Office of Paula S. O'Neil
Clerk & Comptroller
Pasco County, Florida

Pasco County Board of County Commissioners
Water Bill Audit

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Division of Inspector General

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Executive Summary

On October 1, 2014, in response to increasing customer complaints of higher-than-normal water bills, Paula S. O'Neil, Ph.D., Pasco County Clerk & Comptroller, deployed her Division of Inspector General (IG) to audit the utility billing system. The focus of this audit was to determine the root cause of complaints and determine systematic opportunities for improvement.

The audit period was from June 1, 2014 through April 15, 2015. Out of 97,310 Pasco County Utility customer accounts, complaints were received from 337 different customers, 0.34% of the customers.

The purposes of the audit were to determine whether there were meter problems, meter reading issues, billing variances, or other issues causing higher-than-normal water bills. Specifically, the objectives were to (1) conduct equipment testing, (2) determine accuracy of data, (3) review internal policies and procedures, and (4) review customer complaints.

There were four main phases: (1) preliminary analysis, (2) field observations, (3) historical data review, and (4) independent meter testing.

- Phase 1, Preliminary Analysis, required approximately 882 hours. Assignments included reviewing contracts, regulations, statutes, ordinances, industry standards, policies and procedures, industry practices, GIS mapping, news stories, employee discussions, vendor discussions, and customer concerns. (See page 6)

- Phase 2, Field Observations, required approximately 729 hours and included 691 field observations over an 11 week period (January – March, 2015). Collected 702 meter reads, determined by one statistical random sample and two judgmental samples (one from inventory meters and one from customer complaints). Meters were located in Dade City, Holiday, Hudson, Land O'Lakes, Lutz, New Port Richey, Odessa, Port Richey, San Antonio, Shady Hills, Wesley Chapel, and Zephyrhills. Documentation from 56 original source documents were combined and 130 files of supporting documentation were created. (See page 8)

- Phase 3, Historical Data Review, required approximately 782 hours. Detailed examination of historical data included analyzing 701 bills and 1,402 pages of customer records, along with 84 billing exceptions. Further, 337 accounts were scrutinized to compare two 12-month periods to determine the potential for excessive water usage. Ten accounts with excessive usage were further studied and charted. A flowchart was developed to assist the department with examination of all excessive water usage accounts. (See page 10)

- Phase 4, Independent Meter Testing, required approximately 574 hours. This phase included the replacement of 167 water meters for ten consecutive business days beginning April 22, 2015 and auditor-observed testing of the removed water meters for six consecutive days beginning on April 28, 2015. This included selection of some meters from complaints and some random meters, notification of customers, field visits, and vendor coordination. (See page 14)

The results of the audit are listed below by objective:

- Objective 1, Conduct Equipment Testing, demonstrated that 100% of the tested meter registers agreed with the reads captured with the meter reading equipment and 95% of the water meters tested were accurate and functioning properly. While nine meters did

not meet American Water Works Association (AWWA) standards, it was determined that those nine meters were running slow, and in favor of the customers. It was noted that 42% of the service addresses inspected were hindered by the ability to locate meter boxes or poor conditions. The PCU test bench results did not produce the same results as MARS, Co., causing a false pass and several false fail results. (See observation 1)

- Objective 2, Determine Accuracy of Data, demonstrated that 87% of the 701 accounts tested included bills that did not always reflect accurate read dates or accurate reads during the audit period as a result of inconsistent meter reading practices. While some of the inaccuracies in the meter reading information may not have a direct impact on the consumption or dollar amount billed, they may cause confusion. Secondly, the accuracy of the account meter profile report was not determined. At least two profile reports revealed unexplained inconsistencies. (See comments 2, 4, 6, 7, and 10)

- Objective 3, Review of Internal Policies and Procedures, demonstrated inadequate and inconsistent meter reading, billing process, and management oversight. (See comments 1, 3, and 8 through 17)

- Objective 4, Review Customer Complaints, involved the review of 336 customer accounts. An analysis was conducted comparing two 12-month periods to compare household usage, taking the October 2014 rate increase into consideration. Of the 209 accounts that received bills averaging an increase over the prior year, 100 increased up to 20%, 50 increased between 21-40%, 18 increased between 41-60%, and 41 increased more than 60%. Analysis was conducted on number of months and specific months that experienced higher than 20% increase. Ten specific accounts with excessive usage were further studied and charted. Of the 58 bills reviewed, 21 monthly bills were identified that exceeded 120% of the annual average. Two of the ten bills had received bill adjustments, some of the bills reflected read dates when meters were not read, and some accounts received bills where the number of days between reads exceeded 32 days. (See pages 12 and 17 through 21)

Based on results of the completed audit, 17 audit comments and 10 observations were identified. All comments, observations and recommendations were discussed with PCU management, and their responses are included in this report. During the course of this audit, management implemented some of the IG's recommendations.

A brief summary of the recommendations, by objective, is included below. More detail is included within the audit comments and recommendations section of this audit.

- Objective 1, Equipment:
  - Ensure that PCU staff have the ability to access meter boxes. (See observation 6)
  - Replace or repair the PCU test bench. (See observation 1)

- Objective 2, Data Accuracy:
  - Ensure that all data fields on bills are accurate. (See comments 2, 4, 6, 7, and 10)
  - Ensure that account profile reports are accurate. (See comment 5)
  - Determine a process for reviewing exception reports for excessive water usage on a periodic basis. (See comment 9)

- Objective 3: Internal Policies and Procedures:
  - Establish policies and procedures for meter reading, to include use of meter alerts, extended comment fields, scheduling meter routes, and physical inspections. (See comments 1 and 10)

  - Establish policies and procedures for the billing process, to include supervisory approval of adjustments. (See comments 8, 11 through 15, and 17)
  - Establish policies and procedures for management oversight. (See comment 16)

- Objective 4, Customer Complaints:
  1. Analyze the 317 accounts that received between one and six bills that exceeded 120% of the annual average. (See page 19)
     - 209 accounts that demonstrated increased usage over the prior year, as detailed in Appendix C. A flowchart (Appendix K) is provided for this purpose.
     - Consider adjustments for customers, based on the findings of the analysis. (See pages 12 and 17 through 21)

The use of an outside consultant may be helpful to enable a fresh perspective to evaluate these recommendations and employ best practices used throughout the industry. The Office of the Clerk & Comptroller would like to express its appreciation to Pasco County Utilities for its assistance with the collection of these materials, accompaniment in the field, and openness to questioning.

Audit Objectives

The purposes of this audit was to determine whether there were meter problems, meter reading issues, billing variances, or other issues that resulted in higher-than-normal water bills. Specifically, the objectives were to:

1. Conduct equipment testing:
    A. Determine if water meters functioned properly.
    B. Determine if meter reading equipment functioned properly.
2. Determine accuracy of data:
    A. Determine if *reads* captured with meter reading equipment were accurately recorded in the utility billing system.
    B. Determine if bill calculation and pertinent bill information were accurate.
3. Review internal policies and procedures:
    A. Determine if the processes for utility billing, identifying and resolving meter reading exceptions, and identifying and resolving billing exceptions were adequate.
4. Review customer complaints:
    A. Determine if the annual average bill increased or decreased from the prior year.
    B. Determine if accounts received monthly bills that exceeded 120% of the annual average.
    C. Determine if any trends existed in the months that customers received bills that exceeded 120% of the annual average.
    D. Determine if the read date or number of days between meter reads exceeded 32 days, and was contributing factor to the bills that exceeded 120% of the annual average for a sample of 10 accounts.

Audit Scope

The audit period was from June 1, 2014, the date the new billing system went live, through April 15, 2015, the date on the last water bill in the test sample was printed. The nature and scope of this audit was intended to provide objective and relevant assurance, and to contribute to the effectiveness and efficiency of governance, risk management, and control processes of the billing system. The audit was neither designed, nor intended, to be a detailed study of every relevant system, procedure, transaction, or customer complaint.

This audit included four main phases: preliminary analysis, field observations, historical data review, and independent meter testing.

Phase 1: Preliminary Analysis

During the first phase, preliminary analysis, the IG researched and gathered background information pertaining to the risks and controls related to the water billing process. The research was focused on the potential causes of the complaints. Approximately 882 hours were dedicated to this phase which included the following steps:

A. Obtained and reviewed contracts and subcontracts related to the installation of the new AMR meters and the new CIS Infinity billing system:

   1. Reviewed IFB 07-103, Purchase of Automated Meter Reading System and Related Items Badger Meter, Inc.

   2. Reviewed IFB 07-199, Installation of Potable and Reclaimed Automatic Meters (Labor Only) Matchpoint, Inc.

   3. Reviewed RFP SS-11-052, Customer Information & Utility Billing Solution and Master Service Agreement- CIS Infinity- N. Harris Computer Corp. Advanced Utility Systems (a Division of N. Harris Computer Corporation).

   4. Reviewed IFB-EC-11-126, Bid Form-Innovative Metering Solutions.

   5. Reviewed Sarasota County RFI No. 121770HR, Contract No. 2012-398; Procurement No. ISS 121957HR- Innovative Metering Solutions.

B. Reviewed federal regulations, Florida Statutes, Pasco County Ordinances, and industry standards that govern the utilities billing process and meter testing (refer to page 26 for details).

C. Reviewed the available internal policies and procedures related to meter reading, meter testing, billing processing, and exceptions processing.

D. Observed the Pasco County Utilities (PCU) meter testing process in the field, and at the facility with the county meter test bench.

E. Searched the Florida Department of State (DOS), Division of Corporations website for information on vendors associated with water meter related contracts:

   1. Badger Meter, Inc.
   2. Matchpoint, Inc.
   3. Advanced Utility Systems Corp.
   4. N. Harris Computer Corp.
   5. Innovative Metering Solutions, Inc.

F. Obtained GIS maps to plot the service addresses of the customer complaints received through the waterbill@pascoclerk.com email and service addresses included in the meter reading and independent meter testing samples.

   Two separate maps were created. One for the judgmental sample of customer complaints as of 12/23/14, and one for the statistical random sample of accounts from the total population of active water meters. There were a total of 315 and 383 service addresses included on the judgmental and statistical random sample maps, respectively.

There were approximately 12 emails exchanged between the IG staff and the GIS department to obtain and verify information.

G. Reviewed news articles, related to higher than normal water bills and complaints from Pasco County residents:

1. 6/17/14 - Pasco residents say water bills have skyrocketed
2. 6/18/14 - More Pasco residents question jumps in water bills
3. 9/29/14 - Pasco couple shocked to open $3,385 water bill
4. 10/01/14 - Couple's water bill in new home tops $3,000
5. 10/01/14 - Email created for Pasco residents with water bill concerns
6. 10/01/14 - Pasco couple disputes sky-high water bill
7. 10/03/14 - Pasco water bill investigation deepens
8. 10/08/14 - Expert says $3,000 Pasco water bill isn't possible
9. 10/10/14 - Pasco water employee quits, says she's tired of making excuses for high bills
10. 10/11/14 - Investigation launched into high Pasco water bills
11. 10/13/14 - Pasco County government responds to water complaints
12. 10/13/14 - 8 Investigates: Pasco residents claim water bills have tripled
13. 10/14/14 - Pasco agrees to send off questionable water meter for further tests
14. 10/15/14 - Years' worth of water meter data concerns Pasco homeowner
15. 10/16/14 - Pasco water bill in question grows over $3,800 with late fees
16. 10/17/14 - Pasco water complaints up to 300
17. 10/27/14 - Pasco Kohl's Dept. Store Uses More Than a Million Gallons of Water
18. 11/05/14 - Pasco Couple with $3000 Water Bill Address County Commission

H. Communicated with approximately 42 employees from PCU, 14 vendor representatives (Badger, Advanced Utility System, MARS Co., Innovative Metering Solutions, Inc.), one former customer service employee, and one retail department store manager in New Port Richey.

I. Conducted an entrance conference with the Clerk & Comptroller, County Administrator, Assistant County Administrator, and the Customer Service Administrator to inform them of the audit purpose, objectives, scope, methodology, and the overall audit process. The IG also provided estimated time frames for the completion of fieldwork and the release of the draft report. (see Entrance Conference Agenda, Appendix A)

J. Compared billing summaries to water well distribution reports for fiscal years 2009 through 2014. Examined total water billed versus total water distribution to identify trends and variances that coincided with the audit period. Variances or changed trends that supported accounts being billed higher-than-normal usage as compared to prior years trends were not determined.

In addition to preliminary research the IG also tracked and logged the customer complaints received through the water bill email account. As of August 13, 2015, there were approximately 736 emails received from Pasco County Citizens to verify account information. The emails received were from customers belonging to PCU, City of New Port Richey, City of Dade City, City of Zephyrhills, and Florida Governmental Utility Authority (FGUA). The IG did not have jurisdiction

over utility organizations other than PCU. The complaints received from customers not belonging to PCU were directed and/or forwarded to their appropriate utility providers.

Phase 2: Field Observations

During the second phase of the audit, field observations, a total of 691 field observations were conducted. This occurred over a course of 11 weeks during January, February and March, totaling 23 days. The meters were located all throughout Pasco County. The IG drove approximately 1,725 miles to and from the Meter Reading Department during this time. A total of 702 reads captured with the meter reading equipment were traced to the reads uploaded into CONNECT and imported into CIS. Approximately 729 hours were dedicated to this phase which included the following steps:

A. Selected one statistical random sample and two judgmental samples, totaling 708 meters.

   1. Obtained and reviewed a report reflecting 105,937 active meters in CIS as of 10/22/14.

   2. Selected a statistical random sample of the whole population, excluding reclaim and sewer meters, was selected based on a 95% confidence level and a 5% margin of error. Using these criteria, a total of 383 accounts were randomly selected from 97,310 active water meters.

   3. Selected a judgmental sample of accounts with an *inventory* meter status, excluding reclaim and sewer meters. A total of seven accounts or 10% were selected for testing.

   4. Selected a judgmental sampled of all 309 PCU customer complaints received through the water bill email account as of 12/23/14. Some customers had more than one account and/or meter. The judgmental sample included 318 meters.

B. The meter reading schedules were obtained on a weekly basis for 11 weeks. These schedules were reviewed to coordinate the ride alongs for meters included in the test samples. The IG looked in CIS and obtained the route and book for each account in the test samples (a total of 708), as a report in CIS was not available. The route and book was used to determine when the service addresses in the test samples were scheduled to be read. The Meter Reader Department did not know the service addresses in the test samples until the day of the field observations.



C. Meters included in the test samples were physically inspected, and reads captured with the meter reading equipment were verified to determine if they were accurately uploaded into CONNECT and CIS. Between one and four IG auditors rode along with meter readers on their assigned routes to read meters included in the test sample.

   1. Verified that the read on the meter register agreed to the read captured with the meter reading equipment.

   2. Verified the service address, equipment serial numbers, and meter size.

   3. Inspected 691of the 708 meters in the test samples. Some meters in the test sample were not inspected due to locked gates, unsecured dogs, undetermined locations, or incorrect information in CIS. There were also three duplicates that were included in the test samples. The meters were located throughout Pasco County, which included Dade City, Holiday,

Hudson, Land O' Lakes, Lutz, New Port Richey, Odessa, Port Richey, San Antonio, Shady Hills, Wesley Chapel, and Zephyrhills.

4. Obtained and reviewed a total of 101 reports related to the meter reads captured with the meter reading equipment, including exception codes identified and extended comments entered in the field by meter readers.

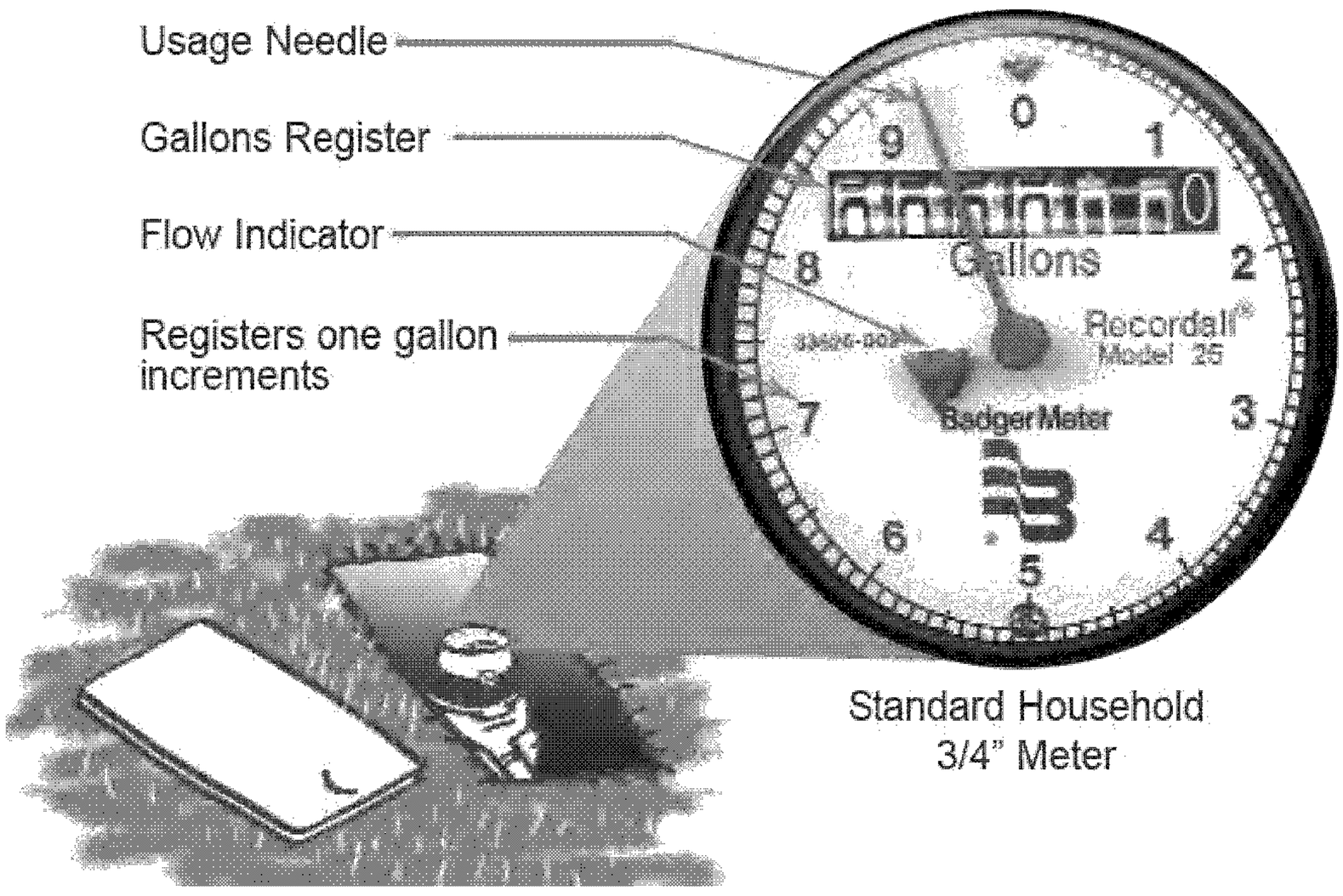
5. Traced 702 reads captured from the meter reading equipment to the reads uploaded into CONNECT and imported into CIS. Not all of the meters included in the test samples were traced because some were duplicates, did not exist, or were not required to be read due to type of account (i.e., fire line accounts were charged only a monthly base rate).

D. The field observation results were documented, as follows:

1. Gathered and compiled information verified in the field from 56 original source documents into one master document for the 708 meters included in the test samples.

2. Compared and documented the 702 reads captured from the meter reading equipment to the reads uploaded into CONNECT and reads imported into CIS for meters included in the test samples.

E. Collected approximately 130 files of supporting documentation, which included information from CIS and, photos and videos captured during field observations. There were approximately 150 email correspondences related to the meter reading and equipment testing to obtain and verify information.

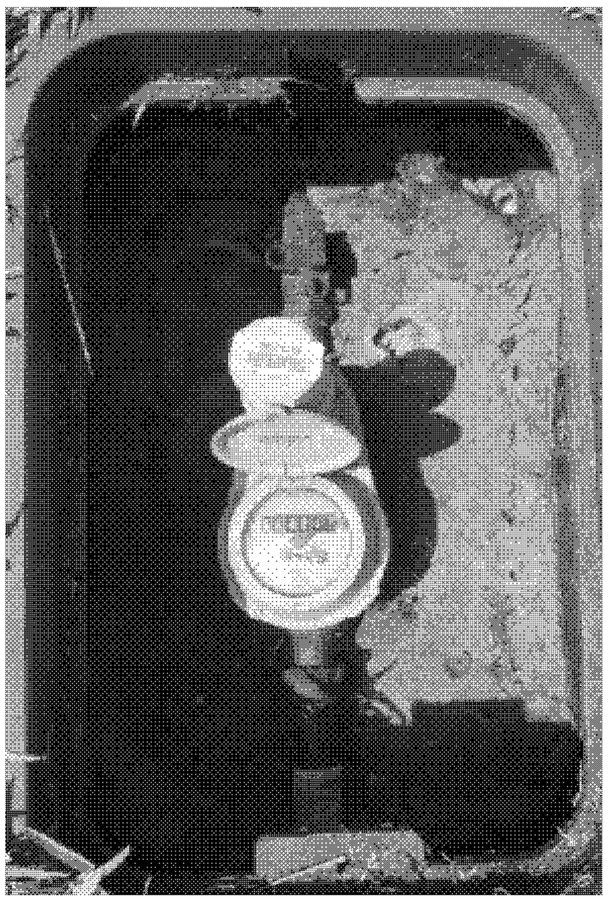


Standard Household
3/4" Meter

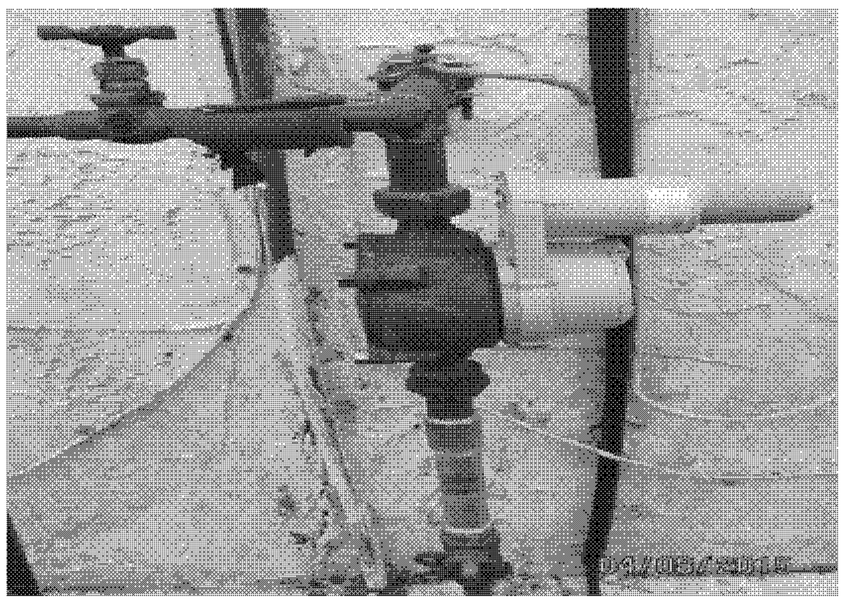
Usage Needle — one full sweep from 0 back to 0 for every ten gallons
Flow Indicator— turns for even the smallest amount of water
Gallons Register— the *read* of gallons used in 10 gallon increments

Meter Box Cover





Water Meter inside a meter box



Water Meter installed on a house

Phase 3: Historical Data Review

During the third phase, historical data review, the IG analyzed data collected in the field, and read history data from the CIS and CONNECT systems. The PCU rates and charges effective October 1, 2014 were obtained to determine the appropriate water base charge and various water tier level charges (Appendix B). There were 701 bills in the test sample which were printed for a detailed analysis. The IG also requested and examined approximately 1,402 pages of CONNECT Customer Records, which allowed a three way reconciliation of the accurate reporting of meter reads. Approximately 782 hours were dedicated to this phase which included the following steps:

A. The IG compared the reported usage on printed bills with the reads collected and observed during the second phase of this audit, and the accuracy of the information on the printed bills. The first bill in the meter read sample was ready to print on February 5, 2015 and the last bill in the sample was ready to print on April 15, 2015. The following information on each printed bill was verified for accuracy:

    1. The read collected with the meter reading equipment.
    2. The customer and account number.
    3. The meter serial number.

4. The number of days since the previous read.
5. The calculation of the consumption billed.
6. The water base charge and various tier levels.

B. The IG further reviewed the usage history of the 701 printed bills to identify months with inconsistent and/or unusual usage during the period of June 2014 through September 2014. Approximately 420 out of 701 accounts reflected higher-than-normal usage during this time period.

C. The IG also reviewed the read history in CIS for 701 accounts was printed and compared to the read history on the CONNECT customer record. There were approximately 66 emails were exchanged to obtain and verify information.

D. During this phase, the IG also observed the processes for utility bill processing and exceptions processing, documented the criteria used for identifying exceptions, determined if exception reports were used, and determined if procedures were adequate for identifying and resolving exceptions.

1. Reviewed the available internal policies and procedures related to bill processing, meter reading exceptions processing, and billing exceptions processing (only one procedure available). Consequently, with little or no information from field observations and internal SOP's, secondary resources were heavily researched to accurately comprehend the billing process within the CIS Infinity billing system.

2. Researched secondary resources including two vendor training manuals (approximately 350 pages) for the CIS Infinity billing system, in order to gain an understanding of the control environment of the PCU billing process:

   a. CIS Infinity Bill Processing

   b. CIS Infinity System Administration

3. Contacted the billing system's vendor (PCU's Account Manager) for recommended practices and CIS Infinity functionality related to meter reading exceptions and billing exceptions processing.

4. Reviewed PCU's exceptions criteria configuration for the CIS billing system.

5. Sent and documented responses for five internal control questionnaires: PCU Customer Service Administrator, Meter Reader Supervisor, Data Entry Operator, Accounting Clerk, and Senior Project Clerk.

6. Selected the February 19, 2015, Cycle 11 billing batch for review to verify if:

   a. Meter reading exceptions and billing exceptions were identified and resolved in a timely manner.

   b. Procedures were adequate for identifying and resolving those exceptions.

7. Traced a total of 84 billing exceptions through the billing system to determine if:

a. There was documentation in the billing system to substantiate and justify each exception that was identified and/or resolved.

b. There was adequate documentation of review and approval for each exception that was identified and/or resolved.

8. Reviewed a total of 95 printed bills pertaining to the 84 billing exceptions to determine if bill adjustments were made. A total of 170 CIS query results pertaining to the 84 billing exceptions were documented to determine if supporting documentation existed in CIS for each billing exception.

E. Monthly bills for the 337 accounts that submitted concerns to the water bill email account as of April 15, 2015 were retrieved from the CIS system. The total monthly current charges included water and sewer services. The current bill amounts on the monthly bills for two consecutive years were compared. Bills from June 2014 through May 2015 (current year) and June 2013 through May 2014 (prior year) were analyzed (Appendix C) to:

1. Determine if the average amount billed for each account in the current year increased or decreased from the prior year.

2. Determine the number of months each account received a bill that exceeded 120% of the annual average.

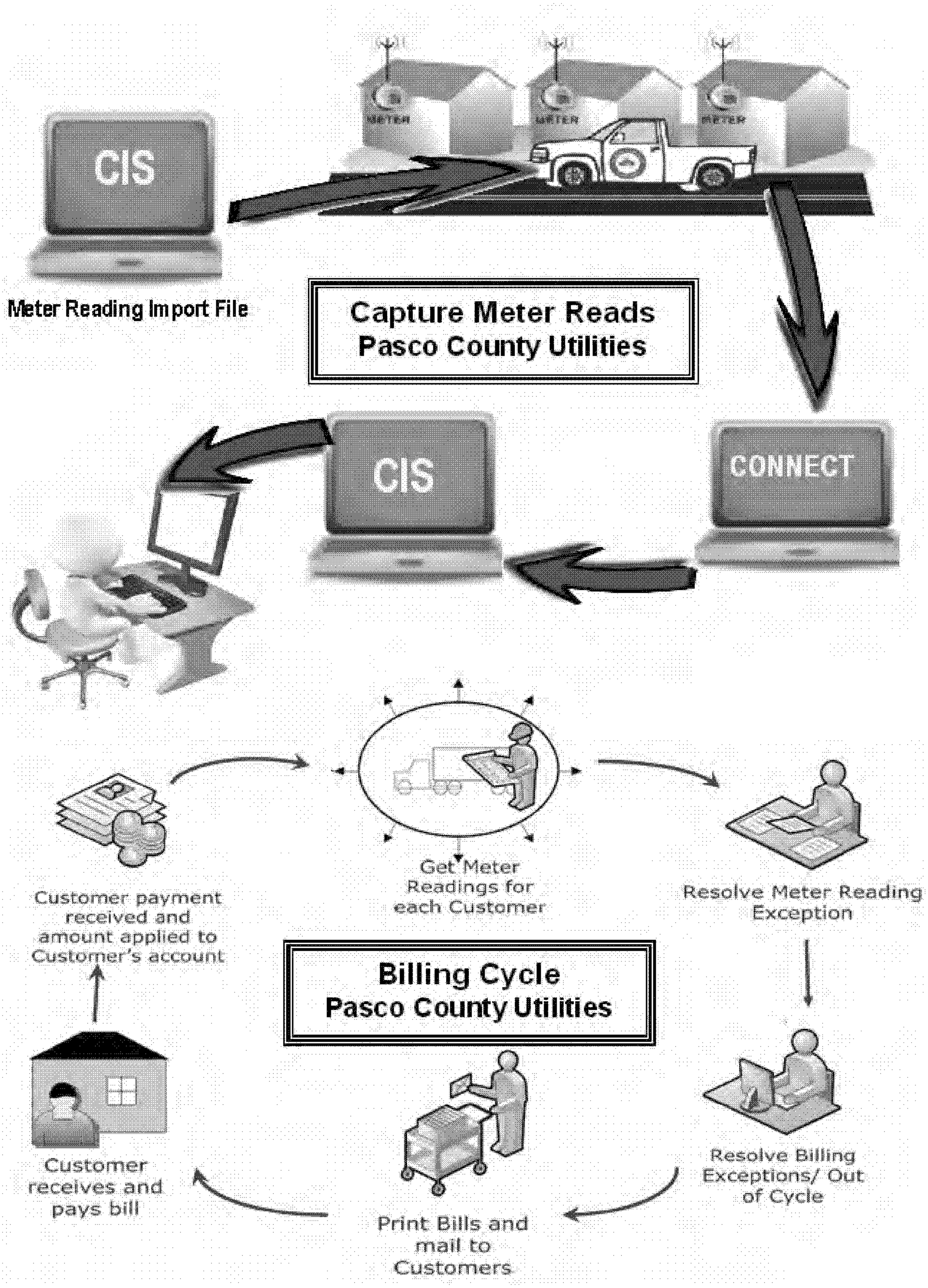
3. Identify if any trends existed in the months that account bills exceeded 120% of the annual average for each account.

F. Reviewed a sample of 10 accounts from the 337, and examined the printed bills that exceeded 120% of the annual average (Appendix D) to:

1. Determine if the meter read date and number of days reflected on the bills agreed to the read history in CIS.

2. Determine if the read date or number of days between meter reads exceeded 32 days, and was a contributing factor to the bills that exceeded 120% of the annual average.

3. Determine if the accounts received a bill adjustment, and if the adjustment was documented.


CIS
METER
METER
METER
Meter Reading Import File
Capture Meter Reads
Pasco County Utilities
CIS
CONNECT
Customer payment received and amount applied to Customer's account
Get Meter Readings for each Customer
Resolve Meter Reading Exception
Billing Cycle
Pasco County Utilities
Customer receives and pays bill
Print Bills and mail to Customers
Resolve Billing Exceptions/ Out of Cycle

Phase 4: Independent Meter Testing

The fourth phase, independent meter testing included replacement and testing of water meters. MARS, Co. in Ocala, Florida was contracted to remove, replace, and test a statistical sample of meters determined by the IG. Planning and managing this phase resulted in approximately 117 communications with PCU, Badger Meters, and MARS, Co., and 1,474 miles driven. Approximately 574 hours were dedicated to this phase which included the following steps:

A. The number of small meter complaints as of March 19, 2015, was 303. Because this represented less than one-half of one percent (0.34%) of the small meter population, the complaints were calculated separately, so a higher percentage of accounts with complaints would be included in the overall test sample population. All accounts included in the test samples were selected at random, from a statistical sample.

    1. Selected a statistical sample of 170 small meter accounts, which was calculated using a confidence level of 95%, and a margin of error of 10% as follows:

        a. 74 test samples from 303 complaints

        b. 96 test samples from 94,679 small meter accounts (excluding complaints)

B. Documents were created to notify selected customers about the replacement and testing phase of the audit. All notifications reflected the IG contact information for questions or concerns.

    1. Distributed a letter and a “FAQ” door hanger to test sample addresses to help explain and answer some common questions regarding access to the water meters and the random selection of accounts (Appendices E and F).

    2. Mailed letters to test sample addresses that reflected the approximate date and time the technical team was scheduled to replace the water meter (Appendix G).

C. For five days, one IG auditor accompanied the vendor to locate, photograph, and assess the condition of the water meters and the meter boxes. This process required travel across the county, and resulted in 680 miles driven over five days. The condition of each meter was documented, and approximately 321 photographs were taken.

    1. Identified 127 accounts that had meter boxes in conditions that would delay the removal and replacement of the meter. A list was provided to the PCU Meter Reading Department, for their attention. Most of the meter box conditions were resolved prior to the scheduled replacement dates.

        a. One account, not from the complaint population, demanded to be removed from the audit sample due to his concern about the age and condition of the pipes leading from his house to the water meter.

D. Beginning on April 22, 2015, a technical team from MARS, Co., along with a PCU Supervisor replaced meters in the test samples over ten consecutive business days. During this time, the IG coordinated replacement schedules, PCU notifications, monitored the progress, and was on call to resolve potential issues in the field.

E. Beginning on April 28, 2015, MARS, Co. tested the removed meters over six consecutive business days. One IG auditor observed the testing each day. The IG coordinated the meter testing with MARS, Co, to include representatives from the meter manufacturer, Badger Meters, and the PCU local procurement vendor, Innovative Solutions. One IG auditor observed the testing to assure the independence, and to provide guidance in the event of exceptions or complications during the testing process.

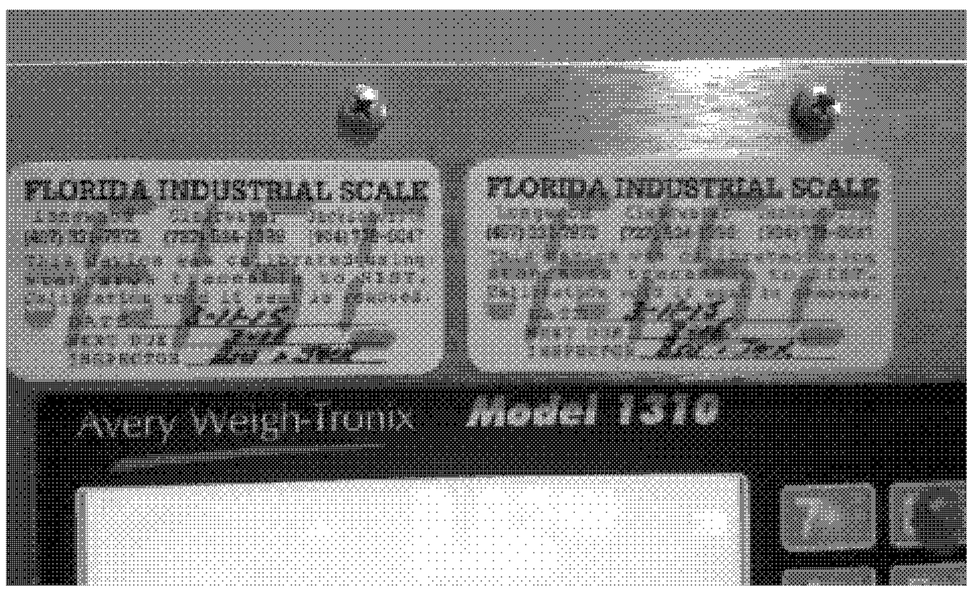
F. Of the 170 meters in the sample, one was removed by customer request, and two were not accessible due to locked fences. A total of 167 meters were tested, and 19 meters failed. The 19 failed meters were tested a second time to eliminate data entry errors, and to verify accuracy rates. Nine meters failed the second test, and did not comply with AWWA standards (Appendix H).

