This presentation premiered at WaterSmart Innovations

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Lessons Learned

Top Mistakes to Avoid when Improving your Building's Water Efficiency

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Aichele

IKE + LEE


END OF EARTH 2

Plunging into Plumbing – Specialty Systems

Instructors: Troy Aichele

UNIVERSITY OF

HARD KNOX

Objectives

1. Audits
2. Installation
3. The Human Factor

Troy's Toilet Trivia

In the United States, when is the toilet flushed more often than any other time of the year?

Objectives

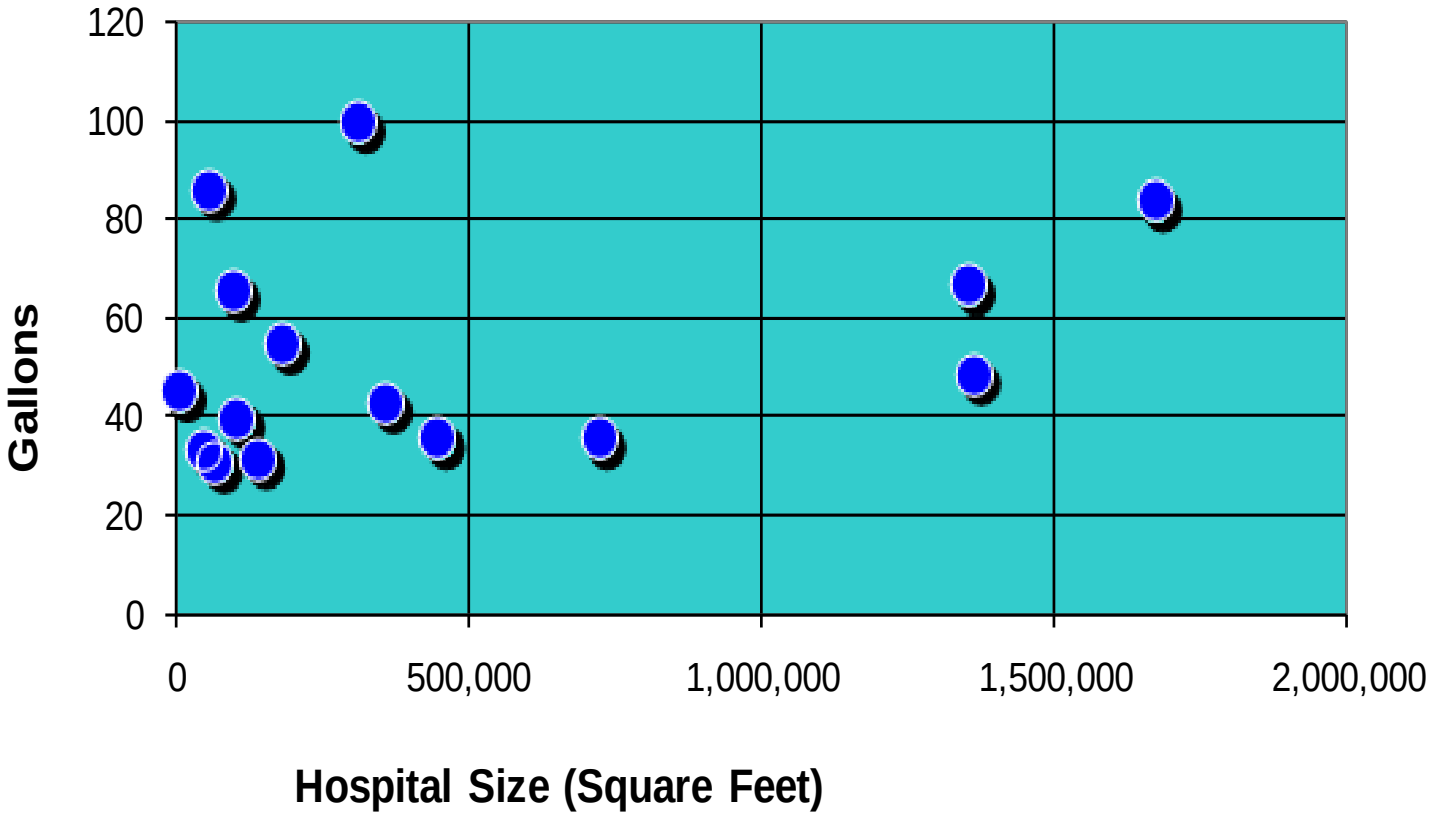
1. Audits
2. Installation
3. The Human Factor

