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Issues:	Capacity Adjustment
Witness:	James A. Merciel, Jr.
Sponsoring Party:	MO PSC Staff
Type of Exhibit:	Rebuttal Testimony
Case Nos.:	SR-2013-0321 and WR-2013-0322
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MISSOURI PUBLIC SERVICE COMMISSION

REGULATORY REVIEW DIVISION

REBUTTAL TESTIMONY

OF

JAMES A. MERCIEL, JR.

LINCOLN COUNTY SEWER & WATER, LLC

CASE NOS. SR-2013-0321 and WR-2013-0322

Jefferson City, Missouri
September 2013

Staff 4

Staff Exhibit No. 4
Date 11-05-13 Reporter KF
File No SR-2013-0321
WR-2013-0322

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Application of Lincoln County Sewer and Water, LLC for Approval of a Rate Increase	)))	Case No. SR-2013-0321
In the Matter of the Application of Lincoln County Sewer and Water, LLC for Approval of a Rate Increase	)))	Case No. WR-2013-0322

AFFIDAVIT OF JAMES A. MERCIEL, JR.

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

James A. Merciel, Jr., of lawful age, on his oath states: that he has participated in the preparation of the foregoing Rebuttal Testimony, in question and answer form, consisting of 26 pages and 5 Attachments, to be presented in the above case; that the answers in the foregoing Rebuttal Testimony were given by him, that he has knowledge of the matters set forth in such answers; and that such answers are true to the best of his knowledge and belief.

James A. Merciel, Jr.

Subscribed and sworn to before me this 24th day of September 2013.

Notary Public

LAURA BLOCH
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: June 21, 2015
Commission Number: 11203914

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JAMES A. MERCIEL, JR.

LINCOLN COUNTY SEWER & WATER, LLC

CASE NOS. SR-2013-0321 and WR-2013-0322

INTRODUCTION

Q. Please state your name and business address.

A. James A. Merciel, Jr., P. O. Box 360, Jefferson City, Missouri, 65102.

Q. By whom are you employed and in what capacity?

A. I am employed by the Missouri Public Service Commission ("Commission") as a Utility Regulatory Engineering Supervisor, in the Water and Sewer Unit.

Q. Please describe your education and work experience.

A. I graduated from the University of Missouri at Rolla in 1976 with a Bachelor of Science degree in Civil Engineering. I am a Registered Professional Engineer in the State of Missouri. I worked for a construction company in 1976 as an engineer and surveyor, and have worked for the Commission in the Water and Sewer Unit since 1977.

Q. What are your work responsibilities at the Commission?

A. My responsibilities include reviewing information and making recommendations with regard to certifications for new water and sewer utilities, sales of utility systems, formal complaint cases, and technical issues associated with water and sewer utility rate cases. In addition to formal case work, I handle informal customer complaints that are of a technical nature, conduct inspections and evaluations of water and sewer utility systems, and informally assist water and sewer utility companies with respect to day-to-day

operations, planning, and customer service issues. In the past, I have supervised engineers and technicians in the Water and Sewer Unit working on the above-described type of case work and informal matters. In the context of my position with Staff, I served on the American Water Works Association Small Systems Committee for three years, and have served on the National Association of Regulatory Utility Commissioners Staff Subcommittee on Water for approximately the past seventeen (17) years.

Q. Have you testified before the Commission previously?

A. Yes. A list of cases in which I have provided testimony is included as Schedule JAM 1 to this Rebuttal Testimony.

PURPOSE OF TESTIMONY

Q. What is the purpose of your Rebuttal Testimony?

A. The purpose of this Rebuttal Testimony is to respond to the Direct Testimony of Dale Johansen. Specifically, this Rebuttal Testimony will support the Staff's "capacity adjustments" made to certain components of Lincoln County Sewer & Water, LLC's ("LCSW") utility plant-in-service level, will explain Staff's position regarding Mr. Johansen's testimony on the bookkeeping and depreciation treatment of disallowed plant, and will offer comments on LCSW's use of "remote read" water meters.

CAPACITY ADJUSTMENTS - GENERAL

Q. Please describe, generally, what is meant by capacity adjustment?

A. A capacity adjustment reduces, or disallows, part of the capital investment of one or more plant items from the rate calculation, usually because there is substantially more plant capacity and correspondingly more investment than what is reasonably needed to provide service to current ratepayers.

Q. Besides recommending a capacity adjustment for LCSW in this case, does Staff recommend capacity adjustments to utility plant for other regulated utilities?