G. The 19 meters tested twice, were returned to PCU for them to test on their meter test bench. They performed two tests:

1. Tested according to existing PCU procedures.

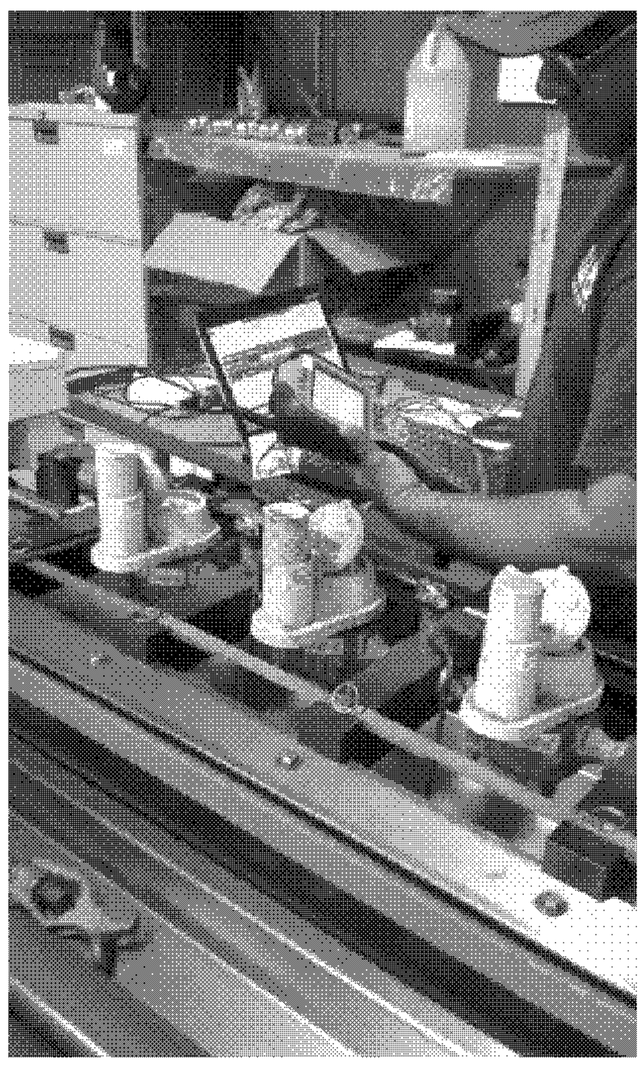
2. Tested according to the AWWA standards.

H. Compared both PCU test results with MARS, Co. results to identify variances.

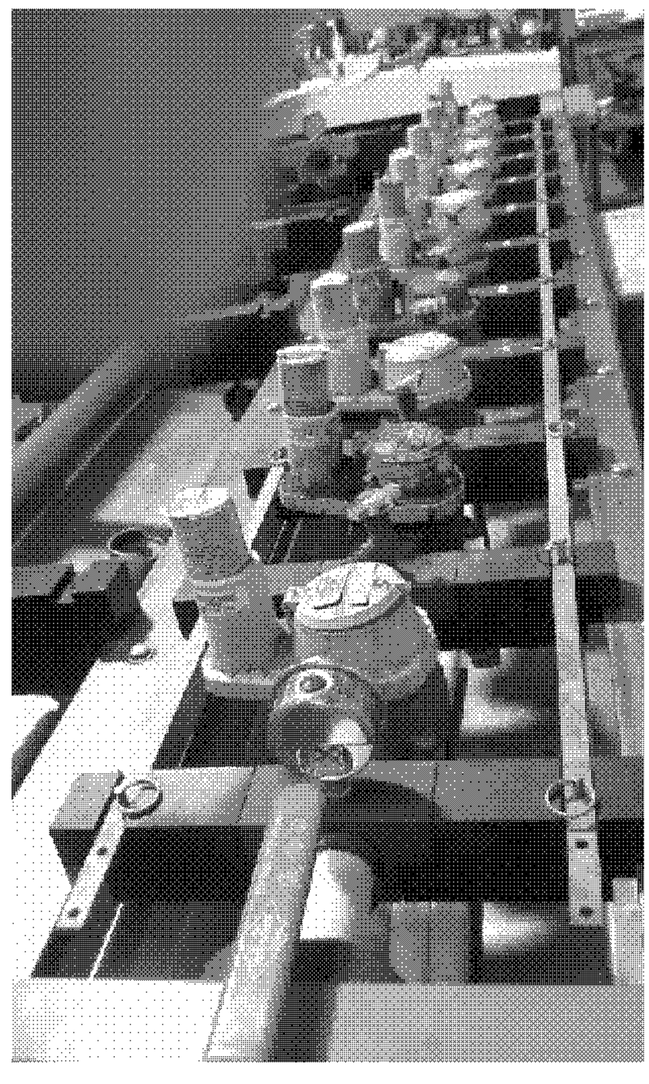


The test bench scale was certified to be calibrated according to National Institute of Standards and Technology (NIST).

Testing the transmitter reads with a handheld reader to verify the read on the meter register.



The test bench with meters loaded for testing.



Scope Limitations:

1. System reports for meter reading exceptions were not utilized and, therefore, not available for the selected review period.

2. In the CIS system, as billing exceptions were resolved, accounts were transferred into a billing batch to be updated and printed, which also resulted in the elimination of the exception data. Due to CIS functionality, there wasn't an audit trail in the system to retrieve billing exceptions after they were resolved. Therefore, a limitation of scope was encountered due to the fact that billing exceptions reports were not available for the selected review period.

When the auditor does not receive all information and explanations that are deemed necessary for the completion of the audit, limitation of scope arises. The auditor, therefore, cannot provide an objective conclusion.

Audit Conclusion

The Division of Inspector General conducted an expansive audit to identify the root cause of customer complaints regarding higher-than-normal water bills. The equipment tested (water meters and meter reading equipment) did not demonstrate a significant problem that would have led to the higher-than-normal water bills.

However, multiple issues with the meter reading and billing processes were identified regarding data accuracy and internal controls. These issues resulted in the loss of customer confidence in the reliability of water bills, and were the source of many customer complaints.

Based on results of the completed audit, we identified a total of 17 audit comments and 10 observations, which are summarized below. The details of the comments, along with PCU responses, can be found beginning on page 27.

All comments, observations and recommendations were discussed with PCU management, and their responses are included in this report. During the course of this audit, management implemented some of the IG's recommendations.

1. **Equipment Testing**:

   A. 158 out of 167, or 95%, of the water meters tested, were accurate and functioned properly.

   B. Nine meters did not meet American Water Works Association (AWWA) standards. It was determined that those nine meters were running slow, and in favor of the customers. Five of these meters were from the complaint sample population.

   C. 72 out of 170, (42)% of the service addresses inspected were hindered by the ability to locate meter boxes or poor conditions.

   D. The results from the PCU test bench did not produce the same results as MARS, Co. The PCU test bench produced a false pass and several false fail results.

   E. 100% of the 685 meter registers observed in the field agreed with the reads captured with the meter reading equipment.

2. **Data Accuracy:**

   A. Account Bill Reliability: 701 account bills were reviewed. 612 out of 701 (87%) of the accounts tested included bills that did not always reflect accurate read dates or accurate reads during the audit period as a result of inconsistent meter reading practices. While some of the inaccuracies in the meter reading information may not have a direct impact on the consumption or dollar amount billed, they may cause confusion. (See comments 2, 4, 6, 7, and 10.)

   B. Account Data Profile Reliability: The accuracy of the account meter profile report was not determined. We noted at least two profile reports with unexplained inconsistencies.

3. **Policies and Procedures:**

   A. Meter Reading: The policies and procedures for meter reading were inadequate. The policies and procedures were provided by PCU (Appendix I).

      a. This also resulted in customers not being notified of potential leaks during the meter reading process.

   B. Billing Process: Written policies and procedures related to the billing process were inadequate. The policies and procedures were provided by PCU (Appendix I).

   C. Management Oversight: According to an *Internal Control Questionnaire*, management oversight of the billing process was not documented in formal policies and procedures (Appendix J).

4. **Customer Complaints**:

The data below summarized the analysis of the monthly bills, and average bills for accounts that contacted the IG as of April 15, 2015. The effect of the October 1, 2014 rate increase was removed from month October 2014 through May 2015 for comparison purposes. One account was not analyzed because it was not billed after October 2013.

A. The annual averages were compared to determine if the accounts received bills that were significantly higher than the prior year. Of the 336 accounts that complained, the following was noted:

1. 31 (9%) accounts could not be compared because bills were not received in both years.

   97 (29%), of the accounts that complained average bills reflected a decrease from the prior year.

   a. 62 (19%) decreased up to 20%

   b. 24 (7%) decreased 21% to 40%

   c. 7 (2%) decrease 41% to 60%

   d. 4 (1%) decreased 51% or more

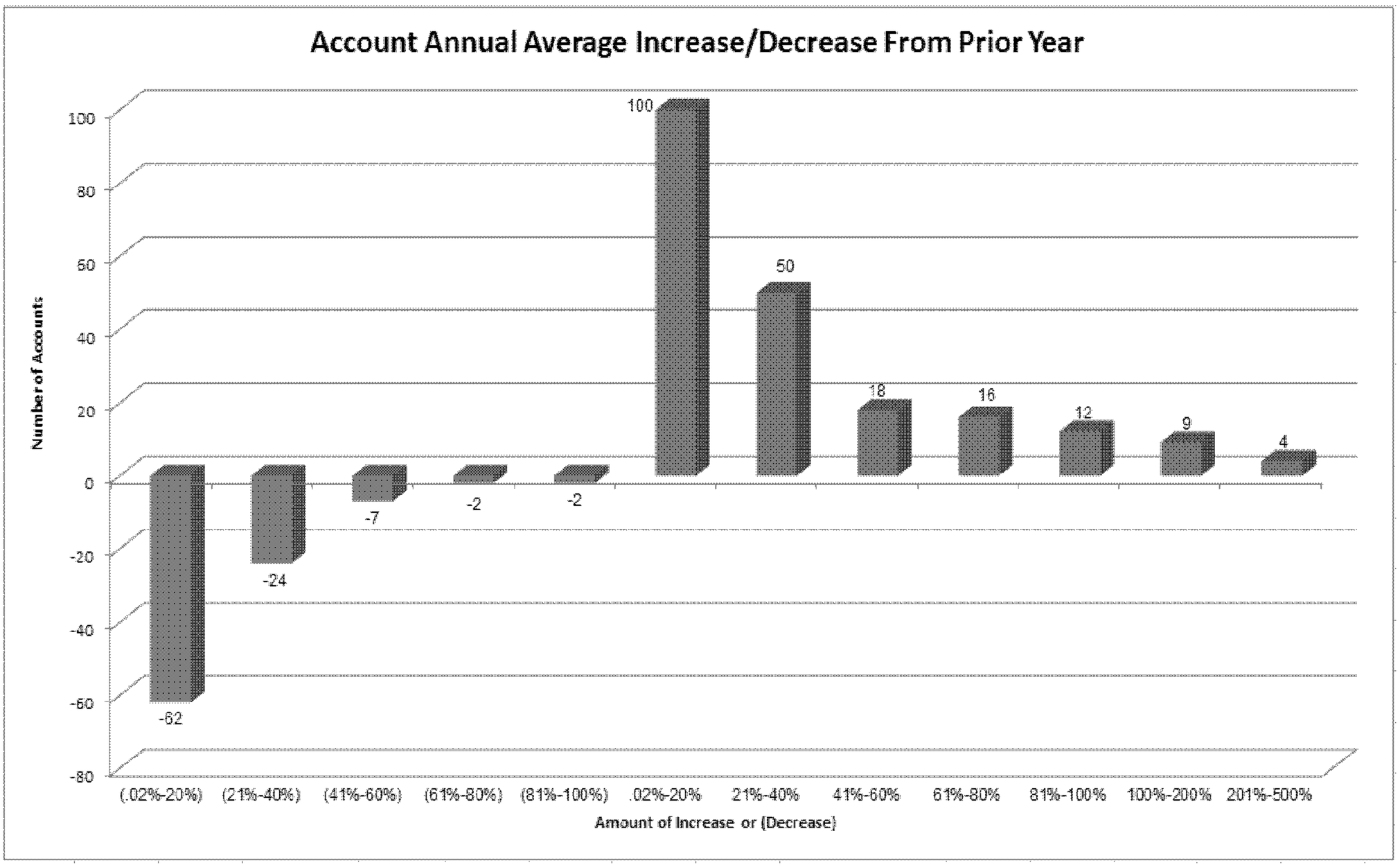
2. Of the 209 (62%) accounts that received bills that averaged an increase over the prior year:

    a. 100 (30%) increased up to 20%

    b. 50 (15%) increased between 21% and 40%

    c. 18 (5%) increased between 41% and 60%

    d. 41 (12%) increased more than 60%, as much as five times more than the prior year average



B. The IG compared the number of months in each account where the monthly bills exceeded 120% of the annual average.

2. 19 (6%) of the accounts did not received a monthly bill in the current year that exceeded 120% of the annual average.

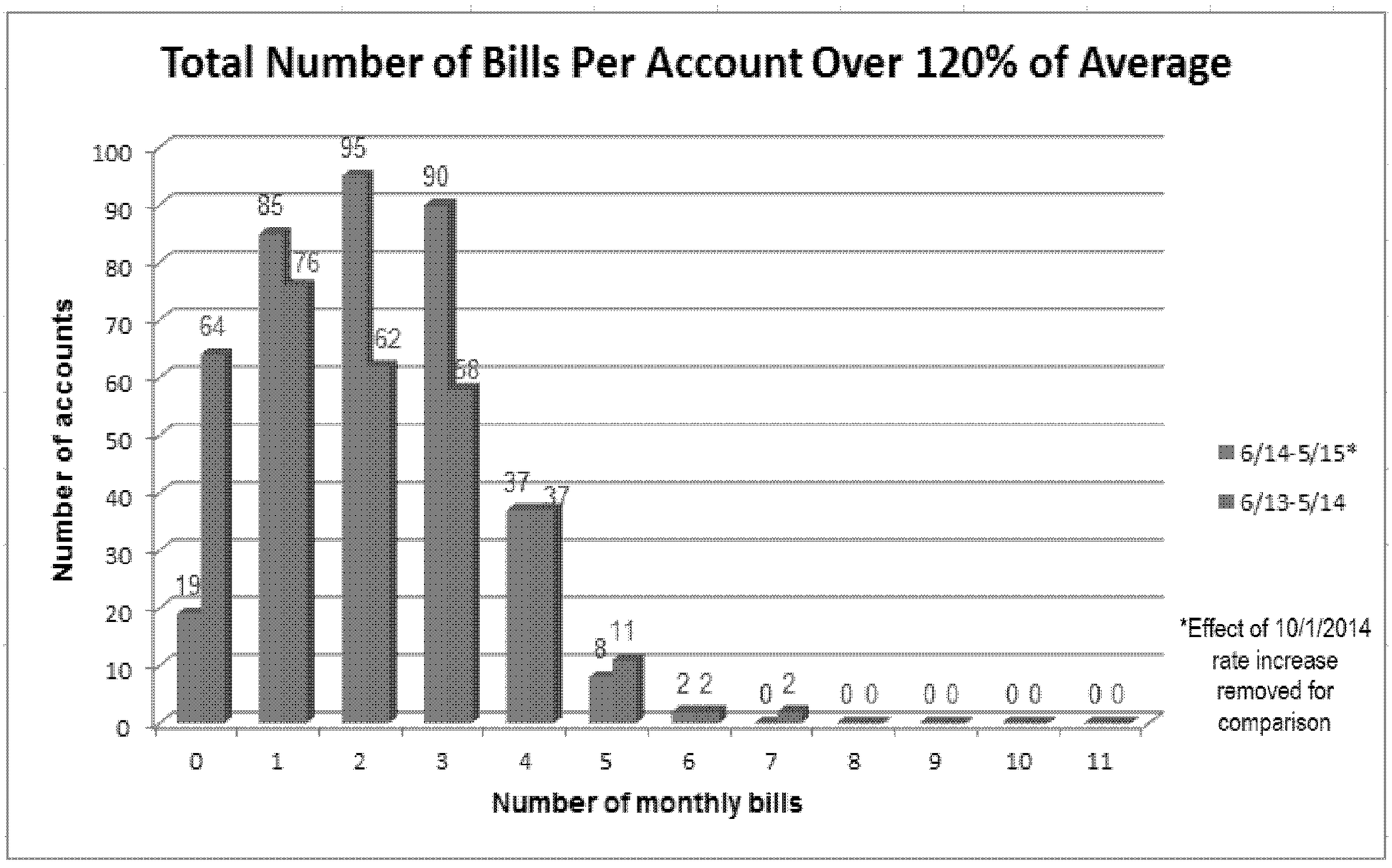
3. 317 (94%) of the accounts received between one and six bills that exceeded 120% of the annual average

   a. 85 (25%) received one (1) monthly bill that exceeded 120% of the annual average.

   b. 95 (28%) received two (2)

   c. 90 (27%) received three (3)

   d. 47 (14%) received four (4) to six (6)



C. Compared each month to determine if any trends existed in the months that accounts received bills that exceeded 120% of the annual average.

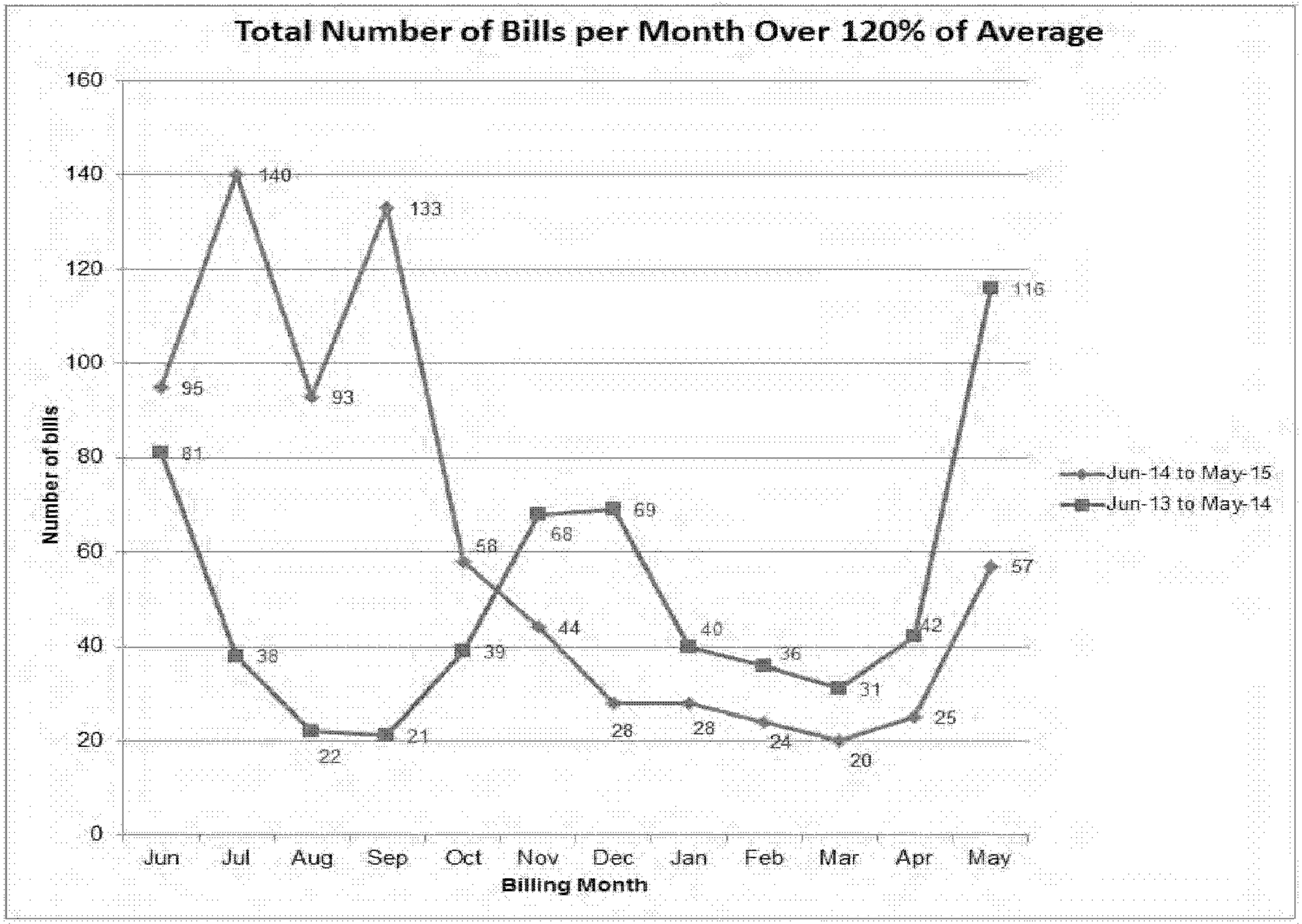
a. The months June 2014 through September 2014 reflected the highest number of occurrences of monthly bills that exceeded 120% of the annual average.

a. June 2014 - 95 (28%)

b. July 2014 – 140 (42%)

c. August 2014 – 93 (28%)

d. September 2014 – 133 (40%)



D. Reviewed ten accounts to examine the printed bills for the months where bills exceeded 120% of the account annual average amount. For the ten accounts, a total of 58 bills were reviewed, and 21 monthly bills were identified that exceeded 120%. As a result of this review, the following was noted:

    1. Two of the accounts received a bill adjustment.

        a. One account in CIS reflected images of the documentation provided by the customer indicating an unexplained consumption event, and documentation of the calculation of the adjustment amount.

        b. One account in CIS reflected a note to the account that indicated the customer provided documentation of a leak, and the amount of the adjustment. Images of the documentation were not available in CIS.

        c. Management or supervisor approval of adjustments was not determined.

    2. Some accounts received bills that reflected read dates when the meter was not read.

        a. Four accounts did not appear to have monthly bills where the read date on the bill differed from the read date in CIS.

        b. Six accounts had at least one month where the bill reflected a read, but the meter was not actually read, and the read did not exist in CIS.

            - One account was not read for the August 2014 bill.

            - One account was not read for the June 2014 and August 2014 bills.

            - Four accounts were not read for the June 2014 bill.

                - One of these accounts also reflected a system-calculated read for August 2014, a hand-estimated read for October 2014, and no read for June 2014. This account reflected two regular reads in five months.

    3. Some accounts received bills where the number of days between reads exceeded 32 days.

        a. Two accounts received a monthly bill where the number of days between reads was from 33 to 35 days.

        b. Eight accounts received at least one monthly bill where the number of days between reads was from 44 to 63 days.

            i. Six of the eight accounts received at least one monthly bill that reflected 22 to 28 days between reads, when the correct number of days between reads was 55 to 63 days.

Recommendations Summary

The results of the customer complaint analysis supported the comments detailed in this report. We recommend the County Administrator work with management to establish written policies and procedures to enable complaints to be resolved consistently. The procedures must consider the terms of all legal authorities, and be applied methodically and consistently to every complaint. The guidelines should include documentation of each step and require at least one supervisory approval of each complaint resolution. The IG provided a flowchart which incorporated the audit comments related to bill inaccuracies to assist Pasco County Utilities (PCU) in resolving complaints (Appendix J).

In addition to the overall complaint analysis, the more detailed review of ten complaint accounts revealed the possibility that a majority of the complaints stemmed from missed reads or incorrect read dates reflected on monthly bills. The meter reading process has a direct effect on the billing process. Therefore, improvements to the timeliness of meter reading could provide an immediate benefit to the billing process and reduce customer concerns and complaints.

We recommend PCU establish written policies and procedures for all areas of meter reading. The policies and procedures should include customer notification of possible leaks during the meter reading process. The meter reading equipment provides an audible sound while the meter reader is collecting reads, as well as an exception code when the reads are downloaded after the reads are collected. Timely, documented action to notify customers that there may be leaks or unknown water flow, could help customers avoid higher-than-normal consumption events.

Improvements to the billing process would also increase the accuracy and reliability of water bills and reduce complaints. Written policies and procedures for each phase of the billing process should include reconciliation of data and management approval of the reconciliations. Effective internal controls over the billing process should include the requirement for manager or supervisor approval for changes, adjustments, deletions, and corrections to bills. The audit comments provided recommendations for implementing such procedures.

We recommend management repair or replace the existing utilities water meter test bench. With the current equipment, the statement that the meter has been tested and is accurate cannot be made.

A formal plan and process for proactive meter testing and replacement, as well as maintenance of meter boxes would increase customer's confidence that their meters are functioning properly.

The Clerk & Comptroller and Division of Inspector General would like to express our gratitude for the cooperation and professional courtesies extended to our audit team by the management and staff of Pasco County Utilities. We would also like to commend management and staff for their responsiveness in taking corrective action during the audit.

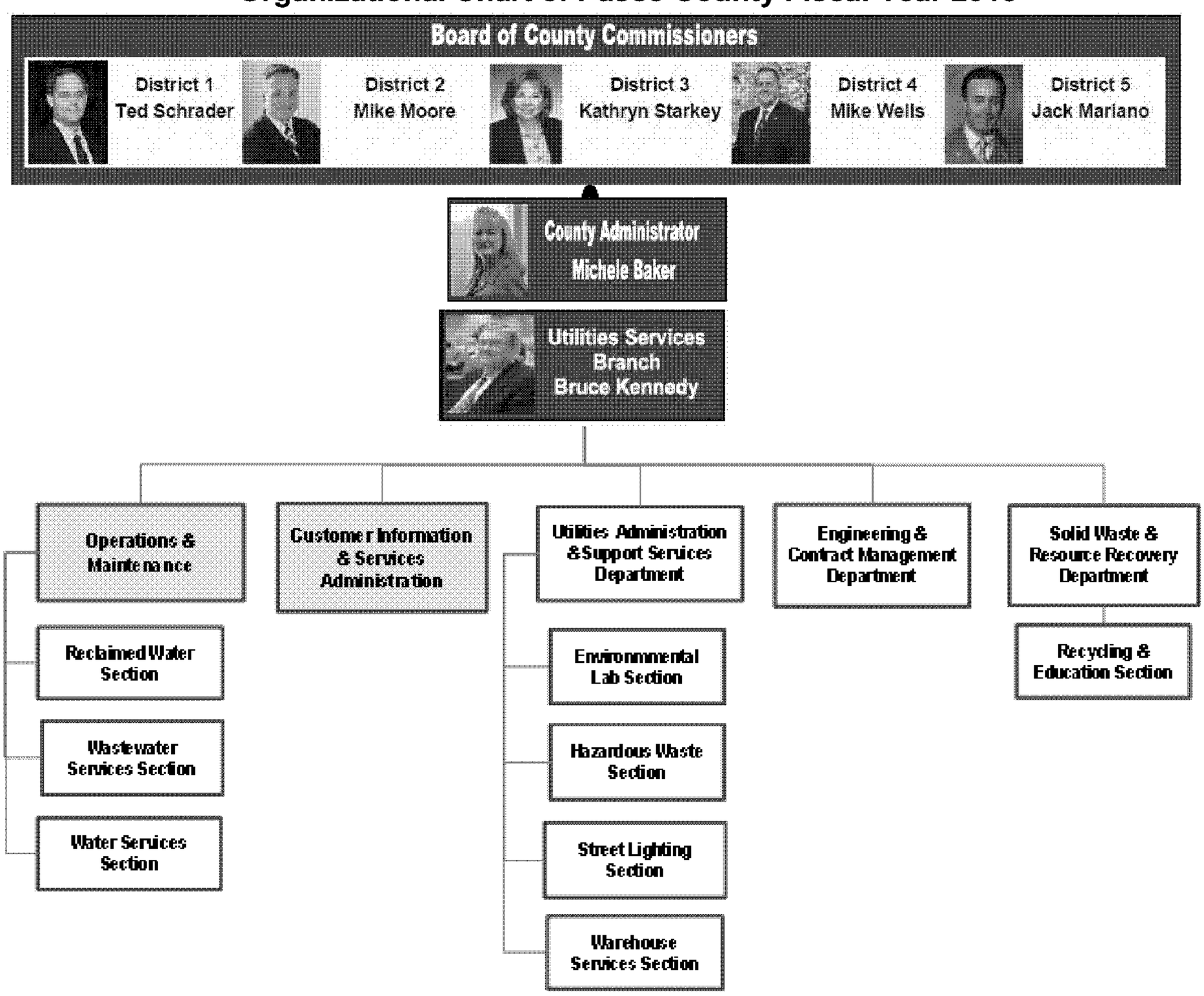
Audit Background

Pasco County Utilities (PCU) was created in 1979, for the purpose of constructing, operating, and maintaining public potable water and centralized wastewater treatment facilities. The Utilities Division absorbed the responsibilities of the Pasco Water Authority (PWA) through an act of condemnation by the County. The policy established by the Utilities Division was to acquire significant private water systems in the County in order to eventually develop a centralized, County-wide public treatment and distribution system.

PCU Customer Information & Services managed customer relations and information for utilities, as well as billing and payments for water/sewer accounts, streetlight accounts, landfill, grease, sludge, reclaimed water, laboratory, and solid waste accounts. In addition to direct customer contact through the branch offices and telephone centers, other major functions included monthly meter reading, dispatch services for water operations, intake services for utility risk management claims, as well as management of billing wholesale water and wastewater.

The utilities system in Pasco County consists of five broad and complex departments. While the water bill audit was expansive, it did not include most of the departments in the system. As a result, the conditions and conclusions in this report cannot be assumed to apply to the rest of the utilities branch. The chart below is highlighted to reflect the two areas included in this audit:

Organizational Chart of Pasco County Fiscal Year 2015



Fiscal year ended September 30, 2010, as compared to 2014, the population in Pasco County increased by approximately 10%, while the number of water customers increased by 19% and connections increased by 7%. During the same period, average daily consumption decreased by approximately one million gallons.

Residential & Commercial Combined:	**Fiscal year ended September 30,**				
	2010	**2011**	**2012**	**2013**	**2014** unaudited
Population	437,500	464,697	468,562	473,566	479,370
Customers	83,224	91,687	92,756	95,758	98,631
Connections	95,338	97,887	98,795	100,003	102,003
Average Daily Consumption (in millions of gallons)	24	24	24	23	23

Data Source: Pasco County Comprehensive Annual Financial Reports

The Pasco County Board of County Commissioners (BCC) approved a contract with Badger Meter Systems, Inc. (Badger) on June 5, 2007. Badger furnished the meter equipment and technology to replace PCU's existing 120,000 water meters. This action enabled the BCC to take advantage of advanced technology and customer service enhancements that the older manual read meters did not allow.

On September 11, 2012, the BCC entered into an agreement with N. Harris Corporation (Harris) for the delivery and implementation of Infinity, a utilities customer service and information management software system (CIS) from Advanced Utility Systems (a wholly owned subsidiary of Harris). Harris was a leading provider of financial management and CIS software solutions. The BCC sought a solution that would improve customer service levels by offering increased levels of customer self-service options, providing effective customer communication, and enabling customer service representatives to respond to customer requests quickly and efficiently. The new CIS billing system went live in June of 2014. Customers received a new bill format and were provided new account numbers and customer numbers.

In September of 2014, customer complaints concerning higher-than-normal water bills increased and resulted in media coverage. In an immediate response, the Clerk & Comptroller established an email account for PCU customers to report their water bill concerns (waterbill@pascoclerk.com).

Audit Method

The following steps were taken to accomplish the audit's objectives:

1. **Equipment Testing:**

   A. Selected samples of water meters for specific meter reading testing. A total of 708 water meters were selected for testing. Compared the reads captured with the meter reading equipment to the water meter register. Verified pertinent meter information in CIS.

   B. Samples of reads captured with the meter reading equipment were tested for accuracy.

   C. Contracted with MARS, Co. to perform independent testing of a statistical sample of small (¾") water meters selected by the IG.

D. Samples of water meters and transmitters were independently tested for accuracy.

E. Reviewed and analyzed test results received from MARS, Co.

2. Data Accuracy:

A. Water bills in the meter reading sample were reviewed to verify if the read on the bill agreed to the read captured with the meter reading equipment.

B. Water bills in the meter reading sample were reviewed to verify the accuracy of the calculated bill amount.

C. Accounts in the meter reading sample were reviewed to determine the accuracy of the read history in CIS.

D. Verified the reads captured with the meter reading equipment were uploaded into CIS correctly for accounts included in the meter reading test samples.

E. Reviewed and verified the accuracy of information on the water bills for accounts included in the meter reading test samples. Information verified included read captured with the meter reading equipment, number of days between reads, consumption since previous read, and PCU approved water rates and charges.

F. Reviewed billed consumption for the period of June 1, 2014 through September 30, 2014 for higher-than-normal water use. The accounts reviewed were included in the meter reading test samples.

3. Policies and Procedures:

A. Obtained and reviewed internal standard operating procedures for bill processing, meter reading exceptions processing, and billing exceptions processing.

B. Observed the meter reading and meter testing processes.

C. Observed bill processing and exceptions processing to determine if procedures were followed and if the procedures were adequate.

D. Obtained and reviewed system generated reports used for bill processing, meter reading exceptions processing, and billing exceptions processing.

E. Tested a selected sample of billing exceptions by tracing them through the billing system to verify if they were documented and resolved in a timely manner.

F. Conducted interviews with management, employees, one former customer service employee, residents, and vendors.

4. **Compliance and Industry Standards Review:**

   A. Reviewed compliance with applicable Florida statutes, County ordinances, certain bond covenants, and PCU policies and procedures associated with the meter reading and utility billing processes.

   B. Reviewed industry standards related to equipment and practices used in meter performance and testing.

5. **Additional Procedures:**

   A. Obtained and reviewed Geographical Information System (GIS) maps for complaint locations.

   B. Obtained and reviewed reports from County water treatment plants.

   C. Maintained a log of all complaints received through the water bill email account.

   D. Analyzed customer complaints received through April 15, 2015 to identify accounts that received monthly bills that exceeded 120% of the annual average, and if any trends existed.

Statutory Authority, County Guidelines, and Industry Standards (Appendix L)

In conducting this audit, we relied on the following authoritative guidelines to serve as criteria:

1. 2014 Florida Statutes, Title XI, Chapter 153: Water and Sewer Systems
   A. 153.83 – Free water and sewer services prohibited

2. Pasco County Ordinance, Article II: County Water Potable System
   A. 110-37(c)(7) – Access to premises
   B. 110-37(f)(2) – Standard of accuracy and certified test of meters
   C. 110-38(c) – Minimum bills
   D. 110-38(e) – Delinquent bills
   E. 110-38(h) – Evidence of consumption
   F. 110-40 – Billing adjustments

3. Water Utility Bond Official Statements - Certain Covenants – No Free Service
   A. $71,160,000 Water and Sewer Refunding Revenue Bonds, Series 2006
   B. $115,655,000 Water and Sewer Revenue Bonds, Series 2009B – "Build America Bonds"
   C. $54,290,000 Water and Sewer Refunding Revenue Bonds, Series 2014A
   D. $50,620,000 Water and Sewer Improvement Revenue Bonds, Series 2014B

4. American Water Works Association (AWWA)
   A. M6-Water Meters- Selection, Installation, Testing and Maintenance

Audit Comments & Recommendations

	Comments	Page Reference
Internal Controls – Data		
1	Verbal policies and procedures for some meter reading processes were ineffective. As a result, data entry and physical inspections in the field were not always performed. Consequently, inefficiencies in the meter reading process were observed and there was an increased risk of undetected water use.	30
2	Some accounts reflected an incorrect account status or meter status in CIS. As a result, some meters were not read and were not correctly billed for up to eight months.	32
3	Verbal policies and procedures were ineffective for detecting and updating inaccurate or incomplete information in CIS. As a result, account information was not updated in a timely manner, and increased the risk of inaccurate bills.	34
4	As a result of the wrong date entered into the meter reading equipment, five percent of reads verified during testing were not included on the CONNECT Read Report for the date the read was observed. Consequently, CONNECT Read Reports were inaccurate and could result in incorrect reads on printed bills.	36
5	Data in meter profile reports did not always agree with the detailed text files. As a result, the meter profile reports were not always reliable.	37
6	Printed bills did not always reflect accurate read dates or accurate reads. Consequently, some accounts were incorrectly billed.	38
7	Meter read dates and/or meter reads reflected on the CONNECT Customer Record did not always agree with the information displayed in the CIS read history.	40

	Comments	Page Reference
Internal Controls – Policies and Procedures		
8	Meter reading exceptions reports were not utilized to identify unusual reads prior to bill generation. As a result, numerous accounts that appeared to have higher-than-normal water use from June 2014 through September 2014 may have been undetected.	41
9	Exception status codes for potential leaks, no usage, and reverse flows were not consistently addressed. Lack of policies and procedures, and failure to address exception codes increased the risk of undocumented potential leaks, and unbilled water use.	44
10	Meters were not always read between 28 and 32 days. As a result, accounts may have been incorrectly charged in subsequent months.	44
11	The number of records in a billing batch was not reconciled to the number of meters read in the cycle in CIS since June 2014. As a result, some accounts may not have been billed.	45
12	Standard operating procedures (SOP's) for bill processing were inadequate. As a result, there was an increased risk of accounts being inaccurately billed.	46
13	Review and approval of reconciled billing, meter reading exceptions, and billing exceptions reports was not performed by management. As a result, there was an increased risk of unauthorized bill adjustments, bill cancellations and unbilled accounts.	47
14	Segregation of duties for bill processing was inadequate. As a result, there was an increased risk of undetected and/or unauthorized billing transactions.	47
15	Written standard operating procedures (SOP's) for identifying and resolving meter reading exceptions and billing exceptions were not provided to staff performing those functions.	48
16	Billing exceptions that resulted in bill adjustments were not always documented in CIS, and did not require authorization and approval from management.	49
17	Billing exceptions were not always resolved in a timely manner. As a result, accounts were not always billed on a monthly basis.	49

	Observations	Page Reference
Equipment		
1	The PCU water meter test bench was not always consistent or accurate. Consequently, test results from the PCU test bench cannot be relied upon for confirming a meter is functioning accurately.	51
2	There were no written policies or programs for routine testing and replacement of small meters. As a result, inaccurate meters may remain in service until a customer complaint is received.	52
Data		
3	Incorrect routes were uploaded into the meter reading equipment, which caused inefficiencies in the meter reading process.	53
4	System security reports were not added to the CIS report environment. As a result, a system audit log was not available.	53
Policies and Procedures		
5	A Billing adjustment policy was not in compliance with County Ordinance 110-40.	54
6	Policies and procedures to enforce access to premises in accordance with county ordinance did not exist. Lack of access to premises prevents PCU from inspecting, maintaining, and reading meters.	55
7	A delinquent account was not disconnected in a timely manner, and resulted in the account receiving service without payment for nine months.	55
8	Lack of procedures for monitoring non-metered water connections resulted in possible theft of service from a vacant lot.	56
9	Maintenance of meter boxes was inadequate and resulted in reduced accessibility to meter components.	57
10	Access to the CONNECT application was not secured, and increased the risk of unauthorized use.	57

Comments & Recommendations

Control Activities: Listed below are comments that represent opportunities to strengthen the internal controls. For each comment, a recommendation has been included.

