

MARSHALL MUNICIPAL UTILITIES
ANNUAL REPORT
2010/2011

TO: Board of Public Works
City Council

January 24, 2012

This annual report summarizes some of the key issues and many of the accomplishments and improvements to Marshall's publicly owned utility systems during the fiscal year ending September 30, 2011.

The top story for fiscal year 2010/2011 for MMU was new EPA regulatory compliance requirements that will impact our customers' water, wastewater and electric rates. Many new EPA air and water laws are being finalized. This past year we were able to put real dollar costs to the first of many regulations in our future.

The Marshall Wastewater Treatment Plant received their renewed five-year discharge permit on November 8, 2011. MMU staff, along with our consultants, negotiated the content of this permit with MoDNR for many months. One major change to this permit mandates that 100% of all wastewater be disinfected before the plant can discharge the effluent water back into Salt Fork Creek. MMU is doing a \$5-\$6 million upgrade to the wastewater treatment plant starting in 2012. Between \$1.2 and \$1.5 million of this cost will be to add disinfection. Additionally, after the disinfection equipment is in operation, more electricity will be consumed.

Another regulation that was finalized required MMU to add oxidation catalyst/silencers to the Power Plant's two large diesel engines (Units #10 and #11). The catalyst was purchased, installed and tested last fall at a cost of \$300,000. Retesting is mandated every three years at a cost of approximately \$10,000. The benefit of this new equipment is to reduce formaldehyde. Total formaldehyde emission without the new equipment was low due to the engines' low operating hours each year. This law may make sense in high population areas where the units run 3-4 thousand hour per year, but in Marshall where we run 100-200 hours per year, it doesn't.

These are just two examples of how EPA regulations impact our rates. MMU, along with our State and Federal user groups, are working to minimize regulation impact, but there will be many, many more rules like these in our near future.

The second top story was approximately 6,500 feet of sewer main found to be in poor condition was reconditioned with cured-in-place pipe (CIPP). This type of trenchless main replacement consists of a fabric liner that is installed inside the old main and is cured with hot water or steam. This CIPP should last for at least 50 years and possibly up to 100 years. This was the fourth year that repairs were made to our sewer mains using the CIPP procedure. In January 2009, the MMU Board authorized collecting a \$5/customer fee each month to address inflow and infiltration (I&I) problems which require MMU to treat rainwater getting into our sewer through damaged piping.

This fund has been building since 2009 and this fall the Board authorized using these funds to expand our CIPP program for the next few years.

The third top story was that our Electric Distribution crews completed a more than twenty-year conversion project which converted the final 4.16 kV distribution system to 13.2 kV. We started upgrading the voltages on our distribution system to 13.2 kV after the installation of the North Street Substation back in the early 1960's. The final conversion in 2011 was in the central part of town which will make moving power more efficient and improve reliability.

These top stories remind us that change is inevitable and that progress, while optional, is very necessary. 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.

The following bulleted points provide a glimpse of some of the accomplishments and operations during this past year.

