**BEFORE THE**

**PUBLIC SERVICE COMMISSION OF WISCONSIN**

Application of the Village of Paddock Lake,

Kenosha County, Wisconsin, to Construct Docket 4510-CW-103

Water System Improvements

**DIRECT TESTIMONY OF JOSEPH MARCHESE**

**ON BEHALF OF THE VILLAGE OF PADDOCK LAKE**

**Q. Please state your name.**

A. My name is Joseph Marchese.

**Q: By whom are you employed and in what capacity?**

A: I am a Senior Engineer I for Baxter & Woodman, Inc. I have been with Baxter & Woodman, Inc. for 11 years.

**Q: What is your educational background?**

A: I received a Bachelor of Science degree in Civil Engineering from the University of Wisconsin Madison in 2001.

**Q: What are your professional qualifications?**

A: I am a registered Professional Engineer in Wisconsin and have worked on drinking water engineering projects for over 17 years. I have worked on numerous well and water treatment plant projects throughout southeastern Wisconsin. I am a member of the American Water Works Association – Wisconsin Section. Several projects I have worked on have received ACEC and AWWA-WI awards. A copy of my resume is attached as Ex.-Direct-Marchese-1.

**Q. What is the purpose of your testimony?**

A. I am providing testimony in support of the Village of Paddock Lake’s application to construct water system improvements, including expansion and improvements of the existing east side water system to provide additional supply and fire protection to existing customers and to allow for expansion of those services to future customers along the south and west sides of the Village.

**Q. Have you been retained by the Village of Paddock Lake with respect to this project?**

A. Yes.

**Q. Are the opinions you express in this testimony to a reasonable degree of professional certainty?**

A. Yes.

**Q. Did you submit an application for construction authorization for Paddock Lake’s proposed project to the Public Service Commission?**

A. Yes. On August 14, 2017, I submitted a letter to Mr. Steve Knudson, PSC, requesting authority to construct this water system improvement project along with a project filing application report in conformance with Wis. Admin. Code ch. PSC 184. Ex.-Direct-Marchese-2.

I also submitted responses to data requests from PSC on January 4, 2018 (PSC REF #: 335544), April 5, 2018 (PSC REF #: 340663), May 12, 2018 (PSC REF #: 342658), June 15, 2018 (PSC REF #: 344507), and June 26, 2018 (PSC REF #345211).

**Q. What are the components of the current water utility system?**

A. The Village has The Village has two operational wells (Well No. 1 and Well No. 2) that were placed into service in 1958. The wells occupy the same pumphouse and both draw water from the sand and gravel aquifer. They are only capable of meeting the current water supply needs of the existing customers (approximately 1/3 of the Village population on the east side of the lake). A 10,000 gallon buried hydro-pneumatic pressure tank is installed at the pumphouse to provide storage system pressure.

The Village also has two wells (Well No. 3 and Well No. 4) and approximately 2.5 miles of water main that were constructed in 2008 to serve the new West Side Water System at the time, but were never placed into service due to the downturn in the economy. The WPSC Authority to Construct for this project was issued on June 6, 2007 under Docket ID 4510-CW-102.

**Q. What are the components of the proposed project?**

A. The planned improvements include an expansion and improvements of the east side water system and connection to the previously constructed west side water system. The following describes the proposed improvements for phase I of the project:

* A new pump station to house Wells No. 1 and No. 2 that will include a ground storage reservoir, high service pumps, chemical addition (sodium hypochlorite and phosphate), and emergency stand-by power;
* New 350 gpm pumps for both Wells No. 1 and No. 2;
* New 12-inch water main along STH 50 and 236th Avenue to connect the east side system to the west side system. The new mains will provide service to Central High School and businesses on STH 50;

Ex.-Direct-Marchese-2.

Future improvements to the Village water system will be phased in as the demand increases and include an elevated tank in the western part of the Village, a pump station and water treatment plant at Well No. 3, a pump station at Well No. 4, a water main loop along County Road K, and distribution mains throughout the Village to serve the remaining residents.

**Q. Why is the Village proposing this project now?**

A. The Village is proposing this project now for three primary reasons: many components of the existing water system are at the end of their useful life; the existing water system is not code compliant with WDNR regulations; and the project is necessary to support water system capacity and fire protection needs for existing customers and a growing customer base. The desire to develop in Paddock Lake is extremely high right now, but many of the developments rely on the availability of public water.

