STAFF RECOMMENDATION REGARDING EMERGENCY RATES

Case Nos. SR-2014-0166 and WR-2014-0167

In the Matter of a Requested Rate Increase for Annual Sewer and Water Operating Revenues by Hickory Hills Water & Sewer Company, Inc.

TO: Missouri Public Service Commission Official Case File

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DATE: April 04, 2014

/s/ James A. Merciel, Jr.	4/04/2014
Water and Sewer Unit	Date
/s/ Aaron Archer	4/04/2014
Water and Sewer Unit	Date
/s/ James Busch	4/04/2014
Water and Sewer Unit	Date
/s/ Akayla Jones	4/04/2014
Staff Counsel's Office	Date

Executive Summary

The Court appointed receiver for Hickory Hills Water & Sewer Company, Inc. (Hickory Hills or Company) filed for a rate request for an increase in water and sewer revenues for Hickory Hills on December 2, 2013. On March 17, 2014, the receiver filed a request for emergency rates on behalf of Hickory Hills. Staff filed its *Staff's Response to Order*, on March 20, 2014 indicating that it would file its response to the request on April 4, 2014. Based upon all information available, Staff does not support the request for emergency rates at this time. Staff has been working diligently over the past two weeks to finalize a proposed temporary solution to address the environmental problems impacting the Hickory Hills area. In this recommendation, Staff will delineate possible solutions and initial estimates of the costs of each solution. Hopefully, a solution will be chosen by the interested parties and operating prior to May 1, 2014, the date that Staff and the Company are to file their proposed resolution to these rate cases. If any obstacles prevent in-service of the chosen solution by May 1, Staff will probably seek an extension of the rate case. If the new permanent rates seem unlikely due to a disagreement among the parties

after the May 1 filing, Staff will likely request emergency rates at that time to cover the costs of the solution, assuming the new facility is in-service.

Staff's Overview

Hickory Hills has approximately 47 sewer customers. The sewer system consists of a single-cell lagoon with a design flow capacity of 16,400 gallons per day, along with a collection system which operates by gravity. The current lagoon providing wastewater treatment to the customers of Hickory Hills is not in compliance with Missouri Department of Natural Resources (DNR) regulations. This facility is discharging unacceptable waste into the waters of the State and needs to be fixed as quickly as possible. In fact, the current facility is operating without an approved operating permit due to the non-compliance. DNR issued a Schedule of Compliance in 2004 with a completion of treatment facilities to meet effluent limits set forth in the permit by March 15, 2007.

The Company's operation of the treatment facility and failure to meet discharge requirements is under DNR enforcement, and the Missouri Attorney General's Office (AG) is actively pursuing the matter. Over the period of time that the system has been under enforcement action, many parties have pursued various avenues to find a solution to get the system back into compliance. Unfortunately, a good solution has not yet been found because the receiver does not have available capital resources to undertake upgrades, such as construction of a new treatment facility that could be placed into service and used for a normal life of a treatment facility, to get the system in compliance with DNR rules and regulations. Due to an agreement reached and ordered on August 7, 2013 in a preliminary injunction filed by the AG, Hickory Hills was required to file a rate case and a request for emergency rates, among other items. Hickory Hills' filing of March 17, 2014 is in response to that agreement.

Based upon continuing discussions, a temporary solution involving a portable treatment facility may have been found to allow the system to meet DNR discharge requirements. Below, Staff will discuss four alternatives based on the temporary solution, and provide **preliminary** engineering cost estimates with each option. The costs reflected in this recommendation do not include any other costs associated with the system and would be included on top of current rates and additional operating costs.

All temporary treatment alternatives involve the Frontier Environmental Technology (Frontier) deployable Baffled BioReactor (dBBR). Two additional treatment systems were investigated initially, but the companies chose not to pursue any proposal for Hickory Hills at this time. The basic solution proposed by Frontier involves the placement of a portable treatment facility, the dBBR, to be placed near the existing lagoon. The alternatives that need to be explored include whether or not to have the dBBR treat the wastewater straight from the collection system or pump sewage from the lagoon to the dBBR. The costs involved in this proposal include the leasing of the mobile treatment facility at a rate of $1,500 per month, plus a number of up-front costs. The facility provider normally charges $5,000 for plant set-up. Frontier has been approached about including this upfront cost in its monthly fee and is receptive to doing so. This

would require the monthly charge to increase to $1,800, with a signed lease for at least 18 months.

