

BEFORE THE TENNESSEE REGULATORY AUTHORITY

NASHVILLE, TENNESSEE

IN RE:

**PETITION OF TENNESSEE
WASTEWATER SYSTEMS, INC.
FOR APPROVAL OF
CAPITAL IMPROVEMENT
SURCHARGES AND FINANCING
ARRANGEMENTS**

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DOCKET NO. 14-00136

**REBUTTAL TESTIMONY
OF
ROY DENNEY**

ON BEHALF OF TENNESSEE WASTEWATER SYSTEMS, INC.

August 19, 2015

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REBUTTAL TESTIMONY OF ROY DENNEY, P.E.

Q. Please state your name and occupation?

A. My name is Roy Denney and I am Chief Technical Officer for the Adenus companies, which includes Tennessee Wastewater.

Q. Tell us about your educational and professional background.

A. Attached is a copy of my resume. I am a licensed engineer in Tennessee. After graduating from Vanderbilt with a degree in engineering, I worked for Yoplait/General Mills in Murfreesboro, spent seven years as a plant engineer with Metro Water Services here in Nashville, and have been with Adenus since October 2013.

Q. What is the purpose of your testimony in this case?

A. The purpose of my testimony is to address testimony previously filed by Brad Harris and Britton Dodson of TDEC and Joseph Ferowich and Rick Tucker who filed testimony on behalf of the Summit View Homeowner's Association.

1 **Q. Please describe your responsibilities for TWSI and the other Adenus companies.**

2 A. As Chief Technical Officer of the Adenus companies, I am active in numerous roles. These
3 responsibilities include, but are not limited to the following:

4
5 With regards to Tennessee Wastewater Systems, I am responsible for technical decisions
6 ranging from approvals of equipment suppliers, to decisions on the appropriate treatment
7 alternative for proposed sites. These activities can be as simple as selecting a new pump
8 manufacturer or as complex as designing a new treatment plant. I am also the principal
9 engineer for the Adenus companies which means plans produced internally for treatment
10 plants are prepared at my direction and will bear my seal and signature.

11
12 Outside of TWSI, I am responsible in a similar scope for treatment sites we manage for
13 other utilities through Adenus Operations. I am also the chief operator for the Logue Road
14 Treatment Plant in Wilson County, Tennessee. Through Adenus Operations I provide
15 technical assistance with troubleshooting systems for multiple entities.

16
17 With Adenus Tech, I provide both input regarding fabrication of new products and
18 improvement of existing products, and ensure that products used or manufactured are safe
19 and reliable.

20
21 With Adenus Solutions Group, I am the principal engineer, which means I am responsible
22 for the production of all technical information, engineering reports, and design plans
23 produced. Additionally, I manage the construction team in the field and am responsible

1 for construction projects and new projects. These can be TWSI projects or others. I
2 develop new or revised specifications for the collection systems, treatment systems, and
3 site planning. I direct the technical group in providing a controls solution for treatment
4 and collections panels. I prepare technical information for informational or educational
5 purposes for dissemination with customers, developers, and regulators. I am responsible
6 for site improvement plans.

7
8 **Q. Are you familiar with the properties named in the petition?**

9 A. Yes. I have personally visited each of the properties.

10
11 **Q. How are you familiar with the properties?**

12 A. Each of these properties is subject to corrective action by TDEC. I've gone to each site to
13 inspect and assess the issues with the respective systems. I also familiarized myself with
14 the existing plans and permits for each system. Further I have developed the corrective
15 action plans for Summit View, Cedar Hill, and Maple Green. I have reviewed the approved
16 corrective action plan for Smoky Village.

17
18 **Q. Have Corrective Action Plans been filed for each of these properties?**

19 A. Yes. Plans are approved for Smoky Village per an Agreed Order with TDEC. Plans are
20 pending for Summit View. We have applied for an extension on the approval of the Free
21 Water Surface ("FWS") wetland plans for Maple Green. TDEC is currently considering the
22 extension. The FWS wetland plans for Cedar Hill have been rejected by TDEC, however
23 conversations are ongoing with TDEC towards a resolution of those plans.

1
2
3 **Q. The Corrective Action Plans for Maple Green and Cedar Hill both involve the**
4 **installation of FWS wetlands. How do the FWS wetlands address the problems at**
5 **these facilities?**

6 A. In February of 2014 a sinkhole developed in the treatment lagoon at Maple Green. This
7 resulted in the loss of approximately seven (7) million gallons of wastewater. TWSI
8 immediately implemented emergency plans that included building a berm across the
9 lagoon, redirecting flow to the portion of the lagoon not compromised by the sinkhole and
10 adding aeration to supplement treatment. The site is currently stable and pending the
11 installation of the FWS wetland which had previously been approved by TDEC.

