



# Final Report

## Douglas County Water Efficiency Analysis and Audits Indoor Analyses, Methodologies, and Findings With Project Recommendations for Indoor, Outdoor and Institutional Activities



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# Introduction

Douglas County Government implemented a program to audit and review the water use in all of its owned and operated facilities to find means and methods to reduce water use. As part of the County's program, Great Western Institute (GWI) was retained by the County to conduct the indoor water audits at 32 facilities.

## Objectives

The objectives of the water use analysis and audit program are as follows:

- Visit all County owned and operated facilities;
- Inventory all water use appliances and fixtures;
- Develop an understanding of water use at each individual facility;
- Identify cost and other related benefits of improving water use efficiency at each facility and as the County collectively; and
- Provide recommendations for water use efficiency improvements based on economic, social and environmental benefits to the County and its citizenry.

## Partners

GWI was supported throughout performance of this project by the Department of Community Development, in conjunction with the Department of Public Works, the Office of the County Administrator and Board of County Commissioners of Douglas County Government. Outdoor water audits at the County facilities were conducted by Keesen Water Management, Inc. Water model development and water audit results and recommendations were coordinated with Keesen Water Management, Inc. to the extent necessary and appropriate.

In addition, this report presents the combined recommendations of the indoor and outdoor water analyses and audits, along with recommendations for institutional activities that the County should consider to improve organizational water use efficiency.

# Methodology

The process of conducting site visits and analyzing water use are presented in this section.

## Site Visits

GWI visited thirty two (32) separate County owned and operated facilities, including 12 contained on the fairgrounds. These facilities were selected for water use analyses in that each is a separate building and/or office operated by the County; including administrative offices, operations, and maintenance. A summary of the facilities visited is presented in Table 1.

Generally, each facility visited is serviced by a single, independent water tap with some notable exceptions as noted below (as identified in Table 1):

- Some of the facilities utilize private well water rather than water provided by municipal supply.
- Some of the facilities (e.g., motor vehicles) are in leased space, where water is included in the monthly rental fee. In these situations, no water bill is received to track facility water use.
- At one location (the Northwest County Road and Bridge Facility), no water is used.
- Numerous fairground facilities share water from one tap (i.e., the Main Shop tap).

The County provided GWI with the 2008 water bills for each water supply tap serving the various facilities. GWI reviewed these water bills to characterize water use trends and identify billing irregularities prior to each site visit.

The site visits were coordinated through the Manager of Public Works and the County's Project Manager such that the site visits could be conducted in the most efficient manner. Water use trends that were developed by GWI for each facility prior to the site visits were reviewed with onsite County staff such that irregularities in water use could be discussed as needed.

During the site visit, the GWI audit team collected the following information:

- Representative toilet and urinal flush flows (using a T5 meter to verify flush volumes, when possible)
- Type of toilet and urinal flushing mechanism (automated vs. manual; tank vs. flushing value)

**Table 1  
Location of Water Audits Conducted by Great Western Institute**

**Douglas County Water Efficiency Analysis**

| <b>Facility Number(s)</b> | <b>Location</b>                             | <b>Address</b>                     | <b>Water Provider</b>           | <b>Account Number</b> | <b>Date of Site Visit</b> | <b>Comment</b>   |
|---------------------------|---|------------------------------------|---------------------------------|-----------------------|---------------------------|--|
| 1                         | <b>Buck Service Center</b>                  | 9040 Tammy Lane, Parker            | Private Well                    |                       | 20-May                    |  |
|                           | <b>County Road and Bridge</b>               |                                    |                                 |                       |                           |  |
| 2                         | Southeast                                   | 8117 Midway Drive, Littleton       | Private Well                    |                       | 20-May                    |  |
| 3                         | Northwest                                   | 11815 Spring Valley Road, Larkspur | Shared Tap with School          |                       | 20-May                    |  |
| 4                         | <b>EV Tech</b>                              | 2965 N. Highway 85, Castle Rock    | Town of Castle Rock             | 38939                 | 20-May                    | Tap for indoor water use only  |
|                           | <b>Fairgrounds</b>                          |                                    |                                 |                       |                           |  |
| 5                         | Bulk Fill                                   |                                    | Town of Castle Rock             | 5542                  | 21-May                    | Used by Fairgrounds and County for dust control and other outdoor uses   |
| 6                         | CSU Extension Building                      |                                    | Town of Castle Rock             | 5543                  | 21-May                    | Tap for indoor and outdoor water use   |
| 7                         | Events Center                               |                                    | Town of Castle Rock             | 20240                 | 21-May                    | Tap for indoor water use only including cooling water towers   |
| 8                         | Kirk Hall                                   |                                    | Town of Castle Rock             | 36100                 | 21-May                    | Tap for indoor water use only  |
| 9                         | Large Animal Barn                           |                                    | Town of Castle Rock             | 35703                 | 21-May                    | Tap for restrooms only   |
| 10,11,12,13,14,15         | Main Shop                                   |                                    | Town of Castle Rock             | 3954                  | 21-May                    | 6 inch tap provides water to the indoor arena, pavillion and yard spigots at the large animal barn, small animal barn, green and brown barns, and the multi-purpose barn |
| 16                        | Shop  |                                    | Town of Castle Rock             | 15155                 | 21-May                    | No water use associated with this tap  |
| 17                        | <b>Highlands Ranch Parks Administration</b> | 9651 S. Quebec Street, Littleton   | Highlands Ranch Metro Districts | 1829                  | 20-May                    | Tap for indoor and limited outdoor water use   |
| 18                        | <b>Human Services</b>                       | 4400 Castleton Court, Castle Rock  | Town of Castle Rock             | 43451                 | 20-May                    | Tap for indoor water use only  |
| 19                        | <b>Justice Center</b>                       | 4000 Castleton Way, Castle Rock    | Town of Castle Rock             | 12760                 | 22-May                    | Tap for indoor and outdoor water use   |
| 20                        | <b>Louviers Village Club House</b>          | 7885 Louviers Blvd., Louviers      | Louviers Mutual Water           | 23                    | 20-May                    | Tap for indoor and outdoor water use   |
|                           | <b>Miller Building</b>                      |                                    |                                 |                       |                           |  |
| 21                        | Administration Building                     | 100 Third Street, Castle Rock      | Town of Castle Rock             | 12225                 | 20-May                    | Tap for indoor water use only  |
| 22                        | Garage                                      | 100 Third Street, Castle Rock      | Town of Castle Rock             | 44160                 | 20-May                    | Tap for indoor water use only  |
|                           | <b>Motor Vehicle Offices</b>                |                                    |                                 |                       |                           |  |
| 23                        | Parker                                      | 16522 Keystone Blvd., Parker       | Leased Space (no water bill)    |                       | 20-May                    | Tap for indoor water use only  |

**Table 1  
Location of Water Audits Conducted by Great Western Institute**

**Douglas County Water Efficiency Analysis**

| <b>Facility Number(s)</b> | <b>Location</b>            | <b>Address</b>                           | <b>Water Provider</b>            | <b>Account Number</b> | <b>Date of Site Visit</b> | <b>Comment</b>                       |
|---------------------------|----------------------------|--|----------------------------------|-----------------------|---------------------------|--------------------------------------|
| 24                        | Highlands Ranch            | 2223 W. Wildcat Parkway,<br>Littleton    | Leased Space (no water bill)     |                       | 20-May                    | Tap for indoor water use only        |
| 25                        | <b>Park Meadows Center</b> | 9350 Heritage Hills Circle,<br>Lone Tree | Denver Water                     | 20018584-01-3         | 20-May                    | Tap for indoor and outdoor water use |
|                           | <b>Public Works Campus</b> |  |                                  |                       |                           |                                      |
| 26                        | Operations Building        | 3030 N. Industrial Way,<br>Castle Rock   | Town of Castle Rock              | 9870                  | 20-May                    | Tap for indoor and outdoor water use |
| 27                        | Car Wash                   | 3030 N. Industrial Way,<br>Castle Rock   | Town of Castle Rock              | 26147                 | 20-May                    | Tap for car wash only                |
| 28                        | Traffic Services           | 3080 N. Industrial Way,<br>Castle Rock   | Castleton Water and San District | 5                     | 20-May                    | Tap for indoor and outdoor water use |
| 29                        | El Tech                    | 3080 N. Industrial Way,<br>Castle Rock   | Private Well                     |                       | 20-May                    |                                      |
| 30                        | Elections                  | 3026 N. Industrial Way,<br>Castle Rock   | Private Well                     |                       | 20-May                    | Shares well with Tin Tech            |
| 31                        | Tin Tech Building          | 3020 N. Industrial Way,<br>Castle Rock   | Private Well                     |                       | 20-May                    | Shares well with Elections Building  |
| 32                        | <b>Wilcox Building</b>     | 301 Wilcox Street, Castle<br>Rock        | Town of Castle Rock              | 119                   | 20-May                    | Tap for indoor water use only        |

- Volumetric measurement of sink and shower flows, and presence of faucet aerators
- Ice machine make and model and verification of cooling mechanism (water vs. air)
- Presence of drinking fountains
- Dishwasher make and model, and per cycle water use, if available
- Pre-rinse spray nozzle type (in kitchens)
- Washer/extractor and/or clothes washer make and model
- Boiler type, make and model, fuel type and temperature setting
- Facility cooling equipment make and model

This information was compiled and summarized to:

- Identify water use trends in each facility;
- Develop a water use model, where possible, for each tap; and
- Identify potential water efficiency improvements that the County may choose to implement.

### **Water Billing Review**

As previously noted, the County provided copies of the 2008 water bills that it had on record for each of its facilities. GWI conducted a review of these records to characterize water use trends and identify billing irregularities. Irregularities that GWI identified included questions regarding water rates, water budgets and in some cases water use.

One key component of the billing for the Town of Castle Rock is the development and use of water budgets beginning in September 2008. The water budgets that the Town developed are unique for each tap, based on outdoor irrigation area (if applicable) and past observed wintertime water use. The Town uses the water budget to determine water billings correlating water use with the Town's inclining block water rates.

A discussion of the identified irregularities will be presented in the results section of this report.

### **Water Use Model**

A water use "model" was developed for each of the subject facilities that had information regarding facility monthly water use. The model was utilized to estimate facility specific water use based on the observed maximum and average monthly water use during the period of January 2007 to December 2008, when

available<sup>1</sup>. The model was developed using the water use information provided on the bill and was calibrated to reproduce observed maximum and average daily indoor water use, or in some cases average water use with and without seasonal cooling water tower usage. The facility water use was developed based on the number and expected uses for each fixture and appliance. Ice machine water use was developed using the certified product directory maintained by the Air-Conditioning, Heating and Refrigeration Institute. The water use for the various washing machines was determined using the manufacturers' specification sheets available through various websites. Other water use estimates were corroborated using "Water Use and Conservation" by Vicker (2001).

Cooling water usage was developed based on the size of the cooling tower, the number of towers and the expected evaporative losses given blower size, efficiency and temperature gradient using a thermodynamic model developed by the Reznor Company ([www.rezspec.com/cms.download.php](http://www.rezspec.com/cms.download.php)). In situations where a single tap provides for outdoor and indoor water, exact estimates of cooling water tower usage was not possible; however, approximations were developed to assist in estimating future potential water savings.

Once completed, the calibrated water use model was employed to estimate average daily hot and cold water use per facility.

Using the calibrated model, future water and energy savings were estimated based on installing water saving toilets, sink aerators, showerheads, etc. The suite of water saving devices was assumed to be EPA WaterSense tested and approved whenever possible. A list of the market-ready water saving devices is as follows:

- High Efficiency Toilet - 1.28 gallons per flush (gpf)<sup>2</sup>
- Zero Flow Urinal - 0 gpf
- Low Flow Showerhead - 1.5 gallons per minute (gpm)
- Low Flow Sink Aerator - 0.5 gpm
- High Efficiency Washing Machine - 24 gallons per load (gpl)
- High Efficiency Dishwasher - 7 gpl

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<sup>1</sup> Water use data for January to December 2007 was available for all Town of Castle Rock, Metro District and Denver Water accounts. It was not available for Louviers and Castlewood Water accounts.

<sup>2</sup> Note that dual flush toilets, averaging 0.9 gallons per flush were included in the evaluation of the Louviers Club House, since the nature of this facility affords the use of this technology. Dual flush toilets could also be installed in the Public Works Operations Building Offices and the Highlands Heritage Building where tanks toilets are currently in use. All other applications in the County's facilities require either the use of either flushing valves (which are not dual flush) or more institutional-friendly equipment.

Total water and energy savings per facility were then calculated, along with an estimate of the average payback period for each type of water saving device, and the cost of the replacement water saved due to the installation of the water efficient fixtures and/or appliances.

Note that waterless urinals were selected for inclusion in the water model to develop an indication of potential water savings associated with this fixture. Waterless urinal technology has in the past been viewed as difficult to maintain and operate, given the oil plug utilized in older models. The waterless urinal included in the GWI model utilizes a gasket-based technology that does not get compromised by excessive water flushing. In addition, it is significantly less expensive than high efficiency urinals that utilize ½ gallon per flush or less. Therefore, the cost benefit analysis presented herein for urinal replacement provides a best case estimate for payback period and water savings. The County can easily substitute high efficiency urinals for the waterless urinals noting that the payback period for such would be longer than shown in the water model as presented in this report.

Also note that water use at the County's car wash was estimated based on a review of the car wash gantry, estimates of daily car washes provided by County staff, and information provided by the car wash manufacturer<sup>3</sup>. The cost-benefit analysis for replacing the existing gantry included reduced costs for water and energy.

### **Triple Bottom Line Analyses**

The assessment of water use efficiencies was developed including, to the extent practical, economic, social and environmental considerations. Each of these areas of consideration were included into the analyses without substantial input from County policy and/or policy makers. Instead, the analysis established cost related metrics for each of the three areas of consideration, as follows:

Economic - this metric involved evaluating the cost of new fixtures and appliances on the County versus the opportunity cost of reduced water and energy billings. To this point, any potential water use efficiency improvement was evaluated by assessing the return on investment to the County.

Social and environmental - the social and environmental impacts of potential water use efficiency improvements were characterized through two key attributes - reduction in water use and the reduction of

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<sup>3</sup> Mark VII Equipment Inc., Arvada, Colorado.

energy and chemicals in the treatment, transport and disposal of water and wastewater. The social impact of reduced water demand associated with improved water use efficiency was characterized by a reduced community cost on new water development, transport, treatment and distribution. This metric was captured through an analysis of replacement water costs – i.e., the reduction of future water demand which in turn reduces (but does not replace) the need for future water development projects.

The environmental impacts, on the other hand, were characterized by a reduction of energy and chemical use associated with reduced delivery of water to existing facilities after water use efficiencies have been implemented. There is also an environmental nexus with reduced future water development projects, which includes smaller pipelines and storage facilities, and reduced energy requirement to move and treat new water sources; however the specific environmental costs for future water development projects have not been calculated herein.

### **Future Cost of Water**

The cost of water at each of the audited facilities varies dependant upon the water provider. The Town of Castle Rock, Denver Water Department, Centennial Water and Sanitation District, Louviers Mutual Water Department and the Castleton Center Water and Sanitation District all have different water rates and billing practices. In addition, predicting future water rate changes are difficult given the variability of past water rate increases<sup>4</sup>. Therefore, all water cost savings were developed based on current (2009) water rates. Note that for the Town of Castle Rock accounts, indoor water savings were based on the first tier costs of water for commercial taps.

The future cost of indoor water also will include a wastewater fee for all facilities using indoor water except the Park Meadows Center (which does not use Denver Water for wastewater treatment), the Louviers Club House (because Louviers Mutual only charges a flat monthly rate per connection) and the Operations Building Car Wash (which is not charged a wastewater connection fee). Water savings at all other facilities will include a wastewater connection savings which vary dependant on the base and unit costs. The analyses presented herein did take into account the wastewater connection fee as presented below.

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<sup>4</sup> In 2009, the Town of Castle Rock increased its first tier water rate by 5.8 percent, and its second tier water rate by 6 percent. Over the same period of time, Denver Water increased its commercial summertime water rate by 33%. Castleton has not raised water rates in 8 years.

The water rates and wastewater connection fees used are as follows:

Town of Castle Rock

Water - \$2.36/thousand gallons

Wastewater - \$5.14/thousand gallons

Denver Water

Water - \$2/thousand gallons (winter) \$3.98/thousand gallons (summer)<sup>5</sup>

Wastewater - not applicable

Centennial Water and Sanitation

Water - \$2.55/thousand gallons

Wastewater - \$36.40 for first 4,000 gallons;  
\$1.83/thousand gallons > 4,000 gallons

Castleton Center Water and Sanitation

Water - \$4/thousand gallons

Wastewater - \$2.40/thousand gallons

Louviers Mutual

Water - \$4.2/thousand gallons

Wastewater - not applicable - flat monthly rate not based on water use.

## Energy Costs

Energy costs related to hot water savings were developed based on reduced kilowatt hours associated with few gallons of heated water. Kilowatt hours were converted to price assuming \$0.065 per kilowatt hour.

## Reporting

A report was developed for each property summarizing the water use analysis and water audit. For those facilities with billed water use data, a water use model was developed and calibrated to the extent feasible, to approximate average conditions indoor water use and estimate potential water savings related to specific indoor water efficiency improvements. Recommendations are presented for each facility with monthly (or bi-monthly) water bills and for the County facilities as a whole. Recommendations presented in this report include those from both the indoor and outdoor analysis and audits. The methodologies and findings from the outdoor irrigation analyses and audits are provided under separate cover.

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<sup>5</sup> A weighted average of summertime and wintertime usage was computed to estimate the cost of water savings at the Park Meadows facility using the published Denver Water rates.

## Summary of Findings

This section provides a summary of the various findings related to current water use and potential water use efficiencies that the County may want to implement at its facilities.

### Summary of the Site Visits

The site visits occurred in May 2008. County staff was most helpful in providing access and guidance throughout the audit effort. It is clear from the site visits that County maintenance continually improves and updates water using fixtures in the various County facilities due to the constant requirement to repair and replace aging equipment. For this reason, one of the key recommendations for the County is to provide maintenance staff with the proper parts and equipment to continuously reduce water use as fixtures and appliances are naturally (organically) replaced.

Another key observation was that the County has already implemented a number of water saving efforts in the construction and management of its facility water use. For example, the County has installed dozens of 0.5 gallon per minute (gpm) sink faucet aerators in bathrooms either as part of new or retrofit construction (e.g., the restrooms in the EV Tech Building and the new restrooms in the Wilcox Building, respectively), or as part of its normal maintenance processes (e.g., one 0.5 gpm was found in the Fairgrounds Events Hall). Given that the County has installed and maintained the 0.5 gpm faucet aerators for a number of years, there is proof that the faucet aerators can be retrofit at a large scale without operational concern or complaint.

One other observation was that even the newest County facilities have opportunities for water use efficiency improvements. Although some of the facilities are more than a couple of decades old, most of the County's facilities are less than 10 years old - some have been built within the last two years. The older facilities have more opportunities for improved indoor water conservation; however, some of the oldest facilities have already undergone some upgrades and/or retrofits. Nonetheless, even the newest facilities could be retrofit with high efficiency faucet aerators, showerheads, toilets (or toilet flushing valves) and/or urinals.

Given that even new construction could be improved by installing market-ready high efficiency fixtures and appliances, it may behoove the County to evaluate developing indoor water use standards for new construction.

More retrofits are clearly warranted to improve water use efficiency in the County's facilities. Some of the retrofits may be best performed through a one time large scale installation of water saving devices (e.g., bathroom sink faucet aerators); however, other retrofit efforts will be more cost effective, and less disruptive, if they are performed organically (e.g., installing more efficient flushing valves on toilets). It is the intelligent combination of large scale changes with organic changes that appear to best suit the County's needs.

Overall, the water use efficiencies that the County can best implement relate to the following areas:

- Fix and repair currently broken and/or damaged equipment;
- Improve laundry water use in the County Jail;
- Update the County's car wash gantry;
- Improve water use efficiency in bathrooms and locker rooms in all of the County facilities;
- Implement logging at the County car wash to better characterize actual water use per vehicle; and
- Install and maintain submetering in selected facilities with outdoor irrigation and/or swamp coolers to better characterize current water use.

In addition, the County should coordinate a review of selected billing practices with the Town of Castle Rock given the number of County accounts, the recent implementation of water budgets in the Town's water billing practices, and a some irregularities in water use at a few of the County's facilities (e.g., the Miller Building). This discussion has been initiated during the performance of the audits; however, some follow-up is needed.

As indicated earlier, the County may want to consider developing water use efficiency standards applicable to new construction.

Finally, the County would benefit from a centralized messaging program that would alert County staff and residents alike that new, more rigorous water conservation efforts are being employed by the County. This messaging campaign could leverage the branding of the "Simply Put" recycling effort previously implemented by the County; creating new awareness and supporting improved water use efficiency behaviors.

Specifics related to each of these recommendations are presented in the next section. Summaries for each of the audited facilities are provided in the subsection that follows, within two categories: facilities with metered usage and facilities without metered usage. Analyses of water use could only be conducted at facilities with meters; however, site visits were performed to all County facilities to inventory fixtures and appliances that could be upgraded or

retrofitted such that cost estimates could be developed for recommended water efficiency improvements. Table 2 presents the key facility water attributes, including which facilities are metered. Table 3 summarizes the potential indoor water savings that the County could realize through replacement or upgrading hardware, appliances and/or fixtures within each of the metered facilities.

Recommendations for future short-term and long-term water use efficiency improvements that the County should consider will be made based on the information in Table 3. Other water efficiencies that the County may choose to realize related to revising and/or initiating institutional activities or implementing additional data collection efforts will also be included in the recommendations.

## **Overview of Metered Facilities**

### **EV Tech**

The Evidence Technology building is one of the newest facilities owned and operated by the County. It is also the facility with the smallest water use, due in part to the limited number of employees that utilize the building on any given day. The facility averages about 625 gallons of water use every month, or about 30 gallons a day (gpd).

Since the facility was constructed in 2006, it has been fit with high efficiency faucet aerators (0.5 gpm) in the bathrooms and 1.6 gpf flushing valves on the toilets. However, some improvements can be made to improve water use efficiency at this location, including high efficiency flushing valves (1.28 gpf), showerheads (1.5 gpm) and waterless urinals.

Although the improvements could reduce water use at this facility by as much as 25%, the cost of the improvements versus the total water savings does not warrant immediate implementation. Rather, the improvements to toilet flushing valves, showerheads and urinals should be implemented as natural fixture replacement occurs. The water model for the EV Tech Building, as well as a summary of potential water efficiencies for this facility is provided in Appendix A.

### **Fairgrounds**

The Fairgrounds is serviced by seven distinct taps that provide all or a portion of water used for indoor water use including: bulk fill, CSU Extension, Events Center, Kirk Hall, Large Animal Barn, Main Shop, and the shop. The bulk fill and shop taps were not audited. The bulk fill tap is used by County and occasionally by Town staff for purposes of dust control and construction use. There is no specific information related to where the bulk fill water is used, therefore this tap water use was not audited.

**Table 2**  
**Summary of Audited Facility Attributes**  
**Douglas County Water Efficiency Analysis**

| Facility Number(s) | Location                             | Outdoor Irrigation | Swamp Coolers/Cooling Water Towers | Variable Use Throughout Year | Metered |
|--------------------|--------------------------------------|--------------------|------------------------------------|------------------------------|---------|
| 1                  | Buck Service Center                  |                    |                                    |                              | no      |
|                    | County Road and Bridge               |                    |                                    |                              |         |
| 2                  | Southeast                            | 💧                  |                                    |                              | no      |
| 3                  | Northwest                            |                    |                                    |                              | no      |
| 4                  | EV Tech                              |                    |                                    |                              | yes     |
|                    | Fairgrounds                          |                    |                                    |                              |         |
| 5                  | Bulk Fill                            |                    |                                    | 💧                            | yes     |
| 6                  | CSU Extension Building               | 💧                  |                                    |                              | yes     |
| 7                  | Events Center                        |                    | 💧                                  | 💧                            | yes     |
| 8                  | Kirk Hall                            |                    |                                    | 💧                            | yes     |
| 9                  | Large Animal Barn                    |                    |                                    | 💧                            | yes     |
| 10,11,12,13,14,15  | Main Shop                            |                    |                                    | 💧                            | yes     |
| 16                 | Shop                                 |                    |                                    |                              | yes     |
| 17                 | Highlands Ranch Parks Administration |                    |                                    | 💧                            | yes     |
| 18                 | Human Services                       |                    |                                    |                              | yes     |
| 19                 | Justice Center                       | 💧                  | 💧                                  |                              | yes     |
| 20                 | Louviers Village Club House          | 💧                  |                                    | 💧                            | yes     |
|                    | Miller Building                      |                    |                                    |                              |         |
| 21                 | Administration Building              |                    |                                    |                              | yes     |
| 22                 | Garage                               |                    |                                    |                              | yes     |
|                    | Motor Vehicle Offices                |                    |                                    |                              |         |
| 23                 | Parker                               |                    |                                    |                              | no      |
| 24                 | Highlands Ranch                      |                    |                                    |                              | no      |
| 25                 | Park Meadows Center                  |                    |                                    |                              | yes     |
|                    | Public Works Campus                  |                    |                                    |                              |         |
| 26                 | Operations Building                  | 💧                  | 💧                                  |                              | yes     |
| 27                 | Car Wash                             |                    |                                    | 💧                            | yes     |
| 28                 | Traffic Services                     | 💧                  | 💧                                  |                              | yes     |
| 29                 | EI Tech                              |                    |                                    |                              | no      |
| 30                 | Elections                            |                    |                                    | 💧                            | no      |
| 31                 | Tin Tech Building                    |                    | 💧                                  |                              | no      |
| 32                 | Wilcox Building                      |                    |                                    |                              | yes     |

**Table 3**  
**Potential Indoor Water Savings Available through Hardware, Appliances, and/or Fixtures**

**Douglas County Water Efficiency Analysis**

| Location                                | 2008 Yearly Water Use (gallons) | Cost for Water Savings | Return Period for Investment <sup>a</sup> (years) | Potential Water Savings (gallons per year) | Cost of Replacement Water <sup>b</sup> | Avoided Costs <sup>c</sup> | Potential Water Savings (vs. Average Indoor Use) (%) |
|---|---------------------------------|------------------------|---|--|--|----------------------------|--|
| <b>Justice Center</b>                   | 16,952,727                      | \$ 56,577              |   |  | \$ 88,110                              | \$ 9,845                   | -8%  |
| Sinks                                   |                                 | \$ 402                 | 0.1   | 280,950                                    |  |                            |  |
| Shower Heads                            |                                 | \$ 510                 | 0.7   | 62,571                                     |  |                            |  |
| Washing Machines                        |                                 | \$ 9,600               | 2.6   | 333,714                                    |  |                            |  |
| Urinals                                 |                                 | \$ 3,885               | 6   | 89,425                                     |  |                            |  |
| Toilets                                 |                                 | \$ 42,180              | 105   | 53,770                                     |  |                            |  |
| <b>Miller</b>                           | 663,000                         | \$ 11,291              |   |  | \$ 22,973                              | \$ 2,567                   | -47%   |
| Sinks                                   |                                 | \$ 66                  | 0.0   | 132,687                                    |  |                            |  |
| Test Water Meter                        |                                 | \$ 1,000               | 1.7   | 127,750                                    |  |                            |  |
| Showerheads                             |                                 | \$ 120                 | 1.4   | 4,563                                      |  |                            |  |
| Urinals                                 |                                 | \$ 2,035               | 6   | 41,975                                     |  |                            |  |
| Dishwashers                             |                                 | \$ 375                 | 22  | 652  |  |                            |  |
| Toilets                                 |                                 | \$ 7,695               | 30  | 34,039                                     |  |                            |  |
| <b>Park Meadows Center</b>              | 513,000                         | \$ 7,435               |   |  | \$ 1,882                               | \$ 210                     | -32%   |
| Sink                                    |                                 | \$ 60                  | 1.4   | 5,573                                      |  |                            |  |
| Showerheads                             |                                 | \$ 180                 | 4   | 3,129                                      |  |                            |  |
| Urinals                                 |                                 | \$ 925                 | 58  | 6,779                                      |  |                            |  |
| Toilets                                 |                                 | \$ 6,270               | 514   | 5,173                                      |  |                            |  |
| <b>Public Works Operations Building</b> | 396,000                         | \$ 2,283               |   |  | \$ 8,255                               | \$ 922                     | -50%   |
| Sinks                                   |                                 | \$ 18                  | 0.0   | 31,139                                     |  |                            |  |
| Showerheads                             |                                 | \$ 60                  | 1.2   | 2,607                                      |  |                            |  |
| Submeter Irrigation and Cooling Water   |                                 | \$ 600                 | 3.4   | -  |  |                            |  |
| Toilets                                 |                                 | \$ 1,050               | 5   | 28,783                                     |  |                            |  |
| Urinals                                 |                                 | \$ 555                 | 5   | 14,339                                     |  |                            |  |
| <b>Wilcox</b>                           | 312,000                         | \$ 6,255               |   |  | \$ 11,468                              | \$ 1,281                   | -33%   |
| Sinks                                   |                                 | \$ 15                  | 0.1   | 18,941                                     |  |                            |  |
| Urinals                                 |                                 | \$ 1,110               | 4   | 40,932                                     |  |                            |  |
| Toilets                                 |                                 | \$ 5,130               | 15  | 46,908                                     |  |                            |  |
| <b>Highlands Ranch Parks Admin</b>      | 159,000                         | \$ 852                 |   |  | \$ 4,872                               | \$ 544                     | -33%   |
| Sinks                                   |                                 | \$ 12                  | 0.1   | 23,464                                     |  |                            |  |
| Toilets                                 |                                 | \$ 840                 | 9   | 21,900                                     |  |                            |  |
| <b>Louvier Village Club</b>             | 140,000                         | \$ 1,040               |   |  | \$ 1,012                               | \$ 113                     | -41%   |
| Sinks                                   |                                 | \$ 15                  | 0.2   | 3,064                                      |  |                            |  |
| Urinals                                 |                                 | \$ 185                 | 20  | 2,150                                      |  |                            |  |
| Toilets                                 |                                 | \$ 840                 | 47  | 4,214                                      |  |                            |  |
| <b>Human Services</b>                   | 98,000                          | \$ 4,793               |   |  | \$ 5,636                               | \$ 630                     | -54%   |
| Sinks                                   |                                 | \$ 63                  | 0.1   | 39,968                                     |  |                            |  |
| Urinals                                 |                                 | \$ 740                 | 12  | 8,343                                      |  |                            |  |
| Toilets                                 |                                 | \$ 3,990               | 128   | 4,171                                      |  |                            |  |

**Table 3**  
**Potential Indoor Water Savings Available through Hardware, Appliances, and/or Fixtures**

**Douglas County Water Efficiency Analysis**

| Location                                | 2008 Yearly Water Use (gallons) | Cost for Water Savings | Return Period for Investment <sup>a</sup> (years) | Potential Water Savings (gallons per year) | Cost of Replacement Water <sup>b</sup> | Avoided Costs <sup>c</sup> | Potential Water Savings (vs. Average Indoor Use) (%) |
|---|---------------------------------|------------------------|---|--|--|----------------------------|--|
| <b>Traffic Services</b>                 | 90,020                          | \$ 1,126               |   |  | \$ 2,114                               | \$ 236                     | -59%   |
| Sinks                                   |                                 | \$ 6                   | 0.1   | 9,158                                      |  |                            |  |
| Showerheads                             |                                 | \$ 30                  | 2.1   | 782  |  |                            |  |
| Submeter Cooling Water                  |                                 | \$ 300                 | 7.4   | -  |  |                            |  |
| Urinals                                 |                                 | \$ 370                 | 7   | 7,821                                      |  |                            |  |
| Toilets                                 |                                 | \$ 420                 | 34  | 1,919                                      |  |                            |  |
| <b>EV Tech</b>                          | 7,000                           | \$ 1,055               |   |  | \$ 254                                 | \$ 28                      | -23%   |
| Shower Heads                            |                                 | \$ 30                  | 2.4   | 651  |  |                            |  |
| Urinals                                 |                                 | \$ 185                 | 24  | 1,043                                      |  |                            |  |
| Toilets                                 |                                 | \$ 840                 | 168   | 667  |  |                            |  |
| <b>Fairgrounds</b>                      |                                 |                        |   |  |  |                            |  |
| <b>Main Shop</b>                        | 1,190,000                       | \$ 25,467              |   |  | \$ 85,915                              | \$ 9,600                   | -64%   |
| Sinks                                   |                                 | \$ 12                  | 0.04  | 17,181                                     |  |                            |  |
| Showerheads                             |                                 | \$ 120                 | 1.3   | 4,171                                      |  |                            |  |
| Submeter Yard Spigots and Cooling Water |                                 | \$ 17,500              | 5.1   | 744,600                                    |  |                            |  |
| Urinals                                 |                                 | \$ 1,850               | 8   | 20,857                                     |  |                            |  |
| Toilets                                 |                                 | \$ 5,985               | 43  | 13,182                                     |  |                            |  |
| <b>Events Center</b>                    | 960,000                         | \$ 13,969              |   |  | \$ 25,198                              | \$ 2,816                   | -22%   |
| Sinks                                   |                                 | \$ 69                  | 0.05  | 113,971                                    |  |                            |  |
| Showerheads                             |                                 | \$ 180                 | 1.0   | 9,386                                      |  |                            |  |
| Urinals                                 |                                 | \$ 2,035               | 4   | 67,264                                     |  |                            |  |
| Toilets                                 |                                 | \$ 11,685              | 29  | 53,394                                     |  |                            |  |
| <b>CSU Extension</b>                    | 231,000                         | \$ 1,420               |   |  | \$ 887                                 | \$ 99                      | -29%   |
| Urinals                                 |                                 | \$ 370                 | 8   | 2,002                                      |  |                            |  |
| Toilets                                 |                                 | \$ 1,050               | 70  | 6,257                                      |  |                            |  |
| <b>Kirk Hall</b>                        | 67,000                          | \$ 3,162               |   |  | \$ 3,967                               | \$ 443                     | -55%   |
| Sinks                                   |                                 | \$ 18                  | 0.1   | 14,665                                     |  |                            |  |
| Urinals                                 |                                 | \$ 555                 | 2.8   | 18,771                                     |  |                            |  |
| Toilets                                 |                                 | \$ 2,565               | 70  | 3,504                                      |  |                            |  |
| <b>Large Animal Barn</b>                | 66,000                          | \$ 3,690               |   |  | \$ 2,023                               | \$ 226                     | -30%   |
| Urinals                                 |                                 | \$ 555                 | 4   | 14,079                                     |  |                            |  |
| Toilets                                 |                                 | \$ 3,135               | 63  | 4,755                                      |  |                            |  |
| <b>Totals</b>                           | <b>21,778,747</b>               |                        |   |  |  |                            |  |

<sup>a</sup> - return based on reduced cost of water and energy use

<sup>b</sup> - based on \$35,000 per acre foot for raw water supply, transmission, treatment and distribution

<sup>c</sup> - includes costs of water not treated in water treatment plant, distributed, collected, treated in wastewater treatment plant and discharged

For the shop at the Fairgrounds (not to be confused with the Main Shop at the Fairgrounds), there is no water use data. Although the Town forwards a bill to the County each month for this tap, the water use was always reported to be zero for each month in 2007 and 2008. Therefore, a water use model was not developed for the shop tap.

### ***CSU Extension Building***

The CSU Extension Building, situated on the County Fairgrounds, houses the CSU Extension in Castle Rock. It also has three conference rooms in the basement that can be used for a fee by groups and individuals. Although the CSU Extension used over 200,000 gallons of water in 2008, the majority of this water was used for outdoor irrigation, therefore the water savings indoors are limited by the number of people that utilize the building.

As with the Evidence Technical Building, this building has been fit with 0.5 gpm faucet aerators in its bathrooms. However, some improvements can be made to improve water use efficiency at this location, including high efficiency tank toilets (1.28 gpf) and waterless urinals.

Although the improvements could reduce water use at this facility by as much as 29%, the cost of the improvements versus the total water savings does not warrant immediate implementation. Rather, the improvements to tank toilets and urinals should be implemented as natural fixture replacement occurs. The water model for the CSU Extension, as well as a summary of potential water efficiencies for this facility is provided in Appendix A.

Note that the CSU Extension appears to over apply water outdoor irrigation water during the spring and summer months; however, direct measure of outdoor water use at this facility is not possible currently. It is anticipated that placing a meter on the outdoor irrigation water line, and taking weekly readings during the irrigation season would help the facility manager to improve outdoor water use efficiency at this location.

### ***Events Center***

The Events Center at the County Fairgrounds is a substantial facility, utilized for myriad uses throughout the year. It contains not only a large events hall that can be used for exhibitions, meetings and concerts, but a conference center and kitchen as well. The County Fairgrounds Administrative Offices are also contained in this building.

The facility is serviced by one tap that provides water for only indoor uses; however indoor uses includes the operation of 6 water cooled air handling units - 4- 31,000 cubic feet per minute (cfm) units and 2-8,400 cfm units. The two smaller units are used to control air temperature in the kitchen and

administrative offices; whereas the four larger units are used to control air temperature in the event hall. During the summer months, these air handling units can evaporate more than 200 gallons of water per hour to cool the Events Center and its offices. Overall the Events Center uses on average over 90,000 gallons of water a month (3,000 gpd), peaking at over 160,000 gallons per month (5,333 gpd), depending on use and time of the year.

Given the heavy usage of this facility, substantial water use efficiencies can be realized with some simple improvements including the installation of high efficiency toilet flushing valves, bathroom faucet aerators, and showerheads, and waterless urinals. Given the low cost of the showerheads and bathroom sink aerators, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically (i.e., as older equipment wears out and is replaced); however the pay-pack period for the urinal upgrades likely warrants implementation once the technology has been shown to work. To this point, the County should consider installing a waterless urinal at the Events Center due to its visibility and use, as a means to test the viability of this technology.

The water model for the Events Center, as well as a summary of potential water efficiencies for this facility is provided in Appendix A.

### ***Kirk Hall***

Kirk Hall is a small building that houses an event/exhibit hall and a kitchen on the County Fairgrounds. Along with the Large Animal Barn restrooms, this is the smallest water use tap on the fairgrounds, using about 5,500 gallons of water per month, or about 250 gallons per day (gpd) on average.

Kirk Hall is one of the older buildings on the property, and therefore it affords the County with an opportunity to reduce water demand through the installation of high efficiency toilet flushing valves and faucet aerators, and waterless urinals. Given the low cost of the bathroom sink aerators, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically; however the pay-pack period for the urinal upgrades likely warrants implementation once the technology has been shown to work.

The water model for Kirk Hall, as well as a summary of potential water efficiencies for this facility is provided in Appendix A.

### ***Large Animal Barn***

The large animal barn houses restrooms are served by this tap. The yard spigots at the large animal barn are connected to the Main Shop tap. Along with Kirk

Hall, this is the smallest water use tap on the Fairgrounds, using about 5,200 gallons of water per month, or about 240 gallons per day (gpd) on average.

The restrooms at the large animal barn utilize foot operated sinks which are difficult to retrofit. However, the toilets and urinals could be retrofit to reduce water demand. Toilet and urinal upgrades at this location are less cost effective than in other locations in County facilities, and therefore should be implemented only as the fixtures age and require replacement; however the pay-pack period for the urinal upgrades likely warrants implementation once the technology has been shown to work.

The water model for the large animal barn restrooms, as well as a summary of potential water efficiencies for this facility is provided in Appendix A.

### *Main Shop*

The Main Shop tap at the Fairgrounds services numerous building on property including the indoor arena and all the outdoor spigots at all the barns (multi-purpose barn, green and brown barn, large animal barn, and small animal barn) and the pavilion. There is substantial water use associated with this tap given the broad distribution system of water. The Main Shop tap on average delivers about 94,000 gallons of water a month or over 3,000 gpd, with a maximum monthly average of about 5,000 gpd. The water delivery at this tap varies depending on ongoing events which vary from week to week and month to month, with the largest uses generally occurring on weekends.

The indoor arena is the most substantial water use building of those served by the Main Shop tap. There are large restrooms with shower facilities in the indoor arena, along with a kitchen and water cooled air handling system.

Given the heavy usage of the buildings serviced by this tap, substantial water use efficiencies can be realized with some simple improvements including the installation of high efficiency toilet flushing valves, bathroom faucet aerators, and showerheads, and waterless urinals. Given the low cost of the showerheads and bathroom sink aerators, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically; however the pay-pack period for the urinal upgrades likely warrants implementation once the technology has been shown to work.



It should be noted that the water use for the Main Shop tap appears to be greater than is anticipated based on the water use model. It is possible that this large water system (which consists of a pipe that runs the entire perimeter of the fairgrounds) has a small leak, or some other unaccounted for water use. To test for a leak, facility staff should record meter readings on a daily basis for at least 6 months in conjunction with recording facility usage to identify water use trends. The meter should also be read last thing at night and first thing in the morning for 3 or 4 consecutive nights to track over night water use (during a time when the facility is not being used).

Dependant on the results of the meter reading exercise, the County may want to consider submetering uses for this tap. For example, meters could be installed at each facility connected to this tap to help to characterize yard spigot uses and indoor arena uses.

The water model for the Main Shop tap, as well as a summary of potential water efficiencies for the facilities served by this tap is provided in Appendix A.

### **Highlands Heritage Center**

The Highlands Heritage Center is located in the Centennial Water and Sanitation District service area, and therefore receives water bills once every two months rather than once a month. This facility, which utilizes a tap dedicated for indoor water use only, has substantial seasonal variations in its use, since the summertime brings increases in the parks programs and staff. On average, this facility uses about 350 gpd in the wintertime and more than twice that much on average in the summertime.

Given the heavy usage of this facility, substantial water use efficiencies can be realized with some simple improvements including the installation of high efficiency toilet and bathroom faucet aerators. Given the low cost of the bathroom sink aerators, these fixture improvements should be implemented as soon as possible. Toilet upgrades are less cost effective, and therefore should be implemented organically; however, replacing the tank toilets with dual flush fixtures may be desirable in this highly visible and unique application. This application is unique since few County facilities have operating toilet tanks; they generally have flushing valves which are more expensive to replace and cannot be retrofitted with dual flush toilets which are more water use efficient. In addition, there are no urinals in this facility.

The water model for the Highlands Heritage Facility, as well as a summary of potential water efficiencies for the facility is provided in Appendix A.

## **Human Services**

This facility was constructed in 2007, with operations beginning in fourth quarter of 2007. The building houses County health services, and the County's environmental staff. Given that the building has dedicated taps for both indoor and outdoor uses, the indoor water use is fairly consistent year round, averaging about 8,500 gallons per month or about 400 gpd.

Although the facility is nearly new, there are water use efficiencies that could be realized with some simple improvements including the installation of high efficiency toilet and bathroom faucet aerators, and waterless urinals. Given the low cost of the bathroom sink aerators, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically.

The water model for the Human Services Building, as well as a summary of potential water efficiencies for the facility is provided in Appendix A.

Noteworthy is that water use efficiency improvements in this facility could reduce indoor water use by over 50%. This observation points to the potential value to the County and the community of new building water use codes that would dictate requirements for high efficiency toilets, urinals, faucet aerators and showerheads; reducing the requirements for future water demand in new construction.

## **Justice Center**

The Justice Center is by far the largest single water user in the County's portfolio, using an average of over one million gallons of water per month, or over 35,000 gpd. The Justice Center houses:

- Most of the County's courthouses;
- Criminal investigations personnel;
- Sheriff's office;
- Coroner's office and labs;
- Central controls and dispatch;
- SWAT, pre-trial, visitation and detention; and
- The County jail.



The Jail houses on average about 400 inmates in 300 cells on a year round, 24/7 basis, such that the facility utilizes water everyday. The jail including the jail laundry and kitchen utilizes about 80% of the water use in the facility. The facility also utilizes large water cooled air handling equipment to cool the jail and courthouse complex.

The County Jail has implemented a submetering program with separate meters on the boiler water make-up, the cooling water tower make-up and the irrigation system. Each of these meters is read daily and the readings are recorded and tracked.

Water savings at the Justice Center could be substantial, even though water use efficiencies within the jail cells were not considered in this evaluation. Sizeable water savings can nonetheless be realized within the jail blocks, given that the inmates utilize top loading washing machines for their personal laundry needs (i.e., socks and underwear). High efficiency washing machines will save the County both water and energy costs.

Additional water use efficiency can be realized with some simple improvements including the installation of high efficiency toilet flushing valves, bathroom faucet aerators, and showerheads, and waterless urinals within the office space and courtroom areas. Given the low cost of the showerheads and bathroom sink aerators, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically; however the pay-pack period for the urinal upgrades likely warrants implementation once the technology has been shown to work.

The water model for the Justice Center, as well as a summary of potential water efficiencies for the facility is provided in Appendix A.

### **Louviers Club House**

The Louviers Club House is located in Louviers and houses a small theatre, bowling alley and kitchen. The facility, which has just completed undergoing substantial renovation and improvement, can be used for various special events and receptions. Water use at the facility is variable depending on the season and occasional use. Based on the 2008 water bills, the facility uses on average about 6,000 gallons of water per month or about 275 gpd.

Although the facility's plumbing and fixtures are nearly new, there are water use efficiencies that could be realized with some simple improvements including the installation of high efficiency toilet and bathroom faucet aerators, and waterless urinals. Given the low cost of the bathroom sink aerators, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically.

Note that outdoor irrigation water appears to be over applied during the spring and summer months at the Club House; however, direct measure of outdoor water use at this facility is not possible currently. The County should consider

installing a meter on the outdoor irrigation water line, and taking weekly readings during the irrigation season to help the facility manager to improve outdoor water use efficiency at this location.

The water model for the Louviers Club House, as well as a summary of potential water efficiencies for the facility is provided in Appendix A.

### **Miller Building**

The Miller Building houses the County's administrative staff and the Board of County Commissioners offices and council chambers. For this reason, this building is one of the most visible in the County. The Miller Building, which has a dedicated indoor water use only tap, is the second largest water user in the County's portfolio, using on average about 40,000 gallons of water a day, with an average daily use varying from about 1,700 to 2,500 gpd.

Noteworthy is that a garage facility was constructed adjacent to the Miller Building in 2007. Since construction of the garage, the Miller Building's water demand has increased by 40%, or by about 16,000 gallons per month. Investigations are currently underway to identify the reason for this increase. One potential reason could be that a leak had developed within the building since the garage construction; however that possibility has been eliminated based on a manual meter reading effort performed by the Public Works Facilities Supervisor. The next step will be to engage the Town in testing the meter to determine its accuracy.

As for other water efficiency improvements, the Miller Building's substantial use makes it an excellent candidate for some simple retrofits including the installation of high efficiency toilet flushing valves, bathroom faucet aerators, and showerheads, and waterless urinals. Given the low cost of the showerheads and bathroom sink aerators, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically; however the pay-pack period for the urinal upgrades likely warrants implementation once the technology has been shown to work. To this point, the County should consider installing a waterless urinal in the Miller Building due to its visibility and use, as a means to test the viability of this technology.

The water model for the Miller Building, as well as a summary of potential water efficiencies for the facility is provided in Appendix A.

### **Park Meadows Center**

The Park Meadows Center houses the northern offices of the County's Sheriff's Office, Tri-County Health and a small conference facility. This building is serviced by two water taps – one for outdoor and one for indoor use. Therefore

the indoor water use is fairly consistent throughout the year, averaging between 5,000 to 6,000 gallons of water per month, or about 265 gpd.

Although the facility is fairly new, there are water use efficiencies that could be realized with some simple improvements including the installation of high efficiency toilet, bathroom faucet aerators, and showerheads, and waterless urinals. Given the low cost of the bathroom sink aerators and showerheads, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically.

The water model for the Park Meadows Center, as well as a summary of potential water efficiencies for the facility is provided in Appendix A.

### **Public Works Campus** ***Operations Building***

The Public Works Building houses the County's Public Works Operations offices and the County vehicle maintenance and repair shop. It is serviced by a single water tap that provides for both indoor and outdoor water use, which varies



from an average wintertime use of about 14,000 gallons per month (650 gpd) to a summertime use of about 30,000 gallons per month (1,400 gpd). The facility utilizes three large cooling towers to maintain air temperatures in the shop. In the summer, the cooling towers can evaporate up to 1,000 gallons of water per day.

The Public Works Building is one of the older buildings owned and operated by the County. Although the bathrooms in the administrative offices have been recently updated (2003) there are a number of simple improvements that the County could choose to implement to reduce water demand through the installation of high efficiency toilet flushing valves, showerheads and faucet aerators, and waterless urinals even within the updated bathrooms. Given the low cost of the bathroom sink aerators and showerheads, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically; however, dual flush toilet tanks and a waterless urinal could be installed in these offices to test the technologies in an institutional environment while reducing water use.

Submetering irrigation and cooling water use at the Public Works building would be of benefit to the County's future evaluations of water use and the Town's development of the facility's water budget (which affects billings). The Town currently does not include cooling water uses in its summertime water budgets, in part because they lack data regarding the use and location of cooling water towers and swamp coolers. Submetering both the irrigation line and the cooling water line would help the County to obtain the data needed to revise its water budget, potentially saving the County money by increasing the summertime water budget for this facility. In addition, the irrigation meter reading can help the facility manager improve outdoor irrigation practices.

The water model for Public Works Building, as well as a summary of potential water efficiencies for this facility is provided in Appendix A.

### *Car Wash*

The County Car Wash is located in the Public Works Building parking lot and is used to wash cars and trucks operated by the County. On any given day, the car wash, which contains two hand wash stations and one car wash bay, uses about 3,500 gallons of water, or over 100,000 gallons in a month.

Given that the car wash services about 100 vehicles on an average day, it appears that the gantry uses about 75 gallons per vehicle; with hand washes using power



wash brushes and spray nozzles using 20-30 gallons per vehicle. This water use rate is consistent with the water use per vehicle reported by the equipment manufacturer.

Although the water use in the car wash tracks fairly well to the expected water use based on the manufacturer's specifications and the number of car washes per day reported by staff, it is recommended that the County initiate

a vehicle logging procedure to track the vehicle traffic and water use on a daily basis. This information will be used to help improve water use at this facility.<sup>6</sup>

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<sup>6</sup> The Grayline Bus Company in Seattle Washington achieved a 93% reduction in water use by installing a reclaimed wash water system and reducing its fresh water demand to clean busses from 350 gallons per vehicle (gpv) to 25 gpv. The reclamation system cost \$85,000. The payback for this improvement was less than one year, since the water and sewer cost was reduced \$35,000 annually and Seattle Public Works provided the bus company with a \$42,400 rebate under its "Water Smart Technology" program.