In addition, Hickory Hills will be responsible for other set-up expenses including rock for the plant base and driveway, grading, and electric utility service. A provision for lift pumping into the facility is also necessary but pump methods and costs vary in the alternatives. Details of all of the up-front expenses will need to be refined as this project moves ahead, and except for the pumping variations would be substantially common for all alternatives.

Electric utility service is readily available on the Hickory Hills' property, but there will be a cost to replace an existing transformer, as well as the cost of the electric service line and a pedestal or some structure to mount the meter and electric box adjacent to the dBBR. There are financing options for the transformer cost.

A majority of the 47 customers are connected to one collection system on the west-side of the lagoon. There are about five other customers that are on a sewer that appears to discharge to east-side of the lagoon. Alternatives include variations on how to handle the five east-side customers.

The only practical location of the proposed dBBR treatment facility is on a flat area of Hickory Hills' property, located just west of the lagoon, and shown as tract "A" in the service area map in Hickory Hills' current tariff.

Estimates provided herein are being determined by bid proposal from Frontier, approximate cost estimates from an Ameren Missouri service representative and Union Electric Co. tariff for electric service, and preliminary estimates by Staff for operations and capital expenses. The capital costs, comprised of investments in new facility components Hickory Hills would need to make, include the setup costs common to all alternatives plus investment in pumping facilities. The capital expenses as estimated by Staff range from $6,795 to $26,463. Additional annual operating costs as estimated by Staff range from $4,230 to $8,430.

Site Assessment and Frontier's Recommendation

On March 31, 2014, Dr. Jianmin Wang with Frontier met with Missouri Public Service Commission (PSC) Staff at the lagoon site that is currently used to treat wastewater from Hickory Hills/Temple Terrace subdivisions. Frontier's dBBR is designed to treat between 10,000 and 15,000 gallons per day. Although not designed as a facility to remain in service on a long-term basis, this system has electronic controls that make the unit significantly automated and has low maintenance costs compared to other treatment options. The estimated maintenance time per week is less than one hour. The dBBR is capable of treating sewage with an effluent quality that significantly exceeds the federal standard applicable to many large facilities (BOD_5 < 30 mg/L, and SS < 30 mg/L, without any total nitrogen requirement). The dBBR also features UV disinfection, which further exceeds the disinfection practices at many small system treatment facilities. For applications similar to Hickory Hills, the power usage is approximately 2 kW.

The ultimate goal for this system is a permanent treatment facility and elimination of the lagoon.

This proposal to utilize the dBBR technology is not a permanent solution at this time, but does allow for the opportunity for the system to meet DNR requirements. Furthermore, depending upon which alternative is chosen, the lagoon may be able to be dried and ready for elimination during this temporary phase.

Frontier's Cost Estimate

The rental cost for the dBBR is $1,500 per month plus the $5,000 setup cost paid to Frontier for its setup work, or $1,800 per month with a minimal lease period of 18 months that includes setup work. This includes delivery, installation, initial start-up and training, technical support through the phone, and up to two site visits from Frontier per year. After delivery, Frontier personnel will come to the site to connect electric power and the intake and discharge lines, and initially start the dBBR. The site preparation, pumping facilities and electric utility service will be the responsibility of Hickory Hills.

If the customer rents the dBBR for more than six years, only the first six-year rental fee will be collected by Frontier ($129,600). After that, the dBBR will become the property of Hickory Hills (rent-to-own option). If the long-term performance of the dBBR appears acceptable and Hickory Hills decides to purchase the dBBR within the initial leasing period, a discount price of $100,000 will be requested by Frontier as the purchase price of the dBBR, and the rental fee previously paid to Frontier will be considered as part of the purchase price (purchase option).