**Q. Please explain the conclusion that the existing water system is at the end of its useful life.**

A. Much of the existing distribution system was installed with Wells No. 1 and No. 2 in 1958. The facility cannot be expanded beyond the current 275 single family home connections per WDNR orders. Ex.-Direct-Marchese-3. The firm capacity, or capacity with the largest well out of service, of the system has been exceeded by the maximum system demand and needs to be expanded to allow for growth of the water utility and to provide fire protection for the service area.

Further, the existing pumphouse is well past its useful life. The building needs major repairs, the electrical and control systems are outdated, the well pumps need to be replaced, the pressure tank needs to be taken offline and inspected, confined-space issues need to be addressed, and the chemical feed building needs to be upgraded.

Many components of the existing water system are typically expected to last 20-30 years with some components expected to last up to 50 years. Many components are now 60 years old. Maintenance on components of this age is more labor-intensive than modern components. Failure of these components can occur at any time and finding replacement parts for much of the equipment is becoming difficult if not impossible. If a failure of a major component were to occur, the entire water system would be at risk due to the lack of redundancy currently available.

**Q. What code compliance issues have been raised with the current system?**

A. On July 26, 2005, a boil water notice was issued by the WDNR as a result of positive total coliform samples taken from the distribution system. At the time, the community water systems were not required to have continuous disinfection, and, thus, the Village had no permanent disinfection for the water system. In response to this issue, the Paddock Lake Water Utility installed chemical feed equipment, which includes a blended phosphate injector and chlorine injector for both Wells No. 1 and No. 2. This chemical feed equipment allows the utility to properly provide safe drinking water for its customers. However, WDNR approved this chemical feed system on a temporary basis with the understanding that a more permanent solution would be provided upon completion of the west side water system. Ex.-Direct-Marchese-4.

Both wells pump from the same aquifer only 12 feet apart, therefore, the Village is essentially only able to supply water from a single source. If this aquifer were to become contaminated, no water supply would be available.

The existing hydro-pneumatic tank is partially buried below the pumpstation and accessible only via confined-space entry. This presents safety concerns for employees when maintenance or repair to the tank is required. Additionally, this tank is the only source of pressure for the distribution system and is required to be inspected every five years, which is virtually impossible due to the lack of redundancy. PSC REF#: 337823 (DNR Sanitary Survey).

**Q. Please explain the demand projections associated with this project.**

A. The project will serve all existing customers along with existing buildings along Highway 50 within the Village that are not currently served by the water utility as well as future customers. The demand projections provided in PSC REF #: 335544 and attached as Ex.-Direct-Marchese-5 assume that service will be provided to new residential customers within previously platted subdivisions along with several new commercial customers. These demand projections are based on historical water usage per customer class. Further, the water use factors for the demand projections assume conservation and efficiency and result in water use rates lower than most other communities. The existing water customers already use less than 50 gallons per day per person and the system as a whole is regularly below 10% for non-revenue water.

**Q. What are the projected costs of the components of the project?**

A. The estimated cost breakdown is provided in PSC REF #: 345211 and attached as Ex.-Direct-Marchese-6 and is as follows:

Structures and Improvements $ 1,211,000

Power Production Equipment $ 70,000

Electric Pumping Equipment $ 175,000

Treatment $ 20,000

Distribution Reservoirs and Standpipes $ 400,000

Transmission and Distribution Mains $ 1,295,150

Services $ 300,000

Hydrants $ 112,000

SUBTOTAL CONSTRUCTION $ 3,583,150

Contingency (10%) $ 358,315

TOTAL CONSTRUCTION $ 3,941,465

Engineering $ 712,000

Legal $ 20,000

Administration $ 30,000

Interest $ 100,000

TOTAL PROJECT COSTS $ 4,803,465

With respect to operation and maintenance costs, the Village does not plan to add or reallocate staff after the new facilities are operational and does not project additional O&M costs. Operations staff currently spends several hours per week for daily monitoring and data logging at the existing well building as well as the time and expense necessary to maintain the outdated equipment and facility. The new facility will include new equipment that does not require maintenance in the next few years in addition to more automation and remote monitoring, which will allow operators to spend less time at the new well buildings on a regular basis. This saved time will allow flushing and maintenance of the proposed distribution mains without adding to O&M costs.