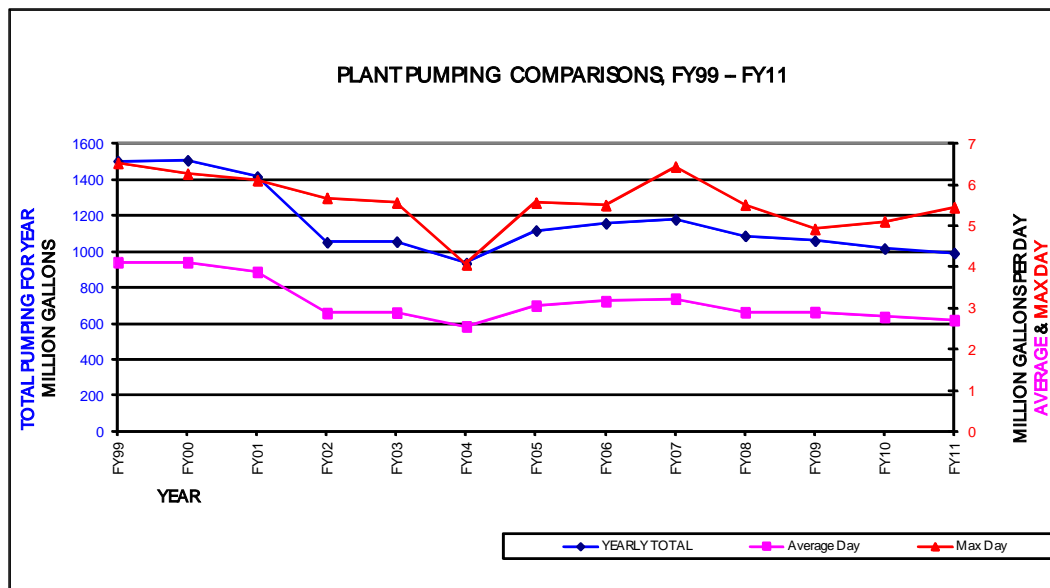
Electric Distribution

- * As part of the voltage conversion project, B Substation was rebuilt and converted to 13.2 kV. The 13.2 kV-4.16 kV transformer was removed, old oil filled breakers were replaced with new vacuum breakers, electronic controls and added to our SCADA system.
- * Electric Distribution crews (electricians) completed the relay replacement project at Southeast Substation. The original electromechanical relays were replaced with new SEL microprocessor relays and a buss differential relay was added. The new relays will provide more information on our SCADA system and improve system coordination. The addition of the buss differential relay lowered the arc hazard rating making the gear safer to work on, and reduced the amount of damage if a problem would occur. Buss differential relaying was also added to the 161 kV buss which will keep problems with that station from causing a system wide outage and limit damage.
- * Electric Distribution crews finished replacing overhead electric lines in the walkway easements located in the Leawood, Hillside and Plaza area with underground. This replaced approximately 3,000 feet of primary and secondary lines and 67 house services with underground. In June of 2011, crews started replacing the lines in the Rosehill, Mission, Black and Highlander areas west of Odell. Most of the conduit has been installed and when completed, we will have replaced approximately 6,200 feet of primary and secondary lines and 137 house services with underground on both projects.
- * Replaced/Installed 62 utility poles

- * Repaired/replaced approximately 400 street and area lights
- * Contractor installed a sprayed on polyethylene roof coating on the Miami #2 control building to fix leaks and increase insulation value.
- * Replaced underground cable and primary metering to Cargill
- * Completed distribution rebuilds in the 900 block of W. Morgan and on Navajo south of Vest.
- * Installed new lighting on Osage Field at Indian Foothills Park.
- * Installed street lights at Atchison and YY.

Water Treatment Plant

- * The plant produced 992,526,000 gallons of water, down approximately 2.5% from the 1,017,521,000 gallons produced in fy10.



- * We published and mailed the annual consumer confidence report for 2010.
- * Major projects included the annual well maintenance; replacement of filter media in filters 4 and 5, and cleaning filters 1, 2, and 3.
- * We started a major project that includes the replacement of the waste lime handling facilities. This includes slip-lining the 30” drain line from the plant to the lime settling basin (done), installing dechlorination equipment (done), replacing the lime settling basin (in progress), replacing the sludge pumps, baffling the lagoons, and eliminating the short-circuiting in the lagoons.

