Our performance exceeds industry standards, ensuring safety for both City and Veolia Water employees
Quality Assurance	• Veolia Water standards guide our employees in providing quality service to our clients.

Our approach is to evaluate the asset based on its design, initial installation, operating costs, maintenance cost, and overall reliability. This approach allows us to really understand the total cost of ownership of an asset and results in better-informed asset care decisions. The Veolia Water Asset Management strategy considers the performance history of equipment in comparable operating conditions so that equipment that demonstrates more reliability and lower O&M costs over the life of the asset is selected when replacements are necessary. Veolia Water uses a proven cost/benefit analysis tool that evaluates equipment reliability, failure frequency, safety and health of personnel, potential risks and hazards to the environment and costs; initial installation, maintenance, operational and retrial. By understanding the equipment life cycle costs, Veolia Water will assist Nashua in making sound investment decisions that lead to a safer, more reliable, and cost effective operation.

Application of the Asset Management program decision process requires that an accurate record of maintenance history and associated costs be maintained. Veolia Water's recommendations for equipment replacements are based on manufacturers' recommended replacement schedules and its experience in maintaining similar equipment at other projects.

Objectives of the Asset Management Approach

Outlined below is Veolia Water's comprehensive approach for maintaining the assets of the Nashua Water Works, which includes reservoirs, ponds, the treatment plant, pumps, storage tanks, water mains, valves, hydrants, meters, etc.

At Veolia Water, disciplined asset management allows for the optimum integration of maintenance programs and operating resources in support of uninterrupted quality water production. Our Asset Management program places emphasis on three goals:

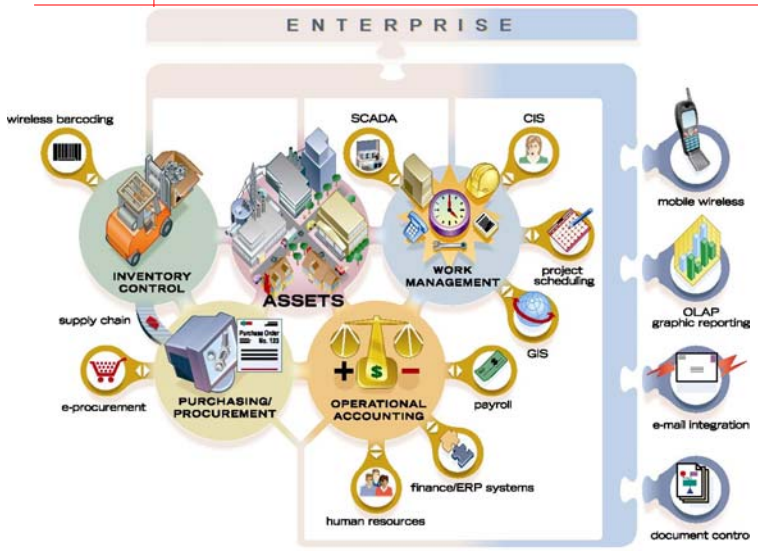
- Performance of maintenance and repairs in a timely, efficient, and effective manner
- Practical accountability methods to measure and sustain asset condition and performance
- Managing risk and the associated costs

Veolia Water's Asset Management program is results-oriented, rather than task-oriented. Priorities and measures of performance are based on cost-effective solutions

Veolia Water's asset management approach is proactive. It makes productive use of planned maintenance strategies to reduce costs normally associated with corrective maintenance. Our maintenance objectives include:

- Caring for and fully maintaining infrastructure through the life of the service agreement.
- Limiting unplanned maintenance through a comprehensive preventive and predictive maintenance program.

Veolia Water's Asset Management tools support the complete lifecycle management of an asset. SPL Enterprise Asset and Work Management System (SPL), our computerized maintenance management system (CMMS), permits the inclusion of various equipment attributes to monitor elements such as environmental conditions, equipment application, sludge disposition or chemical dosing to evaluate system performance. The Asset Management system also tracks inventory, equipment condition data, defined service levels



SPL Enterprise Asset & Work Management Solutions Enterprise Asset Management/Computerized Maintenance Management System (formerly Synergen)

performance limits and tolerances, failure of serviceable assets, and supports a condition-based maintenance plan.

Veolia Water uses predictive and preventive procedures as a principle component of the Asset Management program. Predictive testing generates data for review and analysis. Performance trends are tracked, and non-invasive maintenance is performed to maintain reliability and keep equipment performance at required levels. Specific maintenance programs will be developed that define customized maintenance tasks, task frequencies, required skill sets, and materials.

Root cause failure analysis is another consideration of the Asset Management strategy. Every equipment failure is investigated to determine the actual root cause. Through a series of questions and the resulting answers, the failure may be tracked to such ultimate causes as an engineering defect, an operational problem, a previous maintenance error, a training issue or another issue as determined by the analysis. The results of the root cause analysis are used to modify the maintenance program when appropriate.

Veolia Water has implemented the SPL (Synergen) program at O&M projects for:

- **Indianapolis, IN** (12 water plants with 200-MG daily production capability)
- **Vancouver, WA** (three wastewater plants).
- **Oklahoma City, OK** (four wastewater plants, capable of processing 106 MGD).
- **Cranston, RI** (Asset Management for a 23-MGD regional wastewater plant).
- **Streator, IL** (3.3-MGD wastewater plant).
- Additional sites in the start-up phase for this program include: **Junction City, KS** (municipal and industrial wastewater plants); **Richmond, CA** (16-MGD wastewater plant); and **Fort Knox, KY** (military utility privatization project).

Our firm has also targeted a number of other of our facilities for conversion to SPL in the near future.

In an Asset Management strategy, using the data gathered from our maintenance practices, we compare the maintenance and performance history to comparable equipment in similar applications to determine best reliability when making decisions about what equipment manufacturer, make or equipment model to select as a capital replacement. The City of Nashua will benefit by being a part of Veolia Water's large maintenance database.

The Veolia Water maintenance database has valuable information on the reliability of specific vendor equipment for each process application. By using this information, poor operating equipment can be replaced with assets with proven reliability numbers.

Methodology for Implementing an Asset Management Approach

Asset management will provide the City of Nashua with a set of success factors by which performance can be measured. The City's goal to achieve facility reliability and asset protection will be the keystone of Veolia Water's Maintenance Management Plan, presented in subsection 2.4 of this operations plan.

Veolia Water's experience in providing quality maintenance for more than 7,500 water facilities worldwide places emphasis on:

- Safeguarding the City's multi-million dollar investment in equipment and facilities.
- Using predictive, preventive and proactive maintenance programs that can extend the life, performance reliability and efficiency of equipment.
- Ensuring that maintenance is performed in accordance with the equipment manufacturers warranty, specifications and generally accepted industry standards.

The Asset Management strategy places emphasis on the following Best Maintenance Practices by:

- Using a comprehensive maintenance evaluation to assess the quality of the water works equipment maintenance and ensure that equipment is returned to the City in substantially the same or better condition.
- Tracking maintenance activities with our CMMS.
- Organizing and training operations and maintenance personnel to work together toward becoming autonomous in daily activities to improve equipment effectiveness.
- Avoiding operational problems through preventive and predictive maintenance performed in advance of equipment failure.
- Proactively planning corrective maintenance work assignments.
- Monitoring the quality of maintenance performance to optimize employee performance and productivity while enhancing equipment reliability.
- Maintaining good housekeeping and attention to landscaping as an integral part of facilities maintenance.
- Managing new equipment warrantees.
- Following standard maintenance procedures, maintaining up-to-date equipment maintenance manuals, including written standard maintenance procedures.
- Using local vendors and our well-developed network of national purchasing agreements to take advantage of quality materials at the lowest cost.

Supporting the City's strong commitment to protect its investment and using Veolia Water's proven knowledge of maintenance management, we will achieve a first-class maintenance program that can be measured by the following success factors:

- Limited equipment downtime.
- A reliability driven, proactive operations and maintenance culture.
- Consistent and reliable maintenance of the equipment that promotes use of good process control methods.
- Systematic development and implementation of a predictive testing program to avoid emergency equipment down time.
- Evaluation and redesign of processes to develop more robust operation.
- Use of Root Cause failure analysis to continuously improve the asset's maintenance plan.

- Managing materials consumption to eliminate emergency procurements while avoiding unnecessary inventory costs.

Computerized Maintenance Management System

Veolia Water will utilize a CMMS, which will allow for the inclusion of various equipment attributes. The system also includes information on inventory control, condition assessment and monitoring data, defined service levels, defined performance limits and tolerances, functional failure definitions for all serviceable assets, and supports a condition-based maintenance plan, that incorporates predictive and preventive maintenance procedures. The CMMS supports both aboveground and below-ground maintenance. The major benefits of the CMMS system include:

- Asset and resource management
- Work and maintenance management
- Inventory control and materials management
- Reporting and analysis
- Mobile computing
- GIS integration

The system will be integrated with other software including the SCADA system, and work orders will be downloaded to the maintenance staff directly to their hand-held PC units in the field. This approach saves valuable time and improves overall wrench time availability.

The following provides an overview of how Veolia Water will utilize the CMMS to meet Nashua's objective of asset protection:

- Work Order System - Generate preventive, predictive and corrective work orders to document each task with an assigned priority; collect the cost data.
- Project Planning and Scheduling – Place all equipment on a maintenance schedule.
- Maintenance Measurements – Maintain current information base of all predictive measurements.
- Equipment History – Determine life cycle cost for the equipment and compare to replacement.
- Inventory System – Maintain key or critical spare parts inventory for all equipment.
- Property Management – Work with the City to implement a life cycle asset management system for physical assets.
- Work Performance Standard - Work performance standards published by Means Facilities Maintenance Standards (Means) will be used as the baseline for all maintenance and construction tasks.

O&M Manuals

Within the first 12 months, the O&M manuals will be updated for the treatment facilities and other water system assets. The updated O&M manuals will be used in conjunction with a detailed set of SOPs and unit process management strategies that will be prepared and coordinated with the operations and computerized maintenance software. SOPs would include plant and source of supply operations, safety, maintenance, vehicles and heavy equipment and employees.

Updating O&M Manuals

O&M manuals will be updated annually, as required. Any new or replacement equipment will be included in O&M Manual updates and automatically placed into the CMMS. All equipment manuals, as well as new or updated written manufacturers' materials, will be cataloged for future reference. These manuals will combine the knowledge of designers, constructors and operators involved in the project.

Condition Study

Within 180 days of the Service Commencement Date, Veolia Water will conduct a comprehensive survey of the acquired water system assets with recommendations for any major capital improvements required to maintain the system in adequate condition.

Veolia Water will recommend the equipment to be surveyed. The overall condition of the equipment will be determined and deficiencies will be noted. This evaluation is important because it allows both the City and Veolia Water to identify immediate problems and to predict problems and identify capital improvements required.

This condition survey will serve as the baseline to provide a mechanism to ensure the facilities will provide reliable service. These measurement techniques are subsequently used for:

- Making long-term predictive maintenance measurements and prioritizing any necessary repairs
- Allowing Veolia Water to take any immediate action necessary
- Identifying the required capital improvements

Veolia Water will update the condition study and provide a report summarizing the findings on an annual basis. Recommended capital improvements will be identified.

Above-Ground Assets

Treatment Facility and Equipment Maintenance

The water treatment facility and associated treatment equipment will be maintained to ensure that safe, compliant water is produced at all times. Veolia Water's asset management plans provide for a comprehensive preventive and predictive maintenance program. Key areas of asset management in the treatment facilities and equipment will be:

- Water facilities and equipment will receive preventive and predictive maintenance according to manufacturer's recommendations and industry standards.
- All chemical metering equipment will be maintained to ensure proper chemical dosing occurs at all times.
- Source of supply and pond system treatment equipment will be operated and maintained so the water entering the treatment facility is as high a quality as possible to ensure that the water treatment process is optimized.

Building Maintenance

Building maintenance is an important aspect of Asset Management and will include roof leak repair, regular pest control, janitorial services, repainting of facilities to prevent rapid deterioration or loss of aesthetic value, immediate repair of plumbing leaks and failures.

Water Works facilities will be maintained, at a minimum, to existing standards to provide a safe comfortable work environment. Some key areas of work include:

- Parking Lots -Parking lots will be maintained to provide proper ingress and egress to the facilities. All paved parking areas, access to these areas and asphalt-paved areas will be maintained.
- Grass Cutting and Landscape - Grass cutting and landscape maintenance will be provided on a seasonal schedule that ensures the grounds are kept neat and orderly.
- Snow and Ice Removal – Snow will be removed and walkways de-iced to ensure safe access to the plant offices and treatment facilities.

SCADA Systems

Veolia Water will continue to operate and maintain the existing SCADA systems associated with the facilities. Veolia Water will provide for O&M, training and service level standards for the SCADA system including backup systems. Veolia Water will make recommendations for City Capital improvements associated with the SCADA system.

Well Maintenance

The well maintenance program will be incorporated into the Web-based CMMS software, OPS 32, for water quality data and regulatory compliance. This program will be used to produce inspection requests and the resultant reports.

In addition to regular maintenance, Veolia Water will evaluate well performance versus historical records to detect any changes. This evaluation will include items such as flow rates, water depths, run times, pump ratings and well construction, and resulting data will be placed in the CMMS. Changes in performance, such as a decrease in well yield or specific capacity may be due to hydrogeologic conditions or due to mechanical and physical degradation within the well.

Examples of specific items that will be addressed during maintenance include:

- Capacity of individual wells.
- Assessment of mechanical and electrical problems.
- Assessment of mineral scaling, encrustation or bio-fouling.
- Inspections of the well fields and wellhead protection areas.

The frequency of any such maintenance activities and subsequent corrective actions will be dependent on the evaluation of well performance, as indicated by the historical record or as indicated by the manufacturer's recommended schedule (e.g., pumps).

Below-Ground Asset Management

Below-ground asset management focuses primarily on the water mains and service lines. These assets normally account for approximately 50 percent of the total dollar value of the water utility assets. The regular replacement of components of the underground water system assets is part of the overall Asset Management program, which encompasses regular inspection, preventive, predictive or corrective maintenance and replacement.

The Field Operations Plan, discussed later in this section, reviews in detail the O&M of the underground assets. This includes the repair of water main breaks, system flushing, and the repair and replacement of fire hydrants and valves.

An important aspect of Veolia Water's approach to below-ground Asset Management will be the development of an Underground Asset Rehabilitation and Replacement Plan (UARRP) for the Nashua Water Works. This is discussed in our Alternative proposal in Section Six.

Another important aspect of below-ground Asset Management is system replacement and rehabilitation (R&R). As discussed in Section Six, our Capital Program Management (CPM) will develop an annual replacement schedule for the water lines and distribution system components. This annual schedule will ensure that funds are spent each year on replacing the components that are in the worst condition. Based on the age of the Nashua underground pipes, the R&R rate should be between 0.5 percent and 1.0 percent per year of the total 425-mile system. This translates to an annual City R&R capital cost of approximately $1 million to $2 million. Veolia Water has processes and tools to ensure the City's R/R program will result in the following:

- Correcting service deficiencies, including pressure, flow and water quality
- Best use of the available capital funds
- Addressing the highest priority needs
- Reducing the water main break frequency
- Reducing system water leakage, losses and unaccounted-for water

Veolia Water's technical approach to its water distribution system R/R program will establish priorities based on the following criteria:

- Asset criticality (pipe asset will be assigned a rating of Highly Critical, Critical and Non-Critical)
- Asset condition, including failure data analyses and maintenance history
- Quality customer service
- Regulatory issues
- Environmental considerations

Ancillary Tools

A number of tools will support the Asset Management program. GIS system, hydraulic modeling, computerized maintenance management, and reliability centered maintenance are among those that will be used.