A. Yes, Staff frequently recommends capacity adjustments for other utilities.

Q. Can you please briefly describe why capacity adjustments are used?

A. Yes. Capacity adjustments could be applied when any utility constructs plant or plant additions, perhaps for future growth, at a level that is considered to be a much greater than necessary for the current demand. But also, especially for water and sewer utilities, capacity adjustments are often applied to systems that serve areas where new development is taking place. The reason for this can be illustrated by considering a new utility system that is designed for some appropriate customer level, say 300 lots. The utility system needs to be constructed before any customers exist at all, but rates would need to be set for some customer level which may or may not represent full system capacity. The utility will not realize its full earnings and expense recovery from ordinary revenue until that customer level is attained. In other words, one or two customers cannot be expected to pay for capital recovery and expenses associated with a system designed to serve 300 customers. There are thus inherent disallowances until the pre-determined customer level is attained.

Q. Is there any formula or other standard that the Staff uses to determine capacity adjustments?

A. No, there is not any one standard for capacity adjustment that can be applied to all situations. The above example of a new 300 lot subdivision is one simple example, but there are variables involved with real situations, and it is necessary to study each situation and make some case-by-case judgments. One potential variable could be whether or not the utility is solely responsible for the utility system, versus whether or not a subdivision developer is

involved and is available to risk investment for the subdivision venture. Another variable is whether or not the utility is a new operation that is starting with zero customers and planning to expand to the 300 customer level, or if the utility already has perhaps several thousand customers and intends to expand to several thousand plus the 300. And, there could be additional subdivision development projects besides the one subdivision, which additional development may or may not be integrated together into one system. The utility's business planning, investment risk, the potential impact upon customers' rates, and benefit to customers resulting from company investment all could be completely different for these scenarios.

Q. Is a disallowance that is related to capacity adjustment the same thing as a disallowance of an investment that is held for future use?

A. No, it is not the same thing. Plant held for future use would be an item that exists, but is not being used. The item may or may not be depreciating in value. Examples could include: a parcel of real estate that is kept for future construction; an item that is kept in protective storage to be used in the future or maybe replace a similar item; or a vacant structure that could be used for something at a later time, when it will be treated as an item placed into service. All of these items would become "used and useful" only after they are finally used to provide service to customers. On the other hand, a capacity adjustment is applied to an item that is "used and useful," meaning it is actually in use and providing service to customers, its useful life is in progress and it is depreciating in value; but it is larger and costs more than is reasonably necessary to provide service to the utility's existing customers. The full value of the item and related expenses would appear on the utility's financial records, but some portion of that full value simply is excluded for calculating rates.

Q. Did Staff apply capacity adjustments to LCSW's plant levels in LCSW's CCN case, WA-2012-0018?

A. Yes.

Q. Can you please describe the capacity adjustments made by Staff in WA-2012-0018?

A. Yes. In that case, Staff identified three (3) utility plant items that it considered to be larger than necessary in order to serve existing customers. The three items are the water storage tank, the submersible well pump/motor unit (sometimes referred to simply as a well pump), and the sewage treatment facility, that are provide service to customers in LCSW's Rockport subdivision service area, one of its two service areas. It is clear that the Rockport water and sewer systems both were constructed with the intent to serve a much larger customer level than reflected by the then-current level of sixty-two (62) customers in Rockport. The two phases of the Rockport subdivision, according to what LCSW filed in its application in that case, had 210 lots with homes being constructed to a limited extent; but there was also a substantial amount of undeveloped land within the service area that LCSW had requested. Staff took the position in the CCN case that if these capacity adjustments were not applied, the existing customers would overpay in rates for the excessive capital cost related to overbuilding of certain components of the Rockport water and sewer systems in anticipation of future growth. Staff decided in that particular case to recommend no adjustments to other components of the utility facilities such as structures, fencing and real estate, because these other items were fully used without regard to customer usage and growth. Staff made no capacity adjustments to any plant items in LCSW's other service area, the Bennington subdivision.

CAPACITY ADJUSTMENTS - STAFF RECOMMENDATION

Q. What is Staff proposing for capacity adjustments for this current case?

A. For this current case, Staff is using the same methodologies as were applied in the CCN case, updated for customer growth. Staff did not use updated water use numbers although water usage appears to have decreased somewhat, likely due to the use of water meters. Use of the decreased water usage for a capacity calculation would actually increase the capacity adjustment disallowance even though there has been customer growth; and making a recommendation with this result is not sensible. A worksheet for the calculations are included with this Rebuttal Testimony as Schedule JAM-2, and incorporated herein by reference.