1. **Verbal policies and procedures for some meter reading processes were ineffective. As a result, data entry and physical inspections in the field were not always performed. Consequently, inefficiencies in the meter reading process were observed and there was an increased risk of undetected water use.**

   A. According to the Meter Reader Supervisor, there were informal, or verbal policies and procedures for certain meter reader responsibilities. We observed that meter readers did not always physically inspect or manually read the meters identified with a tamper code or pulled status. The meter reading equipment (laptops) were also set to make distinguished sounds when a tamper code was identified. The sound would prompt the meter reader to physically check the meter. Some meter readers ignored the alert and did not physically verify the meter box or obtain a manual read.

   B. The informal policy explained to the IG indicated the meter readers must physically inspect the meter box and manually enter the read reflected on the meter register into the meter reading equipment for meters with a tamper code. For meters with a pulled status, the meter readers should have physically inspected the meter box each month on the scheduled read route and verified the water connection had not been tampered with. The laptop volume should have been loud enough to ensure the meter readers were alerted when a manual read or physical inspection was necessary. Failure to react to the tamper alerts could result in unbilled water consumption which may not be discovered for an extended period of time. This may also result in inaccurate reads which could cause inaccurate bills.

   C. Additionally, the Meter Reader Supervisor explained that the meter readers were required to enter notes in the extended comment section of the meter reading equipment when meter issues were discovered in the field. These comments were to be reviewed to determine any necessary action to resolve problems. However, notes were not always entered in the extended comment field and/or the extended comments were not always reviewed.

   During IG testing the following was observed and noted:

   1. A water meter (not included in the test sample) was not replaced with an automated meter reading (AMR) meter as of 2/4/15. The meter reader made note of this on a piece of paper and notified dispatch when the route was completed. The meter was replaced on 2/11/15. However, for over a year, this meter was read manually every month. No evidence was provided to the IG that extended comment notes or other communication existed to correct this oversight prior to the IG observation.

   2. A second water meter (not included in the test sample) was not initialized when it was installed on 10/9/13. The meter reading equipment displayed unread on 2/11/15 and the meter reader referred to this as a *ghost* meter. The read on the meter register was 999999. This discrepancy was undetected for 16 months until the meter was initialized as a result of the IG's observation. No evidence was

provided to the IG that extended comment notes or other communication existed to correct this oversight prior to the IG's observation.

3. Several reclaimed water meters had to be read manually because the meter was not initialized when installed and the read on the meter register was 999999. Notes were not entered into the extended comments field.

4. Instances where transmitters that did not transmit an automated read were not always noted in the extended comments field. As a result, the meters had to be manually read.

5. One meter in the test sample had a tamper code, but the meter box was not inspected and the read was not manually entered. The meter reader was unaware that there was a verbal policy to physically inspect the meter.

6. The sound was muted on some meter reading equipment while the meter readers conducted readings. As a result, meter readers were not alerted when a tamper code was identified.

Recommendation:

Establish written policies and procedures for all meter reading processes. Policies and procedures should be explained and distributed to staff to ensure problems discovered in the field are resolved and corrected in a timely manner.

Management Response:

First, Pasco County Utilities (PCU) would like to thank the Inspector General's Office for their detailed analysis of our policies and procedures and for their recommendations.

General Note 1 (GN1): PCU Customer Information and Services Department (PCU-CIS) will add the observations and recommendations to our existing Priority Action List (PAL) as tasks that need to be analyzed and prioritized. The department will work on an action plan that will support a goal of completing the analysis of the processes mentioned herein, identifying opportunities for improvement (OFI's), and documenting the appropriate Standard Operating Procedures (SOP's) by the end of March 2016.

PCU-CIS is in agreement with the Inspector General (IG) that written policies and procedures should be established for all meter reading processes, as well as our meter reading exceptions processes. As mentioned above in General Note #1, these processes will be added to our PAL for further analysis.

General Note 2 (GN2): PCU-CIS believes it is important to note that it appears that the majority of the issues identified within this audit report do not appear to be correlated with the customer complaints regarding "high consumption" that led to the IG's audit. In accordance with County Ordinance Section 110-40(a) Billing Adjustments, it is PCU-CIS's policy to make necessary "billing adjustments" due to any billing inaccuracies. For the majority of the high consumption complaints brought to the department's attention, the research did not identify any such billing inaccuracies and as such the customers' were not eligible for a billing adjustment. Section 11-40(b) does allow for billing adjustments in the case of verified leaks and the first-time filling or filling due to repair of a pool. Any customer's that fell into this category were offered the opportunity to submit an application for a billing adjustment.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's

Target Completion Date:
March 31, 2016

2. Some accounts reflected an incorrect account status or meter status in CIS. As a result, some meters were not read and were not correctly billed for up to eight months.

According to management, some accounts during conversion came over from the legacy system with the wrong account status or meter status, and others that needed to be fixed after conversion were missed. Consequently, some accounts were not read and/or billed.

A. Meters identified as inventory status in CIS were in storage and were not in service. However, during testing, in service meters were read that had inventory status in CIS. The IG observed two out of seven active accounts with inventory status meters. Those two accounts were not included in the CONNECT read route or on the CONNECT Read Reports because the meter status was inventory. According to CIS, these accounts were only billed the sewer base charge and were not being read monthly. Management was notified of the discrepancies and corrections were made.

1. One meter was physically observed in the ground at a particular service address on 1/20/15. According to CIS, the meter was not read from May 2014 to January 2015. The read history in CIS reflected the first read was on 2/19/15. The read history in CIS had read dates of 1/20/15 and 2/23/15. The CONNECT Customer Records showed read dates of 2/18/15 and 3/18/15.

   The following billing errors were a result of the incorrect meter status:

   a. One bill appeared to be a retroactive bill for water usage for the previous months. The bill was for 11,000 gallons, which caused the account to be charged at a higher tier level. The customer was retroactively billed for the water base charge.

   b. The November 2014 through January 2015 bills were for *Sewer Only*. Those bills had previous and current read information that was not consistent with CIS and/or the CONNECT Customer Record. The bills did not include a water base charge.

   c. Three additional bills reflected a current read date and a previous read date that did not agree with CIS and/or the CONNECT Customer Record.

2. A second meter was physically observed in the ground at a different service address on 1/21/15. According to CIS, the meter was not read from July 2014 to January 2015. This account showed a move-in date of 7/22/14. The read history in CIS and the CONNECT Customer Record reflected read dates of 2/19/15 and 3/19/15.

The following billing errors were a result of the incorrect meter status:

a. One bill had a previous read date of 12/22/14 and a current read date of 1/23/15, which did not agree with CIS or the CONNECT Customer Record. The account was not billed for water usage and was not retroactively billed when the discrepancy was identified.

b. The September 2014 through January 2015 bills were for *Sewer Only*. Those bills had previous and current read information that was not consistent with CIS and/or the CONNECT Customer Record. The bills did not include a water base charge.

c. Five additional bills reflected a current read date and a previous read date that did not agree with CIS and/or the CONNECT Customer Record.

B. An account was not billed the monthly minimum bill for water and sewer base charges for eight months. During our review, we observed the process of creating a batch of cycle bills. The particular cycle was cycle 11, the Batch ID was #1508, and the billing date was 2/19/15. Billing reports related to that batch of cycle bills were reviewed. The archived reports from CIS for that billing batch contained a total of 1,693 billed accounts. However, the total number of accounts in the batch reports provided by the Accounting Clerk on 2/12/15 was 1,698 records. Audit Command Language (ACL), a data mining software, was used to determine which accounts were not included (and not billed) on the archive report and billing journal for Batch ID #1508. Five accounts were identified. Four of the five accounts that were not included on the Billing Batch Archive Report and Billing Journal for Batch ID#1508 were included on the No-Bill Exception Report, which validated why accounts were not billed. However, one account was not billed, but was not included on the No-Bill Exception Report.

The following was noted during review:

1) According to the CIS Services Tab, water service was deactivated on 5/9/14 and reactivated on 1/26/15. Notes in CIS indicated that the customer mailed a letter to PCU requesting vacation turn-on for 1/26/15. The turn-on was completed on 1/26/15. The CIS read history indicated that the account was not read or billed since May 2014. The account was not charged the monthly minimum bill for water and sewer from May 2014 through January 2015. On 3/2/15 the meter was read, and the account was billed for consumption of one thousand gallons for the billing period of 1/26/15 through 3/2/2015. It did not appear that the account was retroactively billed for all charges. This account appeared to have been on deactivated status until January 2015, and therefore was not captured in CIS.

C. A water meter was not read and the account was not billed water base charges for eight months. The process of creating a batch of cycle bills was observed. During observations, billing staff was asked how many accounts were in the cycle. The Acting Project Manager opened the Meter Reading Import File that was used for the cycle's reads. The file contained 1,739 accounts. The Acting Project Manager also created a current file, which indicated that there were 1,740 accounts in the cycle. Billing staff researched the discrepancy and determined that, for one account, the meter was not added to the account, and, therefore it did not appear on the original Meter Reading Import File. According to notes in CIS, the Data Entry Operator added the meter to the account on 2/2/15 and cited *conversion problems*. The notes also indicated that the

customer called PCU on 1/27/15 and explained that he received a bill for sewer only. In addition, the meter read history in CIS indicated that the meter was read on 5/9/14 and not read again until 2/2/15. Therefore, the account was only billed for sewer base charges for eight months.

Recommendation:

A. All accounts should be reviewed to ensure that all account and meter status data is accurate in CIS.

B. Accounts having sewer service with no water service should be identified and corrected. We recommend that management address this concern in two phases. The first phase should include a report of all accounts that are sewer only. Establish a matrix to review and verify that every sewer only account, is in fact, receiving sewer services only. Resolve discrepancies as immediately as possible to include retroactive billing for all services received. Management should utilize the same procedure described to incorporate into a monthly or bi-monthly procedure.

C. Consult with the CIS vendor to determine if all meter status types can be uploaded from CIS to CONNECT to ensure all active accounts are read and billed accurately. When errors are discovered, accounts should be retroactively billed. Rates and charges should be consistently applied to all retroactive bills and ensure that proper tier levels are applied.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

PCU-CIS has already made recommendations to add two (2) temporary staff that would work on data cleanup within the CIS Infinity system and will move forward with this plan.

Target Completion Date:
March 31, 2016

3. Verbal policies and procedures were ineffective for detecting and updating inaccurate or incomplete information in CIS. As a result, account information was not updated in a timely manner, and increased the risk of inaccurate bills.

The following information was incorrect in CIS for accounts included in the test sample:

A. The meters for two accounts did not exist at the service addresses indicated in CIS.

B. The meter number for one account verified during testing did not agree with the meter number in CIS.

C. The transmitter number for two accounts verified during testing did not agree with the transmitter numbers in CIS. These were active accounts with inventory meter statuses.

D. The service address for one account was incorrect in CIS.

E. According to CIS, the meter numbers and/or transmitter numbers were not updated in a timely manner for four accounts included in our test sample, ranging from one month to more than three years. For one account, the audit log in CIS was blank and we were unable to verify when the transmitter number was updated.

F. The meter number was not engraved on the meter lid for one account and the meter did not have a meter number identification sticker. As a result, the meter number associated with the account could not be verified in CIS.

G. All meter sizes in CIS were hard coded with the test circle code 48 (resolution of 10 gallons). The test circle resolution was incorrect in CIS at time of the read for four accounts. As a result, the reads uploaded into CIS were incorrect for meters that were 1.5 inches and above and were manually adjusted in CIS. PCU was aware of this situation since September 2014 and was in the process of correcting the issue during the audit. The test circle codes were corrected in the system on 2/18/15.

H. The text file used to import reads into CIS did not include two multipliers for the present read. This resulted in reads sometimes being falsely identified as normal, high, low, or reversed.

I. PCU management updated account information in CIS after discrepancies were brought to their attention. The billing system should accurately reflect account information, and reads should be uploaded into CIS accurately and consistently. An audit log documents the sequence of activities affecting an operation, procedure, event, file or document, and should be used to track all changes for accountability purposes.

Recommendation:

A. Establish documented policies and procedures for entering and updating information accurately and timely in CIS to ensure account information is reliable, accurate, and complete.

B. Consult with the CIS vendor to determine why changes made to certain account fields were not consistently tracked and/or listed on the audit log.

C. Implement policies and procedures to verify that meter numbers are engraved on meter lids prior to installation to ensure meter identification. Badger, or subsequent meter providers, should be notified of any discrepancies found with the meters.

D. The parameters for the text file should be corrected to accurately reflect the appropriate multiplier to ensure consumption is billed correctly. If necessary, contact and notify the vendor of the discrepancies to determine the cause and request necessary corrections.

Management Response:

These issue fall under GN1.

These issues also fall under GN2 above.

Also regarding item H above, this issue was related to the test circles and was corrected with the fixes on 2/18/15. PCU-CIS re-emphasizes that this issue did not impact small residential meters (i.e. 5/8" x 3/4" meters), which the meters installed in nearly all residential homes.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

4. **As a result of the wrong date entered into the meter reading equipment, five percent of reads verified during testing were not included on the CONNECT Read Report for the date the read was observed, Consequently, CONNECT Read Reports were inaccurate and could result in incorrect reads on printed bills.**

   A. Of the 702 reads verified during our meter reading testing, a total of 38 (5%) were not included on the CONNECT Read Report. It appeared the meter reading equipment had an incorrect date. The CONNECT Read Report was generated based upon the incorrect date. The date was manually adjusted before the reads were uploaded to CIS. All meter readers had the ability to change the date on the meter reading equipment, which increased the risk of unauthorized changes to pertinent bill information.

   B. A read (15596) was observed on the meter register on 1/23/15 which agreed with the meter reading equipment. However, it did not agree with the read (15611) uploaded into the CONNECT system. Subsequently, the Meter Reader Supervisor explained that this account was uploaded into the clean-up file in error, and was read a second time on 1/26/15. However, when clean-up reads were performed on 1/26/15, the meter reading equipment reflected a date of 1/23/15. This caused the read date and the corresponding read to be incorrect on the printed bill. Consequently, the account was billed additional usage for that month.

   C. Two reads that were verified on 1/22/15 were included on the CONNECT Read Report but were not included on the CIS Meter Reading Export file. However, the reads were noted in the CIS Reading History section. Management did not provide an explanation for this occurrence.

Recommendation:

A. Limit and restrict access to date changes on meter reading equipment to the appropriate staff to ensure the integrity of the data and report information.

B. Review accounts omitted from CIS reports and correct the cause of missing information. Read reports should accurately reflect all accounts and the dates the meters were read.

C. Limit the number of reads per account for each billing cycle and require approval to ensure that a revised read was authorized. Consult with the vendor to determine if read limits and authorizations can be set within CIS.

Management Response:
These issue fall under GN1.

PCU-CIS already worked with our IT Department and implemented restrictions regarding user's abilities to change dates on meter reading devices.

These issues also fall under GN2 above.

PCU-CIS agrees that it is important to ensure the correct reading dates are displayed in CIS Infinity and on bills and will work to resolve these issues. However, we do want to emphasize that as long as the meter read is correct, as in the cases described above, then the associated charges would be correct as well, so customer would not be overcharged.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

5. **Data in meter profile reports did not always agree with the detailed text files. As a result, the meter profile reports were not always reliable.**

The following discrepancies were found between the account meter profile, the detailed text file (csv file), meter register, and/or meter reading equipment:

A. The consumption reflected on the meter profile did not agree to the detailed text file or meter register for one account. The profile showed 60,000 gallons used per hour, a total of 16 times, between 1/1/15 and 2/20/15, which totaled 960,000 gallons. According to the meter profile data, a total of 781,450 gallons were used between 12/23/14 and 1/23/15. On 1/23/15, the meter was read (188,790) and the account was billed for 61,000 gallons. The detailed text file showed negative usage that was not reflected in the meter profile report. There were a total of 20 negative amounts, totaling 900,140 gallons, during 1/1/15 and 2/15/15.

   The detailed text file also showed a tamper indicator 236 times between 1/25/15 and 2/19/15. The reading was zero when this occurred and no consumption was recorded. However, it appeared there was usage during this period. For example, the profile read was 189,980 on 2/16/15 at 6:34 a.m. No reads were reported for five hours. Then, at 12:34 p.m. on the same day, the read was 130,080. The difference was (59,900) and it appeared there was activity that was unreported. On 1/23/15 at 12:34 p.m. the read was 188,790 according to the detailed text file which agreed to the amount uploaded into CIS.

   This issue was discovered when the customer complained about their high water usage and a profile was ordered. On 2/20/15, a 180 day profile was completed. According to notes in CIS: the meter was installed properly, flow was correct, the meter read was 130, a leak was encountered, and there was reverse flow. The meter was replaced and the account was corrected on 3/16/15.

B. During observations, the read captured with the meter reading equipment (laptop and handheld processer) did not agree with the meter profile report or the detailed text file for one large bulk meter. Management could not explain the discrepancies between the two reads.

Recommendation:
It is recommended that PCU discontinue distributing meter profile reports to customers until the inconsistencies are resolved. In the meantime, we recommend customer service regard this report as an internal document to be used as one of the tools to aid in resolving account inquiries and disputes.

Management Response:
PCU-CIS will take the IG's recommendation under consideration. Besides the issues listed above, Staff has not identified any other issues regarding the meter profiles and still considers them to be very reliable.

It is important to note the meter profiles are not utilized to calculate billing charges and are only used for troubleshooting purposes. When utilizing a meter profile to troubleshoot high consumption, PCU-CIS has an established procedure that includes the verification of the meter number, transmitter number, and the actual meter read displayed on the totalizer of the register (referred to as the Gallons Register by the IG above). The totalizer is part of the mechanical components of the meter, which is used to determine the meter's accuracy during meter testing procedures. The profile is part of the electronic components of the meter and PCU-CIS recognizes that there is always a possibility for something to malfunction with electronic components, but our years of experience and also research has shown that it is quite rare for the mechanical components to malfunction. If PCU-CIS identifies an issue with the electronic meter reading, then we default to the mechanical meter reading.

PCU-CIS would also like clarify portions of the IG's observations mentioned in paragraph three of item A. "Installed properly" means that the meter installation was correct. "Flow was correct" means that the direction of the installed meter was correct (i.e. flow arrow was pointing towards the premise). "Reverse flow" means that the read taken from the totalizer on the register was less than the previous meter reading, which would've come from the electronic components. So it was determined that the electronic reads could not be relied upon, so PCU-CIS used the totalizer read to correct administer a billing adjustment.

PCU-CIS has already worked escalated the one small meter to their vendor's attention (i.e. Badger Meter) and it has been submitted for further analysis.

These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

6. **Printed bills did not always reflect accurate read dates or accurate reads. Consequently, some accounts were incorrectly billed.**

   A. 142 out of 701, or 20%, of accounts received a monthly minimum bill for June 2014 that showed a current read date (6/6/14, 6/17/14, 6/19/14, 6/20/14, 6/23/14 & 6/27/14) which did not exist in the CIS read history or the CONNECT Customer Record. Consequently, the bills sent out for July 2014 showed a previous read date that did not exist in the CIS read history or the CONNECT Customer Record. The printed bills were minimum monthly bills that reflected zero consumption.

   B. 47 out of 701, or 7%, of the account bills that were verified during testing had a current read date that did not agree with the date the meter was read. This was a result of incorrect date settings on the meter reading equipment.

C. Five out of 701 accounts received a minimum monthly bill for August 2014 that showed a current read date of 8/19/14. However, the CONNECT Customer Records reflected a read of 8/13/14 that did not appear in the CIS read history and did not agree to the printed bills.

D. The read (38) on a printed bill did not agree to the read (42) captured with the meter reading equipment. The CONNECT Customer Record showed a read date of 2/2/15 and was uploaded into CIS. However, the CIS read history did not show the read date of 2/2/15. This bill reflected zero (0) consumption for the month and was only billed the water base charge. Based on the CONNECT Customer Record, the consumption for the month was four thousand gallons.

Information presented to PCU customers should be reliable (accurate, true and fair). Information collected in the field should also agree to the information sent to the PCU customers. The PCU printed bills should reflect accurate information.

Recommendation:

A. Implement a checklist for meter readers to ensure laptop information (date, time, route and book) is accurate prior to collecting reads in the field. PCU should include a disclaimer with the printed bills to explain any irregularities (read, read date, etc.).

B. Establish more effective policies and procedures to ensure that the read captured with the meter reading equipment agrees with the CONNECT Customer Record and is uploaded into CIS correctly to generate an accurate read on the printed bill.

Management Response:

These issue fall under GN1.

It has been identified that if a meter reading is not captured for an account during the meter reading process, the system is defaulting to the previous read and the read date entered by the biller. Though this does not charge the customer for any consumption (i.e. 0 gallons billed), it is inaccurate in regards to the date and the number of days billed being displayed, which should also be zero (0). This is still a situation that can occur today and it is confusing for the billing staff as they are appearing as an account with "0 consumption" instead of a "Not Read" account.

The issue with missed meter readings did actually cause many customers to call and complain about high usage in July 2014, due to some meter reading routes getting missed somehow. So customers were billed for a longer period (i.e. 60 days), but the appearance of the bill was that they were only billed for a regular period (i.e. 30 days). This issue was identified and Customer Service Representatives were instructed to re-calculate what the charges should be to determine whether the customer was overcharged or not. If a customer was overcharged, then representatives were instructed to request a credit on the customer's account.

Corrective Action Plan:

These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:

March 31, 2016

7. Meter read dates and/or meter reads reflected on the CONNECT Customer Record did not always agree with the information displayed in the CIS read history.

123 out of 701, or 18%, of accounts had information on the CONNECT Customer Record that did not agree with the CIS read history between June 2014 and April 2015. The following was noted:

A. 24 accounts reflected a read date of 2/18/15 in CIS. The CONNECT Customer Records reflected a read date of 2/14/15.

B. 20 accounts reflected a read date of 2/20/15 in CIS. The CONNECT Customer Record reflected a read date of 2/15/15. The actual read date was 2/19/15.

C. 19 accounts reflected a system calculation read date of 8/19/14 in CIS. The CONNECT Customer Records reflected an interrogated read date of 8/19/14.

D. 16 accounts reflected a read date of 2/19/15 in CIS. The CONNECT Customer Records reflected a read date of 2/15/15.

E. 9 accounts reflected a read date of 2/20/15 in CIS. The CONNECT Customer Records reflected a read date of 2/16/15.

F. 5 accounts reflected a read of 8/13/14 in the CONNECT Customer Record. The CIS read history did not reflect the read.

G. 4 accounts reflected a hand estimate read date of 9/16/14 in CIS. The CONNECT Customer Records reflected an interrogated read of 9/16/14.

H. 3 accounts reflected a read date of 2/20/15 in CIS. The CONNECT Customer Records showed a read date of 2/14/15. The actual read date was 2/19/15.

I. For the remaining accounts, the information on the CONNECT Customer Record did not agree with the CIS read history due to: incorrect dates on the meter reading equipment, service order read dates replacing the cycle read dates, or missing meter information. The service orders were not for final bills, but for field investigations and reconnections.

Recommendation:
While some discrepancies in meter reading information may not have a direct impact on the dollar amount billed, they can cause confusion. Establish a policy and procedure to require a reconciliation of the CONNECT Customer Record to the CIS read history. Regular reconciliations should be performed and discrepancies should be noted and documented in CIS. Consult with the vendor to determine why service order reads override cycle reads, and if this can be corrected.

Management Response:
PCU-CIS agrees with the IG's observations regarding meter reading dates and recognizes that it is important that accurate information is captured and displayed in our systems and on customer bills.

These issue fall under GN1.

However, PCU-CIS wants to re-emphasize the IG's statement above in their recommendation "While some discrepancies in meter reading information may not have a direct impact on the dollar amount billed".

PCU-CIS has already established verbal policies for meter readers to check the date of their reading devices at the start of their day, which appears to be one of the root causes of many of the observations listed above. The supervisor has also worked with our IT Department to restrict the ability to change meter read dates in the reading devices.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

8. **Meter reading exceptions reports were not utilized to identify unusual reads prior to bill generation. As a result, numerous accounts that appeared to have higher-than-normal water use from June 2014 through September 2014 may have been undetected.**

During observations, the Accounting Clerk indicated that system-generated meter reading exceptions reports were not utilized and that only billing exceptions reports were used. She stated that prior to implementation, billing staff was told by an Advanced Utility Systems (AUS) employee that the meter reading functionality was *useless* and *garbage*. However, the Account Manager for AUS stated that the meter reading exceptions reporting functionality in CIS was working in all CIS Infinity releases.

Additionally, an email was sent to the Customer Services Administrator regarding the use of meter reading exceptions reports to identify and resolve unusual readings prior to bill generation. He indicated that there was an alternative method for working meter reading exceptions, as trained by AUS, which included resolving exceptions in the billing cycle after bills were generated. The alternative process did not identify and resolve meter reading exceptions prior to billing and therefore, was not an effective meter reading exceptions process. Meter reading exceptions reports were not utilized in CIS prior to April 2015. This procedure may have identified numerous accounts reflecting higher-than-normal use.

A. 420 out of 701, or 60%, of accounts included in the meter reading sample had printed bills that reflected higher-than-normal water use between the periods of June 2014 through September 2014. 269 out of the 420 accounts were citizen complaints received through the water bill email account as of 12/23/14. The water use reflected on the usage history for June 2014 through September 2014 did not appear to be consistent with the rest of the year.

Timely identification of meter reading exceptions allowed corrections to be made in the current billing cycle before bills were generated and sent to customers.

The Account Manager for AUS expressed that recommended practices for their system included utilizing meter reading exceptions reports. His recommendation was:

> "Ideally, meter reading should be run after the reads are imported prior to billing. This will allow the user to review and go back to the reads that have billing exceptions and correct it as necessary prior to creating the billing batch."

Recommendation:

A. Review accounts with higher-than-normal water use for the period of June 2014 through September 2014 and determine if the water use was 20% greater than the average monthly consumption. Apply billing adjustments to the accounts that meet the requirements as stated in Pasco County Ordinance, Section 110-40. Establish policies and procedures to ensure the use of meter reading exceptions reports to capture unusual consumption amounts.

B. Meter reading exceptions reports should be run after reads are imported into CIS and prior to billing. This would allow the user to review and go back to reads that have meter read exceptions for correction prior to creating the billing batch.

Management Response:

These issue fall under GN1.

PCU-CIS has many concerns regarding statements made by the IG regarding their observations and recommend that this be reworded or be removed from the report. Specifically, the use of the word "excess" suggests that customers were overcharged, which was not the case for the majority of complaints that led to the IG audit.

PCU-CIS is also very concerned with the IG's above statement regarding "excess water use was 20% greater than the average monthly consumption". It is quite normal for PCU-CIS staff to see consumption increase by 20% or more for an account. This is especially true for those accounts that have irrigation systems hooked to their potable water supply. Especially those accounts within a deed restricted community that have HOA requirements stating lawns must be well manicured (i.e. no dead spots). For a large percentage of the customers that complained last summer, PCU-CIS staff pulled many meter profiles, which included verifying meter readings and evaluating the profiles to determine consumption patterns. In most cases it was found that the profiles showed significant and excessive consumption patterns typical of irrigation systems on controllers (i.e. high water usage on the same day of the week at the same times). For some accounts, PCU-CIS staff visited the premise and confirmed that the irrigation controllers were programmed improperly, but consistent to the consumption being seen on the meter profiles.

PCU-CIS would like to point out that though 20% is stated in County Ordinance 110-40(b), this has not relevance with exception handling. It is actually a minimum threshold that must be reached before the issuance of a credit would be considered. PCU-CIS utilizes a much higher threshold for exceptions and has concerns as to how the 20% is referenced in this observation and recommendation.

The Pasco County Ordinance, Section 11-40 regarding Billing Adjustments only allow adjustments for billing errors (i.e. incorrect meter readings or incorrect estimated meter readings), verified leaks, or the first time filling of a pool. When it is determined by PCU-CIS staff that there were no billing errors or leaks at an account, then a customer account does not qualify for a Billing Adjustment under this section of the ordinance.

As stated previously under Observation #6 above, PCU-CIS staff did identify accounts that were billed incorrectly due to not obtaining a meter read for a particular month (i.e. June 2014). This led to accounts being billed the following month for an extended reading period (i.e. 60 days vs. 30 days) and in these cases the reading period displayed in the CIS Infinity system and on the bills was not accurate and misleading. PCU-CIS staff investigated a large number of these accounts and issued billing adjustments, where applicable.

Regarding observations above as to how exceptions were handled, PCU-CIS staff was trained by AUS and was utilizing Exception Handling procedures during the months of June to September 2014. Staff was not using the Pre-exception report available within the CIS Infinity system, as they were trained by AUS on how to use the Bill Batch Processing to handle exceptions. This method of exception handling was preferred due to the fact that staff could efficiently work the exceptions (i.e. quickly separate them from non-exception accounts, generate Service Orders, etc.) from within the billing batch versus using the Pre-exception report, which is very manually intensive process to work exceptions.

Since PCU-CIS started billing in the new CIS Infinity system, the department has made several adjustments to the configuration of exceptions within the system. The biggest challenge is finding efficient and effective configurations regarding why exceptions trigger and an account to receive a "No Bill" exception. Each "No Bill" exception requires staff to physically review and modify the account in order for it to generate a bill. In June 2014 the configuration triggered all accounts with an exception to receive a "No Bill", which proved to be unrealistic and caused issues with getting bills out in a timely manner, so adjustments had to be made. We need to continue to analyze the exception configurations to which ones are the most efficient and effective that support our goals of timely and accurate billing.

PCU-CIS also wants to note that with our current Automated Meter Reading (AMR) technology, the necessity and value of performing re-reads in the cases of low and high consumption is minimal. Unlike when meter readings were entered manually by meter readers and there was the possibility of human error, the AMR technology has drastically reduced inaccuracies of the meter read being obtained. This is particularly the case for accounts where the meter has been in place for months. The situation that increases the opportunity for mistakes is when a meter replacement occurs, due to all the human intervention by staff regarding the information being gathered. So it is not a policy of PCU-CIS staff to request re-reads for every exception that is generated, especially when no change to the account has occurred.

Even with the above comments, these issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
PCU-CIS started using the Meter Reading Exception Reports around the March 2015 timeframe. However, these reports are very inefficient to utilize and have not proven to be very useful. However, we will continue to utilize the Meter Reading exception reports to identify and address the most important issues (i.e. no reads, extremely large consumption, etc.). We will also continue to monitor and adjust the configurations to ensure their efficient and effective use.

These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 2016

9. Exception status codes for potential leaks, no usage, and reverse flows were not consistently addressed. Lack of policies and procedures, and failure to address exception codes increased the risk of undocumented potential leaks, and unbilled water use.

The alert symbols identified on the meter reading equipment for accounts with potential leaks, no usage, and reverse flows were disregarded by the meter readers. Exception reports available in the CONNECT System and the summary report from the meter reading equipment were also not utilized to identify and resolve accounts with exception status codes.

One meter was identified as having no usage according to the meter reading equipment. The meter reader was asked to stop and physically verify the meter read. The meter register reflected 999999 and was not registering water usage. According to CIS, the meter was replaced in May 2013, and the account had only been charged the monthly minimum bill since that time. The meter reader notified dispatch, and the meter was replaced on 1/26/15.

Recommendation:
Develop and implement policies and procedures to identify and resolve accounts with exception status codes in a timely manner. The exception status code reports available in CONNECT and/or the meter reading equipment should be utilized and reviewed by management on a regular basis.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

10. Meters were not always read between 28 and 32 days. As a result, accounts may have been incorrectly charged in subsequent months.

A. 296 out of 701, or 42%, of the accounts read during field observations were outside the 28 to 32 day guideline.

1. 149 of the accounts in the meter read test sample had less than 28 days between reads. The number of days between reads was determined by comparing the previous read date on the printed bill to the actual read date. These were not final bills. The number of days between reads ranged from 22 to 27 days.

2. 147 of the accounts in the meter read test sample had more than 32 days between reads. The number of days between reads was determined by comparing the previous read date on the printed bill to the actual read date. These were not final bills. The number of days between reads ranged from 33 to 35 days.

B. 142 out of 701, or 20%, of the accounts in the meter read test sample received bills in July 2014 for 60 days of usage.

C. 13 accounts in the meter read test sample received a bill in June 2014 that indicated 44 days between reads.

The county ordinance specifically defined a month as: “Month means the time interval between successive meter reading dates when service is rendered upon a monthly basis, which interval may be 30 days, more or less.” PCU did not have a formal written policy that requited meters to be read between 28 and 32 days. According to PCU, they relied on a guideline to do their best to keep read intervals between 28 and 32 days.

Recommendation:
Establish a written policy that provides a specific definition of a month, and implement a meter reader schedule that includes backup procedures for absenteeism and holidays. Meters should be read on a consistent monthly basis so accounts are only billed for water used in the prior 28 to 32 days. Meters read on a consistent basis may mitigate future account complaints.

Management Response:
As stated above by the IG, the County Ordinance does not require PCU to obtain meter reads between 28 and 32 days. However, PCU-CIS has always and will continue to do their best to obtain meter reads within the 28 to 32 day period, but this is not always feasible. Weekends alone can result in it not always being possible to obtain a read within this window. More challenges arise during month with three to four day weekends due to holidays and PCU-CIS does not utilize meter reading staff on holidays. So PCU-CIS will have to take into consideration budget implications when evaluating these recommendations.

These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
In support of this issue, PCU-CIS will include an analysis of our current meter reading cycles and routes to determine what opportunities for improvement exist.

These issues will be added to the PAL for further analysis, process improvements, and documenting SOP’s.

Target Completion Date:
March 31, 2016

11. The number of records in a billing batch was not reconciled to the number of meters read in the cycle in CIS since June 2014. As a result, some accounts may not have been billed.

During observations, billing staff indicated that prior to the implementation of CIS, reconciliation was performed. The CONNECT Meter Reading System Route List was used to verify that the number of meters read reconciled with the number of meters in the route. However, this practice ended when the employee who performed the reconciliation moved to another position within PCU. After the implementation of the new billing system, the Meter Reading Import Files created in CIS were used to import account and meter information from

CIS to CONNECT. The Acting Project Manager indicated that the Meter Reading Import Files were saved on the Utilities U:drive. However, the Accounting Clerk was unaware of having access to the files. Consequently, reconciliations were not performed.

Recommendation:

Billing staff should utilize the Meter Reading Import Files as a guide to reconcile the number of bills in a cycle batch. The number of accounts and meters that were passed from CIS to CONNECT should align with the number of accounts billed in a cycle. Discrepancies should be tracked and documented for follow-up. The reconciliation should be reviewed and approved at the supervisory level.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

12. Standard operating procedures (SOP's) for bill processing were inadequate. As a result, there was an increased risk of accounts being inaccurately billed.