A GIS system that uses piping maps available in electronic format (see illustration at right) and any source documents that help identify system entities will be a key component of the underground asset program. Knowing the land- cover characteristics before conducting an emergency repair to a broken water main will allow the crews to bring the appropriate tools and equipment. In maintaining the system, techniques to record the horizontal and vertical position of a potable water system's point features (e.g., valves) will be employed. Using survey-grade GPS data collection techniques, depending on the prevailing conditions, Veolia Water has been successful at other projects, such as Indianapolis, in locating features to within one-foot of their true horizontal and vertical position. The GIS system can be integrated with Veolia Water's CMMS system to ensure that the repair history is tracked and used to make replacement decisions

Hydraulic modeling requires accurate information about depth of lay, top of pipe, pipe bends, valve elevations, etc., for the water system. Data captured through a GPS survey provides the necessary accuracy. Veolia Water plans to use Nashua's existing **water distribution system hydraulic model** of the potable water system. We anticipate that the model descriptions of the layout, configuration and sizes of system features can be extracted from the GIS system mapping and associated databases.

The data for the completed hydraulic model will reside in the computerized GIS mapping system. Over the long-term, the model, in conjunction with other software, such as the KANEW model, which determines pipe survivability used in R/R programs, will be able to identify sections of pipe to be cleaned and lined or replaced. Long-range strategy or master planning will allow the system to be maintained and customized to meet future population or demand increases and to handle geographic expansion.

Challenges and Solutions of an Asset Management Approach

Challenge	Solutions
Provide maintenance in accordance with the most stringent of applicable laws and prudent utility practice.	Veolia Water's proactive asset management program places emphasis on planned and predictive maintenance to ensure protection of the City's investment in water treatment facilities and equipment.
Implement the CMMS.	Establish a milestone implementation schedule that tracks Veolia Water's progress and performance. Provide the City with oversight for installation of CMMS. Promptly correct any CMMS deficiencies identified by the City.
Condition and age of facilities, equipment particularly in older facilities.	Carry out an initial condition survey, implementing predictive and preventive maintenance in CMMS to address deficiencies.
Update all O&M documents and implementing all SOPs.	Utilize the transition team and other Veolia Water resources to work with the water system staff and deploy a team accountable for this.
Maintain on behalf of the City all manufacturers' warranties.	Equipment warranty information, including warranty start and end dates, will be entered into the CMMS to ensure tracking of all maintenance and vendor activities.
Provide maintenance reports to the City in a timely manner to ensure compliance with the City's requirements and schedules.	Develop a mechanism for delivering maintenance reports to the City.
Condition and age of facilities, equipment particularly in older facilities.	Carry out an initial condition survey, implementing predictive and preventive maintenance in CMMS to address deficiencies.
Assess condition of all equipment, determine equipment that needs replacement, apply a schedule for preventive and predictive maintenance.	Evaluate asset criticality and focus efforts on improving reliability and managing the effects of equipment failure.

2.4 - Maintenance Management Plan

Veolia Water's maintenance management plan will be integrated with our asset management program. Our maintenance strategies and programs are always based on a few clear and prioritized objectives: Reliability, Cost Effectiveness and Client Satisfaction. As such, we will, under this O&M contract with the City of Nashua, maintain a high state of reliability in a cost effective manner while protecting the investments made in the facilities and assets.

Veolia Water's maintenance programs are based on four major fundamental aspects, including:

- Specific asset service, wear, and life cycle characteristics.
- Asset application and service context related impacts.
- Asset criticality in terms of unit and process reliability.
- Maintenance and service characteristics, techniques and procedures including costs/benefits.

Veolia Water's maintenance programs are specific and targeted. All of our experience and expertise developed at the vast array of other facilities and systems we operate will be used in support of development, implementation and operation of our maintenance programs for the City's water works facilities. The resulting program will be proactive, dynamic and specialized.

Veolia Water will, no less than 30 days prior to the Service Commencement Date, submit an update to the Maintenance Plan incorporated in the services contract. This update will reflect any conditions that have changed in the period between the negotiation of the services contract and the service commencement date. Veolia Water will within 90 days after the service commencement date, submit to Nashua a final maintenance plan reflecting all changes required by conditions not previously known to either Nashua or Veolia Water. The plan will include the details associated with directional flushing, which Veolia Water will perform.

Our maintenance management plan will entail a variety of elements, including:

- Preventive maintenance - to replenish routine wear or expendable components, extending operating functionality.
- Predictive maintenance - to quantify the condition and rate of change of material condition, allowing targeted reliability objectives to be monitored and controlled, and to support cost effective planning and scheduling.
- Service Methods - selection of internal and external service methods for cost effective use of staff labor and outside services.
- Targeting Staff Skills and Abilities – to ensure efficient, professional and cost effective manpower utilization and significance for each employee.
- Evaluate Maintenance Activity Types - to eliminate ineffective activities and enhance the value of effective ones.
- Review and Evaluation of Maintenance Programs – that considers results extracted from actual asset history and considers new and innovative maintenance activities, approaches, tools, and equipment.
- Enhanced Reliability and Cost Effectiveness – involves the alteration of assets to increase reliability and cost effectiveness, through measures such as the installation of run time totalizers to allow service to be run-time rather than calendar based.

Maintenance Management Plan Approach

The Veolia Water maintenance approach will be developed based on several fundamental basics. The program will essentially be a coordinated compilation of elements determined individually for each asset and the specific conditions under which each operates and is exposed. The objective is that each unit be retained at desired condition levels. Overall system or facility levels will be automatically met if each component is met.

Maintenance Management Methodology

The methodology Veolia Water will utilize and follow in developing maintenance programs include:

- Asset Inventory and Evaluation - Veolia Water will begin with a thorough audit and evaluation of the assets at the City facilities. This was discussed previously in this section under "Condition Study."
- Asset Service Requirement Determination - an integrated set of service needs will be developed based on manufacturer recommendations, experience with similar types of assets in similar operational circumstances, historical information on the actual assets, and established industry standards.
- Recurring Service Scheduling and CMMS Development - scheduled service activities will include conventional preventive maintenance, predictive maintenance and run-time or periodic-based service. The CMMS will be used to hold the procedures, resource requirements, reference information, scheduling, and historical compilation of performance and associated measurement information.
- Inventory and Spares - analysis of materials and parts necessary will be determined and used to develop an integrated set of spare parts and to establish an appropriate inventory.
- Development of Maintenance Program Policies and Procedures - identify a service need, enter into the CMMS as "open" work, perform scheduling and prioritize operational needs, implement efficient and effective procurement activities, maintain physical inventory control procedures, and develop and implement procedures for the process of collecting, recording, and entry of appropriate service data into the CMMS. As these site specific policies and procedures are developed, they will be incorporated in the Veolia Water site specific SOPs.
- Repair and Replacement - the R&M Budget developed by Veolia Water is consistent with the RFP and Veolia Water definition of City Capital. Major repair and replacement will be accomplished in similar fashion to the Repair and Maintenance as described above, with the difference being the financial aspect of the source funds as well as City review and approval.
- Housekeeping and Beautification - Veolia Water takes facility appearance very seriously. As such, appearance and aesthetic condition of the facilities is of utmost importance to us. As a matter of routine, Veolia Water will keep the facilities in a neat and professional manner. We will cooperate proactively with the City in advancing programs of beautification or appearance improvement.
- Upgrade of Obsolete Equipment - our approach is that some smaller, inexpensive and/or low reliability contribution assets are best replaced rather than service the units.

Maintenance activities to prolong the life of the unit may well cost more than the value of the increased life. Veolia Water analyzes full life-cycle costs and benefits of each service activity. We develop an integrated life-cycle strategy for each asset type that minimizes cost and maintains reliability.

Maintenance Management Plan Summary

Veolia Water will develop a customized maintenance plan for the City of Nashua under this contract. The key features and benefits offered by the Veolia Water plan and approach include:

- Proven Management Tool - The SPL enterprise asset management/computerized maintenance management system (CMMS), a state-of-the-art, Web-based asset management data collection software program, which offers:
  - Real-time viewing of all network equipment helping understand failures and to spot abnormal conditions.
  - User-definable metrics and key performance indicators for monitoring and benchmarking across all Veolia Water projects.
  - Unparalleled insight into both the physical and financial condition of assets for improved decision making regarding resource allocation.
  - Improved cost control and budget compliance due to real-time views of asset lifecycle costs per user-defined categories.
  - Minimal training required for casual and intermittent users due to tutorial wizards, embedded workflow processing, and an e-mail approval portal.
- Enhanced Reliability Approaches – These focus on:
  - Identifying critical assets and establish specific preventive maintenance schedules to protect those assets.
  - Establishing Root Cause Analysis of failures to understand their cause.
  - Significantly enhancing the availability of required inventory including spares based on rigorous failure analysis of assets.
- Enhanced Capital Planning – Made possible by:
  - Providing updated and cost justified information to support Nashua's long-term capital planning.
  - Facilitating close cooperation between Veolia Water and the City in planning future CIP.
  - Minimizing financial spikes by forecasting the need for additional funds in historically under-budgeted programs or in reducing money tied-up in programs over budget.

Protection of the City of Nashua's investment in your water facilities will be central to the Veolia Water O&M plan and approach. This approach was developed on the basis of our "stepping into the owner's shoes," which for us means to strike the best possible balance between maintenance and capital costs to optimize overall costs for the community. It

raises the issue of maintenance to a whole new level of understanding, and we believe that Veolia Water is the only firm capable of providing this.

Subsection 2.3 of this Operations Plan offers a complete discussion of Veolia Water's Asset Management plan and approach proposed for this contract with the City of Nashua. Veolia Water has implemented this approach successfully in the largest public-private partnership in the U.S., our current contract with the City of Indianapolis.

2.5 - Operations, Maintenance and Management Plans

2.5.1 - Production Operations Approach

Objectives of the O&M Approach

Veolia Water's objectives for the successful O&M of the Nashua Water Works are as follows:

- Provide uninterrupted, safe, timely, professional and reliable operations and management of the water works in a cost-efficient manner
- Maintain compliance with all safety, environmental and water quality requirements
- Operate and maintain all the components of the Water Utility as required by the RFP
- Perform all Water Quality testing and reporting
- Compile and file all required reports
- Implement an effective and efficient maintenance management system
- Protect the system assets
- Institute preventive and predictive maintenance

Methodology of the O&M Approach

Veolia Water's plan and approach to providing O&M of the system will guarantee that the water quality, demand, plant production, delivery and system storage capabilities are integrated into the operating plan. Plans will focus on making efficient use of personnel, controlling power, chemical consumption and sludge disposal costs and, most importantly, maintaining the confidence of customers by delivering excellent water quality. Components of the plan include:

Methodology of the O&M Plan

- Process Control
- Standard Operating Procedures
- Training
- Analysis of Water Quality
- Information Management
- Early Warning System
- CMMS

- Data Management - Utilize a comprehensive process control data management software system called OPS 32, for example, to improve finished water quality, increase employee productivity, reduce the cost of facility operations, and generate regulatory reports.
- Process Control Management Plans (PCMP) for the Water Treatment Facilities - This is a management tool to identify and quickly assess the control of critical unit treatment processes. An effective PCMP will ensure that all operational systems are operating within desired and designed parameters.

- Standard Operating Procedures (SOPS) – Apply Veolia Water's experience to establish SOPs for the O&M of all assets. Detailed SOPs will be developed for all critical and regulatory functions of the facility. This includes daily O&M activities, chemical loading and unloading, backwash procedures, satellite systems operations, laboratory procedures, and many others.
- Training – Provide staff with training in all areas and refresher training as required. At a minimum, training will be provided for in the areas of operations, maintenance, safety, regulatory compliance and company policies.
- Analysis of Water Quality – Veolia Water's laboratory QA/QC program will be applied and all data entered into the OPS 32 software. A specific Laboratory QA/QC Manual will be developed and will include:
  - *Water Quality Plan* – Integrates the source water quality, treatment water quality and the distribution water quality to meet or exceed the requirements of the drinking water performance criteria
  - *Source Water Quality* - Ensures that the source water is of high quality and reliable
  - *Treatment Water Quality* - Ensures that treated water quality is optimized, with the raw water quality analyzed on an ongoing basis
  - *Distribution System Water Quality* – Maintains the finished water quality leaving the treatment plant as the water is transported in the system

    Our Water Quality Plan was discussed in detail in subsection 2.2 of this Operations Plan.
- Information Management - Information generated in the SCADA system will be stored and available for subsequent review and uploaded into the process monitoring database, which will be maintained using the OPS 32 program.
- Early Warning System – This system will ensure all regulatory requirements are met. Any significant change in water quality for any parameter found in the regulatory sampling program will be flagged by the SCADA or the OPS 32 system before it approaches the regulatory maximum acceptable level.

2.5.2 - Field Operations Approach

Objectives of the Field Operations Approach

The primary objective of Veolia Water's Field Operations Plan (FOP) will be to improve the quality of service being provided to the customers served by the water system. The FOP will address all aspects of field O&M activities including field customer service. The FOP will be updated annually or as required.

Methodology for Implementing the Field Operations Plan

Field operations include field maintenance activities related to maintaining the water works facilities. A brief description of each of the activities is provided in this section. In addition, the customer service issues are discussed.

Veolia Water will have people, equipment and materials available 24 hours per day, 7 days per week to respond to emergencies. Periodically, emergencies may require outside

resources. Veolia Water can draw upon outside resources from its Team members and local contractors to assist in dealing with emergencies.

Veolia Water will respond immediately to all reported water main breaks, alarms, pump station failures and other emergencies. The response time will be within two hours of notification. A detailed record of our emergency response will include the type of emergency, actions taken and any follow up work that may be required. The detailed information on our responses to emergencies will be provided in our monthly report.

The improvements in water quality that Veolia Water expects to achieve will result from an integrated approach in every area of operations. In this regard, our **Field Operations Plan will be focused on**:

- Ensuring quality water in the distribution system
- Improving customer satisfaction.
- Improving emergency response time for main breaks (dispatched in 30 minuets or less, guaranteed).
- Effectively communications with customers.
- Providing measurable standard of service with service guarantees.
- Improving employee productivity and reducing operating costs.

Water Mains

The water distribution system has approximately 425 miles of pipe. Ductile iron and cast iron pipe account for 72% of the materials. PVC is 14% and transite is 10%. A portion of the cast iron pipe in the distribution system dates to the early 1900s.

Veolia Water is committed to the following:

- Dispatch personnel to emergencies within 30 minutes.
- Keep customers informed during a service outage.
- Analyze pipe samples to determine causes of failure and remaining service life.

Veolia Water will recommend programs to reduce the water main break frequency. In Section Six of this Proposal, Veolia Water offers to provide complete Capital Program Management. A function of this would be the reduction of water main break frequency, which will be tied to recommended performance guarantees.

Fire Hydrants

There are approximately 2,430 fire hydrants in the system. The 2004 NHPUC report does not indicate any private hydrants. The O&M of the fire hydrants will be closely coordinated with the City and local fire departments.

With respect to public fire hydrants, the City of Nashua Draft Water Ordinance indicates the following:

- Fire hydrants will not be used for any purpose other than extinguishing fires.
- Hydrant meters will be used for taking water from hydrants as authorized. Such taking of water will be billed.
- The fire hydrants will be operated by the agent of the City or duly authorized representative of the municipality.

Fire hydrants will be inspected on a regular frequency after report of an emergency leak. A seriously leaking hydrant could do extensive property damage if left unattended. Fire hydrants will be repaired on a high priority basis.

An objective of Veolia Water's hydrant program will be for all fire hydrants on the distribution system to function properly. Fire hydrants in poor condition will be replaced on an as-needed basis. Leaking or malfunctioning fire hydrants will be repaired or replaced. Based on age and condition, a certain number of fire hydrants will be replaced annually. This need will be included in the City's capital plan.