Frontier states that the $100,000 purchase price reflects a sharp discount to the market price of related systems since Frontier is interested in deploying this unit to more users at this stage of its business, and as an advertisement and research tool to further disseminate research data. This cost is approximately $10 per gallon capacity. In comparison, Staff often observes permanent treatment facilities being constructed at costs approaching, or even exceeding, $20 per gallon capacity. Even though the dBBR is not designed to be a permanent long-term facility, its cost, quick setup time, and the availability of a lease arrangement rather than a need to make a large capital investment seems appropriate for Hickory Hills when considering that it is in receivership and there is an urgent need for improved sewage treatment.

Staff's Proposed Alternatives and Estimated Costs

Staff's estimates for various expenses are shown on the attached worksheet, Attachment A. The setup costs that Hickory Hills will incur such as electric components, site and driveway preparation, rock and grading, which are common to all alternatives, are referred to as "Company Setup Costs." The costs of various pumping facilities are shown for each alternative.

Alternative 1

Erect temporary dBBR facility near the inlet manhole with discharge directly to the creek	$ 3480
Construct wet well lift station (LS 1) next to the inlet manhole to pump sewage into the dBBR	$ 7,280

Construct small lift station (LS 2) using either one grinder pump or one sewage pump, with force main and on-site electric supply for the east sewer	$ 3,400
Abandon use of the lagoon for treatment, but it may serve as lift station overflow and sludge disposal	
Option 1a – construct intermittent-use dewatering pump facility to decant lagoon water into the dBBR, 1 pump	$ 1,900
Option 1b – construct sludge holding basin (not included in Staff's worksheet)	$ 2,500
Option 1c – utilize gravity flow with at least 2 new manholes from the east sewer rather than a lift station, but may not be feasible, depending on the depth near the lagoon berm	

Advantage – allows for complete dewatering of lagoon and a track for ultimate elimination (if alternative sludge holding and overflow capacity is developed)

Disadvantage –the most costly and most time-consuming set-up/construction, even without including the options

Cost	**$ 14,160**
Cost with Options 1a and 1b	**$ 18,560**

Alternative 2

Erect temporary dBBR facility near the inlet manhole with discharge directly to the creek	$ 3,480
Construct wet well lift station (LS 1) next to the inlet manhole to pump sewage into the dBBR	$ 7,280
Leave existing east sewer with 5 or so homes connected to the lagoon and operate it as a no-discharge facility	
Option 2a – construct dewatering single-pump facility (LS 3) to decant lagoon water into dBBR, would also transfer east sewer discharge into the lagoon to the dBBR, for	

intermittent use, may or may not be necessary for the lagoon to be no-discharge, and may or may not require 2 pumps $ 1,900

Advantage – a little less costly, could upgrade to Alternative 1 in the future

Disadvantage – requires lagoon to remain in operation even as a no-discharge

Cost **$ 10,760**

Cost with option 2a **$ 12,660**

Alternative 3

Erect temporary dBBR facility near the inlet manhole with discharge directly to the creek $ 3,480

Construct a pump facility (LS 3) on the lagoon bank to decant lagoon water (total collection system flow) into the dBBR, lagoon is used for some pre-treatment– this would be a continuous use pump facility requiring better weather protection, and require two pumps $ 3,200

Advantage – least costly, quickest set-up/construction

Disadvantage – dBBR does not treat raw sewage which is the preferred method – treating lagoon water may require dBBR sludge seeding and better sludge monitoring to attain proper treatment; and lagoon must remain in operation; for sludge monitoring operator training, a more experienced operator, and long-term operator dedication may be needed

Cost **$ 6,680**

Alternative 4

Erect temporary dBBR facility near the inlet manhole with discharge to the existing lagoon $ 3,480

Construct wet well lift station (LS 1) next to the inlet manhole to pump sewage into the dBBR $ 7,280

Leave existing east sewer with 5 or so homes connected to the lagoon

Advantage – a little less costly, could upgrade to Alternative 1 in the future

Disadvantage – lagoon needs evaluation, in its current condition, for the ability to treat sewage from 5 or so homes along with facility discharge and meet discharge limits; and lagoon must remain in operation

Cost **$ 10,760**

System Operations, Lagoon Capacity Issues

The current sewage treatment lagoon facility has a design flow of 16,400 gallons per day (gpd), with actual flows of 9,360 gpd, and peak flows exceeding 50,000 gpd according to the most recent DNR operating permit. Staff recently observed flow of approximately 200,000 gpd. There is not a flowmeter at the facility to indicate actual daily and hourly flows through the collecting sewer. This system has a significant problem with Inflows and Infiltration (I and I) likely due to damage from tree roots, leaks at the customer service sewer connections, and collecting sewer clay pipe section joints. Additionally, Staff's observation of the lagoon level and lagoon discharge pipe on March 31, 2014, as compared to the levels observed after a significant rain event during a follow up visit on April 1, 2014, showed both significant I and I and evidence of the receiving stream topping the lagoon berm and adding flood water to the lagoon.