The procedures that were provided were consistent with those in the *CIS Infinity Training Workbook*. However, although detailed procedures existed for the main components of the billing process, various functions were not included. There were five main types of bills that could be produced in CIS: manual bills, final bills, cycle bills, cancelled bills, and cancel-rebill bills. Functional changes occurred in both the Bill Processing and Reading Entry forms in CIS, depending on the bill type. However, procedures for processing the following bill types were not included in the SOP's: manual bills, final bills, cancelled bills, and cancel-rebill bills.

Recommendation:

Policies and procedures are some of the operational means by which management can control functions within an organization and ensure that management directives are carried out. Establish written SOP's for processing each of the bill types that can be produced in CIS. Policies and procedures should include segregation of duties, and supervisory review and approval for critical and high risk procedures. Disseminate written SOP's to all staff performing those functions.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

13. Review and approval of reconciled billing, meter reading exceptions, and billing exceptions reports was not performed by management. As a result, there was an increased risk of unauthorized bill adjustments, bill cancellations and unbilled accounts.

An internal control questionnaire was given to the Customer Service Administrator regarding management's oversight of several areas and the following was noted:

A. Bill cancellations did not require prior management authorization and approval. In addition, management was not reviewing and monitoring cancelled and manual bills for each billing cycle.

B. Management was not reviewing or approving the number of accounts billed with the number of accounts read.

Recommendation:
Adequate oversight by management reduces the risk that erroneous bills will be sent to customers, reduce the opportunities for unauthorized adjustments, and reduce unauthorized or unknown bill cancellations.

A. Before bills are printed and sent to customers, management should review and approve reconciled billing, meter reading exceptions, and billing exceptions reports.

B. Billing adjustments and cancellations should have prior authorization and approval by management.

C. Management should periodically review justifications for clearing meter reading exceptions and billing exceptions.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

14. Segregation of duties for bill processing was inadequate. As a result, there was an increased risk of undetected and/or unauthorized billing transactions.

Some billing staff had duties that should be segregated. The Accounting Clerk had the responsibilities of generating bills, adjusting bills, canceling bills, and re-billing accounts with no additional management review or approval. In addition, an internal control questionnaire was given to the Customer Service Administrator regarding management's oversight of billing and billing exceptions processing. Responses indicated that only the billers handled and reviewed cancelled bills. Additionally, staff performing the job (i.e. Meter Reading Supervisor, Data Entry Operator, and Accounting Clerk) was responsible for reconciling what was read with what was billed. There was no evidence that management reviewed any edits of data from the original source.

Recommendation:
Key duties should be adequately divided, or segregated among different staff to reduce the risk of error or inappropriate actions. Assigning one individual full responsibility for all aspects of a process could result in errors, misappropriations, or irregularities being concealed and undetected.

A. Management should separate duties of employees so that no one person has control over a complete transaction from beginning to end.

B. Work flow should be established so that one employee's work is verified by another independent employee before proceeding to the next phase of billing.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

15. Written standard operating procedures (SOP's) for identifying and resolving meter reading exceptions and billing exceptions were not provided to staff performing those functions.

An internal control questionnaire was given to the Meter Reader Supervisor, Data Entry Operator, Accounting Clerk, and Senior Project Clerk and all responses indicated they were unaware of written SOP's for processing and resolving meter reading exceptions and billing exceptions.

Recommendation:
Policies and procedures are some of the operational means by which management can control functions within an organization and ensure that management directives are carried out.

Establish written SOP's for resolving meter readings exceptions billing exceptions. Disseminate written SOP's to all staff performing those functions.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

16. Billing exceptions that resulted in bill adjustments were not always documented in CIS, and did not require authorization and approval from management.

A limitation of scope was encountered due to the fact that billing exceptions reports were not available for the selected review period. See *Scope Limitation,* page 16.

A. Billing exceptions that resulted in adjustments to bills were not always documented in CIS.

1. 5 out of 78 billing exceptions which appeared on the billing exceptions report for the February 2015, cycle 11 billing batch had amended bills. There were no notes or supporting documentation in CIS for the bill adjustments.

2. Six additional bills that appeared on the no-bill exceptions report were not found in CIS. However, it appeared that each of those bills was replaced with another bill having a new bill number. Three out of six no-bill billing exceptions had no notes or supporting documentation in CIS for the bill adjustments.

B. Billing exceptions that resulted in adjustments to bills did not require authorization and approval by management. An internal control questionnaire was given to the Customer Service Administrator regarding management's oversight of several areas. Responses indicated that management did not review billing exceptions. In addition, billing exceptions that resulted in bill adjustments were not reviewed or approved by management.

Properly documented approval and authorization from management reduces the opportunities for unauthorized bill adjustments.

Recommendation:

A. All bills resulting in monetary adjustments should be documented and adequately substantiated in CIS or other tracking mechanism.

B. Written policies and procedures should be established requiring authorization and approval from management for adjustments to bills.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

17. Billing exceptions were not always resolved in a timely manner. As a result, accounts were not always billed on a monthly basis.

A limitation of scope was encountered due to the fact that billing exceptions reports were not available for the selected review period. See *Scope Limitation,* page 16.

A. One adjusted bill had a billing date one month past the original cycle billing date. Five out of 78 billing exceptions which appeared on the billing exceptions report for the February 2015, cycle 11 billing batch had amended bills. There were no notes and supporting documentation in CIS for the bill adjustments. Four of the amended bills had the same billing date as the original cycle bills (2/19/15). One was sent a month later with a billing date of 3/18/15.

B. Two accounts on the no-bill exceptions report were not billed the minimum monthly bill for water and sewer charges for eight months.

Recommendation:
Management should implement policies and procedures for tracking and monitoring billing exceptions per cycle per month to ensure that billing exceptions are resolved in a timely manner.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

Observations: Listed below are items we observed during the audit that were outside the scope of our audit, but were worthy of being brought to the attention of management

1. **The PCU water meter test bench was not always consistent or accurate. Consequently, test results from the PCU test bench cannot be relied upon for confirming a meter is functioning accurately.**

The independent meter calibration tests performed by MARS Co. were in accordance with AWWA standards. The test bench included a scale that weighed the amount of water used in each phase of testing. The scale was National Institute of Standards and Technology (NIST) certified. PCU performed two series on 19 meters using their test bench:

A. The first test was based on pressure and flow rates reflected in their standard operating procedures. The testing procedure called for lower quantities and rates of water flow for each test level than recommended by the AWWA.

B. The second test was in accordance with AWWA quantity and flow standards that MARS, Co. used in their calibration testing.

The PCU calibration test results as compared to MARS, Co. revealed concerns regarding the accuracy of the PCU equipment. For some meters, the first and second tests yielded inconsistent results, which did not agree with MARS, Co. test results.

Recommendation:

A. Due to the inconsistency and inaccuracy of meter test results, we recommend management repair or replace the PCU test bench to afford compliance with AWWA standards.

B. For consistency of understanding, we also recommend that management initiate an amendment to the county ordinance to include the AWWA standards as the definition of legally accurate.

C. Management may also consider purchasing mobile devices for small meter calibration testing in the field. The mobile devices offer quick digital test results, and the tests can be performed in the field with the customer present.

D. Formalized training for meter calibration testing, and for the use of equipment should be provided.

Management Response:

PCU will continue use AWWA guidelines in conducting water meter testing. The County will strive to continue to provide accurate service, to include testing of water meters for its customers.

These issues also fall under GN2 above.

Corrective Action Plan:

For customers questioning the accuracy of their meters, PCU will offer several options for its customers to have their meters tested:

1. *Onsite field testing using a MARS, Company handheld meter test equipment*

2. *Offsite employing the county's calibrated Ford Water Meter Test Bench, which uses a calibrated volumetric measurement. This testing employs AWWA standards to guide the program.*
3. *Independent third party calibration testing utilizing the services of the MARS Company, which can use a combination of volumetric and/or weight measurements.*

Target Completion Date:
Ongoing

2. There were no written policies or programs for routine testing and replacement of small meters. As a result, inaccurate meters may remain in-service until a customer complaint is received.

A. A statistical sample of 167 meters was independently tested in accordance with AWWA standards to determine the accuracy of calibration. Nine out of 167 meters ran slow. Slow meters registered less water than what flowed through them. Consequently, unregistered water use cannot be billed.

1. One meter failed the Low Flow test.

2. Eight meters failed the High Flow test.

3. Statistical test results extrapolated to the entire population of 5/8" 3/4" water meters revealed that approximately 11.6%, or 10,000 meters, may be running slow.

Small meters were only tested or replaced when a complaint was received, or if some other event brought the meter's accuracy into question. Although PCU had a program for testing large meters, it did not have a program for testing small meters. Small meters should be routinely tested to ensure they are functioning accurately and accounts are billed correctly.

Recommendation:
A. Establish a program that includes systematic, ongoing testing of meter accuracy and replacement of small meters.

B. Consider adopting AWWA calibration standards as part of a guideline for meter testing and replacement.

Management Response:
PCU is in agreement with the observations and recommendations stated above by the IG and will work to implement solutions to resolve these issues.

These issues also fall under GN2 above.

Corrective Action Plan:
Less than one year ago PCU completed the replacement of over 90,000 small meters utilizing AMR technology. This endeavor has been accomplished for the first time since PCU started the practice of meter reading in the late 1970s. PCU is currently in the second phase of the program; maintenance and phased replacement of small water meters. PCU is currently developing a financially responsible small meter quality assurance testing procedure that will ultimately give way to a small meter phased replacement program. This quality assurance testing procedure will analyze several variables, including age of the meter, damage, and throughput, to develop a small water meter replacement matrix. Per the AWWA M-6 Manual, there is no specific criterion when

small meters are required to be replaced, only defined as to the acceptable amount of loss that a utility is willing to incur.

Target Completion Date:
Ongoing

3. **Incorrect routes were uploaded into the meter reading equipment, which caused inefficiencies in the meter reading process.**

Incorrect routes were uploaded into the meter reading equipment several times during testing, which caused inefficiencies and confusion. The meter readers were not aware that the wrong route was loaded until they were in the field and could not pick up reads on the assigned route. It was not determined that this had an impact on the bills.

Recommendation:
A. Establish written policies and procedures to verify the accuracy of routes uploaded into the meter reading equipment prior to meter readers being dispatched.

B. Contact the vendor to determine if the route, book, and zone can be added to the list view in the meter reading equipment.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

4. **System security reports were not added to the CIS report environment. As a result, a system audit log was not available.**

The Account Manager for Advanced Utility Systems (AUS) advised that system security reports were available, but were not added to the PCU report environment. After IG contact, the Account Manager added the security reports.

Recommendation:
The PCU System Administrator for CIS should contact the AUS Account Manager to confirm that the security reports were added to the system environment and are working properly. System Administrators should periodically review CIS system access reports to monitor if appropriate levels of authorization are granted to system users.

Management Response:
These issue fall under GN1.

These issues also fall under GN2 above.

Corrective Action Plan:
PCU-CIS, in cooperation with our IT Department, will continue to move forward with plans to hire a Technical Analyst II to be the Systems Administrator for our CIS Infinity system. System Security will be part of their responsibility.

These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

5. A billing adjustment policy was not in compliance with County Ordinance 110-40.

The county ordinance reflected specific criteria to be considered for a billing adjustment. In addition to adjustments for corrections and estimated meter reads, the ordinance allowed for billing adjustments as a result of high use due to verified leaks and for first time pool filling or filling due to pool repairs.

The ordinance is cited in PCU's standard operating procedure pertaining to billing adjustments for leaks; however, procedure guidelines reflected an adjustment for unexplained consumption: "A one-time for the life of the account billing adjustment can be completed for unexplained consumption if the customer does not know what caused the usage. A 'Notarized Statement for Unexplained Consumption' must be completed and sent back." This type of billing adjustment was not included in the ordinance.

Recommendation:
Changes to policies and procedures must be in compliance with existing county ordinances. We recommend this policy and procedure be rescinded, and all forms and references to it be removed from the county website. If management has determined the need to expand the definitions or conditions for granting billing adjustments, the county ordinance must be amended.

Management Response:
County Ordinance 110-40 (b) states the following:

Upon application to utilities customer service, for verified leaks and the first-time filling or filling due to repair of a pool, the county administrator or designee may adjust the water bill of a customer after presentation of original plumbing repair bills, original receipts for materials or parts, a notarized statement of the repair, or permit for pool installation, including the date of the work and the nature of the repair.

The ordinance states that verified leaks qualify for a billing adjustment under this section. It also states that "a notarized statement of the repair" can be presented by the customer.

It is PCU-CIS's belief that they were adhering to the ordinance by verifying a leak existed using a meter profile and also by requiring a notarized statement be presented by the customer.

However, PCU-CIS has placed our policy regarding these types of "unexplained high use" situations on hold. We will work with the County Attorney's office to ensure we are interpreting the ordinance properly and if necessary, we will bring forward recommendation to modify the ordinance.

These issues also fall under GN2 above.

Corrective Action Plan:
PCU will work with the County Attorney's office to ensure adherence to the ordinance and to determine whether modifications would be necessary surrounding these types of situations (i.e. unexplained high use).

PCU-CIS will also work with the BCC to ensure that County Ordinances and any supporting policies and procedures meet their expectations regarding County Ordinance 110-40(b).

Target Completion Date:
August 31, 2015 to determine whether our policies adhere to the ordinance.

TBD to implement any necessary modifications, but they will be done as quickly as possible.

6. **Policies and procedures to enforce access to premises in accordance with county ordinance did not exist. Lack of access to premises prevents PCU from inspecting, maintaining, and reading meters.**

Two out of 169 meters in the independent meter test sample were not accessible despite two notifications requesting access. When extrapolated to the entire population, approximately 4%, or 3,462 meters, may not have been accessible at any given time.

Recommendation:
Establish written policies and procedures to enforce County Ordinance Section 110-37(c)(7) which grants access to premises. Policies and procedures should include a requirement for documentation of each step as explained in the ordinance.

Management Response:
These issue fall under GN1.

PCU-CIS does have verbal policies regarding access to premises, which are closely related to the County Ordinance.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

7. **A delinquent account was not disconnected in a timely manner, and resulted in the account receiving service without payment for nine months.**

During testing on 1/26/15, an account in the test sample was locked off for non-payment. According to CIS, the last payment was received in April 2014. However, the account was not locked off until nine months later.

According to County Ordinance, Section 110-38 (e), if a payment is was not received within 60 days, the water service was subject to disconnection without further notice.

Recommendation:

Establish written policies and procedures for monitoring delinquent accounts to ensure that meters are locked off in a timely manner.

Management Response:
These issue fall under GN1.

PCU-CIS does have verbal policies regarding access to premises, which are closely related to the County Ordinance.

These issues also fall under GN2 above.

Corrective Action Plan:
These issues will be added to the PAL for further analysis, process improvements, and documenting SOP's.

Target Completion Date:
March 31, 2016

8. Lack of procedures for monitoring non-metered water connections resulted in possible theft of service from a vacant lot.

During testing, the IG observed a vacant lot with a non-metered water connection. A water nozzle was attached to the black hose connected to the water line. The meter reader immediately put a lock on the line.

Recommendation:
Management should track non-metered water connections. To prevent unbilled water usage vacant property, establish policies and procedures for placing locks on non-metered water lines until construction has commenced

Management Response:
Although an issue, PCU does not feel this is a significant issue and there are only a few isolated cases. In active subdivision developments, use of non-metered water connections assists with maintaining water quality and reduces the need for teams to be deployed to flush water lines in low flow zones.

These issues also fall under GN2 above.

Corrective Action Plan:
There is a trade-off between flushing water lines and unauthorized water loss. In subdivisions that are inactive or development has ceased, service will be isolated and connection buried to decrease the probability of unauthorized water loss.

Target Completion Date:
Ongoing

9. Maintenance of meter boxes was inadequate and resulted in reduced accessibility to meter components.

65 out 152, or 43%, of the meter boxes verified during independent meter testing were full of dirt, mud, water and/or debris. In two meter boxes, the transmitters were attached but not mounted to the meters and were lying in the dirt.

Recommendation:
Develop a program that includes routine meter box maintenance to ensure that meters are accessible for inspection and testing.

Management Response:
Ongoing meter box maintenance is primarily driven by service/work order requirements due to reported damage or customer service orders. Priority for on-site meter box inspections are focused on reclaim-water customers due to the potential for cross-connect issues.

PCU elected to implement AMR meters, in part, to reduce the requirement to access meter boxes, with the primary goal to obtain an accurate meter reading and as long as PCU-CIS is obtaining a meter reading, then maintenance of the box might not be necessary.

PCU-CIS does have a task on our Priority Action List to establish an Annual "eyes on" Meter Inspection by Meter Readers, with the purpose of ensuring that all meters are accessible, intact, appear to be functioning properly, and to obtain a read for verification purposes.

These issues also fall under GN2 above.

Corrective Action Plan:
In time, this on-going program could be expanded to include all in-ground meters, but increase of this level of service (LoS) would require additional resources and funding, which must be balanced against benefits gained. Use of AMR meters has allowed for deferring some maintenance requirements and access issues.

PCU-CIS will move forward with plans to implement an Annual "eyes on" Inspection for all meters, along with a supporting written SOP.

Target Completion Date:
September 30, 2016 (If funding is in place to support increased LoS for meter box maintenance)
September 30, 2016 to have at least a pilot program for Annual "eyes on" Inspections and a written SOP completed.

10. Access to the CONNECT application was not secured, and increased the risk of unauthorized use.

The CONNECT application resided on a stand-alone computer located in an unsecured room. Unique user identification and passwords were not required to gain access, and only one profile was set up for system access.

Recommendation:
The CONNECT application should be protected from unauthorized use and access by implementing password security measures that are unique to each user.

Management Response:
PCU-CIS has recognized that the security of the CONNECT system is less than adequate. Funds have been budgeted to actually replace CONNECT with Badger's new version, which will now be a cloud-based application called Beacon ReadCenter. This new version was supposed to be available in September 2014, but it is still under development.

PCU-CIS believes it is important to note that the issue identified above is not correlated to the customer complaints that led to the IG's audit.

These issues also fall under GN2 above.

Corrective Action Plan:
As an interim solution, PCU-CIS will work with our IT Department to implement individual logins to the PC that hosts the CONNECT software application.

When available, PCU-CIS will switch to the Beacon ReadCenter application, which is supposed to have adequate security.

Target Completion Date:
August 31, 2015 to have individual logins for the CONNECT PC

TBD to implement the Beacon ReadCenter application

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Appendix A
Entrance Conference Agenda

Office of Paula S. O'Neil
Clerk & Comptroller
Pasco County, Florida

Entrance Conference Agenda
October 17, 2015

Introduction

- **Engagement Notification:** An engagement memorandum was sent on October 1, 2014 notifying the County Administrator, Michele Baker, and Assistant County Administrator, Bruce Kennedy of the commencement of this engagement.

  This engagement was initiated by the Pasco County Clerk & Comptroller, Paula S. O'Neil on October 1, 2014 as a result of media coverage and inquiries regarding a growing number of water utility bill complaints.

Audit Team Members

- Patrice Monaco
- Erika Hendricks
- Christine Calianno
- Jossei Vasquez-Gonzalez

Audit Purpose

- The Division of Inspector General is responsible for conducting independent, objective assurance, and consulting activities designed to add value and improve operations of the County and Clerk & Comptroller's Office as a service to management.

Audit Objective(s)

The primary objectives are:

- To determine if water meters functioned properly*.
- To determine if meter readings from meter reading equipment were accurately recorded in the utility billing system.
- To determine if reported usage and billing calculations were accurate.
- To determine if the processes for utility billing and for identifying and resolving exceptions detailed in system reports were adequate.

  * In addition to observation of random, county in-house testing, this will include a small judgmental sample of water meters to be independently tested by a third party under the supervision of the Inspector General.

Audit Scope

- This audit includes, but is not limited to, a review of policies, procedures, and related documentation for the period October 1, 2013 through October 17, 2014.

Audit Methodology

- Our audit will include:
    - Interviews with Utilities staff involved with meter maintenance, meter reading, billing, receipts, and customer service.
    - Interviews with utilities customers, county vendors, and other current or former county employees.
    - Observation of meter reading, meter replacement, meter testing, meter profiling, all billing activities, receipting, and customer service activities.

Audit Process

- Initial Planning & Audit Preparation

  Audit staff, and estimated completion dates were assigned. The engagement letter was sent as notification of the commencement of this audit.

- Preliminary Survey

  During this phase, we research and gather information to familiarize ourselves with the objectives, processes, risks, and controls related to the area under audit. This phase is currently underway.

- Fieldwork

  During this phase, we will focus on objectively gathering and analyzing data (evidence). We perform specific audit procedures and test selected processes or transactions with observations, analysis, investigation, evaluation, and verification.

Some of the information we need to receive as soon as possible includes:

1. Customer service complaints:
   Call logs, files, access to any customer service complaint documentation and activities.

2. List of customers account information that reflects: customer name, account number, meter serial number, transmitter (radio, tower) number, service address, and phone number.

3. Data profiles and corresponding CSV file for customer accounts as needed.

4. Utility Bills, including any supporting documentation and system reports.

5. Policies and procedures relating to meter reading, billing, and resolving exceptions.

6. Contracts and purchasing documents.

7. Inquiry/Audit access to the CIS utility billing system

8. Inquiry/Audit access to the CONNECT software.

9. Inventory of all meters installed, including serial number, location and date installed.

10. Inventory of all handheld and mobile devices used to read and record meter reads and profile data reports.

11. List of all meters removed and/or replaced.

- Reporting

During this phase, we develop a summary of findings. Once refined, the audit findings are developed further and include the condition, criteria, cause, effect, and recommendation.

Pre-Exit Conference
The Pre-Exit Conference is scheduled to discuss the summary of findings with operational management. In addition, observations that were outside of the scope of the audit but worthy of being brought to the attention of management will be discussed. The conference provides an opportunity for management to discuss any issues they may have with the findings and for the auditor to seek clarification from management. There should be no surprises in the Reporting phase after the Pre-Exit Conference. Auditors should carefully document the Pre-Exit Conference regarding any objections, and the manner in which conflicts were resolved.

Draft Report
Following the Pre-Exit Conference, we begin to draft the report. The draft report takes into consideration the results of the Pre-Exit Conference and organizes the audit conclusions into a logical document based on the fieldwork and findings.

Quality Review Process
The draft report goes through a formal quality review process to ensure compliance with the Institute of Internal Auditor's *Standards for the Professional Practice of Internal Auditing* and the Division of Inspector General's Internal Audit Policy Manual.

Exit Conference
The draft report is emailed to management for review. If management does not request further discussion after reviewing the draft report, the Exit Conference may be waived. We then formally request management to provide written responses to the audit findings.

If not waived, the Exit Conference is scheduled to discuss the draft report. After the Exit Conference, management is formally requested to provide written responses to the audit findings.

*Responses should include corrective actions to be taken and their estimated target completion dates. Management is given 20 calendar days to respond.

Final Report & Distribution
Once management's responses have been received, the draft report is finalized to include responses. The Inspector General sends the final report in accordance with the formal distribution protocol.

- Post-Audit Follow-Up
  The Division of Inspector General will track the status of corrective actions taken by operational management and issue a follow-up report every six months until all corrective action items have been verified and completed.

Management Input and Concerns

Time Frame

- Estimated field work completion date: May 31, 2015
- Estimated draft report release date: July 31, 2015

Appendix B
Pasco County Utilities Water Rates and Charges
(http://www.pascocountyfl.net/index.aspx?NID=1422)

Pasco County Utilities
14236 Sixth Street
Dade City, FL 33523
(352) 521-4285

Pasco County Utilities

Rates and Charges
Effective October 1, 2014
utilcustserv@pascocountyfl.net

Pasco County Utilities
7536 State St. – P.O. Box 2139
New Port Richey, FL 34656-2139
New Port Richey (727) 847-8131
Land O' Lakes (813) 235-6012

Meter Size	Installation	Relocation	Calibration	Water Wet Tap[1]	Residential Reclaimed System Connection	Water/Sewer or Sewer Only Owner Deposit	Water/Sewer or Sewer Only Tenant Deposit	Water Only Owner	Water Only Tenant	Water[2]	Sewer[3]
⅝" to ¾"	$276.00	$312.00	$193.00	$445.00	$445.00	$180.00	$216.00	$60.00	$72.00	$7.83	$17.34
1" to 1 ¼"	$334.00	$312.00	$193.00	$445.00	$445.00	$450.00	$540.00	$150.00	$180.00	$19.58	$43.35
1 ½"	$590.00	Actual Cost	$258.00	$665.00	$665.00	$900.00	$1080.00	$300.00	$360.00	$39.15	$86.70
2"	$669.00	Actual Cost	$258.00	$964.00	$964.00	$1439.00	$1727.00	$481.00	$577.00	$62.64	$138.72
3"	N/A		Bulk $193	$310.00	$310.00	$2879.00	$3455.00	$961.00	$1153.00	$117.45	$260.10
4"	N/A		Bulk $193	$310.00	$310.00	$4498.00	$5398.00	$1502.00	$1802.00	$195.75	$433.50
6"	N/A		Bulk $193	$310.00	$310.00	$8996.00	$10796.00	$2951.00	$3542.00	$391.50	$867.00
8"	N/A		Bulk $193	$310.00	$310.00	$14394.00	$17273.00	$4722.00	$5666.00	$626.40	$1387.20
10"	N/A		Bulk $193	$310.00	$310.00						
12"	N/A		Bulk $193	$310.00	$310.00						

PER UNIT WATER CHARGES 5/8" & ¾" ONLY **Base Rate = $7.83**

1,000 to 6,000 gallons	$2.70 per 1,000 gallons
6,001 to 9,000 gallons	$3.63 per 1,000 gallons
9,001 to 15,000 gallons	$4.59 per 1,000 gallons
>15,001 and over	$5.53 per 1,000 gallons

SEWER CHARGES **Base Rate = $17.34**

Base rate plus $5.10 per each 1,000 gallons of metered water.	
Maximum monthly residential sewer (capped 10,000 gallons 5/8" & ¾")	$68.34
Sewer only customers with no water meter (5/8", ¾", 1" and 1 ¼" calculated)	$68.34
Sewer Wet Tap[1A]	$1001.00

There is no maximum sewer charge on commercial accounts.

FIRE LINE SERVICE (no meter)

Flat fee based on size of service (monthly)

2" and under	$2.96	6"	$18.50
3"	$5.55	8"	$29.59
4"	$9.24	10"	$42.54

Fire Hydrant Installation	$5884.00 per hydrant
Fire Hydrant Service	$17.17 per hydrant per mo.
Fire Hydrant Flow Test	$160.00

OTHER SERVICE FEES AND CHARGES

Activation Fee (next day)	$57.00	
Activation Fee (same day)	$98.00	
Emergency service call (after hours)	$203.00	
Meter reading request (special)	$75.00	[4]
Disconnect/Reconnect Fee for nonpayment	$129.00	
Grease Inspection	$97.00	per inspection
Septage/Grease disposal	$79.64	per each 1,000 gallons
Sludge Processing	$130.26	per 1,000 gallons
System Pressure Testing	$160.00	per test
Re-inspection of Engineering Inspection Fee	$60.00	per re-inspection

BULK WATER AND WASTEWATER

	Less than 1.5 MGD	1.5 MGD or greater	Capital Recovery Surcharge
Bulk Water	$3.57 per 1,000 gallons	$3.30 per 1,000 gallons	$0.68 per 1,000 gallons
Bulk Wastewater	$4.04 per 1,000 gallons	$4.04 per 1,000 gallons	$1.00 per 1,000 gallons

RECLAIMED WATER (for irrigation)

Bulk Reuse Irrigation	$0.50 per 1,000 gallons	Surplus Rate	$0.23 per 1,000 gallons of reuse water used (to the nearest 1k/gal)
Residential Reuse Irrigation	$4.97 Backflow prevention device	Wet Weather Rate Commercial	TBD
	$6.08 Reclaimed water	Backflow Device	$59.60 per device – tested annually

[1] County provides labor and materials up to a 2" tap.
[1A] Over a 2" tap, the customer provides labor and materials; the County performs the tap.
[2] Minimum monthly water bill.
[3] Minimum monthly sewer bill.

Appendix C
Accounts with Complaints Submitted to: waterbill@pascoclerk.com
As of April 15, 2015

(Redacted for privacy and confidentiality)

All monthly data taken directly from CIS. Annual averages were calculated as part of the IG analysis.

*For comparison purposes only, the average rate increase of 3% effective 10/1/2014 was removed from October 2014 through May 2015 total bills.

**Accounts noted in red were included in the 10 account sample bill analysis and are included in Appendix D.

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
1	Thu 10/2/2014 6:15 AM	BLUFF MEADOW	CT	$ 81.37	2	$ 61.10	1
2	Sun 10/12/2014 7:41 PM	SHASTA DAISY	PL	$ 55.78	2	$ 59.79	4
3	Fri 10/3/2014 1:11 PM	PALMILLA	CIR	$ 151.20	3	$ 90.44	0
4	Wed 10/1/2014 5:49 PM	JEANNE	AVE	$ 11.66	4	$ 10.72	4
5	Thu 10/9/2014 10:28 PM	OAKLEY	AVE	$ 47.21	2	$ 37.47	3
6	Thu 10/2/2014 4:58 PM	CYPRESS TREE	CT	$ 92.22	2	$ 147.66	2
7	Fri 10/3/2014 10:20 AM	VENICE	DR	$ 70.90	1	$ 77.92	1
8	Wed 10/1/2014 9:20 PM	WILLOUGHBY		$ 45.85	1	$ 45.97	0
9	Sat 10/4/2014 5:12 PM	LEATHERLEAF	LN	$ 63.72	2	$ 45.37	1
10	Tue 10/14/2014 7:34 PM	LAKE VIENNA	DR	$ 127.78	4	$ 115.53	3
11	Wed 10/1/2014 6:34 PM	TOPFLITE	CT	$ 69.71	2	$ 84.70	4
12	Wed 10/1/2014 10:32 PM	BARCHETTA	DR	$ 75.58	0	$ 72.37	1
13	Wed 10/29/2014 9:24 AM	LONESOME DOVE	CT	$ 72.58	2	$ 37.26	0
14	Tue 10/14/2014 2:55 PM	NIBLICK	CT	$ 486.10	3	$ 323.97	3
15	Fri 10/3/2014 6:16 PM	COLLRIDGE	DR	$ 107.89	2	$ 96.99	1
16	Thu 10/2/2014 3:52 PM	CANNONADE	DR	$ 83.17	2	$ 56.44	0
17	Mon 10/6/2014 4:45 PM	BENT BOW	CT	$ 109.61	2	$ 103.69	2
18	Fri 10/31/2014 3:56 PM	GARDEN WALK	LOOP	$ 119.25	2	$ 131.06	7
19	Mon 10/6/2014 9:35 AM	DOUBLE	DR	$ 88.86	5	$ 105.24	3
20	Fri 10/3/2014 8:39 AM	CYPRESS TRAIL	DR	$ 116.27	3	$ 120.71	2
21	Wed 10/29/2014 6:08 PM	BELLFLOWER	PL	$ 87.03	3	$ 85.55	1
22	Sat 10/11/2014 3:46 PM	WYNDMILL	CIR	$ 126.43	4	$ 54.21	4
23	Mon 10/6/2014 6:28 PM	NORMAN	CIR	$ 53.31	1	$ 52.95	0
24	Tue 10/7/2014 8:18 PM	TUMBLEWEED	DR	$ 60.43	2	$ 90.59	1

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
25	Wed 10/15/2014 12:52 PM	ALGERINE	PL	$ 91.15	4	$ 77.13	3
26	Thu 10/2/2014 9:45 AM	GENTLE BREEZE	CT	$ 37.02	0	$ 42.24	1
27	Wed 10/1/2014 7:54 PM	LAURELDALE	DR	$ 139.35	1	$ 124.12	1
28	Sun 10/5/2014 3:01 PM	PRESCOTT	LN	$ 55.38	3	$ 57.04	3
29	Thu 10/16/2014 6:06 PM	GOSHEN	LN	$ 47.22	2	$ 47.21	0
30	Wed 10/1/2014 6:19 PM	CRIMSON CLOVER	LN	$ 68.21	1	$ 71.01	0
31	Sat 10/4/2014 10:08 AM	SKY VISTA	DR	$ 151.37	1	$ 180.40	3
32	Tue 10/28/2014 2:57 PM	BOWDEN MILL	CT	$ 94.22	2	$ 105.74	3
33	Tue 10/28/2014 1:44 PM	RIVA RIDGE	DR	$ 115.93	2	$ 130.77	2
34	Thu 10/2/2014 5:33 PM	BURKE MILL	PL	$ 60.08	1	$ 57.78	1
35	Tue 10/7/2014 7:50 PM	WRENCREST	DR	$ 60.58	1	$ 68.49	3
36	Wed 10/1/2014 10:55 PM	GENEVA	RD	$ 82.44	3	$ 92.55	3
37	Tue 10/7/2014 5:53 PM	WEATHERWOOD	CIR	$ 77.55	4	$ 64.96	5
38	Thu 10/2/2014 11:06 AM	8TH	AVE	$ 33.79	0	$ 50.21	3
39	Wed 10/8/2014 9:44 PM	LAURELDALE	DR	$ 62.21	2	$ 55.49	1
40	Thu 10/9/2014 1:57 PM	LOCH ALINE	DR	$ 78.54	2	$ 69.39	3
41	Sat 10/4/2014 12:10 PM	MOHAWK	ST	$ 37.01	2	$ 61.11	2
42	Fri 10/3/2014 2:16 PM	NEW SAVANNAH	CIR	$ 73.36	1	$ 69.40	1
43	Fri 10/3/2014 7:22 PM	PAXTON	DR	$ 59.41	2	$ 50.98	3
44	Mon 10/6/2014 3:37 PM	LITEWOOD	DR	$ 32.57	3	$ 20.56	3
45	Fri 10/3/2014 12:56 PM	CONESTOGA	DR	$ 128.50	2	$ 121.16	0
46	Tue 10/7/2014 4:25 PM	BRIAR	CIR	$ 83.68	4	$ 66.96	3
47	Thu 10/2/2014 9:11 AM	BEACH	BLVD	$ 105.87	3	$ 61.27	3
48	Thu 10/2/2014 6:12 PM	BLUE BEECH	CT	$ 143.09	3	$ 122.39	4

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
49	Wed 10/1/2014 6:20 PM	DEERBERRY	DR	$ 230.00	3	$ 193.05	3
50	Fri 10/17/2014 6:34 PM	STAGECOACH	LN	$ 45.75	1	$ 47.87	1
51	Sat 10/11/2014 8:40 PM	PONKAN	RD	$ 77.44	4	$ 77.45	4
52	Wed 10/8/2014 12:44 PM	FORE	CT	$ 101.98	4	$ 83.34	4
53	Fri 10/10/2014 11:57 AM	WARRIOR	WAY	$ 54.43	2	$ 55.31	1
54	Thu 10/2/2014 6:00 PM	TABOGI	TRL	$ 75.33	1	$ 54.09	6
55	Thu 10/9/2014 10:30 PM	STONEMAN	LOOP	$ 82.47	1	$ 76.82	0
56	Thu 10/2/2014 9:19 PM	TORRISDALE	LOOP	$ 98.35	0	$ 83.82	3
57	Mon 10/6/2014 9:26 AM	WOODGLEN	AVE	$ 86.79	1	$ 87.49	2
58	Thu 10/16/2014 4:28 PM	CYPRESS TRAIL	DR	$ 132.88	3	$ 120.26	3
59	Thu 10/2/2014 9:16 AM	WHITE BLUFF	RD	$ 81.65	4	$ 55.41	1
60	Fri 10/3/2014 2:27 PM	LAURELDALE	DR	$ 128.47	2	$ 95.49	3
61	Thu 10/2/2014 10:04 AM	COUNTRYWOOD	LN	$ 103.71	3	$ 114.01	3
62	Wed 10/8/2014 8:30 PM	JAY'S NEST	LN	$ 140.67	3	$ 129.47	0
63	Thu 10/2/2014 6:19 PM	FAIRWAY GREEN	DR	$ 148.48	4	$ 123.78	2
64	Mon 10/20/2014 1:56 PM	FOREST VIEW	DR	$ 69.55	2	$ 69.01	2
65	Sat 10/4/2014 6:42 PM	EPPING	LN	$ 173.48	3	$ 127.98	3
66	Thu 10/2/2014 8:53 AM	TALL	DR	$ 33.92	1	$ 19.08	0
67	Tue 10/7/2014 11:26 AM	CANTERBURY	DR	$ 165.74	1	$ 140.96	3
68	Thu 10/9/2014 9:09 AM	KILLINGTON	BLVD	$ 135.58	2	$ 56.13	2
69	Fri 10/10/2014 8:37 PM	WIND MILL	DR	$ 61.43	0		
70	Wed 10/15/2014 6:57 PM	HORNBILL	CIR	$ 61.87	1	$ 64.94	2
71	Wed 10/1/2014 6:24 PM	BROOKSTONE	DR	$ 63.52	0	$ 62.40	1
72	Wed 10/1/2014 6:59 PM	EAGLE STATION	DR	$ 77.74	1	$ 66.03	0