Veolia Water's fire hydrant painting program will be performed as part of the regular annual inspection program. Fire hydrants will be painted to properly maintain the assets and their appearance.

Valves

There are approximately 2,500 valves in the distribution system. Valves that cannot be located or are inoperable reduce system reliability and increase the number of customers that are out of service when a water main break needs to be isolated. The objective of Veolia Water's valve replacement program will be to ensure valves are operational. Veolia Water will inspect and exercise all system valves annually. Valves will be located, boxes cleaned, raised or lowered if required, and the valve will be turned to ensure proper operation. Valve measurements will be verified (if available) or created and recorded. The City will be furnished with a copy of the updated valve records annually. Valve replacements will be either Unplanned Maintenance or City Capital.

Service Lines

As indicated in the City of Nashua Draft Water Ordinance, the service line is the pipe from the water main to the curb stop within the public right-of-way. Such pipe will be owned and maintained by the City. There are 24,685 non-fire service lines and 759 fire service lines in the water system. Older service lines are a major contributor to unaccounted-for water. Service lines will be part of the regular leak detection program. Based on the age of the system, Veolia Water will establish a repair program for leaking service lines. The City's capital plan must allocate funds for the replacement of aged service lines.

Booster Pumping Stations

The PWW distribution system has approximately 34 booster pumping stations. A portion of the pump stations are monitored and controlled from the SCADA system. Operating data and information for the remote pump stations will be collected and processed by the SCADA system. Critical alarms will be monitored to ensure the reliability of the pump stations. The critical equipment at the pump stations will be part of a predictive and preventive maintenance program. The CMMS will be used to plan and track maintenance data and information.

Storage Tanks

There are 10 finished water storage tanks that supply water to the distribution system. The operating levels of the water storage tanks will be monitored and controlled from the SCADA system. Recent research conducted by the AWWA Research Foundation found that water quality deterioration in finished water storage tanks is a serious problem. Veolia Water will have a program to ensure that water quality is not deteriorating in the finished water storage tanks. For example, we will use operating data and information to determine daily turnover. The goal will be to achieve at least a 25% daily turnover in the storage volume to ensure fresh water in the storage tanks.

Each water storage tank will be washed down with high-pressure water spray every five years. Following the tank wash down, Veolia Water will advise the City of the need for a joint inspection. The integrity of the paint and the tanks' condition will be evaluated by Veolia Water. We will submit a report detailing the condition of the painting system and noting needed repairs and recommend when painting of the tank will be required. Major tank repairs and painting will be part of City Capital.

Restoration

Restoration involves the repair and replacement of streets, curbs and gutters, sidewalks and landscaping that have been damaged as a result of repairs or replacements to the water system. The drivers to complete the restoration as soon as possible are safety, aesthetics and building goodwill with the customers and residents. Customers appreciate the timely and quality completion of needed restoration.

Vehicle and Heavy Equipment Management/Maintenance

Veolia Water will implement a comprehensive maintenance program for the vehicles and heavy equipment that will include preventive and predictive maintenance. The primary objectives of the maintenance program will be to achieve the expected service life of the vehicles and heavy equipment, while avoiding emergency breakdowns, which are costly and disrupt operations. Emergency maintenance is the most costly maintenance. Having a major piece of equipment, such as a backhoe, breakdown in the field disrupts operations and delays the completion of the work.

Reading and Maintaining Meters

The City's system includes approximately 24,274 active meters to be read and maintained. Of these, approximately 93% are the small, 5/8-inch meters. Veolia Water will read residential meters without AMR quarterly. Commercial and industrial meters and meters larger than 3/4"will be read monthly. Under our base proposal and as indicated by the RFP, the information gathered will be provided to the City of Nashua for billing purposes.

Meters will be tested in accordance with NHPUC Rule 605. Meters, which register outside a range of 97 - 103%, will be removed and replaced with an accurate meter from stock or from the new meter inventory. All replaced meters will be sealed to prevent tampering. Meters that fail the test will be repaired and/or replaced. Meters that are impractical to repair will be scrapped. Veolia Water will update available meter records for the City or establish a meter record maintenance system. Meters that have been damaged due to abuse, tampering or neglect will be repaired at the City's expense as part of Unplanned Maintenance. Meters replaced as part of the annual meter replacement program will be funded by City Capital.

Automated Meter Reading (AMR)

Within 90 days of the Service Commencement Date, Veolia Water will submit a detailed recommendation for conversion of meters in the water utility to automated meter reading (AMR). The recommendation will compare available AMR systems and include a cost to benefit analysis for the various alternatives. The major benefits of an AMR system are as follows:

- Improved meter reading productivity and reduced costs
- Identify leaks

- Identify tampering
- Backflow detection
- Analyze usage patterns
- Provide data for a conservation program.

Backflow Prevention and Cross-Connection Control

Veolia Water will implement a backflow prevention and cross-connection program in accordance with the New Hampshire Department of Environmental Services (NHDES) requirements. The cross-connection backflow prevention program for communities serving more than 1,000 persons must be approved by the NHDES. The backflow prevention devices are owned and maintained by the customers. Veolia Water also will perform the other activities for the cross-connection program, including the following:

- Owners must have the backflow devices tested in accordance with NHDES requirements and provide the results to Veolia Water. High-hazard applications must be tested at a six-month frequency and all other at a 12 month frequency.
- A list of high-hazard locations will be maintained as required by the NHDES.
- A list of low-hazard locations will be maintained as required by the NHDES.
- A list of inspection frequency and inspection results will be maintained as required by the NHDES.
- An annual summary inspection form will be submitted to the NHDES by February 1 of each year for the inspections that have occurred in the prior calendar year.
- Veolia Water will support the City in its efforts to identify backflow devices for new and existing users.
- Veolia Water will work with the City to establish new service requirements.

Managing Unaccounted-for Water

The NHPUC statistics for 2002 indicated 5,274 million gallons (MG) of water production and 4,842 MG of water sales. This results in a metered ratio of 91.8%. The NHPUC statistics for 2003 indicated 5,162 million gallons (MG) of water production and 4,618 MG of water sales. This results in a metered ratio of 89.5%. The production data in the 2004 NHPUC report is inaccurate.

Based on available data, this would indicate un-metered water averages between 9 and 10% of annual production. This is considered very good water loss, compared to industry standards. A portion of the un-metered water is for authorized usages such as fire protection. The remaining un-metered water is normally unaccounted for water due to system leakage.

Unaccounted-for water adversely impacts operations in two ways: first, the incremental cost for power and chemicals due to additional pumping and pumping rates; second, the need for additional treatment and conveyance facilities to produce and pump non-revenue generating water. The benefits to the City for maintaining low unaccounted-for water will be capital savings and electrical power savings.

Understanding the hydraulics of the distribution system is an essential activity to minimize unaccounted-for water. Veolia Water will use technical support staff to monitor and control system leakage. We will perform leak detection on an ongoing and as needed basis. Leak

detection equipment will be used to listen to fire hydrants, valves, meters, mains and services. Computer-assisted leak detection equipment will be used to identify and locate the small, difficult leaks. Veolia Water has included added resources in its proposal for system leak detection to ensure unaccounted-for water remains low. Results of the leak detection program will be used to identify needed infrastructure improvements in the distribution system.

Conservation Plan

Within 18 months of the Service Commencement Date, Veolia Water will submit a report detailing measures that can be implemented to conserve water and water resources within the water utility. This plan will be drafted using the U.S. Environmental Protection Agency (EPA)'s guidelines that contain a voluntary provision.

Its main purpose is to educate the stakeholders and initiate a reflection among them in order to define a list of actions. According to its design it is, and will be for several years, a working document.

The first part in the development of a water conservation strategy requires preparation of a water system profile to identify where conservation programs can be focused to identify and review water conservation measures. The second part includes guidelines for the process of developing drought response triggers.

For the drafting of a Water Conservation Plan, the EPA identifies three guidelines which correspond generally to the water system size: Basic, Intermediate, and Advanced, as follows:

- The Basic Guidelines are geared to systems serving fewer than 10,000 people.
- The Intermediate Guidelines are appropriate for systems serving between 10,000 and 100,000 people.
- The Advanced Guidelines are for systems serving more than 100,000 people.

The conservation plan will follow the EPA intermediate guidelines for the core system and the Basic Guidelines for the Satellite systems. The major ingredients of the conservation plan will be as follows:

- Beneficial water conservation occurs when the total benefits of conservation exceed the total costs associated with the conservation.
- Growth in consumption and customers will be projected over 15 years. The rate of growth and maximum-day consumption will be projected.
- Existing water supply, treatment, distribution and storage infrastructure will be evaluated with and without conservation. This data will be used to identify the benefits of conservation.
- Commercial, industrial and residential demands will be evaluated.
- Growth projections will be made to estimate demands for 20 years. An evaluation of existing water supply yields to meet projected growth including droughts or water shortages (i.e., droughts with a severity greater than 25-year recurrence) will be evaluated. Our staff has met with the Director of the Nashua Planning Commission for information regarding the newly developed plan that will be released in July.
- Competition for existing water supply sources will continue to increase with growth in surrounding communities, expansion of industrial facilities and more attention to

sustaining minimum stream flows. This competition may limit Nashua's ability to withdraw raw water supplies to meet growth. Even though Nashua is 90% built out, surrounding communities will be receiving substantial growth in the next two years that could have an effect on water availability.

- Drought episodes will be evaluated. Expanded water supply sources and treatment facilities to meet both system growth and high consumption periods as a result of drought will be evaluated.
- An effective water conservation program includes both supply-side and demand-side management practices. The selection of any water conservation measure or incentive must consider legal, social, political, institutional, technical and economic feasibility.
- Programs aimed at reducing average residential water use may not result in substantial savings, given the relatively low rate of consumption on a per capita basis.
- Public education programs should accompany any water conservation measure or incentive.
- Water reuse and recycling is a potentially important strategy to evaluate.

Customer Service Activities in the Field

The customer service activities for field operations include the following activities:

- Turn-ons and shutoffs
- Monthly and quarterly meter reading
- Testing, repair and replacement of meters
- Final and special meter reads
- Improving Key Performance Indicators
- Dispatch personnel to emergencies within 30 minutes
- Ensure accurate meter reading through performance guarantees
- Turn-ons and shut-offs conducted within 24 hours of scheduled time.

Challenges and Solutions of the Field Operations Approach

Challenges	Solutions
Effectively communicate with the customer and increase customer satisfaction in performing the field work.	Maximize scheduling of field work with the customers and be sure customers understand the reasons specific field operations are being performed.
Minimize customer inconvenience associated with field operations including service interruptions due to water main breaks.	Preplan, schedule and monitor field operations to ensure customers and residents are not unduly inconvenienced.
Ensure meter accuracy to maximize revenues.	Establish periodic meter testing that is the most cost-effective.

2.5.3 - Safety & Security

Safety Plan

Safety Plan Objectives

Keys to Veolia Water's Safety Program

- Meet all City and regulatory compliance requirements.
- Monitor all regulatory and contract obligations
- Training of staff in regulatory compliance requirements
- Develop a safety-focused culture
- Train and equip staff appropriately

Veolia Water's experience in operating and maintaining large municipal water systems shows that a quality site-specific environmental, health, safety and security (EHS&S) program is critical to a project's success. An effective program reduces workers' compensation costs, as well as the frequency and severity of OSHA-recordable and lost-time injuries. Health and safety is the responsibility of everyone at Veolia Water, and the company will develop a comprehensive health and safety program for the Nashua project.

Veolia Water will perform a comprehensive safety audit of the water works' facilities and operations. The results of this audit will be used to:

- Assess training needs
- Assess current and needed safety plans
- Assess needed capital improvements
- Assess needed operational controls

Safety Methodology

Veolia Water will assess the health and safety risks to project employees and will develop and implement a site-specific health and safety program to mitigate those risks. We will use established health and safety protocols to anticipate, identify, evaluate and control hazards to protect employees and build on the safety initiatives that the current Water Works safety personnel have developed. Veolia Water's primary goal is to provide a workplace free from health and safety hazards and to properly train all personnel in how to work in a safe workplace. All personnel will be trained in effective work procedures. For example, O&M staff will receive competent person training on safe trenching and shoring practices. Safe work procedures will be based on:

- The workers' knowledge of the work environment and their professional experience
- Veolia Water's management team, which is directly responsible for safety
- The site safety coordinator providing on-site safety, security and compliance leadership to the operational team
- Standards and requirements of applicable laws, including OSHA

A comprehensive review of existing health and safety procedures and controls will be conducted. Additionally, the City's water facilities will be served by a dedicated Site Safety Coordinator, and this person will be responsible for developing and implementing a site-specific safety program. This individual is supported by the facility Project Manager, the Business Center's EHS&S manager, as well as our corporate Director of EHS&S. An extensive and comprehensive corporate safety library is available to all facilities.

Challenges and Solutions of the Safety Management Plan

Challenges	Solutions
Developing a safety-focused culture.	Train staff and lead by example. Implement Veolia Water's "New Facility Startup" program.

Security Plan

Security Plan Objectives

Veolia Water is committed to ensuring the ongoing security of the City of Nashua's water facilities. Veolia Water will use its experience in operating and managing large water utilities to ensure that the integrity of the water system is maintained at all times. Veolia Water will perform a comprehensive security analysis of the water works to:

- Determine the present state of facility security
- Review all current security plans
- Review and update the Vulnerability Assessment (discussed further in Subsection 2.5.7).
- Review and update the Emergency Response Plan (discussed further in Subsection 2.5.7).

Security Plan Methodology

Veolia Water's approach to utility security is based on its experience in large water utility operation. All current plans and procedures will be evaluated for completeness and effectiveness. If necessary, Veolia Water will employ outside expertise to facilitative its review of the water works.

Veolia Water will serve as the liaison with the City and state emergency management staff and organizations and participate in reasonable periodic security drills and exercises.

Security Plan Challenges and Solutions

Challenges	Solutions
Implement an effective Emergency Response Plan.	Review current procedures, consult the City and state emergency management staff on desired components of the plan, update all procedures based on this due diligence.
Implement required measures from the Vulnerability Assessment.	Review and update the current plan, with outside expertise as required. Report to the City on all capital requirements for implementation. Implement those capital requirements as directed by the City. Adjust operational procedures as required.

2.5.4 - Performance and Contract Compliance

Veolia Water continually monitors the performance of all of the facilities it operates for regulatory and contractual compliance, as well as for cost control, optimization, safety and benchmarking. Using this information, efficiencies can be made and applied across all

facilities. To do this, Project Managers participate in networks to share the best solutions and corporate knowledge on the latest technologies and research through research and development activities.

Veolia Water understands how critical overall performance is for our customers. At each of our O&M sites, we currently implement management controls encompassing SOPs, project-specific software (e.g., OPS 32, and CMMS), and training programs to ensure our operations meet performance requirements, regulatory requirements, operate efficiently, and are proactive.

Objectives of Performance and Contract Compliance Plan

Veolia Water's objectives for our Performance and Contract Compliance Plan include:

- Operate and maintain the system compliantly, efficiently and proactively to terms of the Agreement
- Conduct periodic audits and inspections
- Provide monthly, quarterly and annual reports as required to the City, state, and other regulatory agencies
- Participate in quarterly updates and an annual performance review with the City
- Outline the approach to various reporting requirements

Methodology for Implementation of the Performance and Contract Compliance Plan

As part of our due diligence process for this project, Veolia Water has reviewed and considered our obligations in developing our price and approach. These obligations will be incorporated into the various software systems that Veolia Water uses to track and monitor compliance. Veolia Water's use and reporting functions under software systems like OPS 32, and CMMS are integrated. Further detail on this can be found throughout this Operations Plan.

