MEMO

PEC
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

TO: City of Haysville

DATE: 2/10/12

PROJECT NO.: 35-92023-1263

PROJECT: Water Utilities

ATTENTION: Carol Neugent-Dir. of Gov. Services

FROM: Michael D. Kelsey, P.E.

REFERENCE: Meter Reading and Billing Procedures

COPIES TO: Randy Dorner-Dir of Public Works, JEH

Please advise immediately of any misconceptions or omissions you believe to be contained herein.

We have performed a review of the methods of meter reading and billing procedures currently used by the City. As part of this review, we have met with City Staff including the Public Works Director, Water Department Superintendent, and billing clerk along with other staff members to review equipment utilized in meter reading, methods for obtaining the meter reads along with the process of how this information is then conveyed to City Hall in order to prepare the final billings for the water customers.

Our main focus was to determine if there were adequate safe guards and quality control procedures in place to minimize issues with these reading and billing procedures. It should be noted that some of the initial items that we had previously discussed have already been researched and have been implemented or are in process of being implemented by City Staff.

Currently, the City performs meter reading using 3 different methods. These methods include radio read meters, the use of electronic meter reading equipment (through use of a touch pad on the meter lid), or direct read meters. Both the electronic meter reading and direct reading of meters allow for a higher potential user error, because both methods rely on the meter reader to input by hand the meter reading into a handheld electronic storage device. The radio read meters reduce the potential for user error, since the meter number and the meter reading are input electronically and is automatic, which substantially reduces inputting errors. It was noted that the City plans to implement the use of radio read meters for all meters within the system within the next few years as part of the Capital Improvement Program. It is recommended to proceed with replacing the direct read meters with radio read meters as soon as practical.

Shown below are a list of items discussed and potential modifications that can be implemented to the process of meter reading and billing:

- Input the meter readers' initials on the handheld electronic storage device in order to track who performed the initial meter reading. **This has been implemented.**

- On meter re-reads, require that a different meter reader performs the re-read of any questionable initial meter reading. **This has been implemented.**

- Review procedures and policies for meter replacement. It would be recommended that replacement of meters should occur before the meter is 20 years old. Accuracy of meters within the system should be checked to determine if they are within allowable tolerances based on water flow rates. Currently, the American Water Works Association (AWWA) has criteria for the allowable accuracy of the meter being +/- 1.5% during normal flows (reference AWWA C708). We recommend that the AWWA requirements be adopted as policy for the criteria regarding the need for future meter replacement based on meter accuracy.**Currently being implemented.**

- A random sampling of meters should be tested annually to determine if the accuracy of the meters are within the AWWA guidelines. Testing should also be performed on an "as-needed" basis if meter readings are in question on individual meters. **Currently being researched**.

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- Water Department personnel currently perform flow tests on meters when the accuracy is questioned by the water customer. We would recommend to continue this method of testing, and have recommended in certain situations where accuracy continues to be an on-going issue, to have an independent 3rd party perform these tests. **Currently being implemented.**

- The handheld electronic storage device includes a tolerance for minimal or very large changes in the meter reading volumes, and the storage device will not accept the meter reading, where the meter reader can then create a "forced read" (the meter reader can override the set tolerances and force the storage device to accept the reading). It is recommended that this item be further researched to determine the actual tolerances pre-set in the storage device and determine if these pre-set limits need to be modified. **Currently being evaluated.**

- Determine on "forced read" meters, if these can be flagged to review the meter readings and determine if the water usage appears to be in an acceptable range, if there is a potential leak creating the out of tolerance reading, or if a re-read of the meter is needed. **Currently being researched.**

- It was recommended to set criteria on the billing report spreadsheet that determine if the billing software could "flag" excessively high or low meter readings. An example of this would be if a water customer uses 5,000 gallons per month, then the billing software could be set up to "flag" usages 50% lower (2,500 gallons/month) or 75% higher (8,750 gallons/month). The billing clerk has researched this, and this can be done. **This has been implemented.**

Typically, the primary concern with meter reading is the accuracy of the meter. With age and condition of the meter, normally the meters tend to slow down and register lower readings than the volume of water that is actually passing through the meter. Replacement of meters normally results in increased metered flows.