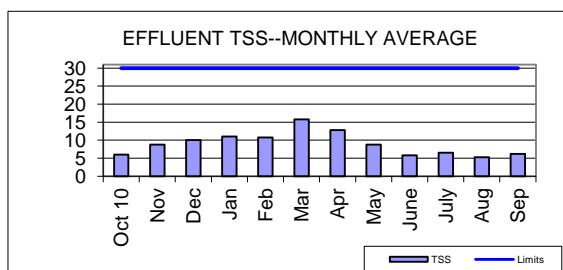
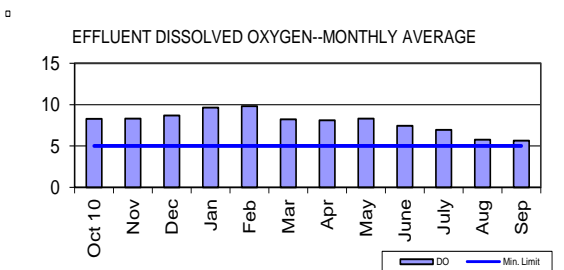
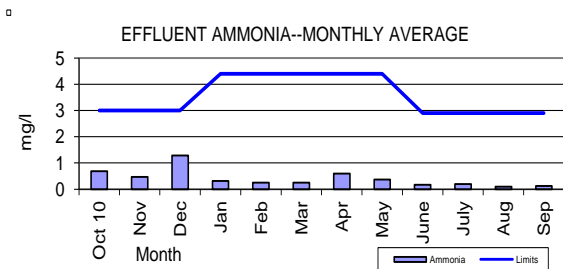
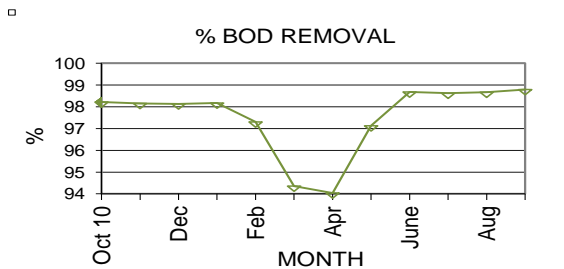
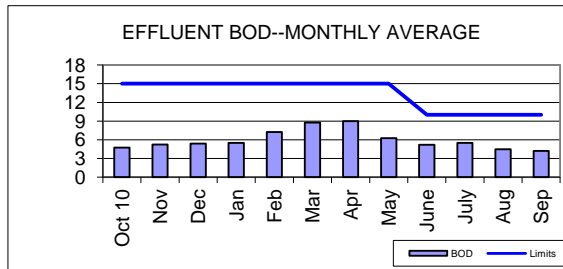
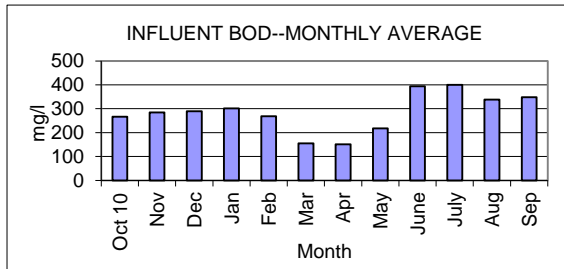
Wastewater Treatment Plant

- * The plant treated 882,000,000 gallons of wastewater, an approximate 10.5% decrease from the 986,000,000 gallons for FY10. We applied roughly 894 tons of sludge to local farmland.
- * The wastewater treatment plant’s five-year discharge permit was reissued on November 8. The main difference in this permit from previous ones is the requirement to disinfect all of the effluent during the recreation season (April 1 to October 31). We spent a lot of time on

back and forth communications with DNR on the golf course irrigation system. DNR staff proposed restrictions on the golf course irrigation that would have made it impracticable to use treated, disinfected effluent on the golf course. After explaining the history of the project and emphasizing that irrigation was not for treatment purposes, we were able to get DNR to remove the proposed restrictions.

- * We have started the project to install disinfection on all of the effluent using ultraviolet light. At the same time, we also are preparing plans to replace the aging headworks, grit removal, and pumping from the headworks to the aeration basins and flow equalization basin.
- * One major project was replacement of rollers and bearings on one of the two belt filter presses. Another replaced the siding and roof on the office/lab as well as the raw sewage building and the aeration basin pump station. We also refurbished the return activated sludge pump building: painted everything inside, installed a railing around the pump access opening on the ground floor, replaced the variable frequency drives, and made repairs to #3 pump.
- * Following are charts showing the wastewater plant's effluent sampling results compared against the effluent limits set by DNR for FY11.

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



Environmental

- * Conducted annual training on spill prevention, control, and countermeasures (SPCC) plan for the water, wastewater, power plant, and electric distribution staffs.
- * Filed the annual toxic chemical release inventory (TRI) report with EPA and the annual Tier II reports with the Missouri Emergency Response Commission, the Saline and Pettis County LEPCs, and local fire departments.