The County is planning to upgrade the existing gantry to improve car wash performance, and reduce water use and energy consumption. Compared to the existing model, the new gantry (Mark VII AJXT-300) will use 44% less water, 25% less energy and 35% fewer chemicals.

### *Traffic Services*

Traffic services houses a small staff and vehicle maintenance and repair shop. This facility is served by one water tap that provides water for indoor and outdoor uses. This facility does not have substantial water use during the wintertime, averaging about 2,600 gallons of water per month, or about 125 gpd. In the summertime, swamp coolers and limited outdoor irrigation increase water use to about 16,000 gallons per month, or over 730 gpd. The three swamp coolers are estimated to evaporate nearly 590 gpd of water during peak usage.

Although the facility has relatively low water use, there are a number of simple improvements that the County could choose to implement to reduce water demand through the installation of high efficiency toilets, showerheads and faucet aerators, and waterless urinals. Given the low cost of the bathroom sink aerators and showerheads, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically.

Submetering irrigation and cooling water use at the Traffic Services building would be of benefit to the County's future evaluations of water use and the Town's development of the facility's water budget (which affects billings). Given that the outdoor irrigation audit is recommending eliminating outdoor water use, it may be best to postpone submetering at this location until such time that that recommendation is implemented, such that a meter is only needed for the cooling water system. Like the Public Works building, site-specific cooling water use information may help the County develop a more accurate water budget for summertime water use at this facility saving the County money.

The water model for Traffic Services, as well as a summary of potential water efficiencies for this facility is provided in Appendix A.

### **Wilcox Building**

The Wilcox Building houses the old county courtrooms, as well as selected County administrative staff. This facility is served by dedicated indoor and outdoor water use taps, such that the indoor water use does not vary substantially over the year - it averages about 26,000 gallons per month or about 1,220 gpd.

There are multiple bathrooms on each floor of the Wilcox Building; however, some of these bathrooms have been updated within the past 3 years. Even with

the updates, there are a number of simple improvements that the County could choose to implement to reduce water demand through the installation of high efficiency toilets and faucet aerators, and waterless urinals. Given the low cost of the bathroom sink aerators, these fixture improvements should be implemented as soon as possible. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically however the pay-pack period for the urinal upgrades likely warrants implementation once the technology has been shown to work.

The water model for Wilcox Building, as well as a summary of potential water efficiencies for this facility is provided in Appendix A.

### **Overview of Unmetered Facilities**

The County owns and operates eight unmetered facilities, including two that reside in local strip malls (the motor vehicle offices in Parker and Highlands Ranch). The water use in the strip mall based facilities is included in the rental cost. At the other locations, water is provided through private wells on property.

A list of the unmetered facilities is provided below:

- Motor vehicle offices in Parker and Highlands Ranch
- Buck Service Center
- County Road and Bridge Facilities in Littleton and Larkspur
- Selected facilities within the Public Works Campus (El Tech, Tin Tech, and Elections Building)

Water use for these facilities are not available such water use models could not be developed. Therefore, the cost benefit analyses related to the triple bottom line analysis could not be performed.

However, the results of the cost benefit analyses performed for the other County facilities identified trends that can easily extended into all the County facilities including those that are unmetered. Specifically, given the low cost of the bathroom sink aerators, these fixture improvements should be implemented as soon as possible in all unmetered County facilities. Toilet and urinal upgrades are less cost effective, and therefore should be implemented organically. Even in facilities where water use is included as a fixed cost (i.e., the Motor Vehicle offices), these simple improvements should be conducted by the County to maintain a consistent message to the community.

The County should also consider installing water meters at all of its facilities that are on well water. Meters will allow the County to better characterize facility

water use and water use efficiency and identify wasteful water use (e.g., identify leaks).

# Recommendations

Recommendations for improved water use efficiency at Douglas County owned and operated facilities have been developed using a combination of site visits and data collection efforts, and water use and cost benefit analyses to evaluate and characterize the economic, social and environmental benefits of potential water conservation measures and programs. Overall, the recommendations fall into these basic categories:

## Indoor

- Install high efficiency fixtures and appliances in selected locations;
- Initiate a waterless urinal demonstration project; and
- Upgrade the County car wash.

## Outdoor<sup>7</sup>

- Reposition and/or install rainfall sensors at selected County properties;
- Install irrigation centralized control system to allow for remote operation and sensing of the County's outdoor irrigation systems;
- Upgrade selected components of existing irrigation control systems;
- Install wireless flow sensor and pressure controls at selected facilities;
- Reset existing irrigation clocks to allow for repeat cycling; and
- Renovate and/or replace existing irrigation systems at selected facilities.

## Other

- Initiate additional data collection including submetering and leak evaluations at selected facilities;
- Improved understanding and corroboration of water billings with the Town of Castle Rock;
- Develop water use efficiency standards for new construction; and
- Develop and initiate a messaging campaign to educate and engage County employees and the community about the County's efforts, in part to help enlighten and shift current water use behaviors.

The specific recommendations for the County are provided below. The recommendations have been differentiated into three categories:

**Short-term** - those measures and programs that require capital expenditures and are either most cost-effective based on expected costs to implement and estimated water savings, are important to understanding future County water use, are required for regulatory compliance, or are needed to update current out-of-date equipment.

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<sup>7</sup> As discussed and presented in Keesen Water Management, Inc. report "Douglas County Water Analysis/Audits – Outdoor Irrigation System Audits Methodology and Findings", September 2009.

**Long-term** – those measures and programs that require capital expenditures and save real water, but are more expensive and less cost – effective than the short-term recommendations, or are better left to a time after selected short-term measures and programs have been implemented.

**Institutional** – those measures and programs that should be implemented to compliment the short-term recommendations, but do not have a capital cost related to them.

A table has been created to summarize the recommendations for each of these categories. Table 4 summarizes the short-term recommendations; Table 6 summarizes the long-term recommendations; Table 7 summarizes the institutional activities. Table 5 summarizes the recommended short-term indoor water use efficiency improvements by facility. Capital costs included in these tables are based on all labor for updates and improvements provided without cost by Douglas County staff.

### **Short-Term Recommendations**

The short-term recommendations for Douglas County’s consideration are summarized in Tables 4 and 5. The recommendations include indoor fixture and appliance replacement, outdoor irrigation system improvements, and other improvements related to data collection, equipment updates, and regulatory compliance.

To begin with, indoor fixture replacements are recommended for all bathroom faucet aerators and showerheads that are not already water efficient. These simple improvements will save the County nearly 800,000 gallons of water per year at a cost of less than \$2,000. In addition, it is recommended that the County consider replacing the washing machines used for personal laundry on the cell blocks at the Justice Center (a total of 12) with high efficiency washing machines which are EPA certified Energy Star and have a water factor of 6.0 or less. Combined, these recommendations, which are detailed by facility in Table 5, would save the County over 1,100,000 gallons of water a year with a combined water and energy cost savings of about \$15,000 per year.

Water use related with tank toilets and flushing valves for toilets are not considered cost effective in the short-term, given that the return on investment for replacing tank toilets and flushing valves is typically greater than 10 years and in some cases over 100 years. Given that staff will be replacing and repairing tank toilets and flushing valves organically as equipment fails and/or breaks, there is not a recommendation for the County to install high efficiency toilets at this time.

**Table 4**  
**Recommendations for Short-Term Capital Projects for Water Use Efficiency Improvements**

**Douglas County Water Efficiency Analysis**

| Type of Improvement   | Number  | Cost for Implementation | Return Period for Investment <sup>a</sup> (years) | Potential Water Savings (gallons per year) | Cost of Replacement Water <sup>b</sup> |
|---|---------|-------------------------|---|--|--|
| <b>Indoor</b>   |         |                         |   |  |  |
| Replace Bathroom Sink Aerators  | 252     | \$ 756                  | 0.2   | 690,760                                    | \$ 74,184                              |
| Replace Showerheads   | 41      | \$ 1,230                | 1.5   | 87,860                                     | \$ 9,436                               |
| Replace Washing Machines in Jail Blocks   | 12      | \$ 9,600                | 2.6   | 333,714                                    | \$ 35,839                              |
|   |         | \$ 11,586               |   | 1,112,334                                  | \$ 119,460                             |
| <b>Outdoor</b>  |         |                         |   |  |  |
| Remove turf at Miller Building  | 1       | \$ -                    | -   | 95,570                                     | \$ 10,264                              |
| Transition turf to native grasses at Traffic Services   | 1       | \$ -                    | -   | 28,000                                     | \$ 3,007                               |
| Move rainfall sensors at numerous facilities  | 6       | \$ 150                  | 0.6   | 58,570                                     | \$ 6,290                               |
| Install Pressure Reducing Valves at EV Tech   | 1       | \$ 300                  | 0.9   | 58,000                                     | \$ 6,229                               |
| Replace Pressure Reducing Valves at Fairgrounds   | 3       | \$ 4,000                | 2.3   | 310,000                                    | \$ 33,293                              |
| Install rainfall sensor at Justice Center   | 1       | \$ 150                  | 2.3   | 15,000                                     | \$ 1,611                               |
| Central Control Systems for Justice Center, Highlands Heritage, Fields at the Fairgrounds, Challenger Regional Park, EV Tech, Event Center at Fairgrounds, Wilcox, Park Meadows | 8       | \$ 72,337               | 1.3 - 6.9   | 5,392,000                                  | \$ 579,076                             |
| Wireless Flow Sensor - Fields at the Fairgrounds  | 1       | \$ 14,000               | 4.8   | 516,000                                    | \$ 55,416                              |
|   |         | \$ 90,937               |   | 6,473,140                                  | \$ 695,185                             |
| <b>Other</b>  |         |                         |   |  |  |
| Test Meter on Miller Building   | 1       | \$ 1,000                | 1.7   | 127,750                                    | \$ 13,720                              |
| Submeters on Public Works Irrigation and Swamp Coolers  | 2       | \$ 600                  | 3.4   | n/a  | n/a                                    |
| Demonstration Waterless Urinals - Miller and Events Center  | 2       | \$ 350                  | 5   | 9,931                                      | \$ 1,067                               |
| Submeter on Main Shop at Fairgrounds  | 7       | \$ 17,500               | 5.1   | 744,600                                    | \$ 79,967                              |
| Submeter on CSU Ext and Louviers Rec Irrigation   | 2       | \$ 600                  | n/a   | n/a  | n/a                                    |
| Meters on Facilities with Wells (Tin Tech, Buck Service Center, SE Road and Bridge, Whispering Pines Park)  | 4       | \$ 2,000                | n/a   | n/a  | n/a                                    |
| Test Main Shop Meter at Fairgrounds   | 1       | \$ -                    | n/a   | n/a  | n/a                                    |
| Re-program Irrigation Clocks to Repeat Cycle  | various | \$ -                    | n/a   | n/a  | n/a                                    |
|   |         | \$ 22,050               |   | 882,281                                    | \$ 94,753                              |
| <b>Update Equipment</b>   |         |                         |   |  |  |
| Car Wash Upgrade with Water Efficient Gantry  | 1       | \$ 115,000              | n/a   | 496,770                                    | \$ 53,351                              |
| <b>Regulatory Compliance/System Management</b>  |         |                         |   |  |  |
| Raise pressure vacuum breaker at Louviers Club House  | 1       | \$ -                    | n/a   | n/a  | n/a                                    |
| Replumb Backflow Prevention Valves at Wilcox Building   | 1       | \$ 200                  | n/a   | n/a  | n/a                                    |
| Replace Master Valves at Heritage Park  | 1       | \$ 700                  | n/a   | n/a  | n/a                                    |
|   |         | \$ 900                  |   |  |  |
| <b>Totals</b>   |         | <b>\$ 240,473</b>       |   | <b>8,964,525</b>                           | <b>\$ 962,749</b>                      |
| <b>Currently in CIP for 2010</b>  |         | <b>\$ 218,355</b>       |   |  |  |
| <b>New Items for 2011 CIP</b>   |         | <b>\$ 22,118</b>        |   |  |  |

<sup>a</sup> - return on investment based on reduced cost of water and energy use (without accounting for increases in future water rates)

<sup>b</sup> - based on \$35,000 per acre foot for raw water supply, transmission, treatment and distribution

**Table 5**  
**Recommended Short-Term Water Use Efficiency Improvements for**  
**Hardware, Appliances and/or Fixtures**

**Douglas County Water Efficiency Analysis**

| Location                                | Cost for Water Savings | Return Period for Investment <sup>a</sup><br>(years) | Potential Water Savings<br>(gallons per year) | Cost of Replacement Water <sup>b</sup> |
|---|------------------------|--|---|--|
| <b>Justice Center</b>                   | \$ 10,512              |  |   | \$ 72,732                              |
| Sinks                                   | \$ 402                 | 0.1  | 280,950                                       |  |
| Shower Heads                            | \$ 510                 | 0.7  | 62,571  |  |
| Washing Machines                        | \$ 9,600               | 2.6  | 333,714                                       |  |
| <b>Miller</b>                           | \$ 186                 |  |   | \$ 14,740                              |
| Sinks                                   | \$ 66                  | 0.04   | 132,687                                       |  |
| Showerheads                             | \$ 120                 | 1.4  | 4,563   |  |
| <b>Park Meadows Center</b>              | \$ 240                 |  |   | \$ 934                                 |
| Sink                                    | \$ 60                  | 1.4  | 5,573   |  |
| Showerheads                             | \$ 180                 | 4  | 3,129   |  |
| <b>Public Works Operations Building</b> | \$ 78                  |  |   | \$ 3,624                               |
| Sinks                                   | \$ 18                  | 0.04   | 31,139  |  |
| Showerheads                             | \$ 60                  | 1.2  | 2,607   |  |
| <b>Wilcox</b>                           | \$ 15                  |  |   | \$ 2,034                               |
| Sinks                                   | \$ 15                  | 0.1  | 18,941  |  |
| <b>Highlands Ranch Parks Admin</b>      | \$ 12                  |  |   | \$ 2,520                               |
| Sinks                                   | \$ 12                  | 0.1  | 23,464  |  |
| <b>Louvier Village Club</b>             | \$ 15                  |  |   | \$ 329                                 |
| Sinks                                   | \$ 15                  | 0.2  | 3,064   |  |
| <b>Human Services</b>                   | \$ 63                  |  |   | \$ 4,292                               |
| Sinks                                   | \$ 63                  | 0.1  | 39,968  |  |
| <b>Traffic Services</b>                 | \$ 36                  |  |   | \$ 1,067                               |
| Sinks                                   | \$ 6                   | 0.1  | 9,158   |  |
| Showerheads                             | \$ 30                  | 2.1  | 782   |  |
| <b>EV Tech</b>                          | \$ 30                  |  |   | \$ 70                                  |
| Showerheads                             | \$ 30                  | 2.4  | 651   |  |
| <b>Fairgrounds</b>                      |                        |  |   |  |
| <b>Main Shop</b>                        | \$ 132                 |  |   | \$ 2,293                               |
| Sinks                                   | \$ 12                  | 0.0  | 17,181  |  |
| Showerheads                             | \$ 120                 | 1.3  | 4,171   |  |
| <b>Events Center</b>                    | \$ 249                 |  |   | \$ 13,248                              |
| Sinks                                   | \$ 69                  | 0.0  | 113,971                                       |  |
| Showerheads                             | \$ 180                 | 1.0  | 9,386   |  |
| <b>Kirk Hall</b>                        | \$ 18                  |  |   | \$ 1,575                               |
| Sinks                                   | \$ 18                  | 0.1  | 14,665  |  |
| <b>Totals</b>                           | <b>\$ 11,586</b>       |  | <b>1,112,334</b>                              | <b>\$ 119,460</b>                      |

<sup>a</sup> - return based on reduced cost of water and energy use

<sup>b</sup> - based on \$35,000 per acre foot for raw water supply, transmission, treatment and distribution

**Table 6**  
**Recommendations for Long-Term Capital Projects for Water Use Efficiency Improvements**

**Douglas County Water Efficiency Analysis**

| Type of Improvement  | Number | Cost for Implementation | Return Period for Investment <sup>a</sup><br>(years) | Potential Water Savings<br>(gallons per year) | Cost of Replacement Water <sup>b</sup> |
|--|--------|-------------------------|--|---|--|
| <b>Indoor</b>  |        |                         |  |   |  |
| Organic Replacement of Urinals   | 90     | \$ 16,650               | 9.2  | 320,830                                       | \$ 34,456                              |
| Organic Replacement of Toilets (Tanks)   | 44     | \$ 8,140                | 20.7   | 69,643  | \$ 7,479                               |
| Organic Replacement of Toilets (Flushing Valves)   | 311    | \$ 88,635               | 71.8   | 218,896                                       | \$ 23,508                              |
|  |        | \$ 113,425              |  | 609,368                                       | \$ 65,443                              |
| <b>Outdoor</b>   |        |                         |  |   |  |
| Renovate Irrigation System - Fairgrounds Event Center  | 1      | \$ 14,445               | 8.5  | 301,000                                       | \$ 32,326                              |
| Renovate Irrigation System - Challenger Regional Park  | 1      | \$ 165,000              | 9.7  | 3,005,000                                     | \$ 322,723                             |
| Cap Heads/Redo Three Turf Zones - Public Works Building  | 1      | \$ 120                  | 10.0   | 2,830   | \$ 304                                 |
| Renovate Irrigation System - Highlands Heritage Park   | 1      | \$ 197,000              | 10.9   | 7,059,000                                     | \$ 758,104                             |
| Renovate Irrigation System - CSU Extension   | 1      | \$ 4,450                | 14.7   | 71,000  | \$ 7,625                               |
| Renovate Irrigation System - Justice Center  | 1      | \$ 74,000               | 16.2   | 1,072,000                                     | \$ 115,128                             |
| Replace Irrigation System - Wilcox Building  | 1      | \$ 18,500               | 17.8   | 184,000                                       | \$ 19,761                              |
| Central Control Systems for Bayou Gulch, Miller, CSU Ext at the Fairgrounds, Public Works Ops Building, Human Services | 5      | \$ 25,499               | 19.5   | 654,000                                       | \$ 70,237                              |
| Wireless Flow Sensors  | 17     | \$ 59,500               | 28.2   | 422,190                                       | \$ 45,341                              |
| Central Control Systems for Louviers Club House, Pinery Park, Whispering Pines, Tin Tech and Dupont Triangle Park      | 5      | \$ 16,395               | n/a  | n/a   | \$ -                                   |
|  |        | \$ 574,909              |  | 12,771,020                                    | \$ 1,371,549                           |
| <b>Other</b>   |        |                         |  |   |  |
| Submeter on Traffic Services Swamp Cooler  | 1      | \$ 300                  | 7.4  | n/a   | n/a                                    |
| Swamp Cooler/Cooling Water Tower Detailed Assessment   | 1      | \$ 8,500                | 15.2   | 120,733                                       | \$ 12,966                              |
|  |        | \$ 8,800                |  | 120,733                                       | \$ 12,966                              |
| <b>Totals</b>  |        | <b>\$ 697,134</b>       |  | <b>13,501,121</b>                             | <b>\$ 1,449,958</b>                    |

<sup>a</sup> - return on investment based on reduced cost of water and energy use (without accounting for increases in future water rates)

<sup>b</sup> - based on \$35,000 per acre foot for raw water supply, transmission, treatment and distribution

# Table 7 Recommendations for Institutional Activities to Improve Water Use Efficiencies

## Douglas County Water Efficiency Analysis

| Proposed Activity                                      | Comment                   |
|--|---------------------------|
| <b>Discussions with Town of Castle Rock</b>            |                           |
| Billings   | ongoing                   |
| Water Budgets  | ongoing                   |
| Meter Testing  | ongoing                   |
| Water Use Reporting                                    | ongoing                   |
| <b>Simply Put Messaging</b>                            |                           |
| Kitchens and Galleys                                   | to be initiated - 4Q 2009 |
| Public Displays  | to be initiated - 4Q 2009 |
| Demo Project   | to be initiated - 4Q 2009 |
| <b>New Construction Standards</b>                      |                           |
| County Protocols for County Facilities                 | ongoing                   |
| County Wide New Construction Standards                 | ongoing                   |
| County Policy Governance Implementation                | to be initiated - 4Q 2009 |
| <b>Track Future Water and Energy Use</b>               |                           |
| Management Team to Include in Monthly Tracking Efforts | to be initiated - 4Q 2009 |
| <b>Public Relations Campaign</b>                       |                           |
|  | ongoing                   |

At numerous facilities, replacing 1 gallon per flush urinals with waterless urinals would have a return on investment of less than 8 years. However, waterless urinals have not been fully evaluated for operations and maintenance suitability. Therefore, the County should consider installing at least two waterless urinals in highly visible locations (e.g., the first floor of the Miller Building and the Fairgrounds Event Center) to evaluate this technology and promote its use to the public. If these installations are found to be satisfactory, then the County should consider installing waterless urinals at other locations including the Justice Center, the Miller and Wilcox buildings and in all the restrooms at the Fairgrounds (e.g., Kirk Hall, Indoor Arena, Events Center, Large Animal Barn, etc.).

The County should also consider implementing those outdoor irrigation improvements listed in Table 4, including:

- Installing (at the Justice Center) and/or moving rainfall sensors (at the Wilcox Building, Public Works Building, EV Tech, Justice Center, Park Meadows Center and the Fairgrounds Events Center);
- Replacing the pressure reducing value (PRV) at the Fairgrounds Parks and installing a PRV at the EV Tech Building;
- Installing central control systems at 8 facilities (Justice Center, Highlands Heritage, the fields at the Fairgrounds, Challenger Regional Park, EV Tech Building, Fairgrounds Events Center, and the Park Meadows Service Center) to vastly improve onsite irrigation control; and
- Install a wireless flow sensor at the Fairgrounds fields.

In addition, the County should consider transitioning the turf at the Traffic Services Building from bluegrass to native grasses. This effort will remove the need for future watering within the Traffic Services stormwater detention facility; however, this option should be discussed with the Town of Castle Rock to ensure that they will permit this recommendation.

In addition, the County is in the process of removing turf from selected areas currently irrigated at the Miller Building. If possible, other turf areas that are not used and/or noticed by the public should be considered for conversion to native grass areas, such that irrigation in these areas can be eliminated.

Water savings associated with the outdoor recommendations provided above will save the County, on average, nearly 9 million gallons of water per year at a cost savings of about \$24,000 per year.

In addition, the County should consider re-programming its various irrigation clocks to allow for repeat cycle watering. This effort will allow the irrigation systems to more effectively deliver water to the turf simply by applying water

twice, instead of once, at a reduced period of time. The water time per cycle for rotor head zones should not exceed 15 to 20 minutes and pop-up spray heads 5 to 7 minutes per cycle at most. These water times will assure that the application rate will not exceed the intake rate of the turf and soil. Additional cycles can be used to meet turf water requirements. Repeat cycles should be implemented on all sites. This will help to save additional water.

Understanding County water use could be substantially improved through the installation of meters at specific facilities to measure facility water use (e.g., facilities on well water - Southeast Road and Bridge, Tin Tech, Buck Service Center, and Whispering Pines Park), or to measure outdoor irrigation and/or cooling water tower (or swamp cooler) use (which would involve submetering). Improved metering can be used to not only help the County better understand its water demands by differentiating and characterizing seasonal water use, but submetering data (i.e., data collected from meters installed to measure just cooling water and/or irrigation use) could help the County develop more accurate water budgets for its facilities, especially in the Town of Castle Rock, potentially saving the County money. The best facilities for submetering in the short-term include the Public Works Building, the CSU Extension and the Louviers Club House. Submetering is also recommended at the Fairgrounds in association with the Main Shop tap. It is discussed below.

In addition, water use associated with two specific water taps appears to be higher than expected. At the Miller Building, water use has increased by about 40% from 2007 to 2008 without any known increase in building occupancy or facility use. Staff has eliminated a leak as the culprit; therefore, it is recommended that the County work with the Town to test the meter and replace it as needed.

At the Main Shop tap at the Fairgrounds, water use is also higher than expected; however the variability of the water use from this tap is dependant on substantial swings in facility use, which are not seasonal, but change from week to week and month to month. Since it is difficult to determine the cause of the higher than expected water use for this complicated tap, maintenance staff should record meter readings on a daily basis for at least 6 months in conjunction with recording facility usage to identify water use trends. The meter should also be read last thing at night and first thing in the morning for 3 or 4 consecutive nights to track and record over night water use during a time when the facility is not being used.

It is also recommended that submetering be installed for the yard spigots and the indoor arena associated with the Main Shop tap. These submeters will be invaluable in helping to characterize water use at the Fairgrounds.

The County's Car Wash needs to be replaced by a more efficient gantry, that will improve the quality of the car wash, reduce the time to wash a single vehicle, and reduce the per vehicle cost for a car wash. Although the rate of return for the update car wash gantry is substantial; the car wash needs to be replaced. Since the new car wash gantry will reduce County water demand, it was included as a recommendation.

Finally, the County has two locations that must be replumbed to maintain compliance with local water purveyor requirements. Replace the existing PVB at Wilcox Building (associated with the outdoor irrigation tap) located at the back of the site with an RP Backflow Preventer. The two current devices are connected together which is an illegal connection and can cause water to flow back into the original source. In addition, the master valve at Heritage Park needs to be added. These "fixes" will not necessarily improve County water use efficiency, but they will allow the County to maintain compliance with local regulations.

The pressure vacuum breaker at the Louviers Clubhouse needs to be raised to prevent water from flowing back into the original source. This is a not water conservation issue, but a potential health hazard. No cost is included for this fix within Table 4.

The total capital cost for the combined short-term recommendations is about \$240,000. Of these funds, about \$218,000 has already been placed into the 2010 capital projects budget; for all the recommended capital projects presented in Table 4. The remaining balance of approximately \$22,000 will be included in the 2011 capital projects budget.

Overall, the recommended capital projects save the County an estimated 8.96 million gallons of water a year (or about 27.5 acre-feet) which has a replacement value of nearly \$1 million.

### **Long-Term Recommendations**

The long-term recommendations typically involve those capital projects that have a rate of return greater than five years (with one exception - submetering at the Traffic Services Building). Table 6 provides a summary of the recommended long-term capital projects that will improve County water use efficiency.

As indicated earlier, the recommended indoor measures and programs involve the organic replacement of tank toilets, urinals and flushing valves. To this end, the County will improve its water use efficiency by replacing broken and/or out dated fixtures as required. In this way, the County reduces its water demand in a stepwise and ordered manner, realizing large water savings as high efficiency

equipment replaces less water efficient equipment. Note that as equipment is replaced, it is imperative that the new high efficiency flushing valves are coupled with toilet bowls that will work with the valve. The Alliance of Water Efficiency has information available that indicates which flushing valves work with which toilet bowls.

Similarly, the long-term outdoor measures and programs involve large expenditure projects that have the potential to save substantial water, but are not necessarily cost effective at this point in time. The specific recommendations include renovating and/or replacing irrigation systems at six different locations to improve irrigation timing and water delivery. Central irrigation control systems are also recommended for the remaining 10 parks (i.e., those parks that did not receive controllers in the short-term). Wireless flow sensors are also recommended in the future. These flow sensors will mesh with the central control system that parks will install to allow for more centralized and remote control of its irrigation systems. The wireless flow sensors will also be able to identify and diagnose irrigation system leaks remotely.

Submetering at the Traffic Services Building is suggested for the long-term since this building uses swamp coolers in the summer. There is no immediate need for a submeter to be installed since this facility receives its water from Castlewood Water which does not currently utilize water budgets or inclining block rates in its water rate structure. However, when the Water District does implement water budgets and/or inclining block rates, it will be in the County's best interest to install a meter on this facility's cooling water supply.

Finally, the County may also wish to consider performing a rigorous assessment of its cooling water towers, to evaluate potential water saving efforts that may be implemented to save evaporative and/or blow-down water losses; however this effort should not be conducted until some additional data collection takes place and more cost effective measures and programs are implemented.

### **Institutional Recommendations**

As listed in Table 7, the institutional recommendations should be considered for implementation by the County as early as possible, since these activities compliment the short-term recommendations. The institutional recommendations are as follows:

- Discussions with the Town of Castle Rock should be initiated to discuss selected irregularities in the County's water bills. These irregularity, which may or may not effect billings, include the following issues:

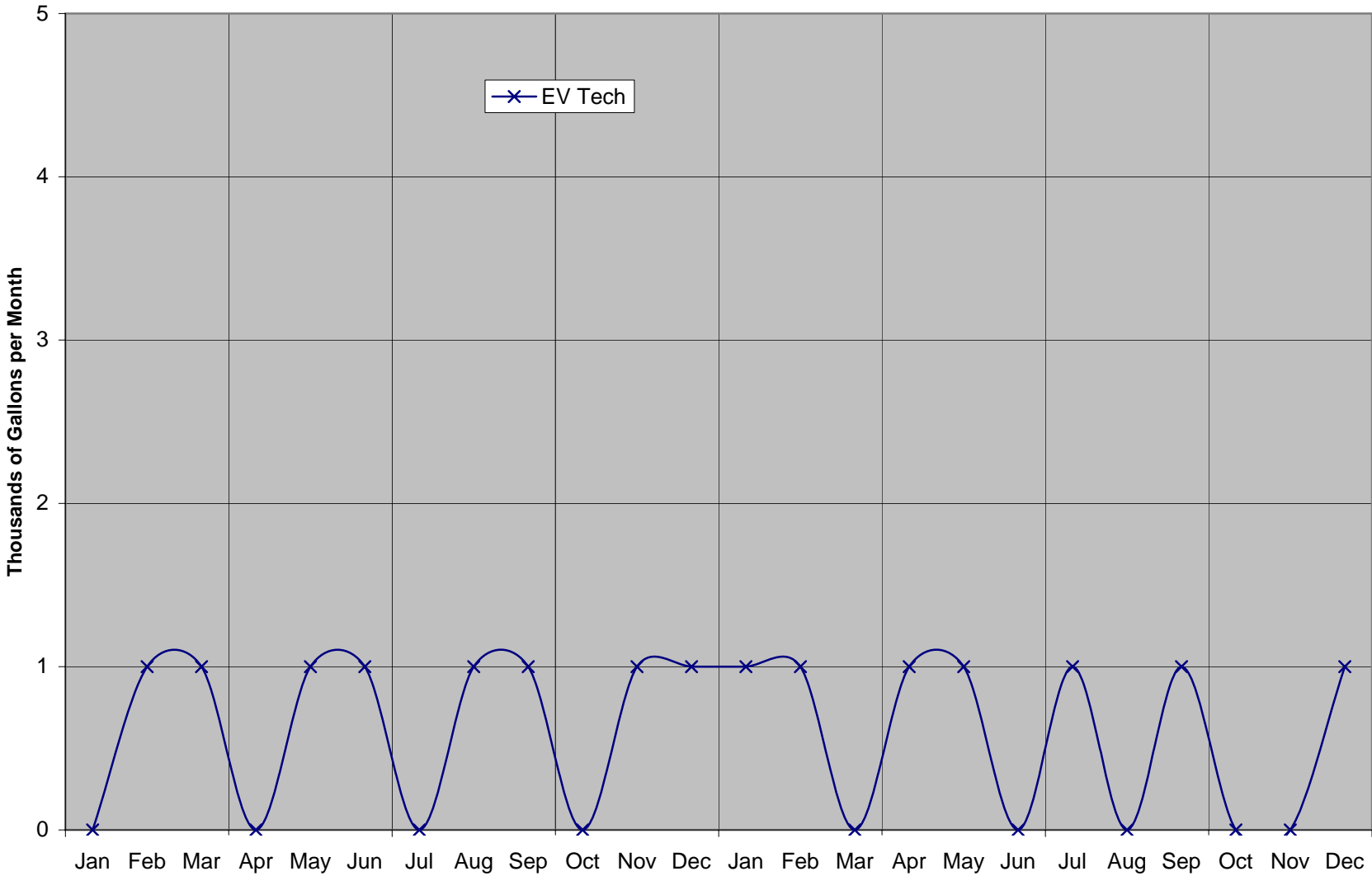
- The water budget and water billings at Kirk Hall, which has been charged a base rate for water of over \$8 per thousand gallons (when it should be close to \$2 per thousand).
  - How water budgets are developed for facilities that have cooling water towers (e.g., Justice Center, Public Works Operations Building, Events Center and the Indoor Arena at the Fairgrounds) since the impact of this seasonal use is not incorporated in the current rate structure.
  - Why water budgets have not been reported or used consistently on some of the County's 2008 water bills.
  - How the Justice Center's water budget was created given that the 2007 water use data was inaccurate.
  - Request meter accuracy testing for the Miller Building, and perhaps the Car Wash and the Main Shop at the Fairgrounds.
- The County should implement an extension of its **Simply Put** messaging campaign to include messages about water conservation and water use efficiency. For example, the County should consider:
    - Developing message cards to put into all kitchens and galleys in the County buildings urging staff to wash hands in the bathrooms to save water;
    - Developing message cards to put into all public use bathrooms indicating that the County has a water conservation program and that it saves both water and energy on a daily basis through this program.
    - Developing message cards to place above waterless urinals to publicize the County's efforts to improve water use efficiency in all county facilities.
- The County should strongly consider developing water efficiency standards for fixtures, appliances and practices in new construction; including codes, plan review procedures and site inspections. Data from the audit suggests that substantial water demand reductions could be realized through such a program. These standards could be developed in three ways:
    - Develop new construction standards for County facilities (which is ongoing).
    - Support the consortium currently working to develop County-wide new construction standards (which is ongoing).
    - Coordinate Board policy governance with new construction guidelines and requirements.

- The County will need to establish mechanisms to track future water and energy use, as a means to evaluate the effectiveness of implemented water use efficiencies and identify additional areas of water conservation. Currently, the County's management team is looking into ways to gather and track the necessary data as part of their normal monthly tracking efforts.
- The County should consider initiating a focused public relations campaign to promote the efforts of the County to improve water use efficiency and permanently reduce its water demand. The County may desire to highlight key implementation efforts, promote partnerships, and provide education and information to its citizenry.
- The County should consider implementing the following best management practices (BMPs) for irrigation at its facilities:
  - To avoid wasting water, irrigation maintenance personnel should perform routine system checks - running through each zone weekly or bi-weekly.
  - When replacing pop-up spray heads insure they have pressure regulators. When water pressure at the sprinkler head is either too high or too low, both water pressure situations cause a distortion of the spray pattern resulting in poor uniformity of coverage. When water exits the nozzle of the irrigation head it explodes into droplets of water. Low operating pressure causes the water to explode into larger droplets, which produces soil compaction and also reduces the effective radius of coverage. High water pressure results in small droplets that drift away and a reduced radius of coverage.
  - When replacing sprinkler heads, insure they have check valves. Low head drainage occurs after each cycle, creating puddles in some areas and water hammer in lateral lines when zones are turned on, resulting in reduced life expectancy of the system. Check valves built into the heads prevent this problem.

## **Appendix A**

### **Facility Water Use and Water Use Models**

### EV Tech Water Use and Water Budget 2007-2008





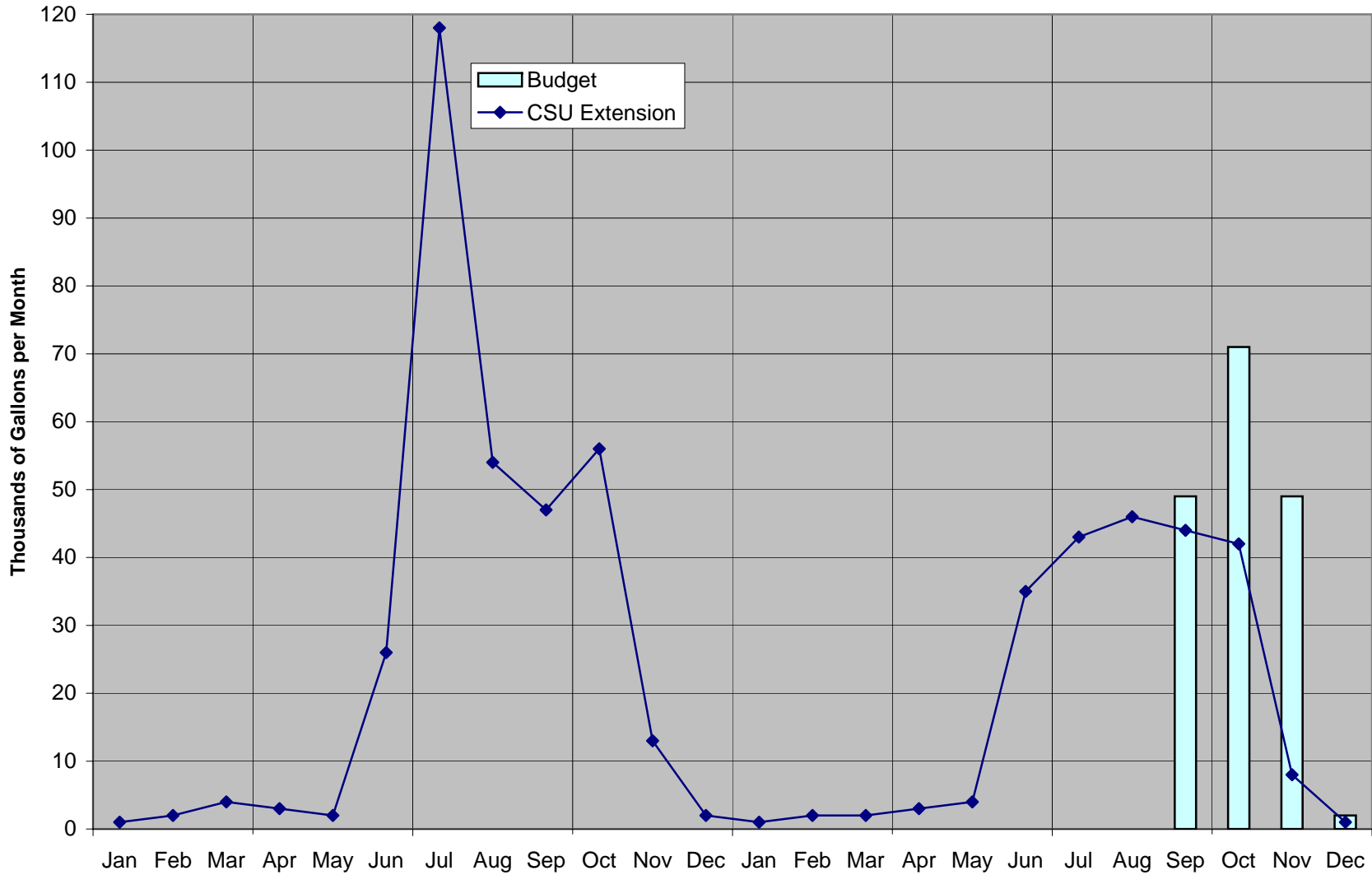
## Summary of Current Water Use and Potential Water Savings EV Tech Building

|                                      |        |     |                 |       | 5 Total Minutes |                  |                 |                            |                 |              |                        |   |   |  |  |
|--------------------------------------|--------|-----|-----------------|-------|-----------------|------------------|-----------------|----------------------------|-----------------|--------------|------------------------|---|---|--|--|
| <b>Sinks</b>                         | 6      | 0.4 | 0.8             | 1.2   | gpm             |                  |                 |                            |                 |              |                        |   |   |  |  |
| Main/Back                            | 2      | 0.2 | 0.3             | 0.5   | gpm             | 0.3              | minutes         | 0.1                        | 0.2             | 0.3          |                        |   |   |  |  |
| Staff                                | 2      | 0.2 | 0.3             | 0.5   | gpm             | 2.1              | minutes         | 1                          | 1               | 2            |                        |   |   |  |  |
| Galley/Kitchen                       | 2      | 0.9 | 1.6             | 2.5   | gpm             | 1.1              | minutes         | 2                          | 3               | 5            |                        |   |   |  |  |
| Lab                                  | 1      | 0.2 | 0.3             | 0.5   | gpm             | 3.5              | minutes         | 1                          | 1               | 2            |                        |   |   |  |  |
|                                      |        |     |                 |       |                 | 29               | Total Sink Uses |                            |                 |              |                        |   |   |  |  |
| <b>Other</b>                         |        |     |                 |       |                 |                  |                 |                            |                 |              |                        |   |   |  |  |
| Coffee Makers                        | 1      | -   | 1.0             | 1.0   | gpd             | 1                |                 | -                          | 1               | 1            |                        |   |   |  |  |
| Ice Maker (refrigerator)             | 1      | -   | 0.3             | 0.3   | gpd             | 1                |                 | -                          | 0.3             | 0.3          |                        |   |   |  |  |
| Drinking Fountain                    | 2      | -   | 0.2             | 0.2   | gpd             | 1                |                 | -                          | 0.3             | 0.3          |                        |   |   |  |  |
| Mop Sink                             | 1      | -   | 2.5             | 2.5   | gpd             | 1                |                 | -                          | 3               | 3            |                        |   |   |  |  |
|                                      |        |     |                 |       |                 |                  |                 | <b>14</b>                  | <b>33</b>       | <b>47</b>    | <b>max day</b>         |   |   |  |  |
|                                      |        |     |                 |       |                 |                  |                 |                            | <b>observed</b> | <b>47</b>    | <b>average max day</b> |   |   |  |  |
|                                      |        |     |                 |       |                 |                  |                 |                            | <b>observed</b> | <b>1,000</b> | <b>max month</b>       |   |   |  |  |
|                                      |        |     |                 |       |                 |                  |                 |                            |                 | <b>13</b>    | <b>days at max</b>     |   |   |  |  |
|                                      |        |     |                 |       |                 |                  |                 |                            | <b>observed</b> | <b>29</b>    | <b>aver day</b>        |   |   |  |  |
|                                      |        |     |                 |       |                 |                  |                 |                            | <b>observed</b> | <b>625</b>   | <b>aver month</b>      |   |   |  |  |
| <b>Average Use Potential Savings</b> |        |     |                 |       |                 |                  |                 |                            |                 |              |                        |   |   |  |  |
|                                      |        |     |                 |       |                 |                  |                 |                            |                 |              |                        |   |   |  |  |
|                                      | number | hot | per use<br>cold | total |                 | uses/day/fixture | hot             | cold                       | total           | total        |                        |   |   |  |  |
| <b>Toilets (tanks)</b>               | 4      | -   | 1.28            | 1.28  | gpf             |                  |                 | 10                         | 10              | -            | 3                      | 3 |   |  |  |
| Main/Back                            | 2      | -   | 1.28            | 1.28  | gpf             | 1                | flushes         | -                          | 3               | 3            | -                      | 1 | 1 |  |  |
| Staff                                | 2      | -   | 1.28            | 1.28  | gpf             | 3                | flushes         | -                          | 8               | 8            | -                      | 2 | 2 |  |  |
|                                      |        |     |                 |       |                 | 8                | Total Flushes   |                            |                 |              |                        |   |   |  |  |
| <b>Urinals</b>                       | 1      | -   | -               | -     | gpf             |                  |                 | -                          | -               | -            | 4                      | 4 |   |  |  |
| Staff                                | 1      | -   | -               | -     | gpf             | 4                | flushes         | -                          | -               | -            | -                      | 4 | 4 |  |  |
|                                      |        |     |                 |       |                 | 4                | Total Flushes   |                            |                 |              |                        |   |   |  |  |
| <b>Showers</b>                       | 4      | 1.1 | 0.4             | 1.5   | gpm             |                  |                 | -                          | -               | -            | -                      | - |   |  |  |
| Staff Mens                           | 2      | 1.1 | 0.4             | 1.5   | gpm             | -                | minutes         | -                          | -               | -            | -                      | - |   |  |  |
| Staff Womens                         | 2      | 1.1 | 0.4             | 1.5   | gpm             | -                | minutes         | -                          | -               | -            | -                      | - |   |  |  |
|                                      |        |     |                 |       |                 | -                | Total Minutes   |                            |                 |              |                        |   |   |  |  |
| <b>Sinks</b>                         | 6      | 0.4 | 0.8             | 1.2   | gpm             |                  |                 | 3                          | 5               | 7            | -                      | - | - |  |  |
| Main/Back                            | 2      | 0.2 | 0.3             | 0.5   | gpm             | 0.3              | minutes         | 0                          | 0               | 0            | -                      | - | - |  |  |
| Staff                                | 2      | 0.2 | 0.3             | 0.5   | gpm             | 1.8              | minutes         | 1                          | 1               | 2            | -                      | - | - |  |  |
| Galley/Kitchen                       | 2      | 0.9 | 1.6             | 2.5   | gpm             | 1.1              | minutes         | 2                          | 3               | 5            | -                      | - | - |  |  |
| Lab                                  | 1      | 0.2 | 0.3             | 0.5   | gpm             | 3.5              | minutes         | 1                          | 1               | 2            |                        |   |   |  |  |
|                                      |        |     |                 |       |                 | 27               | Total Sink Uses |                            |                 |              |                        |   |   |  |  |
| <b>Other</b>                         |        |     |                 |       |                 |                  |                 |                            |                 |              |                        |   |   |  |  |
| Coffee Makers                        | 1      | -   | 1.0             | 1.0   | gpd             | 1                |                 | 0                          | 1               | 1            | -                      | - | - |  |  |
| Ice Maker (refrigerator)             | 1      | -   | 0.3             | 0.3   | gpd             | 1                |                 | 0                          | 0               | 0            | -                      | - | - |  |  |
| Drinking Fountain                    | 2      | -   | 0.2             | 0.2   | gpd             | 1                |                 | 0                          | 0               | 0            | -                      | - | - |  |  |
| Mop Sink                             | 1      | -   | 2.5             | 2.5   | gpd             | 1                |                 | 0                          | 3               | 3            | -                      | - | - |  |  |
|                                      |        |     |                 |       |                 |                  |                 | <b>3</b>                   | <b>19</b>       | <b>22</b>    |                        |   |   |  |  |
|                                      |        |     |                 |       |                 |                  |                 | <b>potential reduction</b> | <b>-23%</b>     |              |                        |   |   |  |  |

## Summary of Current Water Use and Potential Water Savings EV Tech Building

| Maximum Use Potential Savings |  |             |              |          |                |                               |                            |                            |                   |                                  |  |                        |   |
|-------------------------------|--|-------------|--------------|----------|----------------|-------------------------------|----------------------------|----------------------------|-------------------|----------------------------------|--|------------------------|---|
|                               | number   | hot         | per use      |          | total          | uses/day/fixture              | subtotal gpd               |                            |                   |                                  |  |                        |   |
|                               |  |             | cold         |          |                |                               | hot                        | cold                       | total             |                                  |  |                        |   |
| <b>Toilets (tanks)</b>        | 4  | -           | 1.28         |          | 1.28           | gpf                           |                            | -                          | 13                | 13                               | -  | 3                      | 3 |
| Main/Back                     | 2  | -           | 1.28         |          | 1.28           | gpf                           | 1 flushes                  | -                          | 3                 | 3                                | -  | 1                      | 1 |
| Staff                         | 2  | -           | 1.28         |          | 1.28           | gpf                           | 4 flushes                  | -                          | 10                | 10                               | -  | 3                      | 3 |
|                               |  |             |              |          |                |                               | 10 Total Flushes           |                            |                   |                                  |  |                        |   |
| <b>Urinals</b>                | 1  | -           | -            |          | -              | gpf                           |                            | -                          | -                 | -                                | -  | 4                      | 4 |
| Staff                         | 1  | -           | -            |          | -              | gpf                           | 4 flushes                  | -                          | -                 | -                                | -  | 4                      | 4 |
|                               |  |             |              |          |                |                               | 4 Total Flushes            |                            |                   |                                  |  |                        |   |
| <b>Showers</b>                | 4  | 1.7         | 0.6          |          | 2.3            | gpm                           |                            | 6                          | 2                 | 8                                | 6  | 2                      | 8 |
| Staff Mens                    | 2  | 1.1         | 0.4          |          | 1.5            | gpm                           | 2.5 minutes                | 6                          | 2                 | 8                                | 6  | 2                      | 8 |
| Staff Womens                  | 2  | 2.3         | 0.8          |          | 3.0            | gpm                           | - minutes                  | -                          | -                 | -                                | -  | -                      | - |
|                               |  |             |              |          |                |                               | 5 Total Minutes            |                            |                   |                                  |  |                        |   |
| <b>Sinks</b>                  | 6  | 0.4         | 0.8          |          | 1.2            | gpm                           |                            | 3                          | 5                 | 8                                | -  | -                      | - |
| Main/Back                     | 2  | 0.2         | 0.3          |          | 0.5            | gpm                           | 0.3 minutes                | 0                          | 0                 | 0                                | -  | -                      | - |
| Staff                         | 2  | 0.2         | 0.3          |          | 0.5            | gpm                           | 2.1 minutes                | 1                          | 1                 | 2                                | -  | -                      | - |
| Galley/Kitchen                | 2  | 0.9         | 1.6          |          | 2.5            | gpm                           | 1.1 minutes                | 2                          | 3                 | 5                                | -  | -                      | - |
| Lab                           | 1  | 0.2         | 0.3          |          | 0.5            | gpm                           | 3.5 minutes                | 1                          | 1                 | 2                                | -  | -                      | - |
|                               |  |             |              |          |                |                               | 29 Total Sink Uses         |                            |                   |                                  |  |                        |   |
| <b>Other</b>                  |  |             |              |          |                |                               |                            |                            |                   |                                  | -  | -                      | - |
| Coffee Makers                 | 1  | -           | 1.0          |          | 1.0            | gpd                           | 1                          | 0                          | 1                 | 1                                | -  | -                      | - |
| Ice Maker (refrigerator)      | 1  | -           | 0.3          |          | 0.3            | gpd                           | 1                          | 0                          | 0                 | 0                                | -  | -                      | - |
| Drinking Fountain             | 2  | -           | 0.2          |          | 0.2            | gpd                           | 1                          | 0                          | 0                 | 0                                | -  | -                      | - |
| Mop Sink                      | 1  | -           | 2.5          |          | 2.5            | gpd                           | 1                          | 0                          | 3                 | 3                                | -  | -                      | - |
|                               |  |             |              |          |                |                               |                            | 8                          | 24                | 32                               |  |                        |   |
|                               |  |             |              |          |                |                               |                            | <b>potential reduction</b> |                   | <b>-31%</b>                      |  |                        |   |
| <b>Costs to Implement</b>     |  |             |              |          |                |                               |                            |                            |                   |                                  |  |                        |   |
|                               |  | <b>Cost</b> |              |          |                |                               |                            |                            |                   |                                  |  |                        |   |
|                               | number   | Hardware    | Installation | Total    | Payback Period | Annual Energy Savings (kw-hr) | Annual Energy Savings (\$) | Annual Water Savings (\$)  | Acre-Feet Savings | Cost of Alternative Water Supply | Annual Cost of Treatment, Delivery, Wastewater | Cost per AF of Savings |   |
| Toilets                       | 4  | \$ 210      | \$ -         | \$ 840   | 167.8 yrs      | -                             | \$ -                       | \$ 5                       | 0.00              | \$ 72                            | \$ 8   | \$ 410,163             |   |
| Urinals                       | 1  | \$ 185      | \$ -         | \$ 185   | 23.7 yrs       | -                             | \$ -                       | \$ 8                       | 0.00              | \$ 112                           | \$ 13  | \$ 57,814              |   |
| Shower Heads                  | 1  | \$ 30       | \$ -         | \$ 30    | 2.4 yrs        | 119                           | \$ 8                       | \$ 5                       | 0.00              | \$ 70                            | \$ 8   | \$ 15,015              |   |
|                               |  |             |              | \$ 1,055 |                |                               |                            |                            | 0.01              | \$ 254                           | \$ 28  |                        |   |
|                               | Cost of Alternative Water Supply                 |             |              |          | \$ 254         |                               |                            |                            |                   |                                  |  |                        |   |
|                               | Annual Cost of Treatment, Delivery, Augmentation |             |              |          | \$ 28          |                               |                            |                            |                   |                                  |  |                        |   |