Other possible sources of significant I and I include homes in the service area that have foundation drainage pipe and gutter downspouts connected to the collecting sewers. In addition, Staff observed subsurface inflow into multiple manholes through cracks in the concrete and masonry. Also some manholes do not have sufficient freeboard on the risers to combat the flooding of the receiving stream. During the April 1, 2014 inspection, Staff spoke with multiple residents, some who stated they have had sewage backups in basements, and that the problem has happened several times over the years. This was somewhat corroborated by Staff's observation of the difference in sewage levels between the 2nd and 4th collecting sewer manhole from the lagoon influent pipe. There appears to be one or more large trees in very close proximity to the collecting sewer pipe in this area. Utilizing a root cutter and inspection camera may be a sensible course of action to identify and correct some of the problems.

Staff was able to observe the amount of sludge in the lagoon on the March 31, 2014 inspection. A significant portion of the bank, and out to a distance of an estimated 20 ft the depth of the supernatant water, was only an estimated 2-3 inches, potentially indicating the level of sludge versus free water in the lagoon system was minimal; however, the depth of water near the collecting sewer discharge pipe/pipes could not be observed due to their distance from the berm.

Receiver issues

Staff has not had the opportunity to discuss all of these options with the receiver, Mr. Gary Cover; however, during a brief discussion of this concept, Mr. Cover seemed receptive. The initial startup costs have not been addressed and finding appropriate capital funding is still an obstacle that could be overcome.

Staff Recommendations

At this time, based purely on cost and to quickly attain improvement, Staff recommends Alternative 3 as described above. Staff recognizes operational issues with this alternative must be monitored, and if issues are identified that indicate this alternative is not workable, then another alternative would need to be selected. Considering the impacts that any alternative will have on customers, the most cost-effective alternative is best.

Staff recommends the Commission not approve emergency rates for Hickory Hills at this time.

Staff recommends that all of the actual costs associated with the selected alternative be included in permanent rates that will be approved by the Commission at the conclusion of this rate case. Staff will work with the receiver and Frontier and all other interested parties to get all appropriate regulatory approvals and all final costs to be included in Staff's cost of service. It is anticipated that Staff and the Company will have an agreement signed and submitted on May 1, 2014.

If any obstacles occur between now and the May 1 deadline, Staff will request an extension of the current rate case to allow more time to have the facility installed and in-service so the costs can be included in rates.

If an agreement among the parties cannot be reached in the permanent rate case and the temporary facility is in-service, Staff recommends that a request for emergency rates be made to allow for the collection of the costs of the facility and installation as quickly as practical.

Attachment: A Staff Workpaper on Estimated Costs

cost of dBBR - Staff estimates

add 10% to all capital costs for contingencies, supervision, etc.

50 customers
150 gallons usage per customer 7,500 gpd flow 5.2 gpm
360 high flow gallons per customer 18,000 gpd flow 12.5 gpm

cost assumptions

construction labor	labor per person	$ 25.00	hr
backhoe		$ 100.00	hr
electrician		$ 80.00	
plumber		$ 80.00	
electric rates		$ 9.74	customer
		$ 0.1034	4 month summer kwh
		$ 0.0771	8 month winter kwh
		$ 0.0859	ave per month/kwh

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dBBR plant lease cost (Frontier) $ 1,500 per month **$ 18,000** annual
$ 1,800 per month **$ 21,600** annual, if set-up amortization option is chosen