Q. How does Staff calculate its capacity adjustments, beginning with the storage tank?

A. Staff's adjustment to tbe cost of the storage tank, a standpipe, was made in consideration of the design principle of providing a one-day storage volume for single-well system operations. Storage tanks generally serve a purpose of supplementing well production during peak hourly flow that occurs at certain times each day, but in addition to this purpose the one-day level of stored volume would be available for customers in the event of a failure of the well pump, providing a sufficient volume of water for customers during replacement of the pump which is approximately a day-long task. The usable volume of the standpipe is conservatively estimated to be 44,000 gallons which is approximately one-third of total volume. There is unusable volume in a standpipe because the water elevation provides system water pressure, and when the water level falls below the usable volume level then system water pressure would be too low for some customers. Staff assumed a normal average

daily use of approximately 180 gallons per day per customer in the CCN case that was based on master meter readings at the time from the wellheads of primarily the Bennington well but also limited data available from the Rockport well. The current level of seventy-two (72) customers, up from sixty-two (62) in the CCN case, would use approximately 12,960 gallons in a one-day period, or approximately 29.5% of the available tank volume. For this current case, Staff applied a 70% disallowance of the tank cost. This is less than the 75% disallowance Staff and the Company agreed to in the CCN case.

Q. Do you have an estimated customer level to illustrate the capacity of the storage tank with respect to the current 72 customer level?

A. Yes. My estimate is the storage tank has capacity to serve 244 customers using the 180 gallons per day water use number and other assumptions for single-well operation. Further, if LCSW were to construct a second well for this subdivision or interconnect with another system, then this storage tank would only be necessary for peak flows instead of a one-day supply. Recent production data as indicated by LCSW's master meter records show that peak day could be more like 400 gallons per customer instead of 600 gallons as was assumed in the CCN case. If this indication of actual usage is realistic, then the tank capacity for multiple-well operation would be approximately 440 customers using a "default" design criterion of tank volume for domestic flow of 25% of peak day flow.

Q. How does Staff calculate its capacity adjustment for the submersible well pump/motor?

A. Staff's adjustment to the well pump/motor is made in consideration of its pumping capacity of 420 gallons per minute as observed by Staff, and a desired maximum run time of fourteen (14) hours per day, a criterion assumed by Staff for conservative well

operation. This total volume of water is 352,800 gallons and is the amount needed to meet customer demand for one day at maximum daily usage, which is "peak day" usage. An assumed peak day usage of 600 gallons per customer, which could occur on extreme days with lots of outdoor water use such as lawn sprinkling, would result in total daily usage of 43,200 gallons for the existing 72 customers, which is approximately 12.2% of pump capacity. For this current case, Staff applied a 87% disallowance to the cost of the well pump. This is reduced from the 90% disallowance Staff and the Company agreed to in the CCN case.

Q. Do you have an estimated customer level to illustrate the capacity of the well pump with respect to the current 72 customer level?

A. Yes. My estimate is this well pump unit has capacity to serve 588 customers using this estimated peak day flow number of 600 gallons and the other assumptions. But if actual peak day usage were 400 gallons per customer, as described above for the storage tank capacity, then the capacity would be approximately 882 customers imposing the same fourteen (14) hour run time per day. For purposes of the recommended disallowance in this case, I would not consider capacity of this well pump to be significantly different if this well were operated along with a second well.

Q. How does Staff calculate its capacity adjustment for the sewage treatment facility?

A. Staff's adjustment to the cost of the sewage treatment facility was made in consideration of the discharge permit issued by DNR. The plant capacity as stated on the permit is 78,000 gallons per day; and, an "adjusted design flow," to reflect current usage at present as stated on the permit, is 14,999 gallons per day. This adjusted sewage flow amount is approximately 19.2% of the facility design flow, which reflects slightly more than what

Staff estimated to be the water usage of the existing customers in the CCN case. Starting with this calculation based on the discharge permit at the time of the CCN case, and updating for the increase to the current 72 customer level, for this case, Staff applied a 77% disallowance of the treatment facility. This is reduced from the 80% disallowance Staff and the Company agreed to in the CCN case..

Q. Do you have an estimated customer level to illustrate the capacity of the sewage treatment facility with respect to the current 72 customer level?

A. Yes. My estimate is this sewage treatment facility has capacity to serve 322 customers if the CCN case customer level of 62 and the permit flow level of 14,999 gallons per day are used. This would be a per-customer daily use of approximately 242 gallons which is, as stated, more than what water production data indicates.

Q. How are these capacity adjustments to the three utility system components applied to monthly rates?

A. The percentages are used by Lisa Hanneken of the Staff Auditing Unit to calculate the capacity adjustment amounts to plant in service, which appear in Staff's Accounting Schedules. Following this, the costs associated with rate base including a return on investment and depreciation expense are included among the expenses, and used in rate design.