Fairgrounds - CSU Extension Water Use and Budget 2007-2008



## Summary of Current Water Use and Potential Water Savings Fairgrounds - CSU Ext.

| Average Wintertime Use Calculations |        |     |                 |       |     |                    |     |              |       |                 |
|-------------------------------------|--------|-----|-----------------|-------|-----|--------------------|-----|--------------|-------|-----------------|
|                                     | number | hot | per use<br>cold | total |     | uses/day/fixture   | hot | subtotal gpd |       |                 |
|                                     |        |     |                 |       |     |                    |     | cold         | total |                 |
| <b>Toilets (tanks)</b>              | 5      | -   | 1.6             | 1.6   | gpf |                    | -   | 38           | 38    |                 |
| <b>Upstairs</b>                     |        |     |                 |       |     |                    |     |              |       |                 |
| Mens                                | 1      | -   | 1.6             | 1.6   | gpf | 8 flushes          | -   | 13           | 13    |                 |
| Womens                              | 1      | -   | 1.6             | 1.6   | gpf | 16 flushes         | -   | 26           | 26    |                 |
| <b>Downstairs</b>                   |        |     |                 |       |     |                    |     |              |       |                 |
| Mens                                | 1      | -   | 1.6             | 1.6   | gpf | 5 flushes          | -   | 8            | 8     |                 |
| Womens                              | 2      | -   | 1.6             | 1.6   | gpf | 5 flushes          | -   | 16           | 16    |                 |
|                                     |        |     |                 |       |     | 24 Total Flushes   |     |              |       |                 |
| <b>Urinals</b>                      | 2      | -   | 1.5             | 1.5   | gpf |                    | -   | 24           | 24    |                 |
| Mens                                | 2      | -   | 1.5             | 1.5   | gpf | 8 flushes          | -   | 24           | 24    |                 |
|                                     |        |     |                 |       |     | 8 Total Flushes    |     |              |       |                 |
| <b>Sinks</b>                        | 6      | 0.4 | 0.8             | 1.3   | gpm |                    | 16  | 30           | 46    |                 |
| Mens                                | 2      | 0.2 | 0.3             | 0.5   | gpm | 5 minutes          | 2   | 3            | 5     |                 |
| Womens                              | 2      | 0.2 | 0.3             | 0.5   | gpm | 5 minutes          | 2   | 3            | 5     |                 |
| Galley/Kitchen                      | 2      | 1.0 | 1.8             | 2.8   | gpm | 7 minutes          | 13  | 24           | 36    |                 |
|                                     |        |     |                 |       |     | 93 Total Sink Uses |     |              |       |                 |
| <b>Other</b>                        |        |     |                 |       |     |                    |     |              |       |                 |
| Drinking Fountain                   | 1      | -   | 0.1             | 0.1   | gpd | 0.5                | -   | 0.1          | 0.1   |                 |
| Mop Sink                            | 2      | -   | 0.3             | 0.3   | gpd | 1                  | -   | 0.7          | 0.7   |                 |
| Ice Maker (refrigerator)            | 1      | -   | 0.4             | 0.4   | gpd | 1                  | -   | 0.4          | 0.4   |                 |
|                                     |        |     |                 |       |     |                    | 16  | 93           | 109   | max day         |
|                                     |        |     |                 |       |     |                    |     | observed     | 186   | average max day |
|                                     |        |     |                 |       |     |                    |     | observed     | 4,000 | max month       |
|                                     |        |     |                 |       |     |                    |     |              | 21    | days at max     |
|                                     |        |     |                 |       |     |                    |     | observed     | 109   | aver day        |
|                                     |        |     |                 |       |     |                    |     | observed     | 2,333 | aver month      |
|                                     |        |     |                 |       |     |                    |     |              |       |                 |
|                                     |        |     |                 |       |     |                    |     |              |       |                 |
| Maximum Wintertime Use Calculations |        |     |                 |       |     |                    |     |              |       |                 |
|                                     | number | hot | per use<br>cold | total |     | uses/day/fixture   | hot | subtotal gpd |       |                 |
|                                     |        |     |                 |       |     |                    |     | cold         | total |                 |
| <b>Toilets (tanks)</b>              | 5      | -   | 1.6             | 1.6   | gpf |                    | -   | 37           | 37    |                 |
| <b>Upstairs</b>                     |        |     |                 |       |     |                    |     |              |       |                 |
| Mens                                | 1      | -   | 1.6             | 1.6   | gpf | 8 flushes          | -   | 13           | 13    |                 |
| Womens                              | 1      | -   | 1.6             | 1.6   | gpf | 15 flushes         | -   | 24           | 24    |                 |
| <b>Downstairs</b>                   |        |     |                 |       |     |                    |     |              |       |                 |
| Mens                                | 1      | -   | 1.6             | 1.6   | gpf | 12 flushes         | -   | 19           | 19    |                 |
| Womens                              | 2      | -   | 1.6             | 1.6   | gpf | 12 flushes         | -   | 38           | 38    |                 |
|                                     |        |     |                 |       |     | 23 Total Flushes   |     |              |       |                 |
| <b>Urinals</b>                      | 2      | -   | 1.5             | 1.5   | gpf |                    | -   | 60           | 60    |                 |
| Mens                                | 2      | -   | 1.5             | 1.5   | gpf | 20 flushes         | -   | 60           | 60    |                 |

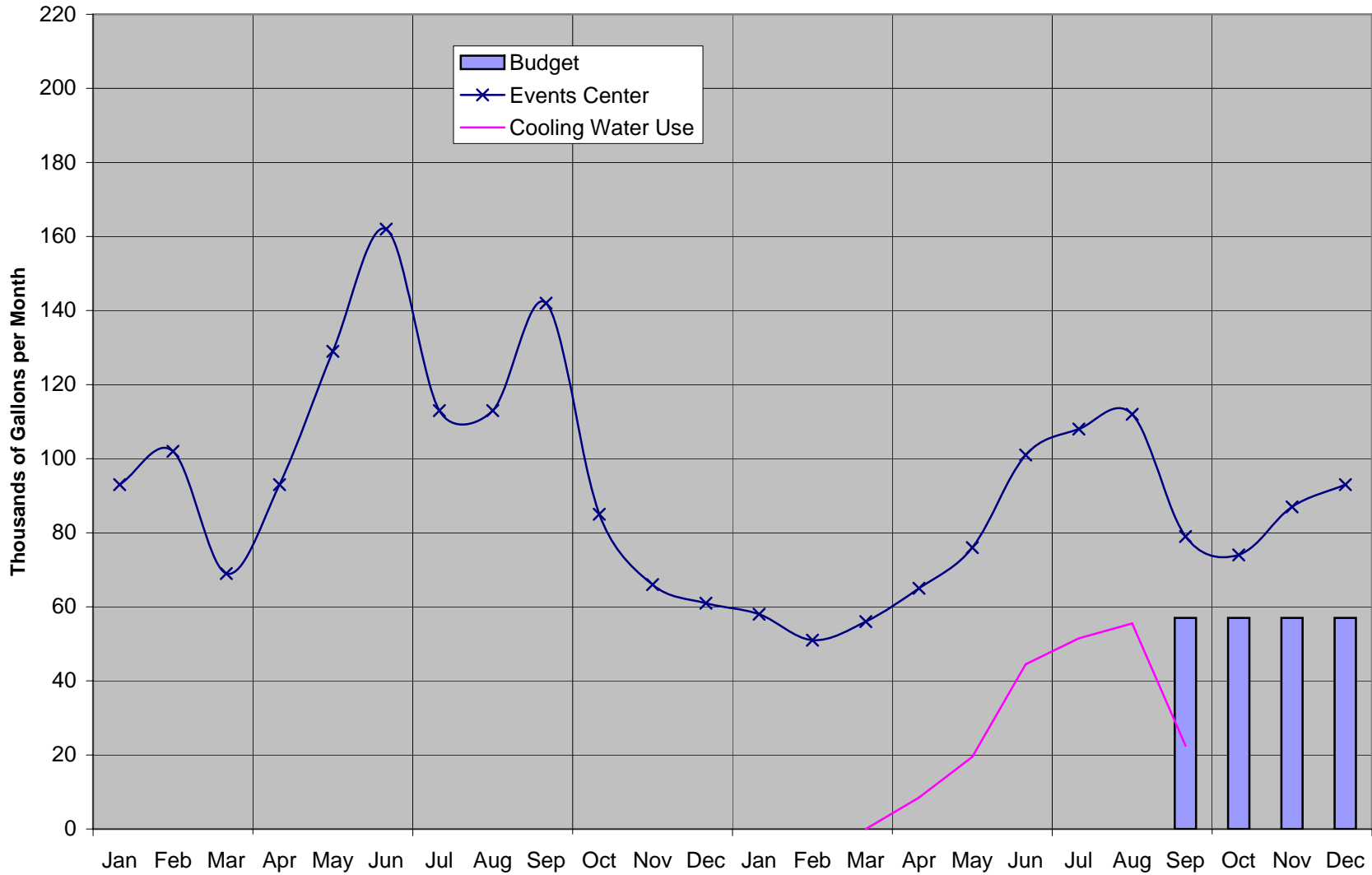
## Summary of Current Water Use and Potential Water Savings Fairgrounds - CSU Ext.

|                                      |        |     |                 |       |     |                  |                 |              |                            |             | 20                     |                | Total Flashes |  |  |  |  |  |
|--------------------------------------|--------|-----|-----------------|-------|-----|------------------|-----------------|--------------|----------------------------|-------------|------------------------|----------------|---------------|--|--|--|--|--|
| <b>Sinks</b>                         | 6      | 0.4 | 0.8             | 1.3   | gpm |                  |                 |              | 31                         | 58          | 90                     |                |               |  |  |  |  |  |
| Mens                                 | 2      | 0.2 | 0.3             | 0.5   | gpm | 11               | minutes         | 4            | 7                          | 11          |                        |                |               |  |  |  |  |  |
| Womens                               | 2      | 0.2 | 0.3             | 0.5   | gpm | 7                | minutes         | 2            | 4                          | 7           |                        |                |               |  |  |  |  |  |
| Galley/Kitchen                       | 2      | 1.0 | 1.8             | 2.8   | gpm | 13               | minutes         | 25           | 47                         | 73          |                        |                |               |  |  |  |  |  |
|                                      |        |     |                 |       |     | 174              | Total Sink Uses |              |                            |             |                        |                |               |  |  |  |  |  |
| <b>Other</b>                         |        |     |                 |       |     |                  |                 |              |                            |             |                        |                |               |  |  |  |  |  |
| Drinking Fountain                    | 1      | -   | 0.1             | 0.1   | gpd | 1                |                 | -            | 0.1                        | 0.1         |                        |                |               |  |  |  |  |  |
| Mop Sink                             | 2      | -   | 0.3             | 0.3   | gpd | 1                |                 | -            | 0.7                        | 0.7         |                        |                |               |  |  |  |  |  |
| Ice Maker (refrigerator)             | 1      | -   | 0.4             | 0.4   | gpd | 1                |                 | -            | 0.4                        | 0.4         |                        |                |               |  |  |  |  |  |
|                                      |        |     |                 |       |     |                  |                 |              | <b>31</b>                  | <b>156</b>  | <b>188</b>             | <b>max day</b> |               |  |  |  |  |  |
|                                      |        |     |                 |       |     |                  |                 |              | <b>observed</b>            | <b>186</b>  | <b>average max day</b> |                |               |  |  |  |  |  |
|                                      |        |     |                 |       |     |                  |                 |              | observed                   | 4,000       | max month              |                |               |  |  |  |  |  |
|                                      |        |     |                 |       |     |                  |                 |              |                            | 12          | days at max            |                |               |  |  |  |  |  |
|                                      |        |     |                 |       |     |                  |                 |              | observed                   | 109         | aver day               |                |               |  |  |  |  |  |
|                                      |        |     |                 |       |     |                  |                 |              | observed                   | 2,333       | aver month             |                |               |  |  |  |  |  |
|                                      |        |     |                 |       |     |                  |                 |              |                            |             |                        |                |               |  |  |  |  |  |
| <b>Average Use Potential Savings</b> |        |     |                 |       |     |                  |                 |              |                            |             |                        |                |               |  |  |  |  |  |
|                                      | number | hot | per use<br>cold | total |     | uses/day/fixture | hot             | subtotal gpd |                            |             |                        |                |               |  |  |  |  |  |
| <b>Toilets (tanks)</b>               | 5      | -   | 1.28            | 1.28  | gpf |                  | -               | 31           | total                      | 31          | -                      | 8              | 8             |  |  |  |  |  |
| <b>Upstairs</b>                      |        |     |                 |       |     |                  |                 |              |                            |             |                        |                |               |  |  |  |  |  |
| Mens                                 | 1      | -   | 1.28            | 1.28  | gpf | 8                | flushes         | -            | 10                         | 10          | -                      | 3              | 3             |  |  |  |  |  |
| Womens                               | 1      | -   | 1.28            | 1.28  | gpf | 16               | flushes         | -            | 20                         | 20          | -                      | 5              | 5             |  |  |  |  |  |
| <b>Downstairs</b>                    |        |     |                 |       |     |                  |                 |              |                            |             |                        |                |               |  |  |  |  |  |
| Mens                                 | 1      | -   | 1.28            | 1.28  | gpf | 5                | flushes         | -            | 6                          | 6           | -                      | 2              | 2             |  |  |  |  |  |
| Womens                               | 2      | -   | 1.28            | 1.28  | gpf | 5                | flushes         | -            | 13                         | 13          | -                      | 3              | 3             |  |  |  |  |  |
|                                      |        |     |                 |       |     | 24               | Total Flashes   |              |                            |             |                        |                |               |  |  |  |  |  |
| <b>Urinals</b>                       | 2      | -   | -               | -     | gpf |                  |                 | -            | -                          | -           | -                      | 24             | 24            |  |  |  |  |  |
| Mens                                 | 2      | -   | -               | -     | gpf | 8                | flushes         | -            | -                          | -           | -                      | 24             | 24            |  |  |  |  |  |
|                                      |        |     |                 |       |     | 8                | Total Flashes   |              |                            |             |                        |                |               |  |  |  |  |  |
|                                      |        |     |                 |       |     |                  |                 |              |                            |             |                        |                |               |  |  |  |  |  |
| <b>Sinks</b>                         | 6      | 0.4 | 0.8             | 1.3   | gpm |                  |                 | 16           | 30                         | 46          | -                      | -              | -             |  |  |  |  |  |
| Mens                                 | 2      | 0.2 | 0.3             | 0.5   | gpm | 5                | minutes         | 2            | 3                          | 5           | -                      | -              | -             |  |  |  |  |  |
| Womens                               | 2      | 0.2 | 0.3             | 0.5   | gpm | 5                | minutes         | 2            | 3                          | 5           | -                      | -              | -             |  |  |  |  |  |
| Galley/Kitchen                       | 2      | 1.0 | 1.8             | 2.8   | gpm | 7                | minutes         | 13           | 24                         | 36          | -                      | -              | -             |  |  |  |  |  |
|                                      |        |     |                 |       |     | 93               | Total Sink Uses |              |                            |             |                        |                |               |  |  |  |  |  |
| <b>Other</b>                         |        |     |                 |       |     |                  |                 |              |                            |             |                        |                |               |  |  |  |  |  |
| Drinking Fountain                    | 1      | -   | 0.1             | 0.1   | gpd | 0.5              |                 | -            | 0.1                        | 0.1         | -                      | -              | -             |  |  |  |  |  |
| Mop Sink                             | 2      | -   | 0.3             | 0.3   | gpd | 1                |                 | -            | 0.7                        | 0.7         | -                      | -              | -             |  |  |  |  |  |
| Ice Maker (refrigerator)             | 1      | -   | 0.4             | 0.4   | gpd | 1                |                 | -            | 0.4                        | 0.4         | -                      | -              | -             |  |  |  |  |  |
|                                      |        |     |                 |       |     |                  |                 |              | <b>16</b>                  | <b>62</b>   | <b>78</b>              |                |               |  |  |  |  |  |
|                                      |        |     |                 |       |     |                  |                 |              | <b>potential reduction</b> | <b>-29%</b> |                        |                |               |  |  |  |  |  |

## Summary of Current Water Use and Potential Water Savings Fairgrounds - CSU Ext.

| Maximum Use Potential Savings |        |  |                 |          |                   |                  |  |                                     |                                    |                      |  |  |                           |  |
|-------------------------------|--------|--|-----------------|----------|-------------------|------------------|--|-------------------------------------|------------------------------------|----------------------|--|--|---------------------------|--|
|                               | number | hot  | per use<br>cold | total    |                   | uses/day/fixture | hot                                    | subtotal gpd                        |                                    |                      |  |  |                           |  |
|                               |        |  |                 |          |                   |                  |  | cold                                | total                              |                      |  |  |                           |  |
| <b>Toilets (tanks)</b>        | 5      | -  | 1.28            | 1.28     | gpf               |                  | -                                      | 29                                  | 29                                 | -                    |  | 7  | 7                         |  |
| <b>Upstairs</b>               |        |  |                 |          |                   |                  |  |                                     |                                    |                      |  |  |                           |  |
| Mens                          | 1      | -  | 1.28            | 1.28     | gpf               | 8 flushes        | -                                      | 10                                  | 10                                 | -                    |  | 3  | 3                         |  |
| Womens                        | 1      | -  | 1.28            | 1.28     | gpf               | 15 flushes       | -                                      | 19                                  | 19                                 | -                    |  | 5  | 5                         |  |
| <b>Downstairs</b>             |        |  |                 |          |                   |                  |  |                                     |                                    |                      |  |  |                           |  |
| Mens                          | 1      | -  | 1.28            | 1.28     | gpf               | 12 flushes       | -                                      | 15                                  | 15                                 | -                    |  | 4  | 4                         |  |
| Womens                        | 2      | -  | 1.28            | 1.28     | gpf               | 12 flushes       | -                                      | 31                                  | 31                                 | -                    |  | 8  | 8                         |  |
|                               |        |  |                 |          |                   | 23               | Total Flushes                          |                                     |                                    |                      |  |  |                           |  |
| <b>Urinals</b>                | 2      | -  | -               | -        | gpf               |                  | -                                      | -                                   | -                                  | -                    |  | 60   | 60                        |  |
| Mens                          | 2      | -  | -               | -        | gpf               | 20 flushes       | -                                      | -                                   | -                                  | -                    |  | 60   | 60                        |  |
|                               |        |  |                 |          |                   | 20               | Total Flushes                          |                                     |                                    |                      |  |  |                           |  |
| <b>Sinks</b>                  | 6      | 0.4  | 0.8             | 1.3      | gpm               |                  | 31                                     | 58                                  | 90                                 | -                    |  | -  | -                         |  |
| Mens                          | 2      | 0.2  | 0.3             | 0.5      | gpm               | 11 minutes       | 4                                      | 7                                   | 11                                 | -                    |  | -  | -                         |  |
| Womens                        | 2      | 0.2  | 0.3             | 0.5      | gpm               | 7 minutes        | 2                                      | 4                                   | 7                                  | -                    |  | -  | -                         |  |
| Galley/Kitchen                | 2      | 1.0  | 1.8             | 2.8      | gpm               | 13 minutes       | 25                                     | 47                                  | 73                                 | -                    |  | -  | -                         |  |
|                               |        |  |                 |          |                   | 174              | Total Sink Uses                        |                                     |                                    |                      |  |  |                           |  |
| <b>Other</b>                  |        |  |                 |          |                   |                  |  |                                     |                                    |                      |  |  |                           |  |
| Drinking Fountain             | 1      | -  | 0.1             | 0.1      | gpd               | 1                | -                                      | 0.1                                 | 0.1                                | -                    |  | -  | -                         |  |
| Mop Sink                      | 2      | -  | 0.3             | 0.3      | gpd               | 1                | -                                      | 0.7                                 | 0.7                                | -                    |  | -  | -                         |  |
| Ice Maker (refrigerator)      | 1      | -  | 0.4             | 0.4      | gpd               | 1                | -                                      | 0.4                                 | 0.4                                | -                    |  | -  | -                         |  |
|                               |        |  |                 |          |                   |                  |  | 31                                  | 89                                 | 120                  |  |  |                           |  |
|                               |        |  |                 |          |                   |                  |  | <b>potential reduction</b>          |                                    | <b>-36%</b>          |  |  |                           |  |
| <b>Costs to Implement</b>     |        |  |                 |          |                   |                  |  |                                     |                                    |                      |  |  |                           |  |
|                               |        | <b>Cost</b>                                      |                 |          |                   |                  |  |                                     |                                    |                      |  |  |                           |  |
|                               | number | Hardware   | Installation    | Total    | Payback<br>Period |                  | Annual<br>Energy<br>Savings<br>(kw-hr) | Annual<br>Energy<br>Savings<br>(\$) | Annual<br>Water<br>Savings<br>(\$) | Acre-Feet<br>Savings | Cost of<br>Alternative<br>Water Supply | Annual Cost<br>of<br>Treatment,<br>Delivery,<br>Wastewater | Cost per AF<br>of Savings |  |
| Toilets                       | 5      | \$ 210   | \$ -            | \$ 1,050 | 69.9 yrs          |                  | -                                      | \$ -                                | \$ 15                              | 0.01                 | \$ 215                                 | \$ 24  | \$ 170,901                |  |
| Urinals                       | 2      | \$ 185   | \$ -            | \$ 370   | 7.9 yrs           |                  | -                                      | \$ -                                | \$ 47                              | 0.02                 | \$ 672                                 | \$ 75  | \$ 19,271                 |  |
|                               |        |  |                 | \$ 1,420 |                   |                  |  |                                     |                                    | 0.03                 | \$ 887                                 | \$ 99  |                           |  |
|                               |        | Cost of Alternative Water Supply                 |                 |          | \$ 887            |                  |  |                                     |                                    |                      |  |  |                           |  |
|                               |        | Annual Cost of Treatment, Delivery, Augmentation |                 |          | \$ 99             |                  |  |                                     |                                    |                      |  |  |                           |  |

Events Center Water Use and Budget 2007-2008



## Summary of Current Water Use and Potential Water Savings Fairgrounds - Events Center

| Average Use Calculations                        |        |     |                 |       |     |                  |                 |              |       |     |
|---|--------|-----|-----------------|-------|-----|------------------|-----------------|--------------|-------|-----|
|   | number | hot | per use<br>cold | total |     | uses/day/fixture | hot             | subtotal gpd |       |     |
|   |        |     |                 |       |     |                  |                 | cold         | total |     |
| <b>Toilets (flushing values)</b>                | 41     | -   | 1.6             | 1.6   | gpf |                  | -               | 1,024        | 1,024 |     |
| <b>Office</b>                                   |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 1      | -   | 1.6             | 1.6   | gpf | 8 flushes        | -               | 13           | 13    |     |
| Womens  | 1      | -   | 1.6             | 1.6   | gpf | 16 flushes       | -               | 26           | 26    |     |
| <b>Front</b>                                    |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 4      | -   | 1.6             | 1.6   | gpf | 25 flushes       | -               | 160          | 160   |     |
| Womens  | 12     | -   | 1.6             | 1.6   | gpf | 20 flushes       | -               | 384          | 384   |     |
| <b>Event Hall</b>                               |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 6      | -   | 1.6             | 1.6   | gpf | 12 flushes       | -               | 115          | 115   |     |
| Womens  | 16     | -   | 1.6             | 1.6   | gpf | 12 flushes       | -               | 307          | 307   |     |
| <b>Kitchen</b>                                  |        |     |                 |       |     |                  |                 |              |       |     |
| Unisex  | 1      | -   | 1.6             | 1.6   | gpf | 12 flushes       | -               | 19           | 19    |     |
|   |        |     |                 |       |     | 640              | Total Flushes   |              |       |     |
| <b>Urinals</b>                                  | 11     | -   | 1.0             | 1.0   | gpf |                  | -               | 258          | 258   |     |
| <b>Office</b>                                   |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 1      | -   | 1.0             | 1.0   | gpf | 8 flushes        | -               | 8            | 8     |     |
| <b>Front</b>                                    |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 6      | -   | 1.0             | 1.0   | gpf | 25 flushes       | -               | 150          | 150   |     |
| <b>Event Hall</b>                               |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 4      | -   | 1.0             | 1.0   | gpf | 25 flushes       | -               | 100          | 100   |     |
|   |        |     |                 |       |     | 258              | Total Flushes   |              |       |     |
| <b>Bathroom/Wash Sinks</b>                      | 24     | 0.8 | 1.5             | 2.3   | gpm |                  |                 | 192          | 357   | 550 |
| <b>Office (auto)</b>                            |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 1      | 1.1 | 2.0             | 3.0   | gpm | 4.0 minutes      | 4               | 8            | 12    |     |
| Womens  | 1      | 0.9 | 1.6             | 2.5   | gpm | 4.0 minutes      | 4               | 7            | 10    |     |
| <b>Front (auto)</b>                             |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 4      | 1.1 | 2.0             | 3.0   | gpm | 15.6 minutes     | 66              | 122          | 188   |     |
| Womens  | 4      | 0.9 | 1.8             | 2.7   | gpm | 15.0 minutes     | 57              | 105          | 162   |     |
| <b>Event Hall (auto except performers bath)</b> |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 5      | 0.6 | 1.1             | 1.7   | gpm | 8.6 minutes      | 26              | 48           | 73    |     |
| Womens  | 5      | 0.7 | 1.4             | 2.1   | gpm | 9.6 minutes      | 35              | 66           | 101   |     |
| <b>Kitchen (auto in bath)</b>                   |        |     |                 |       |     |                  |                 |              |       |     |
| Unisex Bath                                     | 1      | 0.2 | 0.3             | 0.5   | gpm | 3.0 minutes      | 0.5             | 1.0          | 1.5   |     |
| Handwash in Kitchen                             | 3      | 1.1 | 2.0             | 3.0   | gpm | 0.3 minutes      | 1.1             | 2.0          | 3.0   |     |
|   |        |     |                 |       |     | 1,074            | Total Sink Uses |              |       |     |
| <b>Showers</b>                                  | 8      | 2.3 | 0.8             | 3.1   | gpm |                  |                 | 54           | 18    | 72  |
| <b>Front</b>                                    |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 3      | 2.3 | 0.8             | 3.0   | gpm | - minutes        | -               | -            | -     |     |
| Womens  | 3      | 2.4 | 0.8             | 3.2   | gpm | - minutes        | -               | -            | -     |     |
| <b>Event Hall (performers rooms)</b>            |        |     |                 |       |     |                  |                 |              |       |     |
| Mens  | 1      | 2.3 | 0.8             | 3.0   | gpm | 12 minutes       | 27              | 9            | 36    |     |
| Womens  | 1      | 2.3 | 0.8             | 3.0   | gpm | 12 minutes       | 27              | 9            | 36    |     |
| <b>Event Center Kitchen</b>                     |        |     |                 |       |     |                  |                 |              |       |     |
| Pot and Prep Sinks                              | 8      | 2.8 | 0.9             | 3.7   | gpm | 15 minutes       | 332             | 111          | 443   |     |



## Summary of Current Water Use and Potential Water Savings Fairgrounds - Events Center

|   |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
|---|----|-----|-------|-------|-----|-------|-----------------|-----------------|--------------|------------------------|----------------|--|--|
| Mens  | 4  | -   | 1.0   | 1.0   | gpf | 50    | flushes         | -               | 200          | 200                    |                |  |  |
|   |    |     |       |       |     | 508   | Total Flushes   |                 |              |                        |                |  |  |
| <b>Bathroom/Wash Sinks</b>                      | 24 | 0.8 | 1.5   | 2.3   | gpm |       |                 | 301             | 559          | 859                    |                |  |  |
| <b>Office (auto)</b>                            |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
| Mens  | 1  | 1.1 | 2.0   | 3.0   | gpm | 4.0   | minutes         | 4               | 8            | 12                     |                |  |  |
| Womens  | 1  | 0.9 | 1.6   | 2.5   | gpm | 4.0   | minutes         | 4               | 7            | 10                     |                |  |  |
| <b>Front (auto)</b>                             |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
| Mens  | 4  | 1.1 | 2.0   | 3.0   | gpm | 25.0  | minutes         | 105             | 195          | 300                    |                |  |  |
| Womens  | 4  | 0.9 | 1.8   | 2.7   | gpm | 26.3  | minutes         | 99              | 184          | 284                    |                |  |  |
| <b>Event Hall (auto except performers bath)</b> |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
| Mens  | 5  | 0.6 | 1.1   | 1.7   | gpm | 14.5  | minutes         | 43              | 80           | 123                    |                |  |  |
| Womens  | 5  | 0.7 | 1.4   | 2.1   | gpm | 12.0  | minutes         | 44              | 82           | 126                    |                |  |  |
| <b>Kitchen (auto in bath)</b>                   |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
| Unisex Bath                                     | 1  | 0.2 | 0.3   | 0.5   | gpm | 3.0   | minutes         | 0.5             | 1.0          | 1.5                    |                |  |  |
| Handwash in Kitchen                             | 3  | 1.1 | 2.0   | 3.0   | gpm | 0.3   | minutes         | 1.1             | 2.0          | 3.0                    |                |  |  |
|   |    |     |       |       |     | 1,688 | Total Sink Uses |                 |              |                        |                |  |  |
| <b>Showers</b>                                  | 8  | 2.3 | 0.8   | 3.1   | gpm |       |                 | 90              | 30           | 120                    |                |  |  |
| <b>Front</b>                                    |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
| Mens  | 3  | 2.3 | 0.8   | 3.0   | gpm | -     | minutes         | -               | -            | -                      |                |  |  |
| Womens  | 3  | 2.4 | 0.8   | 3.2   | gpm | -     | minutes         | -               | -            | -                      |                |  |  |
| <b>Event Hall (performers rooms)</b>            |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
| Mens  | 1  | 2.3 | 0.8   | 3.0   | gpm | 20    | minutes         | 45              | 15           | 60                     |                |  |  |
| Womens  | 1  | 2.3 | 0.8   | 3.0   | gpm | 20    | minutes         | 45              | 15           | 60                     |                |  |  |
| <b>Event Center Kitchen</b>                     |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
| Pot and Prep Sinks                              | 8  | 2.8 | 0.9   | 3.7   | gpm | 25    | minutes         | 553             | 184          | 738                    |                |  |  |
| Coffee Maker (Bunn Model CWTF15/American Met    | 2  | -   | 1.5   | 1.5   | gpm | 7     |                 | -               | 21           | 21                     |                |  |  |
| Ice Machine (Scotsman #CME506AS)                | 1  | -   | 23.0  | 23.0  | gpd | 2     |                 | -               | 46           | 46                     |                |  |  |
| Cleveland Steamers/Steam Tables                 | 7  | -   | 5.0   | 5.0   | gpd | 2.5   |                 | -               | 88           | 88                     |                |  |  |
| Dishwasher (Hobart C46A)                        | 1  | -   | 125.0 | 125.0 | gph | 3     | hours           | -               | 375          | 375                    |                |  |  |
| Gridder (Insinkerator #SS300-25)                | 1  | -   | 8.0   | 8.0   | gpm | 90    | minutes         | -               | 720          | 720                    |                |  |  |
| <b>Office Kitchen</b>                           |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
| Ice Maker (refrigerator)                        | 1  | -   | 0.3   | 0.3   | gpd | 1     |                 | -               | 0.3          | 0.3                    |                |  |  |
| Coffee Machine                                  | 1  | -   | 0.5   | 0.5   | gpl | 2     |                 | -               | 1.0          | 1.0                    |                |  |  |
| Dishwasher (Hotpoint HAD 3420Z00BB)             | 1  | -   | 12.0  | 12.0  | gpl | 0.5   |                 | -               | 6            | 6                      |                |  |  |
| Sink  | 1  | -   | 4.0   | 4.0   | gpm | 8     | minutes         | -               | 32           | 32                     |                |  |  |
| <b>Yard Spigots</b>                             |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
| Outdoor   | 2  | -   | 5.0   | 5.0   | gpm | 6     | minutes         | -               | 60           | 60                     |                |  |  |
| Indoor  | 3  | -   | 5.0   | 5.0   | gpm | 6     | minutes         | -               | 90           | 90                     |                |  |  |
| <b>Other</b>                                    |    |     |       |       |     |       |                 |                 |              |                        |                |  |  |
| Drinking Fountains                              | 5  | -   | 0.1   | 0.1   | gpd | 3     |                 | -               | 2            | 2                      |                |  |  |
| Mop Sinks                                       | 4  | -   | 2.5   | 2.5   | gpd | 2     |                 | -               | 20           | 20                     |                |  |  |
| First Aid Sink                                  | 1  | 1.1 | 2.0   | 3.0   | gpm | 1     | minutes         | 1.1             | 2.0          | 3.0                    |                |  |  |
| Air Coolers (Events Center) DG-270              | 4  | -   | 50.0  | 50.0  | gph | 11    | hours           | -               | 2,166        | 2,166                  |                |  |  |
| Air Coolers (Kitchen and Office) DJ-100         | 2  | -   | 13.6  | 13.6  | gph | 9     | hours           | -               | 255          | 255                    |                |  |  |
|   |    |     |       |       |     |       |                 | <b>945</b>      | <b>6,581</b> | <b>7,526</b>           | <b>max day</b> |  |  |
|   |    |     |       |       |     |       |                 | <b>observed</b> | <b>7,535</b> | <b>average max day</b> |                |  |  |

## Summary of Current Water Use and Potential Water Savings Fairgrounds - Events Center

|   |        |     |                 |       |     |                  |                 |      |       | observed     | 162,000 | max month   |  |  |
|---|--------|-----|-----------------|-------|-----|------------------|-----------------|------|-------|--------------|---------|-------------|--|--|
|   |        |     |                 |       |     |                  |                 |      |       |              | 12      | days at max |  |  |
|   |        |     |                 |       |     |                  |                 |      |       | observed     | 4,240   | aver day    |  |  |
|   |        |     |                 |       |     |                  |                 |      |       | observed     | 91,167  | aver month  |  |  |
| <b>Average Use Potential Savings</b>            |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
|   |        |     |                 |       |     |                  |                 |      |       | subtotal gpd |         |             |  |  |
|   | number | hot | per use<br>cold | total |     | uses/day/fixture | hot             | cold | total |              |         |             |  |  |
| <b>Toilets (flushing values)</b>                | 41     | -   | 1.28            | 1.28  | gpf |                  | -               | 819  | 819   | -            | 205     | 205         |  |  |
| <b>Office</b>                                   |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Mens  | 1      | -   | 1.28            | 1.28  | gpf | 8 flushes        | -               | 10   | 10    | -            | 3       | 3           |  |  |
| Womens  | 1      | -   | 1.28            | 1.28  | gpf | 16 flushes       | -               | 20   | 20    | -            | 5       | 5           |  |  |
| <b>Front</b>                                    |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Mens  | 4      | -   | 1.28            | 1.28  | gpf | 25 flushes       | -               | 128  | 128   | -            | 32      | 32          |  |  |
| Womens  | 12     | -   | 1.28            | 1.28  | gpf | 20 flushes       | -               | 307  | 307   | -            | 77      | 77          |  |  |
| <b>Event Hall</b>                               |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Mens  | 6      | -   | 1.28            | 1.28  | gpf | 12 flushes       | -               | 92   | 92    | -            | 23      | 23          |  |  |
| Womens  | 16     | -   | 1.28            | 1.28  | gpf | 12 flushes       | -               | 246  | 246   | -            | 61      | 61          |  |  |
| <b>Kitchen</b>                                  |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Unisex  | 1      | -   | 1.28            | 1.28  | gpf | 12 flushes       | -               | 15   | 15    | -            | 4       | 4           |  |  |
|   |        |     |                 |       |     | 640              | Total Flushes   |      |       |              |         |             |  |  |
| <b>Urinals</b>                                  | 11     | -   | -               | -     | gpf |                  | -               | -    | -     | -            | 258     | 258         |  |  |
| <b>Office</b>                                   |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Mens  | 1      | -   | -               | -     | gpf | 8 flushes        | -               | -    | -     | -            | 8       | 8           |  |  |
| <b>Front</b>                                    |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Mens  | 6      | -   | -               | -     | gpf | 25 flushes       | -               | -    | -     | -            | 150     | 150         |  |  |
| <b>Event Hall</b>                               |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Mens  | 4      | -   | -               | -     | gpf | 25 flushes       | -               | -    | -     | -            | 100     | 100         |  |  |
|   |        |     |                 |       |     | 258              | Total Flushes   |      |       |              |         |             |  |  |
| <b>Bathroom/Wash Sinks</b>                      | 24     | 0.2 | 0.3             | 0.5   | gpm |                  | 39              | 73   | 113   | 153          | 284     | 437         |  |  |
| <b>Office (auto)</b>                            |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Mens  | 1      | 0.2 | 0.3             | 0.5   | gpm | 4.0 minutes      | 0.7             | 1.3  | 2.0   | 3.5          | 6.5     | 10.0        |  |  |
| Womens  | 1      | 0.2 | 0.3             | 0.5   | gpm | 4.0 minutes      | 0.7             | 1.3  | 2.0   | 2.8          | 5.2     | 8.0         |  |  |
| <b>Front (auto)</b>                             |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Mens  | 4      | 0.2 | 0.3             | 0.5   | gpm | 15.6 minutes     | 11              | 20   | 31    | 55           | 102     | 156         |  |  |
| Womens  | 4      | 0.2 | 0.3             | 0.5   | gpm | 15.0 minutes     | 11              | 20   | 30    | 46           | 86      | 132         |  |  |
| <b>Event Hall (auto except performers bath)</b> |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Mens  | 5      | 0.2 | 0.3             | 0.5   | gpm | 8.6 minutes      | 8               | 14   | 22    | 18           | 34      | 52          |  |  |
| Womens  | 5      | 0.2 | 0.3             | 0.5   | gpm | 9.6 minutes      | 8               | 16   | 24    | 27           | 50      | 77          |  |  |
| <b>Kitchen (auto in bath)</b>                   |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Unisex Bath                                     | 1      | 0.2 | 0.3             | 0.5   | gpm | 3.0 minutes      | 0.5             | 1.0  | 1.5   | -            | -       | -           |  |  |
| Handwash in Kitchen                             | 3      | 0.2 | 0.3             | 0.5   | gpm | 0.3 minutes      | 0.2             | 0.3  | 0.5   | 0.9          | 1.6     | 2.5         |  |  |
|   |        |     |                 |       |     | 1,074            | Total Sink Uses |      |       |              |         |             |  |  |
| <b>Showers</b>                                  | 8      | 1.7 | 0.6             | 2.3   | gpm |                  | 27              | 9    | 36    | 27           | 9       | 36          |  |  |
| <b>Front</b>                                    |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |
| Mens  | 3      | 2.3 | 0.8             | 3.0   | gpm | - minutes        | -               | -    | -     | -            | -       | -           |  |  |
| Womens  | 3      | 2.4 | 0.8             | 3.2   | gpm | - minutes        | -               | -    | -     | -            | -       | -           |  |  |
| <b>Event Hall (performers rooms)</b>            |        |     |                 |       |     |                  |                 |      |       |              |         |             |  |  |

## Summary of Current Water Use and Potential Water Savings Fairgrounds - Events Center

|  |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
|--|--------|-----|---------|-------|-----|------------------|---------------|----------------------------|--------------|--------------|----|-----|-----|
| Mens   | 1      | 1.1 | 0.4     | 1.5   | gpm | 12               | minutes       | 14                         | 5            | 18           | 14 | 5   | 18  |
| Womens                                       | 1      | 1.1 | 0.4     | 1.5   | gpm | 12               | minutes       | 14                         | 5            | 18           | 14 | 5   | 18  |
| <b>Event Center Kitchen</b>                  |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
| Pot and Prep Sinks                           | 8      | 2.8 | 0.9     | 3.7   | gpm | 15               | minutes       | 332                        | 111          | 443          | -  | -   | -   |
| Coffee Maker (Bunn Model CWTF15/American Met | 2      | -   | 1.5     | 1.5   | gpm | 4                |               | -                          | 12           | 12           | -  | -   | -   |
| Ice Machine (Scotsman #CME506AS)             | 1      | -   | 23.0    | 23.0  | gpd | 1                |               | -                          | 23           | 23           | -  | -   | -   |
| Cleveland Steamers/Steam Tables              | 7      | -   | 5.0     | 5.0   | gpd | 2                |               | -                          | 70           | 70           | -  | -   | -   |
| Dishwasher (Hobart C46A)                     | 1      | -   | 125.0   | 125.0 | gph | 3                | hours         | -                          | 313          | 313          | -  | -   | -   |
| Gridder (Insinkerator #SS300-25)             | 1      | -   | 8.0     | 8.0   | gpm | 60               | minutes       | -                          | 480          | 480          | -  | -   | -   |
| <b>Office Kitchen</b>                        |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
| Ice Maker (refrigerator)                     | 1      | -   | 0.3     | 0.3   | gpd | 1                |               | -                          | 0.3          | 0.3          | -  | -   | -   |
| Coffee Machine                               | 1      | -   | 0.5     | 0.5   | gpl | 2                |               | -                          | 1.0          | 1.0          | -  | -   | -   |
| Dishwasher (Hotpoint HAD 3420Z00BB)          | 1      | -   | 12.0    | 12.0  | gpl | 0.5              | minutes       | -                          | 6            | 6            | -  | -   | -   |
| Sink   | 1      | -   | 4.0     | 4.0   | gpm | 8                | minutes       | -                          | 32           | 32           | -  | -   | -   |
| <b>Yard Spigots</b>                          |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
| Outdoor                                      | 2      | -   | 5.0     | 5.0   | gpm | 8                | minutes       | -                          | 80           | 80           | -  | -   | -   |
| Indoor                                       | 3      | -   | 5.0     | 5.0   | gpm | 8                | minutes       | -                          | 120          | 120          | -  | -   | -   |
| <b>Other</b>                                 |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
| Drinking Fountains                           | 5      | -   | 0.1     | 0.1   | gpd | 3                |               | -                          | 2            | 2            | -  | -   | -   |
| Mop Sinks                                    | 4      | -   | 2.5     | 2.5   | gpd | 1                |               | -                          | 10           | 10           | -  | -   | -   |
| First Aid Sink                               | 1      | 1.1 | 2.0     | 3.0   | gpm | 1                | minutes       | 1.1                        | 2.0          | 3.0          | -  | -   | -   |
| Air Coolers (Events Center) DG-270           | 4      | -   | 50.0    | 50.0  | gph | 3                | hours         | -                          | 552          | 552          | -  | -   | -   |
| Air Coolers (Kitchen and Office) DJ-100      | 2      | -   | 13.6    | 13.6  | gph | 7                | hours         | -                          | 193          | 193          | -  | -   | -   |
|  |        |     |         |       |     |                  |               | <b>399</b>                 | <b>2,908</b> | <b>3,307</b> |    |     |     |
|  |        |     |         |       |     |                  |               | <b>potential reduction</b> |              | <b>-22%</b>  |    |     |     |
| <b>Maximum Use Potential Savings</b>         |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
|  |        |     | per use |       |     |                  |               |                            |              | subtotal gpd |    |     |     |
|  | number | hot | cold    | total |     | uses/day/fixture |               | hot                        | cold         | total        |    |     |     |
| <b>Toilets (flushing values)</b>             | 41     | -   | 1.3     | 1.3   | gpf |                  |               | -                          | 1,134        | 1,134        | -  | 284 | 284 |
| <b>Office</b>                                |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
| Mens   | 1      | -   | 1.3     | 1.3   | gpf | 8                | flushes       | -                          | 10           | 10           | -  | 3   | 3   |
| Womens                                       | 1      | -   | 1.3     | 1.3   | gpf | 16               | flushes       | -                          | 20           | 20           | -  | 5   | 5   |
| <b>Front</b>                                 |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
| Mens   | 4      | -   | 1.3     | 1.3   | gpf | 25               | flushes       | -                          | 128          | 128          | -  | 32  | 32  |
| Womens                                       | 12     | -   | 1.3     | 1.3   | gpf | 35               | flushes       | -                          | 538          | 538          | -  | 134 | 134 |
| <b>Event Hall</b>                            |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
| Mens   | 6      | -   | 1.3     | 1.3   | gpf | 15               | flushes       | -                          | 115          | 115          | -  | 29  | 29  |
| Womens                                       | 16     | -   | 1.3     | 1.3   | gpf | 15               | flushes       | -                          | 307          | 307          | -  | 77  | 77  |
| <b>Kitchen</b>                               |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
| Unisex                                       | 1      | -   | 1.3     | 1.3   | gpf | 12               | flushes       | -                          | 15           | 15           | -  | 4   | 4   |
|  |        |     |         | 1.3   |     | 886              | Total Flushes |                            |              |              |    |     |     |
| <b>Urinals</b>                               |        |     |         |       |     |                  |               |                            |              |              |    |     |     |
| Office                                       | 11     | -   | -       | -     | gpf |                  |               | -                          | 0            | 0            | -  | 508 | 508 |
| Mens   | 1      | -   | -       | -     | gpf | 8                | flushes       | -                          | -            | -            | -  | 8   | 8   |
| <b>Front</b>                                 |        |     |         |       |     |                  |               |                            |              |              |    |     |     |