It should also be noted that even if individual monthly readings being low, that the meters are recording the total volume of water passing through the meter. Even if individual monthly meter readings are incorrect, that if the meter is accurate to within the criteria mentioned previously, that any subsequent readings should account for the difference in the previous readings. The water customer is ultimately paying for the total volume of the water that passes through the meter.

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ACCOUNT #/ NAME	CD	NUM	PRESENT DMD FACT	PREVIOUS DMD MULT	CONSUMPT DMD TOTAL	MULT	ACT. CONS	LMO CONS	LYR CONS	AVG CONS	DATE
	CW		2669	2640	29	100	2900	3300		15826	0208
	CW		4720	4719	1	100	100	200		13127	0208
	CW		1207	1159	48	100	4800	4900	6100	5944	0208
	CW		3527	3500	27	100	2700	3100	300	5711	0208
	CW		4567	4527	40	100	4000	4700		18296	0208
	CW		6258	6184	74	100	7400	8200	8500	16438	0208
	CW		2027	1991	36	100	3600	2800	3300	13177	0208
	CW		2268	2224	44	100	4400	3700	4700	5468	0208
	CW		1882	1844	38	100	3800	4800	5100	6694	0208
	CW		7947	7918	29	100	2900	3200	3200	5425	0208
	CW		1613	1556	57	100	5700	5900	6800	6394	0208
	CW		2023	1999	24	100	2400	3000	4200	5659	0208
	CW		4082	4044	38	100	3800	4000	5200	6958	0208
	CW		5783	5769	14	100	1400	1800	4800	2030	0208
	CW		6371	6320	51	100	5100	5700	6500	6766	0208
	CW		2515	2484	31	100	3100	3100	4100	3237	0208
	CW		5494	5474>	20	100	2000	1000	4100	1374	0208
	CW		14335	14292	43	100	4300	9900	2600	19369	0208