SUMMARY OF STAFF POSITION

Q. Could you please summarize your position on capacity adjustments?

A. Capacity adjustments should be made in many circumstances where there is substantially more capital investment, perhaps for future growth, than is needed for current customers, especially when there are alternatives to determining size of utility plant

components, or when there is investment risk that really belongs with a developer, or both. There are combinations of circumstances that require judgment in determining whether or not capacity adjustments should be made and how to make them. Staff takes the position that LCSW's Rockport water and sewer systems include components that may be reasonable for future development but are substantially oversized for present use, and present customers should not bear the risk of such investment in capacity that is not needed today. As it did in LCSW's CCN case, Staff takes the position that if capacity adjustments are not applied, the existing customers would overpay in rates for the excessive capital cost related to overbuilding of certain components of the Rockport water and sewer systems in anticipation of future growth. Staff recommends capacity adjustments in this current case that are calculated the same way as were applied in the CCN case, updating for Rockport customer growth, and that the capacity adjustments are reasonable with respect to customer rates, and utility operations notwithstanding investment that may exist for the benefit of investors and future customers as future growth occurs.

RESPONSE TO TESTIMONY OF DALE W. JOHANSEN

Q. Have you reviewed the Direct Testimony filed by Dale W. Johansen?

A. Yes.

Q. Do you disagree with any of the points Mr. Johansen makes in his testimony?

A. Yes. I have two reasons why I disagree with Mr. Johansen's testimony regarding Staff's recommended disallowance for well pump capacity. I also disagree with some of the numbers and assumptions Mr. Johansen uses for his assessment of Staff's recommended disallowances for the water storage tank capacity and for the sewage treatment

facility capacity. And, I disagree with Mr. Johansen's proposed treatment of Staff's plant disallowances as "plant held for future use," and related depreciation treatment.

WELL PUMP

Q. What are the two reasons that you disagree with Mr. Johansen's assessment of Staff's well pump capacity disallowance?

A. The first reason is Mr. Johansen's interpretation of DNR's approval for operation of the Rockport water system pertaining to whether one or two wells are utilized. The second reason is the customer water useage, both from design considerations and actual useage, as related to how many customers could be served using this well, whether or not another well is utilized.

Included with this Rebuttal Testimony as Schedule JAM-3 and incorporated herein by reference is a copy of DNR's *Reports on Plans and Specification of a New Water System* (DNR Report) dated December 27, 2007 and pertaining to the Rockport Subdivision. This document was included with LCSW's *Application* that created Case No. WA-2012-0018, the CCN case, as Appendix 6A. Also included with this Rebuttal Testimony as Schedule JAM-4 and incorporated herein by reference is a copy of DNR's *Design Guide for Community Water Systems* (Water Design Guide). Some of the information used as a basis for each of these reasons for disagreement may be found in the Water Design Guide, which is a publication DNR makes available. I have marked on both documents to highlight information I find particularly relevant.

Q. Can you please briefly explain DNR's approval of operation of the water system as stated in the DNR Report?

A. Yes. The DNR Report specifies that approval of the water system is valid for 120 lots in Phase I of the development, but also states that approval of the water system contemplates an additional 90 lots in a future Phase II, for a total of 210 lots. It states that prior to serving any lots in Phase II, a second well will be required, along with DNR review and approval of such future plans.

Q. What is your disagreement with Mr. Johansen with regard to the DNR Report and the operation of one well versus two wells?

A. Mr. Johansen states on page 13 Line 15 of his Direct Testimony that the capacity of the well pump should be set at 120 customers. His reasoning appears to be that the DNR Report validates use of the existing well for 120 customers, and that a second well is needed for what he apparently considers additional capacity to serve another 90 customers, resulting in two wells with combined capacity to serve 210 lots. However, designing the water system by adding the production capacities of the two wells together to serve 210 lots in this manner is not correct. On page 28 of the Water Design Guide in section 3.2.1.2., titled "Number of Sources," paragraphs a., b. and c. each state that for multiple well operations adequate capacity to meet maximum day volume shall be met with the largest producing well out of service. This means that either of two wells serving the 210 lots as contemplated in the DNR Report, and not both operating together, would be needed for adequate capacity to serve all 210 lots. The second well is for reliability, not for needed additional capacity. Either well, then, would provide adequate production capacity while the other is out of service. So, with regard to my first reason for disagreement with Mr. Johansen, as per the DNR Report in context with the Water Design Guide specification for multiple well operation, the existing well is really approved in the DNR Report for providing service to 210 lots, not 120 as stated

in his testimony. If the existing well really only had capacity for 120 lots, then the water system, if serving more than 120 customers, as a whole would have inadequate capacity even with a second well in service.