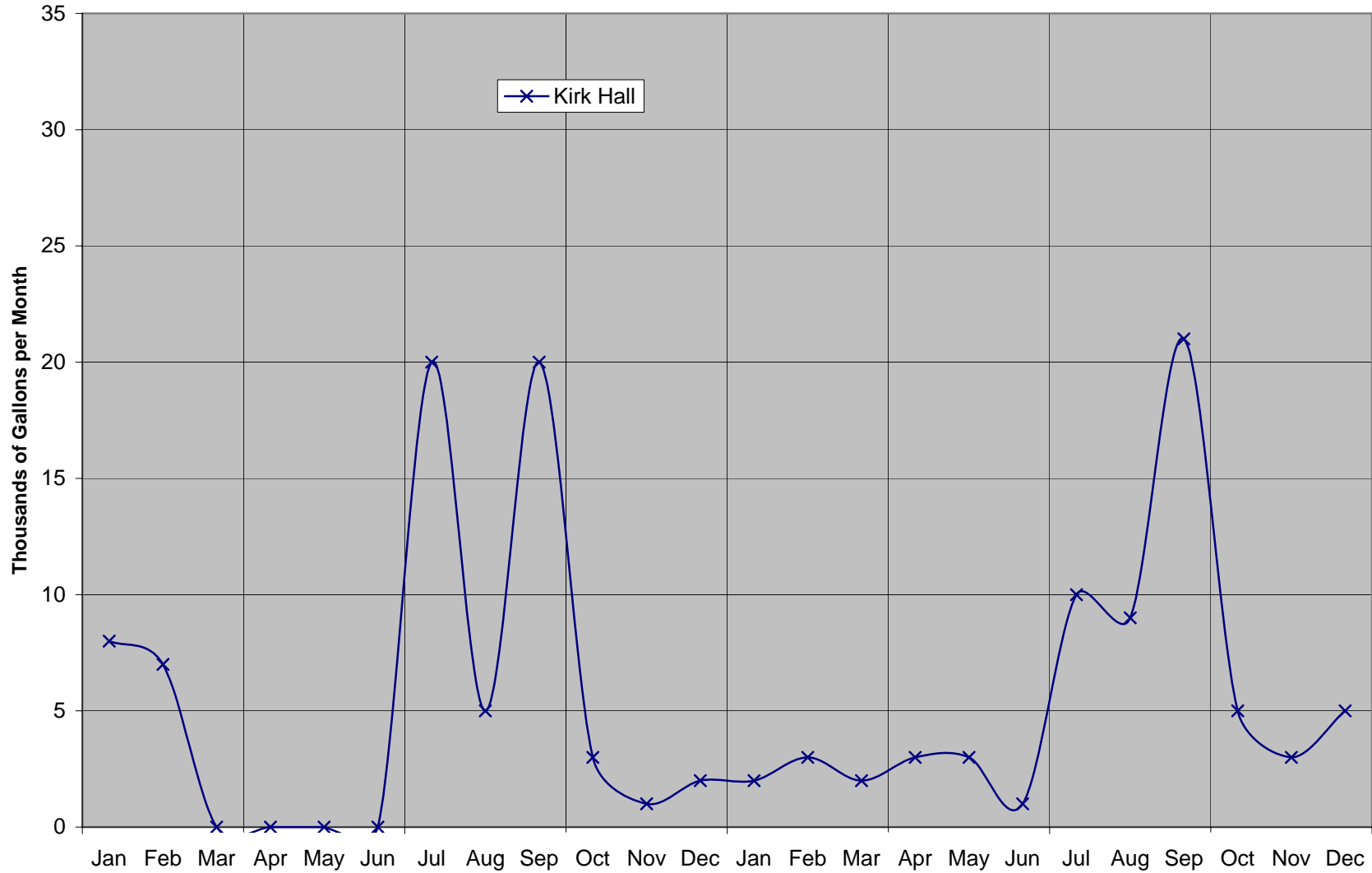
## Summary of Current Water Use and Potential Water Savings Fairgrounds - Events Center

|   |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|---|--|----|-----|-------|-------|-----|-------|-----------------|-----|-------|-------|-----|-----|-----|
|   | Mens   | 6  | -   | -     | -     | gpf | 50    | flushes         | -   | -     | -     | -   | 300 | 300 |
| <b>Event Hall</b>                               |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Mens   | 4  | -   | -     | -     | gpf | 50    | flushes         | -   | -     | -     | -   | 200 | 200 |
|   |  |    |     |       |       |     | 508   | Total Flushes   |     |       |       |     |     |     |
| <b>Bathroom/Wash Sinks</b>                      |  | 24 | 0.2 | 0.3   | 0.5   | gpm |       |                 | 61  | 114   | 175   | 240 | 445 | 685 |
| <b>Office (auto)</b>                            |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Mens   | 1  | 0.2 | 0.3   | 0.5   | gpm | 4.0   | minutes         | 1   | 1     | 2     | 4   | 7   | 10  |
|   | Womens                                       | 1  | 0.2 | 0.3   | 0.5   | gpm | 4.0   | minutes         | 1   | 1     | 2     | 3   | 5   | 8   |
| <b>Front (auto)</b>                             |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Mens   | 4  | 0.2 | 0.3   | 0.5   | gpm | 25.0  | minutes         | 18  | 33    | 50    | 88  | 163 | 250 |
|   | Womens                                       | 4  | 0.2 | 0.3   | 0.5   | gpm | 26.3  | minutes         | 18  | 34    | 53    | 81  | 150 | 231 |
| <b>Event Hall (auto except performers bath)</b> |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Mens   | 5  | 0.2 | 0.3   | 0.5   | gpm | 14.5  | minutes         | 13  | 24    | 36    | 30  | 57  | 87  |
|   | Womens                                       | 5  | 0.2 | 0.3   | 0.5   | gpm | 12.0  | minutes         | 11  | 20    | 30    | 34  | 62  | 96  |
| <b>Kitchen (auto in bath)</b>                   |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Unisex Bath                                  | 1  | 0.2 | 0.3   | 0.5   | gpm | 3.0   | minutes         | 1   | 1     | 2     | -   | -   | -   |
|   | Handwash in Kitchen                          | 3  | 0.2 | 0.3   | 0.5   | gpm | 0.3   | minutes         | 0   | 0     | 1     | 1   | 2   | 3   |
|   |  |    |     |       |       |     | 1,688 | Total Sink Uses |     |       |       |     |     |     |
| <b>Showers</b>                                  |  | 8  | 1.7 | 0.6   | 2.3   | gpm |       |                 | 45  | 15    | 60    | 45  | 15  | 60  |
| <b>Front</b>                                    |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Mens   | 3  | 2.3 | 0.8   | 3.0   | gpm | -     | minutes         | -   | -     | -     | -   | -   | -   |
|   | Womens                                       | 3  | 2.4 | 0.8   | 3.2   | gpm | -     | minutes         | -   | -     | -     | -   | -   | -   |
| <b>Event Hall (performers rooms)</b>            |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Mens   | 1  | 1.1 | 0.4   | 1.5   | gpm | 20    | minutes         | 23  | 8     | 30    | 23  | 8   | 30  |
|   | Womens                                       | 1  | 1.1 | 0.4   | 1.5   | gpm | 20    | minutes         | 23  | 8     | 30    | 23  | 8   | 30  |
| <b>Event Center Kitchen</b>                     |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Pot and Prep Sinks                           | 8  | 2.8 | 0.9   | 3.7   | gpm | 25    | minutes         | 553 | 184   | 738   | -   | -   | -   |
|   | Coffee Maker (Bunn Model CWTF15/American Met | 2  | -   | 1.5   | 1.5   | gpm | 7     |                 | -   | 21    | 21    | -   | -   | -   |
|   | Ice Machine (Scotsman #CME506AS)             | 1  | -   | 23.0  | 23.0  | gpd | 2     |                 | -   | 46    | 46    | -   | -   | -   |
|   | Cleveland Steamers/Steam Tables              | 7  | -   | 5.0   | 5.0   | gpd | 2.5   |                 | -   | 88    | 88    | -   | -   | -   |
|   | Dishwasher (Hobart C46A)                     | 1  | -   | 125.0 | 125.0 | gph | 3     | hours           | -   | 375   | 375   | -   | -   | -   |
|   | Griddler (Insinkerator #SS300-25)            | 1  | -   | 8.0   | 8.0   | gpm | 90    | minutes         | -   | 720   | 720   | -   | -   | -   |
| <b>Office Kitchen</b>                           |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Ice Maker (refrigerator)                     | 1  | -   | 0.3   | 0.3   | gpd | 1     |                 | -   | 0     | 0     | -   | -   | -   |
|   | Coffee Machine                               | 1  | -   | 0.5   | 0.5   | gpl | 2     |                 | -   | 1     | 1     | -   | -   | -   |
|   | Dishwasher (Hotpoint HAD 3420Z00BB)          | 1  | -   | 12.0  | 12.0  | gpl | 0.5   | hours           | -   | 6     | 6     | -   | -   | -   |
|   | Sink   | 1  | -   | 4.0   | 4.0   | gpm | 8     | minutes         | -   | 32    | 32    | -   | -   | -   |
| <b>Yard Spigots</b>                             |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Outdoor                                      | 2  | -   | 5.0   | 5.0   | gpm | 6     | minutes         | -   | 60    | 60    | -   | -   | -   |
|   | Indoor                                       | 3  | -   | 5.0   | 5.0   | gpm | 6     | minutes         | -   | 90    | 90    | -   | -   | -   |
| <b>Other</b>                                    |  |    |     |       |       |     |       |                 |     |       |       |     |     |     |
|   | Drinking Fountains                           | 5  | -   | 0.1   | 0.1   | gpd | 3     |                 | -   | 2     | 2     | -   | -   | -   |
|   | Mop Sinks                                    | 4  | -   | 2.5   | 2.5   | gpd | 2     |                 | -   | 20    | 20    | -   | -   | -   |
|   | First Aid Sink                               | 1  | 1.1 | 2.0   | 3.0   | gpm | 1     | minutes         | 1   | 2     | 3     | -   | -   | -   |
|   | Air Coolers (Events Center) DG-270           | 4  | -   | 50.0  | 50.0  | gph | 11    | hours           | -   | 2,166 | 2,166 | -   | -   | -   |
|   | Air Coolers (Kitchen and Office) DJ-100      | 2  | -   | 13.6  | 13.6  | gph | 9     | hours           | -   | 255   | 255   | -   | -   | -   |

## Summary of Current Water Use and Potential Water Savings Fairgrounds - Events Center

|                           |        |  |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |  |
|---------------------------|--------|--|--------------|-----------|-------------------|-----|--|-------------------------------------|------------------------------------|----------------------|--|--|---------------------------|--|--|
|                           |        |  |              |           |                   |     |  |                                     | 660                                | 5,330                | 5,990                                  |  |                           |  |  |
|                           |        |  |              |           |                   |     |  |                                     | potential                          | reduction            | -20%                                   |  |                           |  |  |
| <b>Costs to Implement</b> |        |  |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |  |
|                           |        | <b>Cost</b>                                      |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |  |
|                           | number | Hardware   | Installation | Total     | Payback<br>Period |     | Annual<br>Energy<br>Savings<br>(kw-hr) | Annual<br>Energy<br>Savings<br>(\$) | Annual<br>Water<br>Savings<br>(\$) | Acre-Feet<br>Savings | Cost of<br>Alternative<br>Water Supply | Annual Cost<br>of<br>Treatment,<br>Delivery,<br>Wastewater | Cost per AF<br>of Savings |  |  |
| Toilets                   | 41     | \$ 285   | \$ -         | \$ 11,685 | 29.2              | yrs | -                                      | \$ -                                | \$ 400                             | 0.16                 | \$ 5,734                               | \$ 641   | \$ 71,321                 |  |  |
| Urinals                   | 11     | \$ 185   | \$ -         | \$ 2,035  | 4.0               | yrs | -                                      | \$ -                                | \$ 504                             | 0.21                 | \$ 7,224                               | \$ 807   | \$ 9,860                  |  |  |
| Sinks                     | 23     | \$ 3   | \$ -         | \$ 69     | 0.05              | yrs | 9,750                                  | \$ 634                              | \$ 855                             | 0.35                 | \$ 12,240                              | \$ 1,368   | \$ 197                    |  |  |
| Showerheads               | 6      | \$ 30  | \$ -         | \$ 180    | 1.0               | yrs | 1,721                                  | \$ 112                              | \$ 70                              | 0.03                 | \$ 1,008                               | \$ 113   | \$ 6,250                  |  |  |
|                           |        |  |              | \$ 13,789 |                   |     |  |                                     |                                    | 0.72                 | \$ 25,198                              | \$ 2,816   |                           |  |  |
|                           |        |  |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |  |
|                           |        | Cost of Alternative Water Supply                 |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |  |
|                           |        | Annual Cost of Treatment, Delivery, Augmentation |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |  |
|                           |        |  |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |  |
|                           |        |  |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |  |

Fairgrounds - Kirk Hall Water Use 2007-2008



## Summary of Current Water Use and Potential Water Savings Fairgrounds - Kirk Hall

| <b>Average Use Calculations</b>  |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
|----------------------------------|--------|-----|---------|-------|-----|---------------------|------------------|-----------------|--------------|------------------------|----------------|--|
|                                  | number | hot | per use |       |     |                     | uses/day/fixture |                 | subtotal gpd |                        |                |  |
|                                  |        |     | cold    | total |     |                     | hot              | cold            | total        |                        |                |  |
| <b>Toilets (flushing values)</b> | 9      | -   | 1.6     | 1.6   | gpf |                     | -                | 67              | 67           |                        |                |  |
| Mens                             | 3      | -   | 1.6     | 1.6   | gpf | 4 flushes           | -                | 19              | 19           |                        |                |  |
| Womens                           | 6      | -   | 1.6     | 1.6   | gpf | 5 flushes           | -                | 48              | 48           |                        |                |  |
|                                  |        |     |         |       |     | 42 Total Flushes    |                  |                 |              |                        |                |  |
| <b>Urinals</b>                   | 3      | -   | 1.5     | 1.5   | gpf |                     | -                | 72              | 72           |                        |                |  |
| Mens                             | 3      | -   | 1.5     | 1.5   | gpf | 16 flushes          | -                | 72              | 72           |                        |                |  |
|                                  |        |     |         |       |     | 16 Total Flushes    |                  |                 |              |                        |                |  |
| <b>Sinks</b>                     | 8      | 0.8 | 2.4     | 3.2   | gpm |                     | 21               | 71              | 92           |                        |                |  |
| Mens                             | 3      | 0.5 | 2.6     | 3.0   | gpm | 5.0 minutes         | 7                | 38              | 45           |                        |                |  |
| Womens                           | 3      | 0.8 | 2.3     | 3.0   | gpm | 2.5 minutes         | 6                | 17              | 23           |                        |                |  |
| Galley/Kitchen                   | 2      | 1.2 | 2.3     | 3.5   | gpm | 3.5 minutes         | 9                | 16              | 25           |                        |                |  |
|                                  |        |     |         |       |     | 84 Total Sink Uses  |                  |                 |              |                        |                |  |
| <b>Other</b>                     |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
| Drinking Fountain                | 2      | -   | 0.1     | 0.1   | gpd | 0.5                 | -                | 0.1             | 0.1          |                        |                |  |
| Mop Sink                         | 1      | -   | 0.3     | 0.3   | gpd | 0.5                 | -                | 0.2             | 0.2          |                        |                |  |
| Spigots                          | 3      | -   | 5.0     | 5.0   | gpm | 1                   | -                | 15              | 15           |                        |                |  |
| Ice Maker (Scotsman #CO322SA)    | 1      | -   | 19.0    | 19.0  | gpd | 0.5                 | -                | 9.5             | 9.5          |                        |                |  |
|                                  |        |     |         |       |     |                     |                  | <b>21</b>       | <b>235</b>   | <b>256</b>             | <b>max day</b> |  |
|                                  |        |     |         |       |     |                     |                  | <b>observed</b> | <b>930</b>   | <b>average max day</b> |                |  |
|                                  |        |     |         |       |     |                     |                  | observed        | 20,000       | max month              |                |  |
|                                  |        |     |         |       |     |                     |                  |                 | 22           | days at max            |                |  |
|                                  |        |     |         |       |     |                     |                  | observed        | 258          | aver day               |                |  |
|                                  |        |     |         |       |     |                     |                  | observed        | 5,542        | aver month             |                |  |
|                                  |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
|                                  |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
|                                  |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
|                                  |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
|                                  |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
|                                  |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
|                                  |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
|                                  |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
| <b>Maximum Water Use</b>         |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
|                                  | number | hot | per use |       |     |                     | uses/day/fixture |                 | subtotal gpd |                        |                |  |
|                                  |        |     | cold    | total |     |                     | hot              | cold            | total        |                        |                |  |
| <b>Toilets (flushing values)</b> | 9      | -   | 1.6     | 1.6   | gpf |                     | -                | 312             | 312          |                        |                |  |
| Mens                             | 3      | -   | 1.6     | 1.6   | gpf | 25 flushes          | -                | 120             | 120          |                        |                |  |
| Womens                           | 6      | -   | 1.6     | 1.6   | gpf | 20 flushes          | -                | 192             | 192          |                        |                |  |
|                                  |        |     |         |       |     | 195 Total Flushes   |                  |                 |              |                        |                |  |
| <b>Urinals</b>                   | 3      | -   | 1.5     | 1.5   | gpf |                     | -                | 108             | 108          |                        |                |  |
| Mens                             | 3      | -   | 1.5     | 1.5   | gpf | 24 flushes          | -                | 108             | 108          |                        |                |  |
|                                  |        |     |         |       |     | 24 Total Flushes    |                  |                 |              |                        |                |  |
| <b>Sinks</b>                     | 8      | 0.8 | 2.4     | 3.2   | gpm |                     | 68               | 216             | 284          |                        |                |  |
| Mens                             | 3      | 0.5 | 2.6     | 3.0   | gpm | 12 minutes          | 17               | 94              | 110          |                        |                |  |
| Womens                           | 3      | 0.8 | 2.3     | 3.0   | gpm | 10 minutes          | 23               | 68              | 90           |                        |                |  |
| Galley/Kitchen                   | 2      | 1.2 | 2.3     | 3.5   | gpm | 12 minutes          | 29               | 55              | 84           |                        |                |  |
|                                  |        |     |         |       |     | 259 Total Sink Uses |                  |                 |              |                        |                |  |
| <b>Other</b>                     |        |     |         |       |     |                     |                  |                 |              |                        |                |  |
| Drinking Fountain                | 2      | -   | 0.1     | 0.1   | gpd | 0.5                 | -                | 0.1             | 0.1          |                        |                |  |

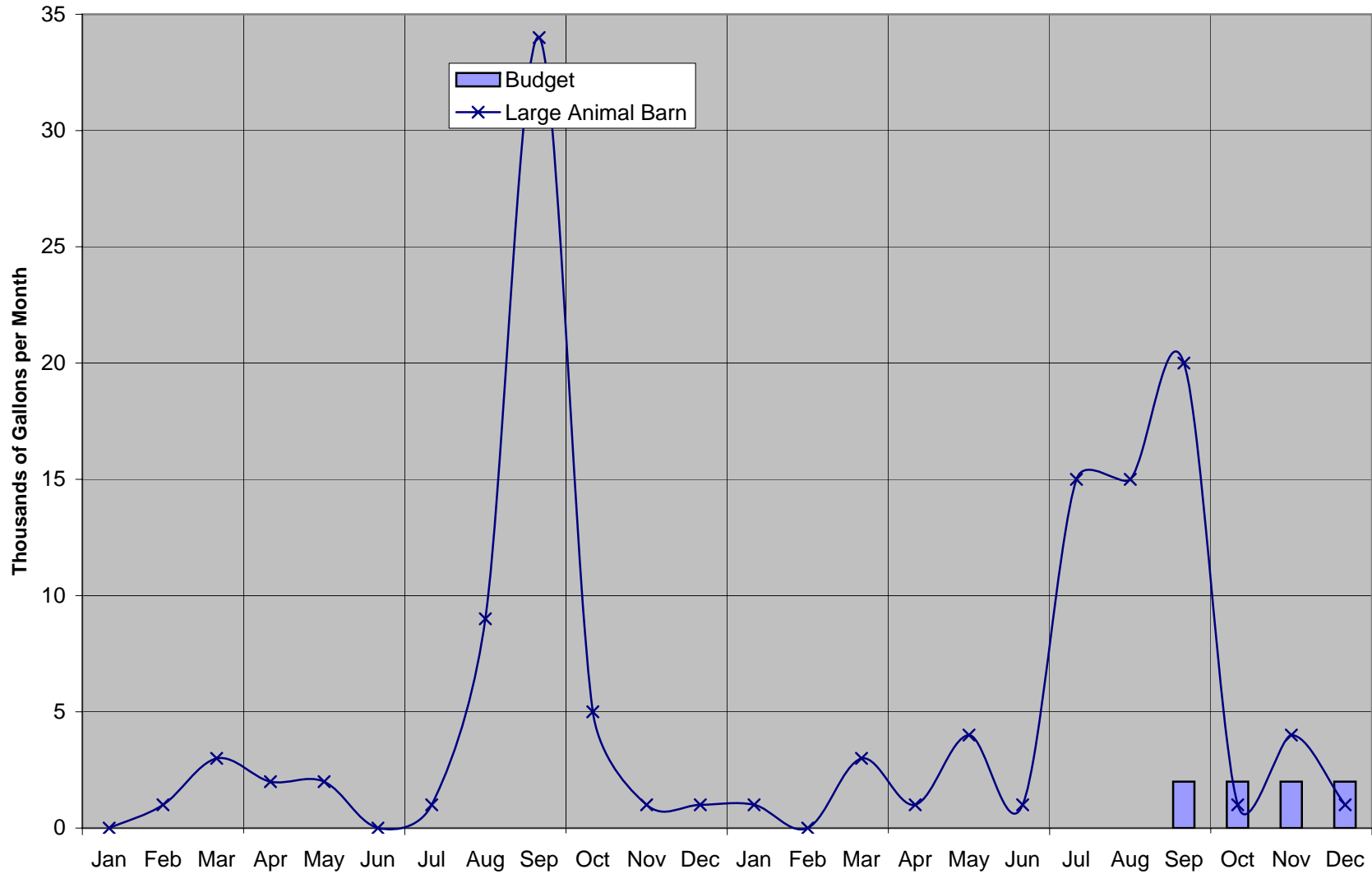
## Summary of Current Water Use and Potential Water Savings Fairgrounds - Kirk Hall

|                                      |        |     |              |       |     |                    |     |                            |             |                        |                |     |  |
|--------------------------------------|--------|-----|--------------|-------|-----|--------------------|-----|----------------------------|-------------|------------------------|----------------|-----|--|
| Mop Sink                             | 1      | -   | 0.3          | 0.3   | gpd | 2                  | -   | 0.7                        | 0.7         |                        |                |     |  |
| Spigots                              | 3      | -   | 5.0          | 5.0   | gpm | 13                 | -   | 195                        | 195         |                        |                |     |  |
| Ice Maker (Scotsman #CO322SA)        | 1      | -   | 19.0         | 19.0  | gpd | 2                  | -   | 38                         | 38          |                        |                |     |  |
|                                      |        |     |              |       |     |                    |     | <b>68</b>                  | <b>870</b>  | <b>938</b>             | <b>max day</b> |     |  |
|                                      |        |     |              |       |     |                    |     | <b>observed</b>            | <b>930</b>  | <b>average max day</b> |                |     |  |
|                                      |        |     |              |       |     |                    |     | observed                   | 20,000      | max month              |                |     |  |
|                                      |        |     |              |       |     |                    |     |                            |             | 6                      | days at max    |     |  |
|                                      |        |     |              |       |     |                    |     | observed                   | 258         | aver day               |                |     |  |
|                                      |        |     |              |       |     |                    |     | observed                   | 5,542       | aver month             |                |     |  |
| <b>Average Use Potential Savings</b> |        |     |              |       |     |                    |     |                            |             |                        |                |     |  |
|                                      |        |     |              |       |     |                    |     |                            |             |                        |                |     |  |
|                                      | number | hot | per use cold | total |     | uses/day/fixture   | hot | cold                       | total       | subtotal gpd           |                |     |  |
| <b>Toilets (flushing values)</b>     | 9      | -   | 1.28         | 1.28  | gpf |                    | -   | 54                         | 54          | -                      | 13             | 13  |  |
| Mens                                 | 3      | -   | 1.28         | 1.28  | gpf | 4 flushes          | -   | 15                         | 15          | -                      | 4              | 4   |  |
| Womens                               | 6      | -   | 1.28         | 1.28  | gpf | 5 flushes          | -   | 38                         | 38          | -                      | 10             | 10  |  |
|                                      |        |     |              |       |     | 42 Total Flushes   |     |                            |             |                        |                |     |  |
| <b>Urinals</b>                       | 3      | -   | -            | -     | gpf |                    | -   | -                          | -           | -                      | 72             | 72  |  |
| Mens                                 | 3      | -   | -            | -     | gpf | 16 flushes         | -   | -                          | -           | -                      | 72             | 72  |  |
|                                      |        |     |              |       |     | 16 Total Flushes   |     |                            |             |                        |                |     |  |
| <b>Sinks</b>                         | 8      | 0.5 | 1.0          | 1.5   | gpm |                    | 11  | 25                         | 36          | 10                     | 46             | 56  |  |
| Mens                                 | 3      | 0.1 | 0.4          | 0.5   | gpm | 5.0 minutes        | 1   | 6                          | 8           | 6                      | 32             | 38  |  |
| Womens                               | 3      | 0.1 | 0.4          | 0.5   | gpm | 2.5 minutes        | 1   | 3                          | 4           | 5                      | 14             | 19  |  |
| Galley/Kitchen                       | 2      | 1.2 | 2.3          | 3.5   | gpm | 3.5 minutes        | 9   | 16                         | 25          | -                      | -              | -   |  |
|                                      |        |     |              |       |     | 84 Total Sink Uses |     |                            |             |                        |                |     |  |
| <b>Other</b>                         |        |     |              |       |     |                    |     |                            |             |                        |                |     |  |
| Drinking Fountain                    | 2      | -   | 0.1          | 0.1   | gpd | 0.5                | 0   | 0                          | 0           | -                      | -              | -   |  |
| Mop Sink                             | 1      | -   | 0.3          | 0.3   | gpd | 0.5                | 0   | 0                          | 0           | -                      | -              | -   |  |
| Spigots                              | 3      | -   | 5.0          | 5.0   | gpm | 1                  | 0   | 15                         | 15          | -                      | -              | -   |  |
| Ice Maker (Scotsman #CO322SA)        | 1      | -   | 19.0         | 19.0  | gpd | 0.5                | 0   | 10                         | 10          | -                      | -              | -   |  |
|                                      |        |     |              |       |     |                    |     | <b>11</b>                  | <b>104</b>  | <b>114</b>             |                |     |  |
|                                      |        |     |              |       |     |                    |     | <b>potential reduction</b> | <b>-55%</b> |                        |                |     |  |
| <b>Maximum Use Potential Savings</b> |        |     |              |       |     |                    |     |                            |             |                        |                |     |  |
|                                      |        |     |              |       |     |                    |     |                            |             |                        |                |     |  |
|                                      | number | hot | per use cold | total |     | uses/day/fixture   | hot | cold                       | total       | subtotal gpd           |                |     |  |
| <b>Toilets (flushing values)</b>     | 9      | -   | 1.28         | 1.28  | gpf |                    | -   | 250                        | 250         | -                      | 62             | 62  |  |
| Mens                                 | 3      | -   | 1.28         | 1.28  | gpf | 25 flushes         | -   | 96                         | 96          | -                      | 24             | 24  |  |
| Womens                               | 6      | -   | 1.28         | 1.28  | gpf | 20 flushes         | -   | 154                        | 154         | -                      | 38             | 38  |  |
|                                      |        |     |              |       |     | 195 Total Flushes  |     |                            |             |                        |                |     |  |
| <b>Urinals</b>                       | 3      | -   | -            | -     | gpf |                    | -   | -                          | -           | -                      | 108            | 108 |  |
| Mens                                 | 3      | -   | -            | -     | gpf | 24 flushes         | -   | -                          | -           | -                      | 108            | 108 |  |
|                                      |        |     |              |       |     | 24 Total Flushes   |     |                            |             |                        |                |     |  |

## Summary of Current Water Use and Potential Water Savings Fairgrounds - Kirk Hall

|                               |        |  |              |          |                |      |                 |                               |                            |                           |                   |                                  |  |                        |
|-------------------------------|--------|--|--------------|----------|----------------|------|-----------------|-------------------------------|----------------------------|---------------------------|-------------------|----------------------------------|--|------------------------|
| <b>Sinks</b>                  | 8      | 0.5  | 1.0          | 1.5      | gpm            |      |                 | 36                            | 81                         | 117                       | 33                | 134                              | 167  |                        |
| Mens                          | 3      | 0.1  | 0.4          | 0.5      | gpm            | 12.3 | minutes         | 3                             | 16                         | 18                        | 14                | 78                               | 92   |                        |
| Womens                        | 3      | 0.1  | 0.4          | 0.5      | gpm            | 10.0 | minutes         | 4                             | 11                         | 15                        | 19                | 56                               | 75   |                        |
| Galley/Kitchen                | 2      | 1.2  | 2.3          | 3.5      | gpm            | 12.0 | minutes         | 29                            | 55                         | 84                        | -                 | -                                | -  |                        |
|                               |        |  |              |          |                | 259  | Total Sink Uses |                               |                            |                           |                   |                                  |  |                        |
| <b>Other</b>                  |        |  |              |          |                |      |                 |                               |                            |                           |                   |                                  |  |                        |
| Drinking Fountain             | 2      | -  | 0.1          | 0.1      | gpd            | 0.5  |                 | 0                             | 0                          | 0                         | -                 | -                                | -  |                        |
| Mop Sink                      | 1      | -  | 0.3          | 0.3      | gpd            | 2    |                 | 0                             | 1                          | 1                         | -                 | -                                | -  |                        |
| Spigots                       | 3      | -  | 5.0          | 5.0      | gpm            | 13   |                 | 0                             | 195                        | 195                       | -                 | -                                | -  |                        |
| Ice Maker (Scotsman #CO322SA) | 1      | -  | 19.0         | 19.0     | gpd            | 2    |                 | 0                             | 38                         | 38                        | -                 | -                                | -  |                        |
|                               |        |  |              |          |                |      |                 | <b>36</b>                     | <b>565</b>                 | <b>601</b>                |                   |                                  |  |                        |
|                               |        |  |              |          |                |      |                 | <b>potential reduction</b>    |                            | <b>-36%</b>               |                   |                                  |  |                        |
| <b>Costs to Implement</b>     |        |  |              |          |                |      |                 |                               |                            |                           |                   |                                  |  |                        |
|                               |        | <b>Cost</b>                                      |              |          |                |      |                 |                               |                            |                           |                   |                                  |  |                        |
|                               | number | Hardware   | Installation | Total    | Payback Period |      |                 | Annual Energy Savings (kw-hr) | Annual Energy Savings (\$) | Annual Water Savings (\$) | Acre-Feet Savings | Cost of Alternative Water Supply | Annual Cost of Treatment, Delivery, Wastewater | Cost per AF of Savings |
| Toilets                       | 9      | \$ 285   | \$ -         | \$ 2,565 | 69.7 yrs       |      |                 | -                             | \$ -                       | \$ 37                     | 0.01              | \$ 376                           | \$ 42  | \$ 238,564             |
| Urinals                       | 3      | \$ 185   | \$ -         | \$ 555   | 2.8 yrs        |      |                 | -                             | \$ -                       | \$ 197                    | 0.06              | \$ 2,016                         | \$ 225   | \$ 9,636               |
| Sinks                         | 6      | \$ 3   | \$ -         | \$ 18    | 0.1 yrs        |      |                 | 657                           | \$ 43                      | \$ 154                    | 0.04              | \$ 1,575                         | \$ 176   | \$ 400                 |
|                               |        |  |              | \$ 3,138 |                |      |                 |                               |                            |                           | 0.11              | \$ 3,967                         | \$ 443   |                        |
|                               |        | Cost of Alternative Water Supply                 |              |          |                |      |                 |                               |                            |                           |                   |                                  |  |                        |
|                               |        | Annual Cost of Treatment, Delivery, Augmentation |              |          |                |      |                 |                               |                            |                           |                   |                                  |  |                        |
|                               |        |  |              |          |                |      |                 |                               |                            |                           |                   |                                  |  |                        |

### Fairgrounds - Large Animal Barn Water Use and Budget 2007-2008





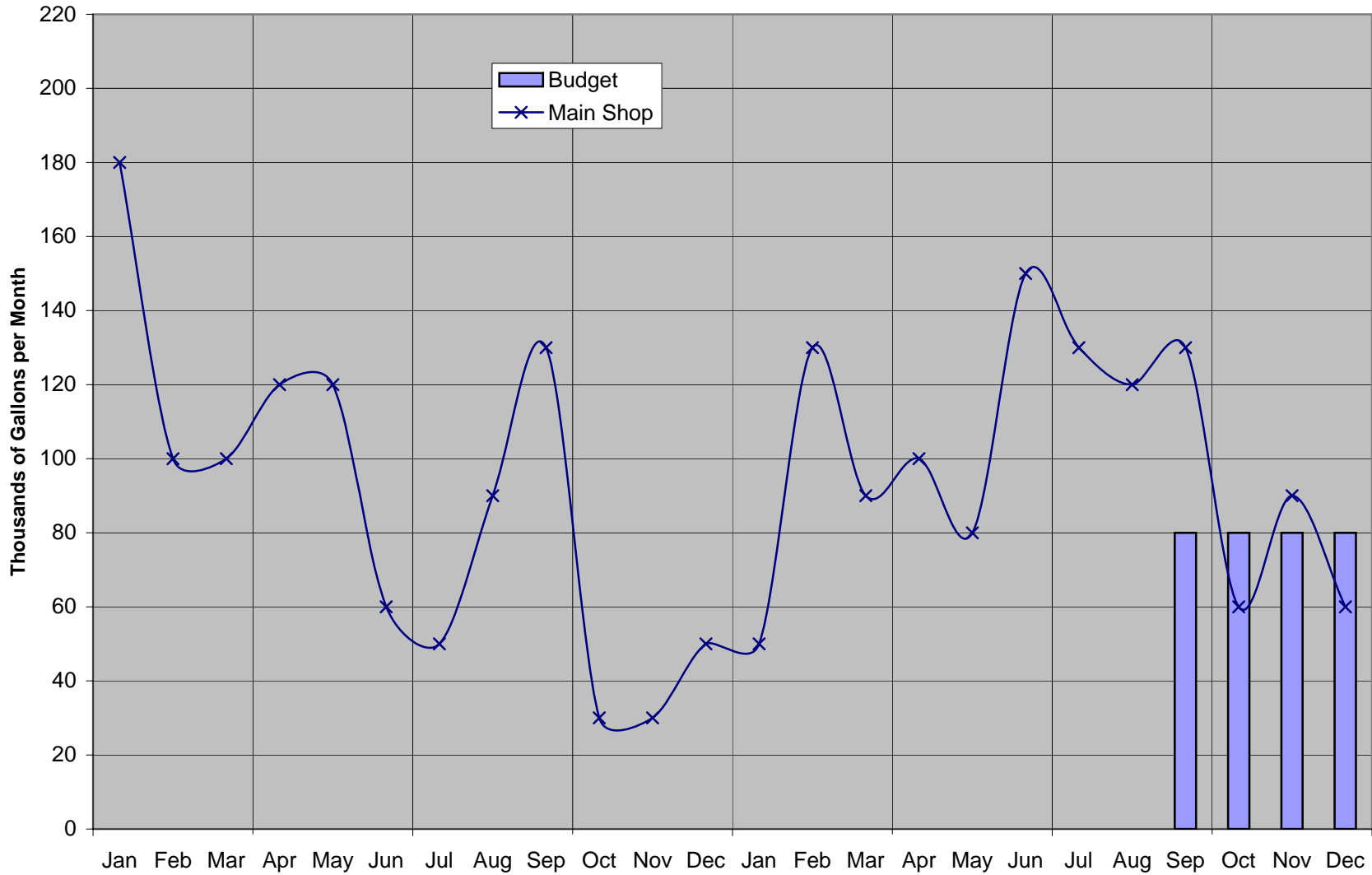
## Summary of Current Water Use and Potential Water Savings Fairgrounds - Large Animal Barn Restrooms

|                                      |                           |        |     |                 |       |     |                     |                            |            |             | observed     | 5,208 | aver month |  |  |
|--------------------------------------|---------------------------|--------|-----|-----------------|-------|-----|---------------------|----------------------------|------------|-------------|--------------|-------|------------|--|--|
| <b>Average Use Potential Savings</b> |                           |        |     |                 |       |     |                     |                            |            |             |              |       |            |  |  |
|                                      |                           | number | hot | per use<br>cold | total |     | uses/day/fixture    | hot                        | cold       | total       | subtotal gpd |       |            |  |  |
| <b>Toilets (tanks)</b>               |                           | 11     | -   | 1.28            | 1.28  | gpf |                     | -                          | 73         | 73          | -            | 18    | 18         |  |  |
|                                      | Mens                      | 4      | -   | 1.28            | 1.28  | gpf | 2 flushes           | -                          | 10         | 10          | -            | 3     | 3          |  |  |
|                                      | Womens                    | 7      | -   | 1.28            | 1.28  | gpf | 7 flushes           | -                          | 63         | 63          | -            | 16    | 16         |  |  |
|                                      |                           |        |     |                 |       |     | 57 Total Flushes    |                            |            |             |              |       |            |  |  |
| <b>Urinals</b>                       |                           | 3      | -   | -               | -     | gpf |                     | -                          | -          | -           | -            | 54    | 54         |  |  |
|                                      | Mens                      | 3      | -   | -               | -     | gpf | 12 flushes          | -                          | -          | -           | -            | 54    | 54         |  |  |
|                                      |                           |        |     |                 |       |     | 12 Total Flushes    |                            |            |             |              |       |            |  |  |
| <b>Sinks</b>                         |                           | 2      | 1.4 | 2.6             | 4.0   | gpm |                     | 33                         | 60         | 93          | -            | -     | -          |  |  |
|                                      | Mens - Bradley (4 hand)   | 1      | 1.4 | 2.6             | 4.0   | gpm | 11.0 minutes        | 15                         | 29         | 44          | -            | -     | -          |  |  |
|                                      | Womens - Bradley (4 hand) | 1      | 1.4 | 2.6             | 4.0   | gpm | 12.3 minutes        | 17                         | 32         | 49          | -            | -     | -          |  |  |
|                                      |                           |        |     |                 |       |     | 66 Total Sink Uses  |                            |            |             |              |       |            |  |  |
| <b>Other</b>                         |                           |        |     |                 |       |     |                     |                            |            |             |              |       |            |  |  |
| Mop Sink                             |                           | 1      | -   | 0.3             | 0.3   | gpd | 2                   | 0                          | 1          | 1           | -            | -     | -          |  |  |
|                                      |                           |        |     |                 |       |     |                     | <b>33</b>                  | <b>134</b> | <b>167</b>  |              |       |            |  |  |
|                                      |                           |        |     |                 |       |     |                     | <b>potential reduction</b> |            | <b>-30%</b> |              |       |            |  |  |
| <b>Maximum Use Potential Savings</b> |                           |        |     |                 |       |     |                     |                            |            |             |              |       |            |  |  |
|                                      |                           | number | hot | per use<br>cold | total |     | uses/day/fixture    | hot                        | cold       | total       | subtotal gpd |       |            |  |  |
| <b>Toilets (flushing values)</b>     |                           | 11     | -   | 1.28            | 1.28  | gpf |                     | -                          | 307        | 307         | -            | 77    | 77         |  |  |
|                                      | Mens                      | 4      | -   | 1.28            | 1.28  | gpf | 18 flushes          | -                          | 92         | 92          | -            | 23    | 23         |  |  |
|                                      | Womens                    | 7      | -   | 1.28            | 1.28  | gpf | 24 flushes          | -                          | 215        | 215         | -            | 54    | 54         |  |  |
|                                      |                           |        |     |                 |       |     | 240 Total Flushes   |                            |            |             |              |       |            |  |  |
| <b>Urinals</b>                       |                           | 3      | -   | -               | -     | gpf |                     | -                          | -          | -           | -            | 180   | 180        |  |  |
|                                      | Mens                      | 3      | -   | -               | -     | gpf | 40 flushes          | -                          | -          | -           | -            | 180   | 180        |  |  |
|                                      |                           |        |     |                 |       |     | 40 Total Flushes    |                            |            |             |              |       |            |  |  |
| <b>Sinks</b>                         |                           | 2      | 1.4 | 2.6             | 4.0   | gpm |                     | 126                        | 234        | 360         | -            | -     | -          |  |  |
|                                      | Mens - Bradley (4 hand)   | 1      | 1.4 | 2.6             | 4.0   | gpm | 48.0 minutes        | 67                         | 125        | 192         | -            | -     | -          |  |  |
|                                      | Womens - Bradley (4 hand) | 1      | 1.4 | 2.6             | 4.0   | gpm | 42.0 minutes        | 59                         | 109        | 168         | -            | -     | -          |  |  |
|                                      |                           |        |     |                 |       |     | 257 Total Sink Uses |                            |            |             |              |       |            |  |  |
| <b>Other</b>                         |                           |        |     |                 |       |     |                     |                            |            |             |              |       |            |  |  |
| Mop Sink                             |                           | 1      | -   | 0.3             | 0.3   | gpd | 2                   | 0                          | 1          | 1           | -            | -     | -          |  |  |
|                                      |                           |        |     |                 |       |     |                     | <b>126</b>                 | <b>542</b> | <b>668</b>  |              |       |            |  |  |
|                                      |                           |        |     |                 |       |     |                     | <b>potential reduction</b> |            | <b>-28%</b> |              |       |            |  |  |

## Summary of Current Water Use and Potential Water Savings Fairgrounds - Large Animal Barn Restrooms

| Costs to Implement                               |        |          |              |          |                   |     |  |                                     |                                    |                      |  |  |                           |
|--|--------|----------|--------------|----------|-------------------|-----|--|-------------------------------------|------------------------------------|----------------------|--|--|---------------------------|
| Cost   |        |          |              |          |                   |     |  |                                     |                                    |                      |  |  |                           |
|  | number | Hardware | Installation | Total    | Payback<br>Period |     | Annual<br>Energy<br>Savings<br>(kw-hr) | Annual<br>Energy<br>Savings<br>(\$) | Annual<br>Water<br>Savings<br>(\$) | Acre-Feet<br>Savings | Cost of<br>Alternative<br>Water Supply | Annual Cost<br>of<br>Treatment,<br>Delivery,<br>Wastewater | Cost per AF<br>of Savings |
| Toilets  | 11     | \$ 285   | \$ -         | \$ 3,135 | 62.8              | yrs | -                                      | \$ -                                | \$ 50                              | 0.01                 | \$ 511                                 | \$ 57  | \$ 214,847                |
| Urinals  | 3      | \$ 185   | \$ -         | \$ 555   | 3.8               | yrs | -                                      | \$ -                                | \$ 148                             | 0.04                 | \$ 1,512                               | \$ 169   | \$ 12,847                 |
|  |        |          |              | \$ 3,690 |                   |     |  |                                     |                                    | 0.06                 | \$ 2,023                               | \$ 226   |                           |
| Cost of Alternative Water Supply                 |        |          |              |          | \$ 2,023          |     |  |                                     |                                    |                      |  |  |                           |
| Annual Cost of Treatment, Delivery, Augmentation |        |          |              |          | \$ 226            |     |  |                                     |                                    |                      |  |  |                           |

Fairgrounds Main Shop Water Use and Budget 2007-2008



## Summary of Current Water Use and Potential Water Savings Fairgrounds - Main Shop (Indoor Arena and Outdoor Spigots for Various Barns)

| Average Use Calculations         |        |     |         |      |       |     |                     |              |                 |              |                        |
|----------------------------------|--------|-----|---------|------|-------|-----|---------------------|--------------|-----------------|--------------|------------------------|
|                                  | number | hot | per use |      | total |     | uses/day/fixture    | subtotal gpd |                 |              |                        |
|                                  |        |     | cold    |      |       |     |                     | hot          | cold            | total        |                        |
| <b>Toilets (flushing values)</b> | 21     | -   | 1.6     | 1.6  | 1.6   | gpf |                     | -            | 253             | 253          |                        |
| <b>Indoor Arena</b>              |        |     |         |      |       |     |                     |              |                 |              |                        |
| Mens                             | 5      | -   | 1.6     | 1.6  | 1.6   | gpf | 6 flushes           | -            | 48              | 48           |                        |
| Womens                           | 16     | -   | 1.6     | 1.6  | 1.6   | gpf | 8 flushes           | -            | 205             | 205          |                        |
|                                  |        |     |         |      |       |     | 158 Total Flushes   |              |                 |              |                        |
| <b>Urinals</b>                   |        |     |         |      |       |     |                     |              |                 |              |                        |
| <b>Indoor Arena</b>              |        |     |         |      |       |     |                     |              |                 |              |                        |
| Mens                             | 10     | -   | 1.0     | 1.0  | 1.0   | gpf | 8 flushes           | -            | 80              | 80           |                        |
| <b>Bathroom Sinks</b>            | 8      | 1.1 | 2.0     | 3.2  | 3.2   | gpm |                     |              | 103             | 192          | 295                    |
| <b>Indoor Arena</b>              |        |     |         |      |       |     |                     |              |                 |              |                        |
| Mens - Chicago                   | 1      | 0.9 | 1.6     | 2.5  | 2.5   | gpm | 2.8 minutes         | 2            | 4               | 7            |                        |
| Womens - Chicago                 | 1      | 0.9 | 1.6     | 2.5  | 2.5   | gpm | 3.2 minutes         | 3            | 5               | 8            |                        |
| Mens - Bradley (4 hand)          | 2      | 1.4 | 2.6     | 4.0  | 4.0   | gpm | 12.4 minutes        | 35           | 64              | 99           |                        |
| Womens - Bradley (4 hand)        | 2      | 1.4 | 2.6     | 4.0  | 4.0   | gpm | 14.4 minutes        | 40           | 75              | 115          |                        |
| Kitchen Hand Sink                | 2      | 1.0 | 1.8     | 2.8  | 2.8   | gpm | 12 minutes          | 23           | 43              | 66           |                        |
|                                  |        |     |         |      |       |     | 334 Total Sink Uses |              |                 |              |                        |
| <b>Showers</b>                   | 4      | 1.9 | 0.6     | 2.5  | 2.5   | gpf |                     |              | 30              | 10           | 40                     |
| <b>Indoor Arena</b>              |        |     |         |      |       |     |                     |              |                 |              |                        |
| Mens                             | 2      | 1.9 | 0.6     | 2.5  | 2.5   | gpm | 4 minutes           | 15           | 5               | 20           |                        |
| Womens                           | 2      | 1.9 | 0.6     | 2.5  | 2.5   | gpm | 4 minutes           | 15           | 5               | 20           |                        |
| <b>Kitchen</b>                   |        |     |         |      |       |     |                     |              |                 |              |                        |
| Pot and Prep Sinks               | 3      | 2.3 | 0.8     | 3.0  | 3.0   | gpm | 5 minutes           | 34           | 11              | 45           |                        |
| Coffee Maker (Bunn Model CWTF15) | 1      | -   | 2.5     | 2.5  | 2.5   | gpm | 4 minutes           | -            | 10              | 10           |                        |
| Ice Machine (Scotsman #CME506AS) | 1      | -   | 23.0    | 23.0 | 23.0  | gpd | 1                   | -            | 23              | 23           |                        |
| <b>Yard Spigots</b>              |        |     |         |      |       |     |                     |              |                 |              |                        |
| Pavillion (5 spigots)            | 1      | -   | 5.0     | 5.0  | 5.0   | gpm | 2 minutes           | -            | 10              | 10           |                        |
| Large Animal Barn (24 spigots)   | 8      | -   | 5.0     | 5.0  | 5.0   | gpm | 2 minutes           | -            | 80              | 80           |                        |
| Small Animal Barn (6 spigots)    | 2      | -   | 5.0     | 5.0  | 5.0   | gpm | 2 minutes           | -            | 20              | 20           |                        |
| Multi-Purpose Barn (19 spigots)  | 2      | -   | 5.0     | 5.0  | 5.0   | gpm | 2 minutes           | -            | 20              | 20           |                        |
| Green Barn                       | 1      | -   | 5.0     | 5.0  | 5.0   | gpm | 2 minutes           | -            | 10              | 10           |                        |
| Brown Barn                       | 3      | -   | 5.0     | 5.0  | 5.0   | gpm | 2 minutes           | -            | 30              | 30           |                        |
| Indoor Arena                     | 11     | -   | 5.0     | 5.0  | 5.0   | gpm | 2 minutes           | -            | 110             | 110          |                        |
| <b>Other</b>                     |        |     |         |      |       |     |                     |              |                 |              |                        |
| Drinking Fountains               | 2      | -   | 0.1     | 0.1  | 0.1   | gpd | 3                   | 0            | 1               | 1            |                        |
| Mop Sinks                        | 2      | -   | 2.5     | 2.5  | 2.5   | gpd | 2                   | 0            | 10              | 10           |                        |
| Undisclosed Use                  | 1      | -   | 85.0    | 85.0 | 85.0  | gph | 24                  | 0            | 2,040           | 2,040        |                        |
|                                  |        |     |         |      |       |     |                     | <b>167</b>   | <b>2,909</b>    | <b>3,076</b> | <b>max day</b>         |
|                                  |        |     |         |      |       |     |                     |              | <b>observed</b> | <b>4,983</b> | <b>average max day</b> |
|                                  |        |     |         |      |       |     |                     |              | observed        | 150,000      | max month              |
|                                  |        |     |         |      |       |     |                     |              |                 | 30           | days at max            |
|                                  |        |     |         |      |       |     |                     |              | observed        | 3,115        | aver day               |
|                                  |        |     |         |      |       |     |                     |              | observed        | 93,750       | aver month             |

## Summary of Current Water Use and Potential Water Savings Fairgrounds - Main Shop (Indoor Arena and Outdoor Spigots for Various Barns)

| Maximum Water Use                |        |     |                 |       |     |                     |            |                 |                |                        |
|----------------------------------|--------|-----|-----------------|-------|-----|---------------------|------------|-----------------|----------------|------------------------|
|                                  | number | hot | per use<br>cold | total |     | uses/day/fixture    | hot        | cold            | subtotal gpd   |                        |
| <b>Toilets (flushing values)</b> | 21     | -   | 1.6             | 1.6   | gpf |                     | -          | 540             | 540            |                        |
| <b>Indoor Arena</b>              |        |     |                 |       |     |                     |            |                 |                |                        |
| Mens                             | 5      | -   | 1.6             | 1.6   | gpf | 18 flushes          | -          | 140             | 140            |                        |
| Womens                           | 16     | -   | 1.6             | 1.6   | gpf | 16 flushes          | -          | 400             | 400            |                        |
|                                  |        |     |                 |       |     | 338 Total Flushes   |            |                 |                |                        |
| <b>Urinals</b>                   |        |     |                 |       |     |                     |            |                 |                |                        |
| <b>Indoor Arena</b>              |        |     |                 |       |     |                     |            |                 |                |                        |
| Mens                             | 10     | -   | 1.0             | 1.0   | gpf | 16 flushes          | -          | 163             | 163            |                        |
| <b>Bathroom Sinks</b>            | 8      | 1.1 | 2.0             | 3.2   | gpm |                     |            | 192             | 356            | 547                    |
| <b>Indoor Arena</b>              |        |     |                 |       |     |                     |            |                 |                |                        |
| Mens - Chicago                   | 1      | 0.9 | 1.6             | 2.5   | gpm | 6.3 minutes         | 5          | 10              | 16             |                        |
| Womens - Chicago                 | 1      | 0.9 | 1.6             | 2.5   | gpm | 6.3 minutes         | 5          | 10              | 16             |                        |
| Mens - Bradley (4 hand)          | 2      | 1.4 | 2.6             | 4.0   | gpm | 28.1 minutes        | 79         | 146             | 225            |                        |
| Womens - Bradley (4 hand)        | 2      | 1.4 | 2.6             | 4.0   | gpm | 28.1 minutes        | 79         | 146             | 225            |                        |
| Kitchen Hand Sink                | 2      | 1.0 | 1.8             | 2.8   | gpm | 12 minutes          | 23         | 43              | 66             |                        |
|                                  |        |     |                 |       |     | 596 Total Sink Uses |            |                 |                |                        |
| <b>Showers</b>                   | 4      | 1.9 | 0.6             | 2.5   | gpf |                     |            | 75              | 25             | 100                    |
| <b>Indoor Arena</b>              |        |     |                 |       |     |                     |            |                 |                |                        |
| Mens                             | 2      | 1.9 | 0.6             | 2.5   | gpm | 10 minutes          | 38         | 13              | 50             |                        |
| Womens                           | 2      | 1.9 | 0.6             | 2.5   | gpm | 10 minutes          | 38         | 13              | 50             |                        |
| <b>Kitchen</b>                   |        |     |                 |       |     |                     |            |                 |                |                        |
| Pot and Prep Sinks               | 3      | 2.3 | 0.8             | 3.0   | gpm | 20 minutes          | 135        | 45              | 180            |                        |
| Coffee Maker (Bunn Model CWTF15) | 1      | -   | 2.5             | 2.5   | gpm | 6 minutes           | -          | 15              | 15             |                        |
| Ice Machine (Scotsman #CME506AS) | 1      | -   | 23.0            | 23.0  | gpd | 2                   | -          | 46              | 46             |                        |
| <b>Yard Spigots</b>              |        |     |                 |       |     |                     |            |                 |                |                        |
| Pavillion (5 spigots)            | 1      | -   | 5.0             | 5.0   | gpm | 14 minutes          | -          | 70              | 70             |                        |
| Large Animal Barn (24 spigots)   | 8      | -   | 5.0             | 5.0   | gpm | 14 minutes          | -          | 560             | 560            |                        |
| Small Animal Barn (6 spigots)    | 2      | -   | 5.0             | 5.0   | gpm | 14 minutes          | -          | 140             | 140            |                        |
| Multi-Purpose Barn (19 spigots)  | 2      | -   | 5.0             | 5.0   | gpm | 14 minutes          | -          | 140             | 140            |                        |
| Green Barn                       | 1      | -   | 5.0             | 5.0   | gpm | 14 minutes          | -          | 70              | 70             |                        |
| Brown Barn                       | 3      | -   | 5.0             | 5.0   | gpm | 14 minutes          | -          | 210             | 210            |                        |
| Indoor Arena                     | 11     | -   | 5.0             | 5.0   | gpm | 2 minutes           | -          | 110             | 110            |                        |
| <b>Other</b>                     |        |     |                 |       |     |                     |            |                 |                |                        |
| Drinking Fountains               | 2      | -   | 0.1             | 0.1   | gpd | 3                   | 0          | 1               | 1              |                        |
| Mop Sinks                        | 2      | -   | 2.5             | 2.5   | gpd | 2                   | 0          | 10              | 10             |                        |
| Undisclosed Use                  | 1      | -   | 85.0            | 85.0  | gph | 24                  | 0          | 2,040           | 2,040          |                        |
|                                  |        |     |                 |       |     |                     | <b>402</b> | <b>4,540</b>    | <b>4,941</b>   | <b>max day</b>         |
|                                  |        |     |                 |       |     |                     |            | <b>observed</b> | <b>4,983</b>   | <b>average max day</b> |
|                                  |        |     |                 |       |     |                     |            | <b>observed</b> | <b>150,000</b> | <b>max month</b>       |
|                                  |        |     |                 |       |     |                     |            |                 | <b>19</b>      | <b>days at max</b>     |
|                                  |        |     |                 |       |     |                     |            | <b>observed</b> | <b>3,115</b>   | <b>aver day</b>        |
|                                  |        |     |                 |       |     |                     |            | <b>observed</b> | <b>93,750</b>  | <b>aver month</b>      |