	CW		4545	4505	40	100	4000	4600	5500	4971	0208
	CW		14437	14392	45	100	4500	4100	6100	19481	0208
	CW		8675	8524>	151	100	15100	3700	5000	7932	0208
	CW		8590	8531	59	100	5900	6600	6900	13548	0208
	CW		7120	7075	45	100	4500	3900	6100	4546	0208
	CW		10877	10797	80	100	8000	15800	10200	11451	0208
	CW		10679	10570>	109	100	10900	4400	6300	7238	0208
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	CW		10144	10073	71	100	7100	6300	4900	15708	0208
	CW		1617	1211>	406	100	40600	200	1600	5276	0208
	CW		5195	5159	36	100	3600	3600	5900	4486	0208
	CW		4401	4348	53	100	5300	6100	6800	7192	0208
	CW		4115	4079	36	100	3600	3600	3100	3911	0208
	CW		5715	5674	41	100	4100	3200	4900	4215	0208
	CW		5815	5743	72	100	7200	7700	4600	8841	0208
	CW		3935	3900	35	100	3500	2300	6100	1897	0208
	CW		2776	2737	39	100	3900	4600	3200	3633	0208
EN	CW		2943	2916	27	100	2700	3500	4400	3524	0208
	CW		8751	8724	27	100	2700	7400	9300	6211	0208
	CW		534	521	13	100	1300	1800	1700	1554	0208
ST	CW		1903	1861	42	100	4200	5000	5600	5456	0208
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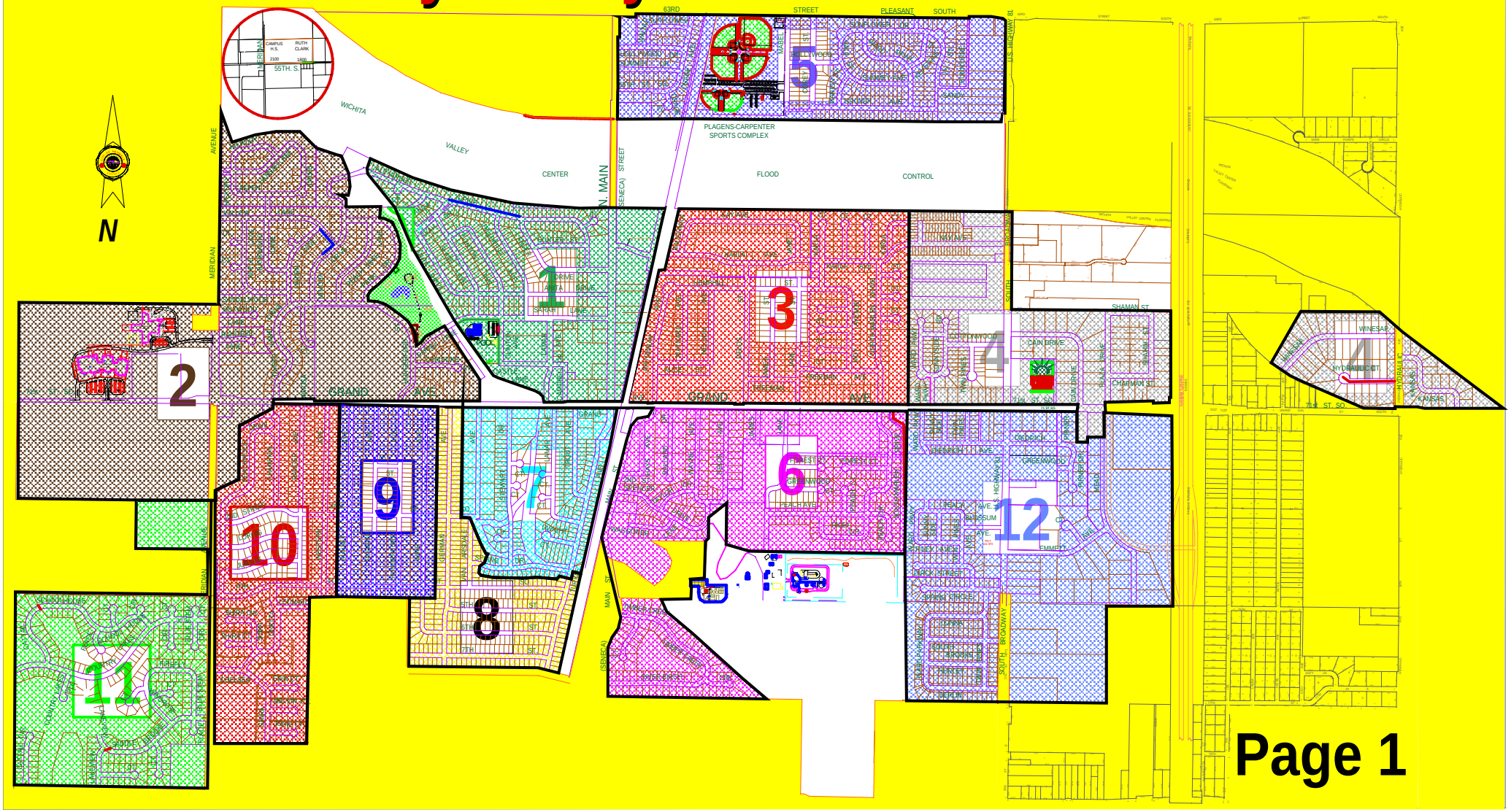
	CW		2525	2478	47	100	4700	4300	5200	5660	0208
	CW		4476	4434	42	100	4200	4600	4800	6658	0208
	CW		7400	7365	35	100	3500	4100	5300	5240	0208
	CW		618	581	37	100	3700	4100	6100	4439	0208
	CW		1652	1628	24	100	2400	2500	4300	4810	0208
	CW		1942	1909	33	100	3300	3500	6300	3851	0208
	CW		1733	1685	48	100	4800	5500	5600	6319	0208
	CW		1415	1376	39	100	3900	4900	6000	5808	0208
	CW		711	677	34	100	3400	2900	3000	2860	0208