Electric Production

- * Some of our greatest challenges in 2011 have been in comprehending what will be necessary to comply with all of the different EPA regulatory issues.
 - The first issue we have addressed is the RICE NESHAP Rule, which involves reducing HAPS from internal combustion engines. This affects all of our diesel engines which can generate electricity. We decided to update Units #10 and #11 this year to comply with this new EPA mandate. We have not made a decision on our smaller diesel units yet. We purchased and installed new vent mist eliminators to capture crankcase emissions. We also bid out and purchased new mufflers with catalytic converter oxidation catalyst installed from Maxim Group. The RICE NESHAP Rule requires the reduction of CO by 70%. We received the new mufflers in October and the major installation is complete except for cosmetic details. Preliminary emissions testing has been scheduled for December to test for compliance.
 - There are new Boiler MACT rules out which affect Units #4 and #5. These rules are currently under a Notice of Reconsideration of the final MACT Rule for public comment. A large percentage of coal fires boilers in this country will not be able to meet these new standards without adding new pollution control equipment. The cost to retrofit our boilers would be very expensive.
 - Coal Combustion Residuals (CCR), also known as fly ash, is another regulatory issue. We currently dispose of our ash as a beneficial use CCB at the coal mine. If the ash were to get reclassified under the new regulations as a coal combustion waste (CCW), it will present an issue for us. Knight Hawk Coal Company does not plan to pursue a waste permit from IDNR. We would need to look for other alternatives to dispose of our ash.
- * This was also the first year we were required to report greenhouse gases under new EPA regulations. Aquaterra Environmental Solutions submitted our first report.
- * We also hired Lutz, Daily & Brain (LD&B) to conduct a repowering study which evaluated alternatives to repower Units #4 and #5 using new combustion turbine generators and heat recovery steam generators (HRSGs). We have several infrastructures already in place which could benefit both us and the MoPEP Pool. This information was submitted to MoPEP, which will be reviewed and evaluated in the future.
- * In 2011, we started looking at the possibility of removing our older Units #1, #2 and #3. Units #1 and #2 have been disabled for many years. Unit #3 saw its last operation in 2003. In order to accomplish this, we would need to conduct asbestos abatement projects on all of the equipment. We have been working on specifications, and evaluating the pros and cons of performing this project.

- * We are also evaluating the roof areas and old equipment on top of the roofs above units #1 and #2 for removal. All of the roof areas on the Power Plant will need replacement within a few years.
- * Another accomplishment in 2011 was the retrofitting of our Hurst heating boiler with a natural gas burner. This project was started in October 2010 and was completed in February 2011. We operated the boiler on natural gas the remainder of the winter and it performed as expected. The addition of this gas burner gives us reliability and flexibility during the winter months to provide heating of the Power Plant and surrounding buildings if paper pellets are not available. The installation of the new gas burner triggered a review of our air operating permit by DNR. The agency reviewed and revised our entire permit. In many ways it was not a bad thing because there were some discrepancies which were clarified and corrected, making the overall language of the permit easier to understand.
- * In 2011, we also looked at the Power Plant lighting. We replaced approximately 140 fixtures that contained 200-watt incandescent lamps with 42-watt compact fluorescents. The compact fluorescents provide us the same amount of lighting but at a lot less cost to operate. This should save us several thousand dollars a year in operating costs.
- * In 2011, Municipal Services conducted a household hazardous waste day at the Recycling Center. The largest part of the collection was paint and chemicals. Municipal Services counted 192 vehicles that came through the facility. We had three employees that helped with the event.
- * In 2011, we also received a grant from the Solid Waste Management District to help fund a portion of the purchase of a new skid steer loaders for the Recycling Center. Our old skid steer was a 2001 model with 4500 hours, which will be transferred to the Water Treatment Plant. A new Gehl was ordered from Riggins with a delivery scheduled for December.
- * In 2011, the overall prices for recyclables increased from 2010. We saw prices range from \$180/ton for cardboard and \$120/ton for mixed paper. Other than shredding for confidential customers, all of the paper products were baled instead of making into paper pellets because of the higher prices. On the maintenance side, we had to replace the main shaft shredder tube and replace the baler feed belt this year.