Q. Does the DNR Report set a limit, or state any maximum, of how many customers the existing well may serve?

A. No, the DNR Report does not set any such limitation, and does not state any maximum capacity of 120 lots nor of 210 lots. The DNR Report approves use of the well for this stated development project; to 120 lots, and then to 210 lots if another well is placed into service. That does not mean the well cannot have or does not actually have more capacity than what is needed for these lots, nor does it mean that it could not be approved for use with further expansion of the water system beyond the requested Rockport Phase I and Phase II plan, with appropriate further DNR approval. Or in other words, a larger-than-necessary well and well pump would meet, or actually exceed, the requirements DNR imposed for approval of a water system for Rockport Phases I and II.

Q. Do you have any observation and comment with respect to the requirement for a second well to be constructed for Phase II?

A. Yes. Referring again to Page 28 of the Water Design Guide, in the same section 3.2.1.2. referenced above, paragraph b. states that water systems serving 500 or more persons shall utilize more than one well (with adequate system capacity to serve customers with the largest well out of service). Since residential customers in a utility service area typically are households averaging between 3 and 4 persons, the 500 person level would be expected to be attained sometime after most of the 120 lots of Phase I are occupied, and before Phase II is built out. So, DNR having imposed the requirement of a second well before

occupancy of homes in Rockport Phase II is consistent with this specification of the Water Design Guide about a requirement for multiple wells for reliability. The requirement does not reflect a need for more capacity beyond that of the existing well for Phase II.

Q. On Page 13 beginning on Line 10 of his testimony, Mr. Johansen points out that using Staff's disallowance methodology, LCSW could be required to construct a second well even while LCSW is not being allowed full recovery of the existing well in rates, for capacity reasons – could this situation occur as he states?

A. Yes, absolutely this situation could occur, and in fact could very likely occur as more home construction occurs in Rockport, depending on future changes to factors that could affect a Staff position on capacity disallowance.

Q. Would you consider this to be placing LCSW in an unusual situation?

A. No I would not. It is no different of a situation than disallowing capacity recovery while this water system is operated as a single-well system.

Q. Why not?

A. The heart of this reasoning is the purpose of the second well. A second well is not for additional capacity, and this situation would not be one where some cost of one well is disallowed for capacity reasons when an additional well is being required for more capacity. If this were the situation, then a disallowance would indeed not be logical nor reasonable. Rather, the purpose of the second well is for reliability, so that adequate capacity exists while one well is out of service for whatever reason, as per the Water Design Guide in 3.2.1.2b. As such, a second well may indeed be required by DNR consistent with the Water Design Guide regarding when multiple wells must be used; but even with a second well the existing well

could still have much more capacity than is needed, and so Staff could still recommend a capacity disallowance.

Q. What is your disagreement with Mr. Johansen with regard to the production capacity of the well as it exists and customer water usage?

A. My disagreement is, very simply and as discussed earlier in this Rebuttal Testimony, the existing well has capacity that far exceeds not only the needs of existing rate-payer customers but also beyond the 120 customer level that Mr. Johansen proposes and beyond the 210 customer level from the DNR Report. My calculation of capacity as related to a customer level, as described above, is 588 customers, and that results from an assumption of a maximum day use of 600 gallons per customer, and a Staff-imposed maximum well pump run time of 14 hours, both assumptions being conservative so as to not over-disallow expenses and thereby unreasonably limit LCSW's ability to recover capital expenses, but still place some reasonable limit on what existing customers should be paying.

Q. Does the Water Design Guide address needed production capacity?

A. Yes, it does. It is found in section 1.1.2. entitled "Extent of the water system(s)." There are various "default" values for water use. For rural water systems the default is 60 gallons per day per person, and if 3 persons per house were assumed then the result would be 180 gallons per day, the same value Staff estimated using observed master meter readings in the CCN case. Multiplying this number by 150% would be 270 gallons per day, whereas Staff conservatively (for the disallowance calculation) assumed a maximum day use of 600 gallons per day. Of course, a design engineer has some freedom to estimate water use values that are based on actual use within a water system that already exists, or estimate based on usage of similar water systems, and also include other reasons for estimating water

usage. Calculations using other default usage values by assuming greater water use per person as the Water Design Guide suggests for municipal residential customers, by including lawn irrigation use, and by assuming greater than 3 persons per house would result in greater usage per customer, but I do not believe those other assumptions and adjustments are applicable for this situation and Staff's disallowance.

Q. What is your conclusion with respect to Mr. Johansen's testimony, the capacity of the well pump, and Staff's proposed well pump disallowance?