12
13 Like Maple Green, Cedar Hill also experienced a sinkhole collapse which resulted in a
14 small wastewater leak out of the lagoon. TWSI immediately implemented emergency
15 measures that included building a berm across the lagoon and redirecting flow to the
16 portion of the lagoon not compromised by the sinkhole. The lagoon is currently stable.
17 The lagoon was designed to handle 74,000 gallons per day ("gpd"), however current daily
18 flows to the site range between 6,000 and 16,000 gpd.

19
20 The FWS wetlands is the best option for these locations because capital and operational
21 costs for wetlands are less expensive than recirculating sand filters, by about half.
22 Wetlands mitigate the potential for environmental impact in the event of catastrophic
23 structural failure—for example if a sinkhole were to develop around a wetland, only

250,000 gallons of wastewater would be lost as opposed to millions. Lastly, simply lining the lagoon—the alternative suggested by TDEC—does not address the structural issues of the geography which caused the sinkholes. It only addresses the seepage issue. If a sinkhole were to develop again with the lined lagoon, the liner would not prevent the release of millions of gallons of wastewater into the environment. The FWS wetlands make the best economic and environmental solution for both Maple Green and Cedar Hill.

Q. How does the Corrective Action Plan filed for Smoky Village address the issues facing that development?

A. Smoky Village has a problem with excess flow which causes the drip area and sand filter to become oversaturated with treated effluent. The reason for this oversaturation is due to the soils in the drip field not being adequate to receive all the treated effluent coming from the sand filter. The CAP calls for utilizing additional property with suitable soils upon which to expand the drip field. This will allow for more effective dispersal of treated effluent into and through the soil.

Q. How does the Corrective Action Plan filed for Summit View address the issues facing that development?

A. Summit View is a resort community comprised of 33 rental cabins and 4 vacant lots. When the development was initially planned and built it was represented to TWSI by the developer that the community was going to be primarily a residential cabin community. The sewer system was designed based on that representation which required 8,000 total gpd across the development. What ended up being built was a commercial rental cabin

1 resort community where each unit is essentially a hotel with units sleeping up to 40 people
2 at a time. The difference in water use between residential and commercial properties is
3 significant and the sewer system as designed for residential use was not capable of handling
4 the excessive water flows seen on the weekends and holidays from these hotels. As a result,
5 the system has been overloaded and is in need of expansion to handle the larger flows in
6 the community.

7
8 The corrective action proposed for Summit View includes acquiring additional land to
9 expand the drip area to allow for the dispersal of more treated effluent as well as expanding
10 the sand filter to add more capacity to the system. TWSI has land neighboring the
11 development under contract upon which the drip field can be expanded. The plan also calls
12 for reinstalling the drip lines on contour to comply with the revised SOP issued for Summit
13 View in 2012.

14
15 **Q. In pre-filed testimony Brad Harris with TDEC and Joseph Ferowich on behalf of the**
16 **Summit View HOA testified that adding "sufficient storage to be able to equalize**
17 **flow" is an alternative solution to the problem at Summit View. Is simply adding**
18 **additional storage capacity at Summit View a viable solution?**

19 **A.** Increasing storage alone is not a viable option because presently flows have sustained
20 above the treatment and dispersal capacity of the site from in excess of 30 days. Expansion
21 of the sand filter and drip area is the most viable solution. After further discussions with
22 George Garden, Senior Engineer at TDEC, we are in agreement that this course of action
23 is the most prudent moving forward. Based on my conversations with Mr. Garden, I

submitted revised corrective plans for Summit View on July 28, 2015 and we anticipate approval of those plans within TDEC's 30 day plan review period.

Q. Has the installation of the drip lines against contour at Summit View contributed to the problems facing the development?

A. No. The drip lines were installed when the system was constructed in 2007. At that time, the SOP had no requirement that the drip lines be installed on contour. That requirement was added when the SOP was renewed in 2012 after the system and drip field were constructed. The problems at Summit View are a direct result of insufficient capacity to handle the surge flows in a commercial rental development.

Q. Do any of the sites included in this petition currently pose a public health hazard?

A. No they do not. All sites are currently stable and operational. With regard to the specific comments made by the cabin owners in Summit View, there is no public health hazard caused by the presence of treated effluent in the drip field. The water has been treated through multiple cycles of filtration and UV disinfection. Any overflow reaching the fishing pond is harmless and is not causing any pollution. TWSI has tested the water in the pond and can verify there is no pollution present.

While frustrating, odor in small ponds is not uncommon. Without adequate aeration and proactive algae control, a small stagnant pond will result in algae blooms and odors naturally.