Underground Facilities

- * Installed over 1700 feet of water main this past year. The six-inch main on College from Odell to Lafayette was replaced. The main was in poor condition with many failures in the past years. The four-inch water main in an area of W. Ohio and N. Lafayette was replaced with six-inch main. The mains were relocated to ease construction of a sewer main replacement project. Pressure and fire flows were improved in this area. There were also four new water services installed, 25 main breaks in the distribution system and 16 main breaks on the transmission line between the Water Treatment Plant near Malta Bend and the Power Plant.
- * Improvements and maintenance of the wastewater collection system is an ongoing project. The sewer main project on N. Lafayette was started. The old six-inch clay sewer main was replaced with eight-inch PVC pipe. New precast manholes replaced the old brick manholes.
- * Inspection and cleaning of the sewer mains continues throughout the collection system. Water from a high pressure sewer cleaner was used to clean over 13 miles of sewer main.

The sewer camera was used to inspect and video over 21 miles of sewer main. These inspections reveal areas that need to be repaired, totally replaced, or reconditioned, or other potential problems in the mains. MMU personnel have also made 52 sewer main repairs this last year.

- * The rebuild of the pumps at Southwest Lift Station was completed last year. There are three high service pumps powered by 125 horsepower motors. The pumps were rebuilt with new bearings and seals. The pumps were in good condition but were over 20 years old. Rebuilding the pumps may extend the life of the pumps another 20 years.

In fiscal year 2011, we hired three people to fill vacancies created by departing personnel. During the year, two people were hired for Environmental Services (one Water Treatment Plant Operator and one Wastewater Treatment Plant Operator/Maintenance), and one was hired for Electric Distribution (General Maintenance/Groundman). A Safety & Training Specialist was also hired. At year's end, we have ten vacancies created by personnel who have departed or retired. These will remain unfilled indefinitely.

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.

Kyle D. Gibbs
General Manager

KDG/dw

TABLE A

Free Services
Fiscal Year 2010/11

WATER:

Fire Hydrant Maintenance	\$ 6,750
Depreciation of Fire Hydrants	\$ 5,614
Labor and Material Donated	<u>\$ 14,605</u>
	\$ 26,969

ELECTRIC:

Street Lighting Energy	\$ 145,551
Street Lighting Maintenance	\$ 30,016
Depreciation of Street Lighting	\$ 19,563
Labor and Material Donated	\$ 44,858
Marshall-Saline Development Corp.	<u>\$ 0</u>
	\$ 239,988

TOTAL \$ 266,957

Payments in Lieu of Taxes

Water Transfers to City General Fund	\$ 137,689
Electric Transfers to City General Fund	<u>\$ 1,718,618</u>
	\$ 1,856,307

TABLE B

Operating Statistics

	<u>2006-07</u>	<u>2007-08</u>	<u>2008-09</u>	<u>2009-10</u>	<u>2010-2011</u>
Average # Elec. Customers	5,907	5,890	5,882	5,919	5,920
Average # Water Customers	4,938	4,903	4,940	4,947	4,942
Average # Internet Customers	79	114	173	263	354
Average Residential Bill (monthly)					
Water	\$20.44	\$20.58	\$22.03	\$22.65	\$23.85
Electric	\$75.60	\$78.41	\$87.58	\$93.69	\$95.53
Wastewater	\$24.26	\$23.38	\$26.83	\$26.91	\$28.79
Uncollectables (Bad Debts)	\$42,216	\$53,919	\$61,155	\$72,985	\$64,888
Customers Assisted	561	597	480	946	520
MVCAA	\$73,653	\$81,885	\$143,022	\$119,008	\$55,760
CAUSE	0	0	0	\$484	0
Other	\$2,510 *	\$1,161 *	\$2,952 *	\$1,232 *	\$9,665 *
Peak Day Water (on production) (1,000,000 gal.)	8/15 6.44	10/1 5.52	2/16 4.93	8/10 5.12	7/29 5.55
Water Sold (1,000,000 gal.)					
Residential	251	237	235	238	235
Commercial	49	48	52	53	75
Small General	54	45	45	48	47
Large General	77	65	82	82	67
Industrial	328	314	296	266	256
Wholesale	<u>224</u>	<u>218</u>	<u>215</u>	<u>224</u>	<u>232</u>
TOTAL	983	927	925	911	912
Total Annual Water from Wells (1,000,000 gal.)	1,046	990	1,012	969	993
Water % Losses	6.0	6.4	8.6	6.0	8.2
Tons Waste Lime (Land Applied)	3,900	1,200	0	1,300	1,400
# Acres	950	690	0	500	690

