

MARSHALL MUNICIPAL UTILITIES
ANNUAL REPORT
2020/2021

TO: Board of Public Works
City Council

February 4, 2022

This annual report summarizes many of the challenges, accomplishments and improvements to Marshall's publicly owned utility systems during the fiscal year ending September 30, 2021. Many of the accomplishments made in 2021 are not only important to provide reliable service to our community, but necessary for Marshall to develop and grow.

As a publicly owned utility MMU is governed by a 4-member Board of its customer/owners who are responsible for the overall operation of Water, Wastewater, Electric and Broadband services for Marshall. MMU has been in operation for over 100 years and developed into an award-winning utility, providing above average service at below average costs.

The top story for fiscal year 2020/2021 was completion of the demolition of our steam generating units and Power Plant structure. Ahrens Construction was awarded the contract and asbestos abatement work began in June of 2020, with demolition completed in August of 2021. The old plant foundations were removed to below grade and the site filled with soil and graded for drainage. While we have no immediate plans for this location, the site has both a high-pressure gas main and 161kV transmission line, and would be ideal for future MoPEP generation. We have made MoPEP staff aware of our willingness to have generation located here if needed.

The second top story of 2020/2021 was winter storm Uri that occurred in February 2021. Historic sub-zero temperatures affected the entire middle of the country from Canada to the Gulf of Mexico. Generation resources including renewables, coal and natural gas were affected by the extreme cold. Most resources in the Southern United States were not designed to operate in these colder temperatures. The loss of resources and the increased demand in natural gas for heating combined for the "perfect" storm and pushed the power grid to the brink of collapse. Without access to natural gas MMU was able to operate local generation on diesel fuel. We recently had our diesel tanks inspected and filled when the price of fuel dropped during the COVID-19 pandemic. We made certain we had an adequate fuel supply that could operate during the winter and this paid off tremendously. MMU staff was able to run our local units on diesel fuel and generated \$2,744,709 in market revenue. This not only offset the \$1,637,184 increase in our February energy bill but covered our March bill and a \$100,000 credit applied to our April bill. These decisions and efforts saved our customers a tremendous amount of money. Many utilities were forced into rolling blackouts and had to place an additional charge on customer bills to pay for these higher energy costs.

The third top story was the damage caused by flooding at the Wastewater Treatment Plant. Record rainfall on June 25th caused Salt Fork Creek to reach levels not seen before. Flood levels exceeded the flood of 1993 by 19 inches and the flood of 1973 by 13 inches. The entire plant was shut down for several days until the flood waters receded. Once flood waters receded, large portable generators were used to power the headworks pumping equipment while repairs were being made. Equipment and facilities

damaged included 2 dump trucks, headworks building electric controls, filter building (overhead doors, all motors and controls) and breakroom. The flooding event was declared a federal disaster which qualified it for FEMA assistance, reimbursing up to 75% of qualifying costs. MMU has been working with FEMA, submitting the data required for reimbursement. MMU is also working with FEMA on possible mitigation efforts to prevent future flooding.

MMU Mission Statement

It is our responsibility to provide for the current needs and to plan for the future needs of Marshall's citizens. We must never forget that Marshall's citizens are the owners of MMU. The citizens of Marshall can be assured that the employees of MMU are committed to continuing the efforts necessary to fulfill our mission, which is to:

Provide reliable utility service for our owners at the lowest reasonable cost; maintain and operate facilities that will assure safe, dependable electricity, potable water and wastewater treatment, giving due consideration to conservation and environmental impacts; plan for the future to assure adequate resources with progressive but sound economic reasoning.

Department information

The following information provides a glimpse of some of the challenges, accomplishments and operations during the 2020-2021 fiscal year.