Asset Protection Reports

Veolia Water's asset protection reports identify yearly maintenance performed on each asset. Each equipment listing is filed in the equipment's maintenance history record, which is organized to provide equipment maintenance information on a monthly, yearly and lifetime basis. The CMMS reporting system will automatically issue and report the progress of preventive maintenance service orders. Daily, a supervisory review of open work order status and summary reports to O&M management staff is carried out.

Records

Veolia Water will maintain the records of the water works as outlined in the RFP. Original records, both hard copy and electronic format, will be maintained by the City, with Veolia Water maintaining all appropriate copies. Electronic records will be backed up to the City's data processing facilities daily.

Challenges and Solutions of Performance and Contract Compliance Plan

Challenges	Solutions
Establish credible data in order to measure performance in the first year and all subsequent years.	Verify systems and data in existence at contract commencement. Focus on the Performance Metrics proposed for the incentive fee.

Challenges	Solutions
	Apply Veolia Water's experience and expertise in applying and utilizing CMMS, and OPS 32 for data management and reporting.
Retention of key current staff and keeping them focused and maintaining a positive attitude.	Veolia Water will provide a highly qualified and capable Project Manager, and provide an experienced and highly motivated transition team. Apply Veolia Water's proven performance metric program.
Collecting data effectively, efficiently, analyzing, trending, reporting and take action.	Apply Veolia Water experience and expertise in applying and utilizing CMMS, OPS 32, and other regulatory and compliance tracking programs.

2.5.5 - Regulatory Compliance

Veolia Water will operate the Nashua Water Works so that at all times the facilities are in compliance with the EPA, the NHDES and other local, state and federal agencies as required.

Veolia Water has a proven track record of working with regulatory agencies at multiple facility locations in North America. We use experienced persons from other facility locations as well as corporate EHS&S expertise to periodically conduct on-site internal peer audits. Internal audits identify opportunities for corrective action implementation to ensure compliance with all applicable environmental and safety laws.

The Veolia Water management team at Nashua will develop and maintain positive relationships with those agencies having control over the water works.

Through the utilization of plant-specific PCMPs, SOPs, and the computerized process monitoring database (OPS 32), Veolia Water will ensure that the water works meets all regulatory requirements.

Objectives of the Regulatory Compliance Plan

Veolia Water's objectives for our Regulatory Compliance Plan are as follows:

- Develop and implement plant-specific PCMPs. These plans are used to monitor daily operational parameters and alert both operators and management to situations that are either outside set operational limits or are trending in that direction.
- Develop and implement Standard Operating Procedures (SOPs).
- Implement a computerized plant process monitoring database (e.g., OPS 32).
- Maintain a comprehensive scheduling matrix of all regulatory compliance monitoring and reporting.
- Develop action plans and recommend capital improvements in the Capital Plan to improve the existing water treatment facilities to meet existing and future EPA, NHDES and other regulatory regulations.
- Develop and maintain positive relationships will all applicable regulatory agencies.
- Implement regulatory update tools (e.g., www.cyberregs.com) to stay current about pending regulations that could impact operations.

Methodology for Implementing the Regulatory Compliance Plan

Veolia Water's Regulatory Compliance Plan

Veolia Water's plan to achieve the proposed objectives includes investing in computer systems software and developing written process control plans to ensure that the water works maintains compliance with all regulatory agencies at all times. Veolia Water will monitor all regulatory agencies for proposed and/or pending regulatory compliance rules and rules changes.

Veolia Water will analyze the facilities' current ability to meet the following rule changes and will determine operational changes or recommendations for City capital needed to meet the standards. Upcoming rule changes include:

- Arsenic – 10 ppb (0.010 mg/L) by 1/23/06 (current standard – 50 ppb)
- D/DBP Rule – expected to be finalized in 2005
- Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) – expected to be finalized in 2005
- Radon Rule – expected to be finalized in 2005
- Groundwater Rule – expected to be finalized in 2005.

Benefits of the Regulatory Compliance Plan

The benefits of Veolia Water's regulatory compliance plan include providing the highest quality water to the customers of the Nashua Water Works, meeting all state and federal (NHDES, EPA) regulations.

Veolia Water is prepared to commit to practicing continuous improvement to achieve optimum water quality and full regulatory compliance. Experience, resources and systems successfully employed in other Veolia Water locations will be used to consistently achieve and maintain regulatory compliance.

Challenges and Solutions of Regulatory Compliance Plan

Challenges	Solutions
Water Quality issues may require capital improvements, operational process improvements, or additional source water protection measures.	Establish baseline water quality benchmark profile, including source water monitoring to determine treatment alternatives to meet requirements. Determine what opportunities may exist to implement watershed management practices to improve and protect source water quality. Explore potential grant funding to leverage watershed management.

2.5.6 – Customer Service Plan

Veolia Water recognizes that the Customer Service function under the Base Proposal will include the management of a comprehensive meter reading, testing and replacement program, responding to water quality inquiries from customers in a timely and responsive manner, resolution of field service requests while maintaining accurate records, management of the backflow prevention program and providing information to customers

on tap fees. A description of Veolia Water's plan to meet the requirements of the RFP, and to effectively and responsively deliver each of these services is explained in this subsection.

The City will provide all the administrative support required for handling customer inquiries, bill generation, payment processing and collection, and will also maintain the accounting systems to track these billing, payment and collection activities.

As indicated by the City of Nashua, there will be one telephone number for customers to contact Veolia Water to schedule field service activities and make water quality inquiries, and there will be a second telephone number for customers to contact the City for information on billing and payments.

Veolia Water recognizes the City's plan and approach under this Customer Service management model, and in our Alternative Proposal (Section Six), we provide a full-service ("One-Stop Shop") approach to Customer Service that has been shown to provide long-term value and enhanced services to water systems customers in other systems that are managed and operated by Veolia Water.

Customer service focuses on higher levels of customer service and cost avoidance. Our one-and-done philosophy enables customer service specialists to develop work orders to ensure timely resolution of customer issues.

For instance, requiring customers to call multiple contact numbers for resolution of water-related issues tends to be confusing and frustrating to customers. (Many consumers don't clearly understand the difference between a billing or a field service issue.) In contrast, having a "One-Stop Shop" for all water-related inquiries (including water quality, meter reading, billing and payment processing) provides customers with faster resolution to inquiries and results in a higher customer satisfaction level. In our Alternative Proposal, Section Six, Veolia Water provides an explanation of the benefits and drawbacks of both approaches.

Customer Service Approach – Base Proposal

Comprehensive Meter Reading, Testing and Replacement Program

Timely, accurate and efficient water meter reading is a key to high quality customer service. In this model, Veolia Water will provide a comprehensive meter reading, testing and replacement program as directed by the City. We will replace meters consistent with NHPUC, AWWA and industry standards. Veolia Water will also test and analyze large commercial and industrial accounts consistent with City of Nashua's standards. For a full description of the Meter Reading, Testing and Replacement Program, see Subsection 2.5.2 the Field Operations Approach.

Respond to Water Quality Customer Inquiries

Veolia Water will provide a customer contact to answer all water quality-related customer inquiries. Typically, customers may have questions about water pressure, taste, odor or aesthetic issues. Veolia Water will respond to customer inquiries on these and other water quality issues in a timely fashion with accurate, helpful answers. Customer inquiries and the

type of inquiry made will be tracked on an on-going basis so that we and the City may track any trends or concerns.

When feasible, Veolia Water will work with the City to resolving any customer inquiries that could be alleviated by consumer education programs or further explanations on Veolia Water's proposed customized Nashua water system Web site. It is proposed that this Web site will offer general information about water quality and treatment and an on-line copy of Nashua's water quality report, when it is available. It is our experience that increased availability of information to consumers can increase their understanding of water quality issues, alleviate concerns and in turn, increase customer satisfaction.

Veolia Water's Customer Service Objectives

- Make the customer central to our business.
- Empower the staff to answer queries and rectify customer concerns efficiently.
- Exceed customer expectations.
- Respond to emergencies promptly and within a prescribed time limit.
- Achieve operational excellence.

Resolution of Field Service Requests

Under Veolia Water's Customer Service management plan, all contacts resulting in work required to be carried out in the field will be scheduled by the contact center and, where appropriate, appointments made with the customer.

Backflow Inspection Program

Veolia Water will implement a cross-connection program in accordance with the requirements of the State of New Hampshire. Veolia Water's Backflow Prevention Program is discussed in detail in subsection 2.5.2 of the Field Operations Plan.

Answer Inquiries on Tap Fees

As part of the Base Proposal, Veolia Water will manage customer inquiries concerning tap fees. Referencing documents provided by the City, Veolia Water will research tap fee prices on existing contracts and provide that information to customers. We will respond to these customer inquiries on a timely basis, and we will provide accurate information in a friendly manner. Records will be maintained of customer inquiries and Veolia Water's response to customers.

Veolia Water's Solid Expertise in Customer Service

Veolia Water has a solid record of providing customer service to water and sewer utility clients. This is demonstrated by the full menu of customer-service offerings Veolia Water currently provides on a contractual basis to communities and cities of various sizes. Although these services are not part of the Base Proposal, Veolia Water has extensive experience in bill generation and payment processing. Veolia Water generates billings, performs quality assurance, processes payments and answers customer inquiries for nearly 600,000 water and sewer accounts.

Challenges and Solutions for the Customer Service Approach

Challenges	Solutions
Responding to **customer inquiries** in a timely fashion with accurate information.	During the transition, a Policies and Procedures Manual will be developed documenting Nashua-specific rules. Employees will receive detailed

Challenges	Solutions
	training on Nashua policies and procedures, and they will be cross trained to ensure that we have a knowledgeable, helpful work force.
Making **water quality information** easily accessible to customers.	Veolia Water will develop a Nashua-specific Web site with water quality and treatment information, making it easy for customers to access water quality data. When completed, a copy of the annual water quality brochure will be available on-line.
Providing new customers with **accurate tap fees** in a timely fashion to expedite their service connections, thereby maximizing City water revenue.	As possible, databases with tap fee data will be developed to make it easier for Veolia Water personnel to provide accurate tap fee information. Records of inquiries and responses will be tracked. Response rate and accuracy will be monitored by management to assure timely response rates are maintained.
Resolving **emergency distribution and customer service problems**.	Response times to emergency requests and resolutions will be tracked. Response time will be monitored to ensure that system emergencies such as water main breaks are minimized to limit damage and disruption to surrounding residents and property.

2.5.7 - Vulnerability Assessment and Emergency Response

Vulnerability Assessment

Terrorist activities in the United States have created a sense of urgency and a need among water utilities to secure their water supplies. Veolia Water has become an industry leader in performing vulnerability studies and implementing security improvements. Veolia Water will review and update the current Vulnerability Assessment for the water works within 180 days of the Service Commencement Date.

Objectives of the Vulnerability Assessment Process

Veolia Water will improve the security of the City's assets and water supply by:

- Identifying areas of the Nashua Water Works that are vulnerable to threats of physical disruption of service or contamination.
- Recommending measures to improve the security of the City's water supply.

Methodology for Implementing the Vulnerability Assessment Process

Veolia Water will review the security and vulnerability plan for the water works prior to commencement, assuming reasonable access, using guidelines developed by the AWWA and the EPA for potable water systems. Security will be provided using an optimum balance between employees and technologies to address vulnerabilities and threats. The key objectives of this process will be to:

- Visit and inspect the facilities and subsystems associated with clean water production, looking for areas of increased risk.

- Visit and inspect facility perimeter fencing and other safety and security measures to ensure facility security is maintained.
- Develop recommendations for each facility and subsystem to address the identified security risks.
- Provide a cost analysis to implement the increased water security measures.
- Incorporate the implementation of increased water security measures into the City's Capital Plan.

Challenges and Solutions of the Vulnerability Assessment Process

Challenges	Solutions
Keep the water system secure.	Identify areas of vulnerability and actions to address the high priority vulnerabilities.
Early detection of a security issue.	Evaluate water quality monitoring and system surveillance and implement needed improvements.
Utilize customers and businesses to assist in providing oversight security.	Educate customers and businesses about the importance of keeping a watchful eye on water supply facilities including raw water reservoirs.

Emergency Response Plan

Objectives of the Emergency Response Plan

Veolia Water is acutely aware that the water works provides a vital service to Nashua's water utility customers. These facilities are critical to the well-being of the entire community. As such, Veolia Water will strive to ensure the facilities and staff are prepared to respond quickly and effectively to any emergency situation that may arise. Within 15 days of the Service Commencement Date, Veolia Water will provide a preliminary review of and employee training on the Emergency Response Plan for the Nashua Water Works.

Within 180 days of the Service Commencement Date, Veolia Water will completely review and update the facilities' existing Emergency Response Plan (ERP) and develop new methodology as needed to meet the needs of the water works, with the following goals:

- Address potential emergencies
- Protect public health and safety
- Protect the physical assets
- Aid other agencies if called upon.

Methodology in Developing the Emergency Response Plan

Veolia Water has the in-house technical expertise to develop a comprehensive, practical ERP. We intend to update and review the existing plan and work with the City to address any shortcomings, particularly in light of increased security needs. The teamwork among these personnel will ensure the Nashua water supply system has an ERP that is technically sound, consistent with NHDES regulations and is practical to implement.

A critical concern is the security against unauthorized entry or sabotage of facilities. Veolia Water will work with the City to identify and reinforce critical areas of concern.

Veolia Water works with the communities that it serves as well as with neighboring areas to make sure they are knowledgeable about its capabilities and what emergency services it can offer. We believe it is critical to work with emergency services providers in our communities, including recommending improvements and integration over time.

Overview of the Emergency Response Plan

Emergency Response Plans, including contingency and disaster recovery plans, are required to address many different scenarios, including the loss of critical assets due to flooding, fire or severe weather or other events.

Contingency and disaster plans are part of the overall crisis response and will assist the plant staff to respond logically and without panic to ensure:

- Safeguards for the community
- Employee safety
- Minimization of potential damage to property
- Quick, informed and responsive decision making
- Environmental stewardship

Key Elements of an Emergency Response Plan

The following lists the key elements in a comprehensive contingency and disaster recovery plan:

- Communication Plan – Developed in consultation with the City. As owner of the facilities, the City must have a key role to play in sharing information with the public. The communication plan will identify a spokesperson for the media and public and under what circumstances to respond. Different emergencies require different communication efforts.
- Crisis Notification Procedures –Addresses the chain of communication to manage the situation.
- Post-emergency Checklist – Ensures appropriate parties have been advised, situation understood, events recorded, review success of response.
- Annual Review - Annual review/update of procedures and contact information.
- Ongoing Training - Annual and new employee training.
- Emergency Response Plans –Guide the staff through each action to be taken for the specific situation.

Challenges and Solutions of the Emergency Response Plan

Challenges	Solutions
Integration with ERPs of Nashua and other serviced communities	Regular meetings with emergency planning officials of other agencies. Participation in emergency planning exercises.
Meet the requirements of the NHDES.	Follow the requirements of Env-Ws 360.14 Emergency Plans for Community Water Systems.

3 - Engineering Services

3.1 - Operational Engineering

Under the Base Proposal approach, Veolia Water will provide operational engineering services required for the normal course of operating and maintaining the water utility assets. Other engineering services required for the City capital projects or system growth (for example; updating GIS, updating hydraulic model, plan review of developer projects, preparation of as-builts, etc.) are covered under Supplemental Engineering Services later in this section.