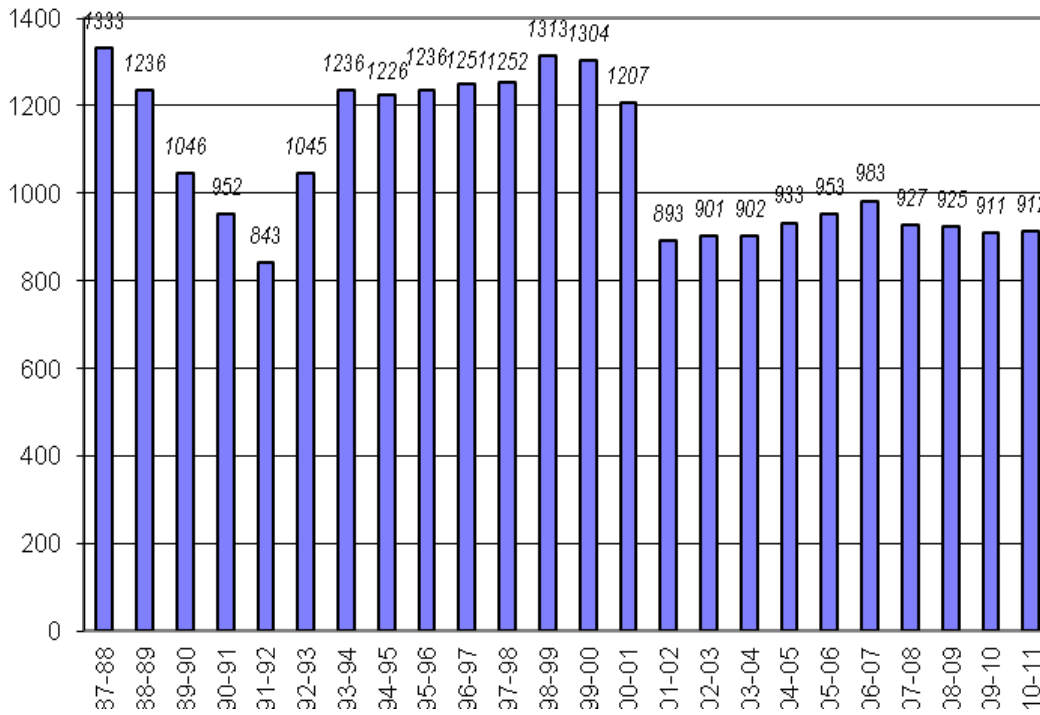
* Includes churches and Salvation Army.

TABLE B - Operating Statistics (cont.)

	<u>2006-07</u>	<u>2007-08</u>	<u>2008-09</u>	<u>2009-10</u>	<u>2010-2011</u>
Peak Day Wastewater (1,000,000 gal.)	6/29 12.0	9/13 14.3	4/30 12.3	5/13 15.2	12/24 11.4
Total Annual Wastewater (1,000,000 gal.)	823	969	962	1,235	878
Tons Wastewater Sludge (Land Applied)	699	644	869	1,239	894
Acres	850	1,200	500	620	500
Golf Course Irrigation Water (1,000,000 gal.)					
Effluent	27.5	12.4	15.3	6.4	2.4
Potable	.04	.02	.3	.03	0
Peak Load KW Date	41,526 8/15	37,110 8/5	39,433 6/23	40,062 8/12	41,944 8/2
MWH sold					
General Lighting	163	177	169	180	143
Residential	49,177	47,584	46,791	51,771	52,262
Commercial	12,208	11,729	12,793	13,792	12,500
Small General	17,629	17,097	19,080	21,426	20,250
Large General	31,605	27,380	26,355	25,271	26,732
Industrial	68,556	69,432	68,384	69,349	68,897
Interruptible	54	119	116	77	56
TOTAL	179,392	173,518	173,688	181,866	180,840
Total MWH Purchased	189,650	182,365	182,704	191,927	190,146
Total MWH Generated *	97,109	92,415	53,758	26,656	22,547
% Losses	5.41	4.85	4.93	5.24	4.89
Natural Gas Burned (MCF)	72,973	59,090	32,442	19,420	16,882
#2 Fuel Oil Burned (gal.)	14,202	10,162	3,504	4,874	6,935
Coal Burned (tons)	60,708	55,850	31,712	15,962	14,230
Paper Pellets Burned (tons)	139	45	0	544	279
Paper and Cardboard Sold (tons)	903	774	428	485	678