## Summary of Current Water Use and Potential Water Savings Fairgrounds - Main Shop (Indoor Arena and Outdoor Spigots for Various Barns)

| Average Use Potential Savings    |        |     |         |      |       |                     |                  |              |                            |       |       |                     |                   |
|----------------------------------|--------|-----|---------|------|-------|---------------------|------------------|--------------|----------------------------|-------|-------|---------------------|-------------------|
|                                  | number | hot | per use |      | total | unit                | uses/day/fixture | subtotal gpd |                            |       | total | potential reduction | potential savings |
|                                  |        |     | hot     | cold |       |                     |                  | hot          | cold                       | total |       |                     |                   |
| <b>Toilets (flushing values)</b> | 21     | -   | 1.28    | 1.28 | gpf   |                     |                  | -            | 202                        | 202   | -     | 51                  | 51                |
| <b>Indoor Arena</b>              |        |     |         |      |       |                     |                  |              |                            |       |       |                     |                   |
| Mens                             | 5      | -   | 1.28    | 1.28 | gpf   | 6 flushes           |                  | -            | 38                         | 38    | -     | 10                  | 10                |
| Womens                           | 16     | -   | 1.28    | 1.28 | gpf   | 8 flushes           |                  | -            | 164                        | 164   | -     | 41                  | 41                |
|                                  |        |     |         |      |       | 158 Total Flushes   |                  |              |                            |       |       |                     |                   |
| <b>Urinals</b>                   |        |     |         |      |       |                     |                  |              |                            |       |       |                     |                   |
| <b>Indoor Arena</b>              |        |     |         |      |       |                     |                  |              |                            |       |       |                     |                   |
| Mens                             | 10     | -   | -       | -    | gpf   | 8 flushes           |                  | -            | -                          | -     | -     | 80                  | 80                |
| <b>Bathroom Sinks</b>            | 8      | 0.7 | 1.2     | 1.9  | gpm   |                     |                  | 80           | 149                        | 229   | 23    | 43                  | 66                |
| <b>Indoor Arena</b>              |        |     |         |      |       |                     |                  |              |                            |       |       |                     |                   |
| Mens - Chicago                   | 1      | 0.2 | 0.3     | 0.5  | gpm   | 2.8 minutes         |                  | 0            | 1                          | 1     | 2     | 4                   | 6                 |
| Womens - Chicago                 | 1      | 0.2 | 0.3     | 0.5  | gpm   | 3.2 minutes         |                  | 1            | 1                          | 2     | 2     | 4                   | 6                 |
| Mens - Bradley (4 hand)          | 2      | 1.4 | 2.6     | 4.0  | gpm   | 12.4 minutes        |                  | 35           | 64                         | 99    | -     | -                   | -                 |
| Womens - Bradley (4 hand)        | 2      | 1.4 | 2.6     | 4.0  | gpm   | 14.4 minutes        |                  | 40           | 75                         | 115   | -     | -                   | -                 |
| Kitchen Hand Sink                | 2      | 0.2 | 0.3     | 0.5  | gpm   | 12 minutes          |                  | 4            | 8                          | 12    | 19    | 35                  | 54                |
|                                  |        |     |         |      |       | 334 Total Sink Uses |                  |              |                            |       |       |                     |                   |
| <b>Showers</b>                   | 4      | 1.1 | 0.4     | 1.5  | gpf   |                     |                  | 18           | 6                          | 24    | 12    | 4                   | 16                |
| <b>Indoor Arena</b>              |        |     |         |      |       |                     |                  |              |                            |       |       |                     |                   |
| Mens                             | 2      | 1.1 | 0.4     | 1.5  | gpm   | 4 minutes           |                  | 9            | 3                          | 12    | 6     | 2                   | 8                 |
| Womens                           | 2      | 1.1 | 0.4     | 1.5  | gpm   | 4 minutes           |                  | 9            | 3                          | 12    | 6     | 2                   | 8                 |
| <b>Kitchen</b>                   |        |     |         |      |       |                     |                  |              |                            |       |       |                     |                   |
| Pot and Prep Sinks               | 3      | 2.3 | 0.8     | 3.0  | gpm   | 5 minutes           |                  | 34           | 11                         | 45    | -     | -                   | -                 |
| Coffee Maker (Bunn Model CWTF15) | 1      | -   | 2.5     | 2.5  | gpm   | 4 minutes           |                  | -            | 10                         | 10    | -     | -                   | -                 |
| Ice Machine (Scotsman #CME506AS) | 1      | -   | 23.0    | 23.0 | gpd   | 1                   |                  | -            | 23                         | 23    | -     | -                   | -                 |
| <b>Yard Spigots</b>              |        |     |         |      |       |                     |                  |              |                            |       |       |                     |                   |
| Pavillion (5 spigots)            | 1      | -   | 5.0     | 5.0  | gpm   | 2 minutes           |                  | -            | 10                         | 10    | -     | -                   | -                 |
| Large Animal Barn (24 spigots)   | 8      | -   | 5.0     | 5.0  | gpm   | 2 minutes           |                  | -            | 80                         | 80    | -     | -                   | -                 |
| Small Animal Barn (6 spigots)    | 2      | -   | 5.0     | 5.0  | gpm   | 2 minutes           |                  | -            | 20                         | 20    | -     | -                   | -                 |
| Multi-Purpose Barn (19 spigots)  | 2      | -   | 5.0     | 5.0  | gpm   | 2 minutes           |                  | -            | 20                         | 20    | -     | -                   | -                 |
| Green Barn                       | 1      | -   | 5.0     | 5.0  | gpm   | 2 minutes           |                  | -            | 10                         | 10    | -     | -                   | -                 |
| Brown Barn                       | 3      | -   | 5.0     | 5.0  | gpm   | 2 minutes           |                  | -            | 30                         | 30    | -     | -                   | -                 |
| Indoor Arena                     | 11     | -   | 5.0     | 5.0  | gpm   | 2 minutes           |                  | -            | 110                        | 110   | -     | -                   | -                 |
| <b>Other</b>                     |        |     |         |      |       |                     |                  |              |                            |       |       |                     |                   |
| Drinking Fountains               | 2      | -   | 0.1     | 0.1  | gpd   | 3                   |                  | 0            | 1                          | 1     | -     | -                   | -                 |
| Mop Sinks                        | 2      | -   | 2.5     | 2.5  | gpd   | 2                   |                  | 0            | 10                         | 10    | -     | -                   | -                 |
| Undisclosed Use                  | 1      | -   | 85.0    | 85.0 | gph   | 24                  |                  | 0            | 2,040                      | 2,040 |       |                     |                   |
|                                  |        |     |         |      |       |                     |                  |              | 132                        | 2,732 |       | 2,864               |                   |
|                                  |        |     |         |      |       |                     |                  |              | <b>potential reduction</b> |       |       | <b>-7%</b>          |                   |

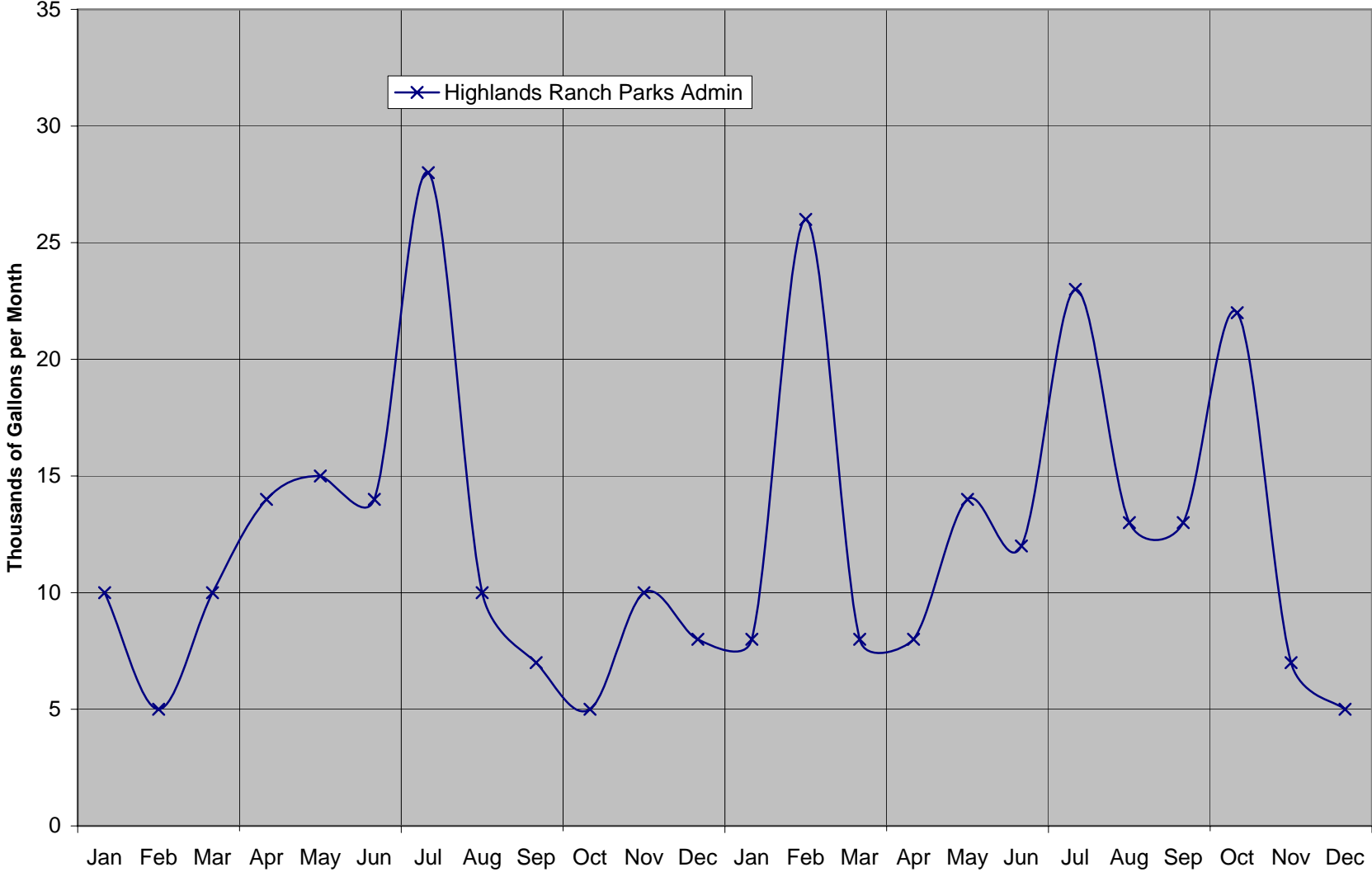
## Summary of Current Water Use and Potential Water Savings Fairgrounds - Main Shop (Indoor Arena and Outdoor Spigots for Various Barns)

| Maximum Use Potential Savings    |        |         |      |      |       |                  |                 |                            |              |              |    |     |     |  |
|----------------------------------|--------|---------|------|------|-------|------------------|-----------------|----------------------------|--------------|--------------|----|-----|-----|--|
|                                  | number | per use |      |      | total | uses/day/fixture | subtotal gpd    |                            |              | total        |    |     |     |  |
|                                  |        | hot     | cold |      |       |                  | hot             | cold                       |              |              |    |     |     |  |
| <b>Toilets (flushing values)</b> | 21     | -       | 1.28 | 1.28 | gpf   |                  |                 | -                          | 432          | 432          | -  | 108 | 108 |  |
| <b>Indoor Arena</b>              |        |         |      |      |       |                  |                 |                            |              |              |    |     |     |  |
| Mens                             | 5      | -       | 1.28 | 1.28 | gpf   | 18               | flushes         | -                          | 112          | 112          | -  | 28  | 28  |  |
| Womens                           | 16     | -       | 1.28 | 1.28 | gpf   | 16               | flushes         | -                          | 320          | 320          | -  | 80  | 80  |  |
|                                  |        |         |      |      |       | 338              | Total Flushes   |                            |              |              |    |     |     |  |
| <b>Urinals</b>                   |        |         |      |      |       |                  |                 |                            |              |              |    |     |     |  |
| <b>Indoor Arena</b>              |        |         |      |      |       |                  |                 |                            |              |              |    |     |     |  |
| Mens                             | 10     | -       | -    | -    | gpf   | 16               | flushes         | -                          | -            | -            | -  | 163 | 163 |  |
| <b>Bathroom Sinks</b>            | 8      | 0.7     | 1.2  | 1.9  | gpm   |                  |                 | 164                        | 304          | 468          | 28 | 51  | 79  |  |
| <b>Indoor Arena</b>              |        |         |      |      |       |                  |                 |                            |              |              |    |     |     |  |
| Mens - Chicago                   | 1      | 0.2     | 0.3  | 0.5  | gpm   | 6.3              | minutes         | 1                          | 2            | 3            | 4  | 8   | 13  |  |
| Womens - Chicago                 | 1      | 0.2     | 0.3  | 0.5  | gpm   | 6.3              | minutes         | 1                          | 2            | 3            | 4  | 8   | 13  |  |
| Mens - Bradley (4 hand)          | 2      | 1.4     | 2.6  | 4.0  | gpm   | 28.1             | minutes         | 79                         | 146          | 225          | -  | -   | -   |  |
| Womens - Bradley (4 hand)        | 2      | 1.4     | 2.6  | 4.0  | gpm   | 28.1             | minutes         | 79                         | 146          | 225          | -  | -   | -   |  |
| Kitchen Hand Sink                | 2      | 0.2     | 0.3  | 0.5  | gpm   | 12               | minutes         | 4                          | 8            | 12           | 19 | 35  | 54  |  |
|                                  |        |         |      |      |       | 596              | Total Sink Uses |                            |              |              |    |     |     |  |
| <b>Showers</b>                   | 4      | 1.1     | 0.4  | 1.5  | gpf   |                  |                 | 45                         | 15           | 60           | 30 | 10  | 40  |  |
| <b>Indoor Arena</b>              |        |         |      |      |       |                  |                 |                            |              |              |    |     |     |  |
| Mens                             | 2      | 1.1     | 0.4  | 1.5  | gpm   | 10               | minutes         | 23                         | 8            | 30           | 15 | 5   | 20  |  |
| Womens                           | 2      | 1.1     | 0.4  | 1.5  | gpm   | 10               | minutes         | 23                         | 8            | 30           | 15 | 5   | 20  |  |
| <b>Kitchen</b>                   |        |         |      |      |       |                  |                 |                            |              |              |    |     |     |  |
| Pot and Prep Sinks               | 3      | 2.3     | 0.8  | 3.0  | gpm   | 20               | minutes         | 135                        | 45           | 180          | -  | -   | -   |  |
| Coffee Maker (Bunn Model CWTF15) | 1      | -       | 2.5  | 2.5  | gpm   | 6                | minutes         | -                          | 15           | 15           | -  | -   | -   |  |
| Ice Machine (Scotsman #CME506AS) | 1      | -       | 23.0 | 23.0 | gpd   | 2                |                 | -                          | 46           | 46           | -  | -   | -   |  |
| <b>Yard Spigots</b>              |        |         |      |      |       |                  |                 |                            |              |              |    |     |     |  |
| Pavillion (5 spigots)            | 1      | -       | 5.0  | 5.0  | gpm   | 14               | minutes         | -                          | 70           | 70           | -  | -   | -   |  |
| Large Animal Barn (24 spigots)   | 8      | -       | 5.0  | 5.0  | gpm   | 14               | minutes         | -                          | 560          | 560          | -  | -   | -   |  |
| Small Animal Barn (6 spigots)    | 2      | -       | 5.0  | 5.0  | gpm   | 14               | minutes         | -                          | 140          | 140          | -  | -   | -   |  |
| Multi-Purpose Barn (19 spigots)  | 2      | -       | 5.0  | 5.0  | gpm   | 14               | minutes         | -                          | 140          | 140          | -  | -   | -   |  |
| Green Barn                       | 1      | -       | 5.0  | 5.0  | gpm   | 14               | minutes         | -                          | 70           | 70           | -  | -   | -   |  |
| Brown Barn                       | 3      | -       | 5.0  | 5.0  | gpm   | 14               | minutes         | -                          | 210          | 210          | -  | -   | -   |  |
| Indoor Arena                     | 11     | -       | 5.0  | 5.0  | gpm   | 2                | minutes         | -                          | 110          | 110          | -  | -   | -   |  |
| <b>Other</b>                     |        |         |      |      |       |                  |                 |                            |              |              |    |     |     |  |
| Drinking Fountains               | 2      | -       | 0.1  | 0.1  | gpd   | 3                |                 | 0                          | 1            | 1            | -  | -   | -   |  |
| Mop Sinks                        | 2      | -       | 2.5  | 2.5  | gpd   | 2                |                 | 0                          | 10           | 10           | -  | -   | -   |  |
| Undisclosed Use                  | 1      | -       | 85.0 | 85.0 | gph   | 24               |                 | 0                          | 2,040        | 2,040        |    |     |     |  |
|                                  |        |         |      |      |       |                  |                 | <b>344</b>                 | <b>4,208</b> | <b>4,552</b> |    |     |     |  |
|                                  |        |         |      |      |       |                  |                 | <b>potential reduction</b> |              | <b>-8%</b>   |    |     |     |  |

**Summary of Current Water Use and Potential Water Savings  
Fairgrounds - Main Shop (Indoor Arena and Outdoor Spigots for Various Barns)**

| <b>Costs to Implement</b>               |  |             |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |
|---|--|-------------|--------------|-----------|-------------------|-----|--|-------------------------------------|------------------------------------|----------------------|--|--|---------------------------|--|
|   |  | <b>Cost</b> |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |
|   | number   | Hardware    | Installation | Total     | Payback<br>Period |     | Annual<br>Energy<br>Savings<br>(kw-hr) | Annual<br>Energy<br>Savings<br>(\$) | Annual<br>Water<br>Savings<br>(\$) | Acre-Feet<br>Savings | Cost of<br>Alternative<br>Water Supply | Annual Cost<br>of<br>Treatment,<br>Delivery,<br>Wastewater | Cost per AF<br>of Savings |  |
| Toilets                                 | 21   | \$ 285      | \$ -         | \$ 5,985  | 43.2              | yrs | -                                      | \$ -                                | \$ 138                             | 0.04                 | \$ 1,416                               | \$ 158   | \$ 147,970                |  |
| Urinals                                 | 10   | \$ 185      | \$ -         | \$ 1,850  | 8.4               | yrs | -                                      | \$ -                                | \$ 219                             | 0.06                 | \$ 2,240                               | \$ 250   | \$ 28,907                 |  |
| Sinks                                   | 4  | \$ 3        | \$ -         | \$ 12     | 0.04              | yrs | 1,470                                  | \$ 96                               | \$ 180                             | 0.05                 | \$ 1,845                               | \$ 206   | \$ 228                    |  |
| Showerheads                             | 4  | \$ 30       | \$ -         | \$ 120    | 1.3               | yrs | 765                                    | \$ 50                               | \$ 44                              | 0.01                 | \$ 448                                 | \$ 50  | \$ 9,375                  |  |
| Submeter Yard Spigots and Cooling Water | 7  | \$ 300      | \$ 2,200     | \$ 17,500 | 5.1               | yrs | -                                      | \$ -                                | \$ 3,440                           | 2.28                 | \$ 79,967                              | \$ 8,935   | \$ 7,659                  |  |
|   |  |             |              | \$ 25,467 |                   |     |  |                                     |                                    | 2.45                 | \$ 85,915                              | \$ 9,600   |                           |  |
|   | Cost of Alternative Water Supply                 |             |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |
|   | Annual Cost of Treatment, Delivery, Augmentation |             |              |           |                   |     |  |                                     |                                    |                      |  |  |                           |  |
|   |  |             |              |           |                   |     | \$ 85,915                              |                                     |                                    |                      |  |  |                           |  |
|   |  |             |              |           |                   |     | \$ 9,600                               |                                     |                                    |                      |  |  |                           |  |

### Highlands Heritage Facility Water Use 2007-2008



## Summary of Current Water Use and Potential Water Savings Highlands Heritage Admin

| Average Wintertime Use Calculations |        |         |      |       |       |                  |                 |           |                 |                            |
|-------------------------------------|--------|---------|------|-------|-------|------------------|-----------------|-----------|-----------------|----------------------------|
|                                     | number | per use |      |       | total | uses/day/fixture | subtotal gpd    |           |                 |                            |
|                                     |        | hot     | cold | total |       |                  | hot             | cold      | total           |                            |
| <b>Toilets (tanks)</b>              | 6      | -       | 1.8  | 1.8   | gpf   |                  | -               | 152       | 152             |                            |
| Indoor                              | 4      | -       | 1.6  | 1.6   | gpf   | 20               | flushes         | -         | 128             | 128                        |
| Outdoor (tankless)                  | 2      | -       | 2.0  | 2.0   | gpf   | 6                | flushes         | -         | 24              | 24                         |
|                                     |        |         |      |       |       | 92               | Total Flushes   |           |                 |                            |
| <b>Sinks</b>                        | 7      | 1.0     | 1.8  | 2.8   | gpm   |                  |                 | 39        | 73              | 112                        |
| Indoor                              | 4      | 1.1     | 2.0  | 3.0   | gpm   | 6.0              | minutes         | 25        | 47              | 72                         |
| Outdoor                             | 2      | 1.1     | 2.0  | 3.0   | gpm   | 1.5              | minutes         | 3         | 6               | 9                          |
| Galley/Kitchen                      | 1      | 0.9     | 1.6  | 2.5   | gpm   | 12.3             | minutes         | 11        | 20              | 31                         |
|                                     |        |         |      |       |       | 112              | Total Sink Uses |           |                 |                            |
| <b>Other</b>                        |        |         |      |       |       |                  |                 |           |                 |                            |
| Drinking Fountain                   | 1      | -       | 0.1  | 0.1   | gpd   | 1                |                 | -         | 0.1             | 0.1                        |
| Mop Sink                            | 2      | -       | 2.5  | 2.5   | gpd   | 2                |                 | -         | 10              | 10                         |
| Drips, Leaks and Undisclosed Uses   | 1      | -       | 75.0 | 75.0  | gpd   | 1                |                 | -         | 75              | 75                         |
|                                     |        |         |      |       |       |                  |                 | <b>39</b> | <b>310</b>      | <b>349 max day</b>         |
|                                     |        |         |      |       |       |                  |                 |           | <b>observed</b> | <b>752 average max day</b> |
|                                     |        |         |      |       |       |                  |                 |           | observed        | 16,167 max month           |
|                                     |        |         |      |       |       |                  |                 |           |                 | 22 days at max             |
|                                     |        |         |      |       |       |                  |                 |           | observed        | 353 aver day               |
|                                     |        |         |      |       |       |                  |                 |           | observed        | 7,600 aver month           |
|                                     |        |         |      |       |       |                  |                 |           |                 |                            |
|                                     |        |         |      |       |       |                  |                 |           |                 |                            |
| Average Summertime Water Use        |        |         |      |       |       |                  |                 |           |                 |                            |
|                                     | number | per use |      |       | total | uses/day/fixture | subtotal gpd    |           |                 |                            |
|                                     |        | hot     | cold | total |       |                  | hot             | cold      | total           |                            |
| <b>Toilets (tanks)</b>              | 6      | -       | 1.8  | 1.8   | gpf   |                  |                 | -         | 396             | 396                        |
| Indoor                              | 4      | -       | 1.6  | 1.6   | gpf   | 40               | flushes         | -         | 256             | 256                        |
| Outdoor (tankless)                  | 2      | -       | 2.0  | 2.0   | gpf   | 35               | flushes         | -         | 140             | 140                        |
|                                     |        |         |      |       |       | 230              | Total Flushes   |           |                 |                            |
| <b>Sinks</b>                        | 7      | 1.0     | 1.8  | 2.8   | gpm   |                  |                 | 83        | 153             | 236                        |
| Indoor                              | 4      | 1.1     | 2.0  | 3.0   | gpm   | 12.0             | minutes         | 50        | 94              | 144                        |
| Outdoor                             | 2      | 1.1     | 2.0  | 3.0   | gpm   | 8.8              | minutes         | 18        | 34              | 53                         |
| Galley/Kitchen                      | 1      | 0.9     | 1.6  | 2.5   | gpm   | 15.8             | minutes         | 14        | 26              | 39                         |
|                                     |        |         |      |       |       | 232              | Total Sink Uses |           |                 |                            |
| <b>Other</b>                        |        |         |      |       |       |                  |                 |           |                 |                            |
| Drinking Fountain                   | 1      | -       | 0.1  | 0.1   | gpd   | 1                |                 | 0         | 0               | 0                          |
| Mop Sink                            | 2      | -       | 2.5  | 2.5   | gpd   | 2                |                 | 0         | 10              | 10                         |
| Drips, Leaks and Undisclosed Uses   | 1      | -       | 95.0 | 95.0  | gpd   | 1                |                 | 0         | 95              | 95                         |
|                                     |        |         |      |       |       |                  |                 | <b>83</b> | <b>654</b>      | <b>737 max day</b>         |
|                                     |        |         |      |       |       |                  |                 |           | <b>observed</b> | <b>752 average max day</b> |
|                                     |        |         |      |       |       |                  |                 |           | observed        | 16,167 max month           |
|                                     |        |         |      |       |       |                  |                 |           |                 | 10 days at max             |
|                                     |        |         |      |       |       |                  |                 |           | observed        | 353 aver day               |
|                                     |        |         |      |       |       |                  |                 |           | observed        | 7,600 aver month           |
|                                     |        |         |      |       |       |                  |                 |           |                 |                            |

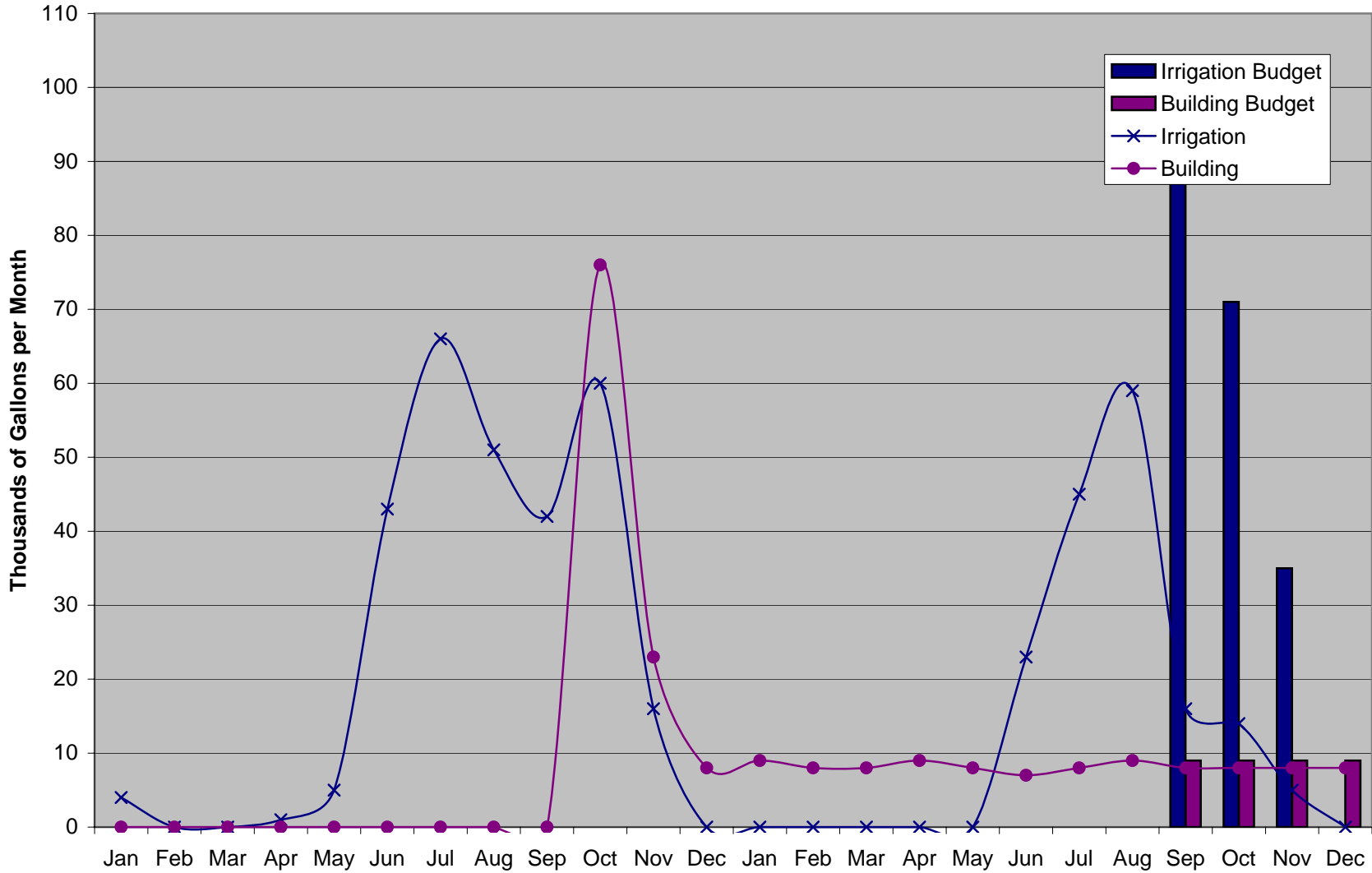
## Summary of Current Water Use and Potential Water Savings Highlands Heritage Admin

| <b>Average Wintertime Use Potential Savings</b> |        |     |                 |       |     |                     |     |                            |       |             |     |     |     |
|---|--------|-----|-----------------|-------|-----|---------------------|-----|----------------------------|-------|-------------|-----|-----|-----|
|   | number | hot | per use<br>cold | total |     | uses/day/fixture    | hot | subtotal gpd               |       |             |     |     |     |
|   |        |     |                 |       |     |                     |     | cold                       | total |             |     |     |     |
| <b>Toilets (tanks)</b>                          | 6      | -   | 1.5             | 1.5   | gpf |                     | -   | 96                         | 96    | -           | 56  | 56  |     |
| Indoor  | 4      | -   | 0.90            | 0.90  | gpf | 20 flushes          | -   | 72                         | 72    | -           | 56  | 56  |     |
| Outdoor (tankless)                              | 2      | -   | 2.0             | 2.0   | gpf | 6 flushes           | -   | 24                         | 24    | -           | -   | -   |     |
|   |        |     |                 |       |     | 92 Total Flushes    |     |                            |       |             |     |     |     |
| <b>Sinks</b>                                    | 7      | 0.7 | 1.3             | 2.0   | gpm |                     | 18  | 34                         | 52    | 21          | 39  | 60  |     |
| Indoor  | 4      | 0.2 | 0.3             | 0.5   | gpm | 6.0 minutes         | 4   | 8                          | 12    | 21          | 39  | 60  |     |
| Outdoor   | 2      | 1.1 | 2.0             | 3.0   | gpm | 1.5 minutes         | 3   | 6                          | 9     | -           | -   | -   |     |
| Galley/Kitchen                                  | 1      | 0.9 | 1.6             | 2.5   | gpm | 12.3 minutes        | 11  | 20                         | 31    | -           | -   | -   |     |
|   |        |     |                 |       |     | 112 Total Sink Uses |     |                            |       |             |     |     |     |
| <b>Other</b>                                    |        |     |                 |       |     |                     |     |                            |       |             |     |     |     |
| Drinking Fountain                               | 1      | -   | 0.1             | 0.1   | gpd | 1                   | -   | 0.1                        | 0.1   | -           | -   | -   |     |
| Mop Sink  | 2      | -   | 2.5             | 2.5   | gpd | 2                   | -   | 10                         | 10    | -           | -   | -   |     |
| Drips, Leaks and Undisclosed Uses               | 1      | -   | 75.0            | 75.0  | gpd | 1                   | -   | 75                         | 75    | -           | -   | -   |     |
|   |        |     |                 |       |     |                     |     | 18                         | 215   | 233         |     |     |     |
|   |        |     |                 |       |     |                     |     | <b>potential reduction</b> |       | <b>-33%</b> |     |     |     |
|   |        |     |                 |       |     |                     |     |                            |       |             |     |     |     |
|   |        |     |                 |       |     |                     |     |                            |       |             |     |     |     |
| <b>Average Summertime Use Potential Savings</b> |        |     |                 |       |     |                     |     |                            |       |             |     |     |     |
|   | number | hot | per use<br>cold | total |     | uses/day/fixture    | hot | subtotal gpd               |       |             |     |     |     |
|   |        |     |                 |       |     |                     |     | cold                       | total |             |     |     |     |
| <b>Toilets (tanks)</b>                          | 6      | -   | 1.5             | 1.5   | gpf |                     | -   | 284                        | 284   | -           | 112 | 112 |     |
| Indoor  | 4      | -   | 0.90            | 0.90  | gpf | 40 flushes          | -   | 144                        | 144   | -           | 112 | 112 |     |
| Outdoor (tankless)                              | 2      | -   | 2.0             | 2.0   | gpf | 35 flushes          | -   | 140                        | 140   | -           | -   | -   |     |
|   |        |     |                 |       |     | 230 Total Flushes   |     |                            |       |             |     |     |     |
| <b>Sinks</b>                                    | 7      | 0.7 | 1.3             | 2.0   | gpm |                     | 41  | 75                         | 116   | 42          | 78  | 120 |     |
| Indoor  | 4      | 0.2 | 0.3             | 0.5   | gpm | 12.0 minutes        | 8   | 16                         | 24    | 42          | 78  | 120 |     |
| Outdoor   | 2      | 1.1 | 2.0             | 3.0   | gpm | 8.8 minutes         | 18  | 34                         | 53    | -           | -   | -   |     |
| Galley/Kitchen                                  | 1      | 0.9 | 1.6             | 2.5   | gpm | 15.8 minutes        | 14  | 26                         | 39    | -           | -   | -   |     |
|   |        |     |                 |       |     | 232 Total Sink Uses |     |                            |       |             |     |     |     |
| <b>Other</b>                                    |        |     |                 |       |     |                     |     |                            |       |             |     |     |     |
| Drinking Fountain                               | 1      | -   | 0.1             | 0.1   | gpd | 1                   | 0   | 0                          | 0     | -           | -   | -   |     |
| Mop Sink  | 2      | -   | 2.5             | 2.5   | gpd | 2                   | 0   | 10                         | 10    | -           | -   | -   |     |
| Drips, Leaks and Undisclosed Uses               | 1      | -   | 95.0            | 95.0  | gpd | 1                   | 0   | 95                         | 95    | -           | -   | -   |     |
|   |        |     |                 |       |     |                     |     | 41                         | 464   | 505         | 42  | 190 | 232 |
|   |        |     |                 |       |     |                     |     | <b>potential reduction</b> |       | <b>-31%</b> |     |     |     |

## Summary of Current Water Use and Potential Water Savings Highlands Heritage Admin

| <b>Costs to Implement</b> |  |          |              |        |                   |     |  |                                     |                                    |                      |  |  |                           |
|---------------------------|--|----------|--------------|--------|-------------------|-----|--|-------------------------------------|------------------------------------|----------------------|--|--|---------------------------|
| <b>Cost</b>               |  |          |              |        |                   |     |  |                                     |                                    |                      |  |  |                           |
|                           | number   | Hardware | Installation | Total  | Payback<br>Period |     | Annual<br>Energy<br>Savings<br>(kw-hr) | Annual<br>Energy<br>Savings<br>(\$) | Annual<br>Water<br>Savings<br>(\$) | Acre-Feet<br>Savings | Cost of<br>Alternative<br>Water Supply | Annual Cost<br>of<br>Treatment,<br>Delivery,<br>Wastewater | Cost per AF<br>of Savings |
| Toilets                   | 4  | \$ 210   | \$ -         | \$ 840 | 8.8               | yrs | -                                      | \$ -                                | \$ 96                              | 0.07                 | \$ 2,352                               | \$ 263   | \$ 12,500                 |
| Sinks                     | 4  | \$ 3     | \$ -         | \$ 12  | 0.1               | yrs | 2,007                                  | \$ 130                              | \$ 103                             | 0.07                 | \$ 2,520                               | \$ 282   | \$ 167                    |
|                           |  |          |              | \$ 852 |                   |     |  |                                     |                                    | 0.14                 | \$ 4,872                               | \$ 544   |                           |
|                           | Cost of Alternative Water Supply                 |          |              |        | \$ 4,872          |     |  |                                     |                                    |                      |  |  |                           |
|                           | Annual Cost of Treatment, Delivery, Augmentation |          |              |        | \$ 544            |     |  |                                     |                                    |                      |  |  |                           |

### Human Services Building Water Use and Water Budget 2007-2008



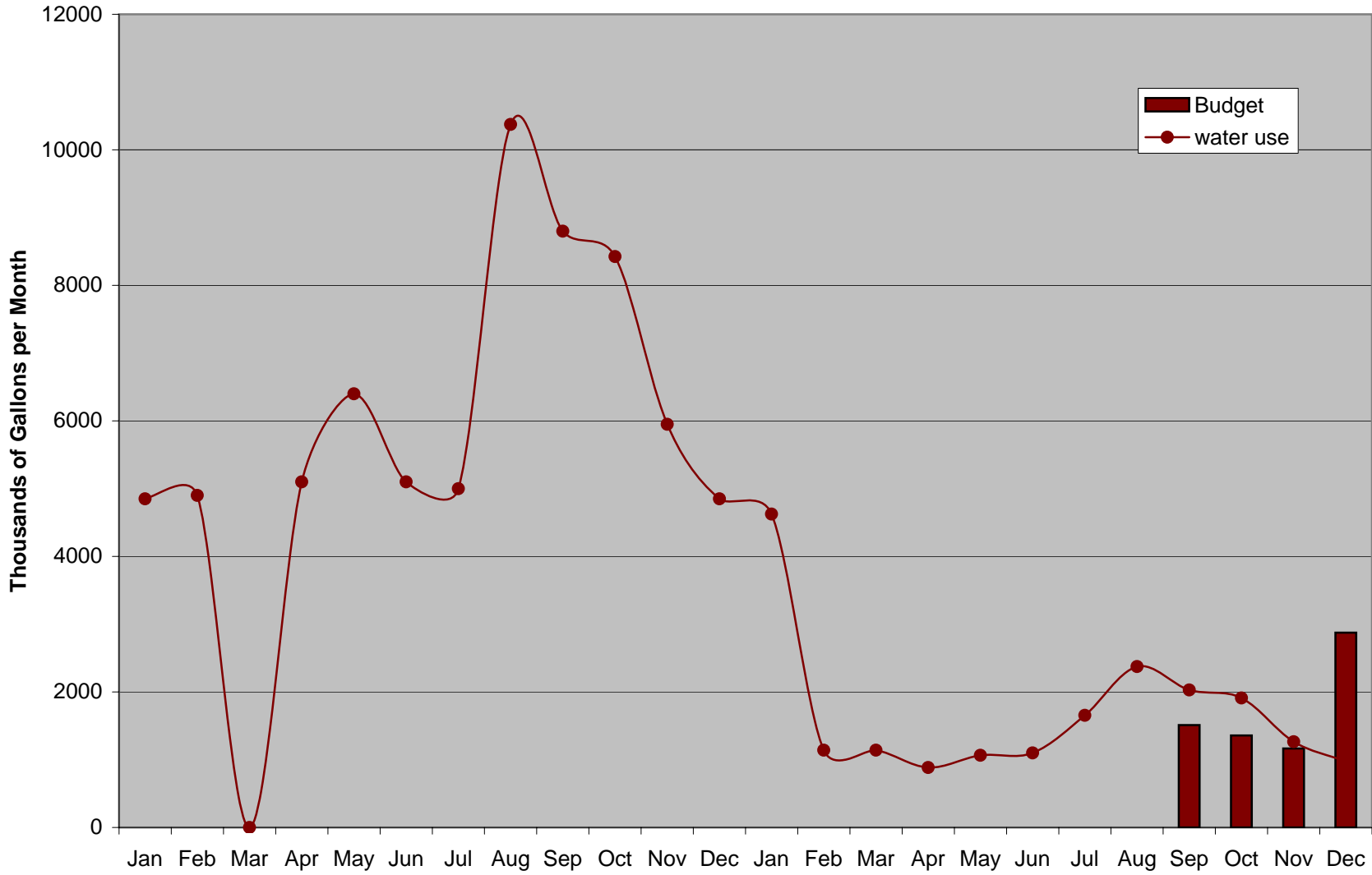




## Summary of Current Water Use and Potential Water Savings Human Services

|                                       | number | per use  |              | total    |                | uses/day/fixture    | subtotal gpd                  |                            |                           | savings           |                                  |  |                        |
|---------------------------------------|--------|--|--------------|----------|----------------|---------------------|-------------------------------|----------------------------|---------------------------|-------------------|----------------------------------|--|------------------------|
|                                       |        | hot  | cold         |          |                |                     | hot                           | cold                       | total                     | hot               | cold                             | total  |                        |
| <b>Toilets (flushing values)</b>      | 14     | -  | 1.28         | 1.28     | gpf            |                     | -                             | 74                         | 74                        | -                 | -                                | 19   | 19                     |
| Clinic                                | 2      | -  | 1.28         | 1.28     | gpf            | 8 flushes           | -                             | 20                         | 20                        | -                 | -                                | 5  | 5                      |
| 1st Floor                             | 6      | -  | 1.28         | 1.28     | gpf            | 4 flushes           | -                             | 31                         | 31                        | -                 | -                                | 8  | 8                      |
| 2nd Floor                             | 6      | -  | 1.28         | 1.28     | gpf            | 3 flushes           | -                             | 23                         | 23                        | -                 | -                                | 6  | 6                      |
|                                       |        |  |              |          |                | 58 Total Flushes    |                               |                            |                           |                   |                                  |  |                        |
| <b>Urinals</b>                        | 4      | -  | -            | -        | gpf            |                     | -                             | -                          | -                         | -                 | -                                | 40   | 40                     |
| 1st Floor                             | 2      | -  | -            | -        | gpf            | 10 flushes          | -                             | -                          | -                         | -                 | -                                | 20   | 20                     |
| 2nd Floor                             | 2      | -  | -            | -        | gpf            | 10 flushes          | -                             | -                          | -                         | -                 | -                                | 20   | 20                     |
|                                       |        |  |              |          |                | 40 Total Flushes    |                               |                            |                           |                   |                                  |  |                        |
| <b>Sinks</b>                          | 30     | 0.4  | 0.7          | 1.0      | gpm            |                     | 32                            | 59                         | 91                        | 58                | 108                              | 166  | 166                    |
| Clinic                                | 11     | 0.2  | 0.3          | 0.5      | gpm            | 2.0 minutes         | 4                             | 7                          | 11                        | 32                | 59                               | 91   | 91                     |
| 1st Floor Bathrooms (incl. Clinic)    | 6      | 0.2  | 0.3          | 0.5      | gpm            | 3.5 minutes         | 4                             | 7                          | 11                        | 15                | 27                               | 42   | 42                     |
| 2nd Floor Bathrooms                   | 4      | 0.2  | 0.3          | 0.5      | gpm            | 3.3 minutes         | 2                             | 4                          | 7                         | 12                | 22                               | 33   | 33                     |
| Galleys                               | 6      | 0.9  | 1.7          | 2.6      | gpm            | 2.9 minutes         | 16                            | 29                         | 45                        | -                 | -                                | -  | -                      |
| Other (Envi Lab, 2nd FI Family Areas) | 3      | 1.1  | 2.0          | 3.0      | gpm            | 2.0 minutes         | 6                             | 12                         | 18                        | -                 | -                                | -  | -                      |
|                                       |        |  |              |          |                | 160 Total Sink Uses |                               |                            |                           |                   |                                  |  |                        |
| <b>Other</b>                          |        |  |              |          |                |                     |                               |                            |                           |                   |                                  |  |                        |
| Ice Maker (U-Line U-B12115B-00)       | 1      |  | 12           | 12       | gpd            | 1                   | 0                             | 12                         | 12                        | -                 | -                                | -  | -                      |
| Dishwasher (Frigidare Electrolux)     | 2      |  | 7            | 7        | gpl            | 0.5                 | 0                             | 7                          | 7                         | -                 | -                                | -  | -                      |
| Coffee Makers                         | 3      |  | 0.5          | 0.5      | gpd            | 2                   | 0                             | 3                          | 3                         | -                 | -                                | -  | -                      |
| Ice Maker (in refrigerator)           | 6      |  | 0.3          | 0.3      | gpd            | 1                   | 0                             | 2                          | 2                         | -                 | -                                | -  | -                      |
|                                       |        |  |              |          |                |                     | <b>32</b>                     | <b>158</b>                 | <b>190</b>                |                   |                                  |  |                        |
|                                       |        |  |              |          |                |                     | <b>potential reduction</b>    |                            | <b>-54%</b>               |                   |                                  |  |                        |
| <b>Costs to Implement</b>             |        |  |              |          |                |                     |                               |                            |                           |                   |                                  |  |                        |
|                                       |        | <b>Cost</b>                                      |              |          |                |                     |                               |                            |                           |                   |                                  |  |                        |
|                                       | number | Hardware   | Installation | Total    | Payback Period |                     | Annual Energy Savings (kw-hr) | Annual Energy Savings (\$) | Annual Water Savings (\$) | Acre-Feet Savings | Cost of Alternative Water Supply | Annual Cost of Treatment, Delivery, Wastewater | Cost per AF of Savings |
| Toilets                               | 14     | \$ 285   | \$ -         | \$ 3,990 | 127.5 yrs      |                     | -                             | \$ -                       | \$ 31                     | 0.01              | \$ 448                           | \$ 50  | \$ 311,724             |
| Urinals                               | 4      | \$ 185   | \$ -         | \$ 740   | 11.8 yrs       |                     | -                             | \$ -                       | \$ 63                     | 0.03              | \$ 896                           | \$ 100   | \$ 28,907              |
| Sinks                                 | 21     | \$ 3   | \$ -         | \$ 63    | 0.1 yrs        |                     | 3,419                         | \$ 222                     | \$ 300                    | 0.12              | \$ 4,292                         | \$ 480   | \$ 514                 |
|                                       |        |  |              | \$ 4,793 |                |                     |                               |                            |                           | 0.16              | \$ 5,636                         | \$ 630   |                        |
|                                       |        | Cost of Alternative Water Supply                 |              |          | \$ 5,636       |                     |                               |                            |                           |                   |                                  |  |                        |
|                                       |        | Annual Cost of Treatment, Delivery, Augmentation |              |          | \$ 630         |                     |                               |                            |                           |                   |                                  |  |                        |

Justice Center Water Use and Water Budget 2007-2008



## Summary of Current Water Use and Potential Water Savings Justice Building Audit

### Average Wintertime Use Calculations

|   | number | hot | per use |       | total   | uses/day/fixture           | hot | subtotal gpd |       |
|---|--------|-----|---------|-------|---------|----------------------------|-----|--------------|-------|
|   |        |     | cold    | total |         |                            |     | cold         | total |
| <b>Toilets (flushing values)</b>                    | 479    | -   |         | 1.9   | 1.9 gpf |                            | -   | 4,374        | 4,374 |
| Jail Cells  | 300    | -   |         | 2.5   | 2.5 gpf | 4 flushes                  | -   | 3,000        | 3,000 |
| Holding Area  |        |     |         |       |         |                            |     |              |       |
| Bathrooms   | 3      | -   |         | 1.6   | 1.6 gpf | 10 flushes                 | -   | 48           | 48    |
| Detainee Bathrooms                                  | 17     | -   |         | 1.6   | 1.6 gpf | 10 flushes                 | -   | 272          | 272   |
| Jail Kitchen  |        |     |         |       |         |                            |     |              |       |
| Bathrooms   | 1      | -   |         | 1.6   | 1.6 gpf | 20 flushes                 | -   | 32           | 32    |
| Inmate Bathrooms                                    | 1      | -   |         | 1.6   | 1.6 gpf | 12 flushes                 | -   | 19           | 19    |
| Central Controls and Other South Building 1st Floor |        |     |         |       |         |                            |     |              |       |
| Bathrooms   | 9      | -   |         | 1.6   | 1.6 gpf | 5 flushes                  | -   | 72           | 72    |
| Detainee Bathrooms                                  | 1      | -   |         | 1.6   | 1.6 gpf | 12 flushes                 | -   | 19           | 19    |
| Pre-Trail/SWAT/Visitation/Detention                 | 5      | -   |         | 1.6   | 1.6 gpf | 4 flushes                  | -   | 32           | 32    |
| Sherrif's Hall/Coroner's Office                     | 16     | -   |         | 1.6   | 1.6 gpf | 2.5 flushes                | -   | 64           | 64    |
| Office of the Sherrif/EOC/Dispatch                  | 5      | -   |         | 1.6   | 1.6 gpf | 2.5 flushes                | -   | 20           | 20    |
| Old Court Building                                  |        |     |         |       |         |                            |     |              |       |
| Bathrooms   | 50     | -   |         | 1.6   | 1.6 gpf | 5 flushes                  | -   | 400          | 400   |
| Detainee Bathrooms                                  | 8      | -   |         | 1.6   | 1.6 gpf | 2 flushes                  | -   | 26           | 26    |
| New Court Building                                  |        |     |         |       |         |                            |     |              |       |
| Bathrooms   | 25     | -   |         | 1.6   | 1.6 gpf | 5 flushes                  | -   | 200          | 200   |
| Detainee Bathrooms                                  | 4      | -   |         | 1.6   | 1.6 gpf | 1 flushes                  | -   | 6            | 6     |
| DA/Probation  | 34     | -   |         | 1.6   | 1.6 gpf | 3 flushes                  | -   | 163          | 163   |
|   |        |     |         |       |         | 2,059 Total Toilet Flushes |     |              |       |
| <b>Urinals</b>                                      | 21     | -   |         | 1.0   | 1.0 gpf |                            | -   | 343          | 343   |
| Jail Cells  | 0      | -   |         | 1.0   | 1.0 gpf | - flushes                  | -   | -            | -     |
| Holding Area  |        |     |         |       |         |                            |     |              |       |
| Bathrooms   | 0      | -   |         | 1.0   | 1.0 gpf | - flushes                  | -   | -            | -     |
| Detainee Bathrooms                                  | 0      | -   |         | 1.0   | 1.0 gpf | - flushes                  | -   | -            | -     |
| Jail Kitchen  |        |     |         |       |         |                            |     |              |       |
| Bathrooms   | 0      | -   |         | 1.0   | 1.0 gpf | - flushes                  | -   | -            | -     |
| Inmate Bathrooms                                    | 0      | -   |         | 1.0   | 1.0 gpf | - flushes                  | -   | -            | -     |
| Central Controls and Other South Building 1st Floor |        |     |         |       |         |                            |     |              |       |
| Bathrooms   | 0      | -   |         | 1.0   | 1.0 gpf | - flushes                  | -   | -            | -     |
| Detainee Bathrooms                                  | 0      | -   |         | 1.0   | 1.0 gpf | - flushes                  | -   | -            | -     |
| Pre-Trail/SWAT/Visitation/Detention                 | 1      | -   |         | 1.0   | 1.0 gpf | 12 flushes                 | -   | 12           | 12    |
| Sherrif's Hall/Coroner's Office                     | 3      | -   |         | 1.0   | 1.0 gpf | 6 flushes                  | -   | 18           | 18    |
| Office of the Sherrif/EOC/Dispatch                  | 1      | -   |         | 1.0   | 1.0 gpf | 12 flushes                 | -   | 12           | 12    |
| Old Court Building                                  |        |     |         |       |         |                            |     |              |       |
| Bathrooms   | 7      | -   |         | 1.0   | 1.0 gpf | 25 flushes                 | -   | 175          | 175   |
| Detainee Bathrooms                                  | 0      | -   |         | 1.0   | 1.0 gpf | - flushes                  | -   | -            | -     |
| New Court Building                                  |        |     |         |       |         |                            |     |              |       |
| Bathrooms   | 6      | -   |         | 1.0   | 1.0 gpf | 15 flushes                 | -   | 90           | 90    |
| Detainee Bathrooms                                  | 0      | -   |         | 1.0   | 1.0 gpf | - flushes                  | -   | -            | -     |
| DA/Probation  | 3      | -   |         | 1.0   | 1.0 gpf | 12 flushes                 | -   | 36           | 36    |
|   |        |     |         |       |         | 343 Total Flushes          |     |              |       |