A. I consider Staff's estimate of 180 gallons per customer per day, based on observed production data that was available in the CCN case, to be both realistic and consistent with what the Water Design Guide suggests. Using this water use number, and considering observed production of 420 gallons per minute and the Staff-imposed time limit of 14 hours pump run time per day as a conservative measure, results in a capacity to serve 588 customers and is the basis of Staff's disallowance. Mr. Johansen uses 120 customers, which is only based on the DNR approval of one of the two particular subdivision phases, and by water design principles and DNR's Water Design Guide is not a correct number to use. Mr. Johansen's recommendation does not take into consideration capacity that actually exists, and is not realistic with respect to the cost of needed capacity to provide service. Staff's disallowance is fairer to the ratepayers, and also allows LCSW to recover additional capital expense as customer growth occurs and more capacity is utilized.

STORAGE TANK

Q. What is your disagreement with Mr. Johansen regarding disallowance associated with LCSW's Rockport storage tank facility?

A. My disagreement is whether actual customer water use and tank volume that is usable for water storage with adequate pressure for all customers should be used to calculate capacity, as Staff did in the CCN case and recommends in this case, versus Mr. Johansen's proposal to simply apply a customer level number that is based on the DNR Report without regard to actual tank capacity.

Q. Would you please briefly explain the use of water storage tanks?

A. Yes. Storage tanks are used for several purposes that can include the following:

1. They can serve as a supplement to the source of supply (well) production, providing a volume of water during peak flow times of the day such as first thing in the morning when people shower and have breakfast, as well as early evening when people have supper and do home activities that use water. The well is then able to replenish storage overnight, mid-morning, and mid-afternoon when there is not much water usage.
2. They can also contain a reserve water supply for use if the source of supply such as a single-well is out of service because of damage or for maintenance.
3. They contain water at or above an elevation level that can maintain constant working water pressure for the water system. Since water is not compressible, most electric pumps, if used to pump directly into a distribution piping system without some type of tank, would result in large and frequent fluctuations in pressure, frequent starting and stopping which is inefficient use of power and adds wear to electric motors, and inefficient use of power since the flow the pump is expected to produce would not be constant;

4. Finally, storage tanks can hold a reserve water volume that can be used for fire protection, flushing the water system, or other legitimate uses of water that might require flows that are greater than flow produced by a well pump.

Q. Is the Rockport standpipe used for all of these activities?

A. At this time it is not used for fire protection. It is used or is available to be used for all of the other stated purposes.

Q. How is a necessary tank size determined?

A. The Water Design Guide may be used in determining needed tank volume, on pages 139, 140 and 141 in Section 7.1., entitled "Tanks and Reservoirs for Finished Water Storage." For its recommended tank disallowance for Rockport as a single-well system, Staff is applying section 7.1.2.a. which specifies usable tank volume to be a one-day supply.

Q. What is Staff's specific calculation for the Rockport tank capacity?

A. The dimensions of the tank are shown on the DNR Report. There would be a vent and an overflow pipe near the top, and the tank would not actually completely fill with water. As noted earlier in this testimony, and as noted in the Water Design Guide, there is an unusable volume of water in a standpipe. Exactly what the unusable volume is could be subject to study but could be at approximately the 50 foot elevation, which is as about half of the volume. Water at an elevation would produce approximately 20.6 pounds per square inch (PSI) water pressure. However to take into consideration pressure loss during high flow and that some homes could be at a slightly higher elevation than the tank, Staff conservatively assumed 44,000 gallons, approximately one-third of the tank volume, to be usable. As also noted earlier in this testimony, using the average per-customer daily usage of 180, this is adequate capacity as a one-day supply for 244 customers as a one-day tank volume.

Q. What is your conclusion with respect to Mr. Johansen's testimony, the capacity of the storage tank, and Staff's proposed tank disallowance?

A. Although Staff's evaluation and calculations use a different methodology than Mr. Johansen's use of the permit number, the difference in the result is not that great, at 244 customers versus 209 customers, and as Mr. Johansen correctly noted the disallowance amounts are Staff's 70% versus 65.55%. However, I stand by Staff's recommendation, because it is based on realistic water use values and a calculation of actual tank capacity using conservative criteria.

SEWAGE TREATMEMT FACILITY

Q. What is your disagreement with Mr. Johansen regarding disallowance associated with LCSW's Rockport sewage treatment facility?

A. My disagreement is whether the disallowance should be based on some actual observed flow as Staff did in the CCN case and recommends in this case, versus Mr. Johansen's proposal to simply apply a customer level number that is based on the DNR Report without regard to actual use of plant capacity.