Examples of the specific services to be provided for Operational Engineering are as follows:

- Preparing engineering analyses and studies required for the normal course of operations and maintenance of the water utility.
- Evaluation of specific capacity of well supplies.
- Analysis of water treatment processes to assure process optimization and finished water quality. Our proposal includes a "Production Engineer."
- Operating recommendations to meet peak system demands.
- Process mapping.
- Evaluation of operating efficiencies including pumping efficiencies.
- Reviewing instrumentation and control system problems.
- Using the hydraulic model to evaluate specific and localized distribution system flow and pressure problems
- Helping evaluate system O&M problems.

As a part of our proposed Alternative Proposal, discussed in detail in Section Six, Veolia Water is proposing to provide enhanced capital services using both in house expertise and the resources of our engineering partner Dufrense-Henry, a local engineering company that is experienced in working with Nashua. The background and experience of this firm is discussed in detail in Section Five of this Proposal volume.

3.2 - Supplemental Engineering Services

In the RFP, the City of Nashua requested proposals for Engineering Services as supplemental services. Outlined below is a narrative on the services that can be supplied to the City as supplemental services. Specific costs for these services are included in Volume IIII, Appendix F.

Review of New Construction in the City

Veolia Water will meet with developers and other City customers who request main extensions or new service installations. We will review plans, establish appropriate sizing of facilities (may require additional services, as discussed below) and provide standards and specifications.

Inspect New Construction

We will provide on-site inspection of new installations to ensure compliance with City standards and specifications. Veolia Water will observe pressure testing, verify that the as-

built drawing provided by the customer is correct, and input the as-built record into the City system. For developer projects, we will make inspections during critical times to verify compliance with standard specifications, observe pressure testing, verify that the as-built drawing provided by the customer is correct, and observe disinfection of new facilities and appropriate follow-up bacteriological sampling before activation of lines.

Create As-built Records

Veolia Water will create an as-built record of new installations on an Auto Cad file. Copies of all such files will be provided to the City. For individual services, the customer will be responsible for supplying the as-built Auto Cad file and Veolia Water will only enter the file into the City system. For Developer projects, the customer will be responsible for supplying as-built records in an acceptable digital format and Veolia Water will enter this information into the City system.

GIS Mapping

Veolia Water assumes that the City will provide, as part of the Asset Purchase, a reasonably accurate GIS map of the water system, however, there may be a need to provide updates on mains, hydrants and gate valve records. Veolia Water will provide updates to the City's distribution mapping and provide field location or verification of water mains and appurtenances as required.

Assess "Unaccounted Water"

At least once each year, we will summarize and compare water production records with total system consumption as measured through customer meters. Leak detection has been included in the Fixed Price Component.

Hydraulic Modeling and Analysis

Veolia Water assumes that the City will provide, as part of the Asset Purchase, a working, calibrated hydraulic model containing detailed computer files on the primary pipes, nodes, booster pumps, etc., and storage of the distribution system. We will become familiar with the hydraulic model and distribution system and be prepared to run specific queries for system improvements, fire flow determination or analysis of developer projects for a lump sum price. Veolia Water will provide system analysis to identify hydraulic bottlenecks and low pressure areas and develop recommendations for additions and improvements. We will also assess the impact of future growth on the system before the commencement of Developer projects.

Fire Flow Testing

Veolia Water will provide a field technician(s) to perform fire hydrant flow testing. These tests include operating the hydrant, flow meter and pressure gauge during the hydrant test; taking and recording readings; and providing a summary report to the City and the customer requesting the test.

Capital Planning for Water System Improvements

Veolia Water will meet with the City to review priorities and set goals for the overall Water System Capital program. In our role as service provider to the City, we will not only prepare the appropriate draft plans for City's review, but more importantly, Veolia Water will bring to

the project creativity and innovation in the assessment of situations; address cost and water quality needs; conceptualize alternatives; and develop recommendations that integrate with overall water quality and service goals. The planning function will be an ongoing activity that will provide a five-year plan with annual updates and recommended capital for the upcoming fiscal year. Veolia Water has included $50,000 per year in our fixed fee component to work with the City to annually develop a five-year Capital Improvements Plan (CIP).

Other Engineering Services

Veolia Water will supply other engineering services for capital planning; capital execution; detailed engineering studies; and GIS projects, based on hourly rates for various classifications or will negotiate lump-sum priced proposals on specific scopes of work as requested

4 - Technical/Management Innovations and Performance Guarantees

Veolia Water has identified a number of technical and management innovations to improve the standards of performance that the City will receive in terms of water quality, reliability, and customer service. These innovations, which have been consolidated from our national and international experience, will give us the ability and confidence to offer the firm performance guarantees which are discussed in Volume Two, our Cost/Price Proposal. These O&M innovations are discussed in the paragraphs that follow.

4.1 - Technical and Management Innovations

Comprehensive Watershed Evaluation/Study

The Nashua Water Works has a combination of surface and groundwater supplies that must be optimized to satisfy the peak water demands and ensure customers high-quality water. To meet these requirements, Veolia Water will perform the following:

- Monitor the raw quality of the water supplies
- Monitor the specific capacity of the well supplies
- Provide a comprehensive watershed management plan
- Perform pilot studies to evaluate the impact of various raw water supplies on the finished water quality
- Provide Capital Planning for water system improvements

Minimizing City Capital Investment and Improving Reliability

Our asset management program will increase the reliability of critical plant and equipment to provide uninterrupted quality water service for the customers by performing the following:

- Apply the results of the condition study
- Perform preventive and predictive maintenance
- Utilize advanced technologies including infrared, oil analysis and vibration
- Utilize software programs including CMMS, OPS 32 and SCADA

Scheduling and Routing of Field Activities and Crews

Customers are often inconvenienced by having to stay home waiting for the water utility service person. Often times a utility will indicate the service person will be there in the morning or afternoon. Axiom's Mobility scheduling solution will be an asset acquired by the City as part of the PWW acquisition. This is a powerful scheduling algorithm for the dynamic scheduling, real-time crew optimization by dispatchers, street-level routing of service personnel and second-to-none emergency response capability for customers. This will enable our customer service representatives to schedule real-time appointments for the customers. This is a huge benefit to the customer and improves the efficiency and productivity in the field.

CMMS

Veolia Water's computerized Asset Management and maintenance approaches and software have been discussed at length throughout this section. Our enterprise asset management software supports the complete lifecycle management of an asset. The CMMS system monitors environmental conditions, equipment application, sludge disposition and chemical dosing, among its many capabilities. It also tracks inventory, condition assessment and monitoring data, defined service levels, defined performance limits and tolerances, functional failure definitions for all serviceable assets, and supports condition-based maintenance.

Energy Savings

Veolia Water will evaluate the Nashua Water Works to identify potential energy savings either through operational efficiencies or through capital expenditures. Our sister company, Dalkia North America, is part of a world leader in energy management solutions. Dalkia North America will help evaluate the water works and provide assistance to Veolia Water in our overall energy analysis and improvement of the system. Specific actions to reduce electrical energy costs will be as follows:

- Utilize the hydraulic model to identify more efficient water distribution
- Operate at optimum pump efficiencies
- Operate to reduce demand charges
- Evaluate off peak pumping
- Identify and implement changes to reduce commodity charges
- Evaluate the use of variable frequency drives

Process Control Management Plans

As has been discussed, Veolia Water will implement comprehensive PCMPs at all facilities. PCMPs are utilized by plant management staff to ensure all plant operational processes are in line with predetermined parameters and quality control standards. PCMPs provide managers with the information they need to make informed decisions about plant operations. An integral part of the PCMPs is the utilization of computerized process control software. Veolia Water uses OPS 32 as its process control software. OPS 32 will take data from the SCADA system as well as the laboratory to provide a daily report on plant performance and operations. Outputs culminate in various reports as needed for the

internal project management and regular reporting to the NHDES, EPA and the City. The plant staff and the production manager will also have direct access to these, providing redundancy in reviewing operational data and plant performance.

4.2 - Performance Metrics

One of the key elements of our Proposal to the City of Nashua is our commitment to establish a performance-based approach to this project, one in which Veolia Water's receipt of a set amount of the Services Fee will be based on our achievement of clearly defined sets of metrics in the key areas of project and service performance. In this section, we discuss methods for implementing this approach under the proposed contract with the City of Nashua, and in Volume Two, our Price Proposal, we discuss the specific performance metrics proposed.

In this discussion, Veolia Water outlines our proposed Annual Performance Metric Program, an important feature of both the Base and Alternative Proposals. This section provides explanatory information so that performance metrics may easily be understood. Performance metrics are an important tool to focus the City of Nashua, stakeholders and regulators, Veolia Water and its soon-to-be-employees on the most important key drivers of the business. Performance metrics provide financial reward for improved performance. They provide Nashua and the community a vital tool to objectively judge Veolia Water's performance. Public openness about performance appears to be a particularly important issue to Nashua stakeholders.

The metrics presented in this section are specific to Veolia Water's Base Proposal, which offers customer services related to utility operations, such as field service requests, tap fee pricing and oversight of the backflow program.

As an introduction to performance incentives, here is an example of an incentive currently in use at Veolia Water's Indianapolis Project. Customer requests for water service turn on or water service turn off are responded to within 24-hours. This metric has been met by Veolia Water each year of our contract.

Like many other successful organizations, Veolia Water requires its managers to set performance goals, and they are subsequently rewarded for accomplishing those goals. Veolia Water has applied this same concept of setting goals and rewarding performance to its O&M and customer service contracts with municipal utilities with much success.

Use of this methodology enabled Veolia Water to significantly improve performance during a three-year period at our Indianapolis project, resulting in improved customer service, water quality, maintenance and compliance. A thorough discussion of this is included in Appendix D, Part 3, in the 2004 Indianapolis project Annual Report.

Veolia Water is "the contractor" with significant experience in managing to performance metrics. Competitors typically have contracts that penalize them for bad performance, but Veolia Water's performance metric methodology rewards significant and objective performance improvements. There is a big difference in these two approaches and the outcomes. Veolia Water's experience shows that rewarding performance improvements results in higher customer, and therefore client, satisfaction and a higher level of overall performance, compared to the penalty-fee methodology most of its competitors use.

Benefits of Performance Metrics to Nashua

Some of the key benefits of this type of approach include:

- Performance metrics establish an objective methodology for Nashua and its citizens to evaluate Veolia Water's true performance, especially in the areas of water quality, environmental compliance and responsiveness to customers.
- There are other firms qualified to run water treatment and distribution system operations, but few are willing to place themselves under open scrutiny and to hold themselves to high performance improvement goals. We welcome communication about our performance with the citizens of Nashua. Veolia Water typically posts this performance data on its Web-site for public review.
- Based on our past experience, use of performance metrics in Veolia Water's contract with the City of Nashua will result in improved customer satisfaction and increased overall performance, and this marked improvement will be demonstrated to the citizens of Nashua.

Objectives of the Performance Metrics Program

Veolia Water will provide Nashua with a set of quantifiable measures against which:

- Over the term of the contract, serve to reward Veolia Water for providing an ever-increasing standard of performance to Nashua.
- Stakeholders have an objective method to measure and evaluate performance.

Methodology for Implementing a Performance Metric Approach

The performance metrics, year-to-year improvement goals, incentive dollar values, and the methodology for measurement will be mutually agreed upon prior to the contract onset. The performance metrics will be challenging and provide our firm with stretch goals to improve performance and maintain accountability to the City of Nashua.

Under this approach, Veolia Water will:

- Thoroughly document incentive performance. On an annual basis, performance will be evaluated by the City of Nashua.
- Upon completion of the City's evaluation at year end, we will be awarded an incentive fee from the City of Nashua for each performance metric earned.

Performance Metrics

The performance metrics that we recommend for the Base Proposal are presented for five key areas, including:

- Emergency Response
- Turn Ons/Shut Offs
- Employee Safety
- Meter Misreads
- Fire Hydrant Repairs/Replacements

Future Improvements Beyond Five Years

Veolia Water recognizes that the performance metrics cannot be static over the term of the management Agreement. We want to continuously improve in all areas. We prefer to be measured and compensated for our performance in areas that are of importance to our key constituents—the City of Nashua, our customers, regulators, legislators, developers, suppliers and team members. We believe that the measures of success should be developed on a forward-looking basis. Our performance measures will drive excellence in O&M activities in the early years of our relationship, as measured by the areas outlined in the performance metrics discussed in Volume Two.

5 – Benefits to the City

Veolia Water has proposed an "Operations Plan" that will provide customers with quality water service at a competitive price. The water system assets will be incorporated into a comprehensive Asset Management program.

Specific benefits to the City include:

- Watershed Management and Water Quality Protection – As discussed throughout this Proposal, Veolia Water will develop comprehensive plans and provide for strict operational controls to ensure water quality is maintained.
- Comprehensive Asset Management Program – Veolia Water's Asset Management program is based on minimizing life cycle costs
- Operations & Maintenance Savings – Veolia Water will provide savings and stable pricing for the term of the contract.
- Capital Savings – Veolia Water will properly maintain assets to optimize capital replacement requirements.
- Increased Reliability – Our maintenance approach will increase reliability of all critical equipment and all critical processes.

Selection of Veolia Water as the contract provider for the O&M of the Nashua Water Works system will bring to bear Veolia Water's expertise and solid performance record to the benefit of the Nashua community.

STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: October 28, 2004
AT (OFFICE): NHPUC

FROM: Stuart Hodgdon, Chief Auditor
James Schuler, Examiner
Paul Tessier, Examiner

SUBJECT: Pennichuck Water Works Inc.
DW 04-056
FINAL REPORT

TO: Mark Naylor, Director of Water and Gas Division
Jayson Laflamme, Utility Analyst

INTRODUCTION

Pennichuck Water Works, Inc. (PWW, Pennichuck or Company) is one of five wholly owned subsidiaries of Pennichuck Corporation (PCP, Parent). The others are: Pennichuck East Utility, (PEU), Pittsfield Aqueduct Company, Inc., (PAC), Southwood Corporation (TSC), a developer of residential and commercial real estate in Nashua and Merrimack, and Pennichuck Water Service Corporation (PWSC), which provides water system management services.

On March 30, 2004, PWW filed with the New Hampshire Public Utilities Commission, (PUC, Commission) a Notice of Intent to file Rate Schedules. The Company is proposing an overall increase in permanent rates of 16.39%. Upon reviewing the filing Mark Naylor, Director of Water and Gas Division at the PUC, instructed the Audit Staff (Staff) to perform an audit of test year 2003.

Our contact personnel were Bonalyn Hartley, Vice President-Administration and Robyn Descoteau, Accounting Manager. Staff thanks them for their prompt responses to our many audit requests (A/R).

INTERNAL CONTROLS

Upon arrival Staff was presented with notes from the Pennichuck Corporation Board of Directors minutes as well as Pennichuck Water Works minutes. The minutes show that there were several PCP special meetings as well as regularly scheduled meetings. The main topics throughout the year were the municipalization efforts of several cities, an ongoing SEC investigation, relocation of the corporate office and the replacement of the Chief Executive Officer. Staff also read from the minutes of

Total interest expense, Account #427, was $1,605,391 for the test year.

Unamortized Debt

Unamortized Debt Discount and Expense, account #181 had a year-end balance of $488,580. Amortization of Debt Expense, account #428 had test year charges of $31,876.

PLANT

Work Order System

PWW uses components of a Synergen software package. One of the reports is a work order detail report (work order, w.o.). The work order provides: a number, task description, finished date, city in which the asset is located and the name of the PWW Accountant who inputs the data. The work orders reviewed all had the same output format. Column Headings are:
Part No Part Desc Quantity Unit Cost Total Cost Transaction Date.

Part No	03000000000-000
Part Desc	Contractor / Overhead / Total Labor / Veh #
Quantity	Dependent on Unit Cost and **Total Cost.**
Unit Cost	$0.00 for Labor / Vehicle Rate charged for respective veh # / All other charges $0.01
Total Cost	As displayed on REPORT Quantity. Not to exceed 10Million times the Unit Cost displayed $0.01 = $100,000.00 **or** Vehicle Hourly Rate $6.00; $35.00; $40.00; $150.00
Transaction Date	No database information displayed on work order.