## Summary of Current Water Use and Potential Water Savings Justice Building Audit

|   |     |     |     |         |             |       |                 |       |
|---|-----|-----|-----|---------|-------------|-------|-----------------|-------|
| <b>Sinks (bath unless otherwise noted)</b>          | 521 | 1.8 | 2.5 | 4.0 gpm |             | 3,087 | 3,834           | 6,921 |
| Jail Cells  | 300 | 2.1 | 3.9 | 6.0 gpm | 2.0 minutes | 1,260 | 2,340           | 3,600 |
| Holding Area  |     |     |     |         |             |       |                 |       |
| Bathrooms   | 3   | 1.2 | 2.3 | 3.5 gpm | 3.5 minutes | 13    | 24              | 37    |
| Detainee Bathrooms                                  | 17  | 1.8 | 3.3 | 5.0 gpm | 3.5 minutes | 104   | 193             | 298   |
| Galleys   | 1   | 1.2 | 2.3 | 3.5 gpm | 7.5 minutes | 9     | 17              | 26    |
| Jail Kitchen  |     |     |     |         |             |       |                 |       |
| Bathrooms   | 1   | 1.1 | 2.0 | 3.0 gpm | 7.0 minutes | 7     | 14              | 21    |
| Inmate Bathrooms                                    | 1   | 1.8 | 3.3 | 5.0 gpm | 4.2 minutes | 7     | 14              | 21    |
| Kitchen   | 4   | 5.1 | 0.9 | 6.0 gpm | 40 minutes  | 816   | 144             | 960   |
| Kitchen/Handwash                                    | 4   | 3.0 | 0.5 | 3.5 gpm | 6.1 minutes | 73    | 13              | 86    |
| Central Controls and Other South Building 1st Floor |     |     |     |         |             |       |                 |       |
| Bathrooms   | 9   | 1.1 | 2.1 | 3.3 gpm | 1.8 minutes | 18    | 34              | 52    |
| Detainee Bathrooms                                  | 1   | 2.1 | 3.9 | 6.0 gpm | 4.2 minutes | 9     | 16              | 25    |
| Galleys (building support, medical, CC)             | 3   | 1.2 | 2.3 | 3.5 gpm | 2.3 minutes | 9     | 16              | 25    |
| Labs  | 6   | 1.4 | 2.6 | 4.0 gpm | 0.7 minutes | 6     | 11              | 17    |
| Exam Rooms (medical, morgue, hair care)             | 11  | 1.4 | 2.6 | 4.0 gpm | 3.5 minutes | 54    | 100             | 154   |
| Pre-Trail/SWAT/Visitation/Detention                 |     |     |     |         |             |       |                 |       |
| Bathrooms   | 4   | 1.8 | 3.4 | 5.2 gpm | 2.8 minutes | 20    | 38              | 58    |
| Galleys   | 1   | 1.2 | 2.3 | 3.5 gpm | 5.0 minutes | 6     | 11              | 18    |
| Sherrif's Hall/Coroner's Office                     |     |     |     |         |             |       |                 |       |
| Bathrooms   | 19  | 1.2 | 2.3 | 3.5 gpm | 1.1 minutes | 25    | 46              | 71    |
| Galleys   | 3   | 2.4 | 1.9 | 4.3 gpm | 5.0 minutes | 35    | 29              | 65    |
| Office of the Sherrif/EOC/Dispatch                  |     |     |     |         |             |       |                 |       |
| Bathrooms   | 6   | 1.2 | 2.3 | 3.5 gpm | 1.4 minutes | 11    | 20              | 30    |
| Galleys   | 2   | 0.9 | 1.6 | 2.5 gpm | 5.0 minutes | 9     | 16              | 25    |
| Old Court Building                                  |     |     |     |         |             |       |                 |       |
| Bathrooms (public, judge's chambers, jury room)     | 44  | 1.2 | 2.1 | 3.3 gpm | 3.4 minutes | 172   | 319             | 491   |
| Detainee Bathrooms                                  | 8   | 1.2 | 2.1 | 3.3 gpm | 0.7 minutes | 6     | 12              | 18    |
| Galleys/Jury Rooms                                  | 9   | 1.2 | 2.3 | 3.5 gpm | 2.0 minutes | 22    | 41              | 63    |
| Kitchen (Concessionaire)                            |     |     |     |         |             |       |                 |       |
| Kitchen   | 3   | 6.0 | 1.1 | 7.0 gpm | 12 minutes  | 214   | 38              | 252   |
| Kitchen/Handwash                                    | 3   | 1.2 | 1.0 | 2.2 gpm | 2 minutes   | 7     | 6               | 13    |
| New Court Building                                  |     |     |     |         |             |       |                 |       |
| Bathrooms (public, judge's chambers, jury room)     | 19  | 1.2 | 2.1 | 3.3 gpm | 4 minutes   | 87    | 161             | 248   |
| Detainee Bathrooms                                  | 4   | 1.2 | 2.1 | 3.3 gpm | 0.4 minutes | 2     | 3               | 5     |
| Galleys/Jury Rooms                                  | 4   | 1.2 | 2.1 | 3.3 gpm | 3 minutes   | 12    | 21              | 33    |
| DA/Probation  |     |     |     |         |             |       |                 |       |
| Bathrooms   | 25  | 1.2 | 2.3 | 3.5 gpm | 2 minutes   | 59    | 110             | 169   |
| Galleys   | 6   | 1.2 | 2.3 | 3.5 gpm | 2 minutes   | 15    | 27              | 42    |
|   |     |     |     |         |             | 3,926 | Total Sink Uses |       |
| <b>Shower</b>                                       | 83  | 1.3 | 0.4 | 1.7     |             | 7,451 | 2,484           | 9,935 |
| Jail Cells  | 66  | 1.8 | 0.6 | 2.4 gpm | 61 minutes  | 7,125 | 2,375           | 9,500 |
| Holding Area  | 2   | 2.6 | 0.9 | 3.5 gpm | 5 minutes   | 26    | 9               | 35    |
| Central Controls and Other South Building           | 2   | 2.6 | 0.9 | 3.5 gpm | 5 minutes   | 26    | 9               | 35    |

## Summary of Current Water Use and Potential Water Savings Justice Building Audit

|                                     |   |     |     |         |                       |     |    |     |
|-------------------------------------|---|-----|-----|---------|-----------------------|-----|----|-----|
| Pre-Trail/SWAT/Visitation/Detention | 0 | -   | -   | - gpm   | - minutes             | -   | -  | -   |
| Sherrif's Hall/Coroner's Office     | 9 | 2.6 | 0.9 | 3.5 gpm | 10 minutes            | 236 | 79 | 315 |
| Office of the Sherrif/EOC/Dispatch  | 0 | -   | -   | - gpm   | - minutes             | -   | -  | -   |
| Old Court Building                  | 0 | -   | -   | - gpm   | - minutes             | -   | -  | -   |
| New Court Building                  | 0 | -   | -   | - gpm   | - minutes             | -   | -  | -   |
| DA/Probation                        | 4 | 1.9 | 0.6 | 2.5 gpm | 5 minutes             | 38  | 13 | 50  |
|                                     |   |     |     |         | 417 Total Shower Uses |     |    |     |

### Other

|   |    |   |     |         |             |               |                 |                      |
|---|----|---|-----|---------|-------------|---------------|-----------------|----------------------|
| Drinking Fountains                            | 13 | - | 0.5 | 0.5 gpd | 1           | -             | 7               | 7                    |
| Janitor Closet                                | 23 | - | 10  | 10 gpd  | 1           | -             | 230             | 230                  |
| Dishwashers (Kenmore 665.17002.400)           | 1  | - | 16  | 16 gpl  | 1           | -             | 16              | 16                   |
| Coffee Makers                                 | 18 | - | 0.5 | 0.5 gpd | 2           | -             | 18              | 18                   |
| Ice Maker (in refrigerator)                   | 12 | - | 0.3 | 0.3 gpd | 1           | -             | 4               | 4                    |
| Ice Maker (Manitowoc - Air Cooled)            | 1  | - | 40  | 40 gpd  | 1           | -             | 40              | 40                   |
| Clothes Washer (Maytag Top Loader)            | 12 | - | 40  | 40 gpl  | 5           | -             | 2,286           | 2,286                |
| Washer/Extractor (Unimac 50# UC 50MN2FU40001) | 4  | - | 57  | 57 gpl  | 29          | -             | 6,514           | 6,514                |
| Dishwasher (Hobart - CRS 86A)                 | 1  | - | 133 | 133 gph | 4.5 hrs/day | -             | 599             | 599                  |
| Grinder (Salvajor MP914)                      | 2  | - | 2.0 | 2.0 gpm | 270 min/day | -             | 1,080           | 1,080                |
| Wash Bay in Jail Kitchen                      | 1  | - | 10  | 10 gpd  | 1           | -             | 10              | 10                   |
| Cooling Water Towers                          | 2  | - | 940 | 940 gpd | 0.5         | -             | 940             | 940                  |
| Cleveland Steamers                            | 3  | - | 12  | 12 gpd  | 1           | -             | 36              | 36                   |
| Coffee Maker with Fill Sink                   | 1  | - | 28  | 28 gpd  | 1           | -             | 28              | 28                   |
| Drips, Leaks and Other Undisclosed Uses       | 1  | - | 1.5 | 1.5 gpm | 1440        | -             | 2,160           | 2,160                |
|   |    |   |     |         |             | <b>10,538</b> | <b>25,002</b>   | <b>35,540</b>        |
|   |    |   |     |         |             |               | <b>observed</b> | <b>38,000</b>        |
|   |    |   |     |         |             |               | observed        | 1,140,000            |
|   |    |   |     |         |             |               | observed        | 32 days at max       |
|   |    |   |     |         |             |               | observed        | 35,533 aver day      |
|   |    |   |     |         |             |               | observed        | 1,066,000 aver month |

### Maximum Wintertime Use Calculations

|   | number | hot | per use |       | total   | uses/day/fixture | hot | subtotal gpd |       |
|---|--------|-----|---------|-------|---------|------------------|-----|--------------|-------|
|   |        |     | cold    | total |         |                  |     | cold         | total |
| <b>Toilets (flushing values)</b>                    | 479    | -   |         | 1.9   | 1.9 gpf |                  | -   | 4,434        | 4,434 |
| Jail Cells  | 300    | -   |         | 2.5   | 2.5 gpf | 4 flushes        | -   | 3,000        | 3,000 |
| Holding Area  |        |     |         |       |         |                  |     |              |       |
| Bathrooms   | 3      | -   |         | 1.6   | 1.6 gpf | 10 flushes       | -   | 48           | 48    |
| Detainee Bathrooms                                  | 17     | -   |         | 1.6   | 1.6 gpf | 10 flushes       | -   | 272          | 272   |
| Jail Kitchen  |        |     |         |       |         |                  |     |              |       |
| Bathrooms   | 1      | -   |         | 1.6   | 1.6 gpf | 20 flushes       | -   | 32           | 32    |
| Inmate Bathrooms                                    | 1      | -   |         | 1.6   | 1.6 gpf | 12 flushes       | -   | 19           | 19    |
| Central Controls and Other South Building 1st Floor |        |     |         |       |         |                  |     |              |       |
| Bathrooms   | 9      | -   |         | 1.6   | 1.6 gpf | 5 flushes        | -   | 72           | 72    |
| Detainee Bathrooms                                  | 1      | -   |         | 1.6   | 1.6 gpf | 12 flushes       | -   | 19           | 19    |
| Pre-Trail/SWAT/Visitation/Detention                 | 5      | -   |         | 1.6   | 1.6 gpf | 4 flushes        | -   | 32           | 32    |
| Sherrif's Hall/Coroner's Office                     | 16     | -   |         | 1.6   | 1.6 gpf | 2.5 flushes      | -   | 64           | 64    |
| Office of the Sherrif/EOC/Dispatch                  | 5      | -   |         | 1.6   | 1.6 gpf | 2.5 flushes      | -   | 20           | 20    |
| Old Court Building                                  |        |     |         |       |         |                  |     |              |       |

## Summary of Current Water Use and Potential Water Savings Justice Building Audit

|   |   |     |     |     |         |                            |       |       |       |
|---|---|-----|-----|-----|---------|----------------------------|-------|-------|-------|
|   | Bathrooms                               | 50  | -   | 1.6 | 1.6 gpf | 6 flushes                  | -     | 440   | 440   |
|   | Detainee Bathrooms                      | 8   | -   | 1.6 | 1.6 gpf | 2 flushes                  | -     | 26    | 26    |
| New Court Building                                  |   |     |     |     |         |                            |       |       |       |
|   | Bathrooms                               | 25  | -   | 1.6 | 1.6 gpf | 6 flushes                  | -     | 220   | 220   |
|   | Detainee Bathrooms                      | 4   | -   | 1.6 | 1.6 gpf | 1 flushes                  | -     | 6     | 6     |
| DA/Probation  |   | 34  | -   | 1.6 | 1.6 gpf | 3 flushes                  | -     | 163   | 163   |
|   |   |     |     |     |         | 2,096 Total Toilet Flushes |       |       |       |
| <b>Urinals</b>                                      |   | 21  | -   | 1.0 | 1.0 gpf |                            | -     | 370   | 370   |
| Jail Cells  |   | 0   | -   | 1.0 | 1.0 gpf | - flushes                  | -     | -     | -     |
| Holding Area  |   |     |     |     |         |                            |       |       |       |
|   | Bathrooms                               | 0   | -   | 1.0 | 1.0 gpf | - flushes                  | -     | -     | -     |
|   | Detainee Bathrooms                      | 0   | -   | 1.0 | 1.0 gpf | - flushes                  | -     | -     | -     |
| Jail Kitchen  |   |     |     |     |         |                            |       |       |       |
|   | Bathrooms                               | 0   | -   | 1.0 | 1.0 gpf | - flushes                  | -     | -     | -     |
|   | Inmate Bathrooms                        | 0   | -   | 1.0 | 1.0 gpf | - flushes                  | -     | -     | -     |
| Central Controls and Other South Building 1st Floor |   |     |     |     |         |                            |       |       |       |
|   | Bathrooms                               | 0   | -   | 1.0 | 1.0 gpf | - flushes                  | -     | -     | -     |
|   | Detainee Bathrooms                      | 0   | -   | 1.0 | 1.0 gpf | - flushes                  | -     | -     | -     |
| Pre-Trail/SWAT/Visitation/Detention                 |   | 1   | -   | 1.0 | 1.0 gpf | 12 flushes                 | -     | 12    | 12    |
| Sherrif's Hall/Coroner's Office                     |   | 3   | -   | 1.0 | 1.0 gpf | 6 flushes                  | -     | 18    | 18    |
| Office of the Sherrif/EOC/Dispatch                  |   | 1   | -   | 1.0 | 1.0 gpf | 12 flushes                 | -     | 12    | 12    |
| Old Court Building                                  |   |     |     |     |         |                            |       |       |       |
|   | Bathrooms                               | 7   | -   | 1.0 | 1.0 gpf | 28 flushes                 | -     | 193   | 193   |
|   | Detainee Bathrooms                      | 0   | -   | 1.0 | 1.0 gpf | - flushes                  | -     | -     | -     |
| New Court Building                                  |   |     |     |     |         |                            |       |       |       |
|   | Bathrooms                               | 6   | -   | 1.0 | 1.0 gpf | 17 flushes                 | -     | 99    | 99    |
|   | Detainee Bathrooms                      | 0   | -   | 1.0 | 1.0 gpf | - flushes                  | -     | -     | -     |
| DA/Probation  |   | 3   | -   | 1.0 | 1.0 gpf | 12 flushes                 | -     | 36    | 36    |
|   |   |     |     |     |         | 370 Total Flushes          |       |       |       |
| <b>Sinks (bath unless otherwise noted)</b>          |   | 521 | 1.8 | 2.5 | 4.0 gpm |                            | 3,113 | 3,882 | 6,995 |
| Jail Cells  |   | 300 | 2.1 | 3.9 | 6.0 gpm | 2.0 minutes                | 1,260 | 2,340 | 3,600 |
| Holding Area  |   |     |     |     |         |                            |       |       |       |
|   | Bathrooms                               | 3   | 1.2 | 2.3 | 3.5 gpm | 3.5 minutes                | 13    | 24    | 37    |
|   | Detainee Bathrooms                      | 17  | 1.8 | 3.3 | 5.0 gpm | 3.5 minutes                | 104   | 193   | 298   |
|   | Galleys                                 | 1   | 1.2 | 2.3 | 3.5 gpm | 7.5 minutes                | 9     | 17    | 26    |
| Jail Kitchen  |   |     |     |     |         |                            |       |       |       |
|   | Bathrooms                               | 1   | 1.1 | 2.0 | 3.0 gpm | 7.0 minutes                | 7     | 14    | 21    |
|   | Inmate Bathrooms                        | 1   | 1.8 | 3.3 | 5.0 gpm | 4.2 minutes                | 7     | 14    | 21    |
|   | Kitchen                                 | 4   | 5.1 | 0.9 | 6.0 gpm | 40 minutes                 | 816   | 144   | 960   |
|   | Kitchen/Handwash                        | 4   | 3.0 | 0.5 | 3.5 gpm | 6.1 minutes                | 73    | 13    | 86    |
| Central Controls and Other South Building 1st Floor |   |     |     |     |         |                            |       |       |       |
|   | Bathrooms                               | 9   | 1.1 | 2.1 | 3.3 gpm | 1.8 minutes                | 18    | 34    | 52    |
|   | Detainee Bathrooms                      | 1   | 2.1 | 3.9 | 6.0 gpm | 4.2 minutes                | 9     | 16    | 25    |
|   | Galleys (building support, medical, CC) | 3   | 1.2 | 2.3 | 3.5 gpm | 2.3 minutes                | 9     | 16    | 25    |
|   | Labs                                    | 6   | 1.4 | 2.6 | 4.0 gpm | 0.7 minutes                | 6     | 11    | 17    |
|   | Exam Rooms (medical, morgue, hair care) | 11  | 1.4 | 2.6 | 4.0 gpm | 3.5 minutes                | 54    | 100   | 154   |

## Summary of Current Water Use and Potential Water Savings Justice Building Audit

|   |   |    |     |     |         |             |                       |       |       |  |
|---|---|----|-----|-----|---------|-------------|-----------------------|-------|-------|--|
| Pre-Trail/SWAT/Visitation/Detention           |   |    |     |     |         |             |                       |       |       |  |
|   | Bathrooms                                       | 4  | 1.8 | 3.4 | 5.2 gpm | 2.8 minutes | 20                    | 38    | 58    |  |
|   | Galleys   | 1  | 1.2 | 2.3 | 3.5 gpm | 5.0 minutes | 6                     | 11    | 18    |  |
| Sherrif's Hall/Coroner's Office               |   |    |     |     |         |             |                       |       |       |  |
|   | Bathrooms                                       | 19 | 1.2 | 2.3 | 3.5 gpm | 1.1 minutes | 25                    | 46    | 71    |  |
|   | Galleys   | 3  | 2.4 | 1.9 | 4.3 gpm | 5.0 minutes | 35                    | 29    | 65    |  |
| Office of the Sherrif/EOC/Dispatch            |   |    |     |     |         |             |                       |       |       |  |
|   | Bathrooms                                       | 6  | 1.2 | 2.3 | 3.5 gpm | 1.4 minutes | 11                    | 20    | 30    |  |
|   | Galleys   | 2  | 0.9 | 1.6 | 2.5 gpm | 5.0 minutes | 9                     | 16    | 25    |  |
| Old Court Building                            |   |    |     |     |         |             |                       |       |       |  |
|   | Bathrooms (public, judge's chambers, jury room) | 44 | 1.2 | 2.1 | 3.3 gpm | 3.7 minutes | 189                   | 351   | 540   |  |
|   | Detainee Bathrooms                              | 8  | 1.2 | 2.1 | 3.3 gpm | 0.7 minutes | 6                     | 12    | 18    |  |
|   | Galleys/Jury Rooms                              | 9  | 1.2 | 2.3 | 3.5 gpm | 2.0 minutes | 22                    | 41    | 63    |  |
| Kitchen (Concessionaire)                      |   |    |     |     |         |             |                       |       |       |  |
|   | Kitchen   | 3  | 6.0 | 1.1 | 7.0 gpm | 12 minutes  | 214                   | 38    | 252   |  |
|   | Kitchen/Handwash                                | 3  | 1.2 | 1.0 | 2.2 gpm | 2 minutes   | 7                     | 6     | 13    |  |
| New Court Building                            |   |    |     |     |         |             |                       |       |       |  |
|   | Bathrooms (public, judge's chambers, jury room) | 19 | 1.2 | 2.1 | 3.3 gpm | 4 minutes   | 96                    | 178   | 273   |  |
|   | Detainee Bathrooms                              | 4  | 1.2 | 2.1 | 3.3 gpm | 0.4 minutes | 2                     | 3     | 5     |  |
|   | Galleys/Jury Rooms                              | 4  | 1.2 | 2.1 | 3.3 gpm | 3 minutes   | 12                    | 21    | 33    |  |
| DA/Probation                                  |   |    |     |     |         |             |                       |       |       |  |
|   | Bathrooms                                       | 25 | 1.2 | 2.3 | 3.5 gpm | 2 minutes   | 59                    | 110   | 169   |  |
|   | Galleys   | 6  | 1.2 | 2.3 | 3.5 gpm | 2 minutes   | 15                    | 27    | 42    |  |
|   |   |    |     |     |         |             | 3,990 Total Sink Uses |       |       |  |
| <b>Shower</b>                                 |   |    |     |     |         |             |                       |       |       |  |
|   |   | 83 | 1.3 | 0.4 | 1.7     |             | 7,499                 | 2,500 | 9,998 |  |
| Jail Cells                                    |   |    |     |     |         |             |                       |       |       |  |
|   |   | 66 | 1.8 | 0.6 | 2.4 gpm | 61 minutes  | 7,125                 | 2,375 | 9,500 |  |
| Holding Area                                  |   |    |     |     |         |             |                       |       |       |  |
|   |   | 2  | 2.6 | 0.9 | 3.5 gpm | 5 minutes   | 26                    | 9     | 35    |  |
| Central Controls and Other South Building     |   |    |     |     |         |             |                       |       |       |  |
|   |   | 2  | 2.6 | 0.9 | 3.5 gpm | 5 minutes   | 26                    | 9     | 35    |  |
| Pre-Trail/SWAT/Visitation/Detention           |   |    |     |     |         |             |                       |       |       |  |
|   |   | 0  | -   | -   | - gpm   | - minutes   | -                     | -     | -     |  |
| Sherrif's Hall/Coroner's Office               |   |    |     |     |         |             |                       |       |       |  |
|   |   | 9  | 2.6 | 0.9 | 3.5 gpm | 12 minutes  | 284                   | 95    | 378   |  |
| Office of the Sherrif/EOC/Dispatch            |   |    |     |     |         |             |                       |       |       |  |
|   |   | 0  | -   | -   | - gpm   | - minutes   | -                     | -     | -     |  |
| Old Court Building                            |   |    |     |     |         |             |                       |       |       |  |
|   |   | 0  | -   | -   | - gpm   | - minutes   | -                     | -     | -     |  |
| New Court Building                            |   |    |     |     |         |             |                       |       |       |  |
|   |   | 0  | -   | -   | - gpm   | - minutes   | -                     | -     | -     |  |
| DA/Probation                                  |   |    |     |     |         |             |                       |       |       |  |
|   |   | 4  | 1.9 | 0.6 | 2.5 gpm | 5 minutes   | 38                    | 13    | 50    |  |
|   |   |    |     |     |         |             | 417 Total Shower Uses |       |       |  |
| <b>Other</b>                                  |   |    |     |     |         |             |                       |       |       |  |
| Drinking Fountains                            |   |    |     |     |         |             |                       |       |       |  |
|   |   | 13 | -   | 0.5 | 0.5 gpd | 1           | -                     | 7     | 7     |  |
| Janitor Closet                                |   |    |     |     |         |             |                       |       |       |  |
|   |   | 23 | -   | 10  | 10 gpd  | 1           | -                     | 230   | 230   |  |
| Dishwashers (Kenmore 665.17002.400)           |   |    |     |     |         |             |                       |       |       |  |
|   |   | 1  | -   | 16  | 16 gpl  | 1           | -                     | 16    | 16    |  |
| Coffee Makers                                 |   |    |     |     |         |             |                       |       |       |  |
|   |   | 18 | -   | 0.5 | 0.5 gpd | 2           | -                     | 18    | 18    |  |
| Ice Maker (in refrigerator)                   |   |    |     |     |         |             |                       |       |       |  |
|   |   | 12 | -   | 0.3 | 0.3 gpd | 1           | -                     | 4     | 4     |  |
| Ice Maker (Manitowoc - Air Cooled)            |   |    |     |     |         |             |                       |       |       |  |
|   |   | 1  | -   | 40  | 40 gpd  | 1           | -                     | 40    | 40    |  |
| Clothes Washer (Maytag Top Loader)            |   |    |     |     |         |             |                       |       |       |  |
|   |   | 12 | -   | 40  | 40 gpl  | 5           | -                     | 2,286 | 2,286 |  |
| Washer/Extractor (Unimac 50# UC 50MN2FU40001) |   |    |     |     |         |             |                       |       |       |  |
|   |   | 4  | -   | 57  | 57 gpl  | 29          | -                     | 6,514 | 6,514 |  |
| Dishwasher (Hobart - CRS 86A)                 |   |    |     |     |         |             |                       |       |       |  |
|   |   | 1  | -   | 133 | 133 gph | 4.5 hrs/day | -                     | 599   | 599   |  |

## Summary of Current Water Use and Potential Water Savings Justice Building Audit

|   |   |   |       |           |             |   |               |                 |                               |
|---|---|---|-------|-----------|-------------|---|---------------|-----------------|-------------------------------|
| Grinder (Salvajor MP914)                | 2 | - | 2.0   | 2.0 gpm   | 270 min/day | - | 1,080         | 1,080           |                               |
| Wash Bay in Jail Kitchen                | 1 | - | 10    | 10 gpd    | 1           | - | 10            | 10              |                               |
| Cooling Water Towers                    | 2 | - | 1,340 | 1,340 gpd | 0.5         | - | 1,340         | 1,340           |                               |
| Cleveland Steamers                      | 3 | - | 12    | 12 gpd    | 1           | - | 36            | 36              |                               |
| Coffee Maker with Fill Sink             | 1 | - | 28    | 28 gpd    | 1           | - | 28            | 28              |                               |
| Drips, Leaks and Other Undisclosed Uses | 1 | - | 3.0   | 3.0 gpm   | 1440        | - | 4,320         | 4,320           |                               |
|   |   |   |       |           |             |   | <b>10,611</b> | <b>27,712</b>   | <b>38,323 max day</b>         |
|   |   |   |       |           |             |   |               | <b>observed</b> | <b>38,000 average max day</b> |
|   |   |   |       |           |             |   |               | observed        | 1,140,000 max month           |
|   |   |   |       |           |             |   |               |                 | 30 days at max                |
|   |   |   |       |           |             |   |               | observed        | 35,533 aver day               |
|   |   |   |       |           |             |   |               | observed        | 1,066,000 aver month          |

### Average Wintertime Use Savings Calculations

|   | number | hot | per use |       | total    | uses/day/fixture           | hot | subtotal gpd |       | Savings |     |     |
|---|--------|-----|---------|-------|----------|----------------------------|-----|--------------|-------|---------|-----|-----|
|   |        |     | cold    | total |          |                            |     | cold         | total |         |     |     |
| <b>Toilets (flushing values)</b>                    | 479    | -   |         | 1.8   | 1.8 gpf  |                            | -   | 4,167        | 4,167 | -       | 206 | 206 |
| Jail Cells  | 300    | -   |         | 2.5   | 2.5 gpf  | 4 flushes                  | -   | 3,000        | 3,000 | -       | -   | -   |
| Holding Area  |        |     |         |       |          |                            |     |              |       |         |     |     |
| Bathrooms   | 3      | -   |         | 1.28  | 1.28 gpf | 10 flushes                 | -   | 38           | 38    | -       | 10  | 10  |
| Detainee Bathrooms                                  | 17     | -   |         | 1.6   | 1.6 gpf  | 10 flushes                 | -   | 272          | 272   | -       | -   | -   |
| Jail Kitchen  |        |     |         |       |          |                            |     |              |       |         |     |     |
| Bathrooms   | 1      | -   |         | 1.28  | 1.28 gpf | 20 flushes                 | -   | 26           | 26    | -       | 6   | 6   |
| Inmate Bathrooms                                    | 1      | -   |         | 1.6   | 1.6 gpf  | 12 flushes                 | -   | 19           | 19    | -       | -   | -   |
| Central Controls and Other South Building 1st Floor |        |     |         |       |          |                            |     |              |       |         |     |     |
| Bathrooms   | 9      | -   |         | 1.28  | 1.28 gpf | 5 flushes                  | -   | 58           | 58    | -       | 14  | 14  |
| Detainee Bathrooms                                  | 1      | -   |         | 1.6   | 1.6 gpf  | 12 flushes                 | -   | 19           | 19    | -       | -   | -   |
| Pre-Trail/SWAT/Visitation/Detention                 | 5      | -   |         | 1.28  | 1.28 gpf | 4 flushes                  | -   | 26           | 26    | -       | 6   | 6   |
| Sherrif's Hall/Coroner's Office                     | 16     | -   |         | 1.28  | 1.28 gpf | 2.5 flushes                | -   | 51           | 51    | -       | 13  | 13  |
| Office of the Sherrif/EOC/Dispatch                  | 5      | -   |         | 1.28  | 1.28 gpf | 2.5 flushes                | -   | 16           | 16    | -       | 4   | 4   |
| Old Court Building                                  |        |     |         |       |          |                            |     |              |       |         |     |     |
| Bathrooms   | 50     | -   |         | 1.28  | 1.28 gpf | 5 flushes                  | -   | 320          | 320   | -       | 80  | 80  |
| Detainee Bathrooms                                  | 8      | -   |         | 1.6   | 1.6 gpf  | 2 flushes                  | -   | 26           | 26    | -       | -   | -   |
| New Court Building                                  |        |     |         |       |          |                            |     |              |       |         |     |     |
| Bathrooms   | 25     | -   |         | 1.28  | 1.28 gpf | 5 flushes                  | -   | 160          | 160   | -       | 40  | 40  |
| Detainee Bathrooms                                  | 4      | -   |         | 1.6   | 1.6 gpf  | 1 flushes                  | -   | 6            | 6     | -       | -   | -   |
| DA/Probation  | 34     | -   |         | 1.28  | 1.28 gpf | 3 flushes                  | -   | 131          | 131   | -       | 33  | 33  |
|   |        |     |         |       |          | 2,059 Total Toilet Flushes |     |              |       |         |     |     |
| <b>Urinals</b>                                      | 21     | -   |         | 1.0   | 1.0 gpf  |                            | -   | -            | -     | -       | 343 | 343 |
| Jail Cells  | 0      | -   |         | 1.0   | 1.0 gpf  | - flushes                  | -   | -            | -     | -       | -   | -   |
| Holding Area  |        |     |         |       |          |                            |     |              |       |         |     |     |
| Bathrooms   | 0      | -   |         | 1.0   | 1.0 gpf  | - flushes                  | -   | -            | -     | -       | -   | -   |
| Detainee Bathrooms                                  | 0      | -   |         | 1.0   | 1.0 gpf  | - flushes                  | -   | -            | -     | -       | -   | -   |
| Jail Kitchen  |        |     |         |       |          |                            |     |              |       |         |     |     |
| Bathrooms   | 0      | -   |         | 1.0   | 1.0 gpf  | - flushes                  | -   | -            | -     | -       | -   | -   |
| Inmate Bathrooms                                    | 0      | -   |         | 1.0   | 1.0 gpf  | - flushes                  | -   | -            | -     | -       | -   | -   |
| Central Controls and Other South Building 1st Floor |        |     |         |       |          |                            |     |              |       |         |     |     |

## Summary of Current Water Use and Potential Water Savings Justice Building Audit

|   |   |     |     |     |         |                   |       |       |       |     |     |       |
|---|---|-----|-----|-----|---------|-------------------|-------|-------|-------|-----|-----|-------|
|   | Bathrooms                                       | 0   | -   | 1.0 | 1.0 gpf | - flushes         | -     | -     | -     | -   | -   | -     |
|   | Detainee Bathrooms                              | 0   | -   | 1.0 | 1.0 gpf | - flushes         | -     | -     | -     | -   | -   | -     |
| Pre-Trail/SWAT/Visitation/Detention                 |   | 1   | -   | -   | - gpf   | 12 flushes        | -     | -     | -     | -   | 12  | 12    |
| Sherrif's Hall/Coroner's Office                     |   | 3   | -   | -   | - gpf   | 6 flushes         | -     | -     | -     | -   | 18  | 18    |
| Office of the Sherrif/EOC/Dispatch                  |   | 1   | -   | -   | - gpf   | 12 flushes        | -     | -     | -     | -   | 12  | 12    |
| Old Court Building                                  |   |     |     |     |         |                   |       |       |       |     |     |       |
|   | Bathrooms                                       | 7   | -   | -   | - gpf   | 25 flushes        | -     | -     | -     | -   | 175 | 175   |
|   | Detainee Bathrooms                              | 0   | -   | 1.0 | 1.0 gpf | - flushes         | -     | -     | -     | -   | -   | -     |
| New Court Building                                  |   |     |     |     |         |                   |       |       |       |     |     |       |
|   | Bathrooms                                       | 6   | -   | -   | - gpf   | 15 flushes        | -     | -     | -     | -   | 90  | 90    |
|   | Detainee Bathrooms                              | 0   | -   | 1.0 | 1.0 gpf | - flushes         | -     | -     | -     | -   | -   | -     |
| DA/Probation  |   | 3   | -   | -   | - gpf   | 12 flushes        | -     | -     | -     | -   | 36  | 36    |
|   |   |     |     |     |         | 343 Total Flushes |       |       |       |     |     |       |
| <b>Sinks (bath unless otherwise noted)</b>          |   | 521 | 1.3 | 1.8 | 2.9 gpm |                   | 2,673 | 3,171 | 5,844 | 414 | 664 | 1,078 |
| Jail Cells  |   | 300 | 2.1 | 3.9 | 6.0 gpm | 2.0 minutes       | 1,260 | 2,340 | 3,600 | -   | -   | -     |
| Holding Area  |   |     |     |     |         |                   |       |       |       |     |     |       |
|   | Bathrooms                                       | 3   | 0.2 | 0.3 | 0.5 gpm | 3.5 minutes       | 2     | 3     | 5     | 11  | 20  | 32    |
|   | Detainee Bathrooms                              | 17  | 1.8 | 3.3 | 5.0 gpm | 3.5 minutes       | 104   | 193   | 298   | -   | -   | -     |
|   | Galleys   | 1   | 1.2 | 2.3 | 3.5 gpm | 7.5 minutes       | 9     | 17    | 26    | -   | -   | -     |
| Jail Kitchen  |   |     |     |     |         |                   |       |       |       |     |     |       |
|   | Bathrooms                                       | 1   | 0.2 | 0.3 | 0.5 gpm | 7.0 minutes       | 1     | 2     | 4     | 6   | 11  | 18    |
|   | Inmate Bathrooms                                | 1   | 1.8 | 3.3 | 5.0 gpm | 4.2 minutes       | 7     | 14    | 21    | -   | -   | -     |
|   | Kitchen   | 4   | 5.1 | 0.9 | 6.0 gpm | 40 minutes        | 816   | 144   | 960   | -   | -   | -     |
|   | Kitchen/Handwash                                | 4   | 0.4 | 0.1 | 0.5 gpm | 6.1 minutes       | 10    | 2     | 12    | 62  | 11  | 74    |
| Central Controls and Other South Building 1st Floor |   |     |     |     |         |                   |       |       |       |     |     |       |
|   | Bathrooms                                       | 9   | 0.2 | 0.3 | 0.5 gpm | 1.8 minutes       | 3     | 5     | 8     | 15  | 28  | 44    |
|   | Detainee Bathrooms                              | 1   | 2.1 | 3.9 | 6.0 gpm | 4.2 minutes       | 9     | 16    | 25    | -   | -   | -     |
|   | Galleys (building support, medical, CC)         | 3   | 1.2 | 2.3 | 3.5 gpm | 2.3 minutes       | 9     | 16    | 25    | -   | -   | -     |
|   | Labs  | 6   | 1.4 | 2.6 | 4.0 gpm | 0.7 minutes       | 6     | 11    | 17    | -   | -   | -     |
|   | Exam Rooms (medical, morgue, hair care)         | 11  | 1.4 | 2.6 | 4.0 gpm | 3.5 minutes       | 54    | 100   | 154   | -   | -   | -     |
| Pre-Trail/SWAT/Visitation/Detention                 |   |     |     |     |         |                   |       |       |       |     |     |       |
|   | Bathrooms                                       | 4   | 0.2 | 0.3 | 0.5 gpm | 2.8 minutes       | 2     | 4     | 6     | 18  | 34  | 53    |
|   | Galleys   | 1   | 1.2 | 2.3 | 3.5 gpm | 5.0 minutes       | 6     | 11    | 18    | -   | -   | -     |
| Sherrif's Hall/Coroner's Office                     |   |     |     |     |         |                   |       |       |       |     |     |       |
|   | Bathrooms                                       | 19  | 0.2 | 0.3 | 0.5 gpm | 1.1 minutes       | 4     | 7     | 10    | 21  | 40  | 61    |
|   | Galleys   | 3   | 2.4 | 1.9 | 4.3 gpm | 5.0 minutes       | 35    | 29    | 65    | -   | -   | -     |
| Office of the Sherrif/EOC/Dispatch                  |   |     |     |     |         |                   |       |       |       |     |     |       |
|   | Bathrooms                                       | 6   | 0.2 | 0.3 | 0.5 gpm | 1.4 minutes       | 2     | 3     | 4     | 9   | 17  | 26    |
|   | Galleys   | 2   | 0.9 | 1.6 | 2.5 gpm | 5.0 minutes       | 9     | 16    | 25    | -   | -   | -     |
| Old Court Building                                  |   |     |     |     |         |                   |       |       |       |     |     |       |
|   | Bathrooms (public, judge's chambers, jury room) | 44  | 0.2 | 0.3 | 0.5 gpm | 3.4 minutes       | 26    | 48    | 74    | 146 | 271 | 417   |
|   | Detainee Bathrooms                              | 8   | 1.2 | 2.1 | 3.3 gpm | 0.7 minutes       | 6     | 12    | 18    | -   | -   | -     |
|   | Galleys/Jury Rooms                              | 9   | 1.2 | 2.3 | 3.5 gpm | 2.0 minutes       | 22    | 41    | 63    | -   | -   | -     |
| Kitchen (Concessionaire)                            |   |     |     |     |         |                   |       |       |       |     |     |       |
|   | Kitchen   | 3   | 6.0 | 1.1 | 7.0 gpm | 12 minutes        | 214   | 38    | 252   | -   | -   | -     |
|   | Kitchen/Handwash                                | 3   | 1.2 | 1.0 | 2.2 gpm | 2 minutes         | 7     | 6     | 13    | -   | -   | -     |
| New Court Building                                  |   |     |     |     |         |                   |       |       |       |     |     |       |

## Summary of Current Water Use and Potential Water Savings Justice Building Audit

|   |    |     |     |         |                       |       |              |               |               |            |              |              |
|---|----|-----|-----|---------|-----------------------|-------|--------------|---------------|---------------|------------|--------------|--------------|
| Bathrooms (public, judge's chambers, jury room) | 19 | 0.2 | 0.3 | 0.5 gpm | 4 minutes             | 13    | 24           | 38            | 74            | 137        | 211          |              |
| Detainee Bathrooms                              | 4  | 1.2 | 2.1 | 3.3 gpm | 0.4 minutes           | 2     | 3            | 5             | -             | -          | -            |              |
| Galleys/Jury Rooms                              | 4  | 1.2 | 2.1 | 3.3 gpm | 3 minutes             | 12    | 21           | 33            | -             | -          | -            |              |
| DA/Probation                                    |    |     |     |         |                       |       |              |               |               |            |              |              |
| Bathrooms                                       | 25 | 0.2 | 0.3 | 0.5 gpm | 2 minutes             | 8     | 16           | 24            | 51            | 94         | 145          |              |
| Galleys   | 6  | 1.2 | 2.3 | 3.5 gpm | 2 minutes             | 15    | 27           | 42            | -             | -          | -            |              |
|   |    |     |     |         | 3,926 Total Sink Uses |       |              |               |               |            |              |              |
| <b>Shower</b>                                   | 83 | 0.7 | 0.2 | 0.9     |                       | 7,271 | 2,424        | 9,695         | 180           | 60         | 240          |              |
| Jail Cells                                      | 66 | 1.8 | 0.6 | 2.4 gpm | 61 minutes            | 7,125 | 2,375        | 9,500         | -             | -          | -            |              |
| Holding Area                                    | 2  | 1.1 | 0.4 | 1.5 gpm | 5 minutes             | 11    | 4            | 15            | 15            | 5          | 20           |              |
| Central Controls and Other South Building       | 2  | 1.1 | 0.4 | 1.5 gpm | 5 minutes             | 11    | 4            | 15            | 15            | 5          | 20           |              |
| Pre-Trail/SWAT/Visitation/Detention             | 0  | -   | -   | - gpm   | - minutes             | -     | -            | -             | -             | -          | -            |              |
| Sherrif's Hall/Coroner's Office                 | 9  | 1.1 | 0.4 | 1.5 gpm | 10 minutes            | 101   | 34           | 135           | 135           | 45         | 180          |              |
| Office of the Sherrif/EOC/Dispatch              | 0  | -   | -   | - gpm   | - minutes             | -     | -            | -             | -             | -          | -            |              |
| Old Court Building                              | 0  | -   | -   | - gpm   | - minutes             | -     | -            | -             | -             | -          | -            |              |
| New Court Building                              | 0  | -   | -   | - gpm   | - minutes             | -     | -            | -             | -             | -          | -            |              |
| DA/Probation                                    | 4  | 1.1 | 0.4 | 1.5 gpm | 5 minutes             | 23    | 8            | 30            | 15            | 5          | 20           |              |
|   |    |     |     |         | 417 Total Shower Uses |       |              |               |               |            |              |              |
| <b>Other</b>                                    |    |     |     |         |                       |       |              |               |               |            |              |              |
| Drinking Fountains                              | 13 | -   | 0.5 | 0.5 gpd | 1                     | -     | 7            | 7             | -             | -          | -            |              |
| Janitor Closet                                  | 23 | -   | 10  | 10 gpd  | 1                     | -     | 230          | 230           | -             | -          | -            |              |
| Dishwashers (Kenmore 665.17002.400)             | 1  | -   | 16  | 16 gpl  | 1                     | -     | 16           | 16            | -             | -          | -            |              |
| Coffee Makers                                   | 18 | -   | 0.5 | 0.5 gpd | 2                     | -     | 18           | 18            | -             | -          | -            |              |
| Ice Maker (in refrigerator)                     | 12 | -   | 0.3 | 0.3 gpd | 1                     | -     | 4            | 4             | -             | -          | -            |              |
| Ice Maker (Manitowoc - Air Cooled)              | 1  | -   | 40  | 40 gpd  | 1                     | -     | 40           | 40            | -             | -          | -            |              |
| Clothes Washer (Maytag Top Loader)              | 12 | -   | 24  | 24 gpl  | 5                     | -     | 1,371        | 1,371         | -             | 914        | 914          |              |
| Washer/Extractor (Unimac 50# UC 50MN2FU40001)   | 4  | -   | 57  | 57 gpl  | 29                    | -     | 6,514        | 6,514         | -             | -          | -            |              |
| Dishwasher (Hobart - CRS 86A)                   | 1  | -   | 133 | 133 gph | 4.5 hrs/day           | -     | 599          | 599           | -             | -          | -            |              |
| Grinder (Salvajor MP914)                        | 2  | -   | 2.0 | 2.0 gpm | 270 min/day           | -     | 1,080        | 1,080         | -             | -          | -            |              |
| Wash Bay in Jail Kitchen                        | 1  | -   | 10  | 10 gpd  | 1                     | -     | 10           | 10            | -             | -          | -            |              |
| Cooling Water Towers                            | 2  | -   | 940 | 940 gpd | 0.5                   | -     | 940          | 940           | -             | -          | -            |              |
| Cleveland Steamers                              | 3  | -   | 12  | 12 gpd  | 1                     | -     | 36           | 36            | -             | -          | -            |              |
| Coffee Maker with Fill Sink                     | 1  | -   | 28  | 28 gpd  | 1                     | -     | 28           | 28            | -             | -          | -            |              |
| Drips, Leaks and Other Undisclosed Uses         | 1  | -   | 1.5 | 1.5 gpm | 1440                  | -     | 2,160        | 2,160         | -             | -          | -            |              |
|   |    |     |     |         |                       |       | <b>9,944</b> | <b>22,815</b> | <b>32,759</b> | <b>594</b> | <b>2,187</b> | <b>2,781</b> |
|   |    |     |     |         |                       |       |              |               |               |            |              | <b>-8%</b>   |

### Maximum Wintertime Use Savings

|                                  | number | hot | per use |       | total    | uses/day/fixture | hot | subtotal gpd |       | Savings |     |     |
|----------------------------------|--------|-----|---------|-------|----------|------------------|-----|--------------|-------|---------|-----|-----|
|                                  |        |     | cold    | total |          |                  |     | cold         | total |         |     |     |
| <b>Toilets (flushing values)</b> | 479    | -   | -       | 1.8   | 1.8 gpf  |                  | -   | 4,215        | 4,215 | -       | 218 | 218 |
| Jail Cells                       | 300    | -   | -       | 2.5   | 2.5 gpf  | 4 flushes        | -   | 3,000        | 3,000 | -       | -   | -   |
| Holding Area                     |        |     |         |       |          |                  |     |              |       |         |     |     |
| Bathrooms                        | 3      | -   | -       | 1.28  | 1.28 gpf | 10 flushes       | -   | 38           | 38    | -       | 10  | 10  |
| Detainee Bathrooms               | 17     | -   | -       | 1.6   | 1.6 gpf  | 10 flushes       | -   | 272          | 272   | -       | -   | -   |