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
73	Sat 10/4/2014 1:51 PM	HAWK ROOST	CT	$ 127.80	3	$ 170.95	4
74	Wed 10/1/2014 7:38 PM	STONE ARCH	AVE	$ 59.23	1	$ 54.05	0
75	Sun 10/5/2014 4:43 PM	BRILEY	LOOP	$ 84.43	2	$ 67.85	1
76	Fri 10/3/2014 11:52 AM	SCHOOL	RD	$ 36.74	2	$ 20.06	1
77	Mon 10/6/2014 10:12 AM	ROXBURY	DR	$ 39.46	1	$ 48.34	2
78	Wed 10/15/2014 3:51 PM	DERWENT GLEN	CIR	$ 60.18	6	$ 103.36	2
79	Mon 10/6/2014 10:35 AM	FALDO	CT	$ 235.82	4	$ 62.89	3
80	Fri 10/3/2014 10:59 AM	BLUE SPRING	DR	$ 101.96	4	$ 88.58	3
81	Thu 10/2/2014 5:52 PM	FRASCATI	LOOP	$ 96.45	1	$ 65.18	4
82	Tue 10/7/2014 10:22 AM	CITRUS BLOSSOM	DR	$ 64.76	2	$ 71.46	5
83	Wed 10/8/2014 6:24 PM	ZAHARIAS	CT	$ 102.23	3	$ 87.16	5
84	Wed 10/1/2014 8:56 PM	TIMACQUA	DR	$ 82.52	2	$ 75.85	2
85	Thu 10/2/2014 5:44 PM	PRIMWOOD	LN	$ 144.86	4	$ 112.03	3
86	Fri 10/3/2014 10:33 AM	EUGENE	DR	$ 112.69	2	$ 64.72	1
87	Sat 10/18/2014 1:08 PM	FOAMFLOWER	BLVD	$ 184.85	2	$ 161.55	4
88	Mon 10/27/2014 9:09 PM	BENERAID	ST	$ 133.25	2		
89	Sun 10/5/2014 12:55 AM	CAY	DR	$ 110.50	4	$ 91.98	3
90	Wed 10/1/2014 8:42 PM	HAMMOCKS	AVE	$ 45.30	1	$ 44.10	1
91	Thu 10/2/2014 5:11 PM	LIVING WORD	CT	$ 125.10	2	$ 60.62	1
92	Fri 10/17/2014 10:21 AM	CARDINAL CREST	DR	$ 59.96	2	$ 60.56	1
93	Sat 10/4/2014 9:35 AM	DIPAOLA	DR	$ 29.65	2	$ 22.96	2
94	Mon 10/13/2014 11:49 AM	BUCKHORN	DR	$ 35.34	0	$ 37.26	0
95	Fri 10/17/2014 2:12 PM	DURNEY	ST	$ 48.24	5	$ 33.53	0
96	Mon 10/13/2014 4:41 PM	SALTAMONTE	DR	$ 107.97	3	$ 140.74	4

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
97	Thu 10/9/2014 7:16 AM	MIDTOWN	CT	$ 120.16	2	$ 99.81	0
98	Wed 2/18/2015 12:07 PM	WAYSIDE WILLOW	CT	$ 206.58	3	$ 120.03	2
99	Mon 10/6/2014 9:48 PM	ASHMONTE	DR	$ 116.35	4	$ 106.18	0
100	Thu 10/2/2014 7:38 PM	FISH HOOK	LOOP	$ 65.58	2	$ 66.42	3
101	Thu 10/9/2014 6:14 AM	SUNDER BERRY	ST	$ 111.28	3	$ 142.84	5
102	Sun 10/12/2014 9:14 PM	CEDAR WAXWING	DR	$ 104.68	3	$ 121.00	2
103	Fri 10/3/2014 10:11 PM	FLAMEFLOWER	CT	$ 97.51	2	$ 90.50	5
104	Fri 10/17/2014 6:52 PM	BENERAID	ST	$ 160.86	2	$ 86.59	3
105	Fri 10/3/2014 3:43 PM	HIGH PINES	CT	$ 53.20	3	$ 55.86	4
106	Wed 10/1/2014 8:22 PM	BIG PINE	DR	$ 79.70	3	$ 101.68	1
107	Mon 10/13/2014 8:32 AM	ROYAL HART	DR	$ 95.41	1		
108	Thu 10/2/2014 2:37 PM	HAWK HILL	LOOP	$ 151.41	3	$ 92.40	4
109	Wed 10/1/2014 8:55 PM	BRIAR	CIR	$ 80.39	2		
110	Mon 10/6/2014 1:14 PM	BREMERTON	CT	$ 84.66	1	$ 77.46	4
111	Thu 10/2/2014 11:51 AM	JUDEE	DR	$ 32.79	1	$ 16.40	2
112	Fri 10/3/2014 11:13 AM	AMBERSWEET	PL	$ 88.61	1	$ 82.07	3
113	10/21/2014 (Phone Call)	VICTORIA	RD	$ 74.89	2	$ 61.23	2
114	Wed 10/1/2014 7:35 PM	FRASCATI	LOOP	$ 55.44	1	$ 72.25	4
115	Wed 10/8/2014 8:06 AM	WOODBINE	DR	$ 59.54	3	$ 48.45	0
116	Tue 10/7/2014 3:43 PM	SIERRA VISTA	WAY	$ 128.53	4	$ 142.73	2
117	Fri 10/3/2014 4:22 PM	GANDY	LN	$ 126.45	4	$ 132.43	5
118	Thu 10/2/2014 1:52 PM	FAIRFAX	DR	$ 73.31	5	$ 57.81	1
119	Thu 10/9/2014 5:20 AM	STETSON	DR	$ 75.88	1	$ 73.51	0
120	Fri 10/3/2014 8:06 AM	BIG PINE	DR	$ 124.33	4	$ 124.51	3

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
121	Thu 10/30/2014 4:39 PM	TIMBER TRACE	DR	$ 90.98	2	$ 75.35	0
122	Mon 10/6/2014 10:59 AM	WILDWYND	CT	$ 204.91	2	$ 170.53	2
123	Wed 11/5/2014 2:41 PM	P L POOL & REC	0	$ 197.32	3	$ 190.61	3
124	Sun 10/12/2014 10:56 AM	CHERRYDALE	LN	$ 73.78	4	$ 42.95	1
125	Thu 10/2/2014 8:03 PM	ST AUGUSTINE	PL	$ 70.54	4	$ 49.26	5
126	Fri 10/3/2014 8:10 AM	TURKEYHILL	DR	$ 105.25	2	$ 73.45	0
127	Wed 10/1/2014 8:01 PM	ARCHWAY	AVE	$ 104.66	2	$ 153.10	3
128	Thu 10/2/2014 8:54 PM	BOYETTE OAKS	PL	$ 120.60	1	$ 88.53	7
129	Fri 10/3/2014 8:14 PM	ROYCROFT	DR	$ 101.58	2	$ 63.25	4
130	Mon 10/20/2014 2:31 PM	SNOWDONIA	DR	$ 75.62	6	$ 70.46	4
131	Wed 10/1/2014 6:12 PM	ASHVIEW	LN	$ 93.53	3	$ 101.44	2
132	Thu 10/2/2014 11:27 AM	FOX HOLLOW	DR	$ 102.62	3	$ 42.92	3
133	Fri 10/3/2014 2:14 PM	PARKWAY	BLVD	$ 72.17	3	$ 73.03	2
134	Wed 10/15/2014 12:07 PM	HERITAGE POINT	DR	$ 48.36	1	$ 48.50	0
135	Thu 10/9/2014 8:03 PM	RIDGEFIELD	AVE	$ 46.81	2	$ 44.00	1
136	Thu 10/2/2014 6:04 PM	STEEPLE	CT	$ 139.12	1	$ 104.89	0
137	Mon 10/6/2014 6:08 PM	SHADOW RIDGE	BLVD	$ 61.09	2	$ 57.87	1
138	Thu 10/2/2014 11:26 PM	OCEANSIDE	DR	$ 96.79	4	$ 98.50	1
139	Fri 10/3/2014 2:56 PM	BILLINGHAM	DR	$ 72.08	3	$ 75.79	2
140	Wed 10/15/2014 1:25 PM	GARDENDALE	LN	$ 42.08	2	$ 34.76	0
141	Thu 10/2/2014 7:11 PM	BALLARD CREST	LN	$ 80.20	1	$ 75.58	2
142	Thu 10/2/2014 3:47 PM	BRIDLEFORD	DR	$ 28.19	2	$ 22.73	0
143	Tue 10/7/2014 10:55 AM	PARKWAY	BLVD	$ 77.12	3	$ 77.39	2
144	Thu 10/16/2014 5:16 PM	DINSDALE	DR	$ 113.78	1	$ 83.26	3

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
145	Mon 10/13/2014 1:58 PM	SILVER CHARM	TER	$ 125.20	3	$ 108.53	2
146	Fri 10/3/2014 10:18 PM	PICNIC	CT	$ 40.76	3	$ 31.66	0
147	Thu 10/9/2014 8:18 AM	PEARL BERRY	LOOP	$ 138.05	1	$ 77.26	3
148	Mon 10/13/2014 12:42 PM	SANDGATE	CT	$ 87.48	1	$ 80.81	2
149	Wed 11/5/2014 1:12 PM	LEANING OAK	DR	$ 38.84	1	$ 39.71	0
150	Wed 10/1/2014 9:51 PM	ODESSA	DR	$ 103.49	3	$ 146.51	4
151	Wed 10/1/2014 6:21 PM	COLLEGE HILL	DR	$ 38.60	3	$ 22.30	2
152	Fri 10/3/2014 7:17 PM	SWANS LANDING	DR	$ 112.98	2	$ 104.79	5
153	Thu 10/2/2014 4:09 PM	PANOLA	DR	$ 17.03	0	$ 31.40	1
154	Mon 10/13/2014 4:23 PM	PLEASANT HILL	LN	$ 147.43	3	$ 116.96	3
155	Thu 10/2/2014 1:37 PM	PALM LAKE	BLVD	$ 101.61	3	$ 91.80	4
156	Wed 10/1/2014 2:33 PM	HERMITAGE	LN	$ 74.26	1	$ 44.21	1
157	Tue 10/14/2014 6:01 PM	BARRACUDA	CT	$ 60.98	2	$ 51.63	1
158	Sun 10/19/2014 12:05 PM	TURNSTONE	CT	$ 185.92	3	$ 183.06	2
159	Mon 10/13/2014 4:17 PM	AMARILLO	ST	$ 148.09	1	$ 78.89	2
160	Fri 10/17/2014 1:09 PM	NEW SAVANNAH	CIR	$ 153.97	2	$ 128.75	4
161	Thu 10/2/2014 8:31 PM	HOLLOW OAK	PL	$ 49.16	2	$ 54.68	1
162	Thu 10/2/2014 3:59 PM	PATTI	LN	$ 244.56	4	$ 68.71	2
163	Mon 10/20/2014 (Phone Ca	MILLWOOD	DR	$ 58.13	4	$ 60.46	1
164	Thu 10/2/2014 7:12 PM	FOREST GLEN	DR	$ 134.77	1	$ 119.41	0
165	Mon 10/13/2014 10:02 AM	WILLISTON	LOOP	$ 107.25	4	$ 100.19	4
166	Wed 10/1/2014 9:15 PM	DRESDEN	LN	$ 93.01	3	$ 61.38	2
167	Tue 10/28/2014 9:38 AM	ALICO	PASS	$ 122.07	3	$ 88.76	1
168	Tue 10/7/2014 12:57 AM	NEWTON	DR	$ 130.07	3	$ 114.42	1

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
169	Tue 10/7/2014 6:27 PM	SUNSET BAY	DR	$ 121.21	4	$ 67.91	2
170	Tue 10/7/2014 10:04 PM	KILLINGTON	BLVD	$ 172.35	5	$ 138.61	4
171	Tue 11/4/2014 10:03 PM	CRESCENT PALMS	DR	$ 92.65	4	$ 104.69	2
172	Thu 10/9/2014 3:19 PM	AZALEA	LN	$ 35.77	1	$ 36.71	2
173	Fri 10/3/2014 9:09 PM	SANTOS	WAY	$ 78.27	3	$ 60.73	2
174	Wed 10/1/2014 2:16 PM	FOREST VIEW	DR	$ 61.06	2	$ 81.97	4
175	Sat 10/11/2014 4:16 PM	SAGAMORE	CT	$ 63.35	3	$ 77.09	2
176	Wed 10/15/2014 9:56 PM	WIND WHISPER	DR	$ 155.00	3	$ 141.44	4
177	Thu 10/2/2014 7:08 PM	LANDMARK	DR	$ 89.28	1	$ 114.45	1
178	Fri 10/3/2014 7:32 PM	BANYAN HILL	LN	$ 75.07	1	$ 71.68	3
179	Thu 10/2/2014 11:28 PM	MEADOW REACH	DR	$ 72.35	0	$ 67.42	1
180	Mon 10/13/2014 6:19 PM	GULF	WAY	$ 97.52	2	$ 71.12	4
181	Thu 10/2/2014 11:55 PM	BELL	DR	$ 107.19	1	$ 78.15	1
182	Thu 10/9/2014 12:01 PM	RIVA RIDGE	DR	$ 69.07	3	$ 64.89	3
183	Sat 10/11/2014 1:34 PM	FINCH	DR	$ 78.23	1	$ 41.92	4
184	Fri 10/10/2014 2:01 PM	OAKSHIRE	DR	$ 57.10	0	$ 98.06	1
185	Fri 10/3/2014 9:06 AM	EAGLE BROOK	DR	$ 124.53	2	$ 94.10	4
186	Fri 10/3/2014 5:20 PM	JIM	ST	$ 11.00	1	$ 265.38	2
187	Wed 10/1/2014 5:16 PM	HAMILTON HARBOR	DR	$ 78.58	2	$ 64.73	1
188	Mon 10/20/2014 4:48 PM	MINT LEAF	LN	$ 94.49	0	$ 89.64	3
189	Tue 10/7/2014 8:32 AM	PENZANCE	LN	$ 255.58	3	$ 175.75	3
190	Tue 10/7/2014 8:32 AM	PENZANCE	LN	$ 77.13	5	$ 191.33	0
191	Thu 10/2/2014 12:38 PM	REGENCY PARK	BLVD	$ 42.49	1	$ 39.76	0
192	Sat 10/4/2014 6:31 PM	BARTHOLDI	CIR	$ 135.25	0	$ 121.44	1

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
193	Mon 10/6/2014 4:42 PM	MEADOW REACH	DR	$ 119.60	1	$ 155.10	2
194	Mon 10/6/2014 4:10 PM	FOX HOLLOW	DR	$ 73.58	4	$ 69.97	0
195	Wed 10/8/2014 4:02 PM	LEEWOOD	WAY	$ 76.15	2	$ 132.40	1
196	Mon 10/20/2014 8:26 PM	DANBURY	LN	$ 57.40	1	$ 50.34	0
197	Thu 10/2/2014 1:12 PM	PACENTE	LOOP	$ 61.74	2	$ 57.18	2
198	Thu 10/16/2014 11:01 AM	SPECTACULAR BID	DR	$ 100.94	2	$ 73.23	3
199	Wed 10/15/2014 7:58 AM	ALANBROOKE	ST	$ 98.15	4	$ 87.32	4
200	Tue 10/14/2014 6:21 PM	CANOE	DR	$ 151.53	3	$ 142.24	1
201	Sun 10/12/2014 6:28 PM	VERMILLION	DR	$ 8,991.96	1	$7,536.36	0
202	Sun 10/19/2014 3:40 PM	BARRACUDA	CT	$ 97.15	3	$ 67.57	3
203	Sat 10/4/2014 10:27 AM	GRECKO	DR	$ 81.30	3	$ 47.07	4
204	Thu 10/2/2014 12:38 PM	JASMINE BROOK	CIR	$ 74.17	1	$ 115.45	1
205	Wed 10/15/2014 8:47 AM	TIKAL	WAY	$ 97.68	0	$ 86.21	5
206	Wed 11/5/2014 6:29 PM	WELLFIELD	RD	$ 153.08	3	$ 124.27	2
207	Fri 10/10/2014 11:45 AM	BOX ELDER	DR	$ 46.75	3	$ 59.00	3
208	Thu 10/2/2014 8:48 PM	DIAMONDS PALM	LOOP	$ 89.40	2	$ 54.86	3
209	Mon 10/20/2014 10:31 AM	CALLE ALTA	0	$ 124.24	1	$ 93.08	3
210	Mon 11/3/2014 1:48 PM	MERKIN	PL	$ 71.05	3	$ 60.58	1
211	Mon 10/6/2014 1:39 PM	SAGO POINT	DR	$ 116.50	1	$ 103.28	6
212	Thu 10/9/2014 11:45 AM	DEERBERRY	DR	$ 80.63	2	$ 71.44	4
213	Mon 10/6/2014 3:57 PM	WOLF DEN	TRL	$ 67.10	1	$ 41.52	1
214	Tue 10/7/2014 6:42 PM	CALLE ALTA	0	$ 64.32	2	$ 61.18	1
215	Tue 10/14/2014 9:27 AM	OAK TRAIL	WAY	$ 179.54	3	$ 75.80	1
216	Sat 10/18/2014 7:31 AM	BISCAY	PL	$ 67.41	3	$ 45.32	3

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
217	Wed 10/1/2014 6:48 PM	ROSELAND	DR	$ 127.81	4	$ 64.10	1
218	Thu 10/2/2014 6:24 AM	EDENFIELD	DR	$ 61.85	1	$ 72.88	0
219	Thu 10/2/2014 2:32 PM	PARKWAY	BLVD	$ 71.39	3	$ 71.59	1
220	Fri 10/3/2014 11:42 AM	FLOTILLA	DR	$ 645.45	3	$ 113.04	3
221	Wed 10/22/2014 1:25 PM	MORGONS CASTLE	CT	$ 71.65	2	$ 124.05	1
222	Fri 10/3/2014 2:39 PM	SHINING STAR	DR	$ 53.97	2	$ 51.54	1
223	Thu 10/2/2014 4:02 PM	TIMBER	LN	$ 62.30	2	$ 53.26	0
224	Thu 10/2/2014 2:26 PM	PALOMAR	PL	$ 63.26	3	$ 61.28	2
225	Tue 10/14/2014 11:52 AM	FRONTIER	TRL	$ 77.26	4	$ 64.89	0
226	Fri 10/3/2014 6:12 PM	AMBLESIDE	DR	$ 137.30	2	$ 101.62	2
227	Thu 10/2/2014 11:16 AM	GREEN PINES	TER	$ 59.51	1	$ 52.66	0
228	Thu 10/30/2014 8:05 PM	EAGLES CREST	CT	$ 110.11	2	$ 60.84	0
229	Sat 10/11/2014 9:56 AM	WINDING	WAY	$ 88.29	1	$ 132.23	1
230	Fri 10/17/2014 1:54 PM	MORGONS CASTLE	CT	$ 78.81	4	$ 156.09	2
231	Fri 10/17/2014 10:54 AM	HADDEN HALL	PL	$ 156.72	1	$ 135.52	1
232	Thu 10/16/2014 9:22 AM	STONEGATE FALLS	DR	$ 74.59	3	$ 40.70	0
233	Sat 10/4/2014 11:20 AM	STERLING MNR	LOOP	$ 96.09	3	$ 80.48	4
234	Sun 10/26/2014 5:04 PM	NATURE	TRL	$ 68.58	3	$ 86.59	3
235	Fri 10/10/2014 10:42 AM	EAGLE	BLVD	$ 115.63	2	$ 118.90	0
236	Sat 10/4/2014 4:31 PM	WOODMUSE	CT	$ 165.14	2	$ 72.52	1
237	Thu 10/16/2014 9:35 AM	SALTAMONTE	DR	$ 351.17	1	$ -	0
238	Sun 10/5/2014 8:36 AM	AYRSHIRE	BLVD	$ 72.33	3	$ 69.94	0
239	Wed 10/22/2014 3:11 PM	NINEBARK	CT	$ 107.06	3	$ -	0
240	Mon 11/3/2014 5:51 PM	BREAKERS	DR	$ 87.92	3	$ 61.77	1

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
241	Fri 10/3/2014 8:38 PM	CANTERBURY	DR	$ 54.85	3	$ 47.20	0
242	Wed 10/1/2014 6:40 PM	WOODSIDE	DR	$ 101.19	2	$ 91.53	1
243	Thu 10/2/2014 4:36 PM	MIRADA	DR	$ 43.35	2	$ 132.87	0
244	Sun 10/5/2014 4:31 PM	COLONY LAKES	BLVD	$ 89.34	3	$ 47.20	1
245	Thu 10/2/2014 7:14 AM	MERION	CT	$ 120.05	4	$ 81.27	1
246	Wed 10/8/2014 3:32 PM	WESTRIDGE	DR	$ 156.45	3	$ 24.46	0
247	Thu 10/23/2014 10:26 AM	SEMIAHMOO	LOOP	$ 76.71	3	$ 55.82	1
248	Fri 10/3/2014 11:17 AM	TALL	DR	$ 39.10	3	$ 17.18	1
249	Fri 10/3/2014 8:18 PM	BERNA	LN	$ 70.66	2	$ 70.89	4
250	Sun 10/5/2014 10:08 PM	PARKWAY	BLVD	$ 63.64	2	$ 41.00	0
251	Mon 10/6/2014 11:14 AM	SPOON	CT	$ 179.12	5	$ -	
252	Wed 11/5/2014 10:15 PM	BROADWATER	DR	$ 98.06	3	$ -	
253	Fri 10/3/2014 5:49:00 AM	DRAKEFIELD	DR	$ 75.78	1	$ -	
254	Tue 10/14/2014 2:34 PM	CAMERON	CT	$ 78.01	4	$ -	
255	Sat 10/4/2014 2:49 PM	SANDRA	AVE	$ 30.04	3	$ -	
256	Thu 11/6/2014 9:44 AM	LAKE POLO	DR	$ 178.09	3	$ -	
257	Mon 10/6/2014 9:03 PM	TURNSTONE	CT	$ 72.11	2	$ -	
258	Sun 10/5/2014 8:42 AM	AUGUSTA	BLVD	$ 76.92	1	$ -	
259	Sat 11/1/2014 3:12 PM	CHENWOOD	AVE	$ 104.94	4	$ -	
260	Thu 10/2/2014 6:11 PM	MARCHESTER	DR	$ 63.46	2	$ -	
261	Fri 10/3/2014 11:22 AM	OTIS	DR	$ 64.06	1	$ -	
262	Sun 10/26/2014 9:54 AM	CLOCK TOWER	PKWY	$ 139.29	3	$ -	
263	Wed 10/15/2014 6:01 PM	OLDE LANARK	DR	$ 118.50	1	$ -	
264	Wed 10/15/2014 12:59 PM	BARRACUDA	CT	$ 85.39	3	$ -	

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
265	Mon 10/27/2014 6:05 PM	EAGLE BEND	DR	$ 102.40	3	$ 128.60	2
266	Thu 11/13/2014 2:39 PM	KILBURN	RD	$ 77.80	3	$ 68.12	0
267	Thu 11/6/2014 4:23 PM	JACK RABBIT	LN	$ 77.01	5	$ 66.25	1
268	Tue 10/7/2014 12:09 PM	MADISON	ST	$ 62.65	1	$ 45.77	2
269	Wed 10/1/2014 6:18 PM	COCHISE	LN	$ 111.35	4	$ 53.04	0
270	phone/letter	MANISTIQUE	WAY	$ 228.91	1	$ 125.56	0
271	Tue 11/18/2014 8:13 AM	CREEDMOOR	LN	$ 111.46	2	$ 60.85	3
272	Mon 11/17/2014 2:54 PM	BIDDEFORD	PL	$ 183.14	2	$ 140.57	1
273	Sat 10/4/2014 9:04 AM	NARIMORE	DR	$ 102.88	3	$ 103.04	5
274	Fri 11/7/2014 4:28 PM	EAGLE ISLAND	DR	$ 85.02	2	$ 61.75	2
275	Fri 11/14/2014 8:46 AM	DUSTIN	CT	$ 77.96	3	$ 99.47	3
276	Tue 10/14/2014 12:56 PM	CRESTRIDGE		$ 68.67	3	$ 110.39	2
277	Wed 11/19/2014 1:20 PM	HEATHGATE	WAY	$ 112.50	3	$ 82.65	1
278	Thu 10/2/2014 4:24 PM	TRIGGERFISH	CT	$ 298.16	2	$ 415.75	1
279	Fri 10/17/2014 11:04 AM	SUE ELLEN	DR	$ 76.43	0	$ 66.75	1
280	Tue 10/21/2014 10:33 AM	DUVAL	DR	$ 98.16	2	$ 65.10	4
281	Wed 10/1/2014 6:43 PM	ELM LEAF	CT	$ 57.92	1	$ 56.55	1
282	Sun 11/16/2014 9:58 AM	OYSTER BAY	CIR	$ 55.54	2	$ 57.52	2
283	Sat 10/4/2014 7:22 AM	SUNTERRA	DR	$ 55.35	1	$ 83.43	2
284	Mon 10/13/2014 12:28 PM	ST CROIX	PL	$ 57.75	1	$ 110.05	3
285	Fri 10/3/2014 11:09 PM	MAGNOLIA TRACE	BLVD	$ 111.64	1	$ 81.40	3
286	Tue 10/14/2014 7:42 PM	WOODLANDS	CIR	$ -		$ 28.47	1
287	Thu 10/23/2014 11:26 AM	STATE RD 56	0	$ 11,255.32	1	$9,880.20	2
288	Thu 10/23/2014 11:26 AM	STATE RD 56	0	$ 6,412.50	1	$5,747.15	2

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
289	Thu 10/2/2014 9:54 AM	GUARDS	ST	$ 9,448.38	0	$9,185.08	0
290	Mon 10/6/2014 1:20 PM	STATE RD 52		$ 28.60	0	$ 29.01	0
291	Mon 10/6/2014 1:20 PM	STATE RD 52	0	$ 9,477.22	1	$7,729.90	2
292	Tue 10/14/2014 7:50 PM	VILLAGE MILL	ROW	$ 106.28	2	$ 112.35	3
293	phone/letter	SHINING STAR	DR	$ 80.03	3	$ 53.37	1
294	phone/letter	BRIARBROOK	PL	$ 36.41	1	$ 35.39	1
295	phone/letter	KICKLITER	LN	$ 105.62	2	$ 102.31	4
296	phone/letter	FOXGROVE	DR	$ 64.90	1	$ 76.17	2
297	phone/letter	WAVERLY SHORES	LN	$ 60.09	1	$ 78.82	4
298	phone/letter	MANDARIN	DR	$ 82.70	1	$ 51.55	1
299	phone/letter	KICKLITER	LN	$ 130.24	3	$ 142.86	2
300	phone/letter	TAWNY OWL	CT	$ 135.77	2	$ 169.42	3
301	phone/letter	CYPRESS BAY	PKWY	$ 71.27	3	$ 74.13	2
302	Wed 12/3/2014 11:43 AM	EMILY	LOOP	$ 70.57	3	$ 57.15	3
303	Sun 10/12/2014 1:55 PM	STERLING MNR	LOOP	$ 94.00	3	$ 97.21	5
304	Mon 12/1/2014 12:32 AM	BELL ROCK	PL	$ 107.19	3		
305	Fri 10/3/2014 4:24 PM	BRIDGEGATE	DR	$ 84.84	1	$ 80.66	1
306	Fri 11/28/2014 7:22 PM	BRIDGEGATE	DR	$ 94.66	2	$ -	0
307	Fri 11/28/2014 11:16 AM	SEA DAHLIA	PASS	$ 78.76	2	$ 69.14	0
308	Tue 10/7/2014 9:07 PM	FOX HOLLOW	DR	$ 106.25	3	$ 103.54	0
309	Mon 11/24/2014 11:13 AM	CHENWOOD	AVE	$ 350.94	2	$ 193.39	2
310	Mon 11/24/2014 11:13 AM	CHENWOOD	AVE	$ 43.72	1	$ -	0
311	Mon 11/24/2014 9:34 AM	WINDCHASE	WAY	$ 67.91	0	$ 69.14	0
312	Sat 12/13/2014 9:52 PM	ABYSS	DR	$ 114.46	4	$ 92.33	3

Pseudo Customer #	Date email sent (By Customer)	Street		6/2014-5/2015* Average	# months bill exceeded 120% ave.	6/13-5/14 Average	# months bill exceeded 120% ave.
313	Mon 12/15/2014 8:32 PM	RALEIGH	PL	$ 97.02	2	$ 72.10	2
314	Wed 10/1/2014 6:29 PM	PARKWAY	BLVD	$ 63.26	3	$ 47.20	0
315	Sun 12/28/2014 12:08 PM	PROUT	CT	$ 61.40	3	$ 53.83	1
316	Sat 1/3/2015 10:44 PM	OAK CREST	DR	$ 57.86	1	$ -	
317	Mon 1/5/2015 11:09 AM	CANOE	DR	$ 134.28	3	$ 120.31	4
318	Sat 3/14/2015 4:55 PM	CRESTRIDGE	#N/A	$ 70.40	1	$ -	
319	Thu 1/8/2015 5:11 PM	LAND O LAKES	BLVD	$ 18.75	2	$ 16.32	3
320	Fri 1/9/2015 3:49 PM	Via Segovia	0	$ 113.11	2	$ 88.47	1
321	Tue 1/13/2015 12:16 PM	HIDDEN PINES	WAY	$ 66.23	1	$ 55.34	0
322	Tue 1/20/2015 11:14 AM	WASATCH	CT	$ 103.25	1	$ 45.46	2
323	Thu 1/22/2015 3:40 PM	EL CERRO	DR	$ 41.37	0	$ 48.50	0
324	Mon 1/26/2015 2:41 PM	DEERBERRY	DR	$ 104.76	2	$ -	
325	Thu 1/29/2015 10:03 AM	FOX GRAPE	LOOP	$ 177.78	1	$ -	
326	Thu 1/29/2015 2:33 PM	TARVES	DR	$ 101.79	4	$ -	
327	Sat 1/31/2015 8:59 AM	WOLF DEN	TRL	$ 83.45	3	$ 93.67	0
328	Tue 2/3/2015 8:09 PM	KENCHESTER	LOOP	$ 87.44	1	$ -	
329	Fri 2/13/2015 8:13 AM	ROSE COTTAGE	WAY	$ 111.87	1	$ 108.36	0
330	Sun 2/15/2015 1:58 AM	OLD FLORIDA	CIR	$ 119.99	3	$ 95.31	1
331	Mon 2/16/2015 10:47 AM	WILLOUGHBY	LN	$ 53.46	2	$ 66.80	2
332	Fri 2/20/2015 1:31 PM	ELENA	DR	$ 26.58	2	$ 27.16	0
333	Tue 2/24/2015 9:36 AM	MEADOW REACH	DR	$ 223.32	5	$ -	0
334	Tue 3/3/2015 3:54 PM	GRACEWOOD	CIR	$ 132.70	1	$ 79.66	2
335	Fri 3/6/2015 6:23 PM	ASHFIELD	PL	$ 51.77	2	$ 52.04	2
336	Tue 3/31/2015 4:33 PM	PERTHSHIRE	CIR	$ 99.54	0	$ 88.75	1
337	Mon 4/6/2015 9:34 PM	DALE	DR	$ 72.79	1	$ 51.92	4

Appendix D
Sample Bill Analysis

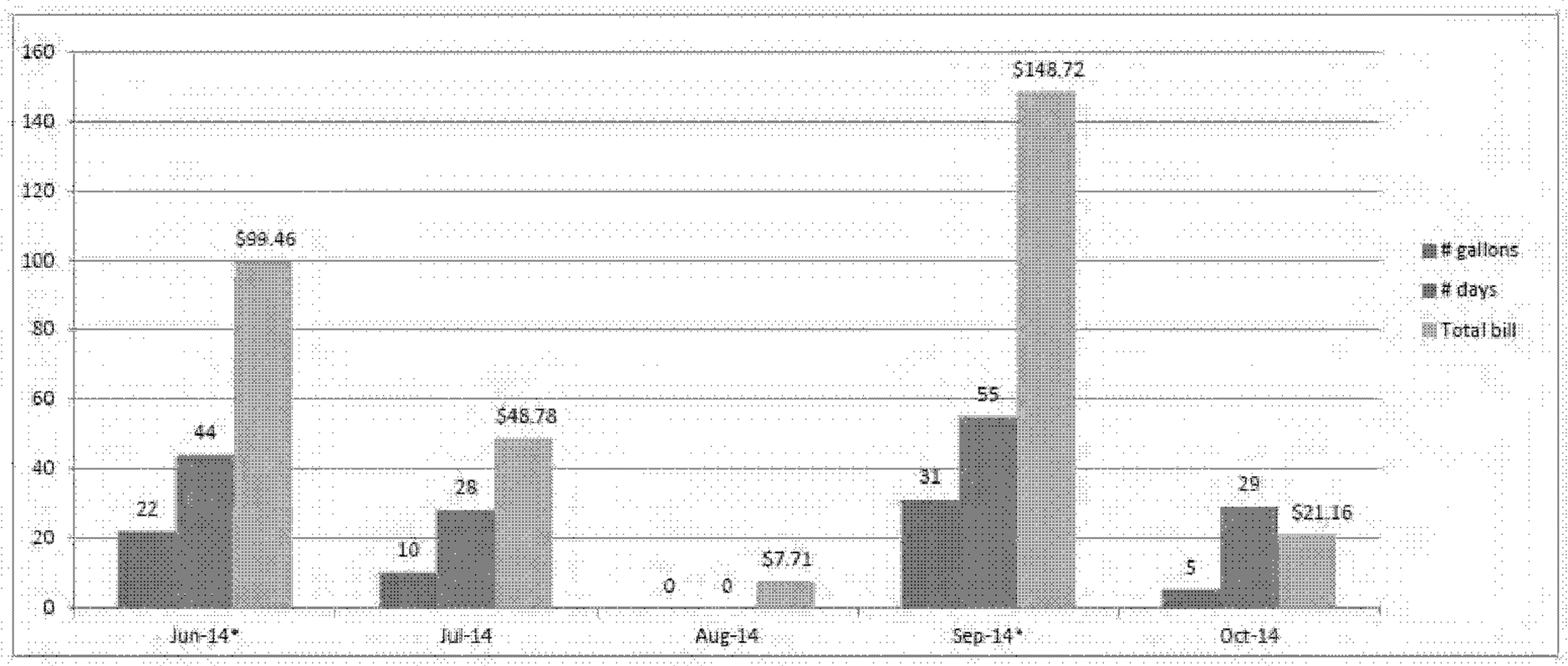
Pseudo account #5

water only customer

Month	# days	# gallons	Total bill	PCU adj. amount**	IG notes
Jun-14*	44	22	$ 99.46		44 day billing cycle
Jul-14	28	10	$ 48.78		
Aug-14	0	0	$ 7.71		No read in CIS for August. Bill reflected 30 days between reads, and a read date of 8/5/14.
Sep-14*	55	31	$ 148.72		Bill reflected 27 days between reads, and a read date of 9/11/14. Last read in CIS was 7/16/14, resulting in a 55 day billing cycle.
Oct-14	29	5	$ 21.16		