Electric Distribution

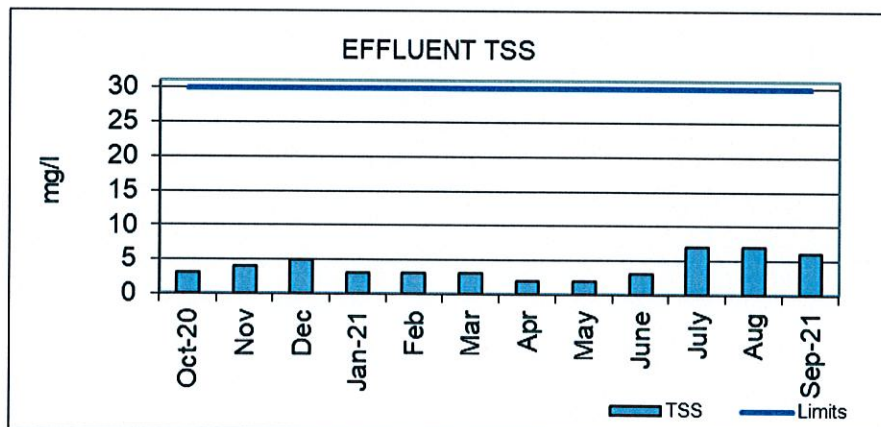
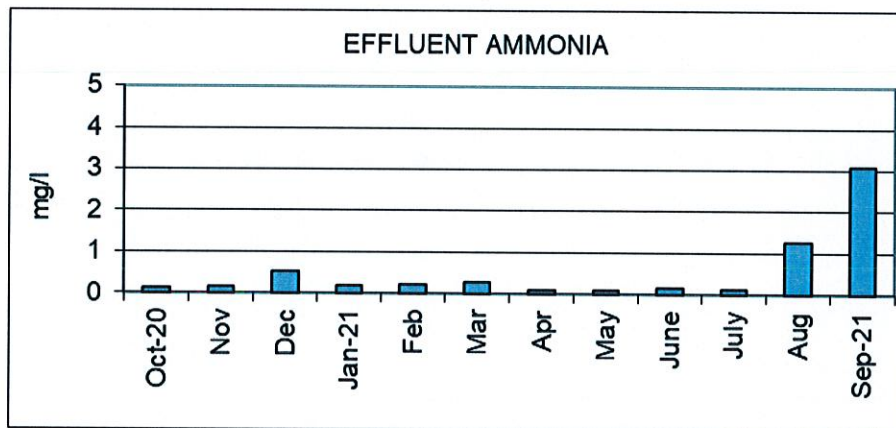
- Overhead to Underground Projects: The crews completed the overhead to underground project in the area of Morrow, Grant, Crestwood, and Miami. We buried approximately 500' of primary and 600' of secondary lines along with 15 house services.
- Street/Area Light Conversion: All street lights have been converted to LED. The total number of LED street lights is 2017; there are a total of 910 area lights. This leaves approximately 60 high-pressure sodium area light fixtures that need replaced to complete the LED conversion.
- Replace Direct Primary: The crew replaced approximately 1400' of direct buried primary at the Lakeview Mobile Home Park on N. Odell. This completes the replacement of direct buried primary conductors. All primary conductors are now in conduit.
- Southeast Substation New Switchgear and Transformer: Foundations are complete and the new transformer was set on November 8th 2021. Work with engineering firm continues on the general installation material list. The new switchgear is done, we plan to move ahead with the replacement soon.
- Replaced and/or installed 40 utility poles.
- Replaced primary underground on 65 Highway at the viaduct. Crews pulled out the old conductor and pulled in approximately 400' of new primary underground. This underground circuit serves as a tie between our West and North St. Substations.
- Replaced Breaker 111B. This breaker is a 161kV SF6 Breaker at Southeast Substation.
- Connected nine (9) new electric services.
- Connected six (6) new solar panel installations.
- Sent a crew to Fayette on June 21, 2021 for mutual aid after a storm.
- Replaced several broken poles and downed three phase primary lines after storm on May 9, 2021.