The Audit Staff reviewed many work orders. It was noted that when PWW pays a contractor for work, the work order description column does not state the contractor's name but instead just states "Contractor". The Unit Cost is reported as $0.01 cents and the Quantity column reads .01 divided by total contract dollars. On some work orders the PWW Accountants manually wrote the contractor name which is cross referenced to a Part Number. PWW Accountants also manually calculated overhead. Due to the above lack of detailed information contained on the work orders it appears that the automated system is not being efficiently or effectively used for the purpose intended. **(Audit Find #4)**

Construction Overhead

The Audit Staff observed that the work orders show use of various overhead rates. An overhead rate of 50% of Union labor was being used in the test year to cover Union employee benefit costs. When asked for support the Company provided a 2003 Benefits

Summary with column headings displaying: Social Security; 401k Match; Combined Federal & State Unemployment Taxes; Boots; Clothing Miscellaneous Operations; Clothing Miscellaneous Treatment Plant; Lunch Pay; Christmas Bonus for Union; Sickness/Funeral Pay; Pension-DB Plan; Service Awards; Blue Cross/Blue Shield; Insurance Opt-Out; Group Dental; Group Life & Disability; Section 125; Miscellaneous Employee Benefits for all; Miscellaneous Employee Benefits for Operations Only; Miscellaneous Employee Benefits for Treatment Plant Only; Miscellaneous Employee Benefits-Individual; Training Education Seminars; Training Education.-Operations/Treatment Plant; Vacation/Holiday. Staff reviewed the Summary and agrees to the reasonableness of the information contained in it that led to the test year use of 50% for Union benefit overhead.

Staff noted that capitalized PWW labor for Data Processing and Engineering includes a rate of 40% for overhead to cover benefits.

PWW Accountants manually add an overhead rate of 5-10% for jobs performed by outside contractors and Staff observed that 10% is added to materials and supplies.

Additions and Adjustments to Plant

PWW provided, in the Annual Report, a seven page report entitled "Fixed Asset Additions for 2003" that contained 253 items totaling **$5,435,648.** A sample of plant additions from this report was chosen by the Audit Staff for review. Such testing included a review of work orders, invoice detail, related costs and appropriate classification of the used and useful plant addition. The Audit Staff selected the following test year additions for detail review:

Kessler Farm Tank Painting w.o. #0207098-01 and #0300494-01
Hills Ferry High Pressure Ugrading: Paving w.o. #0300915-01
Unused Sargent AVE Inventory w.o. #0102039-01
Fleet Maintenance-Synergen w.o. #0207764-01, #0300914-01 #0302567-01
Scheduling Software w.o. #0306697-01
Enterprise GIS-Synergen w.o. #0201707-01 and #0300860-01
PC Replacements w.o. #0308201-01

Kessler Farm Tank Painting

The PWW 2002 Capital Improvements Request/Company Expenditures Authorization form for Kessler Farm Tank states that it was estimated that exterior and interior touch up work would hold this tank for 5 years. However, when the tank was actually drained it was determined that the interior coating had failed, with significant pitting with depths of over 50% of the floor thickness. Tank Industry Consultants of Indianapolis, IN determined that the entire tank needed to be painted to protect it from "*further pitting and potential failure.*" The PWW Fiscal Year 2002 – Record of Bids/Proposals Schedule indicates a bid date of 11/7/2002 led to the receipt of two Contractor bids of $624,740 and $668,000. An E-22 was filed with the NHPUC showing

the approved budget to be $804,200. Staff notes that the budgeted amount does not include overhead.

Staff reviewed two completed PWW Synergen Work Order Detail Reports #0207098-01 and #0300494-01 that total $3,482 and $896,376 respectively. The two work orders were booked via journal entry on 7/31/03 to PWW account 304, Structures and Improvements, sub-account 100, Asset #s 5421 and 5422. Several contractor charges listed on the work orders were tied to actual invoices and PWW Data Processing and Engineering capital time were tied to support schedules with no exceptions noted. Staff noted that overhead charges were calculated by PWW Accounting to be $40,277. Support for their calculation was manually written on the work order and shows that 5% was added for contractor invoices and then PWW labor costs, truck costs and backhoe costs totaling $2,007 were applied a rate of 50%. Overhead was correctly booked to the general ledger as a credit to PWW account #922-000.

Staff notes that on page 8 of Mr. Ware's testimony he states: "*The total cost of repainting the Kessler Farm tank, including engineering and inspection, was $1,035,910.* Staff notes that the Fixed Asset Additions for 2003 reports only $896,376.

Hills Ferry High Pressure Ugrading: Paving

Staff reviewed the PWW Synergen Work Order Detail Report #007-0300915/01 for the above project. There was one work order for the upgrade and one for paving. The support for the completed work order for the Upgrade included two Applications for Payment (Application) requests for Park Construction Corporation. The Application referenced a contract for which multiple jobs were being done. Staff noted that a PWW Engineer wrote on each Application the amount to be charged to the pertinent work orders. 30% of the total Application amount was approved to be charged to the Hills Ferry Pressure Upgrade. The Application was signed by a representative of the contractor and then by a PWW Engineer. Staff traced two Application payment requests for $20,852 and $45,658 to the work order. In addition Staff reviewed the reasonableness of vehicle costs, labor and the rate of 10% of contractor invoices for overhead. Total Upgrade costs for July were $74,261. The paving work order was supported by an invoice for $7,430 and then the PWW Accountants applied a 10% overhead charge. Both work order amounts were traced by Staff to a journal entry to the general ledger. Staff notes that the upgrade was correctly posted to PWW account #331-200, Distribution Mains and the paving was correctly posted to account #331-002, Paving: Distribution Mains.

Unused Sargent AVE Inventory

The Audit Staff reviewed PWW Journal Entry #125 which was to adjust inventory. This entry was done by PWW Accounting to remove inventory from a job on Sargent Avenue and put it back into the pipes and fittings inventory. Then this inventory with additional inventory was transferred to a job on Manchester Street. 10% was applied to the inventory for overhead. A support schedule was attached to the journal

entry that shows the cost of individual items of inventory. The net ($12,463.31) of these transactions appear on the PWW electronic version of the FIXED ASSET ADDITIONS FOR 2003 in July and the credits were correctly traced to general ledger account #331-100, Transmission Mains.

Fleet Maintenance-Synergen

The Audit Staff reviewed a PWW 2002 Capital Improvements Request/Company Expenditures Authorization form for a work order described as Fleet Management Incorporation into Synergen. Per this form many of the PWW Fleet department functions are currently done manually so the completion of this project would lead to Synergen computer program tracking. The budget for the above was $16,000 not including overhead costs. A review of the PWW Synergen Work Order Detail Report #007-0207764/01 shows that the actual cost was $15,850. A review of the support shows Union capital labor with a benefit overhead rate of 50%, PWW Data Processing and Engineering Capital Time totaling $4,617 that includes benefit overhead at 40% and supported by reports dated October, November and December 2002, an invoice totaling $8,720 for a Synergen employee for on-site training along with reimbursement of expenses and one Dell personal computer totaling $1,682 purchased via an American Express credit card assigned to the PWW CFO. A final invoice for $95 was for lunches for the Synergen Fleet Core Team. A journal entry was done on 6/30/03 to the general ledger to debit account #347-110, Computer Equipment for $15,850.

An additional work order #007- 0300914/01 for Fleet Management Incorporation into Synergen was completed in year 2003. This work order shows costs of $25,580. For support the Company provided January, February, April, May, June, July, September and October 2003 PWW Data Processing and Engineering Capital Time Reports. The monthly labor on these reports includes benefit overhead at 40%. Total PWW Data Processing and Engineering support totaled $20,326. Staff also noted on the work order, Union labor of $1,596 along with a posting for benefit overhead at 50%. Various monthly journal entries were posted to account #347-110. No exceptions were found by Staff in the review of these two work orders.

Scheduling Software Replacement

The PWW 2003 Capital Improvements Request/Company Expenditures Authorization form states that this project is new software that can be linked to other systems, providing real-time data interconnectivity, eliminating the need for manual input from the Customer Service Representatives. The approved budget for the project was $195,000 without overhead charges. However, an additional approval was sought to increase the scope of this job. An additional amount of $62,947 was approved by PWW Management. From the work order Staff traced contractor charges of $99,960, $11,442 and $5,846 back to the actual invoices. Support for PWW Data Processing and Engineering Capital Time for the months of November and December 2003 totaling $7,054 was reviewed. PWW Accounting did manual calculations of overhead at 10% of contractor invoices. Staff then tied the completed work order amount of $253,173 to the

PWW journal entry and to general ledger account #347-110, Computer Equipment-Hardware/Software.

Enterprise Geographical Information System (GIS)

The approved budget for this project was $89,000 not including overhead. However, an additional approval was sought to increase the scope of this job. Management approved an additional expenditure of $46,600. From the work order Staff traced three contractor charges in the amounts of $13,050, $6,672 and $6,584 back to the original invoices. Support in the form of a PWW Data Processing and Engineering Capital Time for the month of January 2002 for $1,753 was provided. Staff observed that this work order contains many PWW Accounting hand written notes. The completed work order amount of $73,448 was traced to the PWW journal entry and to general ledger account #347-110, Computer Equipment-Hardware/Software.

PC Replacement

The 2003 Capital Improvements Request/Company Expenditures Authorization form for this project states *"In the past, we have added to, or replaced our desktop computers as they 1) became obsolete, or 2) new hires came on-board. This has led to a multiplicity of operating systems, office suites, and hardware. Replacing our existing computers all at once assures that everyone will be working with the same type of hardware and software, thereby gaining efficiencies for the company."* Staff noted that this project was not budgeted but the expenditure was approved by PWW Management on 11/7/03 for $118,645. From the work order Staff traced four contractor charges totaling $113,135 back to the original invoices. Support for Data Processing and Engineering Capital Time for the month of December 2003 totaling $1,584 was provided. Staff observed that this work order contained many PWW Accounting hand written notes. The completed work order amount of $115,108 was traced to the PWW journal entry and then to general ledger account #347-110, Computer Equipment-Hardware/Software.

Corporate Offices

Improvements were made to the PCP office facilities and placed in-service, mid-year and also at the end of the test year. These costs were posted to PWW general ledger account #304-900, Water Street Office Building. A/R#124 was issued asking the following: *"It was noted that the following three work orders were placed in service during the test year 2003:*
1. Asset #5402, w.o. #0302953-01, 3RD Floor Restroom, 06/2003, $9,895
2. Asset #5532, w.o. #0307347-01, Security Equipment, 12/2003, $17,317
3. Asset #5533, w.o. #0307341-01, Reception Area Renovations, 12/2003, $34,664
A) Please provide a reason for each of the expenditures.
B) When was the decision made to enter into a lease for the present Company office space."

The Company Response was: *The Security Equipment was recommended as part of Phase I of the Vulnerability Study performed by the EPA. It was recommended that the Office Building needed a security barrier system. Also, the personnel had been threatened by irate customers on occasion. Therefore, the Reception Area was renovated to accommodate security requirements. The 3rd floor restroom was over 20 years old and was in poor condition, particularly, for the amount of employees using it." "B. It was decided to relocate the Office in early December 2003 – The actual lease was signed in April 2004."* **(Audit Find #5)**

Data Processing and Engineering Capital Time

In the Audit Staff's review of the work orders there were many charges listed as "Contractor" in which the support provided by the Company was a PWW Data Processing and Engineering Capital Time Report. Staff asked the Company on A/R #54 to explain what comprises these capital time charges. The Company responded as follows: *"Each month the managers of Information systems and Engineering submit to Accounting a list of their employees who have worked on Capital jobs, which job they have worked on, and how long they have worked on it. (These times (hours) would have been submitted to the managers by the employees during the month). Accounting allocates the charges to the job by taking the hours worked on the job times their benefited hourly rate."* The response also contains an example consisting of 14 pages for May 2004 that displays information for 12 employees. Staff notes that 40% is added to labor for overhead to cover benefits and overtime is an additional 50% of the benefited loaded base pay.

Staff's review of PWW Data Processing and Engineering Capital Time reported on work orders resulted in no exceptions.

Labor Test of Charges to Work Orders

The Audit Staff tested payroll charges from the work order to the payroll register and to time sheets of employees. Staff, through A/R #63, asked for support for the following: *Work orders:*
1. #0300914, Fleet Management Into Synergen a/o 07/09/2003; Qty. 49.5 Total Costs $1,326 and $130.
2. W.O. #0300494, Kessler Farm Tank Painting, a/o 01/16/2004; Qty. 67.5 Total Cost $1,344.72.
3. W.O. #0301472, WTP Eval. &……, a/o 4/23/2004; Qty. 95.5 Total Cost $1,926.17"

One Employee worked on the incorporation of the fleet management system into Synergen w.o. *#0300914,* on a straight time basis, for 29 hours from April 25, 2003 through June 27, 2003. From April 7 through April 22, 2003, the employee was paid at a double overtime basis for a total of 8 hours. An additional 12.5 hours from April 1 – 4, 2003 were paid at overtime (on a time and a half basis). The grand total was 49.5 hours or $1,326. The additional $130 updates the 12.5 hours from April 1 – 4, 2003 paid at a double overtime basis. Synergen Timesheet Reports were supplied.

Ten different employees provided services for w.o. *#0300494, Kessler Farm Tank Painting,* for the time period queried. All were paid on a straight time basis, and their payroll rates and labor charges were verified.

Seven individuals provided services for w.o. *#0301472, WTP Eval. &*..... 91 hours were paid at straight time and 4.5 hrs. at the overtime rate. All payroll rates and labor charges were verified.

No exceptions were noted by Staff in the review of payroll costs contained in our sample of work orders.

Transportation Equipment

Audit Request #62, requested *"A list of vehicles, by vehicle number, description thereof and the hourly rates charged."* Staff was presented with an Excel printout entitled PWW TRUCK COSTS. A PWW distinctive row vehicle identifier is the Truck #; Dump Truck #; Backhoe #; Compressor # and Boom Truck #. There is no manufacturer name, model, model year, vehicle identification number (vin) or other distinctive vehicle identifiers. This list displays information as of December 31, 2003 and Staff was verbally told that this information is reviewed/updated semi-annually. Printout columns display *"O & M", " Registration", " Insurance", "Fuel", "Book Cost", "Depreciation"* (9yrs. and ~5 mths. life for all assets displayed), *"Motor Oil"* ($26 each for all assets displayed), *"Maint. Garage"* ($583.21 each for all assets displayed), *"Total Exp.", "Total Hours Used"* and *"Charge to Customer"* and/or work orders. The list includes 32 "Trucks", 5 "Dump Trucks", 4 "Backhoes", 4 "Compressors" and 1 "Boom Truck", a total of 46 items, total book cost, $1,195,021.

The calculated rate for the 32 trucks is $5.26/hour and the Company rounds up to **$6/hr.** for charges to Customer and **work orders**. The range for the calculated individual hourly truck costs is $3/hr. to $34/hr. The five dump trucks calculated rate is $26.30 and the Company rounds up to **$35** for hourly charges to Customer and **work orders.** The range for the calculated individual hourly dump truck costs is $19/hr. to $56/hr. The four backhoes are charged at **$40/hr**. The calculated rate for the four backhoes is $38/hr. for total use of 1,373 hours as of 12/31/2003. The range for the calculated individual hourly backhoe costs is $12/hr. to $453/hr. The four compressors are charged out at a composite rate of **$40/hr**. The calculated rate for the four units' total use of 208 hrs. is $31/hr. Data is not kept on individual compressor usage. The boom truck calculation is $776/hr. with $150/hr. charged to Customer and work orders.