* Monthly bill exceeded 120% of the annual average

** No adjustments found on printed bills or in CIS transaction history.

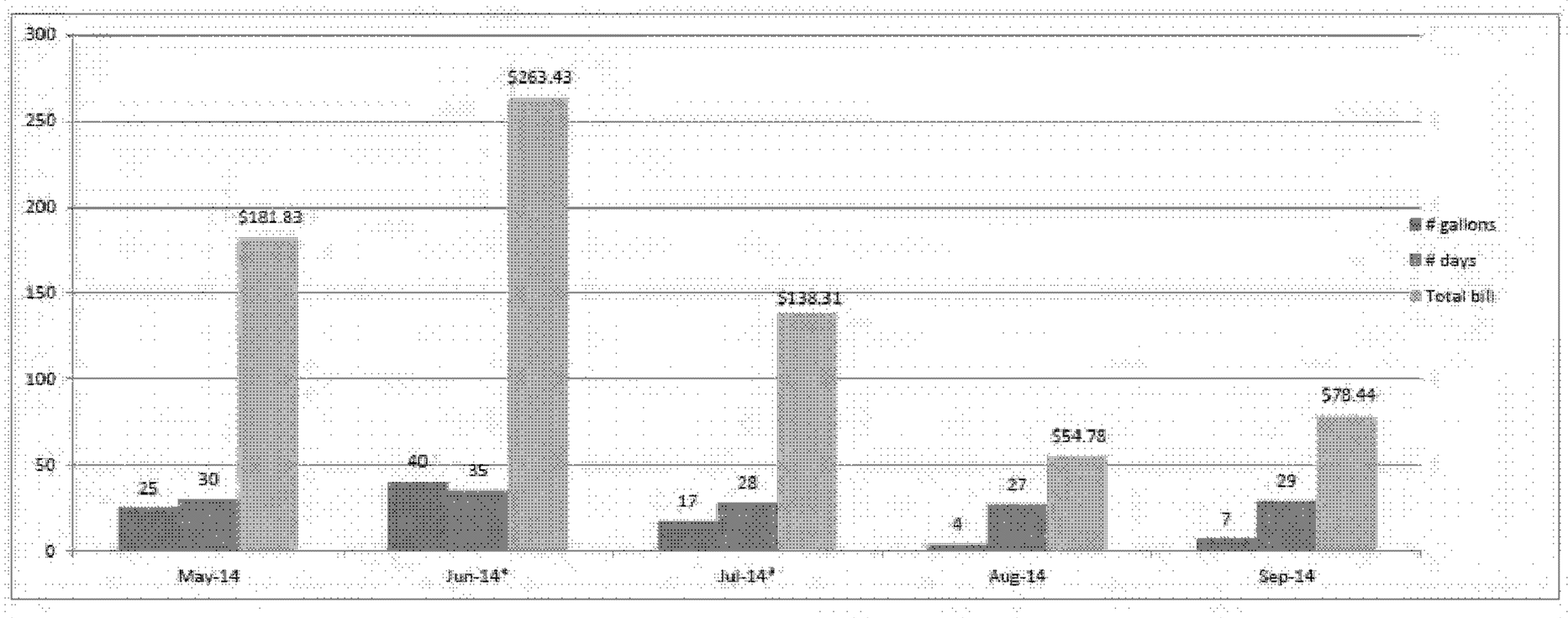


Pseudo account #6

Month	# days	# gallons	Total bill	PCU adj. amount**	IG notes
May-14	30	25	$ 181.83		
Jun-14*	35	40	$ 263.43		35 day billing cycle
Jul-14*	28	17	$ 138.31		Except for increased consumption, no noted bill exceptions.
Aug-14	27	4	$ 54.78		
Sep-14	29	7	$ 78.44		

* Monthly bill exceeded 120% of the annual average

** No adjustments found on printed bills or in CIS transaction history.

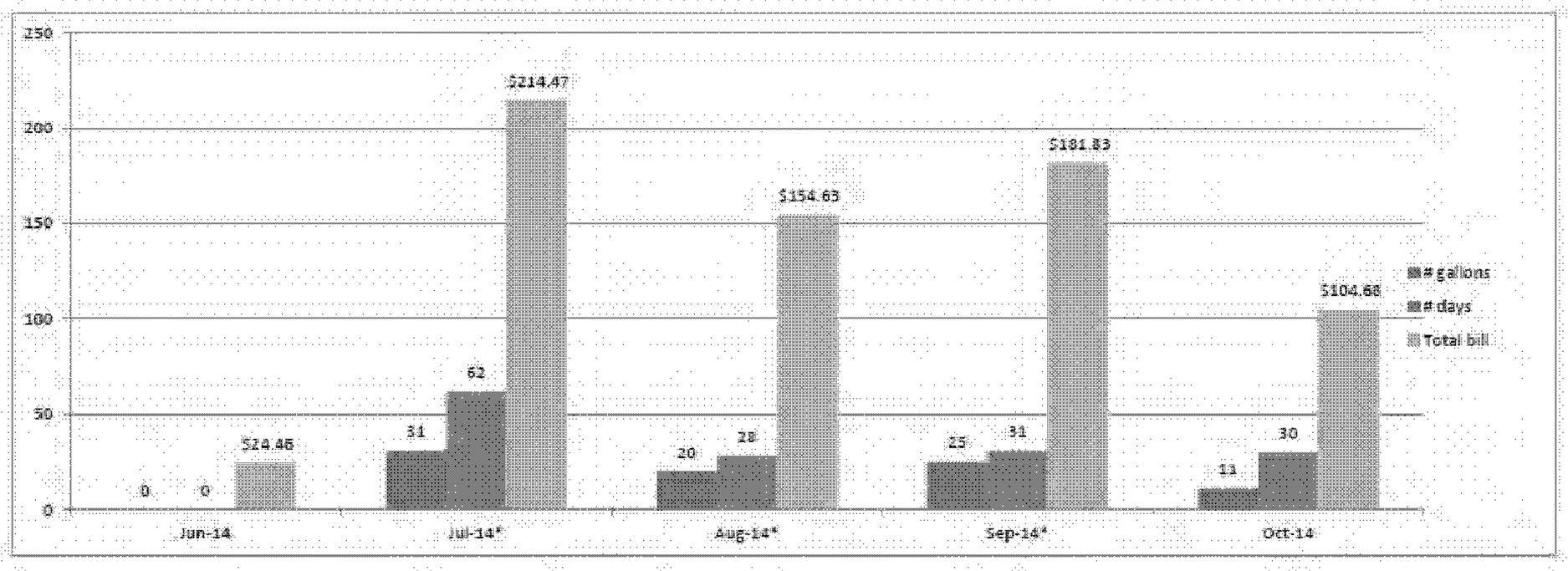


Pseudo account #20

Month	# days	# gallons	Total bill	PCU adj. amount**	IG notes
Jun-14	0	0	$ 24.46		No read in CIS for June. Bill reflected 35 days between read, and a read date of 6/20/14.
Jul-14*	62	31	$ 214.47		Bill reflected 28 days between reads, and a read date of 7/18/14. Last read in CIS was 5/16/14, resulting in a 62 day billing cycle
Aug-14*	28	20	$ 154.63		Except for increased consumption, no noted bill exceptions.
Sep-14*	31	25	$ 181.83		Except for increased consumption, no noted bill exceptions.
Oct-14	30	11	$ 104.68		

* Monthly bill exceeded 120% of the annual average

** No adjustments found on printed bills or in CIS transaction history.

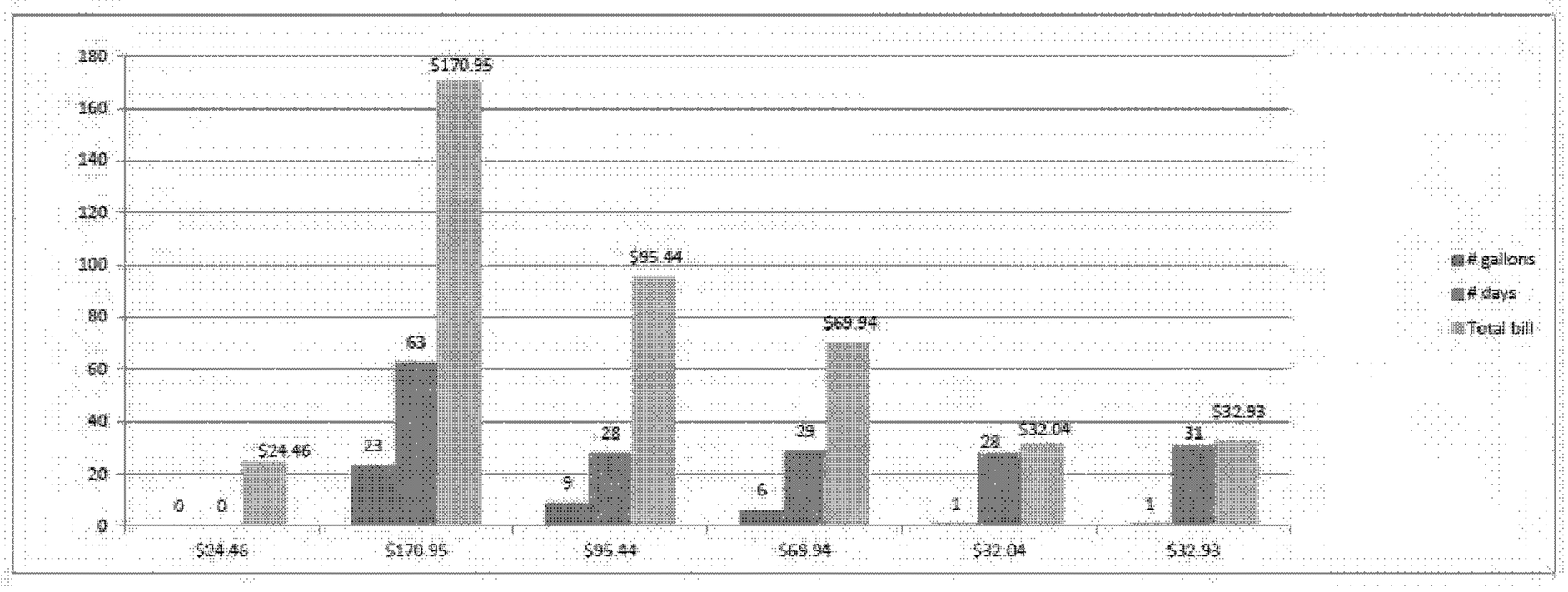


Pseudo account #105

Month	# days	# gallons	Total bill	PCU adj. amount**	IG notes
Jun-14	0	0	$ 24.46		No read in CIS for June. Bill reflected 37 days between reads, and a read date of 6/6/14.
Jul-14*	63	23	$ 170.95		Bill reflected 27 days between reads, and a read date of 7/3/14. Last read in CIS was 4/30/14, resulting in a 63 day billing cycle.
Aug-14*	28	9	$ 95.44		Except for increased consumption, no noted bill exceptions.
Sep-14*	29	6	$ 69.94		Except for increased consumption, no noted bill exceptions.
Oct-14	28	1	$ 32.04	$ 37.09	Bill reflected a credit adj. ($37.09).
Nov-14	31	1	$ 32.93		

* Monthly bill exceeded 120% of the annual average

** Adjustment noted in CIS and was applied to the account on 9/29/14, totaling $37.09. No documentation found attached in CIS.

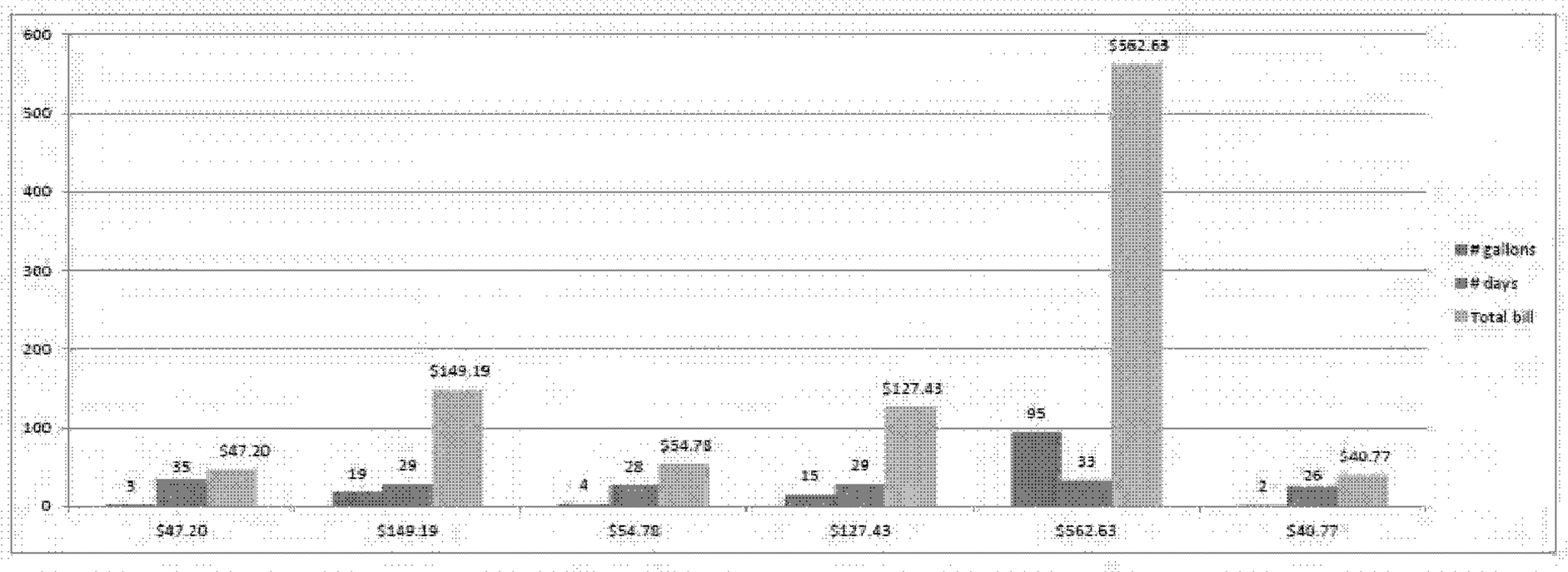


Pseudo account #132

Month	# days	# gallons	Total bill	PCU adj. amount**	IG notes
Jun-14	35	3	$ 47.20		
Jul-14*	29	19	$ 149.19	16 gal/$61.05	Except for increased consumption, no noted bill exceptions.
Aug-14	28	4	$ 54.78		
Sep-14*	29	15	$ 127.43	12 gal/$49.52	Except for increased consumption, no noted bill exceptions.
Oct-14*	33	95	$ 562.63	92 gal/$289.20	Except for increased consumption, no noted bill exceptions.
Nov-14	26	2	$ 40.77		

* Monthly bill exceeded 120% of the annual average

** Customer provided a PCU Notarized Statement for an Unexplained Consumption Event and a copy was attached in CIS. An adjustment was applied to the account on 3/5/15, totaling $339.77.

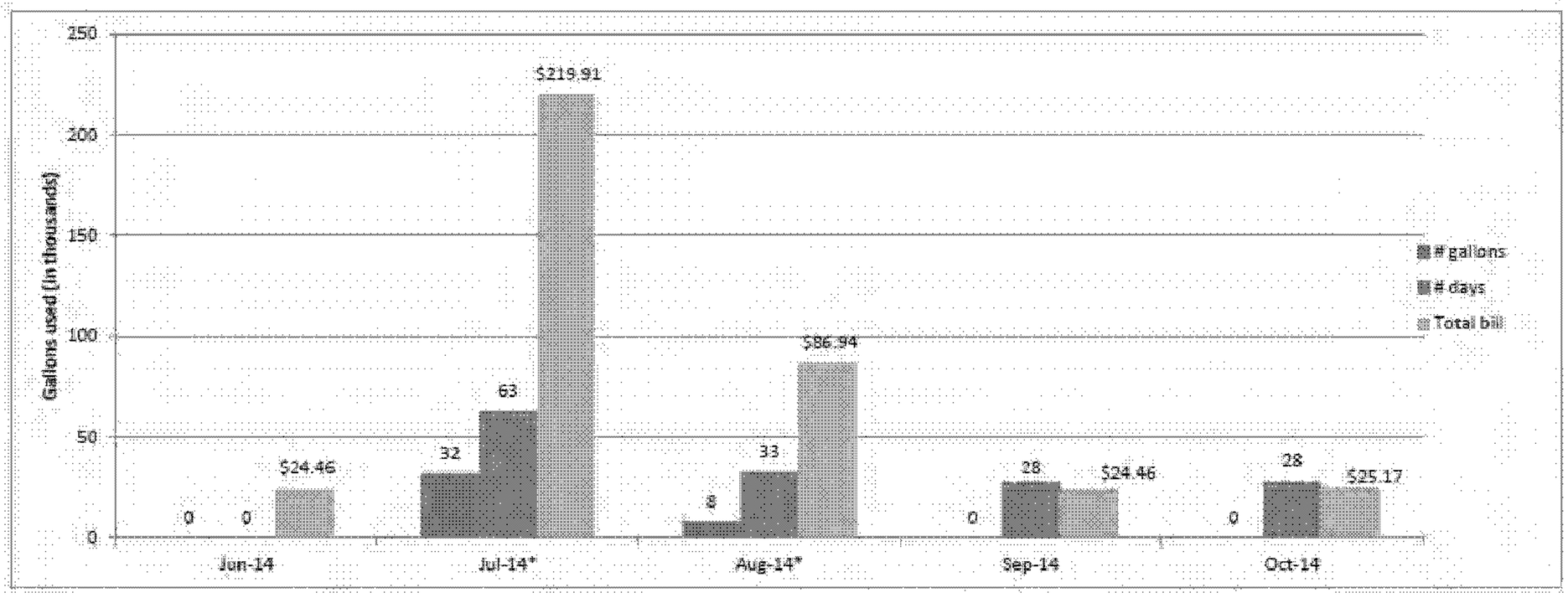


Pseudo account #174

Month	# days	# gallons	Total bill	PCU adj. amount**	IG notes
Jun-14	0	0	$ 24.46		No read in CIS for June. Bill reflected 27 days between reads.
Jul-14*	63	32	$ 219.91		Bill reflected 27 days between reads, and a read date of 7/17/14. Last read in CIS was 5/14/14, resulting in a 63 day billing cycle.
Aug-14*	33	8	$ 86.94		CIS stated system calculation read
Sep-14	28	0	$ 24.46		
Oct-14	28	0	$ 25.17		CIS stated hand estimate read

* Monthly bill exceeded 120% of the annual average

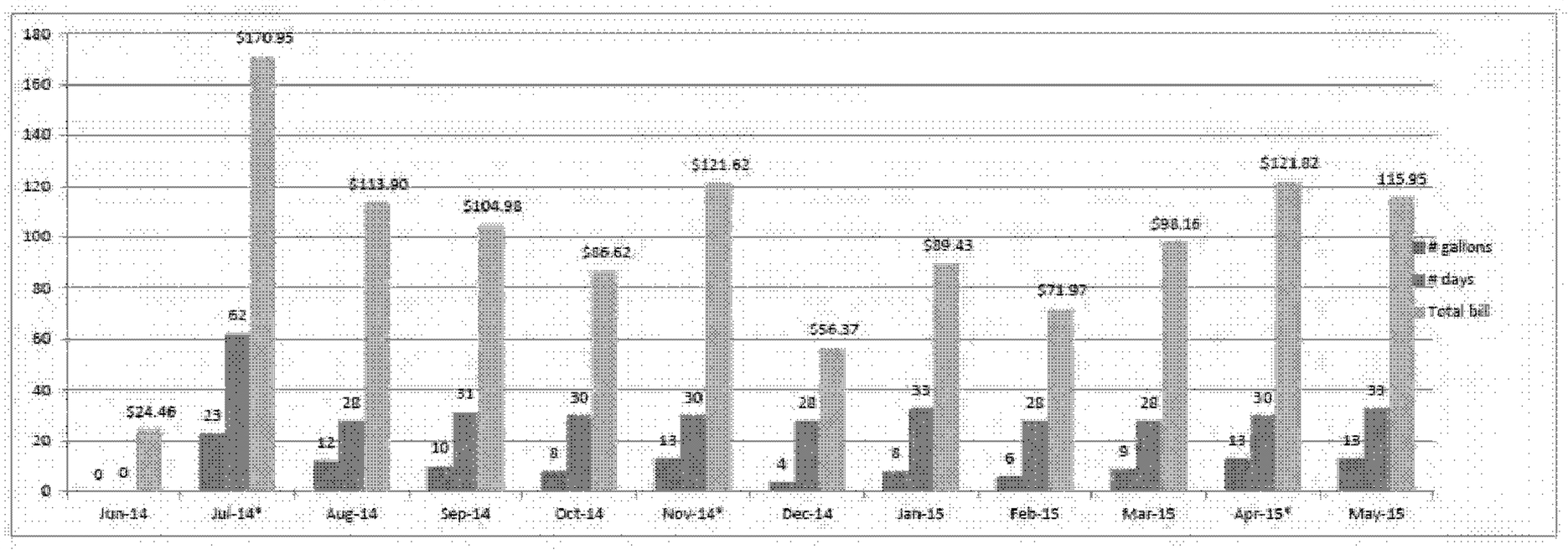
** No adjustments found on printed bills or in CIS transaction history.



Pseudo account #233

Month	# days	# gallons	Total bill	PCU adj. amount**	IG notes
Jun-14	0	0	$ 24.46		No read in CIS for June. Bill reflected 35 days between reads, and a read date of 6/20/14.
Jul-14*	62	23	$ 170.95		Bill reflected 28 days between reads, and a read date of 7/18/14. Last read in CIS was 5/16/14, resulting in a 62 day billing cycle.
Aug-14	28	12	$ 113.90		
Sep-14	31	10	$ 104.98		
Oct-14	30	8	$ 86.62		
Nov-14*	30	13	$ 121.62		Except for increased consumption, no noted bill exceptions.
Dec-14	28	4	$ 56.37		
Jan-15	33	8	$ 89.43		
Feb-15	28	6	$ 71.97		
Mar-15	28	9	$ 98.16		
Apr-15*	30	13	$ 121.82		Except for increased consumption, no noted bill exceptions.
May-15	33	13	115.95		2 reads/read dates-new meter

* Monthly bill exceeded 120% of the annual average
** No adjustments found on printed bills or in CIS transaction history.

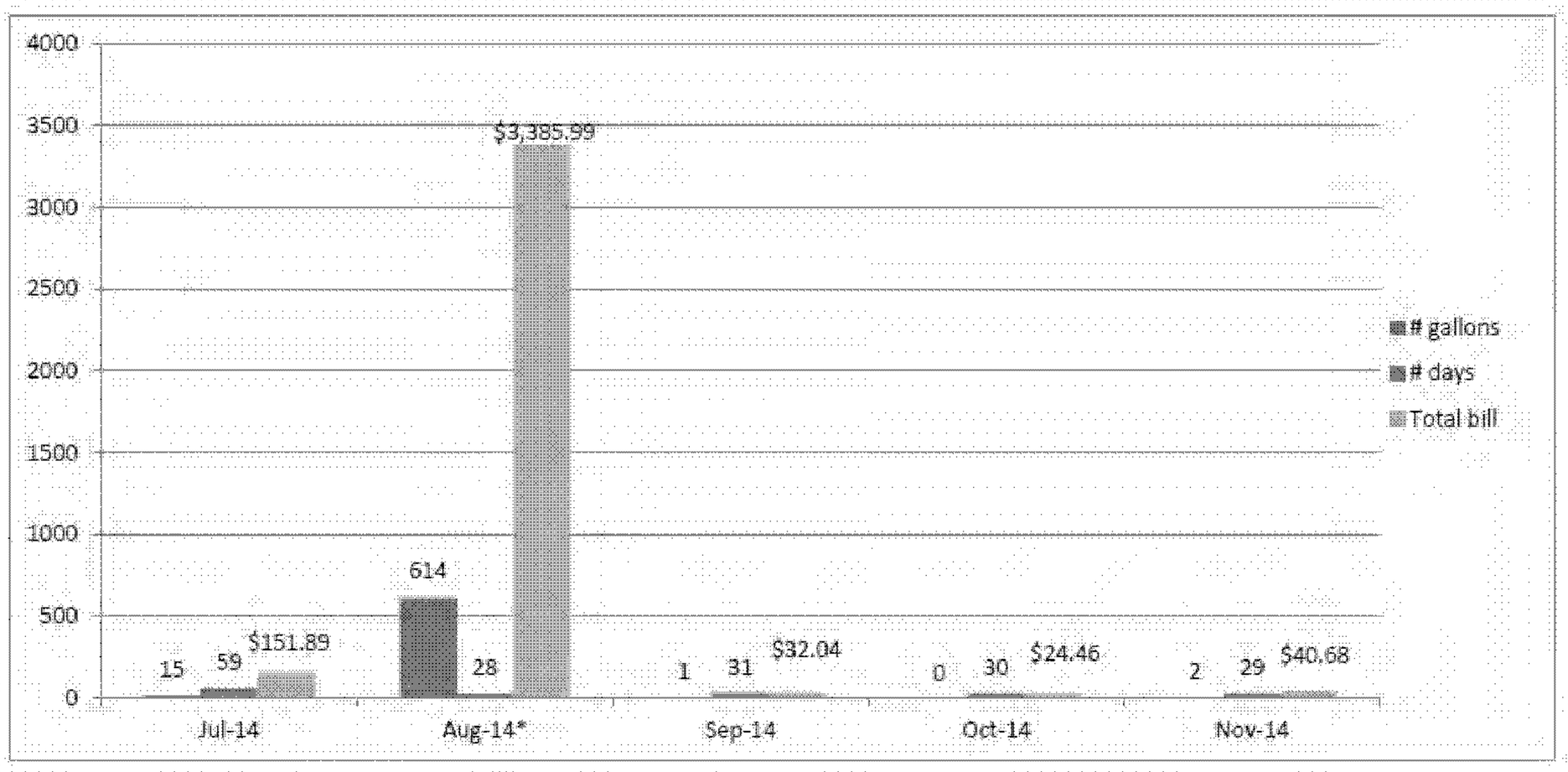


Pseudo account #237

Month	# days	# gallons	Total bill	PCU adj. amount**	IG notes
Jul-14	59	15	$ 151.89		59 day billing cycle Except for increased consumption, no noted bill exceptions.
Aug-14*	28	614	**$ 3,385.99**		
Sep-14	31	1	$ 32.04		
Oct-14	30	0	$ 24.46		plus $191 charge for testing
Nov-14	29	2	$ 40.68		

*** Monthly bill exceeded 120% of the annual average**

**** No adjustments found on printed bills or in CIS transaction history.**

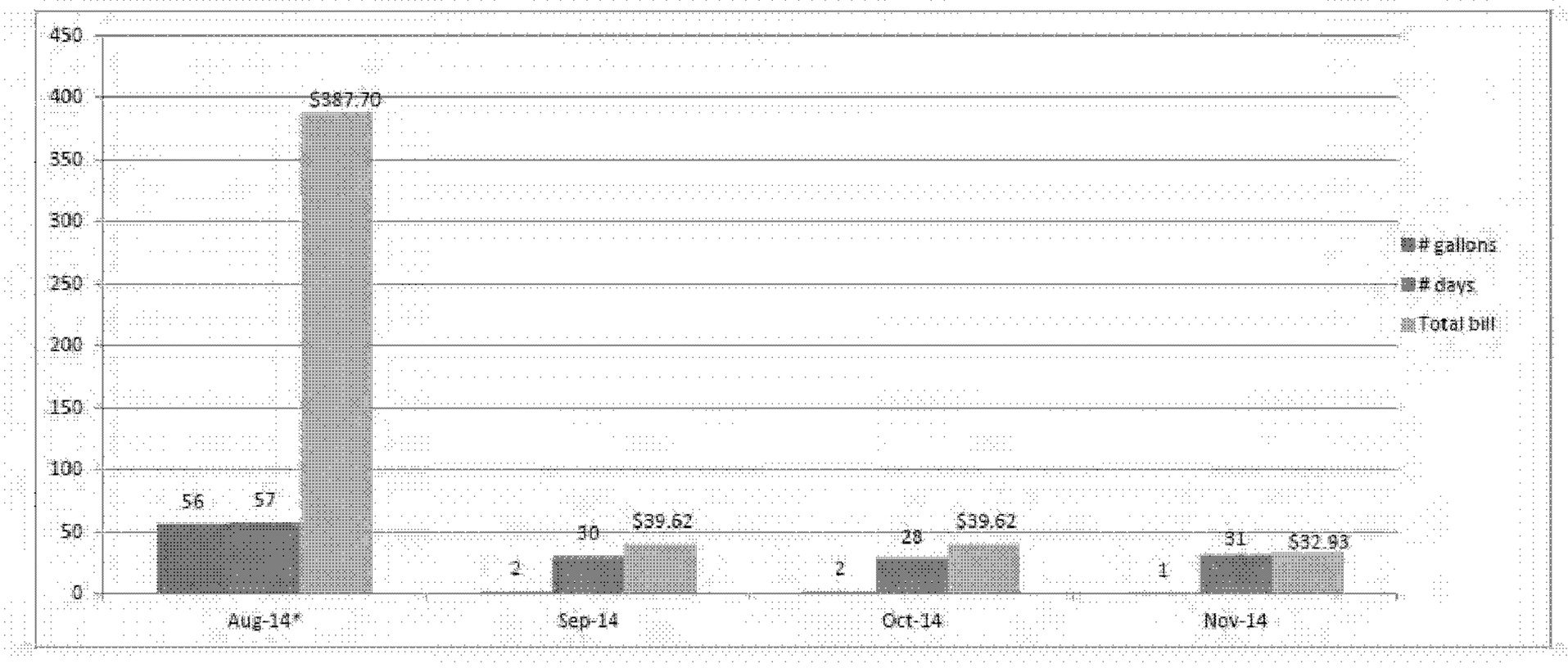


Pseudo account #253

Month	# days	# gallons	Total bill	PCU adj. amount**	IG notes
Aug-14*	57	56	**$ 387.70**		Aug-14 bill period was 6/1-7/28. Customer opened account on 6/2/14, but stated they did not move in until 6/20/14.
Sep-14	30	2	$ 39.62		
Oct-14	28	2	$ 39.62		
Nov-14	31	1	$ 32.93		

*** Monthly bill exceeded 120% of the annual average**

**** No adjustments found on printed bills or in CIS transaction history.**

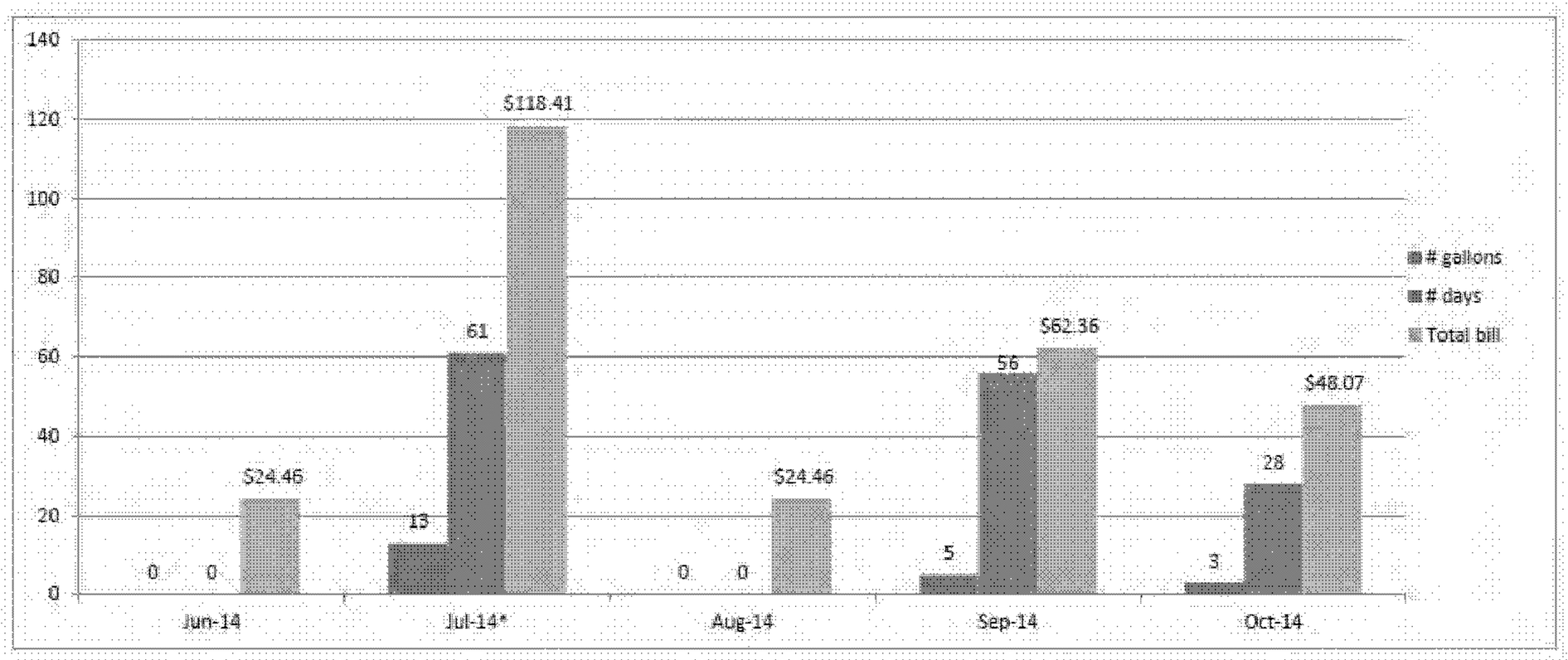


Pseudo account #335

Month	# days	# gallons	Total bill	PCU adj. amount**	IG notes
Jun-14	0	0	$ 24.46		No read in CIS for June. Bill reflected 35 days between reads, and a read date of 6/17/14.
Jul-14*	61	13	$ 118.41		Bill reflected 27 days between reads, and a read date of 7/14/14. Last read in CIS was 5/13/14, resulting in a 61 day billing cycle.
Aug-14	0	0	$ 24.46		No read in CIS for August. Bill reflected 36 days between reads, and a read date of 8/19/14.
Sep-14	56	5	$ 62.36		Bill reflected 22 days between reads, and a read date of 9/10/14. Last read in CIS was 7/14/14, resulting in a 56 day billing cycle.
Oct-14	28	3	$ 48.07		

* Monthly bill exceeded 120% of the annual average

** No adjustments found on printed bills or in CIS transaction history.

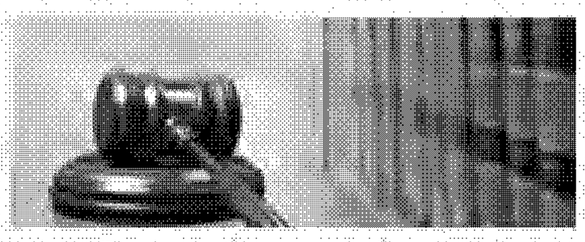


Appendix E
Customer Notification- FAQs

FAQs about Your Water Meter Replacement

Why is my water meter being pulled and replaced?
The Pasco County Clerk & Comptroller's Office Division of Inspector General is conducting an audit of the Pasco County Utility Billing System. As part of the audit, your water meter was *randomly* selected for testing to verify the accuracy of the meter in accordance with the American Water Works Association standards.

How will my new meter compare to my current meter?
Your current meter will be replaced with a brand new water meter. The new meter will be the same size and model as your current meter and will be tested for accuracy *before installation*.

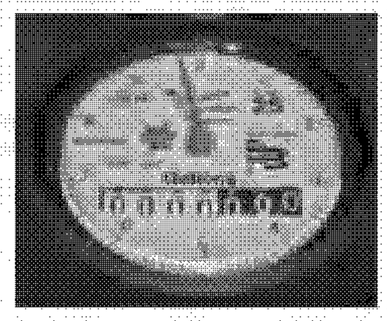


What gives Pasco County the authority to be on my property and replace my water meter?
In compliance with the Pasco County Ordinance Section 110-37(c) (7), *Access to premises*:

> *"The duly authorized agents of the county shall have access at all reasonable hours to the premises of the customer for the purpose of installing, maintaining and inspecting or removing the county's property, reading meters and other purposes incident to performance under or termination of the county's contract with the customer and in such performance shall not be liable for trespass."*

I checked, and the new meter does not reflect a zero starting read. Will I be billed for this?
No. The small read you may see on the new meter is a result of the testing process. The beginning read on your account will be the number the meter displays when the replacement meter is installed. The meter read will be recorded and verified at the time of installation to make certain you are not billed for the amount run through the meter during pre-installation testing.

When will my water meter be replaced?

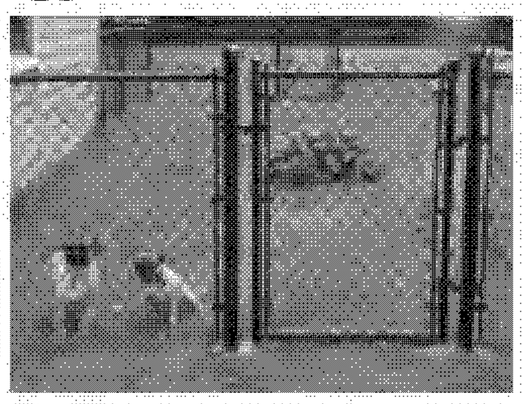


This project will take place in April and May 2015. You will receive a letter from the Pasco County Clerk & Comptroller's Division of Inspector General stating the exact date and range of hours that you can expect the technical team to arrive at your property. On that date, a Pasco County Utilities technician will knock on your door to let you know we are replacing your meter.

Will this affect my water service?
Yes. The water service to your residence will be temporarily shut off for approximately one hour during the replacement period. Once the meter is replaced, your water will be turned on.

Who will be on my property to replace my meter?
A Pasco County Utilities technician will accompany a two-man work crew from MARS Company, the vendor who has been contracted to provide independent third-party testing of a sample of water meters for accuracy.

I have a dog, fence, locked gate, etc. How is this going to work?
Please remove any unsecured animals from the area surrounding your water meter. If you are not able to be present during your scheduled meter replacement, please have gates unlocked and the meter box area accessible on the date and timeframe stated on your notification letter.



Who do I contact to ask questions about my water meter replacement?
Contact the Office of Paula S. O'Neil, Pasco County Clerk & Comptroller, Division of Inspector General, at waterbill@pascoclerk.com.