**Q. Did the Village consider any alternatives other than the selected project?**

A. Yes. The Village considered two other options for the improvements for the Village of Paddock Lake Water Utility:

* Option 2: Improvements to Wells No. 1 and No. 2 and utilizing a connection to the Village of Bristol water system to serve as a backup supply. In this option, a connection to the Village of Bristol water system would serve as a backup water supply rather than implementation of the improvements to Well No. 3 proposed in the selected alternative. The total cost associated with Option 2 was projected at $5,067,000. Ex.-Direct-Marchese-2.
* Option 3: Well No 3 and No. 4 Improvements. This option would rely on Wells No. 3 and 4 for capacity, which have been drilled and tested. The cost for Option 3 was projected at $5,368,000. Ex.-Direct-Marchese-2.
* Option 4: Do nothing. This option should not be considered. The existing water system could fail at any time and is in need of major upgrades. If the Village is not proactive, they could be putting the health and safety of their existing customers at risk.

**Q. Why was the current proposed project selected over the considered alternatives?**

A. The current proposed project was the selected option based on the life cycle cost analysis and non-monetary factors. As explained above, the projected cost for the currently proposed project is $4,803,465, compared to $5,067,000 for Option 2 and $5,368,000 for Option 3. Numerous non-monetary factors were considered in rejecting Options 2 and 3, including the utility of using water system infrastructure currently installed but not being used, lack of fire protection improvements in Options 2 and 3, and reliance on other communities for water service in Options 2 and 3. As stated above, the “do nothing” alternative was rejected because the existing system is in need of major repairs and could fail at any time.

**Q. What happened after the Village of Paddock Lake selected the proposed project?**

A. The Village began looking into low-interest financing options for the project and determined a USDA loan was the best option. Then the Village hired Baxter & Woodman, Inc. to begin designing the project and assist in obtaining all necessary approvals.

**Q. Has the Village of Paddock Lake received plan approval for the project from the WDNR?**

A. Yes. On April 23, 2018, the Village received WDNR approval to construct the water main along Highway 50 and on May 11, 2018, the Village received WDNR approval to update facilities at Wells No. 1 and 2 and approval to delay proceeding with the originally proposed improvements to Well No. 3 at this time. Ex.-Direct-Marchese-7.

**Q. Please describe the proposed improvements to the Wells No. 1 and 2 pump station and storage.**

A. The Project consists of constructing a new pump station to house Wells No. 1 and No. 2 that includes replacing the existing well pumps, ground storage reservoir, high service pumps, chemical addition, mechanical work, grinder pump station and low pressure sewer, site work, electrical and controls, and emergency stand-by power.

**Q. Please describe the construction for the Highway 50 water main and water services.**

A. The Project consists of constructing 6,500 lineal feet of 12-inch water main and appurtenances, 4,500 lineal feet of water main and water services installed by trenchless methods, sidewalk replacement, lawn restoration, and traffic control.

**Q. In this proceeding, the PSC is to consider whether completion of the proposed project will provide facilities unreasonably in excess of probable future requirements. Based upon your knowledge and experience as a professional water supply engineer, do you have an opinion on whether completion of the project will provide facilities unreasonably in excess of the probable future requirements?**

A. The proposed project will not provide facilities unreasonably in excess of the probable future requirements. The proposed project only provides the bare minimums for supply, storage, and fire protection to serve the existing and immediate customers only.

**Q. In this proceeding, the PSC is to consider whether completion of the proposed project will substantially impair the efficiency of the service of the utility. Based upon your knowledge and experience as a professional water supply engineer, do you have an opinion on whether completion of the project will substantially impair the efficiency of the service of the utility?**

A. The proposed project will not substantially impair the efficiency of the service of the utility. In fact, the proposed project will improve the efficiency of the service of the utility by reducing operation and maintenance time, improving safety, and making the system more reliable. It will also reduce the number of emergency related alarms and potentially eliminate the need for weekend operations.

**Q. In this proceeding, the PSC is to consider whether the project, when placed in operation, will add to the cost of service without proportionally increasing the value or available quantity of the service of the utility. Based upon your knowledge and experience as a professional water supply engineer, do you have an opinion on whether the project, when placed in operation, will add to the cost of service without proportionally increasing the value or available quantity of the service of the utility?**

A. The proposed project will not add to the cost of service without proportionally increasing the value or available quantity of the service of the utility. Initially the cost of service will increase, but the improved system reliability and added benefit of fire protection will greatly increase the value of the service. In the long run, the cost of service will be much lower by constructing the proposed improvements. The cost impact to the existing customers would be much greater when the time comes to make the improvements at the existing pump station if the proposed additional customers are not added to the system.

**Q. Does this conclude your direct testimony?**

A. Yes.

[END]