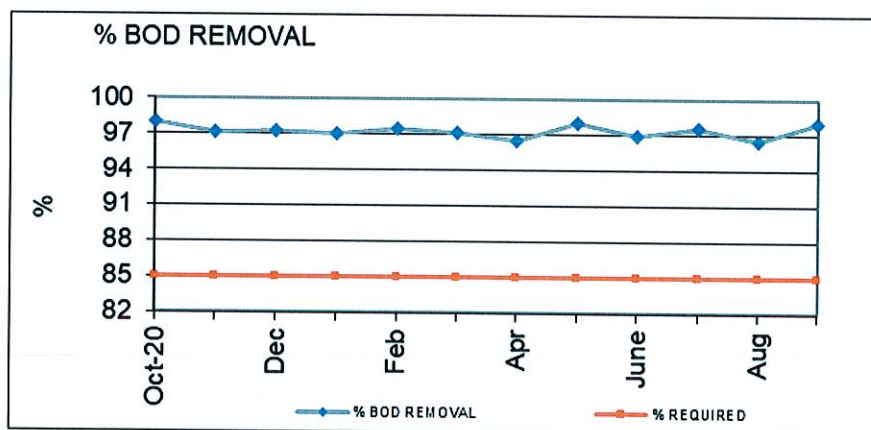
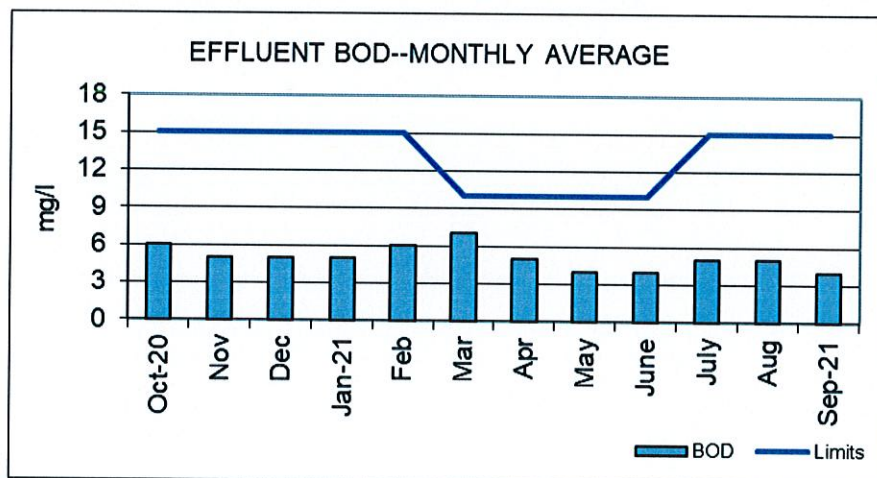
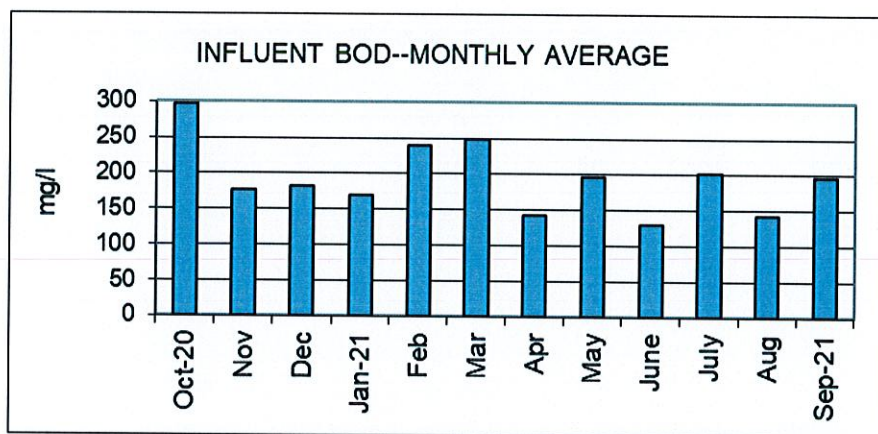
Water Treatment Plant

- The plant produced 838,133,000 gallons of water up from 816,293,000 gallons in FY20. The daily average produced was 2.296 million gallons per day.
- We published and posted the annual consumer confidence report for 2020.
- Replaced the surface wash lines on all five filters.
- Rocked and stabilized the banks on lagoons #2 and #3.
- Completed annual well treatment and maintenance for 5 wells.
- Replace the motor control center (MCC).
- Installed the carbon dioxide feed system.

Wastewater Treatment Plant

- The plant treated 1,113,489,000 gallons of wastewater, an approximate 11% increase from the 1,000,453,000 gallons for FY20.
- We applied roughly 350 dry tons of biosolids to local farmland.
- Reissued pretreatment permits to all industries.
- Started project with Burns & McDonnell to upgrade aeration basin and final clarifier equipment-projected completion in calendar year 2022 at a cost of approximately \$9.1 million.
- Following are charts showing the wastewater treatment plant's effluent sampling results for FY21 computed against the effluent limits set by DNR.





BOD – biochemical oxygen demand
TSS – total suspended solids
mg/l – milligrams per liter or parts per million

There currently is no discharge limit, only a monitoring requirement, for ammonia.

Electric Production

There were several significant accomplishments and events that happened during the 2021 year. Two that actually started in the 2020 year were the demolition of the old steam power plant building and our operating permit.