Appendix F
Customer Notification Letter 1

Mailing Addresses:

Dade City:
38053 Live Oak Avenue
Dade City, FL 33523-3894

New Port Richey:
P.O. Box 338
New Port Richey, FL 34656-0338

Office Locations:

Robert D. Sumner Judicial Center
38053 Live Oak Avenue, Suite 205
Dade City, FL 33523-3894

West Pasco Judicial Center
7530 Little Road, Suite 106
New Port Richey, FL 34654

East Pasco Government Center
14236 Sixth Street, Suite 201
Dade City, FL 33523

West Pasco Government Center
8731 Citizens Drive, Suite 220
New Port Richey, FL 34654

East Pasco Records Center
38319 McDonald Street
Dade City, FL 33525

West Pasco Records Center
Jack Albert Records Retention Center
8902 Government Drive
New Port Richey, FL 34654

Inspector General
Dade City: (352) 521-4528
Or (352) 521-4527
waterbill@pascoclerk.com

www.pascoclerk.com

Office of Paula S. O'Neil
Clerk & Comptroller
Pasco County, Florida

April 6, 2015

12345 Ridge Road
New Port Richey, FL 34654

Dear Water Utility Customer:

Paula S. O'Neil, Ph.D., Clerk & Comptroller, has authorized an audit of the Pasco County Water Utility Billing System. Her Division of Inspector General is in the third phase of this audit. The Inspector General is an independent and objective assurance and consulting activity designed to add value and improve county operations.

This phase of the audit is to test a statistical sample of water meters. Your water meter has been *randomly* selected to be replaced as part of the audit testing. There is no cost to you for receiving a new water meter.

In the next few weeks, you will receive a letter in the mail notifying you of a specific day and timeframe for your water meter replacement. Technical teams, including Pasco County Utilities Technicians and Meter Technicians from Meter and Related Services (MARS) Company will replace your current meter with a brand new meter. In the meantime, please take a few minutes to read the enclosed page that reflects some frequently asked questions (FAQs) for more details.

If you have questions that are not answered in the enclosed page, *FAQs About Your Water Meter Replacement*," feel free to call or email us with your questions or concerns.

Sincerely,

Patrice Monaco-McBride

Patrice Monaco-McBride, CIG, CIGA, CGFO
Inspector General
Director of Inspector General Division

Appendix G
Customer Notification Letter 2

Mailing Addresses:

Dade City:
38053 Live Oak Avenue
Dade City, FL 33523-3894

New Port Richey:
P.O. Box 338
New Port Richey, FL 34656-0338

Office Locations:

Robert D. Sumner Judicial Center
38053 Live Oak Avenue, Suite 205
Dade City, FL 33523-3894

West Pasco Judicial Center
7530 Little Road, Suite 106
New Port Richey, FL 34654

East Pasco Government Center
14236 Sixth Street, Suite 201
Dade City, FL 33523

West Pasco Government Center
8731 Citizens Drive, Suite 220
New Port Richey, FL 34654

East Pasco Records Center
38319 McDonald Street
Dade City, FL 33525

West Pasco Records Center
Jack Albert Records Retention Center
8502 Government Drive
New Port Richey, FL 34654

Inspector General:

P.O. Box 724
Dade City, FL 33526-00724

Dade City: (352) 521-4528
Or (352) 521-4527

waterbill@pascoclerk.com

www.pascoclerk.com

Office of Paula S. O'Neil
Clerk & Comptroller
Pasco County, Florida

April 17, 2015

12345 Ridge Road
New Port Richey, FL 34654

Dear Water Utility Customer:

You recently received some information from our office regarding the Pasco County Utilities Billing Audit, explaining that your water meter was *randomly* selected to be replaced. Technical teams from Meter and Related Services (MARS) Company will replace your current meter with a brand new meter. There will also be a Pasco County Utilities Supervisor present.

The technical teams are scheduled to work in your area on Wednesday, April 22, 2015, between 8:00 AM and 10:00 AM. When they arrive, a Pasco County Utility Supervisor will knock on your door to let you know the work is about to begin.

While your water meter is being replaced, the water to your home must be shut off. We are sorry for any inconvenience this may cause. The teams will work as quickly as possible to replace your water meter and restore your water service.

Once the work is completed, the Utility Supervisor will knock on your door to let you know your water service is on. If you are not home when your meter is replaced, a notice will be placed on your door to let you know the work is complete.

If you have questions at any time during this process, please do not hesitate to call us at 352-521-4527 or 352-521-4528. The Inspector General Audit team will be available during this entire process.

Sincerely,

Patrice Monaco-McBride

Patrice Monaco-McBride, CIG, CIGA, CGFO
Inspector General
Director of Inspector General Division

Appendix H
MARS, Co. Meter Test Results

June 15, 2015

Ms. Patrice Monaco-McBride
Director of Division of Inspector General
Pasco County
14236 Sixth Street, Dade City, FL 33523

Subject: Water Meter and Automatic Meter Reading (AMR) Audit Report

Dear Patrice:

Thank you for the opportunity to serve the Division of Inspector General for the Pasco County Clerk & Comptroller via this Water Meter and Automatic Meter Reading Audit. On the following pages, you will find the results of our testing. Feel free to contact me directly for any clarifications of the Report's details.

MARS Company is a manufacturer and distributor of water meter testing and reading equipment, and specialty products, provided to municipal, privately held, and publicly held water utilities, water authorities, both domestically and internationally. For almost thirty years, MARS has serviced utility's need to minimize water loss (unaccounted-for water), maximize ROI on capital investments, and facilitate the process of reading meters via AMR technology. MARS is the recognized industry leader for water meter testing equipment of all sizes, residential through commercial, and holds several patents on our products.

We look forward to formally presenting the results of this Report at a time that is most convenient to you.

Best regards,

Dave Corey - CEO
MARS Company

Pasco County Water Meter and AMR Audit

MARS Company
3925 SW 13th Street, Ocala, Florida 34474
P: 800.782.5268 F: 352.694.7397 W: www.marswater.com

Definitions:

A. "Project" - Water meter and AMR audit
B. "Report" – Project's results
C. "AMR" – Automatic Meter Reading technology
D. "Units" – Three-quarter inch (3/4") Badger meters, and accompanying AMR
E. "AWWA" – American Water Works Association
F. "County" – Pasco County
G. "Division" – Division of Inspector General
H. "MARS" – MARS Company
I. "Pasco County" – Pasco County Utilities Department
J. "System" - MARS Gravimetric Scale and M3 software systems
K. "Testing" – Water Meter Test Utilizing MARS Gravimetric Scale and M3 software systems
L. "MTF" - Meter Testing Facility

Scope and Objectives:

The scope of the Project was as follows:

1. Test for accuracy, one hundred-seventy (170) brand new Units to be used as replacements of one hundred-seventy (170) existing Units (currently installed at resident's homesteads). This is referred to as "front-end testing". Although outside the original scope of the Project, the Division chose to front-end test the new Units on MARS recommendation so as to; a) ensure the accuracy of each Unit for the purposes of mitigating the chance of an inaccurate new Unit being installed at a resident's home, and b) as a value-add to the County to determine if it's capital expenditures were expended on accurate Units. In other words, if an unacceptable number of new Units failed MARS testing,
2. To locate, remove, and physically test for accuracy, one hundred-seventy (170) Units (currently installed at resident's homes). The number of Units to be tested, and the respective resident location of the Units, were predetermined by the Division via a statistical sampling methodology.
3. To install the one hundred-seventy (170) new front-end tested Units as replacements of the one hundred seventy (170) existing Units.
4. To provide individual Unit testing results via MARS M3 testing software, MARS Certification of its testing accuracy, and to summarize all testing results into a Report.

The objectives of the Project were as follows:

1. To provide the Division with independent, third-party, testing results as to the accuracy of (170) new and existing Units.
2. To complete the Project within budget.

Definition of *Accuracy*: PERFORMANCE

Please note that performance is defined as the acceptable level of variance in a meter's performance when tested, compared to the AWWA (AWWA Standards), and not any other unit of measure.

The level of performance is determined by measuring the amount of water passing through the meter over a period of time and a given quantity (calculated by physically "reading the meter register" prior to the test), and comparing that amount to the meter register after the test. The difference is the volume of water, in gallons, or any other unit of measure is the quantity used in the test. That must be compared to the actual amount introduced into the precision gravimetric test system to determine performance for that individual test. The System's calculations are the standard (100% reading accuracy). Thus, if the eyewitness calculation says that 98 gallons passed through the meter (over a fixed period of time), and the System records 100 gallons, the meter performance is 98% compared to the known quantity in the measure tank of 100 Gallons.

MARS Company
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P: 800.782.5268 F: 352.694.7397 W: www.marswater.com

Our ability to represent MARS Meter Testing Facility equipment as the acceptable standard is based on the NIST annual certification of the MARS System. System accuracy includes reading the electronic scales within the MARS System and the fact that this system is certified to NIST Handbook 44 for performance compliance (a nationally accepted standard). As stated, the System has been calibrated and been found accurate to within +/-.25%, in accordance with the National Institute for Standards and Technology (NIST), Handbook 44, and all devices used in the calibration are NIST traceable.

System Testing:

This System consists of fully integrated test equipment including a certified Gravimetric Scale System and a MARS Water Meter Test Bench. The testing of meters is completed over a ninety (90) minute period, broken into three (3) time intervals. Therefore, a meter is being tested three times under various flowrates as required by the AWWA National Standard (Gallons per Minute "GPM"). Testing at three different flowrates allows testing to represent the entire flow range of the meter without error.

Those three testing flowrates are as follows:

1. High flowrate - 100 gallons of water passes through the meter at 15 GPM.
2. Mid flowrate - 10 gallons of water passes through the meter at 2 GPM.
3. Low flowrate - 10 gallons of water passes through the meter at .25 GPM (point two-five).

The outcome of testing is simple; a Unit either passes or fails the test. The pass parameters are as follows:

1. High flow performance = 98.5% to 101.5%
2. Mid flow performance = 98.5% to 101.5%
3. Low flow performance = 95% to 101%

Methodology:

Designed into the Project's methodology were steps to ensure MARS complete independence from the following:

- The Division
- The County
- Pasco County
- The County Commission
- The Water Meter Manufacturer
- The AMR Manufacturer
- Residents of the Testing Locations

The general methodology MARS utilized to complete the project was as follows:

- Geographically segregate the statistical sample of one hundred-seventy (170) addresses (Units to be tested).
- Create an estimated trip route that would link address to address in a pattern that would allow the Project to be the most time efficient.

MARS Company
3925 SW 13th Street, Ocala, Florida 34474
P: 800.762.5268 F: 352.694.7207 W: www.marswater.com

- Provide the Division and Pasco County a full inspection of MARS facilities in Ocala, Florida. This included a Project Kick Off meeting where MARS Project lead, Tom Volland, discussed the Project and fielded questions, as well as, a tour and demonstration of the System. Note that the demonstration did not include the actual review of the Project's testing of new Units. The demonstration was provided to show how the testing system worked.
- Complete a physical pre-inspection of the Unit locations to determine; a) the exact whereabouts of the meter boxes on the property, b) the current condition of the existing Units, and c) an estimate of the time it would take to remove and replace one hundred-seventy (170) Units.
- At the MARS MTF in Ocala, test the new Units delivered by Pasco County (front-end testing). Record all results in the system, as well as, a spreadsheet to be presented to the Division as part of this deliverable.
- Segregate Units that passed from Units that failed. Retest Units that failed. Record results of second test. If a Unit failed, retest a third time. Record results.
- Utilizing a two-man crew, remove existing Units from pre-determined addresses, and replace each with new front end tested Units. Document all activity and findings, e.g., resident refused test, meter leaking, etc.
- Transport removed Units to the MARS MTF (Meter Testing Facility) in Ocala. Test the existing Units removed from resident's locations. Record all results in the System as well as a spreadsheet to be presented to the Division as part of this deliverable.
- Segregate Units that passed from Units that failed. Retest Units that failed. Record results of second test. If a Unit failed, retest a third time. Record results.
- Contact the Division to have all tested units transported back to the County.
- Deliver Report to the Division, along with the testing results of each Unit.

Project Assumptions:

- The Division, Pasco County Utilities Department, and any other department, division or individual, would fully cooperate with MARS on the Project **Assumption met.**
- The Division would advise each resident (address) where Units are to be removed and replaced, in advance, as to the nature and timing of the Project. MARS would coordinate with the Division the exact day and range of hours MARS planned to visit the address. MARS would not be responsible for delays due to lack of Division coordination with Pasco County and residents. However, MARS would remain in direct communication with the Division regarding any delays. **Assumption met.**
- Pasco County would provide MARS with an employee(s) escort, driving a vehicle clearly marked with a County seal. The escort would approach each residence where the Units are located to: 1) ensure the safety of the area surrounding the meter box; 2) remove any unsecured animals from the meter box area; 3) inform the resident of the nature of our visit; and 4) be prepared to repair any problems created by the removal of the existing Units and installation of the new Units. **Assumption met.**
- If MARS were unable to complete the removal and/or the replacement of any Unit, for reasons out of the control of MARS, including, but not limited to; threatening animals that could not be removed, irate or otherwise unhappy residents who could disrupt the work, Units or pipes attached in such disrepair as to significantly encumber removal, wasps, hornets, snakes, etc. within the meter box, weather, or any Acts of God, MARS would move on to the next residence. Subsequently, MARS would inform the Division within 24 hours of all unremoved Units, and coordinate with the Division a return visit to the address to complete the work. **Assumption met.**

MARS Company
3925 SW 13th Street, Ocala, Florida 34474
P: 800.782.5268 F: 352.694.7397 W: www.marswater.com

- All Units to be removed were coupled to the accompanying pipes, and not yoked. **Assumption met.**
- New Units would be delivered to MARS for testing before being installed in place of the existing Units. The County would provide preprogrammed AMR to County specifications, but unattached to the Units. MARS would have the responsibility of connecting the AMR to the Units. **Assumption met.**
- Project work will be completed both at MARS and in Pasco County at predetermined residences. **Assumption met.**

Project Teams:

- The Division. Patrice Monaco-McBride, Inspector General, as Project Sponsor.
- MARS. Tom Volland - COO (Project Lead), Chris Reul - Production Manager (Project Manager), Sedeek Rahman - Meter Testing Manager, Chris Mastic - Systems Engineer, Andy Jenkinson and Sid Everage – Field Work.

General Findings:

The general findings of Testing are as follows:

1. Front End Test (new Units) – 174 Units tested. AMR read to meter read – **all passed.** Eyewitness reading to System results– **two (2) failed upon initial test.** Second eyewitness reading to System results (retest) – **two (2) initial fails passed.** Third eyewitness reading to System results (second retest) – **two (2) initial fails passed.** These meters are **deemed passing.** All one hundred seventy-four (174) front-end tested meters **deemed passing.**
2. Existing Unit Test – 167 Units tested. AMR read to meter read – **all passed.** Eyewitness reading to System results– **nineteen (19) failed upon initial test.** Second eyewitness reading to System results (retest) – **ten (10) initial fails passed.** Third eyewitness reading to System results (second retest) – **ten (10) initial fails passed.** Nine (9) meters are deemed failing and (158) meters deemed passing of one hundred sixty-seven (167) existing Units tested.

MARS Company
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MARS - Pasco County Meter Test Log

Average for High Flow	Average for Mid Flow	Average for Mid Flow	% AMR Pass	% Meter Pass	% Unit Pass
99.2563%	100.2740%	99.4016%	100.0000%	94.6108%	94.6108%

Meter Information					AWWA 5/8" Test Results			Overall Results			Additional Information
Batch #	Item #	Serial Number (redacted)	Endpoint ID (redacted)	Date	High Flow	Mid Flow	Low Flow	AMR Pass	Meter Pass	Unit Pass	Notes
5	42	80690	801807	29-Apr-15	98.94%	100.72%	100.20%	✓	✓	✓	
5	43	80691	801773	29-Apr-15	98.94%	99.69%	99.20%	✓	✓	✓	
18	180	80692	801785	6-May-15	99.55%	100.82%	99.10%	✓	✓	✓	TESTED ON MAY 4, RECHECK AGAIN MAY 6 , PASS
14	133	80693	802069	5-May-15	98.81%	99.39%	100.00%	✓	✓	✓	TESTED ON APRIL 29, RECHECK AGAIN MAY 5 , PASS
14	132	80694	802479	5-May-15	98.81%	99.39%	99.00%	✓	✓	✓	TESTED ON APRIL 29, RECHECK AGAIN MAY 5 , PASS
7	68	80695	802091	30-Apr-15	99.63%	100.82%	97.90%	✓	✓	✓	
6	59	80696	807708	30-Apr-15	98.55%	99.59%	99.10%	✓	✓	✓	
5	41	80697	807703	29-Apr-15	98.84%	99.69%	98.20%	✓	✓	✓	
6	60	80698	807669	30-Apr-15	99.65%	100.82%	97.10%	✓	✓	✓	
14	131	80753	807712	5-May-15	98.31%	99.39%	99.00%	✓	✗	✗	TESTED ON APRIL 29, RECHECK AGAIN MAY 5 , FAIL
4	38	81499	809300	29-Apr-15	99.65%	100.82%	97.71%	✓	✓	✓	
4	34	81512	809292	29-Apr-15	99.25%	99.59%	99.70%	✓	✓	✓	
4	37	81539	809288	29-Apr-15	99.25%	99.59%	99.70%	✓	✓	✓	
1	9	87608	817389	28-Apr-15	99.40%	99.17%	99.30%	✓	✓	✓	
1	7	91407	819306	28-Apr-15	99.10%	100.21%	99.30%	✓	✓	✓	
2	14	95521	823355	28-Apr-15	98.94%	99.16%	101.00%	✓	✓	✓	
9	87	95577	822796	1-May-15	99.54%	99.49%	100.00%	✓	✓	✓	
9	83	95664	824849	1-May-15	98.84%	100.51%	100.00%	✓	✓	✓	
14	137	95685	824839	5-May-15	98.02%	100.41%	100.00%	✓	✗	✗	TESTED ON MAY 1, RECHECK AGAIN MAY 5 , FAIL
10	92	96660	825160	1-May-15	99.24%	100.82%	99.10%	✓	✓	✓	
9	81	96666	824817	1-May-15	99.74%	100.51%	101.00%	✓	✓	✓	
11	107	98672	825188	1-May-15	98.72%	98.75%	99.10%	✓	✓	✓	
11	105	100839	825178	1-May-15	99.02%	99.79%	100.10%	✓	✓	✓	
11	106	100841	825147	1-May-15	98.92%	98.75%	100.10%	✓	✓	✓	
10	95	101261	826642	1-May-15	99.24%	100.82%	99.10%	✓	✓	✓	
10	97	101990	828150	1-May-15	98.54%	99.59%	99.10%	✓	✓	✓	
10	91	102000	826659	1-May-15	99.34%	100.82%	99.10%	✓	✓	✓	
10	93	102289	828855	1-May-15	99.24%	99.59%	99.10%	✓	✓	✓	
14	138	104010	833874	5-May-15	98.22%	99.39%	100.00%	✓	✗	✗	TESTED ON MAY 1, RECHECK AGAIN MAY 5 , FAIL
10	98	104011	833874	1-May-15	98.74%	100.82%	100.10%	✓	✓	✓	
14	139	104015	833879	5-May-15	97.92%	99.39%	96.00%	✓	✗	✗	TESTED ON MAY 1, RECHECK AGAIN MAY 5 , FAIL
8	75	104017	833882	30-Apr-15	99.15%	100.20%	98.10%	✓	✓	✓	
9	90	104415	833879	1-May-15	99.24%	99.49%	99.00%	✓	✓	✓	
8	79	104421	833885	30-Apr-15	99.45%	99.18%	100.10%	✓	✓	✓	
18	179	104422	833898	6-May-15	98.45%	100.82%	100.10%	✓	✗	✗	TESTED ON MAY 4, RECHECK AGAIN MAY 6 , FAIL
14	140	104422	832238	5-May-15	98.31%	99.39%	99.00%	✓	✗	✗	TESTED ON MAY 1, RECHECK AGAIN MAY 5 , FAIL
11	101	104424	832129	1-May-15	98.62%	99.79%	95.10%	✓	✓	✓	
8	77	104425	833871	30-Apr-15	99.25%	100.20%	98.10%	✓	✓	✓	
8	80	104426	832122	30-Apr-15	99.55%	100.20%	100.10%	✓	✓	✓	
9	84	104427	832123	1-May-15	98.74%	99.49%	100.00%	✓	✓	✓	
11	110	107192	835019	1-May-15	99.12%	99.79%	100.10%	✓	✓	✓	
9	82	107202	835016	1-May-15	98.64%	99.49%	99.00%	✓	✓	✓	
10	94	110323	837319	1-May-15	99.44%	100.82%	100.10%	✓	✓	✓	
10	96	110325	834209	1-May-15	99.24%	100.82%	100.10%	✓	✓	✓	
16	155	110327	834211	5-May-15	99.41%	99.48%	98.80%	✓	✓	✓	
14	134	112103	835035	5-May-15	99.51%	100.41%	101.00%	✓	✓	✓	TESTED ON APRIL 29, RECHECK AGAIN MAY 5 , PASS
11	108	112113	835095	1-May-15	99.32%	99.79%	100.10%	✓	✓	✓	
	181	113316	835829	7-May-15	97.86%	99.69%	99.60%	✓	✗	✗	TESTED ON MAY 4, RECHECK AGAIN MAY 7 , FAIL
12	118	113317	835831	4-May-15	98.79%	99.90%	99.30%	✓	✓	✓	
5	50	113326	835824	29-Apr-15	99.64%	100.72%	99.20%	✓	✓	✓	
5	45	113909	836572	29-Apr-15	99.14%	100.72%	98.20%	✓	✓	✓	
5	49	113909	836531	29-Apr-15	99.14%	99.69%	99.20%	✓	✓	✓	
5	48	113912	836569	29-Apr-15	99.44%	100.72%	99.20%	✓	✓	✓	
13	125	113916	836580	4-May-15	99.26%	100.82%	99.80%	✓	✓	✓	
13	123	115222	842934	4-May-15	99.26%	100.82%	98.80%	✓	✓	✓	
17	164	116459	844251	6-May-15	99.47%	100.82%	100.20%	✓	✓	✓	
15	148	116461	844219	5-May-15	99.15%	100.82%	99.90%	✓	✓	✓	
17	163	116463	844244	6-May-15	99.77%	100.82%	100.20%	✓	✓	✓	
18	176	116464	836516	6-May-15	99.15%	100.82%	100.10%	✓	✓	✓	
12	120	116466	844215	4-May-15	99.29%	100.93%	100.30%	✓	✓	✓	
13	124	116468	835083	4-May-15	99.66%	100.82%	99.80%	✓	✓	✓	
18	177	116470	840110	6-May-15	99.95%	100.82%	100.10%	✓	✓	✓	
15	150	116471	836532	5-May-15	99.85%	100.82%	99.90%	✓	✓	✓	
12	119	117618	845148	4-May-15	99.79%	99.90%	100.30%	✓	✓	✓	
13	121	121218	843086	4-May-15	99.16%	99.59%	99.80%	✓	✓	✓	
13	127	121869	848998	4-May-15	99.46%	100.82%	99.80%	✓	✓	✓	

Batch #	Item #	Serial Number (redacted)	Endpoint ID (redacted)	Date	High Flow	Mid Flow	Low Flow	AMR Pass	Meter Pass	Unit Pass	Notes
13	122	121872	849018	4-May-15	99.58%	100.62%	96.81%	✓	✓	✓	
16	151	122501	847489	5-May-15	99.31%	100.52%	99.80%	✓	✓	✓	
15	142	123544	850395	5-May-15	99.35%	100.62%	99.90%	✓	✓	✓	
16	158	123548	850403	5-May-15	99.21%	100.52%	98.80%	✓	✓	✓	
6	56	124108	850730	30-Apr-15	99.15%	99.59%	100.10%	✓	✓	✓	
15	141	124115	850826	5-May-15	99.55%	100.62%	99.90%	✓	✓	✓	
	182	124841	850750	7-May-15	99.45%	100.72%	98.58%	✓	✓	✓	TESTED ON MAY 5, RECHECK AGAIN MAY 7 ,PASS
15	144	124844	850925	5-May-15	99.55%	100.62%	99.90%	✓	✓	✓	
6	57	124849	851353	30-Apr-15	99.15%	99.59%	99.10%	✓	✓	✓	
14	135	124854	851354	5-May-15	99.41%	100.41%	100.00%	✓	✓	✓	TESTED ON APRIL 30, RECHECK AGAIN MAY 5 , PASS
	184	125634	850940	7-May-15	99.45%	100.72%	94.57%	✓	✗	✗	TESTED ON MAY 5, RECHECK AGAIN MAY 7 ,FAIL
18	160	125641	851809	5-May-15	99.91%	99.48%	99.80%	✓	✓	✓	
15	145	125644	851686	5-May-15	99.55%	100.62%	97.90%	✓	✓	✓	
18	172	127058	851051	6-May-15	99.15%	100.62%	100.10%	✓	✓	✓	
	186	127059	852316	7-May-15	99.05%	100.72%	100.60%	✓	✓	✓	TESTED ON MAY 6, RECHECK AGAIN MAY 7 ,PASS
18	174	127069	852317	6-May-15	99.45%	99.59%	99.10%	✓	✓	✓	
18	171	127071	851939	6-May-15	99.15%	99.59%	100.10%	✓	✓	✓	
	183	130137	851539	7-May-15	99.95%	100.72%	96.58%	✓	✓	✓	TESTED ON MAY 5, RECHECK AGAIN MAY 7 , PASS
17	167	131147	852329	6-May-15	99.37%	100.82%	96.19%	✓	✓	✓	
17	161	131148	852394	6-May-15	98.97%	100.82%	98.20%	✓	✓	✓	
15	149	131151	852395	5-May-15	99.15%	99.59%	99.90%	✓	✓	✓	
4	31	131157	853238	29-Apr-15	98.95%	99.59%	99.70%	✓	✓	✓	
18	173	131159	852919	6-May-15	99.45%	100.62%	99.10%	✓	✓	✓	
16	159	131999	852809	5-May-15	99.51%	100.52%	99.80%	✓	✓	✓	
17	162	132006	853284	6-May-15	99.47%	100.82%	99.20%	✓	✓	✓	
17	168	132007	852770	6-May-15	99.67%	100.82%	99.20%	✓	✓	✓	
16	156	132008	853256	5-May-15	99.11%	100.52%	99.80%	✓	✓	✓	
17	170	132011	853816	6-May-15	99.67%	100.82%	100.20%	✓	✓	✓	
17	166	132832	830123	6-May-15	99.57%	100.82%	99.20%	✓	✓	✓	
17	169	132832	830782	6-May-15	99.47%	100.82%	99.20%	✓	✓	✓	
17	165	132839	854521	6-May-15	99.17%	100.82%	99.20%	✓	✓	✓	
1	1	132985	854356	28-Apr-15	99.50%	100.21%	100.30%	✓	✓	✓	
1	3	132986	854424	28-Apr-15	98.50%	101.24%	98.29%	✓	✓	✓	
2	16	132990	854351	28-Apr-15	99.03%	100.21%	99.00%	✓	✓	✓	
16	154	133237	854424	5-May-15	99.51%	99.48%	100.80%	✓	✓	✓	
18	175	133239	854361	6-May-15	98.55%	99.59%	100.10%	✓	✓	✓	
	185	133414	855102	7-May-15	97.98%	99.69%	100.60%	✓	✗	✗	TESTED ON MAY 5, RECHECK AGAIN MAY 7 , FAIL
16	153	133420	854375	5-May-15	99.11%	100.52%	100.80%	✓	✓	✓	
16	152	133421	854369	5-May-15	99.71%	100.52%	100.80%	✓	✓	✓	
1	4	133803	854034	28-Apr-15	99.70%	100.21%	100.30%	✓	✓	✓	
2	15	133804	854034	28-Apr-15	99.33%	101.25%	99.00%	✓	✓	✓	
3	28	133813	854082	29-Apr-15	99.36%	100.62%	99.10%	✓	✓	✓	
4	36	133826	854089	29-Apr-15	99.35%	100.62%	100.70%	✓	✓	✓	
2	19	133827	854998	28-Apr-15	99.43%	101.25%	100.00%	✓	✓	✓	
7	69	133831	854101	30-Apr-15	99.53%	100.82%	98.90%	✓	✓	✓	
7	63	133831	854103	30-Apr-15	99.33%	99.79%	97.90%	✓	✓	✓	
7	64	133835	854089	30-Apr-15	99.03%	99.79%	99.90%	✓	✓	✓	
2	11	133837	856818	28-Apr-15	98.83%	101.25%	100.00%	✓	✓	✓	
3	27	133843	856814	29-Apr-15	99.16%	100.62%	99.10%	✓	✓	✓	
2	12	133844	856855	28-Apr-15	99.03%	101.25%	100.00%	✓	✓	✓	
10	99	134011	856214	1-May-15	99.04%	100.62%	100.10%	✓	✓	✓	
3	26	134016	855126	29-Apr-15	99.06%	99.59%	98.10%	✓	✓	✓	
13	130	134017	856360	4-May-15	98.96%	99.59%	98.80%	✓	✓	✓	TESTED ON APRIL 28, RECHECK AGAIN MAY 4 , PASS
11	104	134027	855116	1-May-15	99.52%	100.83%	100.10%	✓	✓	✓	
12	114	134040	855121	4-May-15	99.79%	100.93%	99.30%	✓	✓	✓	
13	128	134040	855115	4-May-15	99.76%	99.59%	100.80%	✓	✓	✓	
12	116	134044	856358	4-May-15	99.29%	100.93%	99.30%	✓	✓	✓	
8	71	134045	856348	30-Apr-15	99.55%	100.20%	100.10%	✓	✓	✓	
8	78	134046	856347	30-Apr-15	98.65%	100.20%	100.10%	✓	✓	✓	
1	10	134053	856355	28-Apr-15	99.50%	100.21%	100.30%	✓	✓	✓	
1	2	134100	856208	28-Apr-15	99.10%	100.21%	100.30%	✓	✓	✓	
2	17	134102	856352	28-Apr-15	98.74%	101.25%	100.00%	✓	✓	✓	
7	61	134109	856170	30-Apr-15	99.63%	100.82%	99.90%	✓	✓	✓	
12	115	134117	856975	4-May-15	99.89%	100.93%	100.30%	✓	✓	✓	
10	100	134119	856829	1-May-15	99.44%	100.62%	99.10%	✓	✓	✓	
7	66	134122	856825	30-Apr-15	99.43%	99.79%	99.90%	✓	✓	✓	
8	76	134132	856984	30-Apr-15	99.25%	100.20%	100.10%	✓	✓	✓	
14	138	134133	856839	5-May-15	99.51%	99.39%	100.00%	✓	✓	✓	TESTED ON MAY 1, RECHECK AGAIN MAY 5 , PASS

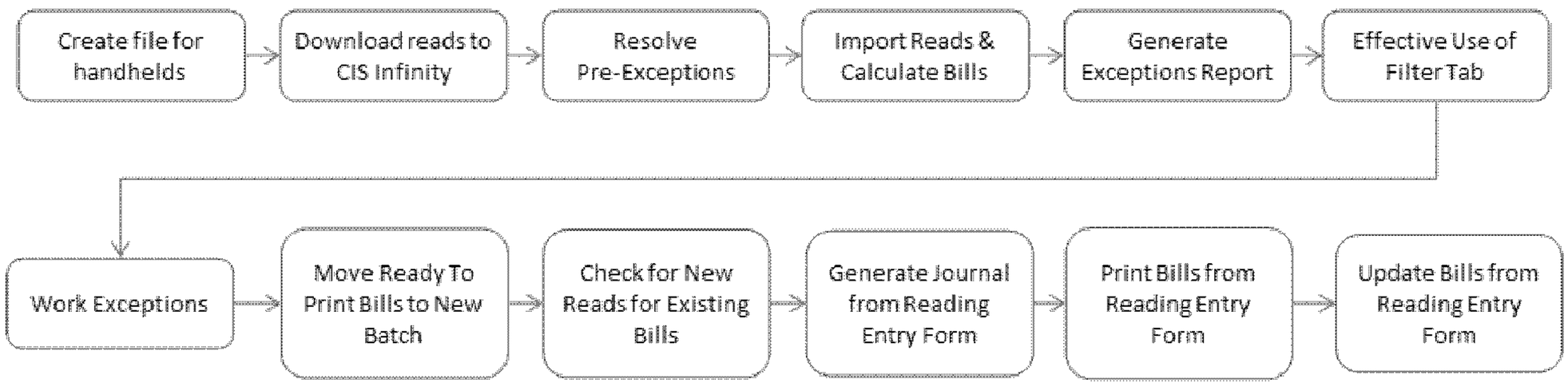
Batch #	Item #	Serial Number (redacted)	Endpoint ID (redacted)	Date	High Flow	Mid Flow	Low Flow	AMR Pass	Meter Pass	Unit Pass	Notes
8	78	134132	856984	30-Apr-15	99.25%	100.20%	100.10%	✓	✓	✓	
14	136	134133	856839	5-May-15	99.51%	99.39%	100.00%	✓	✓	✓	TESTED ON MAY 1, RECHECK AGAIN MAY 5 , PASS
9	88	134134	857384	1-May-15	99.64%	100.51%	99.00%	✓	✓	✓	
1	6	134137	857462	28-Apr-15	99.40%	101.24%	98.29%	✓	✓	✓	
1	8	134147	857386	28-Apr-15	99.60%	101.24%	98.29%	✓	✓	✓	
12	113	134377	856220	4-May-15	99.79%	100.93%	100.30%	✓	✓	✓	
12	112	134380	856188	4-May-15	99.45%	100.93%	99.30%	✓	✓	✓	
8	73	134382	856187	30-Apr-15	99.35%	100.20%	99.10%	✓	✓	✓	
3	21	134391	856839	29-Apr-15	99.26%	99.59%	99.10%	✓	✓	✓	
8	72	134399	856832	30-Apr-15	99.05%	101.23%	100.10%	✓	✓	✓	
9	89	134399	856992	1-May-15	99.14%	100.51%	100.00%	✓	✓	✓	
12	117	134410	857000	4-May-15	99.29%	100.93%	99.30%	✓	✓	✓	
8	74	134413	857002	30-Apr-15	99.35%	100.20%	100.10%	✓	✓	✓	
4	35	134587	857355	29-Apr-15	100.05%	99.59%	100.70%	✓	✓	✓	
4	32	134598	857344	29-Apr-15	99.35%	100.82%	100.70%	✓	✓	✓	
7	70	134607	857416	30-Apr-15	99.33%	100.82%	99.90%	✓	✓	✓	
7	65	134609	857462	30-Apr-15	99.33%	100.82%	99.90%	✓	✓	✓	
4	39	134614	857403	29-Apr-15	98.95%	99.59%	100.70%	✓	✓	✓	
8	55	134615	857413	30-Apr-15	99.45%	99.59%	98.10%	✓	✓	✓	
8	58	134617	857469	30-Apr-15	99.55%	100.82%	99.10%	✓	✓	✓	
4	33	134636	857483	29-Apr-15	99.65%	100.82%	99.70%	✓	✓	✓	
2	20	134782	857597	28-Apr-15	99.43%	100.21%	99.00%	✓	✓	✓	
3	24	134784	857597	29-Apr-15	98.76%	99.59%	99.10%	✓	✓	✓	
3	23	134786	857655	29-Apr-15	99.46%	100.82%	99.10%	✓	✓	✓	
3	22	134787	857654	29-Apr-15	98.96%	99.59%	98.10%	✓	✓	✓	
2	13	134788	857607	28-Apr-15	99.33%	101.25%	99.00%	✓	✓	✓	
2	18	134788	857607	28-Apr-15	99.23%	100.21%	99.00%	✓	✓	✓	
3	29	134792	857674	29-Apr-15	99.56%	100.82%	99.10%	✓	✓	✓	
3	25	134793	857674	29-Apr-15	99.36%	100.82%	99.10%	✓	✓	✓	
7	62	134798	857664	30-Apr-15	99.33%	99.79%	99.90%	✓	✓	✓	
6	54	134804	857451	30-Apr-15	99.55%	99.59%	100.10%	✓	✓	✓	
6	52	134806	857446	30-Apr-15	99.55%	99.59%	100.10%	✓	✓	✓	
5	46	134808	857615	29-Apr-15	99.74%	100.72%	100.20%	✓	✓	✓	
7	67	134814	857442	30-Apr-15	99.43%	100.82%	97.90%	✓	✓	✓	
6	53	134817	857606	30-Apr-15	99.55%	100.82%	99.10%	✓	✓	✓	

Appendix I
Department Policies and Procedures

1. **Standard Operating Procedures (SOP) - *Large Water Meter Testing***
   The purpose of this written process was to document the process of testing the calibration of a large water meter (>3 inches). This testing is done on an annual basis according to AWWA standards. *(Attachment Available)*

2. **Standard Operating Procedures (SOP) – *Water Meter Calibration Testing***
   The purpose of this written process was to document the process of calibrating a water meter which needs to be completed with 24 to 48 hours. The calibration of a water meter was usually customer driven and if results were found to be within AWWA standards, the customer was charged a fee for the testing. *(Attachment Available)*

3. **Meter to Online Billing Test Script:**



a) Create Read

Files – *Create Meter Reading Import File*
b) Download Reads – *Process Reading Export File*
c) Pre-Exceptions – *Pre-Exception Processing*
d) Import Reads and Calculate Bills
e) Generate and View Exceptions Report
f) Filter Tab
g) Work Exceptions
h) Move Bills to New Batch
i) Check for New Reads
j) Generate Journal for Reading Entry Form
k) Print Bills
l) Update Bills

Appendix J
Internal Control Questionnaires

Internal Control Questionnaire (ICQ) given to the PCU Accounting Clerk	
1.	Do you receive and/or review a Pre-Exceptions Report (exceptions prior to bill calculation/generation and before the cycle billing process) If so, from who do you receive the report?
2.	Do you identify and resolve pre-exceptions? If so, what do you look for?
3.	Do you identify and resolve exceptions after bills have been calculated and generated? If so, what do you look for?
4.	At our meeting on February 12, 2015, you provided a No-Bill Exception Report and an Exception Report for Cycle 11, for working and resolving exceptions after bills have been calculated and generated. Are you the only billing staff member that resolves exceptions after bills have been calculated and generated? If not, who else does?
5.	Do you generate service order requests to send meter readers out for re-reads?
6.	Do you document service order requests in CIS?
7.	Do you receive a report of updated meter readings for pre-exceptions? If so, from who?
8.	Do you perform manual reading entry processing in CIS for updating corrected meter readings?
9.	Do you update bills in CIS for corrections resulting from pre-exceptions and exceptions resolution? Who else is authorized to update bills in CIS?
10.	Do you approve bills for printing and mailing out to customers? Who else is authorized to approve bills in CIS?
11.	Do you follow an SOP for resolving pre-exceptions and exceptions? If so, please provide a copy (electronic is fine) of any written procedures that you have.