Per the exit audit it was noted that vehicles assigned to Engineering, Officers and any other salaried personnel are not included in the above schedule. These vehicle costs are charged through the management fee.

Construction Work in Process (CWIP)

The Audit Staff traced one large work order posted to CWIP at year end. Work order #007-0301472/01 was described as Water Treatment Plant Evaluation and Capital Improvement Plan. The project was for consulting services for a comprehensive evaluation of the Water Treatment Plant including the development of a capital improvement plan. A budget dated 2/12/03 was approved for $200,000. An additional request not budgeted was approved on 7/21/03 in the amount of $550,000 to conduct a pilot study of the flocculation and filtration processes. The test year work order reveals that a total of $501,513 was spent. The PWW Accountants had many hand written notes on this work order. There were no exceptions noted.

Bid Process & Maintaining Bid Reviews

Staff was presented with a PWW Fiscal Year 2002 – Record of Bids/Proposals. This document, presented column titles for: Project Name; Bid Date; Project Manager; Three lowest Bids/Proposals consisting of Company and Bid. Two additional Company and Bid columns and a Comments column were available. Twenty eight projects with bid dates ranging from **1/31/2002** through **5/17/2004** were displayed. **Five Projects were listed with bid dates during the test year 2003**, four for 2004 through May 17th and the remaining 21 projects with 1992 bid dates. Two Projects, one each in 2002 and 2004 had five bids; one 2002 project had 4 bids; twelve of the remaining twenty five projects had three bids; twelve projects had two bids and one 2004 project one bid. The one B&S Locksmith $33,512 bid (Water Treatment Plant Video Surveillance & Access Control) Comment was *"No alternative bids were solicited. B and S provide access control to all other facilities and in....."*

A/R #28 was issued to have the Company provide the bid solicitation(s) for the Kessler Farm Tank repainting that cost $1,035,910. The Senior Vice President, Operations told Staff that as a result of the move to Merrimack, the Company could not locate the bid comparison as Staff had requested. It was indicated that the winning bid is kept and the competitive bid summaries are placed in the winning bid folder.

Allowance for Funds Used During Construction (AFUDC)

The Company did not record any AFDUC on the work orders.

Contributions In Aid Of Construction (CIAC) & Amortization

Balances were checked and verified with the Annual Report, general ledger and filing. The CIAC basis as of 12/31/2003 was $18,553,428 per the Annual Report, schedule F-46 and this agreed with general ledger account #271. CIAC additions in 2003 amounted to $1,343,459.

Amortization of CIAC, for the test year in the amount of $271,127 as detailed on schedule F-46.4 agreed with the appropriate general ledger account. The rates viewed on schedule F-46.4 approximate the rates used on the depreciation schedule F-12 for the major categories of plant. Other rates have been observed for specific Projects and/or locations. (Amortization of CIAC, $271,127 during 2003 with a CIAC basis of $18,553,428 yields a composite rate of 1.46% or approximately 68 year life).

The Company records amortization of Organization and Franchise costs. Staff reviewed NHPUC Annual Report, Schedule F-49, Amortization of Other Utility Charges and note that there are many Organization Expenses and Franchise Fees being amortized at a rate of approximately 5%.

Retirements

Total Plant retirements, per the Annual Report, schedule F-8, amount to $743,270. PWW provided Staff with an electronic version of an Asset List for FIXED ASSET ADDITIONS and FIXED ASSET RETIREMENTS. There are 169 items listed on the Fixed Asset Retirements List.

Staff verified the Annual Report, schedule F-8, Utility Plant In Service Accounts to the PWW general ledger. The core and the community water systems have their breakdowns as a cost center/sub-account within each plant account.

37 personal computers, work stations, and word processors were retired in year 2003 and no salvage value was posted. (See PC Replacement w.o., page 10) When asked why there was no salvage, the Company stated that they had attempted to donate the equipment to schools but there was no interest. The Company concluded that it would incur costs to dispose of the above so it was decided to give the personal computers to employees.

Staff noted that the retirements for mains were reported to be only $332 for the test year. When questioned as to why such a small number the Company admitted that an error had occurred. **(Audit Find #6)**

Continuing Property Records

Testimony in this rate case filing by The Vice President of Administration states, "*The Company is currently in the process of converting its fixed assets to a new program called BNA which will provide automatic calculation for book and tax depreciation expense as well as group depreciation for the Company's assets.*"

When Staff asked for the CPRs as of 12/31/03 to tie them to the general ledger the Company responded that Staff could accomplish this task but it would be difficult. Staff believed that this was due to the above BNA conversion. The Company suggested that the first quarter ending 4/31/04 would be much easier. On July 12, 2004, PWW presented Staff with a compact disk (cd): containing the Company's CPRs. Audit Response #78

outlines the contents of the cd. *"The Company has compiled an Excel spreadsheet which details every fixed asset record on an individual basis to the best of our records. This excel spreadsheet reconciles to General Ledger as of 4/30/2004, our cut over date for BNA conversion to begin. BNA is now in the process of converting our spreadsheets, testing will follow in August and September 2004. We hope to have a "Go Live" date in October 2004."* The Excel CPR model does indeed contain assets and depreciation through April 30, 2004. There are over 3,000 items listed. Of that, a sort on the **ACQ. DATE** yields 256 assets that were additions in 2003, totaling $5,503,723. This is $68,074 in excess of the $5,435,649 reported on the FIXED ASSET ADDITIONS FOR 2003 report which lists 253 assets. (See the Miscellaneous Fixed Asset Additions write up, end of this page).

A review of the CPRs for account 341, Transportation Equipment displays 68 items with acquisition costs of $1,622,030.32. The CPRs have 22 vehicles/line items/accessories, $427,009 more than displayed on the PWW TRUCK COSTS report. (See Transportation Equipment, page #12)

An Acadia Insurance Amendatory Endorsement, effective January 1, 2003 for Pennichuck Corporation, was reviewed. As the CPRs for transportation equipment do not consistently display detailed descriptions, the ability for CPR/Endorsement matching, was difficult. The nine items reported as deleted on the Endorsement were not found in the CPRs as anticipated. The five endorsement additions Vehicles #(s) 66 thru 70 are not clearly identified as stated earlier. Endorsement Vehicle #66, a 2002 Rogers Trailer new cost $15,500. CPR asset #5065 is a 2002 Tag A Long Trailer, Acquisition Cost $12,112. Endorsement Vehicle #67, a 2002 Chevrolet Pickup new cost $23,000. CPR asset 05088 cannot be both a 2002 CHEVY S10 and 2002 FORD F-350 truck(s), Acquisition Cost(s) $45,744. Endorsement Vehicle #68, lists a 2002 Ford Focus with a new cost of $17,000. CPR asset 05141 is a Ford Focus #73, $15,367. Endorsement Vehicles #s 69 and 70, are listed as 2003 Jeep Grand Cherokees costing $29,000 each. CPR asset 05145, Jeep Grand Cherokee assigned to Sr. V.P. Operations, $18,257 and CPR asset 05146, Jeep Grand Cherokee assigned to Exec. V.P., $29,757. Model Yr., veh. #s, other identifiers not available and a separate line item should appear for each asset. Truck #70 appears on the PWW Truck Costs with a book cost of $14,000. CPR asset 04295 displays 1999 WINDSTAR S/W VANS (4), VEH#'S 26, 27, 28, 29, Acquisition Cost $71,219 or $17,805 each. These (4) **do** appear on the PWW TRUCK COSTS as Trucks #'S 26, 27, 28, 29. A separate line item should appear for each asset. **(Audit Find #7)**

The Audit Staff found that the General Ledger Trial Balance at 4/30/04 reveals Plant Assets of $94,295,905 compared to the CPR's which contain $94,307,005. A variance of $11,100 is noted.

Miscellaneous Fixed Asset Addition

Proforma Property Tax Adjustment B of the filing refers to three asset numbers 5210, 5211 and 5212 with values of $4,295, $11,037 and $40,451. Staff reviewed the FIXED ASSET ADDITIONS in 2003 and these assets could not be found. Staff

observed that by isolating the CPRs for 2003 there is a count of 256 asset numbers. An electronic search on the CPR's spreadsheet located the three assets in question. Audit Request #130 was initiated, "Please explain why assets 5210, 5211 and 5212 that appear on the CPRs **do not** appear on the The FIXED ASSET ADDITIONS in 2003." The Company responded "*These 3 assets should have been put into Fixed Assets in December 2002. They were additional costs to Developer Installed Mains that were found during Audit, however, fixed assets were already closed for the year. The Journal Entry was made in December 2002 for this adjustment.*"

DEPRECIATION

In DR 97-058, Petition for Permanent Rate Increase, Order 22,883 dated March 25, 1998, the following was stated: "Finally, regarding depreciation, Pennichuck and Staff agree to use the "whole life" rather than Pennichuck's proposed "average remaining life" methodology, for an annual depreciation expense of $1,272,791, which **results in an annual composite depreciation rate of 2.44%."** ($52.2M basis and 41 year life).

Depreciation Expense on the NHPUC Annual Report exceeds the general ledger by $18,553, the amount of the Souhegan Woods Acquisition Adjustment. Staff asked the Company to explain why the filing Schedule 1 shows a reclassification of $18,553 from Depreciation Expense to Amortization Expense and why the NHPUC Annual Report schedule F-12, Annual Depreciation Charge total is $2,527,997 and the General Ledger Trial Expense is $2,509,494. The Company's response was: "*The Souhegan Woods and Bon Terrain Acquisition Adjustment Accounts were set up incorrectly years ago. We have manually transferred these when reporting to the PUC. (A) When filing Schedule 1, we matched our numbers to our financial Statements, not the PUC report for Depreciation Expense and Amortization Expense. The same account, Souhegan Adjustment, causes the difference noted in (B).*" Staff asked the Company why the NHPUC Annual Report schedule F-49, page 74 account #407.3 does not tie to the general ledger by the Bon Terrain Adjustment in account #406, $6,396, page 74. The Company response was: *Bon Terrain is the other account we manually transfer. These accounts will be fixed in 2004."* Company has provided sample documentation to correct the discrepancy.

The depreciation and amortization rates were reviewed for reasonableness. PWW's 2003 Annual Report displays $2,528,000 depreciation on assets of $92,996,000. **This computes to a 2.7184% or 37 year life for PWW assets.**

The Accumulated Depreciation minus the Acquisition Cost was tested for the 3,000 plus assets presented in the CPRs. **257 assets, or 8.6% of the assets have accumulated depreciation that exceeds the acquisition cost of the asset.** The total excess depreciation for these 257 assets is $557,722. Staff asked the Company why the Accumulated Depreciation on assets exceeds the acquisition cost. The Company's response was: "*Accumulated Depreciation will exceed acquisition costs of certain assets as a result of using Group Depreciation Method as approved by the PUC.*" During 2003,

AUDIT FIND #4

Synergen Work Order

Background

PWW has purchased the rights to use components of a Synergen work order system.

Finding

The Synergen work order system does not meet all of the NH PUC Uniform System of Accounts requirements for work orders as listed on page 38. Only the following Part Descriptions are shown: "Total Labor" (in-house Union), "Vehicle number", "Overhead", "Contractor." Staff found that the description "Contractor" is the following: In house Data Processing and Engineering labor costs and benefit overhead, as well as any contractor invoice. The work order does not provide the month of capital Data Processing and Engineering labor nor does it specify what the contractor's name is or month paid. In many cases the PWW Accountants hand wrote this information on the work order.

The Synergen work order does not show the plant account number that was charged or credited.

The work order column Transaction Date is left blank except for PWW Accountants' hand written notes.

Conclusion

The Synergen work order system needs improvement. The Unit cost and Quantity are in most cases meaningless. The form should give the source or sources of costs. The Part Description should show name of actual contractor and date of charge. Data Processing and Engineering labor should be used in the description and not "Contractor." The Transaction date column should be used and the date labor was used should be listed along with number of hours charged.

The NH PUC Uniform Chart of Accounts for work orders requires identification of the utility plant account or accounts to which amounts are charged or credited. The NH Chart of Accounts also requires an explicit location description.

Implementation of these changes would result in the optimization of the software, ensuring full compliance with the NH Chart of Accounts.

AUDIT FIND #4

Synergen Work Order

Continued:

Company's Exit Audit Comment

Regarding the above language: "The Synergen work order system needs improvement." How about **"further refinement or enhancement"?**

The Synergen workorder system is capable of addressing all of the concerns mentioned above. There are a few "bugs" in the system that have been addressed with an upgrade completed in October 2004.

The Unit cost, Quantity, and Contractor issues have been fixed with the upgrade. The Plant accounts to which the amounts are charged or credited and the explicit location description are within the Synergen system. They have always been visible on the screen. Reports can be written to show this information, if needed.

Audit Staff's Exit Audit Comment

Company Response requested "**further refinement or enhancement**" for "needs improvement".

As a component of the Company's Exit Audit Comment, it provided a copy of pp. 37-38 in the UNIFORM SYSTEM of ACCOUNTS for WATER UTILITIES, 610.01(e)(19) Utility Plant – Work Order System Required, A. thru E. The Company is well aware of it's' commitments and responsibilities.

STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: February 2, 2007
AT (OFFICE): NHPUC

FROM: Stuart Hodgdon, Chief Auditor
Karen Moran, Examiner
James Schuler, Examiner

SUBJECT: PENNICHUCK WATER WORKS, INC.
DW 06-073
FINAL Audit Report

TO: Mark Naylor, Director Gas & Water

INTRODUCTION

Pennichuck Water Works, Inc. (PWW, Pennichuck or Company) is one of five wholly owned subsidiaries of Pennichuck Corporation (PCP, Parent). The others are: Pennichuck East Utility, (PEU), Pittsfield Aqueduct Company, Inc., (PAC), Southwood Corporation (TSC), a developer of residential and commercial real estate in Nashua and Merrimack, and Pennichuck Water Service Corporation (PWSC), which provides water system management services.

On June 16, 2006, PWW filed with the New Hampshire Public Utilities Commission, (PUC, Commission) support for a rate increase. In this filing the Company is proposing an initial increase in rates of 15.91% and a step increase of 20.58% which leads to an overall increase in permanent rates of 36.49%. Upon reviewing the filing Mark Naylor, Director of Water and Gas Division at the PUC, instructed the Audit Staff (Audit) to perform a review of the Company's financials for the test year 2005.

Our Company contact personnel were Bonalyn Hartley, Vice President-Administration and Charlie Hoepper, AVP Regulatory and Business Services. The PUC Audit Staff thanks them for responding to our many audit requests (A/R).

BOARD MINUTES

Audit was presented with minutes taken from the Pennichuck Corporation Board of Directors meetings, and Committee meetings for The Compensation & Benefits, Audit, Nominating and Search Committees as well as the minutes of Pennichuck Water Works Board meetings. The minutes were dated from January 2005 through July 17, 2006. The PCP Board minutes show discussion throughout the year concerning the

municipalization efforts and PCP costs to defend. Other topics discussed were Directors and Officers (D+O) Insurance premium costs, sale of stock, departure of and the hiring of an interim Chief Executive Officer(CEO). The Compensation & Benefits Committee supported salary increases for the Senior Vice President and Chief Financial Officer of PCP and the President of PWW as well as a 4% base salary increase for all management in test year 2005. The Search Committee conducted many interviews during the first and second quarters of 2006 for a new CEO.

OUTSIDE AUDITORS

Pricewaterhouse, Coopers (PwC) was the outside audit firm during the test year. In addition to the annual audit, they were to provide services related to compliance with the requirements of the Sarbanes Oxley Act and participate in the PCP planned public offering of common stock.