- To start the year off we received our Part 70 operating permit on January 13, 2021. Although we were issued our permit in January it was actually the result of work that took place throughout the 2020 calendar year with the assistance of TRC Environmental and the Department of Natural Resources. This permit allows the operation of Marshall's electrical generation. MMU's Electric Production currently operates two reciprocating dual fueled internal combustion generating units (EP-10 and EP-11), and a gas turbine generating unit (EP-06). In addition, there are two internal combustion peaking generators located at the water treatment plant and one located at the wastewater treatment plant (EP-07, EP-08 and EP-09). These generating units are a huge benefit for emergencies and a hedge when the market is volatile. Our operating permit must be renewed every 5 years.
- The demolition started in June of 2020 with ARSI mobilizing to begin the asbestos and hazardous materials abatement. This phase of the project was completed in January of 2021 when Ahrens Contracting started their mobilization to begin the actual demolition of the building and peripheral structures. Work began on the west end of the building and continued to the east. During this process the coal conveyor, unit 4 and 5 baghouses along with the unit 5 cooling tower were taken down as well. In May, Ahrens began breaking out the footings, foundation and concrete slabs. This material was recycled by being crushed and used to cover the old coal yard. The demolition was completed on schedule by the end of August.
- Another event that took place was Winter Storm Uri in February of 2021. Early Monday, February 15th, record lows had already been established in parts of Minnesota, Nebraska, Iowa, South Dakota, Kansas, Wisconsin, Colorado, Missouri, Texas and Oklahoma, with forecasted temperatures likely to drop even more on Tuesday morning. The storm produced snow, ice and -10° temperatures with -32° windchills. There were well over 3 million power outages throughout the region. Due to the loss of regional generation, much of which was wind and solar, MMU's unit 6 was called on to generate. The price of power and gas prices skyrocketed which facilitated burning diesel fuel in the gas turbine. Unit 6 was dispatched by SPP (Southwest Power Pool) and ran around the clock from February 13th through the 20th using 252,890 gallons of diesel fuel. While most cities in MoPEP were greatly impacted by escalated costs, MMU's generation unit ran very well and not only defrayed escalated costs but created a considerable amount of revenue as well.
- In the month of March, Everygy had to replace a river crossing which caused energy constraints in the area. Once again, MMU's unit 6 was dispatched by SPP and ran 24/7 from March 1st through March 23rd. During the month of March, the unit ran on natural gas and performed very well.
- The bi-annual capacity test was performed on July 29th. This test consists of running all 6 of our generators at full capacity for a 2-hour period. All units performed well with a peak output of 29,732 KW.

Recycling

In April of 2021 the contract with Conagra Brand Foods was not renewed. In 2020 we baled 234 tons of plastics, in 2021 we baled 91 tons of plastics through the month of September. The Excel hand tie baler was used to bale all plastic material. The recycling facility processed 3,882 tons of cardboard and mixed paper in 2020 and 1,952 tons as of the end of September 2021. The recycling facility did receive plastic and cardboard from Conagra Brands the first three months of 2021.

Underground Facilities

- A water main project was completed in the fall of 2021 on East Gordon Street. The 8" main extension is on East Gordon Street from Redman Avenue to Lincoln Avenue. This is the final phase of the cross-town tie between Miami Avenue and Lincoln Avenue that was started in the 80's. The project consisted of approximately 1,800' of 8" C900 plastic main and two fire hydrants. The 500 and 600 blocks of East Gordon had been served with a 1" service line previously. This improved pressure flows and fire protection in the area.
- A sewer main replacement project on North English Avenue was completed in the late summer months of 2021. This project was the third and final phase on North English Avenue. Approximately 500' of 8" PVC main and one manhole were installed.
- A second sewer main project was completed on South Jefferson Avenue. During routine inspection of the main, major failures including missing pipe sections were discovered. Approximately 250' of 15" clay main was replaced with 15" PVC.
- The new EPA mandated Risk and Resilience Assessment was completed and submitted, along with the Emergency Operation Plan in June of 2021.
- North Street pump station renovations were started. MMU selected the engineering firm Burns & McDonnell for the design/build project.
- Inspection and cleaning of the sewer mains continues throughout the collection system. Water from a high-pressure sewer cleaner was used to clean over nine miles of sewer main. The sewer camera was used to videotape over ten miles of sewer mains. These video inspections reveal areas that need to be repaired, totally replaced or reconditioned, as well as identifying other potential problems in the collection system. There were ten new water services installed.
- MMU has approximately 100 miles of distribution mains, some of which are over 100 years old. Last year, we had a total of 11 main failures in the distribution system and 6 on the transmission line. We have a very well-maintained distribution system and have demonstrated that we can endure droughts and maintain water for major fires without having to curtail consumption.

IT & Broadband

This department was split off from Administrative Services into its own department in 2019. It includes the computer group, which handles technical support for internal needs and for internet customers, as well as the fiber group, which takes care of installing and maintaining our fiber optic system.