Internal Control Questionnaire (ICQ) given to the PCU Data Entry Operator	
1.	Do you receive and/or review a Pre-Exceptions Report (exceptions prior to bill calculation/generation and before the cycle billing process) If so, from who do you receive the report?
2.	Do you identify and resolve pre-exceptions? If so, what do you look for?
3.	Do you identify and resolve exceptions after bills have been calculated and generated? If so, what do you look for?
4.	Are you the only billing staff member that resolves exceptions after bills have been calculated and generated? If not, who else does?
5.	Do you generate service order requests to send meter readers out for re-reads?
6.	Do you document service order requests in CIS?
7.	Do you receive a report of updated meter readings for pre-exceptions? If so, from who?
8.	Do you perform manual reading entry processing in CIS for updating corrected meter readings?
9.	Do you update bills in CIS for corrections resulting from pre-exceptions and exceptions resolution?
10.	Do you approve bills for printing and mailing out to customers?
11.	Do you follow an SOP for resolving pre-exceptions and exceptions? If so, please provide a copy (electronic is fine) of any written procedures that you have.

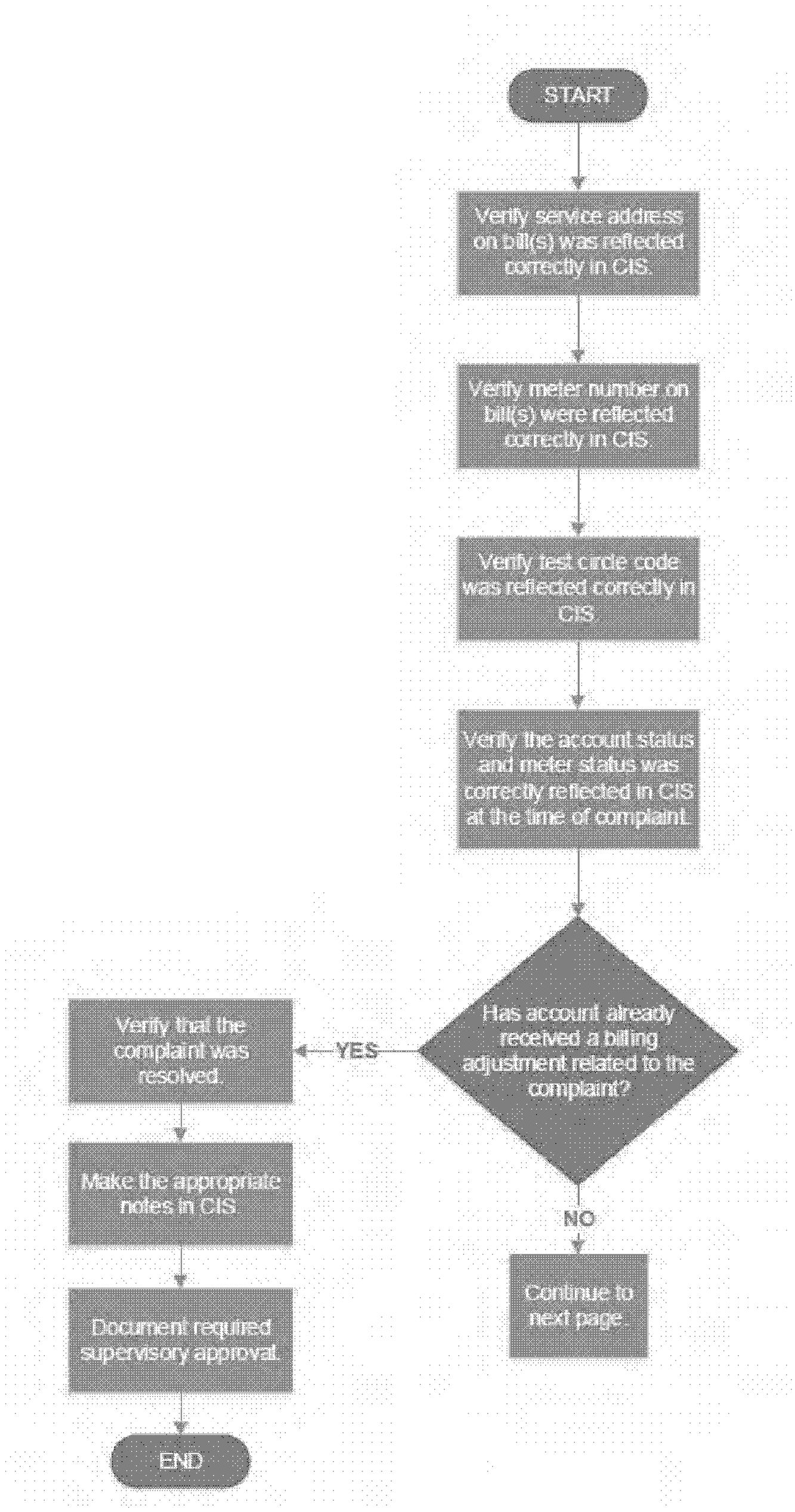
Internal Control Questionnaire (ICQ) given to the PCU Meter Reader Supervisor	
1.	Do you review a Pre-Exceptions Report (exceptions prior to bill calculation/generation and before the cycle billing process) If so, from who do you receive the report?
2.	Do you identify pre-exceptions and generate a list of re-reads to be sent out in the field? If so, what do you look for?
5.	Do you generate service order requests to send meter readers out for re-reads?
6.	Do you document service order requests in CIS for resolving pre-exceptions?

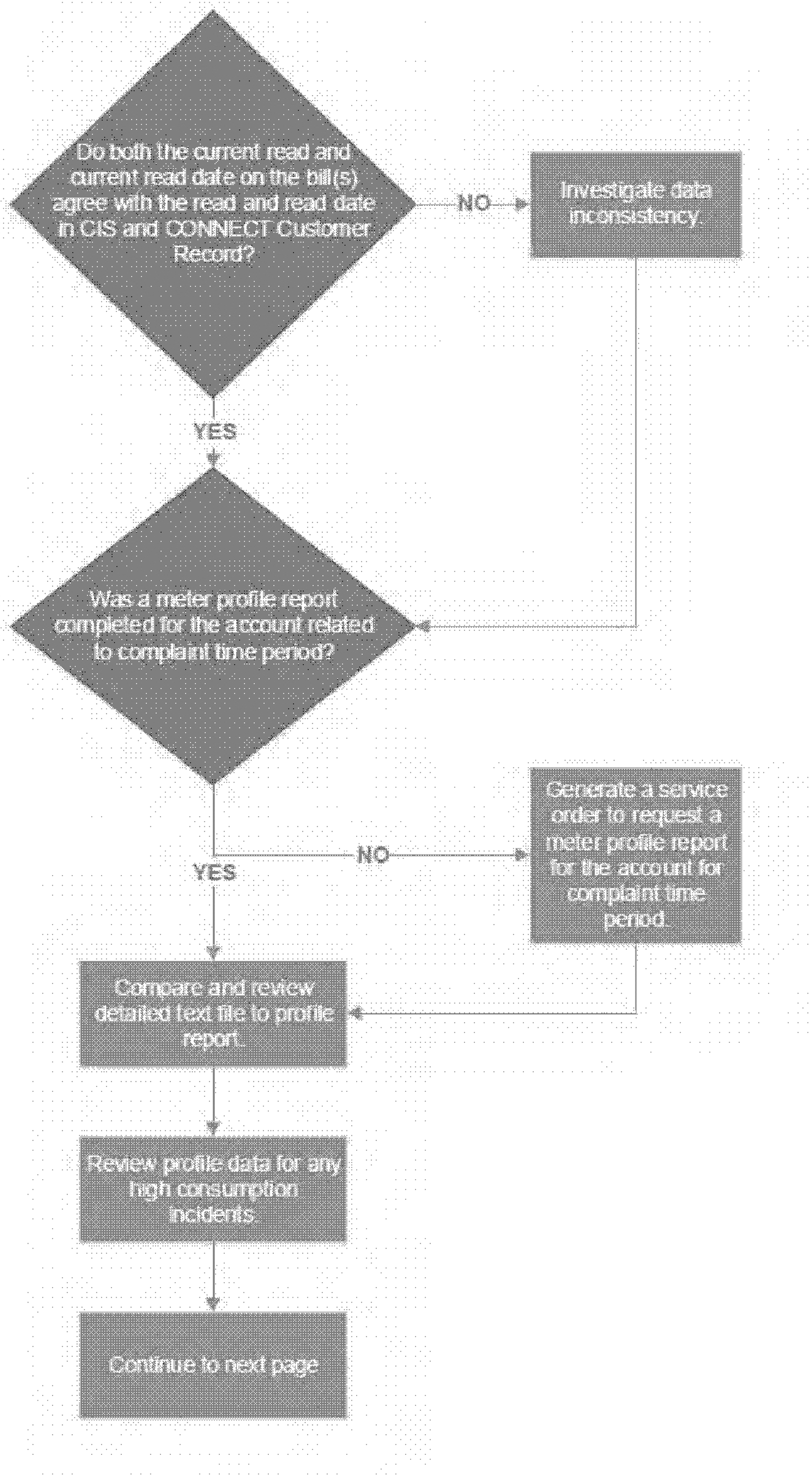
7.	Do you create a report of updated meter readings for pre-exceptions and send it to billing? If so, who do you send it to?
8.	Perform Manual Reading Entry Processing in CIS for updating corrected meter readings?
9.	Do you update bills in CIS for corrections?
10.	Do you approve bills for printing and mailing out to customers?
11.	Do you follow an SOP for resolving pre-exceptions? If so, please provide a copy (electronic is fine) of any written procedures that you have.

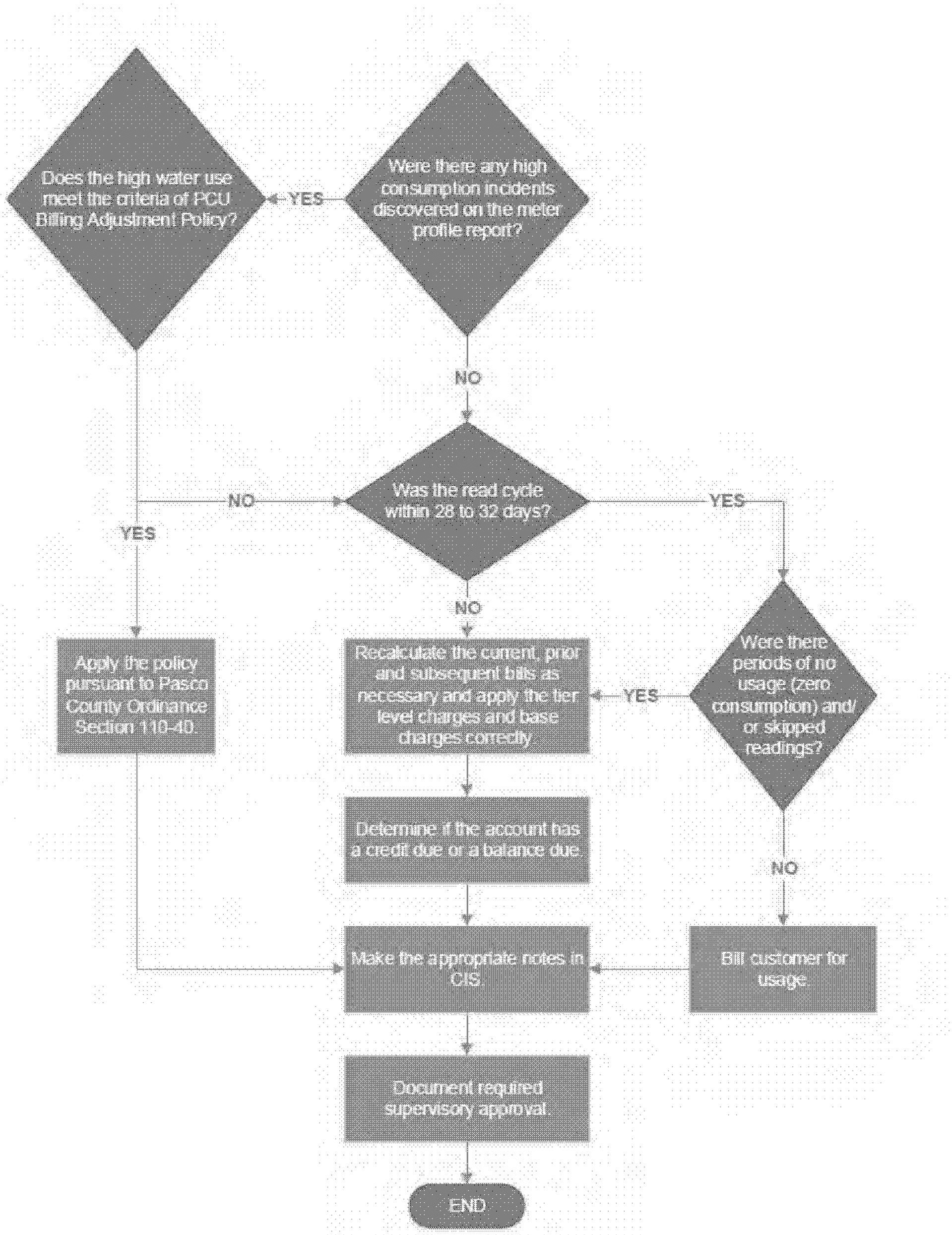
Internal Control Questionnaire (ICQ) given to the PCU Senior Project Clerk	
1.	Do you receive and/or review a Pre-Exceptions Report (exceptions prior to bill calculation/generation and before the cycle billing process) If so, from who do you receive the report?
2.	Do you identify and resolve pre-exceptions? If so, what do you look for?
3.	Do you identify and resolve exceptions after bills have been calculated and generated? If so, what do you look for?
4.	Are you the only billing staff member that resolves exceptions after bills have been calculated and generated? If not, who else does?
5.	Do you generate service order requests to send meter readers out for re-reads?
6.	Do you document service order requests in CIS?
7.	Do you receive a report of updated meter readings for pre-exceptions? If so, from who?
8.	Do you perform manual reading entry processing in CIS for updating corrected meter readings?
9.	Do you update bills in CIS for corrections resulting from pre-exceptions and exceptions resolution?
10.	Do you approve bills for printing and mailing out to customers?
11.	Do you follow an SOP for resolving pre-exceptions and exceptions? If so, please provide a copy (electronic is fine) of any written procedures that you have.

Internal Control Questionnaire (ICQ) given to the PCU Customer Service Administrator	
1.	Does management (personnel at the supervisory level) review system-generated exceptions reports for billing cycles, including the following exception types: service exceptions, customer/account exceptions; and meter exceptions? If so, who reviews the exceptions? Does management monitor and track exceptions? What do you look for?
2.	Do bill cancellations require authorization/ approval by management prior to requesting a bill cancellation in CIS?
3.	Are CIS system reports utilized to review/monitor cancelled bills for each billing cycle? If so, please give the specific name of the system report(s) and provide an electronic copy of each.
4.	Are CIS system reports utilized to review/monitor manual bills for each billing cycle? If so, please give the specific name of the system report(s) and provide an electronic copy of each.
5.	Are reconciliations done to compare the number of bills to be printed with the database of customer accounts that were read? If so, who reconciles them? Is documentation maintained? If so, please provide a copy.
6.	Does management review and approve reconciliations of the number of bills to be printed with the database of customer accounts that were read?
7.	What happens if there are differences between the number of accounts that were read and the number that were billed? Is this tracked?

Appendix K
Customer Complaint Flowchart




Do both the current read and current read date on the bill(s) agree with the read and read date in CIS and CONNECT Customer Record?
NO
Investigate data inconsistency
YES
Was a meter profile report completed for the account related to complaint time period?
NO
Generate a service order to request a meter profile report for the account for complaint time period.
YES
Compare and review detailed text file to profile report.
Review profile data for any high consumption incidents.
Continue to next page


Were there any high consumption incidents discovered on the meter profile report?
YES
Does the high water use meet the criteria of PCU Billing Adjustment Policy?
NO
Was the read cycle within 28 to 32 days?
YES
NO
Were there periods of no usage (zero consumption) and/ or skipped readings?
YES
NO
Apply the policy pursuant to Pasco County Ordinance Section 110-40.
YES
Recalculate the current, prior and subsequent bills as necessary and apply the tier level charges and base charges correctly
Determine if the account has a credit due or a balance due.
Bill customer for usage
Make the appropriate notes in CIS
Document required supervisory approval.
END

Appendix L
Statutory Authority, County Guidelines, and Industry Standards

1. **2014 Florida Statutes, Title XI, Chapter 153, Section 83** – ***Free water and sewer services prohibited***.—The same rates, fees and charges shall be fixed and collected from any county, school district or other political subdivision using the services and facilities of the water system or sewer system, or both, as are fixed and collected from other users of such facilities in the same class. No free water or sewer services shall be rendered by the district and no discrimination shall exist in the fees, rates and charges for users of the same class.

2. **Pasco County Code of Ordinances, Part I, Chapter 110, Article II. County Water Potable System:**

   a) **§ 110-37(c)(7)** – ***Access to premises.*** The duly authorized agents of the county shall have access at all reasonable hours to the premises of the customer for the purpose of installing, maintaining and inspecting or removing the county's property, reading meters and other purposes incident to performance under or termination of the county's contract with the customer and in such performance shall not be liable for trespass. If access is not granted for the purposes indicated in this subsection, a notice will be left for the customer stating that county personnel would return within 48 hours. If access is not granted for two consecutive billing periods, service will be subject to termination. All appropriate regulatory agencies will be advised of county action. A service charge of $10.00 will be assessed for each attempt after the initial attempt to gain access. Those charges will be applied on the customer's next bill. In order to have water service restored, all charges must be prepaid.

   b) **§ 110-37(f)(2)** – ***Standard of accuracy and certified test of meters.*** A legally accurate meter means a meter that has been tested according to the county's established procedures and within a tolerance of 1.5 percent error displacement, two percent error turbine propelled and three percent compound and fire service.

   c) **§ 110-38(c)** – ***Minimum bills.*** Each bill for water service shall not be less than the minimum charge specified in county rates. Where service on a monthly basis is discontinued within 30 days after the beginning of service and the consumption is less than the quantity covered by the monthly minimum bill, a minimum monthly bill shall be paid by the consumer to compensate the county for extra expenses incurred.

   d) **§ 110-38(e)** – ***Delinquent bills.*** Bills are due when rendered and if not actually received on or before the past due date set forth on the customer's bill, a ten-percent late charge to defray county costs and expenses shall be added to the water bill. If payment is not actually received within 60 days of the date rendered, the water service may be subject to disconnection and termination of the account with the county without further notice. Upon termination of service, the guarantee deposit shall be applied to the outstanding bill for that customer and a final statement shall be rendered showing the balance due. Service shall not be reinstituted until the final statement is paid in full and the customer makes application for service and pays the guarantee deposit at the then-established rate as provided in subsection (d) of this section. A customer's water service shall be discontinued and no new application shall be accepted at any other location when there remains an outstanding final statement for unpaid water service at any previous location.

e) **§ 110-38(h) – *Evidence of Consumption.*** The service rendered by the county shall be measured by meters. The meter readings shall serve as prima facie evidence of the quantity of water delivered to the customer.

f) **§ 110-40 – *Billing Adjustments.***

(a) Billing adjustments under this article will be made for the following reasons:

(1) Incorrect meter reading.

(2) Overestimate or underestimate, which may occur when the county is unable to gain access to the property (see subsection 110-37(c)(7)).

(b) Upon application to utilities customer service, for verified leaks and the first-time filling or filling due to repair of a pool, the county administrator or designee may adjust the water bill of a customer after presentation of original plumbing repair bills, original receipts for materials or parts, a notarized statement of the repair, or permit for pool installation, including the date of the work and the nature of the repair. The high water use will not be forgiven, but shall be paid at the current Tampa Bay Water unitary rate. "High water use" shall mean usage from the leak or pool filling, which results in an amount of water used that is 20 percent over the average usage of the preceding 12 months based on meter readings. Additionally, if the documentation shows that the high water use did not flow to the county's sewer system, the county administrator or designee may likewise issue a credit to the sewer portion of the bill for the high water use. If a new customer does not have 12 months usage, the county will take the average usage over the entire available period of usage of not less than three months for that customer. The water bill adjustment will only be made for the water used that is 20 percent over the average usage for the preceding 12 months. The adjustment can only be applied to the customer account active at the time of the leak and will only be applied to the time period of the leak but not to exceed three consecutive months.

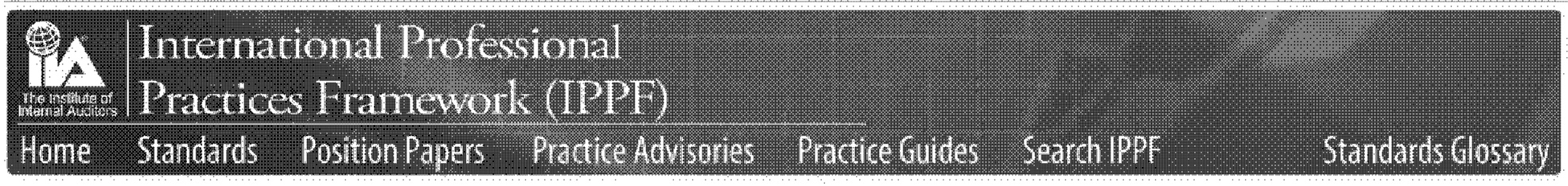
3. **Pasco County Water Utility Bond Official Statement**:

a) **$54,290,000 Water and Sewer Refunding Revenue Bonds, Series 2014A; $50,620,000 Water and Sewer Improvement Revenue Bonds, Series 2014B – *Certain Covenants – No Free Service.*** The County will not render or cause to be rendered any free services of any nature by its System. The County, including its departments, agencies and instrumentalities, shall avail itself of the services provided by the System, or any part thereof, and the same rates, fees or changes applicable to other customers receiving like services under similar circumstances shall be charged to the County and any such department, agency or instrumentally.

b) **$71,160,000 Water and Sewer Refunding Revenue Bonds, Series 2006; $115,655,000 Water and Sewer Revenue Bonds, Series 2009B – "Build America Bonds" – *Certain Covenants – No Free Service.*** The County will not render or cause to be rendered any free services of any nature by its System. The County, including its departments, agencies and instrumentalities, shall avail itself of the services provided by the System, or any part thereof, and the same rates, fees or changes applicable to other customers receiving like services under similar circumstances shall be charged to the County and any such department, agency or instrumentally.

4. **American Water Works Association (AWWA) – *M6-Water Meters- Selection, Installation, Testing and Maintenance.***

Appendix M
International Professional Practices Framework (IPPF)



International Professional Practices Framework (IPPF)

The IIA's authoritative guidance

The International Professional Practices Framework (IPPF) is the conceptual framework that organizes **AUTHORITATIVE GUIDANCE** promulgated by The Institute of Internal Auditors (IIA). The IPPF does not include all of The IIA's products and services.

Definition of Internal Auditing

Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes.

INTERNATIONAL STANDARDS

Introduction to the International Standards

The purpose of the *Standards* is to:

1. Delineate basic principles that represent the practice of internal auditing.
2. Provide a framework for performing and promoting a broad range of value-added internal auditing.
3. Establish the basis for the evaluation of internal audit performance.
4. Foster improved organizational processes and operations.

The *Standards* are principles-focused, mandatory requirements consisting of:

- Statements of basic requirements for the professional practice of internal auditing and for evaluating the effectiveness of performance, which are internationally applicable at organizational and individual levels.
- Interpretations, which clarify terms or concepts within the Statements.

The *Standards* apply to individual internal auditors and internal audit activities. All internal auditors are accountable for conforming with the *Standards* related to individual objectivity, proficiency, and due professional care. In addition, internal auditors are accountable for conforming with the *Standards*, which are relevant to the performance of their job responsibilities. Chief audit executives are accountable for overall conformance with the *Standards*.

Appendix N
Definitions

The definitions provided are not intended to and do not provide a comprehensive explanation of all criteria, factors, or regulations pertaining to any given term. The definitions are supplements to the audit report.

Account – All of the information that is relevant to the address where the customer is receiving service.

Active account – An active account is an account status in CIS Infinity for accounts with active services. CIS Infinity is configured to bill only accounts having an active status.

Advanced Utility Systems (AUS) – The vendor selected by the BCC to provide the delivery and implementation of a CIS software solution.

Alert code – To assist with the meter reading process, the meter reading equipment utilizes a series of factory set audible tones to alert the meter reader of a number of different conditions such as: receipt of a good read, receipt of a tampered read, notification of a manual read account, and receipt of a read with a potential leak.

American Water Works Association (AWWA) – The AWWA is an international scientific and educational association founded to improve water quality and supply. The AWWA developed industry standards for products, processes and best practices for water and utility communities.

Auditor– A person who conducts independent, objective assurance and consulting activities designed to add value and improve an organization's operations. Auditors provide information to management and bring a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes.

Automated meter reading (AMR) system – A meter reading system that uses radio frequency technology to transmit meter reads between a transmitter and meter reading equipment.

BCC – The Pasco County Board of County Commissioners.

Billing batch – Any type of bill in *CIS Infinity* is processed in a batch. Batches are working files that save information to system tables. The batch process allows for the calculation, review, and corrections of bills before they negatively affect accounts.

Badger Meter, Inc. (Badger) – The vendor selected by the BCC to furnish the new automated meter reading system (AMR system) and associated meter equipment and technology.

Billing adjustment – A correction that is manually made to a customer's account to correct a consumption error or to add or change a dollar amount.

Billing exceptions – Bills that *CIS Infinity* considers outside of normal parameters. Billing exceptions are identified and resolved after bills have been calculated. Cycle bills are billed at regular intervals and, therefore, they tend to follow regular patterns of consumption, number of days, and corresponding dollar amounts of the bill. When a cycle bill is calculated and the consumption, dollar amounts, number of days between bills or other factors do not follow normal patterns, *CIS Infinity* generates a billing exception prompting review of the account.

CFE– Certified Fraud Examiner. This is a professional credential which denotes expertise in fraud prevention, detection and deterrence.

CGAP – Certified Government Auditing Professional. This is a professional credential which denotes expertise in public sector auditing.

CGFO – Certified Government Finance Officer. This is a professional credential which denotes expertise the field of government finance.

CIA – Certified Internal Auditor. This is a professional credential which is the only globally accepted certification for internal auditors and remains the standard by which individuals demonstrate their competency and professionalism in the internal auditing field.

CIG – Certified Inspector General. This is a professional credential which certifies that the designee has received instruction in six core competency areas identified by the Association of Inspectors General (AIG).

CIGA – Certified Inspector General Auditor. This is a professional credential which certifies that the designee has received instruction in ten core competency areas identified by the Association of Inspectors General (AIG).

CIS Infinity – A customer information system and billing solution provided by Advanced Utility Systems. This solution replaced PCU's legacy system as the new billing system in June, 2014.

Confidence level – The measure of the reliability of a result. A confidence level of 95 percent means that there is a probability of at least 95 percent that the result is reliable.

CONNECT – A utility software application from Badger for data management that provides an interface between the utility billing software and the water meters. It manages the read data collected from Badger water meters.

***CONNECT* Customer Record** – A report generated from the CONNECT application that includes: customer information (account number, name, address, and phone number); meter information (serial number, location, and date installed); transmitter information (module type, serial number, location, date installed, and status); current read information; and read history (date, time, use, and read type).

***CONNECT* Extended Comment Code Report**– A report that displays all of the accounts where the meter reader has entered an extended comment for management to see.

***CONNECT* Read Report** – A report that displays a detailed account of all reads loaded into the meter reading equipment.

Customer Information System (CIS) – An application that enables utilities to deliver exceptional customer service, automates repetitive tasks, and improves revenue streams. It brings together all aspects of customer-account data and billing, and enables staff to document, locate and update every customer interaction.

Cycle – Locations that are grouped together for billing. A cycle may have one or more routes.

Cycle bills – Cycle bills are billed at regular intervals and are handled in an automated way in *CIS Infinity*. The readings for cycle bills are obtained through the automated meter reading software.

Delinquent account – An account that is 60 days past the due date of services rendered. Delinquent accounts may be subject to disconnection and termination of the account with the Country without further notice. Services shall not be reinstituted until the final statement is paid in full and the customer makes application for service.

Exceptions Report– A system-generated report which includes billing exceptions.

Excess water use – As defined by the Pasco County Billing Adjustment Request Form, excess water use means the amount of water used over the average usage of the preceding 12 months based on the meter readings.

Extended comments – A field displayed on the laptop screen in which the meter reader can create a free-form message for the account. The extended comments allow the meter reader to enter notes relating to a meter. The message stays with the account until it is deleted.

Final read - A meter read taken as a customer moves from one service address to another in order to send the customer their final bill.

Higher-than-normal – As used in the context of perspective, *higher-than-normal* means the amount of water used according to the customer.

IIA – The Institute of Internal Auditors. The IIA is an international professional association which provides leadership for the global profession of internal auditing. The IIA is the recognized authority, acknowledged leader, chief advocate, and principal educator of those who work in internal auditing, risk management, governance, internal control, information technology audit, education, and security.

Internal control – Systematic measures instituted by an organization to: (1) conduct its business in an effective and efficient manner, (2) safeguard its assets and resources, (3) deter and detect fraud and theft, (4) ensure accuracy and completeness of its accounting data, (5) produce reliable and timely financial and management information, and (6) ensure compliance with applicable laws, regulations, and internal policies and procedures.

Inventory status – The status of a meter in *CIS Infinity* which indicates that the meter is not in-service and is held in storage.

Laptop – A Panasonic Toughbook laptop computer with touch screen and built-in GPS receiver used as meter reading equipment to collect meter reads.

Large meter – A water meter for use in measurement of potable water. Used in the context of the audit report, a large meter is a meter with a size designation of 3 inches or greater.

MACC – Master of Accountancy. This is a graduate professional degree for public accounting.

MARS Company (MARS Co.) – The vendor selected to perform independent testing of water meters. The company provides custom water meter testing equipment and AMR systems and components for the water utility industry, as well as custom products and consulting services.

Margin of error – The margin of error quantifies uncertainty about a survey result. It provides a basis for estimating the extent of sampling error. The laws of probability make it possible to calculate this estimate in the form, plus or minus *x* percent.

Manual read – A manual read is a read that the meter reader enters directly into the reading field on the account read screen of the meter reading equipment.

Meter box – An underground box that houses the meter register and meter connection.

Meter profile report – A report containing historical interval data from a transmitter. The data provides a water usage profile used by PCU to address customer concerns and/or resolve billing disputes.

Meter Reading Export File – An electronic file created within *CIS Infinity* which extracts the reads captured with the meter reading equipment. The reads are used to calculate bills in *CIS Infinity.*

Meter Reading Import File – An electronic file created within *CIS Infinity* which pulls meter and account information from *CIS Infinity* to be loaded into the meter reading equipment.

Meter reading equipment – A mobile data collection device, such as a laptop computer or handheld device that receives information from a transmitter.

Meter reading exceptions– Meter reads that *CIS Infinity* considers outside of normal parameters. Meter reading exceptions are identified and resolved before bills have been calculated. Reads that are outside of normal consumption parameters may be in error and require a re-read and possible correction.

Meter register – An odometer-type display having a dial similar to a clock, with gradations around the perimeter to indicate the measuring unit. The water meter register is a lot like the mileage odometer on a car. It keeps a running total of all the water that has passed through the meter.

Minimum monthly bill – A bill for water/or sewer services that shall not be less than the minimum charge (base rate) specified in County rates.

NIST – National Institute of Standards and Technology. NIST is a non-regulatory federal agency within the United States Department of Commerce. NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve the quality of life.

No-bill Exceptions Report– A system-generated report within CIS Infinity which includes accounts that are flagged because they are not supposed to be billed.

No usage status – A status reported by a transmitter indicating that the meter has not registered water usage for 30 days.

Non-statistical (judgmental) sample– A sampling method which involves the auditor using his or her own experience and knowledge to determine the sample size. It is meant to focus and confirm a condition that is reasonably thought to exist. This method may not be based objectively and, thus, results of a sample may not be mathematically supportable when extrapolated over the population. Non-statistical sampling may be used when results are needed to confirm a condition, rather than being needed to project the mathematical accuracy of the conclusions.

Objective – Objectives are broad statements developed by auditors to define the intended audit accomplishments. The audit objectives form the basis of the audit. They state the subject matter under examination and how performance will be assessed.

Population – The entire pool from which a statistical sample is drawn. The information obtained from the sample allows statisticians to develop hypotheses about the larger population.

Potential leak status – A status reported by a transmitter indicating that the meter has registered continuous usage over the past 24-hour period and may have a potential leak.

Printed bill – A bill that has been calculated in *CIS Infinity* and saved inside a billing batch. The batch then gets updated, making the bill a permanent record on the customer's account.

Pulled status– The status of a meter which has been removed from the ground at the service address.

Read – The current reading on the dial of a water meter's register. It is also the number captured by the meter reading equipment at a specific point in time.

Read history - All history relating to the customer's usage while at the service address. This information is displayed for every customer account in the utility billing system.

Reverse flow status - A status reported by a transmitter indicating that the current read is lower than the previous read.

Route – A section of locations within a cycle.

Sample – A set of observations drawn from a population.

Sampling method – A procedure for selecting sample elements from a population.

Scope – The scope of an audit is a statement that specifies the focus, extent, and boundary of a particular audit. The scope can be specified by defining the physical location of the audit, the organizational units that will be examined, the processes and activities that will be included, and the time period that will be covered.

Scope limitation – A limitation of scope arises if there are instances where the auditor does not receive all information and explanations that are deemed necessary to give an objective conclusion.

Sewer base charge – The base rate charged per month, which is based on the size of the water meter. For the typical 5/8 x 3/4 inch meter, the monthly sewer base charge is $17.34. This base rate serves as compensation to the County for extra expenses incurred (***Appendix B).***

Small meter – A water meter for use in measurement of potable water in residential and commercial services. Used in the context of the audit report, a small meter is a meter with a size designation of 5/8 x 3/4 inch.

Statistical (random) sample– A sampling method that has the following properties:

- The population consists of *n* objects.
- The sample consists of *n* objects.
- All possible samples of *n* objects are equally likely to occur.

Statistical sampling allows the auditor to draw conclusions supported by arithmetic confidence levels (e.g., odds of an erroneous conclusion) regarding a population of data output.

Tamper status - A status reported by a transmitter indicating a potential tamper situation where the meter is not working. For example, the wire between the register and the transmitter is cut or shorted. A secondary tamper situation could also exist where the meter is still working. For example, the meter cover is removed or the transmitter has a low battery status.

Transmitter – An electronic device that produces radio waves.

Water Base Charge – The base rate charged per month, which is based on the size of the water meter. For the typical 5/8 x 3/4 inch meter, the monthly water base charge is $7.83. This base rate serves as compensation to the County for extra expenses incurred (***Appendix B).***