Q. Can you briefly explain how sewage treatment capacity is utilized by customers?

A. Yes. As customers use water, most of that same water is discharged into the sanitary sewer along with organic and chemical waste, ultimately arriving at the treatment facility for processing, then discharge to a stream. Outdoor water use such as lawn and garden irrigation and washing cars however is not included as sewage discharge. The sanitary sewer also sometimes picks up some additional water as infiltration and inflow, mostly during rain events. The strength of the waste water, sometimes expressed as "biochemical oxygen

demand" or BOD, can be variable depending upon the types of customers to be connected to the system, and such strength needs to be taken into consideration when designing a treatment facility. Unlike other items such as a well pump or an electric generator that produces some commodity with a firm maximum limitation (i.e. x gallons per minute or y kilowatts), a sewage treatment facility must process waste that is sent to it, using bacteria for biochemical breakdown along with mechanical removal of solids. Several types of sewage treatment facilities are available to be used with central sewer systems as well as by individual homeowners, with variations on how the process is carried out, but any plant must be able to allow adequate time for the biological treatment to occur and for solids settling. To do that, the plant is designed so that hydraulic flow through the various plant chambers at a specified maximum rate of flow would provide the amount of time that is normally needed for the biological processing the waste load, and thus treatment facility capacity is most often expressed in gallons per day.

Q. What type of treatment facility is in use for Rockport, and how does the facility work?

A. The Rockport treatment facility is what is called an "extended aeration" treatment plant. The way it fundamentally works is sewage water flows continuously through an aeration chamber where air is introduced using blowers and submerged air diffusers, where most of the bacteriological breakdown occurs. The volume of the aeration chamber provides for approximately one-day detention. Then, from the aeration chamber the sewage water flows through a clarifier where solids settling occurs. The clarifier would have a dimension for the water surface of perhaps one square foot per 1,000 gallons per day, or some other number based on type of treatment and actual settlability of the solids, along with other

specifications including depth. Solids must be removed periodically from the clarifier, an activity commonly called "sludge hauling."

Q. Is there a guide that may be used for sewer system design?

A. Yes, DNR incorporates a design guide for sewer systems in its regulations. It may be found in 10 CSR 20 Chapter 8. A copy of DNR's regulation is included with this Rebuttal Testimony and incorporated herein by reference as Schedule JAM-5, and referred to herein as the "Sewer Design Guide."

Q. What part of the Sewer Design Guide is applicable to the capacity of the Rockport treatment facility?

A. Default flow and organic values may be found at 10 CSR 20-8.140(5)(C) 1. and 2., on page 44 of the Sewer Design Guide. The default value for flow is 100 gallons per day per person and 370 gallons per day per customer; however similar to water system design other justifiable flow rates may be used.

Q. What is the capacity of the Rockport treatment facility?

A. The Rockport treatment facility has a total flow capacity of 78,000 gallons per day. However, it is constructed in three (3) separate units, each with capacity of 26,000 gallons per day. At present, one of the three units is being utilized, the other two are not in use yet.

Q. Can you please re-state Staff's position regarding disallowance with respect to the sewage treatment facility?

A. Yes. In the CCN case, Staff considered several alternative methods that included calculations based on actual water use of 180 per customer per day which would result in the greatest disallowance; or based on what is termed the actual flow as stated on the

DNR permit for this facility, 14,999 gallons per day, or disallowing two-thirds of the cost based on the fact that only one of three units was actually in operation. Staff based its disallowance on the DNR permit flow number because it was the middle option, and Staff considered it to be the most reasonable of the options. By this methodology, customer water use related to sewage flow would be 242 gallons per customer for a residential customer capacity of 322 customers. Staff, in this current case, is continuing to recommend disallowance based on this methodology but has reduced the recommended disallowance to reflect customer growth, from 62 in the CCN case to the 72 customer level used in this case, for a disallowance of 77%.

Q. How does this compare to Mr. Johansen's recommendation?

A. Mr. Johansen's recommended disallowance is based on the 210 customer-level as stated in the DNR Report, similar to his recommendation on the water storage tank. He uses a 209 customer-level design capacity to arrive at a disallowance of 65.55%. This is very close to the 66.67% that would result if the disallowance were based on one of three units in operation but my two primary concerns with this methodology are: 1) it assumes that the default Sewer Design Guide water usage is applicable to this operation, which if that assumption were valid would mean that the one unit is operating at slightly over capacity at 26,640 gallons per day for 72 customers, with a design capacity of 26,000 gallons per day; and 2) the 65.55% disallowance would include a portion of the units that are in fact not in operation.

Q. What is your conclusion with respect to Mr. Johansen's testimony, the capacity of the sewage treatment facility, and Staff's proposed sewage treatment facility disallowance?