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

WATER SALES (MIL GAL)



ELECTRIC SALES (MWH)

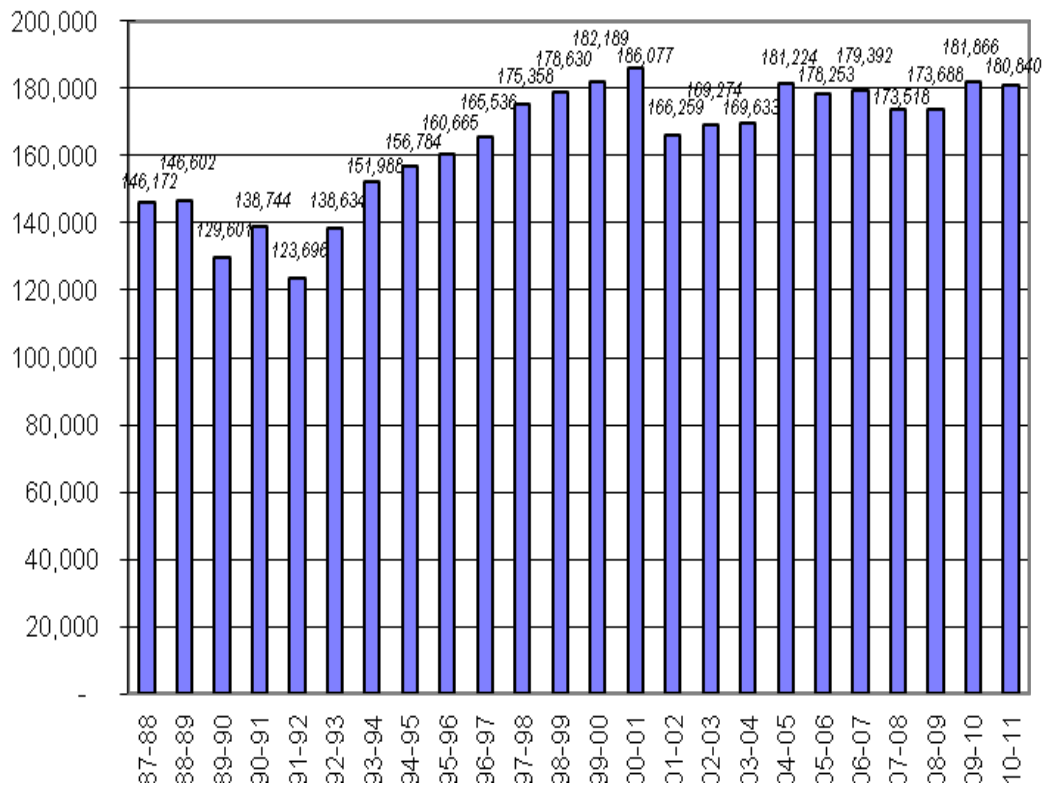


TABLE C

Cash Transaction Report
Fiscal Year 2010/11

	<u>WATER</u>	<u>ELECTRIC</u>	<u>SEWER</u>	<u>INTERNET</u>	<u>GAS</u>	<u>TOTAL</u>
Fund Balance (10/1/11)*	\$1,224,401	\$17,811,916	\$1,459,561	\$ 4,031	\$1,714,565	\$22,214,474
Revenues	\$2,964,268	\$20,232,412	\$2,689,640	\$174,666	\$ 187,716	\$26,248,702
Disbursements	\$2,999,018	\$17,443,400	\$2,623,246	\$332,589	\$ 52,598	\$23,450,851
Net Transfers		(\$ 150,000)		\$150,000		
Fund Balance (9/30/11)*	\$1,189,651	\$20,450,928	\$1,525,955	(\$ 3,892)	\$1,849,683	\$25,012,325
Investments (9/30/11)	\$ 750,000	\$16,893,021	\$1,244,696	0	\$1,599,686	\$20,487,403