1 From *Farm Pond Ecosystems, February 2006 Fish and Wildlife Habitat Management*
2 *Leaflet Number 29, NRCS:*

3 "Excessive algal populations may choke out aquatic vegetation, reducing
4 the diversity of the pond ecosystem. Excessive algae populations may be a problem
5 if the color of the water appears to be more green than normal, if water has an overly
6 musky odor, or water feels somewhat gritty. Algal blooms can be controlled
7 manually by raking water to gather excess algae. Chemicals such as herbicides
8 may also be applied to control algal blooms. Alternatively, corn meal contains a
9 natural algae herbicide and when sprinkled over the pond does not add to nutrient
10 overloading. This provides an immediate, though temporary, solution to algae
11 blooms. The most effective control of aquatic vegetation is to monitor and reduce
12 the level of nutrients entering the pond, thereby, preventing excessive algal and
13 aquatic weed growth.

14
15 While none of these sites currently pose a public health hazard, they do have issues that
16 need to be addressed and remedied. TWSI has been working diligently towards solutions
17 for all of these sites and are now asking the TRA to approve the funding necessary for
18 TWSI to implement these much needed solutions.

19
20 **Q. Does this complete your testimony?**

21 **A.** Yes, it does.
22

Roy Denney, PE

712 Silverhill Drive; Murfreesboro, TN 37129 Phone: 615-479-9511

MechPE@gmail.com

PROFESSIONAL SUMMARY AND ACTIVITIES

Project engineering and management

- Functioned as the site engineer for the startup and commissioning of the \$120 Million Metro Water Services Biosolids Facility.
- Project Manager for the owner in the design of a new \$3.5 million effluent pump station to supply process water to the Metro Water Services Biosolids facility.
- Developed operational staffing and procedures for a new facility.
- Site Incident Command at Metro Water Services Central Wastewater Treatment Plant during 500 year flood event in 2010. Managed resources, clean up and recovery efforts, logistics and supplies, and communication to employees when plant communications were down.

Troubleshooting and problem solving

- Assessed environmental conditions resulting in final product failure to meet QC Standards through review of variables during manufacturing conditions. Reduced occurrences of heating and combustion of final product in storage by over 90% with in house modifications to the process.
- Balanced cooling tower control loop to allow return water and make up water bypass when the system did not need cooling capacity. Resolved deadheading and water hammer conditions by review and modifications to control logic.
- Identified and located an ammonia leak in a closed loop, heated water system. Addressed isolation of the leak and discharge of contaminated water.

Public outreach and communication

- Develop and present public outreach presentations for the Metro Water Services Biosolids Facility for schools, public officials, and industry groups.

CAREER EXPERIENCE

October 13 - Present
Chief Technical Officer

Adenus Group, LLC

Smyrna, TN 37167

Provide technical direction for the companies under Adenus Group. Manage the staff of Adenus Solutions. Chief Engineer responsible for plans and designs.

- Business management including budgeting, documentation, design and review, environmental compliance, and permitting.
- Operations and Maintenance support and customer support including programming PLCs and VFDs, developing and maintaining QA/QC testing practices, and failure analysis and review.
- Development of new processes, technologies and markets to increase marketability of the company and expand service areas.

March 07 - October 13
Plant Engineer

Metro Water Services

Nashville, TN 37208

Plant Engineer for the Metro Water Services Biosolids Facility from the field oversight of construction and contract adherence through to current operations, maintenance, and planning.

- Business management including budgeting, RFPs, document and design review, environmental compliance, and permitting.
- Operations and Maintenance support including programming PLCs and VFDs, developing and maintaining QA/QC testing practices, and failure analysis and review.
- Manage energy recovery and reuse systems.

May 06 - March 07

Fluor Global Craft [Yoplait/General Mills]

Murfreesboro, TN 37128

Ammonia Technician

Provided maintenance and operational support for the building utilities of the Yoplait production facility. Performed maintenance and improvement projects.

- PLC Controls troubleshooting.

EDUCATION AND LICENSURE

Bachelor of Engineering, Mechanical Engineering

Vanderbilt University

FE/EIT

PE TN114195

Grade IV Wastewater Treatment Plant Operator

REFERENCES AVAILABLE ON REQUEST

Nashville, TN 2003

State of Tennessee 2004

State of Tennessee 2011

State of Tennessee 2013

ACKNOWLEDGMENT

State of Tennessee)
County of Rutherford)

Personally appeared before me, Susan R. Chaffin, notary public of this county,
Roy C. Denney, the within named witness, with whom I am personally acquainted, and who
acknowledged that such person executed the within instrument for the purposes therein contained.

Witness my hand, at office, this 19 day of 0, 2015.

Susan R. Chaffin
Notary

My commission expires: 2/20/2018