Minutes of the PCP Board of Directors meeting of 6/23/06 shows that the Board's Audit Committee recommended, and the PCP Board appointed, Beard Miller as outside auditors for year 2006.

INTERNAL CONTROLS

Questionnaire

After reviewing the Company's responses, a request was submitted for the offsetting journal entry detail on two DES grants received in the test-year for the Celina Avenue and Pennichuck Square storm water projects which totaled $28,500. The Company stated that the amounts were initially recorded in account #105-222, Contractor Clearing and subsequently transferred to account #304-100, Source of Supply Structures. The two NHDES Grants totaling $28,500 should be accounted for as Contributions in Aid of Construction (CIAC) and not Source of Supply Structures account #304-100 **(Audit Issue #1)**. Otherwise, the Audit Staff finds no problems or inconsistencies.

Procurement Policies and Practices

PWW provided the Audit Staff with a bid policy dated May 22, 2006 which outlines the steps to follow, where to post the bid results, the length of time for which the documentation should be retained, the dollar amounts for which the NHPUC E-22 must be filed for each of the three regulated water companies, and the amount over which the signature of the CEO, CFO, and Vice President of the responsible department must be evidenced.

Audit was also provided with the bid summary for the projects beginning in January 2002 through the print date of June 2006. The four projects reviewed in the Plant Additions section of this report were noted on the bid summary as representing the lowest bid for each.

PLANT

Plant in service at year end was reported to be $104,508,697, which was verified to the general ledger. This amount includes additions during the year of $6,924,135, retirements of $667,980, and net adjustments and transfers of $168,735.

Overview

The plant in service as reported on the PUC Annual Report (schedule F8) was tied without exception to the general ledger. Audit then attempted to validate the general ledger balances to the BNA Fixed Asset system. PWW provided Audit with a Microsoft Excel formatted summary of every asset which was downloaded from the BNA system. None of the spreadsheet grand totals (original book cost, additions during the year, retirements during the year, net plant book cost at year end, depreciation expenses, accumulated depreciation) agreed with the PUC Annual Report. Audit was then provided with a reconciliation of the BNA spreadsheet. For the "original book cost" year end figure, the principal variance identified between the BNA and the general ledger was intangible plant. That $170,572 item is noted on the general ledger and properly shown on the Annual Report as organizational and franchise costs.

The reconciliation of the BNA Excel formatted information to the general ledger contained several adjustments. Audit was told that the BNA is used as the accurate beginning point to which the general ledger is reconciled. Audit noted however, that there are assets on the BNA Excel listing which should not be there (such as the Water Street Leasehold Improvements). However, because of the size of the file, Audit is unable to quantify the amount of the error. (**Repeat Audit Issue #2)**

In the audit report dated October 29, 2004 (in docket DW 04-056), continuing property records were summarized as follows:

> Testimony of the Vice President of Administration (in docket DW 04-056) states *"The Company is currently in the process of converting its fixed assets to a new program called BNA which will provide automatic calculation for book and tax depreciation expense as well as group depreciation for the Company's assets."*

Information provided to Audit during the current review demonstrates that the BNA system was installed in 2004 at a cost of $31,697. While the BNA system report provided to Audit does reflect the asset purchase price, an accumulated depreciation figure, net book value and a depreciation expense, it does not comply with the requirements of the Uniform Chart of Accounts. For example, BNA does not reflect the asset location of mains in more specific terms than the town. The Excel summary format does not reflect the "in service" date nor the depreciation rate. BNA information presented to Audit for review of the assets added during the test year was in an asset-specific form which reflected "in-service" dates, depreciation, etcetera, but not the rate, and the accumulated depreciation was not reliable. After discussing this with PWW

Management, it was noted that PWW does not use BNA reports in the form provided to Audit; rather, PWW uses the wide variety of information online. Hard copy prints of items are not normally requested, thus not reviewed. In addition, databases used by the Engineering department and the Munis billing software used by Customer Service department do reflect more specific information such as locations of items and depreciation rates.

Additions

Audit reviewed the BNA continuing property records (CPR) and Synergen system work order summaries for four projects completed during the year. The four, which sum to $2,642,154, represent 38% of the total plant additions reported during the test year.

Each of the Synergen work order summaries contained a manual calculation of both internal and external contractor overhead. Internal overhead of 50% was noted, and external contractor overhead was calculated using 5%. Audit noted that in the calculation of the external overhead, internal costs such as Engineering overhead, AFUDC, Labor, and Vehicle costs were deducted to leave only the external costs subject to the 5% calculation. The calculation of the total overhead was then reduced by the Engineering overhead (salary only) in order to identify the indirect overhead calculated figure. Engineering is considered direct overhead. Original costs and costs for software updates (according to the Excel spreadsheet) for the Synergen system amount to $612,469. (**Audit Issue #3)**

Project 1-Bon Terrain Tank Painting

The three CPRs for the Bon Terrain Tank Painting reflected $394,620 as the total cost of the project, which agrees with the pre-filed testimony of PWW President Don Ware. Each of the three CPRs was supported with work order summaries, detailing specific expenses allocated to the project. The work order summaries are part of the Synergen system, but as in the prior audit, do not reflect the information in a manner that is useful. The Quantity column is not used for the actual quantity of the listed description for any line except labor hours. All other expense lines appear to be the actual cost of the item. The column “unit cost” reflects $1.00 for all items, except labor hours which reflect $0.00. The “transaction date” column contained no information, so Audit was unable to determine when the reflected costs posted to the general ledger. (**Audit Issue #3)**

Labor was traced to a timesheet for one employee, which reflected the date, hours worked on a variety of jobs, regular and any overtime pay rate, identified by work order number. Engineering salary is listed on the work orders as ENG&ISOH, or in some cases misidentified as AFUDC. Each of the engineering dollar amounts was traced to a sheet by month called “Data Processing and Engineering Capital Time” without exception. Audit was told that this figure represents salary only, not any overhead. Internal overhead calculation of 50% was seen throughout the documentation provided, and appears to be reasonable.

Because of the BNA Microsoft Excel spreadsheet format provided to Audit, the timeframe and depreciation rate over which the improvements made to the Bon Terrain Tank are being depreciated could not be determined.

Outside contract work has a 5% overhead calculation applied. Audit reviewed invoices from Amex Inc. which accurately reflect work performed and completed during the test year. The project was completed in September 2005 and appears to be used and useful for the test year ending 12/31/2005. One invoice from Amex, in the amount of $17,000 was for work related to staging rental for "phone companies".

Audit asked for more specifics about this and was provided with four different cellular phone company contracts for rental of space on the water tank. Audit was told that the costs to remove and reinstall the cabling and antenna on the tank were not part of the contract, but that PWW had been able to negotiate with each and the majority of the cost, $131,000 of the total $148,000, was paid by the cellular companies. The remaining $17,000 was paid by PWW.

Audit noted that the form E-22 had been filed on May 24, 2005 for this plant addition. The form estimated the cost at $374,942, which is reasonably close to the actual cost detailed above, net of the $17,000 paid to remove the cell companies' antenna. Refer to the **Lease of Utility Property** section of this report for further discussion.

Project 2-Carbon Media Change

The CPR reflects $502,420 as the cost to replace the water treatment plant filtration media. This amount agrees with the testimony of Don Ware. Audit requested supporting documentation for a specific entry, and was provided with a photocopy of an invoice from Calgon Carbon Corporation dated December 1, 2005 in the amount of $478,495 for "Field services-carbon exchange".

The E-22 form filed with the NHPUC estimated the cost of the media change to be $490,000 and available for service by year end 2005.

Testimony of Don Ware indicates that the life of the filtration media is three years. It was noted that the next installation will encompass an upgrade to the type of filtration media and piping within the treatment plant, and will take place between mid-2007 and mid-2009.

The general ledger entry, which moved it from Construction Work in Progress to 2-320 posted on December 31, 2005. However, because of the lack of transaction completion dates on the Synergen work order summary provided, Audit was unsure of when the work was actually completed. Through a number of requests for supporting documentation, it *does* appear that work was accomplished in late December 2005.

Repeat Audit Issue #2

Continuing Property Records

Background:

PWW installed (in 2004) a Fixed Asset System (Continuing Property Records or CPR) called BNA, at a cost of $31,697. While the CPR does reflect the asset purchase price, accumulated depreciation, net book value and depreciation expense, it fails to comply with the requirements of the Uniform Chart of Accounts for all asset types.

Issue:

The BNA Fixed Asset System report provided to Audit does not reflect the asset depreciation rate and does not provide specific locations.

While the BNA spreadsheet is a representation of assets of PWW, and is reconciled to the general ledger on a regular basis, the spreadsheet contains assets which should no longer be on it.

Recommendation:

The Company should review the operational process associated with fixed asset system to ensure that all information contained in it is accurate.

Company Response:

The Company agrees with the recommendation and will review its asset transaction process in order to minimize future occurrences of items noted.

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In response to the issues raised, the net book value report that the Company provided did not indicate depreciation rates or specific locations. However, there are other reports that do provide useful life in years and months and placed in service date. Reports can also provide asset location by town and community water system. Specific locations for certain assets such as meters, services, gates and hydrants are maintained in the engineering database and/or MUNIS, the Company's billing and customer service system. The Company views the engineering data base and MUNIS as integral components of Continuing Property Records.

Audit Staff's Exit Audit Comment:

Audit concurs with the Company's response, and was provided with details of the MUNIS and Engineering database reports at the time of the exit audit conference held on January 31, 2007.

Audit Issue #3

Work Order System

Background:

The Synergen work order system maintains all costs associated with capital projects.

Issue:

Internal overhead of 50% was noted, and external contractor overhead was calculated using 5%. Audit noted that in the calculation of the external overhead, internal costs such as Engineering salaries, AFUDC, Labor and Vehicle costs were deducted to leave only the indirect overhead costs subject to the 5% calculation. Calculations were handwritten on the work order summaries.

The work order summaries are part of the Synergen system, but as in the prior audit, do not reflect the information in a manner that is useful. For example, the Synergen work order summaries' Quantity column is not used for the actual quantity of the listed description for any line except labor hours. The column "unit cost" reflects $1.00 for all items, except labor hours which reflect $0.00. The "transaction date" does not appear to be used.

Recommendation:

It is recommended that PWW review the methodology used to calculate both direct and indirect overhead. The Synergen software should be capable of calculating such overheads.

Further, the Company should review their costs to date for the Synergen system (in excess of $600,000) as that system does not appear to be used and useful to the extent reported or anticipated.

Company Response:

In 2006, The Company reviewed the methodology for indirect overhead and implemented a more straight forward approach to its calculation. Going forward, the Company will explore automating the calculation in Synergen. Currently, the Company does not use the unit cost column for labor hours. The $1.00 is used for all contractor invoices as the Company enters the total not the individual items within the invoice. The transaction date is inputted but is not reflected in the report.

However, the Company does not consider the above as an inherent deficiency in the Synergen system. The system has the ability to accommodate report changes and other enhancements as the Company may require.

Audit Staff's Exit Audit Comment:

Audit understands that, on a going forward basis, the Company intends to implement a more streamlined and automated method by which overhead will be calculated. It is also understood that the Synergen system does in fact have the capability to be used in the manner outlined in the response, and the Company is encouraged to use the system to its highest efficiency.

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Process modeling is the state-of-the-art trouble-shooting package specifically designed to the unit processes and conditions of your plant. Oxygen transfer and utilization, solids balance, sludge wastage and clarifier status analysis allow you to evaluate all aspects of your treatment plant operation.

***JOB Cal* ® (including one year of support)**

Computerized Maintenance Management made easy. Track equipment and schedule maintenance. JOB Cal® automatically builds a job calendar that at a glance tells you what needs to be done, what's coming up, and what's overdue. Simply check off a job when it's complete and it's moved to history. Reports included: Equipment History, Top Ten List, Open Work Order, an Equipment List and the Calendar.

***JOB Plus* ™ (including one year of support)**

Computerized Maintenance Management made easy. Track equipment and schedule maintenance. JOB Plus automatically builds a job calendar that at a glance tells you what needs to be done, what's coming up, and what's overdue. Simply check off a job when it's complete and it's moved to history. Reports included: Equipment History, Top Ten List, Open Work Order, Equipment List & Calendar. JOB Plus also contains functions for: Purchasing, Inventory, Vendor and Personnel tracking. Graphics and Auto-Print Scheduler utilities included. Options for administering user-level Security.

OPS Systems, Inc.

4020 Peggy Rd. SE Ste K, Rio Rancho, NM 87124 PH: 800-677-0067 FAX: 505-994-3574 www.opssys.com

SCADA Interfaces for OPS 32

Interface software is used for transfer of daily values from the historical database to OPS 32. Data is read from the historical database, summarized based upon the specified statistic and the resulting value is placed into the OPS 32 database.

- Wonderware
- Intellution
- RSView
- CiTect

** Custom interfaces available for systems such as *Cimplicty.* Price for a custom interface will vary based on system output. Firm price will be provided after technical aspects are verified.

SCADA Interfaces for JOB

Interface software is used for transfer of daily values from the historical database to JOB. Data is read from the historical database, summarized based upon the specified statistic and the resulting value is placed into the JOB database.

- Wonderware
- Intellution
- RSView
- CiTect

** Custom interfaces available for systems such as *Cimplicty.* Price for a custom interface will vary based on system output. Firm price will be provided after technical aspects are verified.

YSI Interface

The YSI Interface software transfers Dissolved Oxygen readings from a YSI 5100 into the OPS 32 BOD Manager. Data is read from the YSI and transferred through the serial port to the BOD Manager. BOD Manager calculates BODs, checks validity of tests, and stores the BODs in the OPS 32 database.

SIEGFRIED ATTACHMENT 4

Product Comparison

Feature	OPS SQL Enterprise	OPS SQL Express	OPS SQL Lite	OPS 32
Database				
Client/Server Application	✓	✓	✓	
Database Platform	MS SQL / Oracle	MSDE (included)	MSDE (included)	MS Access (included)
Multiple Facility Databases	Unlimited	Unlimited	Single	Unlimited
Database size limits	Unlimited	2-gigabyte	2-gigabyte	2-gigabyte
Database Variable Limits	Unlimited	31,9999	300	31,999
Database concurrent user limits	Unlimited	4	1	10
Data Manager				
Monthly / Custom Data Entry	✓	✓	✓	✓
Hourly/15 min Data	✓	✓	✓	✓
One Minute Data	✓	✓	✓	
Log Book	✓	✓	✓	✓
Multiple Log books	✓	✓	✓	
BOD Manager				✓
Locking Data	✓	✓	✓	✓
Audit Trail	*Full*	*Full*	*Full*	*Limited*
Daily Detail Calculations	✓	✓	✓	
Data Approval/Status	✓	✓	✓	
Reports				
Daily Reports	✓	✓	✓	✓
Spread Reports	✓	✓	✓	✓
Templates for DMRs, MORs, MROs	✓	✓	✓	✓
NPDES Report	✓	✓	✓	✓
QC Analysis	✓	✓	✓	✓
Email Reports	✓	✓	✓	✓
Graphs				
Email Graphs	✓	✓	✓	✓
Times Series, Correlation, Probability, Multiple Linear Regression, Multi Graph Output	✓	✓	✓	✓
Security				
Password Protected Login	✓	✓	✓	✓
Security levels	7	7	7	7
User Defined security by Icon	✓	✓	✓	✓
Group Managers	✓	✓	✓	
Options				
PDA's with Windows Mobile for field data collection	✓	✓	✓	
SCADA / LIMS Interfaces	✓	✓	✓	✓
***NEW:** *GnR Server Module for automatic generation of reports & graphs*	✓	✓	✓	
***NEW:** *Lab Cal Module for sample scheduling*	✓	✓	✓	