Miscellaneous:

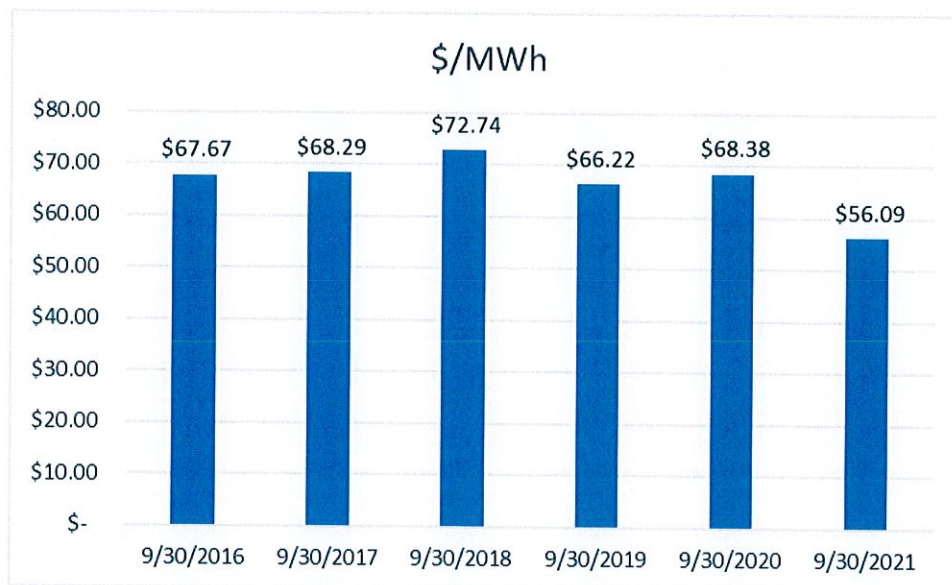
- Added approximately 270 internet customers.
- Completed construction in Lakeview Mobile Home Park.
- Continued construction of 2019 USDA broadband grant areas. Completed Lark and Meyer Lake areas. Pulled aerial fiber along most of Hwy 65 North. Conduit completed in Landmark and Ladder areas.
- Continuing paperwork for 2020 USDA broadband grant.
- Added 2 Fiber Technician positions.
- Worked on construction in several areas that are not part of either grant, including Lantern Ave, Hwy 240 and Hwy YY.

Administration

- In August of 2021 we started the implementation of new financial and utility billing software with Tyler Technologies. The financial software is estimated to go live in February of 2022 and the utility billing software will be live in June of 2022.
- A new drive-thru drawer and audio system were installed at the business office building in January of 2021.
- The business office was updated with new siding along with new garage doors. The outside exterior was also painted in August of 2021.
- Worked with Toth and Associates in creating time-of-use rates for all residential and commercial customers. MMU hopes to have these rates prepared for approval by the end of 2022.

Wholesale Energy

MoPEP wholesale energy in fiscal year 2020/2021 averaged approximately \$75.94/mw. Compared to fiscal year 2019/2020, wholesale energy was up approximately \$7.94/mw. The increase in wholesale energy was due to extremely high market prices during Winter Storm Uri. MMU was able to offset the increase in market prices with its local generation. Market revenue from MMU generation in February 2021 was \$2,744,709 which covered the \$1,637,184 increase in market power for the month. This resulted in an all-in cost of \$56.09/mw for the year.



Forecasting wholesale energy costs has become more complicated with the transition from coal to natural gas and renewables. Events like Winter Storm Uri can have a tremendous impact on wholesale energy markets. Maintaining our local generation resources is as important now as ever, and ironically, these resources are capable of running on diesel fuel.

MoPEP implemented a change in wholesale rate design in June 2021 to more accurately reflect market pricing. Forecast all-in energy pricing from June 2021 to May 2022 is expected to be \$61.57/mw. This does not include local transmission which will add approximately \$3.50/mw.

Net Metering

In 2003, MMU adopted net metering in compliance with the Consumer Clean Energy Act. For fiscal year 2021 MMU reported a total of 19 net metering customers with a total KW capacity of 245 KW. During fiscal year 2021 those net metering customers produced 216,600 kWh of which 41,558 kWh was fed back to the electric grid.

HR/Personnel

In fiscal year 2021, a total of 4 people were hired. All were hired to fill vacancies created by departing or transferring personnel. Two additional Fiber Optic Technician positions were created to support growth in MMU's IT & Broadband department. These individuals were hired (transferred) from within; resulting in vacancies for the department they previously worked within. During the year:

- Three people were hired for Underground Facilities (General Maintenance/Meter Reader) – two to replace transferring personnel and one to replace a departing employee; and
- One person was hired for Electric Distribution (Apprentice Lineman) to replace a departing employee.

During the year, organizational structure was reviewed and 3 vacant positions were eliminated (Two General Maintenance positions in Underground Facilities and the position of Environmental Services Director). At year's end, we have 7 vacancies created by personnel who have departed or retired. Four of these vacancies will remain unfilled indefinitely.