City of Haysville Kansas

Water Meter Reading Books



Page 1

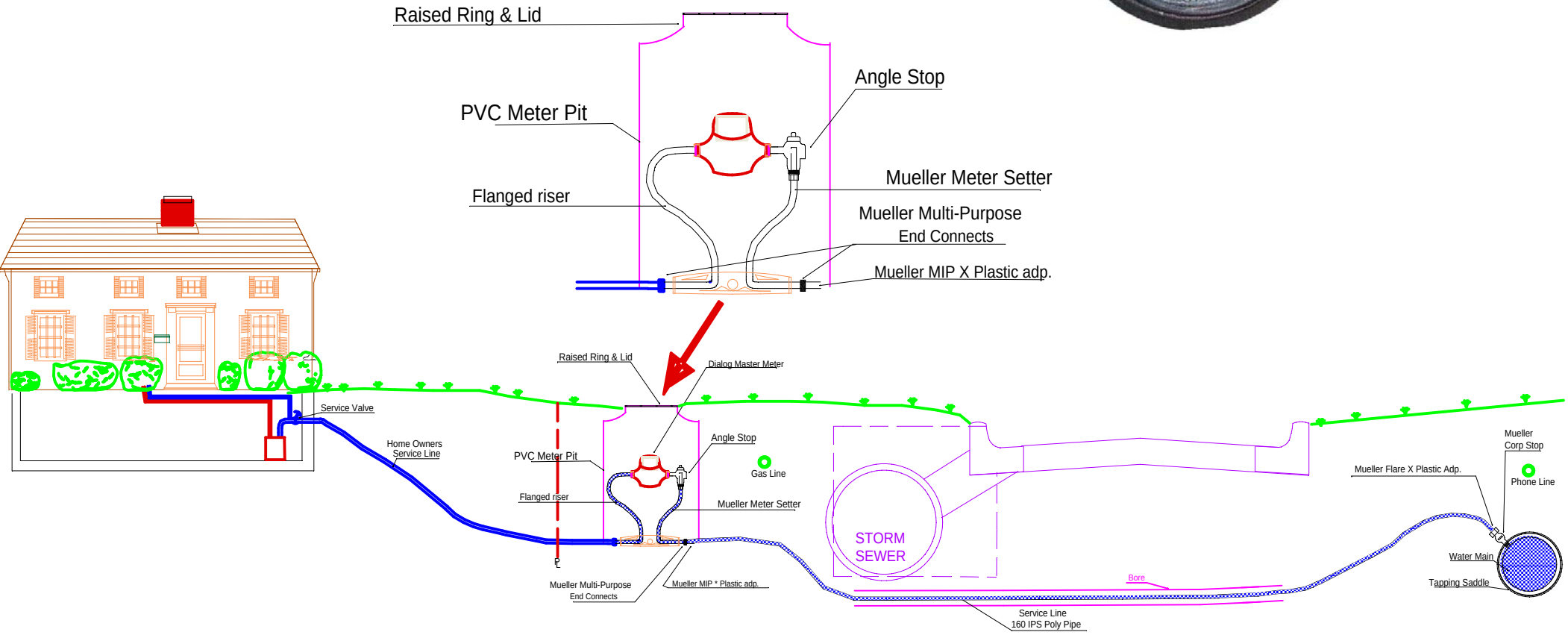
1 Year

2 - 10 Years

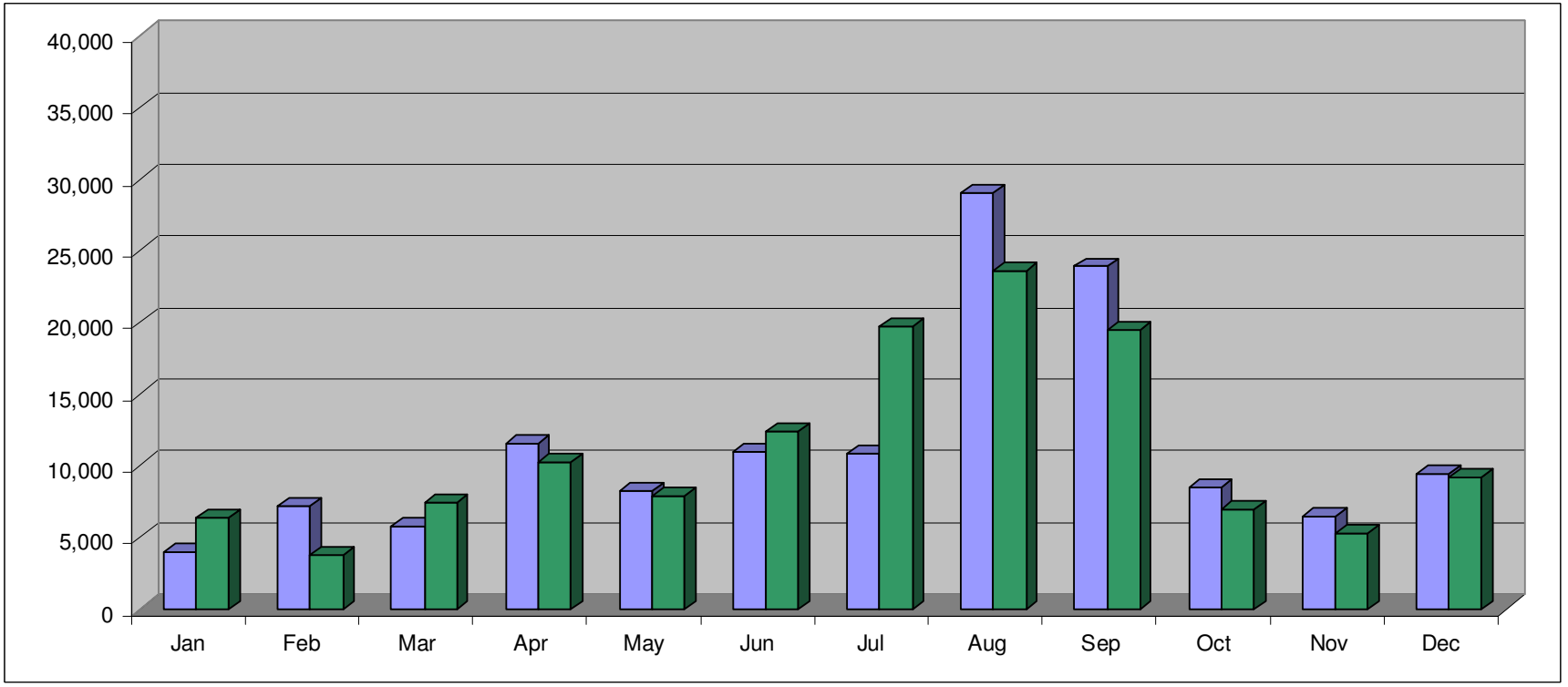
10 - 18 Years

20 Years +


U.S. GALLONS
5/8"
DIALOG
Master Meter

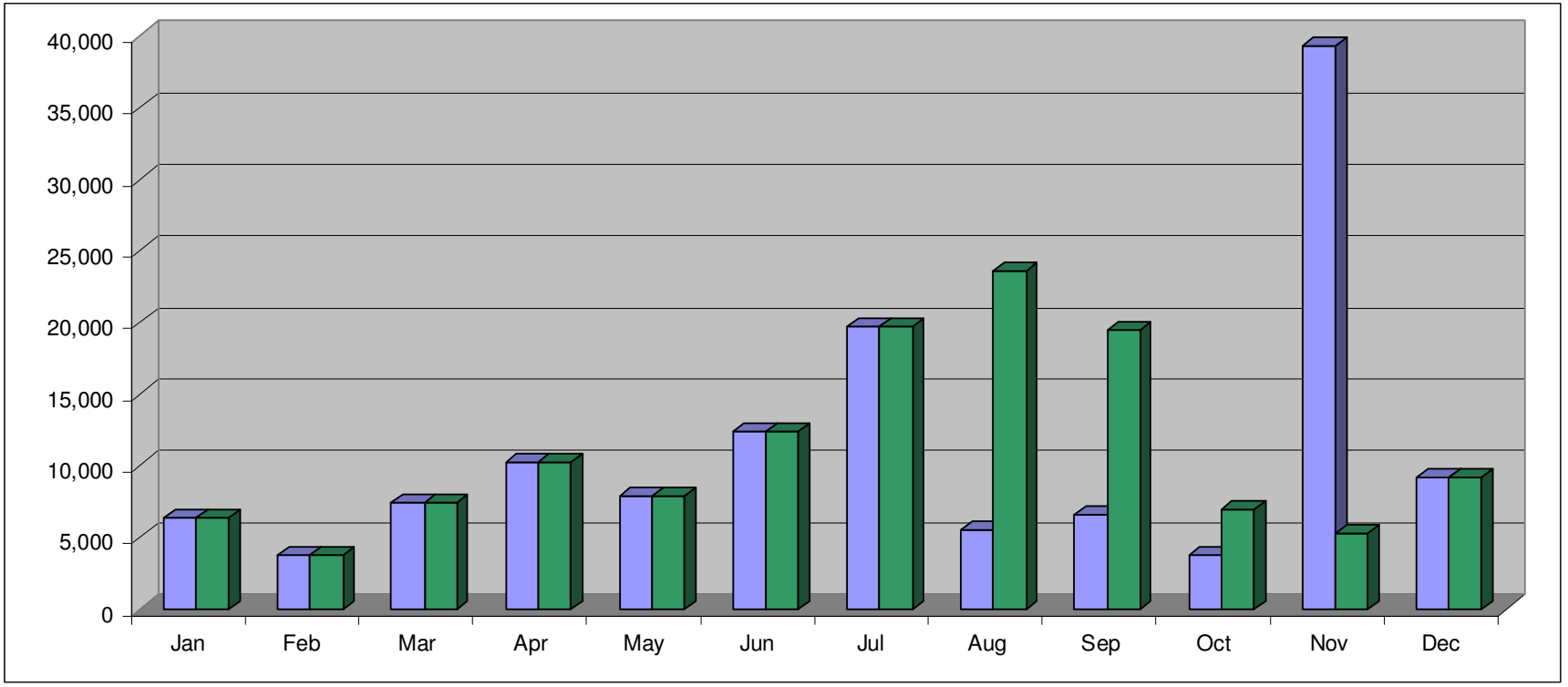

Raised Ring & Lid
Angle Stop
PVC Meter Pit
Mueller Meter Setter
Flanged riser
Mueller Multi-Purpose
End Connects
Mueller MIP X Plastic adp.
Raised Ring & Lid
Dialog Master Meter
Service Valve
Home Owners
Service Line
PVC Meter Pit
Angle Stop
Gas Line
Flanged riser
Mueller Meter Setter
STORM
SEWER
Mueller
Corp Stop
Mueller Flare X Plastic Adp.
Phone Line
Water Main
Tapping Saddle
Bore
Mueller Multi-Purpose
End Connects
Mueller MIP * Plastic adp.
Service Line
160 IPS Poly Pipe

2010 Usage vs. 2011 Adapted Usage
1216 W. 4th



2010 Average Bill $72.63

2011 Billed vs. 2011 Adapted Usage
1216 W. 4th



2011 Average Bill $74.17

1216 W 4TH

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	4,000	7,200	5,800	11,600	8,200	11,000	10,900	29,000	23,900	8,500	6,500	9,400
2011	6,300	3,700	7,400	10,300	7,900	12,400	19,700	~~5,500~~	~~6,600~~	~~3,800~~	~~39,300~~	9,200