Alternative non-lease for other product options (Pollution Control Sys) estimate $ 123,915 capital **$ 31,858** annual 9% 5 year institutional financing, interest and principle

lift station electric operation

assume for typical flow enter pump gpm: tdh whp
enter gpd: **12,000** **50** 20 0.25

kw	hours/day		electric rate	
0.25	4	$	0.0859	
30.19	kwh/month	$	2.59	electric per month
288,000	gal per month			$ 0.0090 cost per kgal

plant electric operation

kw	hours/day		
3	24		
2160	kwh/month	$ 185.47	electric kwh per month

base electric cost per month (rates only) $ 197.80
annual electric
based on rates, plus factor up for taxes, extra fees, optional and extra pumping, **$ 2,729.70** as annual operating expense
motor start/stop peak use, and other on-site electric usage 15% factor

sludge hauling initially assume sludge may be disposed into the lagoon
if off-site disposal is needed, then assume 250 gallons per person annually
2.5 persons per customer
DOES NOT APPLY TO STAFF ALTERNATIVE No. 3 31250 gallons per year
other unknown additional sludge maintenance and monitoring expense may be necessary 2,500 gal/load $ 300.00 per load **$ 3,900.00**

max annual additional non-capital operating expenses **$ 8,430**
min annual additional non-capital operating expenses **$ 4,230**

Capital Cost:
electric service - capital cost to company

Transformer changeout per quote from Amerer **(or optional** - may be amortized as payment plan with Ameren) **$ 3,000.00**
option is annual operating cost for 12 months **or** **$ 3,000.00** annual operating expense

electric service line	125 ft	$ 3.50	per foot	(round)	$ 440.00
meter setting, customer electric box and structure					$ 500.00
electric service installation labor	1 electrician		1 day		$ 640.00
					$ 1,580.00

plant set-up - capital cost to company

Set-up cost to be paid to Frontier paid lump sum **(or optional** - may be amortized as payment plan with Frontier) **$ 5,000.00**
option is annual operating cost for 18 or more months **or** **$ 3,600.00** annual operating expense

rock	$ 300.00 per truckload	3 loads	$ 900.00			15	20	1 dimensions for plant site rock base
site and driveway groundwork, grading	1 person labor plus equipment	1 day	$ 1,000.00			12	40	0.5 dimensions for driveway rock
			$ 1,900.00			540	cf	120 pounds per
						32.4	tons	
						2.16	truckloads	15 tons per

lift station capital cost 2 man crew labor

2090 capital plus 10%
$537.32 annual

LS 1 plant lift station, 2 pump with wetwell for most of the plant flow

wetwell excavation, construction w/ equipment	$ 1,200 per day	1 days	$ 1,200.00	
wetwell tank product, or construction material			$ 1,400.00	
pumps and plumbing			$ 2,500.00	
labor - plumbing	$ 400 per day	1 days	$ 400.00	
electrical controls			$ 500.00	
electrical labor	$ 1,280 per day	1 days	$ 1,280.00	
			$ 7,280.00	

from above financing costs:
9% 5 year institutional financing, interest and principle

LS 2 east sewer lift station

grinder pump unit			$ 1,500.00
force main,	250 feet @	$ 5.00	$ 1,250.00
electric wire	250 feet @	$ 1.00	$ 250.00
installation labor	$ 400 per day	1 days	$ 400.00
			$ 3,400.00

2 lift station annualized capital cost
$ 11,748.00 capital plus 10%
$3,020.32 annual

LS 3 lagoon dewatering - required if LS 2 not constructed, else optional

structure or shelf at inner lagoon bank, may require some excavation			$ 500.00	
intake piping in lagoon, and discharge piping to dBBR	100 feet @	$ 5.00	$ 500.00	
installation labor		1 days	$ 400.00	
electric wire and connections	$ 100.00 plus	100 feet @ $ 1.00	$ 200.00	
pump			$ 300.00	
			$ 1,900.00	
extra pump			$ 300.00	
all-weather pump enclosure			$ 1,000.00	

NOTE: if LS 1 and LS 2 not constructed, this would need to be an all-weather facility

$ 3,200.00 alternate LS 3
$1,410.19 2.500336

ADD 10% contingencies, supervision
total max capital **$ 26,466**
min capital -- must use enhanced LS 3, and include amortizations for transformer and dBBR set-up **$ 7,348**

Modified Staff report Attachment A