Since the start of the COVID-19 pandemic, MMU management and staff have worked diligently to ensure COVID-19 does not impact the critical services that MMU provides to the community. Additionally, MMU has taken steps to work with customers throughout what has been a very challenging year for everyone. In fiscal year 2020, MMU experienced ninety (90) total instances of COVID-19 related leave (excluding vaccine-related absences).

The information and statistics above are intended to give you a feel for what was accomplished this last year, but these statistics do not begin to convey the importance of the utility services provided to the citizens of Marshall by the citizens of Marshall. This local ownership yields many hometown advantages, not the least of which is having the business office right here in town and having decisions made by citizen owners.

Jeff Bergstrom
General Manager



JB/jm

TABLE A
Free Services
Fiscal Year 2020/2021

WATER:

Fire Hydrant Maintenance	\$	9,921
Depreciation of Fire Hydrants	\$	6,762
Labor and Material Donated	\$	4,705
Utilities Donated to City	\$	<u>45,203</u>
	\$	66,591

ELECTRIC:

Street Lighting Energy	\$	54,288
Street Lighting Maintenance	\$	6,383
Depreciation of Street Lighting	\$	33,916
Labor and Material Donated	\$	14,189
Marshall-Saline Development Corp.	\$	30,000
Utilities Donated to City	\$	<u>117,153</u>
	\$	255,929

WASTEWATER:

Labor and Material Donated	\$	610
Utilities Donated to City	\$	<u>10,281</u>
	\$	10,891

INTERNET:

Labor and Material Donated	\$	8,770
Utilities Donated to City	\$	<u>10,835</u>
	\$	19,605

TRASH:

Billing Services Donated	\$	65,156
--------------------------	----	--------

TOTAL	\$	418,172
-------	----	----------------

Payments in Lieu of Taxes

Water Transfers to City General Fund	\$	205,316
Electric Transfers to City General Fund	\$	<u>1,638,445</u>
	\$	1,843,758

TABLE B

Operating Statistics

	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Average # Elec. Customers	5,957	5,934	5,919	5,935	5,949
Average # Water Customers	4,974	4,980	4,984	4,998	5,025
Average # Internet Customers	2,131	2,403	2,691	2,971	3,266
Average Residential Bill (monthly)					
Water	\$30.45	\$31.03	\$30.79	\$32.02	\$31.82
Electric	\$95.72	\$105.05	\$101.22	\$101.68	\$94.05
Wastewater	\$37.31	\$37.25	\$37.23	\$37.18	\$37.13
Uncollectable (Bad Debts)	\$69,528	\$79,395	\$66,058	\$86,943	\$83,053
Customers Assisted	500	474	434	536	677
MVCAA	\$59,634	\$66,072	\$62,016	\$67,866	\$94,588
Other*	0	0	0	\$30,087	\$17,735
Peak Day Water (on production)	6/13	8/14	7/20	10/14	10/19
(1,000,000 gal.)	4.65	4.7	4.7	4.09	4.42
Water Sold (1,000,000 gal.)					
Residential	211	214	201	205	204
Commercial	64	72	54	56	59
Small General	42	44	40	37	43
Large General	58	54	50	59	63
Industrial	201	201	215	216	229
Wholesale	231	227	220	223	228
TOTAL	807	812	780	796	826
Total Annual Water from Wells	886	885	869	870	909
(1,000,000 gal.)					
Water % Losses	8.92	8.25	10.24	8.50	9.13
Tons Waste Lime (land applied)	7,693	7,326	0	0	44
# Acres	3,847	3,240	0	0	44

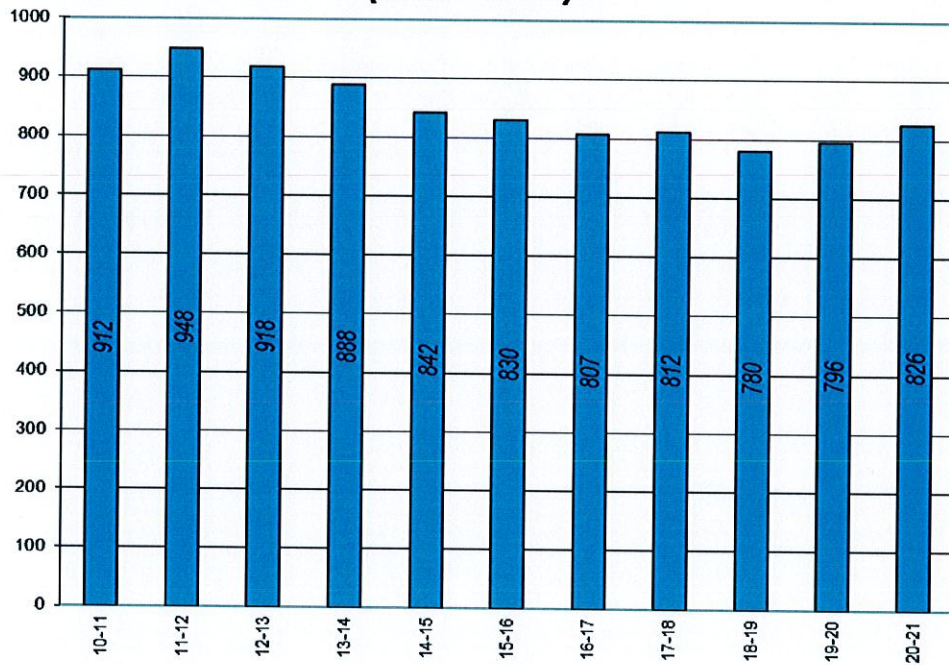
*Includes churches and Salvation Army.