A. Staff's evaluation and calculations use a different methodology than Mr. Johansen's use of the permit number, resulting in a difference in the recommendations that is based on 244 customers versus 209 customers, resulting in Staff's 77% versus Mr. Johansen's 65.55%. However, I stand by Staff's recommendation, because it is based on flow as expressed in a DNR permit, and is conservative with regard to actual customer water use.

PLANT HELD FOR FUTURE USE

Q. What is your disagreement with Mr. Johansen regarding treating the disallowance amounts as plant held for future use?

A. In his Direct Testimony on page15 lines 3 through 6, Mr. Johansen positively asserts that Staff identified the disallowances as "plant held for future use" in the CCN case. Staff does not recommend recording the disallowance on LCSW's books in this manner. Mr. Johansen also asserts that depreciation of the item, or portion of the item, should begin when the plant is finally placed into service.

Q. Can you please explain the disagreement with respect to recording the disallowances on LCSW's books?

A. Staff does not consider the disallowances to be held for future use, as discussed earlier in this Rebuttal Testimony. As discussed, the disallowances particularly the well pump and the storage tank are each single items that are in service (used and useful) but are larger than necessary at present. The disallowances are simply exclusions from rate calculations, and do not indicate that Staff considers any portion of those items as not in service yet. Staff's treatment of these disallowances is consistent with the Uniform System of Accounts, or USOA which, generally in its various versions, is a system of accounts that regulated utilities are required to use to maintain books and records. The USOA specifies in its

definitions for plant held for future use that normal spare capacity of plant in service shall not be included in the account for plant held for future use.

Q. What is the disagreement with respect to depreciation?

A. Contrary to Mr. Johansen's statements, depreciation of the disallowed portions of the plant items is occurring, because the items are used and useful in their entirety, are wearing, and are depreciating in value as the service life is used. However, again and as discussed earlier in this Rebuttal Testimony, depreciation expense attributable to the disallowed plant is not included in rates. It would not be proper depreciation treatment to wait until some later time to begin depreciation of a portion of an item when it is in fact depreciating today, even though some such expense is excluded from rates because of capacity. However in accordance with the USOA the items would be subject to depreciation, proper recording of depreciation, but depreciation would not necessarily be included in today's rate calculations.

Q. Can you please summarize Staff's disagreements with regard to LCSW's plant held for future use issue?

A. Yes. Staff does not agree that the disallowances are plant held for future use, because the items are used and useful, in service and are depreciating. Staff does not agree that depreciation on disallowed portions of plant, or plant held for future use, should be deferred.

REMOTE READ WATER METERS

Q. Mr. Johansen, on page 4 line 16 of his Direct Testimony, discusses some advantages of the meters that LCSW utilizes for its customers – do you agree with Mr. Johansen's comments?

A. Yes, although the cost of the water meters that can be read remotely by radio from a vehicle, along with related equipment and computer software, could be a factor in determining reasonableness, I generally agree with the points Mr. Johansen makes, including the fact that some benefits are intangible or not quantifiable. In addition to his points about the capability of this system to be able to acquire and keep records pertaining to water usage detail, the remote reading capability can also be a time-saving tool available to the utility in managing its obligation to read every water meter each billing period.

SUMMARY OF TESTIMONY

Q. Could you please summarize this Rebuttal Testimony?

A. Yes. Staff recommends capacity disallowances of LCSW's Rockport well pump, storage tank, and sewage treatment facility, which are based on the same methodologies as those used in the LCSW's CCN case, which methodologies are based on customer water usage and sewage flow as was determined in the CCN case, but adjusted for customer growth. Staff strongly disagrees with Mr. Johansen's recommendation regarding the well pump capacity disallowance, because: 1) the methodology is not consistent with water facility design principles nor the DNR Water Design Guide; and, 2) the well pump is much larger than what is reasonably required, under any water usage guides or usage assumptions, to serve the existing customer level and even the DNR Report-approved customer level of 210 customers. Staff disagrees with Mr. Johansen's recommendations for storage tank and sewage treatment facility disallowances, because, although his results are within what could be deemed a reasonable range, they are not based on actual customer usage of capacities, as are Staff's recommendations. Also, because of the principles specified in the USOA, Staff strongly disagrees with Mr. Johansen's proposal that disallowed plant be treated

as plant held for future use, and also his proposal to defer depreciation of the disallowed portion of plant items. Finally, Staff agrees with Mr. Johansen that remote read water meters can provide benefits, some intangible, with regard to utility operations and customer service.

Q. Does this conclude your Rebuttal Testimony?

A. Yes.