## Summary of Current Water Use and Potential Water Savings Justice Building Audit

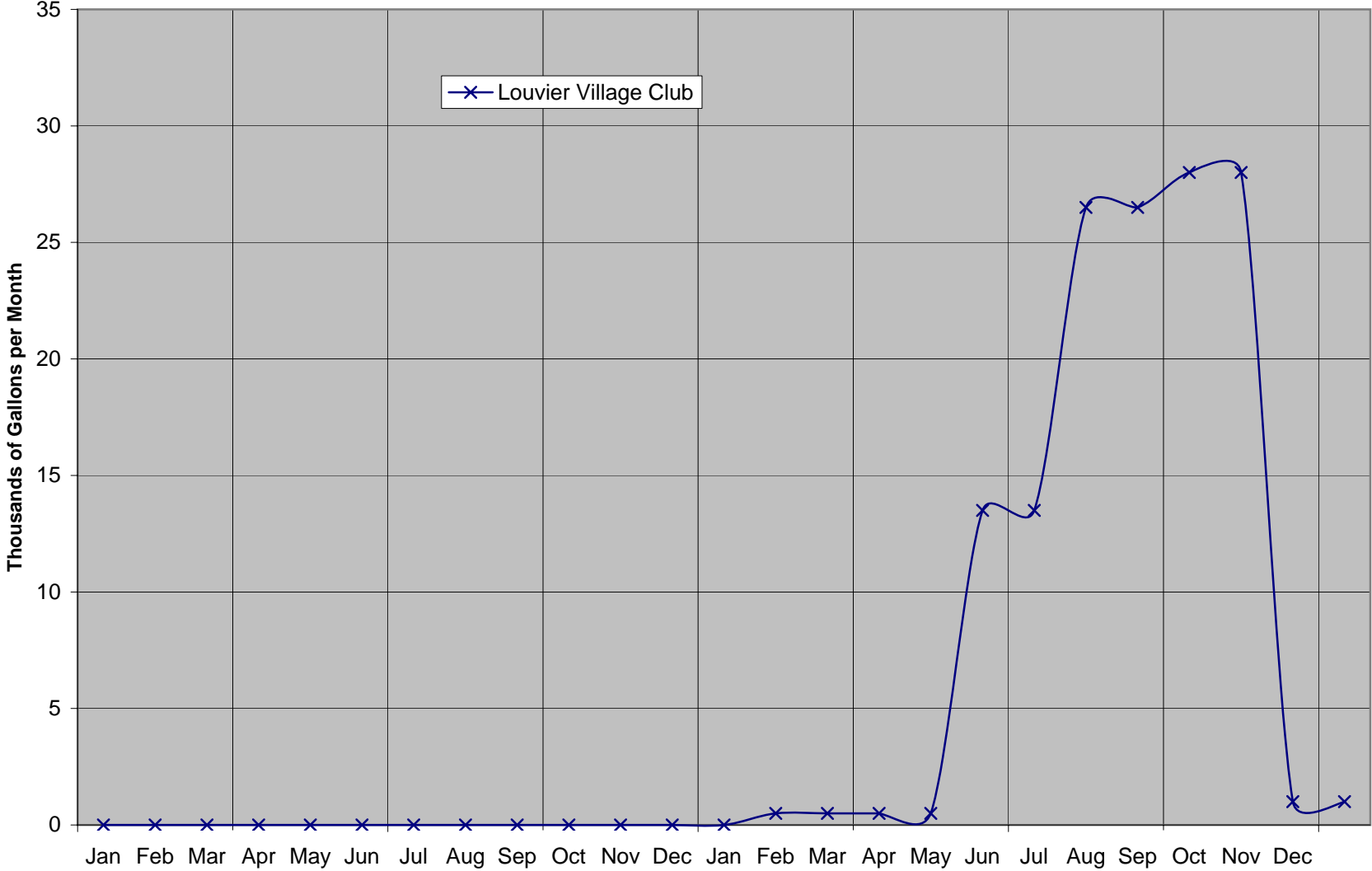
|   |                    |     |     |      |          |                            |       |       |       |     |     |       |
|---|--------------------|-----|-----|------|----------|----------------------------|-------|-------|-------|-----|-----|-------|
| Jail Kitchen  | Bathrooms          | 1   | -   | 1.28 | 1.28 gpf | 20 flushes                 | -     | 26    | 26    | -   | 6   | 6     |
|   | Inmate Bathrooms   | 1   | -   | 1.6  | 1.6 gpf  | 12 flushes                 | -     | 19    | 19    | -   | -   | -     |
| Central Controls and Other South Building 1st Floor | Bathrooms          | 9   | -   | 1.28 | 1.28 gpf | 5 flushes                  | -     | 58    | 58    | -   | 14  | 14    |
|   | Detainee Bathrooms | 1   | -   | 1.6  | 1.6 gpf  | 12 flushes                 | -     | 19    | 19    | -   | -   | -     |
| Pre-Trail/SWAT/Visitation/Detention                 |                    | 5   | -   | 1.28 | 1.28 gpf | 4 flushes                  | -     | 26    | 26    | -   | 6   | 6     |
| Sherrif's Hall/Coroner's Office                     |                    | 16  | -   | 1.28 | 1.28 gpf | 2.5 flushes                | -     | 51    | 51    | -   | 13  | 13    |
| Office of the Sherrif/EOC/Dispatch                  |                    | 5   | -   | 1.28 | 1.28 gpf | 2.5 flushes                | -     | 16    | 16    | -   | 4   | 4     |
| Old Court Building                                  | Bathrooms          | 50  | -   | 1.28 | 1.28 gpf | 6 flushes                  | -     | 352   | 352   | -   | 88  | 88    |
|   | Detainee Bathrooms | 8   | -   | 1.6  | 1.6 gpf  | 2 flushes                  | -     | 26    | 26    | -   | -   | -     |
| New Court Building                                  | Bathrooms          | 25  | -   | 1.28 | 1.28 gpf | 6 flushes                  | -     | 176   | 176   | -   | 44  | 44    |
|   | Detainee Bathrooms | 4   | -   | 1.6  | 1.6 gpf  | 1 flushes                  | -     | 6     | 6     | -   | -   | -     |
| DA/Probation  |                    | 34  | -   | 1.28 | 1.28 gpf | 3 flushes                  | -     | 131   | 131   | -   | 33  | 33    |
|   |                    |     |     |      |          | 2,096 Total Toilet Flushes |       |       |       |     |     |       |
| <b>Urinals</b>                                      |                    | 21  | -   | 1.0  | 1.0 gpf  |                            | -     | -     | -     | -   | 370 | 370   |
| Jail Cells  |                    | 0   | -   | 1.0  | 1.0 gpf  | - flushes                  | -     | -     | -     | -   | -   | -     |
| Holding Area  | Bathrooms          | 0   | -   | 1.0  | 1.0 gpf  | - flushes                  | -     | -     | -     | -   | -   | -     |
|   | Detainee Bathrooms | 0   | -   | 1.0  | 1.0 gpf  | - flushes                  | -     | -     | -     | -   | -   | -     |
| Jail Kitchen  | Bathrooms          | 0   | -   | 1.0  | 1.0 gpf  | - flushes                  | -     | -     | -     | -   | -   | -     |
|   | Inmate Bathrooms   | 0   | -   | 1.0  | 1.0 gpf  | - flushes                  | -     | -     | -     | -   | -   | -     |
| Central Controls and Other South Building 1st Floor | Bathrooms          | 0   | -   | 1.0  | 1.0 gpf  | - flushes                  | -     | -     | -     | -   | -   | -     |
|   | Detainee Bathrooms | 0   | -   | 1.0  | 1.0 gpf  | - flushes                  | -     | -     | -     | -   | -   | -     |
| Pre-Trail/SWAT/Visitation/Detention                 |                    | 1   | -   | -    | - gpf    | 12 flushes                 | -     | -     | -     | -   | 12  | 12    |
| Sherrif's Hall/Coroner's Office                     |                    | 3   | -   | -    | - gpf    | 6 flushes                  | -     | -     | -     | -   | 18  | 18    |
| Office of the Sherrif/EOC/Dispatch                  |                    | 1   | -   | -    | - gpf    | 12 flushes                 | -     | -     | -     | -   | 12  | 12    |
| Old Court Building                                  | Bathrooms          | 7   | -   | -    | - gpf    | 28 flushes                 | -     | -     | -     | -   | 193 | 193   |
|   | Detainee Bathrooms | 0   | -   | 1.0  | 1.0 gpf  | - flushes                  | -     | -     | -     | -   | -   | -     |
| New Court Building                                  | Bathrooms          | 6   | -   | -    | - gpf    | 17 flushes                 | -     | -     | -     | -   | 99  | 99    |
|   | Detainee Bathrooms | 0   | -   | 1.0  | 1.0 gpf  | - flushes                  | -     | -     | -     | -   | -   | -     |
| DA/Probation  |                    | 3   | -   | -    | - gpf    | 12 flushes                 | -     | -     | -     | -   | 36  | 36    |
|   |                    |     |     |      |          | 370 Total Flushes          |       |       |       |     |     |       |
| <b>Sinks (bath unless otherwise noted)</b>          |                    | 521 | 1.3 | 1.8  | 2.9 gpm  |                            | 2,677 | 3,178 | 5,855 | 436 | 704 | 1,140 |
| Jail Cells  |                    | 300 | 2.1 | 3.9  | 6.0 gpm  | 2.0 minutes                | 1,260 | 2,340 | 3,600 | -   | -   | -     |
| Holding Area  | Bathrooms          | 3   | 0.2 | 0.3  | 0.5 gpm  | 3.5 minutes                | 2     | 3     | 5     | 11  | 20  | 32    |
|   | Detainee Bathrooms | 17  | 1.8 | 3.3  | 5.0 gpm  | 3.5 minutes                | 104   | 193   | 298   | -   | -   | -     |
|   | Galleys            | 1   | 1.2 | 2.3  | 3.5 gpm  | 7.5 minutes                | 9     | 17    | 26    | -   | -   | -     |
| Jail Kitchen  |                    |     |     |      |          |                            |       |       |       |     |     |       |

## Summary of Current Water Use and Potential Water Savings Justice Building Audit

|   |   |    |     |     |         |             |       |                   |       |     |     |     |  |
|---|---|----|-----|-----|---------|-------------|-------|-------------------|-------|-----|-----|-----|--|
|   | Bathrooms                                       | 1  | 0.2 | 0.3 | 0.5 gpm | 7.0 minutes | 1     | 2                 | 4     | 6   | 11  | 18  |  |
|   | Inmate Bathrooms                                | 1  | 1.8 | 3.3 | 5.0 gpm | 4.2 minutes | 7     | 14                | 21    | -   | -   | -   |  |
|   | Kitchen   | 4  | 5.1 | 0.9 | 6.0 gpm | 40 minutes  | 816   | 144               | 960   | -   | -   | -   |  |
|   | Kitchen/Handwash                                | 4  | 0.4 | 0.1 | 0.5 gpm | 6.1 minutes | 10    | 2                 | 12    | 62  | 11  | 74  |  |
| Central Controls and Other South Building 1st Floor |   |    |     |     |         |             |       |                   |       |     |     |     |  |
|   | Bathrooms                                       | 9  | 0.2 | 0.3 | 0.5 gpm | 1.8 minutes | 3     | 5                 | 8     | 15  | 28  | 44  |  |
|   | Detainee Bathrooms                              | 1  | 2.1 | 3.9 | 6.0 gpm | 4.2 minutes | 9     | 16                | 25    | -   | -   | -   |  |
|   | Galleys (building support, medical, CC)         | 3  | 1.2 | 2.3 | 3.5 gpm | 2.3 minutes | 9     | 16                | 25    | -   | -   | -   |  |
|   | Labs  | 6  | 1.4 | 2.6 | 4.0 gpm | 0.7 minutes | 6     | 11                | 17    | -   | -   | -   |  |
|   | Exam Rooms (medical, morgue, hair care)         | 11 | 1.4 | 2.6 | 4.0 gpm | 3.5 minutes | 54    | 100               | 154   | -   | -   | -   |  |
| Pre-Trail/SWAT/Visitation/Detention                 |   |    |     |     |         |             |       |                   |       |     |     |     |  |
|   | Bathrooms                                       | 4  | 0.2 | 0.3 | 0.5 gpm | 2.8 minutes | 2     | 4                 | 6     | 18  | 34  | 53  |  |
|   | Galleys   | 1  | 1.2 | 2.3 | 3.5 gpm | 5.0 minutes | 6     | 11                | 18    | -   | -   | -   |  |
| Sherrif's Hall/Coroner's Office                     |   |    |     |     |         |             |       |                   |       |     |     |     |  |
|   | Bathrooms                                       | 19 | 0.2 | 0.3 | 0.5 gpm | 1.1 minutes | 4     | 7                 | 10    | 21  | 40  | 61  |  |
|   | Galleys   | 3  | 2.4 | 1.9 | 4.3 gpm | 5.0 minutes | 35    | 29                | 65    | -   | -   | -   |  |
| Office of the Sherrif/EOC/Dispatch                  |   |    |     |     |         |             |       |                   |       |     |     |     |  |
|   | Bathrooms                                       | 6  | 0.2 | 0.3 | 0.5 gpm | 1.4 minutes | 2     | 3                 | 4     | 9   | 17  | 26  |  |
|   | Galleys   | 2  | 0.9 | 1.6 | 2.5 gpm | 5.0 minutes | 9     | 16                | 25    | -   | -   | -   |  |
| Old Court Building                                  |   |    |     |     |         |             |       |                   |       |     |     |     |  |
|   | Bathrooms (public, judge's chambers, jury room) | 44 | 0.2 | 0.3 | 0.5 gpm | 3.7 minutes | 29    | 53                | 82    | 160 | 298 | 458 |  |
|   | Detainee Bathrooms                              | 8  | 1.2 | 2.1 | 3.3 gpm | 0.7 minutes | 6     | 12                | 18    | -   | -   | -   |  |
|   | Galleys/Jury Rooms                              | 9  | 1.2 | 2.3 | 3.5 gpm | 2.0 minutes | 22    | 41                | 63    | -   | -   | -   |  |
| Kitchen (Concessionaire)                            |   |    |     |     |         |             |       |                   |       |     |     |     |  |
|   | Kitchen   | 3  | 6.0 | 1.1 | 7.0 gpm | 12 minutes  | 214   | 38                | 252   | -   | -   | -   |  |
|   | Kitchen/Handwash                                | 3  | 1.2 | 1.0 | 2.2 gpm | 2 minutes   | 7     | 6                 | 13    | -   | -   | -   |  |
| New Court Building                                  |   |    |     |     |         |             |       |                   |       |     |     |     |  |
|   | Bathrooms (public, judge's chambers, jury room) | 19 | 0.2 | 0.3 | 0.5 gpm | 4 minutes   | 14    | 27                | 41    | 81  | 151 | 232 |  |
|   | Detainee Bathrooms                              | 4  | 1.2 | 2.1 | 3.3 gpm | 0.4 minutes | 2     | 3                 | 5     | -   | -   | -   |  |
|   | Galleys/Jury Rooms                              | 4  | 1.2 | 2.1 | 3.3 gpm | 3 minutes   | 12    | 21                | 33    | -   | -   | -   |  |
| DA/Probation  |   |    |     |     |         |             |       |                   |       |     |     |     |  |
|   | Bathrooms                                       | 25 | 0.2 | 0.3 | 0.5 gpm | 2 minutes   | 8     | 16                | 24    | 51  | 94  | 145 |  |
|   | Galleys   | 6  | 1.2 | 2.3 | 3.5 gpm | 2 minutes   | 15    | 27                | 42    | -   | -   | -   |  |
|   |   |    |     |     |         |             | 3,990 | Total Sink Uses   |       |     |     |     |  |
| <b>Shower</b>                                       |   |    |     |     |         |             |       |                   |       |     |     |     |  |
|   | Jail Cells                                      | 66 | 1.8 | 0.6 | 2.4 gpm | 61 minutes  | 7,292 | 2,431             | 9,722 | 207 | 69  | 276 |  |
|   | Holding Area                                    | 2  | 1.1 | 0.4 | 1.5 gpm | 5 minutes   | 11    | 4                 | 15    | 15  | 5   | 20  |  |
|   | Central Controls and Other South Building       | 2  | 1.1 | 0.4 | 1.5 gpm | 5 minutes   | 11    | 4                 | 15    | 15  | 5   | 20  |  |
|   | Pre-Trail/SWAT/Visitation/Detention             | 0  | -   | -   | - gpm   | - minutes   | -     | -                 | -     | -   | -   | -   |  |
|   | Sherrif's Hall/Coroner's Office                 | 9  | 1.1 | 0.4 | 1.5 gpm | 12 minutes  | 122   | 41                | 162   | 162 | 54  | 216 |  |
|   | Office of the Sherrif/EOC/Dispatch              | 0  | -   | -   | - gpm   | - minutes   | -     | -                 | -     | -   | -   | -   |  |
|   | Old Court Building                              | 0  | -   | -   | - gpm   | - minutes   | -     | -                 | -     | -   | -   | -   |  |
|   | New Court Building                              | 0  | -   | -   | - gpm   | - minutes   | -     | -                 | -     | -   | -   | -   |  |
|   | DA/Probation                                    | 4  | 1.1 | 0.4 | 1.5 gpm | 5 minutes   | 23    | 8                 | 30    | 15  | 5   | 20  |  |
|   |   |    |     |     |         |             | 417   | Total Shower Uses |       |     |     |     |  |



Louviers Village Club Water Use 2007-2008

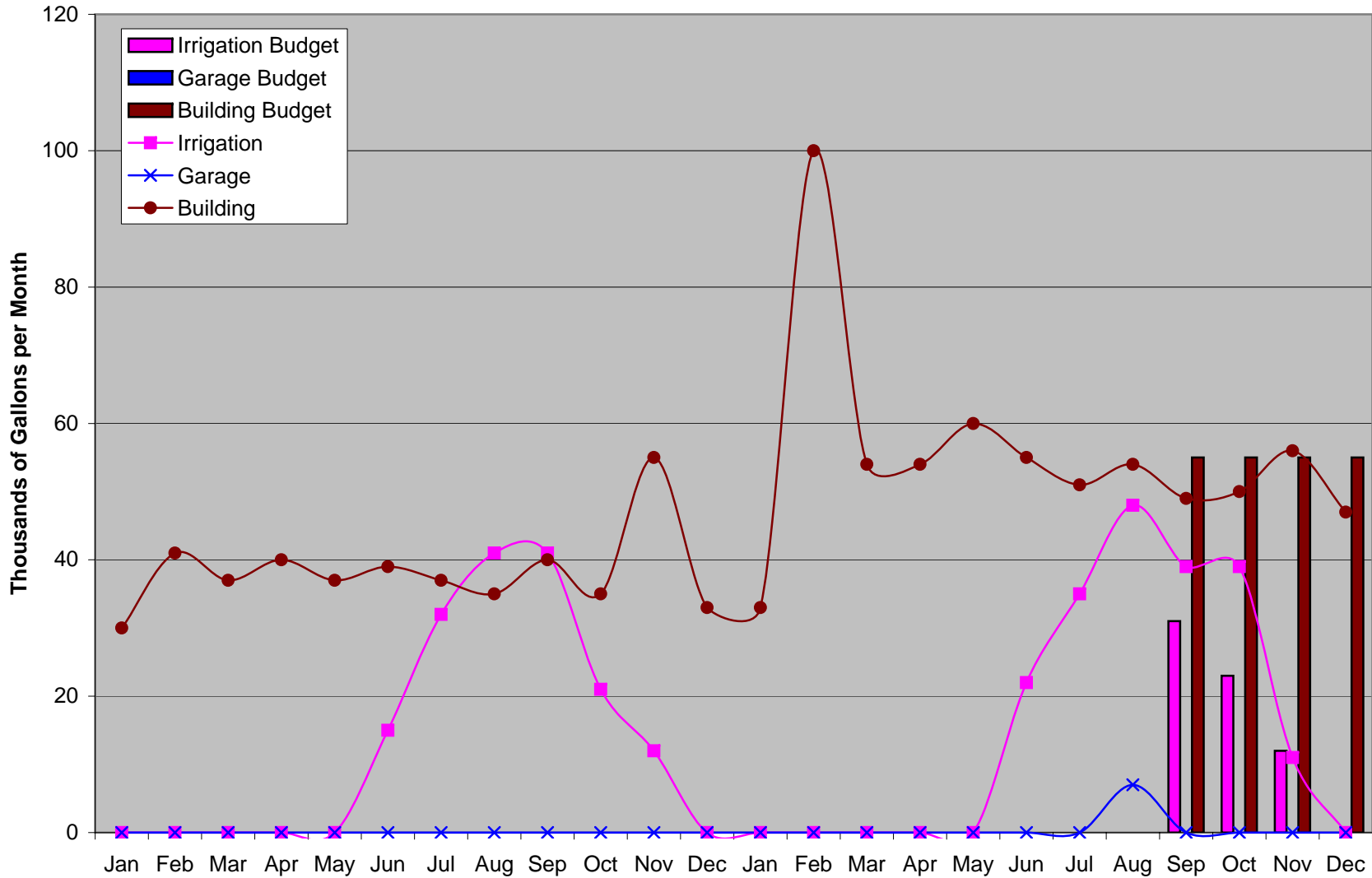








Miller Building Water Use and Water Budget 2007-2008





## Summary of Current Water Use and Potential Water Savings Miller Building

|  |        |     |              |       |     |                  |                 |               |          |        |                 |     |  |
|--|--------|-----|--------------|-------|-----|------------------|-----------------|---------------|----------|--------|-----------------|-----|--|
| <b>Toilets (flushing values)</b>         | 27     | -   | 1.6          | 1.6   | gpf |                  |                 | -             | 773      | 773    |                 |     |  |
| Garden Level                             | 6      | -   | 1.6          | 1.6   | gpf | 8                | flushes         | -             | 77       | 77     |                 |     |  |
| 1st Floor                                | 9      | -   | 1.6          | 1.6   | gpf | 25               | flushes         | -             | 360      | 360    |                 |     |  |
| 2nd Floor                                | 6      | -   | 1.6          | 1.6   | gpf | 20               | flushes         | -             | 192      | 192    |                 |     |  |
| 3rd Floor                                | 6      | -   | 1.6          | 1.6   | gpf | 15               | flushes         | -             | 144      | 144    |                 |     |  |
|  |        |     |              |       |     | 483              | Total Flushes   |               |          |        |                 |     |  |
| <b>Urinals</b>                           | 11     | -   | 1.0          | 1.0   | gpf |                  |                 | -             | 193      | 193    |                 |     |  |
| Garden Level                             | 2      | -   | 1.0          | 1.0   | gpf | 6                | flushes         | -             | 12       | 12     |                 |     |  |
| 1st Floor                                | 3      | -   | 1.2          | 1.2   | gpf | 26               | flushes         | -             | 91       | 91     |                 |     |  |
| 2nd Floor                                | 3      | -   | 1.0          | 1.0   | gpf | 18               | flushes         | -             | 54       | 54     |                 |     |  |
| 3rd Floor                                | 3      | -   | 1.0          | 1.0   | gpf | 12               | flushes         | -             | 36       | 36     |                 |     |  |
|  |        |     |              |       |     | 180              | Total Flushes   |               |          |        |                 |     |  |
| <b>Sinks</b>                             | 27     | 1.2 | 2.2          | 3.4   | gpm |                  |                 | 337           | 626      | 963    |                 |     |  |
| Garden Level                             | 6      | 1.3 | 2.4          | 3.8   | gpm | 4                | minutes         | 28            | 51       | 79     |                 |     |  |
| 1st Floor Bathrooms                      | 6      | 1.0 | 1.8          | 2.8   | gpm | 18               | minutes         | 102           | 190      | 292    |                 |     |  |
| 2nd Floor Bathrooms                      | 5      | 1.2 | 2.1          | 3.3   | gpm | 12               | minutes         | 70            | 131      | 201    |                 |     |  |
| 3rd Floor Bathrooms                      | 5      | 1.2 | 2.1          | 3.3   | gpm | 9                | minutes         | 51            | 95       | 146    |                 |     |  |
| Galleys                                  | 5      | 1.4 | 2.7          | 4.1   | gpm | 12               | minutes         | 86            | 160      | 246    |                 |     |  |
|  |        |     |              |       |     | 708              | Total Sink Uses |               |          |        |                 |     |  |
| <b>Shower</b>                            |        |     |              |       |     |                  |                 |               |          |        |                 |     |  |
| Garden Level                             | 4      | 1.8 | 0.6          | 2.38  | gpm | 15               | minutes         | 107           | 36       | 143    |                 |     |  |
| <b>Other</b>                             |        |     |              |       |     |                  |                 |               |          |        |                 |     |  |
| Janitor Closet                           | 3      |     | 10           | 10    | gpd | 1                |                 | -             | 30       | 30     |                 |     |  |
| Dishwasher (GE GXD530X-72WW) (post 1990) | 1      |     | 12           | 12    | gpl | 0.5              |                 | -             | 6        | 6      |                 |     |  |
| Coffee Makers                            | 4      |     | 0.5          | 0.5   | gpd | 2                |                 | -             | 4        | 4      |                 |     |  |
| Ice Maker (in refrigerator)              | 3      |     | 0.3          | 0.3   | gpd | 1                |                 | -             | 1        | 1      |                 |     |  |
| Ice Maker (U-Line Model B198)            | 4      |     | 0.3          | 0.3   | gpd | 1                |                 | -             | 1        | 1      |                 |     |  |
| Drips, Leaks or Other Undisclosed Uses   | 1      |     | 1.0          | 350   | gpd | 1                |                 | -             | 1        | 350    |                 |     |  |
|  |        |     |              |       |     |                  |                 | 444           | 1,671    | 2,463  | max day         |     |  |
|  |        |     |              |       |     |                  |                 |               | observed | 2,465  | average max day |     |  |
|  |        |     |              |       |     |                  |                 |               | observed | 53,000 | max month       |     |  |
|  |        |     |              |       |     |                  |                 |               |          | 22     | days at max     |     |  |
|  |        |     |              |       |     |                  |                 |               | observed | 1,760  | aver day        |     |  |
|  |        |     |              |       |     |                  |                 |               | observed | 37,846 | aver month      |     |  |
| <b>Average Use Potential Savings</b>     |        |     |              |       |     |                  |                 |               |          |        |                 |     |  |
|  | number | hot | per use cold | total |     | uses/day/fixture | hot             | subtotal cold | total    |        |                 |     |  |
| <b>Toilets (flushing values)</b>         | 27     | -   | 1.28         | 1.28  | gpf |                  | -               | 522           | 522      | -      | 131             | 131 |  |
| Garden Level                             | 6      | -   | 1.28         | 1.28  | gpf | 8                | flushes         | 61            | 61       | -      | 15              | 15  |  |

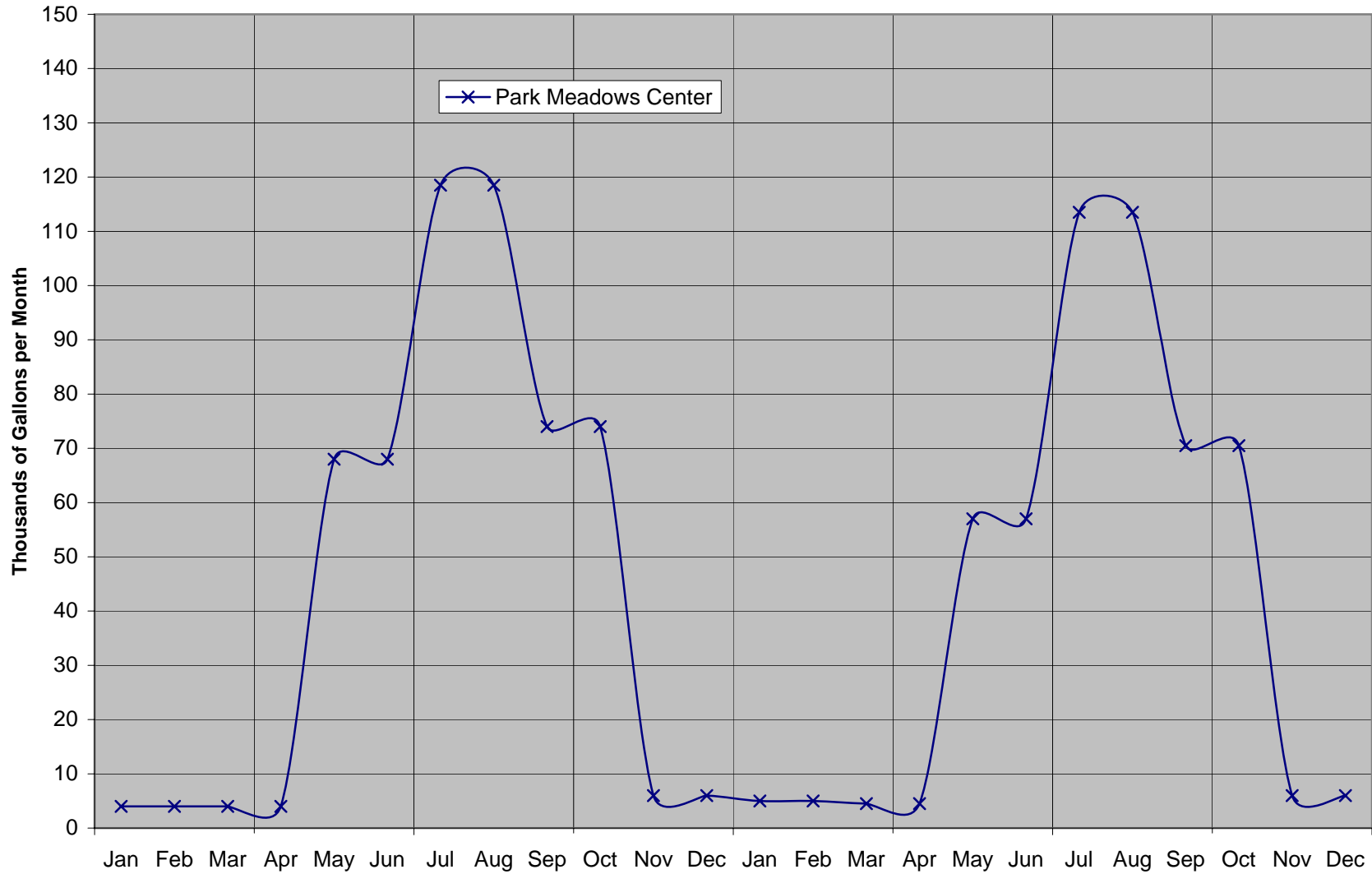
## Summary of Current Water Use and Potential Water Savings Miller Building

|                                      |        |     |                 |       |     |                  |                 |                            |      |             |         |      |       |
|--------------------------------------|--------|-----|-----------------|-------|-----|------------------|-----------------|----------------------------|------|-------------|---------|------|-------|
| 1st Floor                            | 9      | -   | 1.28            | 1.28  | gpf | 20               | flushes         | -                          | 230  | 230         | -       | 58   | 58    |
| 2nd Floor                            | 6      | -   | 1.28            | 1.28  | gpf | 15               | flushes         | -                          | 115  | 115         | -       | 29   | 29    |
| 3rd Floor                            | 6      | -   | 1.28            | 1.28  | gpf | 15               | flushes         | -                          | 115  | 115         | -       | 29   | 29    |
|                                      |        |     |                 |       |     | 408              | Total Flushes   |                            |      |             |         |      |       |
| <b>Urinals</b>                       | 11     | -   | -               | -     | gpf |                  |                 | -                          | -    | -           | -       | 161  | 161   |
| Garden Level                         | 2      | -   | -               | -     | gpf | 6                | flushes         | -                          | -    | -           | -       | 12   | 12    |
| 1st Floor                            | 3      | -   | -               | -     | gpf | 22               | flushes         | -                          | -    | -           | -       | 77   | 77    |
| 2nd Floor                            | 3      | -   | -               | -     | gpf | 12               | flushes         | -                          | -    | -           | -       | 36   | 36    |
| 3rd Floor                            | 3      | -   | -               | -     | gpf | 12               | flushes         | -                          | -    | -           | -       | 36   | 36    |
|                                      |        |     |                 |       |     | 150              | Total Flushes   |                            |      |             |         |      |       |
| <b>Sinks</b>                         | 27     | 0.4 | 0.8             | 1.2   | gpm |                  |                 | 120                        | 223  | 344         | 178     | 331  | 509   |
| Garden Level                         | 6      | 0.2 | 0.3             | 0.5   | gpm | 4                | minutes         | 4                          | 7    | 11          | 24      | 44   | 68    |
| 1st Floor Bathrooms                  | 6      | 0.2 | 0.3             | 0.5   | gpm | 14               | minutes         | 15                         | 28   | 43          | 68      | 126  | 194   |
| 2nd Floor Bathrooms                  | 5      | 0.2 | 0.3             | 0.5   | gpm | 9                | minutes         | 8                          | 14   | 22          | 43      | 80   | 123   |
| 3rd Floor Bathrooms                  | 5      | 0.2 | 0.3             | 0.5   | gpm | 9                | minutes         | 8                          | 14   | 22          | 43      | 80   | 123   |
| Galleys                              | 5      | 1.4 | 2.7             | 4.1   | gpm | 12               | minutes         | 86                         | 160  | 246         | -       | -    | -     |
|                                      |        |     |                 |       |     | 603              | Total Sink Uses |                            |      |             |         |      |       |
| <b>Shower</b>                        |        |     |                 |       |     |                  |                 |                            |      |             |         |      |       |
| Garden Level                         | 4      | 1.1 | 0.4             | 1.50  | gpm | 5                | minutes         | 23                         | 8    | 30          | 13      | 4    | 18    |
| <b>Other</b>                         |        |     |                 |       |     |                  |                 |                            |      |             |         |      |       |
| Janitor Closet                       | 3      |     | 10              | 10    | gpd | 1                |                 | -                          | 30   | 30          | -       | -    | -     |
| Dishwasher                           | 1      |     | 7               | 7     | gpl | 0.5              |                 | -                          | 4    | 4           | -       | 3    | 3     |
| Coffee Makers                        | 4      |     | 0.5             | 0.5   | gpd | 2                |                 | -                          | 4    | 4           | -       | -    | -     |
| Ice Maker (in refrigerator)          | 3      |     | 0.3             | 0.3   | gpd | 1                |                 | -                          | 1    | 1           | -       | -    | -     |
| Ice Maker (U-Line Model B198)        | 4      |     | 0.3             | 0.3   | gpd | 1                |                 | -                          | 1    | 1           | -       | -    | -     |
|                                      |        |     |                 |       |     |                  |                 | 143                        | 793  | 936         |         |      |       |
|                                      |        |     |                 |       |     |                  |                 | <b>potential reduction</b> |      | <b>-47%</b> |         |      |       |
| <b>Maximum Use Potential Savings</b> |        |     |                 |       |     |                  |                 |                            |      |             |         |      |       |
|                                      | number | hot | per use<br>cold | total |     | uses/day/fixture |                 | subtotal gpd               |      |             | savings |      |       |
| <b>Toilets (flushing values)</b>     | 27     | -   | 1.3             | 1.3   | gpf |                  |                 | hot                        | cold | total       | hot     | cold | total |
| Garden Level                         | 6      | -   | 1.28            | 1.28  | gpf | 8                | flushes         | -                          | 61   | 61          | -       | 15   | 15    |
| 1st Floor                            | 9      | -   | 1.28            | 1.28  | gpf | 25               | flushes         | -                          | 288  | 288         | -       | 72   | 72    |
| 2nd Floor                            | 6      | -   | 1.28            | 1.28  | gpf | 20               | flushes         | -                          | 154  | 154         | -       | 38   | 38    |
| 3rd Floor                            | 6      | -   | 1.28            | 1.28  | gpf | 15               | flushes         | -                          | 115  | 115         | -       | 29   | 29    |
|                                      |        |     |                 |       |     | 483              | Total Flushes   |                            |      |             |         |      |       |
| <b>Urinals</b>                       | 11     | -   | -               | -     | gpf |                  |                 | -                          | -    | -           | -       | 193  | 193   |
| Garden Level                         | 2      | -   | -               | -     | gpf | 6                | flushes         | -                          | -    | -           | -       | 12   | 12    |
| 1st Floor                            | 3      | -   | -               | -     | gpf | 26               | flushes         | -                          | -    | -           | -       | 91   | 91    |
| 2nd Floor                            | 3      | -   | -               | -     | gpf | 18               | flushes         | -                          | -    | -           | -       | 54   | 54    |

## Summary of Current Water Use and Potential Water Savings Miller Building

|  |        |  |              |           |                |           |                               |                            |                           |                   |                                  |  |                        |  |
|--|--------|--|--------------|-----------|----------------|-----------|-------------------------------|----------------------------|---------------------------|-------------------|----------------------------------|--|------------------------|--|
| 3rd Floor                              | 3      | -  | -            | -         | gpf            | 12        | flushes                       | -                          | -                         | -                 | -                                | 36   | 36                     |  |
|  |        |  |              |           |                | 180       | Total Flushes                 |                            |                           |                   |                                  |  |                        |  |
| <b>Sinks</b>                           | 27     | 0.4  | 0.8          | 1.2       | gpm            |           |                               | 127                        | 235                       | 362               | 210                              | 391  | 601                    |  |
| Garden Level                           | 6      | 0.2  | 0.3          | 0.5       | gpm            | 4         | minutes                       | 4                          | 7                         | 11                | 24                               | 44   | 68                     |  |
| 1st Floor Bathrooms                    | 6      | 0.2  | 0.3          | 0.5       | gpm            | 18        | minutes                       | 19                         | 34                        | 53                | 84                               | 155  | 239                    |  |
| 2nd Floor Bathrooms                    | 5      | 0.2  | 0.3          | 0.5       | gpm            | 12        | minutes                       | 11                         | 20                        | 30                | 60                               | 111  | 171                    |  |
| 3rd Floor Bathrooms                    | 5      | 0.2  | 0.3          | 0.5       | gpm            | 9         | minutes                       | 8                          | 14                        | 22                | 43                               | 80   | 123                    |  |
| Galleys                                | 5      | 1.4  | 2.7          | 4.1       | gpm            | 12        | minutes                       | 86                         | 160                       | 246               | -                                | -  | -                      |  |
|  |        |  |              |           |                | 708       | Total Sink Uses               |                            |                           |                   |                                  |  |                        |  |
| <b>Shower</b>                          |        |  |              |           |                |           |                               |                            |                           |                   |                                  |  |                        |  |
| Garden Level                           | 4      | 1.1  | 0.4          | 1.50      | gpm            | 15        | minutes                       | 68                         | 23                        | 90                | 39                               | 13   | 53                     |  |
| <b>Other</b>                           |        |  |              |           |                |           |                               |                            |                           |                   |                                  |  |                        |  |
| Janitor Closet                         | 3      |  | 10           | 10        | gpd            | 1         |                               | -                          | 30                        | 30                | -                                | -  | -                      |  |
| Dishwasher                             | 1      |  | 7            | 7         | gpl            | 0.5       |                               | -                          | 4                         | 4                 | -                                | 3  | 3                      |  |
| Coffee Makers                          | 4      |  | 0.5          | 0.5       | gpd            | 2         |                               | -                          | 4                         | 4                 | -                                | -  | -                      |  |
| Ice Maker (in refrigerator)            | 3      |  | 0.3          | 0.3       | gpd            | 1         |                               | -                          | 1                         | 1                 | -                                | -  | -                      |  |
| Ice Maker (U-Line Model B198)          | 4      |  | 0.3          | 0.3       | gpd            | 1         |                               | -                          | 1                         | 1                 | -                                | -  | -                      |  |
| Drips, Leaks or Other Undisclosed Uses | 1      |  | 1.0          | 350       | gpd            | 1         |                               | -                          | 1                         | 350               |                                  |  |                        |  |
|  |        |  |              |           |                |           |                               | <b>194</b>                 | <b>917</b>                | <b>1,460</b>      |                                  |  |                        |  |
|  |        |  |              |           |                |           |                               | <b>potential reduction</b> |                           | <b>-41%</b>       |                                  |  |                        |  |
| <b>Costs to Implement</b>              |        |  |              |           |                |           |                               |                            |                           |                   |                                  |  |                        |  |
|  |        | <b>Cost</b>                                      |              |           |                |           |                               |                            |                           |                   |                                  |  |                        |  |
|  | number | Hardware   | Installation | Total     | Payback Period |           | Annual Energy Savings (kw-hr) | Annual Energy Savings (\$) | Annual Water Savings (\$) | Acre-Feet Savings | Cost of Alternative Water Supply | Annual Cost of Treatment, Delivery, Wastewater | Cost per AF of Savings |  |
| Toilets                                | 27     | \$ 285   | \$ -         | \$ 7,695  | 30.1 yrs       |           | -                             | \$ -                       | \$ 255                    | 0.10              | \$ 3,656                         | \$ 408   | \$ 73,674              |  |
| Urinals                                | 11     | \$ 185   | \$ -         | \$ 2,035  | 6.5 yrs        |           | -                             | \$ -                       | \$ 315                    | 0.13              | \$ 4,508                         | \$ 504   | \$ 15,800              |  |
| Sinks                                  | 22     | \$ 3   | \$ -         | \$ 66     | 0.0 yrs        |           | 11,351                        | \$ 738                     | \$ 995                    | 0.41              | \$ 14,250                        | \$ 1,592                                       | \$ 162                 |  |
| Showers                                | 4      | \$ 30  | \$ -         | \$ 120    | 1.4 yrs        |           | 836                           | \$ 54                      | \$ 34                     | 0.01              | \$ 490                           | \$ 55  | \$ 8,572               |  |
| Dishwasher                             | 1      | \$ 375   | \$ -         | \$ 375    | 21.5 yrs       |           | 193                           | \$ 13                      | \$ 5                      | 0.00              | \$ 70                            | \$ 8   | \$ 187,503             |  |
| Test Meter/Make Repairs                | 1      | \$ 1,000   | \$ -         | \$ 1,000  | 1.7 yrs        |           | -                             | -                          | \$ 590                    | 0.39              | \$ 13,720                        | \$ 1,095                                       | \$ 2,551               |  |
|  |        |  |              | \$ 11,291 |                |           |                               |                            |                           | 1.05              | \$ 22,973                        | \$ 2,567                                       |                        |  |
|  |        |  |              |           |                |           |                               |                            |                           |                   |                                  |  |                        |  |
|  |        | Cost of Alternative Water Supply                 |              |           |                | \$ 22,973 |                               |                            |                           |                   |                                  |  |                        |  |
|  |        | Annual Cost of Treatment, Delivery, Augmentation |              |           |                | \$ 2,567  |                               |                            |                           |                   |                                  |  |                        |  |

### Park Meadows Center Water Use 2007-2008





## Summary of Current Water Use and Potential Water Savings Park Meadows Center

|                                      |        |     |              |       |     |                  |                 |     |          |       |                 |    |
|--------------------------------------|--------|-----|--------------|-------|-----|------------------|-----------------|-----|----------|-------|-----------------|----|
| Tri-County Health                    | 8      | -   | 1.6          | 1.6   | gpf | 2                | flushes         | -   | 26       | 26    |                 |    |
| Sheriff's Department                 | 6      | -   | 1.6          | 1.6   | gpf | 4                | flushes         | -   | 38       | 38    |                 |    |
| Sheriff's Department Locker Room     | 6      | -   | 1.6          | 1.6   | gpf | 3                | flushes         | -   | 29       | 29    |                 |    |
| Basement                             | 2      | -   | 1.6          | 1.6   | gpf | 2                | flushes         | -   | 6        | 6     |                 |    |
|                                      |        |     |              |       |     | 62               | Total Flushes   |     |          |       |                 |    |
| <b>Urinals</b>                       | 5      | -   | 1.0          | 1.0   | gpf |                  |                 | -   | 26       | 26    |                 |    |
| Tri-County Health                    | 1      | -   | 2.0          | 2.0   | gpf | 4                | flushes         | -   | 8        | 8     |                 |    |
| Sheriff's Department                 | 1      | -   | 1.0          | 1.0   | gpf | 6                | flushes         | -   | 6        | 6     |                 |    |
| Sheriff's Department Locker Room     | 3      | -   | 1.0          | 1.0   | gpf | 4                | flushes         | -   | 12       | 12    |                 |    |
| Basement                             | 0      | -   | -            | -     | gpf | -                | flushes         | -   | -        | -     |                 |    |
|                                      |        |     |              |       |     | 22               | Total Flushes   |     |          |       |                 |    |
| <b>Sinks</b>                         | 24     | 0.7 | 1.2          | 1.7   | gpm |                  |                 | 28  | 53       | 81    |                 |    |
| <b>Baths</b>                         |        |     |              |       |     |                  |                 |     |          |       |                 |    |
| Tri-County Health                    | 7      | 0.7 | 1.3          | 2.0   | gpm | 0.7              | minutes         | 4   | 7        | 10    |                 |    |
| Sheriff's Department                 | 5      | 0.5 | 0.9          | 1.4   | gpm | 1.5              | minutes         | 4   | 7        | 11    |                 |    |
| Sheriff's Department Locker Room     | 6      | 0.4 | 0.8          | 1.3   | gpm | 1.3              | minutes         | 3   | 6        | 9     |                 |    |
| Basement                             | 2      | 0.7 | 1.3          | 2.0   | gpm | 0.5              | minutes         | 1   | 1        | 2     |                 |    |
| <b>Other</b>                         |        |     |              |       |     |                  |                 |     |          |       |                 |    |
| Kitchens/ Galley                     | 3      | 0.8 | 1.4          | 2.2   | gpm | 2.9              | minutes         | 7   | 12       | 19    |                 |    |
| Lab                                  | 1      | 0.9 | 1.6          | 2.5   | gpm | 12               | minutes         | 11  | 20       | 30    |                 |    |
|                                      |        |     |              |       |     | 119              | Total Sink Uses |     |          |       |                 |    |
| <b>Showers</b>                       |        |     |              |       |     |                  |                 |     |          |       |                 |    |
| Sheriff's Department Locker Room     | 6      | 1.9 | 0.6          | 2.5   | gpm | 5                | minutes         | 56  | 19       | 75    |                 |    |
| <b>Other</b>                         |        |     |              |       |     |                  |                 |     |          |       |                 |    |
| Drinking Fountains                   | 4      | -   | 0.1          | 0.1   | gpd | 2                |                 | 0   | 1        | 1     |                 |    |
| Mop Sink                             | 2      | -   | 2.5          | 2.5   | gpd | 1                |                 | 0   | 5        | 5     |                 |    |
| Coffee                               | 1      | -   | 0.3          | 0.3   | gpd | 3                |                 | 0   | 1        | 1     |                 |    |
| Ice Machines (Refrigerator)          | 2      | -   | 0.3          | 0.3   | gpd | 2                |                 | 0   | 1        | 1     |                 |    |
|                                      |        |     |              |       |     |                  |                 | 85  | 205      | 289   | max day         |    |
|                                      |        |     |              |       |     |                  |                 |     | observed | 279   | average max day |    |
|                                      |        |     |              |       |     |                  |                 |     | observed | 6,000 | max month       |    |
|                                      |        |     |              |       |     |                  |                 |     |          | 18    | days at max     |    |
|                                      |        |     |              |       |     |                  |                 |     | observed | 240   | aver day        |    |
|                                      |        |     |              |       |     |                  |                 |     | observed | 5,167 | aver month      |    |
|                                      |        |     |              |       |     |                  |                 |     |          |       |                 |    |
| <b>Average Use Potential Savings</b> |        |     |              |       |     |                  |                 |     |          |       |                 |    |
|                                      | number | hot | per use cold | total |     | uses/day/fixture |                 | hot | cold     | total |                 |    |
| <b>Toilets (flushing values)</b>     | 22     | -   | 1.3          | 1.3   | gpf |                  |                 | -   | 79       | 79    | -               | 20 |
| Tri-County Health                    | 8      | -   | 1.3          | 1.3   | gpf | 2                | flushes         | -   | 20       | 20    | -               | 5  |
| Sheriff's Department                 | 6      | -   | 1.3          | 1.3   | gpf | 4                | flushes         | -   | 31       | 31    | -               | 8  |
| Sheriff's Department Locker Room     | 6      | -   | 1.3          | 1.3   | gpf | 3                | flushes         | -   | 23       | 23    | -               | 6  |
| Basement                             | 2      | -   | 1.3          | 1.3   | gpf | 2                | flushes         | -   | 5        | 5     | -               | 1  |
|                                      |        |     |              |       |     | 62               | Total Flushes   |     |          |       |                 |    |