TABLE B - Operating Statistics (cont.)

	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Peak Day Wastewater	4/30	3/20	5/25	3/23	6/30
(1,000,000 gal.)	18.88	13.53	10.31	7.88	11.00
Total Annual Wastewater	861	759	1,002	1,002	1,113
(1,000,000 gal.)					
Tons Wastewater Sludge	284	362	319	420	350
# Acres	277	726	820	710	466
Golf Course Irrigation Water					
(1,000,000 gal.)					
Potable	12,939	20,559	5,925	6,412	6,687
Peak Load KW	37,200	38,200	36,800	35,730	37,781
Date	7/20	7/12	7/19	8/25	8/11
MWH sold					
General Lighting	100	118	125	114	125
Residential	46,684	51,929	49,848	50,051	50,053
Commercial	13,068	14,085	13,767	13,832	12,982
Small General	17,911	17,543	18,097	17,014	18,263
Large General	24,880	25,373	25,439	24,914	25,526
Industrial	65,443	65,831	64,004	63,191	65,276
Interruptible	57	80	81	78	65
Area Light	525	450	276	283	114
TOTAL	168,668	175,409	171,637	169,477	172,404
Total MWH Purchased	176,710	180,581	179,064	174,416	179,030
Total MWH Generated *	121	521	3,695	1,141	11,840
% Losses	4.55	2.87	2.08	2.18	3.71
Natural Gas Burned (MCF)	2,715	7,654	80,761	16,685	144,803
#2 Fuel Oil Burned (gal)	2,040	3,050	51,953	2,855	263,088
Paper Sold (tons)	659	583	237	194	172
Cardboard Sold (tons)	2,324	3,086	3,558	3,804	2,706

* Beginning in June 2006, all energy generated is sold to MoPEP.

WATER SALES (MIL GAL)



ELECTRIC SALES (MWH)