67,700 = 1.15 x 67,900 = 78,311 / 4 = 19,578
58,700

$98.41 Average Bill
$154.66 1/1/12 Bill
$56.25 Adjustment Amount

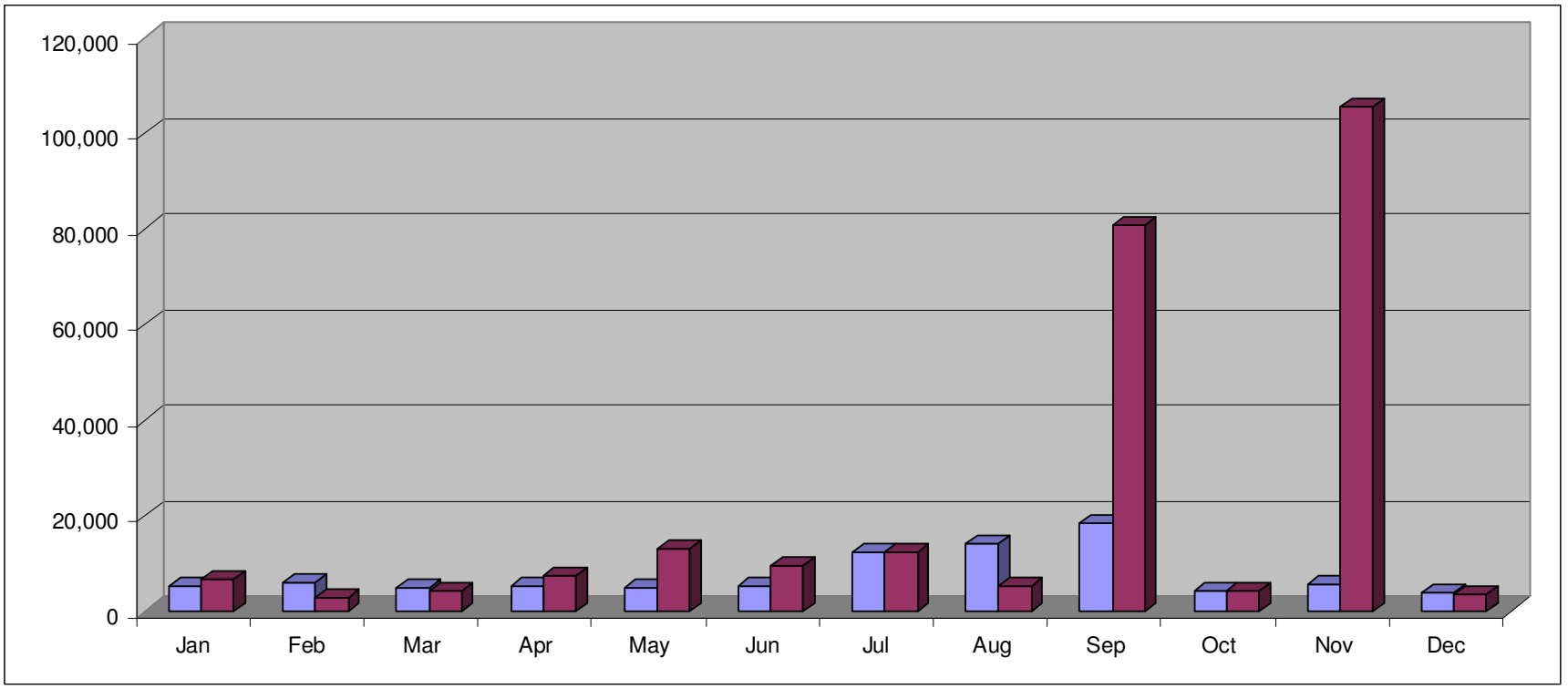
1501 W 4TH

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	5,500	2,900	5,100	4,600	29,800	25,400	32,400	26,300	22,800	3,800	6,100	2,600
2011	4,100	2,600	9,100	29,400	20,900	32,000	43,200	~~3,700~~	~~7,000~~	~~3,700~~	~~94,700~~	7,000