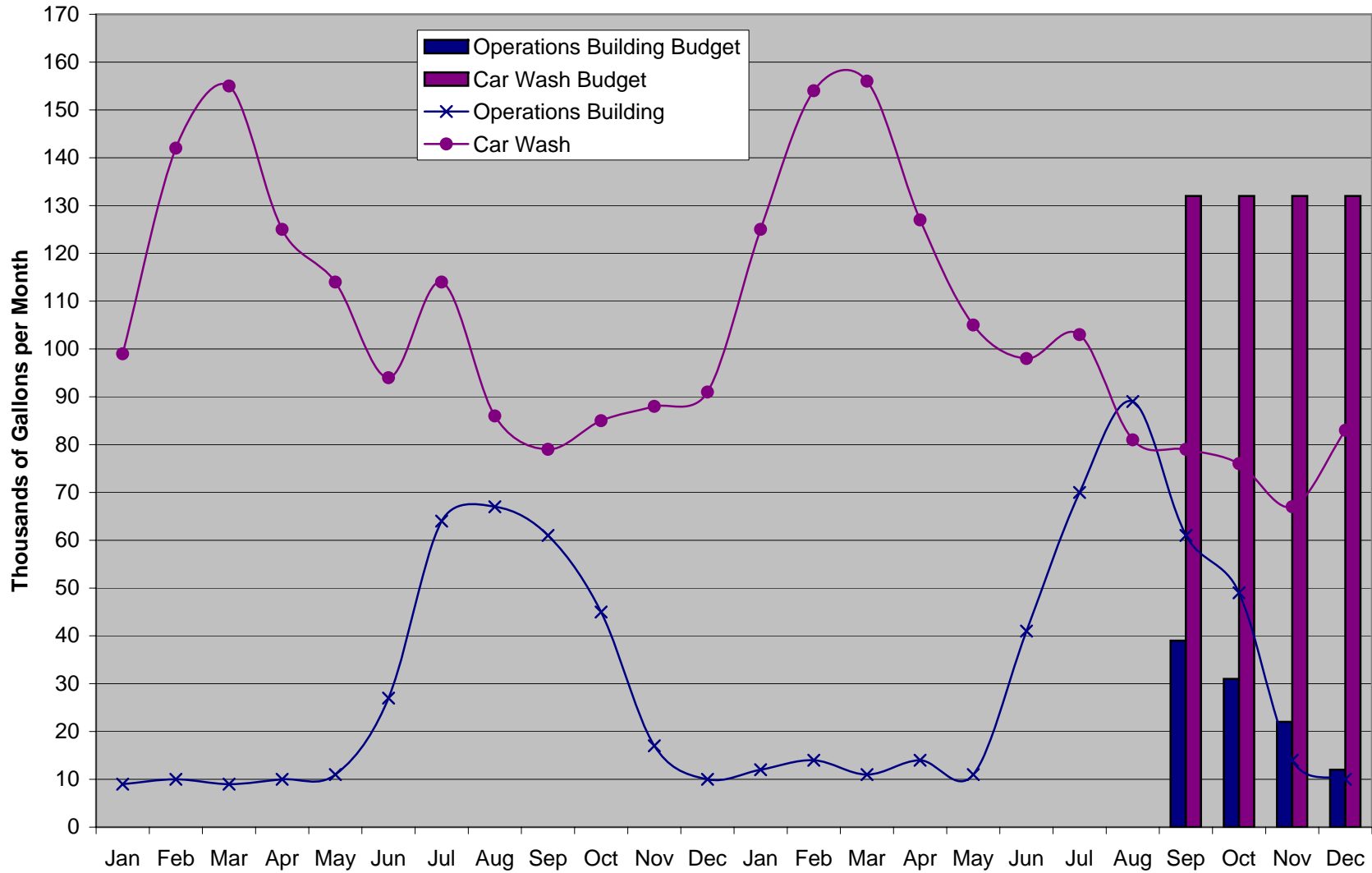
## Summary of Current Water Use and Potential Water Savings Park Meadows Center

|                                      |        |     |              |       |     |                  |                 |                            |      |             |              |    |    |    |    |
|--------------------------------------|--------|-----|--------------|-------|-----|------------------|-----------------|----------------------------|------|-------------|--------------|----|----|----|----|
| <b>Urinals</b>                       | 5      | -   | -            | -     | gpf |                  |                 |                            |      |             |              |    |    | 26 | 26 |
| Tri-County Health                    | 1      | -   | -            | -     | gpf | 4                | flushes         | -                          | -    | -           | -            | -  | -  | 8  | 8  |
| Sheriff's Department                 | 1      | -   | -            | -     | gpf | 6                | flushes         | -                          | -    | -           | -            | -  | -  | 6  | 6  |
| Sheriff's Department Locker Room     | 3      | -   | -            | -     | gpf | 4                | flushes         | -                          | -    | -           | -            | -  | -  | 12 | 12 |
| Basement                             | 0      | -   | -            | -     | gpf | -                | flushes         | -                          | -    | -           | -            | -  | -  | -  | -  |
|                                      |        |     |              |       |     | 22               | Total Flushes   |                            |      |             |              |    |    |    |    |
| <b>Sinks</b>                         | 24     | 0.4 | 0.7          | 0.5   | gpm |                  |                 | 21                         | 39   | 59          | 7            | 14 | 21 |    |    |
| <b>Baths</b>                         |        |     |              |       |     |                  |                 |                            |      |             |              |    |    |    |    |
| Tri-County Health                    | 7      | 0.2 | 0.3          | 0.5   | gpm | 0.7              | minutes         | 1                          | 2    | 3           | 3            | 5  | 8  |    |    |
| Sheriff's Department                 | 5      | 0.2 | 0.3          | 0.5   | gpm | 1.5              | minutes         | 1                          | 2    | 4           | 2            | 4  | 7  |    |    |
| Sheriff's Department Locker Room     | 6      | 0.2 | 0.3          | 0.5   | gpm | 1.3              | minutes         | 1                          | 2    | 4           | 2            | 4  | 6  |    |    |
| Basement                             | 2      | 0.2 | 0.3          | 0.5   | gpm | 0.5              | minutes         | 0                          | 0    | 1           | 1            | 1  | 2  |    |    |
| <b>Other</b>                         |        |     |              |       |     |                  |                 |                            |      |             |              |    |    |    |    |
| Kitchens/ Galley                     | 3      | 0.8 | 1.4          | 2.2   | gpm | 2.9              | minutes         | 7                          | 12   | 19          | -            | -  | -  |    |    |
| Lab                                  | 1      | 0.9 | 1.6          | 2.5   | gpm | 12               | minutes         | 11                         | 20   | 30          | -            | -  | -  |    |    |
|                                      |        |     |              |       |     | 119              | Total Sink Uses |                            |      |             |              |    |    |    |    |
| <b>Showers</b>                       |        |     |              |       |     |                  |                 |                            |      |             |              |    |    |    |    |
| Sheriff's Department Locker Room     | 6      | 1.1 | 0.4          | 1.5   | gpm | 2                | minutes         | 14                         | 5    | 18          | 9            | 3  | 12 |    |    |
| <b>Other</b>                         |        |     |              |       |     |                  |                 |                            |      |             |              |    |    |    |    |
| Drinking Fountains                   | 4      | -   | 0.1          | 0.1   | gpd | 2                |                 | 0                          | 1    | 1           | -            | -  | -  |    |    |
| Mop Sink                             | 2      | -   | 2.5          | 2.5   | gpd | 1                |                 | 0                          | 5    | 5           | -            | -  | -  |    |    |
| Coffee                               | 1      | -   | 0.3          | 0.3   | gpd | 3                |                 | 0                          | 1    | 1           | -            | -  | -  |    |    |
| Ice Machines (Refrigerator)          | 2      | -   | 0.3          | 0.3   | gpd | 2                |                 | 0                          | 1    | 1           | -            | -  | -  |    |    |
|                                      |        |     |              |       |     |                  |                 | 34                         | 131  | 165         |              |    |    |    |    |
|                                      |        |     |              |       |     |                  |                 | <b>potential reduction</b> |      | <b>-32%</b> |              |    |    |    |    |
|                                      |        |     |              |       |     |                  |                 |                            |      |             |              |    |    |    |    |
|                                      |        |     |              |       |     |                  |                 |                            |      |             |              |    |    |    |    |
| <b>Maximum Use Potential Savings</b> |        |     |              |       |     |                  |                 |                            |      |             |              |    |    |    |    |
|                                      | number | hot | per use cold | total |     | uses/day/fixture |                 | hot                        | cold | total       | subtotal gpd |    |    |    |    |
| <b>Toilets (flushing values)</b>     | 22     | -   | 1.3          | 1.3   | gpf |                  |                 | -                          | 79   | 79          |              |    | 20 | 20 |    |
| Tri-County Health                    | 8      | -   | 1.3          | 1.3   | gpf | 2                | flushes         | -                          | 20   | 20          | -            | -  | 5  | 5  |    |
| Sheriff's Department                 | 6      | -   | 1.3          | 1.3   | gpf | 4                | flushes         | -                          | 31   | 31          | -            | -  | 8  | 8  |    |
| Sheriff's Department Locker Room     | 6      | -   | 1.3          | 1.3   | gpf | 3                | flushes         | -                          | 23   | 23          | -            | -  | 6  | 6  |    |
| Basement                             | 2      | -   | 1.3          | 1.3   | gpf | 2                | flushes         | -                          | 5    | 5           | -            | -  | 1  | 1  |    |
|                                      |        |     |              |       |     | 62               | Total Flushes   |                            |      |             |              |    |    |    |    |
| <b>Urinals</b>                       | 5      | -   | -            | -     | gpf |                  |                 | -                          | -    | -           |              |    | 26 | 26 |    |
| Tri-County Health                    | 1      | -   | -            | -     | gpf | 4                | flushes         | -                          | -    | -           | -            | -  | 8  | 8  |    |
| Sheriff's Department                 | 1      | -   | -            | -     | gpf | 6                | flushes         | -                          | -    | -           | -            | -  | 6  | 6  |    |
| Sheriff's Department Locker Room     | 3      | -   | -            | -     | gpf | 4                | flushes         | -                          | -    | -           | -            | -  | 12 | 12 |    |
| Basement                             | 0      | -   | -            | -     | gpf | -                | flushes         | -                          | -    | -           | -            | -  | -  | -  |    |
|                                      |        |     |              |       |     | 22               | Total Flushes   |                            |      |             |              |    |    |    |    |
| <b>Sinks</b>                         | 24     | 0.4 | 0.7          | 0.5   | gpm |                  |                 | 21                         | 39   | 59          | 7            | 14 | 21 |    |    |

## Summary of Current Water Use and Potential Water Savings Park Meadows Center

|  |        |             |              |          |                |     |         |                               |                            |                           |                   |                                  |  |                        |
|--|--------|-------------|--------------|----------|----------------|-----|---------|-------------------------------|----------------------------|---------------------------|-------------------|----------------------------------|--|------------------------|
| <b>Baths</b>                                     |        |             |              |          |                |     |         |                               |                            |                           |                   |                                  |  |                        |
| Tri-County Health                                | 7      | 0.2         | 0.3          | 0.5      | gpm            | 0.7 | minutes | 1                             | 2                          | 3                         | 3                 | 5                                | 8  |                        |
| Sheriff's Department                             | 5      | 0.2         | 0.3          | 0.5      | gpm            | 1.5 | minutes | 1                             | 2                          | 4                         | 2                 | 4                                | 7  |                        |
| Sheriff's Department Locker Room                 | 6      | 0.2         | 0.3          | 0.5      | gpm            | 1.3 | minutes | 1                             | 2                          | 4                         | 2                 | 4                                | 6  |                        |
| Basement   | 2      | 0.2         | 0.3          | 0.5      | gpm            | 0.5 | minutes | 0                             | 0                          | 1                         | 1                 | 1                                | 2  |                        |
| <b>Other</b>                                     |        |             |              |          |                |     |         |                               |                            |                           |                   |                                  |  |                        |
| Kitchens/ Galley                                 | 3      | 0.8         | 1.4          | 2.2      | gpm            | 2.9 | minutes | 7                             | 12                         | 19                        | -                 | -                                | -  |                        |
| Lab  | 1      | 0.9         | 1.6          | 2.5      | gpm            | 12  | minutes | 11                            | 20                         | 30                        | -                 | -                                | -  |                        |
|  |        |             |              |          |                |     |         | 119                           | Total Sink Uses            |                           |                   |                                  |  |                        |
| <b>Showers</b>                                   |        |             |              |          |                |     |         |                               |                            |                           |                   |                                  |  |                        |
| Sheriff's Department Locker Room                 | 6      | 1.1         | 0.4          | 1.5      | gpm            | 5   | minutes | 34                            | 11                         | 45                        | 23                | 8                                | 30   |                        |
| <b>Other</b>                                     |        |             |              |          |                |     |         |                               |                            |                           |                   |                                  |  |                        |
| Drinking Fountains                               | 4      | -           | 0.1          | 0.1      | gpd            | 2   |         | 0                             | 1                          | 1                         | -                 | -                                | -  |                        |
| Mop Sink   | 2      | -           | 2.5          | 2.5      | gpd            | 1   |         | 0                             | 5                          | 5                         | -                 | -                                | -  |                        |
| Coffee   | 1      | -           | 0.3          | 0.3      | gpd            | 3   |         | 0                             | 1                          | 1                         | -                 | -                                | -  |                        |
| Ice Machines (Refrigerator)                      | 2      | -           | 0.3          | 0.3      | gpd            | 2   |         | 0                             | 1                          | 1                         | -                 | -                                | -  |                        |
|  |        |             |              |          |                |     |         | 55                            | 137                        | 192                       |                   |                                  |  |                        |
|  |        |             |              |          |                |     |         | potential reduction           |                            | -34%                      |                   |                                  |  |                        |
| <b>Costs to Implement</b>                        |        |             |              |          |                |     |         |                               |                            |                           |                   |                                  |  |                        |
|  |        | <b>Cost</b> |              |          |                |     |         | Annual Energy Savings (kw-hr) | Annual Energy Savings (\$) | Annual Water Savings (\$) | Acre-Feet Savings | Cost of Alternative Water Supply | Annual Cost of Treatment, Delivery, Wastewater | Cost per AF of Savings |
|  | number | Hardware    | Installation | Total    | Payback Period |     |         |                               |                            |                           |                   |                                  |  |                        |
| Toilets  | 22     | \$ 285      | \$ -         | \$ 6,270 | 513.6          | yrs | -       | \$ -                          | \$ 12                      | 0.02                      | \$ 556            | \$ 62                            | \$ 395,042                                     |                        |
| Urinals  | 5      | \$ 185      | \$ -         | \$ 925   | 57.8           | yrs | -       | \$ -                          | \$ 16                      | 0.02                      | \$ 728            | \$ 81                            | \$ 44,472                                      |                        |
| Sink   | 20     | \$ 3        | \$ -         | \$ 60    | 1.4            | yrs | 477     | \$ 31                         | \$ 13                      | 0.02                      | \$ 598            | \$ 67                            | \$ 3,509                                       |                        |
| Showerheads                                      | 6      | \$ 30       | \$ -         | \$ 180   | 4.0            | yrs | 574     | \$ 37                         | \$ 7                       | 0.01                      | \$ 336            | \$ 38                            | \$ 18,750                                      |                        |
|  |        |             |              | \$ 7,255 |                |     |         |                               |                            | 0.05                      | \$ 1,882          | \$ 210                           |  |                        |
| Cost of Alternative Water Supply                 |        |             |              |          | \$ 1,882       |     |         |                               |                            |                           |                   |                                  |  |                        |
| Annual Cost of Treatment, Delivery, Augmentation |        |             |              |          | \$ 210         |     |         |                               |                            |                           |                   |                                  |  |                        |

**Public Works Ops Building and Car Wash Water Use and Water Budget 2007-2008**



## Summary of Current Water Use and Potential Water Savings Public Works Operations

| <b>Average Use Calculations w/o Cooling</b> |        |     |         |     |       |                     |                 |              |            |                        |  |
|---|--------|-----|---------|-----|-------|---------------------|-----------------|--------------|------------|------------------------|--|
|   | number | hot | per use |     | total | uses/day/fixture    | hot             | subtotal gpd |            |                        |  |
|   |        |     | cold    |     |       |                     |                 | cold         | total      |                        |  |
| <b>Toilets (tanks)</b>                      | 5      | -   | 2.1     | 2.1 | gpf   |                     | -               | 232          | 232        |                        |  |
| Main  | 2      | -   | 1.6     | 1.6 | gpf   | 10 flushes          | -               | 32           | 32         |                        |  |
| Staff                                       | 3      | -   | 2.7     | 2.7 | gpf   | 25 flushes          | -               | 200          | 200        |                        |  |
|   |        |     |         |     |       | 95 Total Flushes    |                 |              |            |                        |  |
| <b>Urinals</b>                              | 3      | -   | 1.0     | 1.0 | gpf   |                     | -               | 55           | 55         |                        |  |
| Main  | 1      | -   | 1.0     | 1.0 | gpf   | 5 flushes           | -               | 5            | 5          |                        |  |
| Staff                                       | 2      | -   | 1.0     | 1.0 | gpf   | 25 flushes          | -               | 50           | 50         |                        |  |
|   |        |     |         |     |       | 55 Total Flushes    |                 |              |            |                        |  |
| <b>Showers</b>                              |        |     |         |     |       |                     |                 |              |            |                        |  |
| Staff                                       | 2      | 1.9 | 0.6     | 2.5 | gpm   | 5.0 minutes         | 19              | 6            | 25         |                        |  |
| <b>Sinks</b>                                | 8      | 0.9 | 1.7     | 2.6 | gpm   |                     | 64              | 120          | 184        |                        |  |
| Main  | 2      | 0.7 | 1.3     | 2.0 | gpm   | 4.4 minutes         | 6               | 11           | 18         |                        |  |
| Staff                                       | 4      | 1.0 | 1.8     | 2.8 | gpm   | 11.8 minutes        | 45              | 84           | 130        |                        |  |
| Galley/Kitchen                              | 2      | 1.1 | 2.0     | 3.0 | gpm   | 6.1 minutes         | 13              | 24           | 37         |                        |  |
|   |        |     |         |     |       | 195 Total Sink Uses |                 |              |            |                        |  |
| <b>Other</b>                                |        |     |         |     |       |                     |                 |              |            |                        |  |
| Swamp Coolers (Rezmor)                      | 3      | -   | 9       | 9   | gph   | 3 hours             | 0               | 81           | 81         |                        |  |
| Ice Maker (Manitowoc - Air Cooled)          | 1      | -   | 12      | 12  | gpd   | 0.5                 | 0               | 6            | 6          |                        |  |
| Coffee Makers                               | 2      | -   | 1.0     | 1.0 | gpd   | 2                   | 0               | 4            | 4          |                        |  |
| Ice Maker (in refrigerator)                 | 1      | -   | 0.3     | 0.3 | gpd   | 1                   | 0               | 0            | 0          |                        |  |
|   |        |     |         |     |       |                     | <b>83</b>       | <b>504</b>   | <b>588</b> | <b>max day</b>         |  |
|   |        |     |         |     |       |                     | <b>observed</b> | <b>651</b>   | <b>651</b> | <b>average max day</b> |  |
|   |        |     |         |     |       |                     | observed        | 14,000       | 14,000     | max month              |  |
|   |        |     |         |     |       |                     |                 | 24           | 24         | days at max            |  |
|   |        |     |         |     |       |                     | observed        | 591          | 591        | aver day               |  |
|   |        |     |         |     |       |                     | observed        | 12,714       | 12,714     | aver month             |  |
|   |        |     |         |     |       |                     |                 |              |            |                        |  |
|   |        |     |         |     |       |                     |                 |              |            |                        |  |
| <b>Average Use Calculations w Cooling</b>   |        |     |         |     |       |                     |                 |              |            |                        |  |
|   | number | hot | per use |     | total | uses/day/fixture    | hot             | subtotal gpd |            |                        |  |
|   |        |     | cold    |     |       |                     |                 | cold         | total      |                        |  |
| <b>Toilets (tanks)</b>                      | 5      | -   | 2.1     | 2.1 | gpf   |                     | -               | 232          | 232        |                        |  |
| Main  | 2      | -   | 1.6     | 1.6 | gpf   | 10 flushes          | -               | 32           | 32         |                        |  |
| Staff                                       | 3      | -   | 2.7     | 2.7 | gpf   | 25 flushes          | -               | 200          | 200        |                        |  |
|   |        |     |         |     |       | 95 Total Flushes    |                 |              |            |                        |  |
| <b>Urinals</b>                              | 3      | -   | 1.0     | 1.0 | gpf   |                     | -               | 55           | 55         |                        |  |
| Main  | 1      | -   | 1.0     | 1.0 | gpf   | 5 flushes           | -               | 5            | 5          |                        |  |
| Staff                                       | 2      | -   | 1.0     | 1.0 | gpf   | 25 flushes          | -               | 50           | 50         |                        |  |
|   |        |     |         |     |       | 55 Total Flushes    |                 |              |            |                        |  |

## Summary of Current Water Use and Potential Water Savings Public Works Operations

| <b>Showers</b>                       |                                    |        |     |                 |       |     |                  |                 |                            |              |                 |         |      |       |
|--------------------------------------|------------------------------------|--------|-----|-----------------|-------|-----|------------------|-----------------|----------------------------|--------------|-----------------|---------|------|-------|
|                                      | Staff                              | 2      | 1.9 | 0.6             | 2.5   | gpm | 5.0              | minutes         | 19                         | 6            | 25              |         |      |       |
| <b>Sinks</b>                         |                                    |        |     |                 |       |     |                  |                 |                            |              |                 |         |      |       |
|                                      |                                    | 8      | 0.9 | 1.7             | 2.6   | gpm |                  |                 | 64                         | 120          | 184             |         |      |       |
|                                      | Main                               | 2      | 0.7 | 1.3             | 2.0   | gpm | 4.4              | minutes         | 6                          | 11           | 18              |         |      |       |
|                                      | Staff                              | 4      | 1.0 | 1.8             | 2.8   | gpm | 11.8             | minutes         | 45                         | 84           | 130             |         |      |       |
|                                      | Galley/Kitchen                     | 2      | 1.1 | 2.0             | 3.0   | gpm | 6.1              | minutes         | 13                         | 24           | 37              |         |      |       |
|                                      |                                    |        |     |                 |       |     | 195              | Total Sink Uses |                            |              |                 |         |      |       |
| <b>Other</b>                         |                                    |        |     |                 |       |     |                  |                 |                            |              |                 |         |      |       |
|                                      | Swamp Coolers (Rezmor)             | 3      | -   | 11              | 11    | gph | 28               | hours           | 0                          | 924          | 924             |         |      |       |
|                                      | Ice Maker (Manitowoc - Air Cooled) | 1      | -   | 12              | 12    | gpd | 0.5              |                 | 0                          | 6            | 6               |         |      |       |
|                                      | Coffee Makers                      | 2      | -   | 1.0             | 1.0   | gpd | 2                |                 | 0                          | 4            | 4               |         |      |       |
|                                      | Ice Maker (in refrigerator)        | 1      | -   | 0.3             | 0.3   | gpd | 1                |                 | 0                          | 0            | 0               |         |      |       |
|                                      |                                    |        |     |                 |       |     |                  |                 | 83                         | 1,347        | 1,431           | max day |      |       |
|                                      |                                    |        |     |                 |       |     |                  |                 | observed                   | 1,526        | average max day |         |      |       |
|                                      |                                    |        |     |                 |       |     |                  |                 | observed                   | 32,800       | max month       |         |      |       |
|                                      |                                    |        |     |                 |       |     |                  |                 |                            | 23           | days at max     |         |      |       |
|                                      |                                    |        |     |                 |       |     |                  |                 | observed                   | 1,466        | aver day        |         |      |       |
|                                      |                                    |        |     |                 |       |     |                  |                 | observed                   | 31,514       | aver month      |         |      |       |
| <b>Average Use Potential Savings</b> |                                    |        |     |                 |       |     |                  |                 |                            |              |                 |         |      |       |
|                                      |                                    | number | hot | per use<br>cold | total |     | uses/day/fixture |                 | hot                        | subtotal gpd |                 | savings |      |       |
|                                      |                                    |        |     |                 |       |     |                  |                 |                            | cold         | total           | hot     | cold | total |
| <b>Toilets (tanks)</b>               |                                    |        |     |                 |       |     |                  |                 |                            |              |                 |         |      |       |
|                                      |                                    | 5      | -   | 1.28            | 1.28  | gpf |                  |                 | -                          | 122          | 122             | -       | 110  | 110   |
|                                      | Main                               | 2      | -   | 1.28            | 1.28  | gpf | 10               | flushes         | -                          | 26           | 26              | -       | 6    | 6     |
|                                      | Staff                              | 3      | -   | 1.28            | 1.28  | gpf | 25               | flushes         | -                          | 96           | 96              | -       | 104  | 104   |
|                                      |                                    |        |     |                 |       |     | 95               | Total Flushes   |                            |              |                 |         |      |       |
| <b>Urinals</b>                       |                                    |        |     |                 |       |     |                  |                 |                            |              |                 |         |      |       |
|                                      |                                    | 3      | -   | -               | -     | gpf |                  |                 | -                          | -            | -               | -       | 55   | 55    |
|                                      | Main                               | 1      | -   | -               | -     | gpf | 5                | flushes         | -                          | -            | -               | -       | 5    | 5     |
|                                      | Staff                              | 2      | -   | -               | -     | gpf | 25               | flushes         | -                          | -            | -               | -       | 50   | 50    |
|                                      |                                    |        |     |                 |       |     | 55               | Total Flushes   |                            |              |                 |         |      |       |
| <b>Showers</b>                       |                                    |        |     |                 |       |     |                  |                 |                            |              |                 |         |      |       |
|                                      | Staff                              | 2      | 1.1 | 0.4             | 1.5   | gpm | 5.0              | minutes         | 11                         | 4            | 15              | 8       | 3    | 10    |
| <b>Sinks</b>                         |                                    |        |     |                 |       |     |                  |                 |                            |              |                 |         |      |       |
|                                      |                                    | 8      | 0.5 | 0.9             | 1.3   | gpm |                  |                 | 23                         | 42           | 65              | 42      | 78   | 119   |
|                                      | Main                               | 2      | 0.2 | 0.3             | 0.5   | gpm | 4.4              | minutes         | 2                          | 3            | 4               | 5       | 9    | 13    |
|                                      | Staff                              | 4      | 0.2 | 0.3             | 0.5   | gpm | 11.8             | minutes         | 8                          | 15           | 24              | 37      | 69   | 106   |
|                                      | Galley/Kitchen                     | 2      | 1.1 | 2.0             | 3.0   | gpm | 6.1              | minutes         | 13                         | 24           | 37              | -       | -    | -     |
|                                      |                                    |        |     |                 |       |     | 195              | Total Sink Uses |                            |              |                 |         |      |       |
| <b>Other</b>                         |                                    |        |     |                 |       |     |                  |                 |                            |              |                 |         |      |       |
|                                      | Swamp Coolers (Rezmor)             | 3      | -   | 9               | 9     | gph | 3                | hours           | 0                          | 81           | 81              | -       | -    | -     |
|                                      | Ice Maker (Manitowoc - Air Cooled) | 1      | -   | 12              | 12    | gpd | 0.5              |                 | 0                          | 6            | 6               | -       | -    | -     |
|                                      | Coffee Makers                      | 2      | -   | 1.0             | 1.0   | gpd | 2                |                 | 0                          | 4            | 4               | -       | -    | -     |
|                                      | Ice Maker (in refrigerator)        | 1      | -   | 0.3             | 0.3   | gpd | 1                |                 | 0                          | 0            | 0               | -       | -    | -     |
|                                      |                                    |        |     |                 |       |     |                  |                 | 34                         | 259          | 293             |         |      |       |
|                                      |                                    |        |     |                 |       |     |                  |                 | <b>potential reduction</b> |              | <b>-50%</b>     |         |      |       |

## Summary of Current Water Use and Potential Water Savings Public Works Operations

| Maximum Use Potential Savings      |        |  |              |          |                |                     |  |                            |                           |                   |                                  |  |                        |
|------------------------------------|--------|--|--------------|----------|----------------|---------------------|--|----------------------------|---------------------------|-------------------|----------------------------------|--|------------------------|
|                                    | number | per use  |              |          | total          | uses/day/fixture    | subtotal gpd   |                            |                           | savings           |                                  |  |                        |
|                                    |        | hot  | cold         | total    |                |                     | hot  | cold                       | total                     | hot               | cold                             | total  |                        |
| <b>Toilets (tanks)</b>             | 5      | -  | 1.3          | 1.3      | gpf            |                     | -  | 122                        | 122                       | -                 | 110                              | 110  |                        |
| Main                               | 2      | -  | 1.3          | 1.3      | gpf            | 10 flushes          | -  | 26                         | 26                        | -                 | 6                                | 6  |                        |
| Staff                              | 3      | -  | 1.3          | 1.3      | gpf            | 25 flushes          | -  | 96                         | 96                        | -                 | 104                              | 104  |                        |
|                                    |        |  |              |          |                | 95 Total Flushes    |  |                            |                           |                   |                                  |  |                        |
| <b>Urinals</b>                     | 3      | -  | -            | -        | gpf            |                     | -  | -                          | -                         | -                 | 55                               | 55   |                        |
| Main                               | 1      | -  | -            | -        | gpf            | 5 flushes           | -  | -                          | -                         | -                 | 5                                | 5  |                        |
| Staff                              | 2      | -  | -            | -        | gpf            | 25 flushes          | -  | -                          | -                         | -                 | 50                               | 50   |                        |
|                                    |        |  |              |          |                | 55 Total Flushes    |  |                            |                           |                   |                                  |  |                        |
| <b>Showers</b>                     |        |  |              |          |                |                     |  |                            |                           |                   |                                  |  |                        |
| Staff                              | 2      | 1.1  | 0.4          | 1.5      | gpm            | 5.0 minutes         | 11   | 4                          | 15                        | 8                 | 3                                | 10   |                        |
| <b>Sinks</b>                       | 8      | 0.5  | 0.9          | 1.3      | gpm            |                     | 23   | 42                         | 65                        | 42                | 78                               | 119  |                        |
| Main                               | 2      | 0.2  | 0.3          | 0.5      | gpm            | 4.4 minutes         | 2  | 3                          | 4                         | 5                 | 9                                | 13   |                        |
| Staff                              | 4      | 0.2  | 0.3          | 0.5      | gpm            | 11.8 minutes        | 8  | 15                         | 24                        | 37                | 69                               | 106  |                        |
| Galley/Kitchen                     | 2      | 1.1  | 2.0          | 3.0      | gpm            | 6.1 minutes         | 13   | 24                         | 37                        | -                 | -                                | -  |                        |
|                                    |        |  |              |          |                | 195 Total Sink Uses |  |                            |                           |                   |                                  |  |                        |
| <b>Other</b>                       |        |  |              |          |                |                     |  |                            |                           |                   |                                  |  |                        |
| Swamp Coolers (Rezmor)             | 3      | -  | 11           | 11       | gph            | 28 hours            | 0  | 924                        | 924                       | -                 | -                                | -  |                        |
| Ice Maker (Manitowoc - Air Cooled) | 1      | -  | 12           | 12       | gpd            | 0.5                 | 0  | 6                          | 6                         | -                 | -                                | -  |                        |
| Coffee Makers                      | 2      | -  | 1.0          | 1.0      | gpd            | 2                   | 0  | 4                          | 4                         | -                 | -                                | -  |                        |
| Ice Maker (in refrigerator)        | 1      | -  | 0.3          | 0.3      | gpd            | 1                   | 0  | 0                          | 0                         | -                 | -                                | -  |                        |
|                                    |        |  |              |          |                |                     | <b>34</b>  | <b>1,102</b>               | <b>1,136</b>              |                   |                                  |  |                        |
|                                    |        |  |              |          |                |                     | <b>potential reduction</b>                                 |                            | <b>-21%</b>               |                   |                                  |  |                        |
| <b>Costs to Implement</b>          |        |  |              |          |                |                     |  |                            |                           |                   |                                  |  |                        |
|                                    |        | <b>Cost</b>                                      |              |          |                |                     |  |                            |                           |                   |                                  |  |                        |
|                                    | number | Hardware   | Installation | Total    | Payback Period |                     | Annual Energy Savings (kw-hr)                              | Annual Energy Savings (\$) | Annual Water Savings (\$) | Acre-Feet Savings | Cost of Alternative Water Supply | Annual Cost of Treatment, Delivery, Wastewater | Cost per AF of Savings |
| Toilets                            | 5      | \$ 210   | \$ -         | \$ 1,050 | 4.9 yrs        |                     | -  | \$ -                       | \$ 216                    | 0.09              | \$ 3,091                         | \$ 345   | \$ 11,889              |
| Urinals                            | 3      | \$ 185   | \$ -         | \$ 555   | 5.2 yrs        |                     | -  | \$ -                       | \$ 108                    | 0.04              | \$ 1,540                         | \$ 172   | \$ 12,614              |
| Shower Heads                       | 2      | \$ 30  | \$ -         | \$ 60    | 1.2 yrs        |                     | 478  | \$ 31                      | \$ 20                     | 0.01              | \$ 280                           | \$ 31  | \$ 7,500               |
| Sinks                              | 6      | \$ 3   | \$ -         | \$ 18    | 0.04 yrs       |                     | 2,664  | \$ 173                     | \$ 234                    | 0.10              | \$ 3,344                         | \$ 374   | \$ 188                 |
|                                    |        |  |              | \$ 1,683 |                |                     |  |                            |                           | 0.24              | \$ 8,255                         | \$ 922   |                        |
|                                    |        | Cost of Alternative Water Supply                 |              |          |                | \$ 8,255            |  |                            |                           |                   |                                  |  |                        |
|                                    |        | Annual Cost of Treatment, Delivery, Augmentation |              |          |                | \$ 922              |  |                            |                           |                   |                                  |  |                        |
|                                    |        | cost of air cooling                              |              |          |                | \$ 227              | per year   |                            |                           |                   |                                  |  |                        |
|                                    |        | replacement water cost of cooling                |              |          |                | \$ 10,344           | renewable water, transmission, treatment, and distribution |                            |                           |                   |                                  |  |                        |

### Traffic Services Water Use and Water Budget 2007-2008



## Summary of Current Water Use and Potential Water Savings Traffic Services

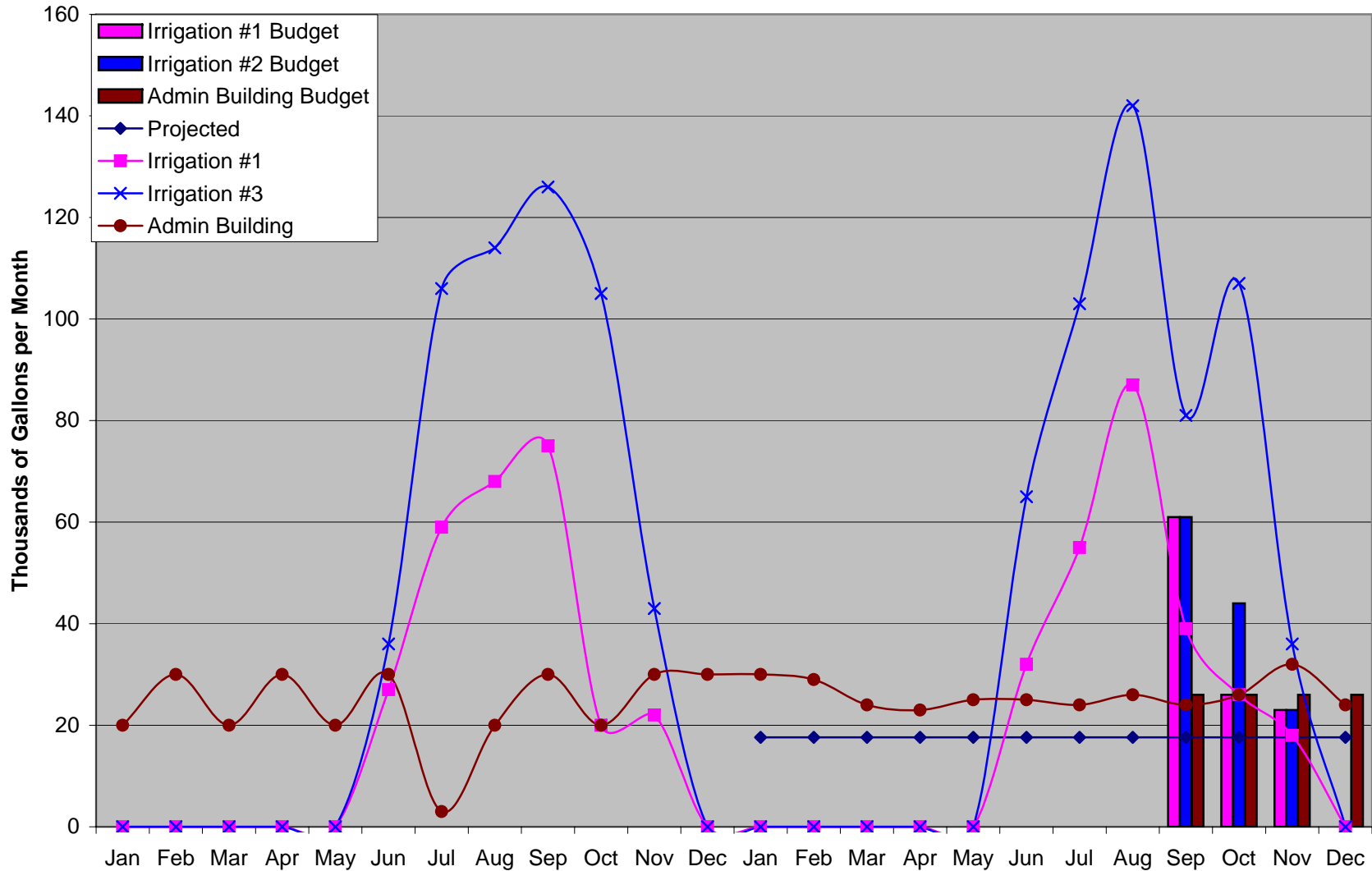
| Average Use Calculations w/o Cooling |        |     |                 |       |     |                    |     |              |                 |                            |
|--------------------------------------|--------|-----|-----------------|-------|-----|--------------------|-----|--------------|-----------------|----------------------------|
|                                      | number | hot | per use<br>cold | total |     | uses/day/fixture   | hot | subtotal gpd |                 |                            |
|                                      |        |     |                 |       |     |                    |     | cold         | total           |                            |
| <b>Toilets (tanks)</b>               | 2      | -   | 1.6             | 1.6   | gpf |                    | -   | 37           | 37              |                            |
| Mens                                 | 1      | -   | 1.6             | 1.6   | gpf | 15 flushes         | -   | 24           | 24              |                            |
| Womens                               | 1      | -   | 1.6             | 1.6   | gpf | 8 flushes          | -   | 13           | 13              |                            |
|                                      |        |     |                 |       |     | 23 Total Flushes   |     |              |                 |                            |
| <b>Urinals</b>                       | 2      | -   | 1.0             | 1.0   | gpf |                    | -   | 30           | 30              |                            |
| Mens                                 | 2      | -   | 1.0             | 1.0   | gpf | 15 flushes         | -   | 30           | 30              |                            |
|                                      |        |     |                 |       |     | 15 Total Flushes   |     |              |                 |                            |
| <b>Showers</b>                       | 1      | 2.1 | 0.7             | 2.8   | gpm |                    |     | 5            | 2               | 6                          |
| Mens                                 | 1      | 2.3 | 0.8             | 3.0   | gpm | 2 minutes          | 5   | 2            | 6               |                            |
| Womens                               | 0      | 1.9 | 0.6             | 2.5   | gpm | - minutes          | -   | -            | -               |                            |
|                                      |        |     |                 |       |     | 2 Total Minutes    |     |              |                 |                            |
| <b>Sinks</b>                         | 3      | 1.0 | 1.8             | 2.8   | gpm |                    |     | 18           | 34              | 53                         |
| Mens                                 | 1      | 1.1 | 2.0             | 3.0   | gpm | 11.3 minutes       | 12  | 22           | 34              |                            |
| Womens                               | 1      | 1.1 | 2.0             | 3.0   | gpm | 2.8 minutes        | 3   | 5            | 8               |                            |
| Galley/Kitchen                       | 1      | 0.9 | 1.6             | 2.5   | gpm | 4.2 minutes        | 4   | 7            | 11              |                            |
|                                      |        |     |                 |       |     | 52 Total Sink Uses |     |              |                 |                            |
| <b>Other</b>                         |        |     |                 |       |     |                    |     |              |                 |                            |
| Coffee Makers                        | 1      | -   | 1.0             | 1.0   | gpd | 2                  |     | 0            | 2               | 2                          |
| Mop Sink                             | 2      | -   | 0.3             | 0.3   | gpd | 2                  |     | 0            | 1               | 1                          |
|                                      |        |     |                 |       |     |                    |     | 23           | 106             | 129                        |
|                                      |        |     |                 |       |     |                    |     |              |                 | <b>max day</b>             |
|                                      |        |     |                 |       |     |                    |     |              | <b>observed</b> | 732 <b>average max day</b> |
|                                      |        |     |                 |       |     |                    |     |              | observed        | 15,745 <b>max month</b>    |
|                                      |        |     |                 |       |     |                    |     |              |                 | 21 <b>days at max</b>      |
|                                      |        |     |                 |       |     |                    |     |              | observed        | 123 <b>aver day</b>        |
|                                      |        |     |                 |       |     |                    |     |              | observed        | 2,648 <b>aver month</b>    |
|                                      |        |     |                 |       |     |                    |     |              |                 |                            |
| Average Use Calculations w/ Cooling  |        |     |                 |       |     |                    |     |              |                 |                            |
|                                      | number | hot | per use<br>cold | total |     | uses/day/fixture   | hot | subtotal gpd |                 |                            |
|                                      |        |     |                 |       |     |                    |     | cold         | total           |                            |
| <b>Toilets (tanks)</b>               | 2      | -   | 1.6             | 1.6   | gpf |                    | -   | 37           | 37              |                            |
| Mens                                 | 1      | -   | 1.6             | 1.6   | gpf | 15 flushes         | -   | 24           | 24              |                            |
| Womens                               | 1      | -   | 1.6             | 1.6   | gpf | 8 flushes          | -   | 13           | 13              |                            |
|                                      |        |     |                 |       |     | 23 Total Flushes   |     |              |                 |                            |
| <b>Urinals</b>                       | 2      | -   | 1.0             | 1.0   | gpf |                    | -   | 30           | 30              |                            |
| Mens                                 | 2      | -   | 1.0             | 1.0   | gpf | 15 flushes         | -   | 30           | 30              |                            |
|                                      |        |     |                 |       |     | 15 Total Flushes   |     |              |                 |                            |
| <b>Showers</b>                       | 1      | 2.1 | 0.7             | 2.8   | gpm |                    |     | 5            | 2               | 6                          |
| Mens                                 | 1      | 2.3 | 0.8             | 3.0   | gpm | 2 minutes          | 5   | 2            | 6               |                            |



## Summary of Current Water Use and Potential Water Savings Traffic Services

| Maximum Use Potential Savings |  |             |              |        |                |                    |                               |  |                           |                   |                                  |  |                        |
|-------------------------------|--|-------------|--------------|--------|----------------|--------------------|-------------------------------|--|---------------------------|-------------------|----------------------------------|--|------------------------|
|                               | number   | hot         | per use cold | total  |                | uses/day/fixture   | hot                           | cold   | total                     | subtotal gpd      |                                  |  |                        |
| <b>Toilets (tanks)</b>        | 2  | -           | 1.28         | 1.28   | gpf            |                    | -                             | 29   | 29                        | -                 | 7                                | 7  |                        |
| Mens                          | 1  | -           | 1.28         | 1.28   | gpf            | 15 flushes         | -                             | 19   | 19                        | -                 | 5                                | 5  |                        |
| Womens                        | 1  | -           | 1.28         | 1.28   | gpf            | 8 flushes          | -                             | 10   | 10                        | -                 | 3                                | 3  |                        |
|                               |  |             |              |        |                | 23 Total Flushes   |                               |  |                           |                   |                                  |  |                        |
| <b>Urinals</b>                | 2  | -           | -            | -      | gpf            |                    | -                             | -  | -                         | -                 | 30                               | 30   |                        |
| Mens                          | 2  | -           | -            | -      | gpf            | 15 flushes         | -                             | -  | -                         | -                 | 30                               | 30   |                        |
|                               |  |             |              |        |                | 15 Total Flushes   |                               |  |                           |                   |                                  |  |                        |
| <b>Showers</b>                | 1  | 1.5         | 0.5          | 2.0    | gpm            |                    | 2                             | 1  | 3                         | 2                 | 1                                | 3  |                        |
| Mens                          | 1  | 1.1         | 0.4          | 1.5    | gpm            | 2 minutes          | 2                             | 1  | 3                         | 2                 | 1                                | 3  |                        |
| Womens                        | 0  | 1.9         | 0.6          | 2.5    | gpm            | - minutes          | -                             | -  | -                         | -                 | -                                | -  |                        |
|                               |  |             |              |        |                | 2 Total Minutes    |                               |  |                           |                   |                                  |  |                        |
| <b>Sinks</b>                  | 3  | 0.4         | 0.8          | 1.2    | gpm            |                    | 6                             | 11   | 18                        | 12                | 23                               | 35   |                        |
| Mens                          | 1  | 0.2         | 0.3          | 0.5    | gpm            | 11.3 minutes       | 2                             | 4  | 6                         | 10                | 18                               | 28   |                        |
| Womens                        | 1  | 0.2         | 0.3          | 0.5    | gpm            | 2.8 minutes        | 0                             | 1  | 1                         | 2                 | 5                                | 7  |                        |
| Galley/Kitchen                | 1  | 0.9         | 1.6          | 2.5    | gpm            | 4.2 minutes        | 4                             | 7  | 11                        | -                 | -                                | -  |                        |
|                               |  |             |              |        |                | 52 Total Sink Uses |                               |  |                           |                   |                                  |  |                        |
| <b>Other</b>                  |  |             |              |        |                |                    |                               |  |                           |                   |                                  |  |                        |
| Coffee Makers                 | 1  | -           | 1.0          | 1.0    | gpd            | 2                  | 0                             | 2  | 2                         | -                 | -                                | -  |                        |
| Mop Sink                      | 2  | -           | 0.3          | 0.3    | gpd            | 2                  | 0                             | 1  | 1                         | -                 | -                                | -  |                        |
| Swamp Coolers (8,000 cfm)     | 3  | -           | 12.0         | 12.0   | gph            | 16.33              | 0                             | 588  | 588                       |                   |                                  |  |                        |
|                               |  |             |              |        |                |                    | <b>8</b>                      | <b>633</b>   | <b>641</b>                |                   |                                  |  |                        |
|                               |  |             |              |        |                |                    | <b>potential reduction</b>    |  | <b>-11%</b>               |                   |                                  |  |                        |
| <b>Costs to Implement</b>     |  |             |              |        |                |                    |                               |  |                           |                   |                                  |  |                        |
|                               |  | <b>Cost</b> |              |        |                |                    |                               |  |                           |                   |                                  |  |                        |
|                               | number   | Hardware    | Installation | Total  | Payback Period |                    | Annual Energy Savings (kw-hr) | Annual Energy Savings (\$)                                 | Annual Water Savings (\$) | Acre-Feet Savings | Cost of Alternative Water Supply | Annual Cost of Treatment, Delivery, Wastewater | Cost per AF of Savings |
| Toilets                       | 2  | \$ 210      | \$ -         | \$ 420 | 34.2 yrs       |                    | -                             | \$ -   | \$ 12                     | 0.01              | \$ 206                           | \$ 23  | \$ 71,333              |
| Urinals                       | 2  | \$ 185      | \$ -         | \$ 370 | 7.4 yrs        |                    | -                             | \$ -   | \$ 50                     | 0.02              | \$ 840                           | \$ 94  | \$ 15,417              |
| Shower Heads                  | 1  | \$ 30       | \$ -         | \$ 30  | 2.1 yrs        |                    | 143                           | \$ 9   | \$ 5                      | 0.00              | \$ 84                            | \$ 9   | \$ 12,500              |
| Sinks                         | 2  | \$ 3        | \$ -         | \$ 6   | 0.1 yrs        |                    | 783                           | \$ 51  | \$ 59                     | 0.03              | \$ 983                           | \$ 110   | \$ 214                 |
|                               |  |             |              | \$ 826 |                |                    |                               |  |                           | 0.06              | \$ 2,114                         | \$ 236   |                        |
|                               | Cost of Alternative Water Supply                 |             |              |        |                |                    |                               |  |                           |                   |                                  |  |                        |
|                               | Annual Cost of Treatment, Delivery, Augmentation |             |              |        |                |                    |                               |  |                           |                   |                                  |  |                        |
|                               |  |             |              |        |                |                    | \$ 96                         | per year   |                           |                   |                                  |  |                        |
|                               |  |             |              |        |                |                    | \$ 4,354                      | renewable water, transmission, treatment, and distribution |                           |                   |                                  |  |                        |

### Wilcox Building Water Use and Water Budget 2007-2008







## Summary of Current Water Use and Potential Water Savings Wilcox Building

|  |        |          |              |          |                   | 474 | Total Flushes                          |                                     |                                    |                      |  |  |                              |
|--|--------|----------|--------------|----------|-------------------|-----|--|-------------------------------------|------------------------------------|----------------------|--|--|------------------------------|
| <b>Urinals</b>                                   | 6      | -        | -            | -        | gpf               |     |  | -                                   | -                                  | -                    | -                                      | 216  | 216                          |
| Garden Level                                     | 2      | -        | -            | -        | gpf               | 6   | flushes                                | -                                   | -                                  | -                    | -                                      | 12   | 12                           |
| 1st Floor  | 2      | -        | -            | -        | gpf               | 48  | flushes                                | -                                   | -                                  | -                    | -                                      | 144  | 144                          |
| 2nd Floor  | 2      | -        | -            | -        | gpf               | 30  | flushes                                | -                                   | -                                  | -                    | -                                      | 60   | 60                           |
|  |        |          |              |          |                   | 168 | Total Flushes                          |                                     |                                    |                      |  |  |                              |
| <b>Sinks</b>                                     | 31     | 0.4      | 0.8          | 1.3      | gpm               |     |  | 88                                  | 164                                | 252                  | 29                                     | 54   | 84                           |
| Garden Level                                     | 8      | 0.2      | 0.3          | 0.5      | gpm               | 2   | minutes                                | 3                                   | 5                                  | 8                    | 3                                      | 5  | 8                            |
| 1st Floor Bathrooms                              | 7      | 0.2      | 0.3          | 0.5      | gpm               | 19  | minutes                                | 24                                  | 44                                 | 67                   | 13                                     | 25   | 38                           |
| 2nd Floor Bathrooms                              | 8      | 0.2      | 0.3          | 0.5      | gpm               | 9   | minutes                                | 13                                  | 24                                 | 37                   | 13                                     | 24   | 37                           |
| Galleys  | 8      | 1.2      | 2.3          | 3.5      | gpm               | 5   | minutes                                | 49                                  | 91                                 | 140                  | -                                      | -  | -                            |
|  |        |          |              |          |                   | 882 | Total Sink Uses                        |                                     |                                    |                      |  |  |                              |
| <b>Other</b>                                     |        |          |              |          |                   |     |  |                                     |                                    |                      |  |  |                              |
| Janitor Closet                                   | 3      |          | 10           | 10       | gpd               | 1   |  | -                                   | 30                                 | 30                   | -                                      | -  | -                            |
| Coffee Makers                                    | 7      |          | 0.5          | 0.5      | gpd               | 2   |  | -                                   | 7                                  | 7                    | -                                      | -  | -                            |
| Ice Maker (in refrigerator)                      | 4      |          | 0.3          | 0.3      | gpd               | 1   |  | -                                   | 1                                  | 1                    | -                                      | -  | -                            |
|  |        |          |              |          |                   |     |  | <b>88</b>                           | <b>809</b>                         | <b>897</b>           |  |  |                              |
|  |        |          |              |          |                   |     |  | <b>potential reduction</b>          |                                    | <b>-36%</b>          |  |  |                              |
| <b>Costs to Implement</b>                        |        |          |              |          |                   |     |  |                                     |                                    |                      |  |  |                              |
| <b>Cost</b>                                      |        |          |              |          |                   |     |  |                                     |                                    |                      |  |  |                              |
|  | number | Hardware | Installation | Total    | Payback<br>Period |     | Annual<br>Energy<br>Savings<br>(kw-hr) | Annual<br>Energy<br>Savings<br>(\$) | Annual<br>Water<br>Savings<br>(\$) | Acre-Feet<br>Savings | Cost of<br>Alternative<br>Water Supply | Annual Cost<br>of<br>Treatment,<br>Delivery,<br>Wastewater | Cost per<br>AF of<br>Savings |
| Toilets  | 18     | \$ 285   | \$ -         | \$ 5,130 | 14.6              | yrs | -                                      | \$ -                                | \$ 352                             | 0.14                 | \$ 5,038                               | \$ 563   | \$ 35,641                    |
| Urinals  | 6      | \$ 185   | \$ -         | \$ 1,110 | 3.6               | yrs | -                                      | \$ -                                | \$ 307                             | 0.13                 | \$ 4,396                               | \$ 491   | \$ 8,838                     |
| Sinks  | 5      | \$ 3     | \$ -         | \$ 15    | 0.1               | yrs | 1,620                                  | \$ 105                              | \$ 142                             | 0.06                 | \$ 2,034                               | \$ 227   | \$ 258                       |
|  |        |          |              | \$ 6,255 |                   |     |  |                                     |                                    | 0.33                 | \$ 11,468                              | \$ 1,281   |                              |
| Cost of Alternative Water Supply                 |        |          |              |          |                   |     |  |                                     |                                    |                      |  |  |                              |
| Annual Cost of Treatment, Delivery, Augmentation |        |          |              |          |                   |     |  |                                     |                                    |                      |  |  |                              |
|  |        |          |              |          | \$ 11,468         |     |  |                                     |                                    |                      |  |  |                              |
|  |        |          |              |          | \$ 1,281          |     |  |                                     |                                    |                      |  |  |                              |