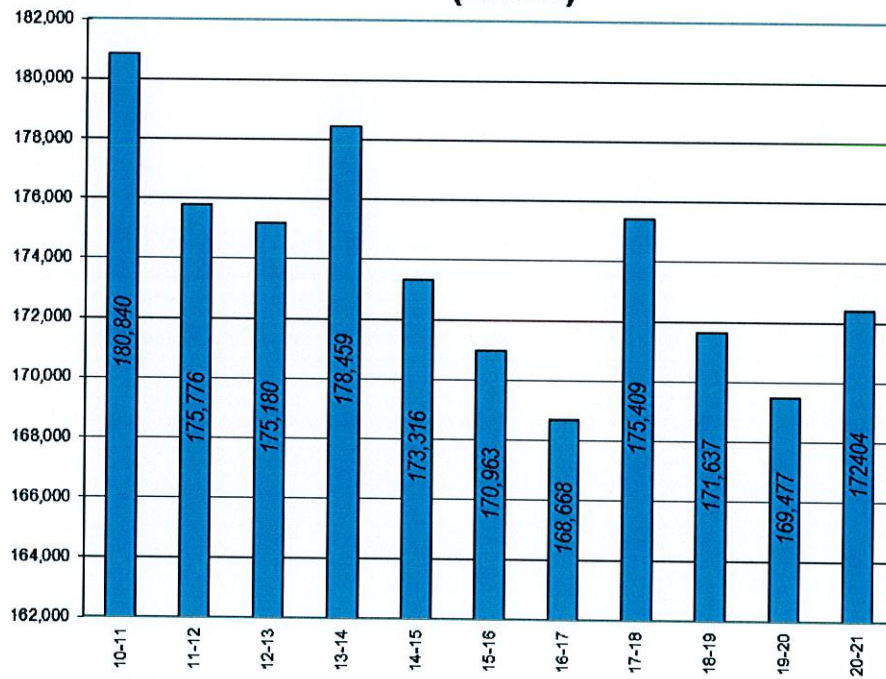


TABLE C

Cash Transaction Report
Fiscal Year 2020/2021

	<u>WATER</u>	<u>ELECTRIC</u>	<u>SEWER</u>	<u>INTERNET</u>	<u>GAS</u>	<u>TOTAL</u>
Fund Balance (10/1/20) *	\$ 2,056,098	\$ 22,175,373	\$ 2,997,172	\$ 1,040,255	\$ 3,237,528	\$ 31,506,426
Revenues	\$ 4,393,505	\$ 19,050,128	\$ 2,962,784	\$ 1,582,514	\$ 192,778	\$ 28,181,709
Disbursements	\$ 3,272,013	\$ 22,747,391	\$ 2,948,177	\$ 1,488,570	\$ 68,227	\$ 30,524,378
Net Transfers	\$ (294,984)	\$ 765,524	\$ (350,540)	\$ (120,000)	\$ -	\$ -
Fund Balance (9/30/21) *	\$ 2,882,606	\$ 19,243,634	\$ 2,661,239	\$ 1,014,199	\$ 3,362,079	\$ 29,163,757
Investments (9/30/21)	\$ -	\$ 14,996,840	\$ 245,000	\$ -	\$ -	\$ 15,241,840

* Includes Investments

TABLE D

Water and Wastewater Debt
(Subject to interest rate change semi-annually)

Estimated payments due for year ending:

Principal & Interest	Water	Wastewater
9/30/2022	\$ 295,551	\$ 351,213
9/30/2023	\$ 295,551	\$ 351,213

E-1

Cash and Investments
9/30/2021

	<u>TOTAL</u>	<u>CASH</u>	INVESTMENTS (At cost)
WATER			
Operating	1,045,341	1,045,341	-
Water Reserve	1,337,265	1,337,265	-
Insurance Reserve	500,000	500,000	-
	<u>2,882,606</u>	<u>2,882,606</u>	<u>-</u>
ELECTRIC			
Operating	3,007,479	3,007,479	-
Consumer Deposits	624,757	624,757	-
Insurance Reserve	5,001,567	2,578	4,998,989
Equipment Reserve	10,282,717	284,866	9,997,851
Genset Reserves	327,114	327,114	-
	<u>19,243,634</u>	<u>4,246,794</u>	<u>14,996,840</u>
WASTEWATER			
Operating	13,420	13,420	-
Inflow & Infiltration	1,152,742	907,742	245,000
Insurance Reserve	500,000	500,000	-
Main Replacement	846,993	846,993	-
Equipment Reserve	148,084	148,084	-
	<u>2,661,239</u>	<u>2,416,239</u>	<u>245,000</u>
INTERNET			
Operating	1,014,199	1,014,199	-
NATURAL GAS			
Operating Equipment Fund	3,356,623	3,356,623	-
	5,456	5,456	-
	<u>3,362,079</u>	<u>3,362,079</u>	<u>-</u>
	\$ 29,163,757	\$ 13,921,917	\$ 15,241,840

TABLE E-2
(Detail of Table E-1)

Investments
9/30/2021

	<u>COST</u>	<u>FACE VALUE</u>	<u>% YIELD</u>
ELECTRIC (Wood & Huston)			
Treasury Bill Maturing 1/13/2022	\$ 2,999,242	\$ 3,000,000	0.091%
Treasury Bill Maturing 11/4/2021	\$ 4,999,115	\$ 5,000,000	0.035%
Treasury Bill Maturing 12/9/2021	\$ 4,998,989	\$ 5,000,000	0.041%
Treasury Bill Maturing 1/27/2022	\$ 1,999,494	\$ 2,000,000	0.086%
	<u>\$ 14,996,840</u>	<u>\$ 15,000,000</u>	
WASTEWATER (Community Bank)			
Certificate of Deposit 12/17/2021	\$ 245,000	\$ 245,000	0.20%
	<u><u>\$ 15,241,840</u></u>	<u><u>\$ 15,245,000</u></u>	

RECYCLING

9/30/2021

		<u>TOTAL</u>
REVENUE		
Cardboard	\$	311,533
Plastic		8,531
Mixed Paper		2,017
Metal		656
Aluminum		1,310
Glass		403
		324,450
EXPENSES		
Supplies		11,459
Expenses		19,387
Labor		197,950
Utilities		15,050
Depreciation		27,066
		270,912
Net Income	\$	53,538