* Includes Investments

TABLE D

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

Estimated payments due for year ending:

9/30/11 None

TABLE E-1

Cash and Investments

9/30/11

	<u>Total</u>	<u>Cash</u>	<u>Investments</u> <u>(at cost)</u>
WATER:			
Operating	\$ 131,613	\$ 131,613	0
Water Plant	\$ 606,082	\$ 356,082	\$ 250,000
Insurance Reserve	\$ 500,000	\$ 0	\$ 500,000
Equipment Reserve	\$ 0	\$ 0	\$ 0
	<u>\$ 1,237,695</u>	<u>\$ 487,695</u>	<u>\$ 750,000</u>
ELECTRIC:			
Operating	\$ 3,676,137	\$ 3,676,137	\$ 0
Consumer Deposits	\$ 430,303	\$ 30,500	\$ 399,803
Insurance Reserve	\$ 3,500,001	\$ 1,725	\$ 3,498,276
Equipment Reserve	<u>\$ 13,226,802</u>	<u>\$ 231,859</u>	<u>\$ 12,994,943</u>
	<u>\$ 20,833,243</u>	<u>\$ 3,940,221</u>	<u>\$ 16,893,022</u>
WASTEWATER:			
Operating	\$ 114,126	\$ 114,126	\$ 0
Inflow and Infiltration	\$ 768,000	\$ 23,152	\$ 744,848
Insurance Reserve	\$ 500,000	\$ 152	\$ 499,848
Main Replacement	\$ 91,713	\$ 91,713	\$ 0
Equipment Reserve	<u>\$ 158,548</u>	<u>\$ 158,548</u>	<u>\$ 0</u>
	<u>\$ 1,632,387</u>	<u>\$ 387,691</u>	<u>\$ 1,244,696</u>
INTERNET			
Operating	\$ 6,321	6,321	\$ 0
NATURAL GAS			
Operating	\$ 249,514	249,514	\$ 0
Equipment	<u>\$ 1,603,283</u>	<u>\$ 3,597</u>	<u>\$ 1,599,686</u>
	<u>\$ 1,852,797</u>	<u>\$ 253,111</u>	<u>\$ 1,599,686</u>

TABLE E-2
(Detail of Table E-1)
Investments 9/30/11

	<u>Cost</u>	<u>Face Value</u>	<u>% Yield</u>
WATER (Bank Midwest):			
CD – G.E. Cap 7/2/12	\$ 250,000	\$ 250,000	0.350
CD – Safra NY 2/6/12	\$ 250,000	\$ 250,000	0.250
CD – India NY 6/29/11	<u>\$ 250,000</u>	<u>\$ 250,000</u>	0.60
	\$ 750,000	\$ 750,000	
ELECTRIC (Wood & Huston):			
Treasury Bill Maturing 11/10/11	\$ 4,998,357	\$ 5,000,000	0.064
Treasury Bill Maturing 12/22/11	\$ 3,898,078	\$ 3,900,000	0.098
Treasury Bill Maturing 1/26/12	\$ 4,997,522	\$ 5,000,000	0.099
Treasury Bill Maturing 2/12/11	<u>\$ 2,999,064</u>	<u>\$ 3,000,000</u>	0.063
	\$ 16,893,021	\$16,900,000	
WASTEWATER (Community):			
CD – Community Bank 12/17/11	\$ 245,000	\$ 245,000	0.25
Treasury Bill Maturing 1/26/12	<u>\$ 999,697</u>	<u>\$ 1,000,000</u>	0.06
	\$ 1,244,697	\$ 1,245,000	
NATURAL GAS (Wood & Huston)			
Treasury Bill Maturing 3/1/12	\$ 1,599,686	\$ 1,600,000	0.04
	<u><u>\$ 20,487,404</u></u>	<u><u>\$ 20,495,000</u></u>	

(Organization Chart)