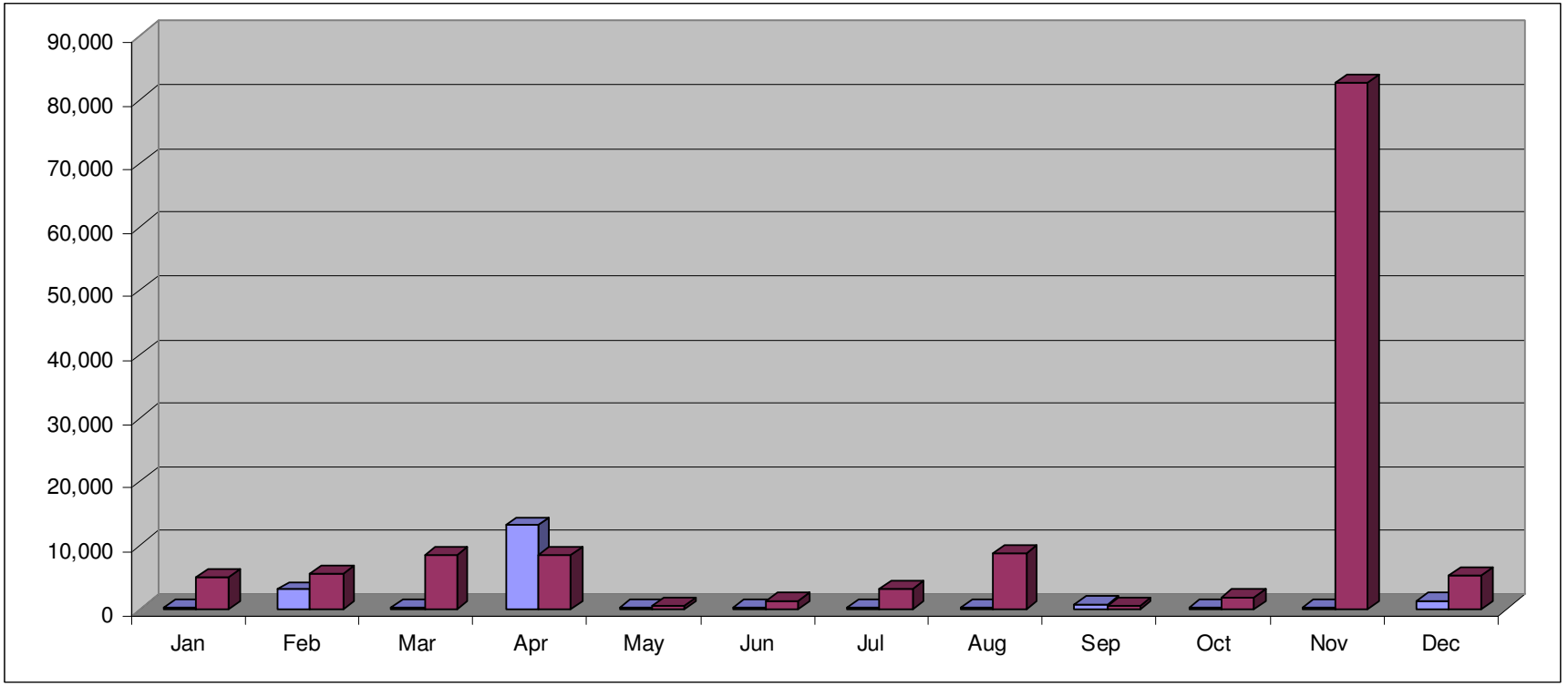
141,300 = 1.34 x 59,000 = 78,871 / 4 = 19,718
105,700

$96.48 Average Bill
$310.33 1/1/12 Bill
$213.85 Adjustment Amount

2010 vs. 2011 Usage
344 Clinton



2010 vs. 2011 Usage
146 N. Lamar



2010 vs. 2011 Usage
767 Windrose