Assemble Data

- Historical Use
- Cost Data / Utility Rates
- Building Use and Occupancy

Compare Benchmarks

Water Use / SF / Year Comparisons

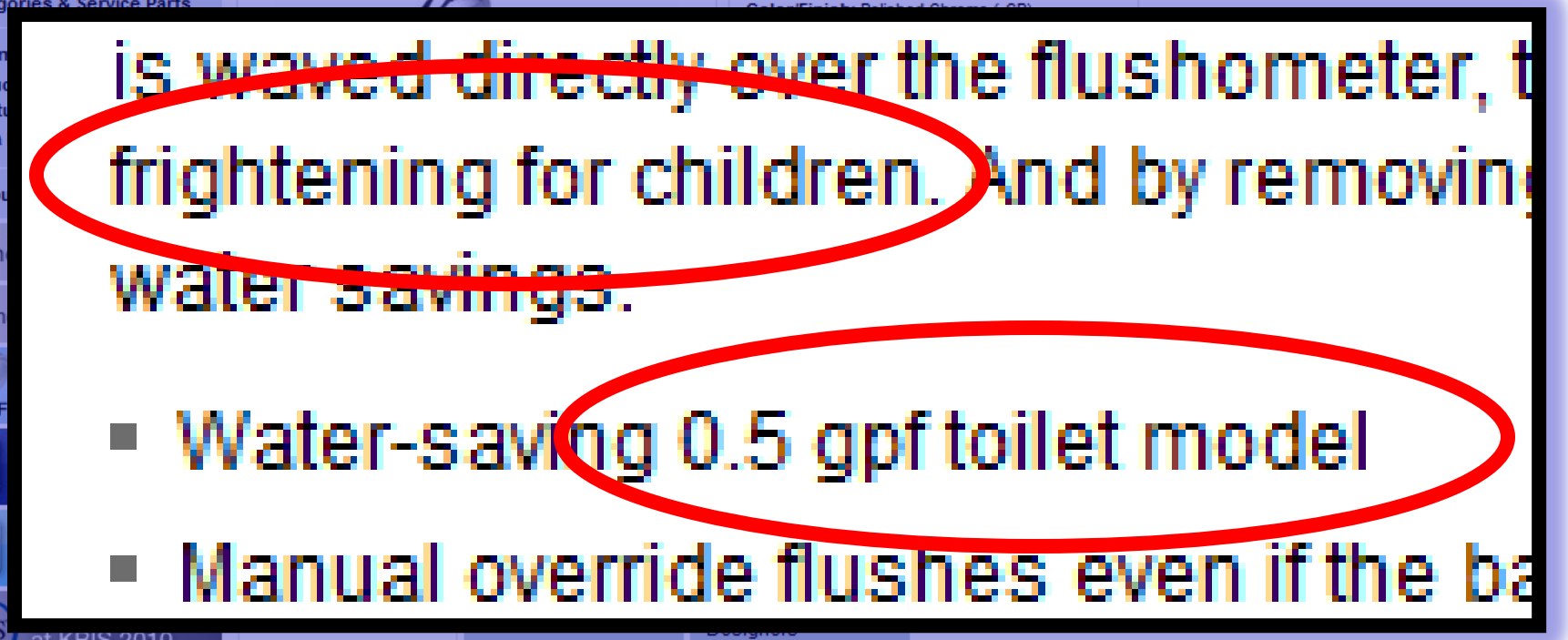


Bathroom Products

0.5 gpf exposed urinal flushometer - washdown

E-mai Print

Color/Finish



0.5 gpf exposed urinal flushometer - washdown

WAVE technology offers hygienic touchless operation on command. Activating only when a hand is waved directly over the flushometer, the sensor eliminates random flushing that can be frightening for children. And by removing false actuations, Wave technology provides even greater water savings.

- Water-saving 0.5 gpf toilet model
- Manual override flushes even if the batteries have expired
- 24-hour sentinel flush keeps trapway fresh
- Waterproof shroud protects electronic components
- Serviceable without turning water supply off
- Engineered for optimal performance with KOHLER® 0.5 gpf urinals

Maximum Performance (MaP) of Toilet Fixtures Flushometer Valve/Bowl Combinations

Appendix D - Sorted by Manufacturer

IMPORTANT NOTE: The evaluation and MaP measurement of the flushometer bowl/valve combinations shown below was performed using the existing MaP protocol designed for residential applications. A new, more rigorous commercial MaP protocol for non-residential (public restroom) applications is under development. The fixture combinations shown below will likely be re-tested in 2009 or 2010 against the new commercial protocol and it is possible that results will change.

KEY:

Flush performance (MaP column & score)

250 grams to 475 grams

500 grams and more

Type of toilet fixture

6-L (1.6-gal) Flushometer Bowl & Valve Combination (Commercial applications)

4.8-L (1.28-gal) (max) Flushometer Bowl & Valve Combination HET (Commercial applications)

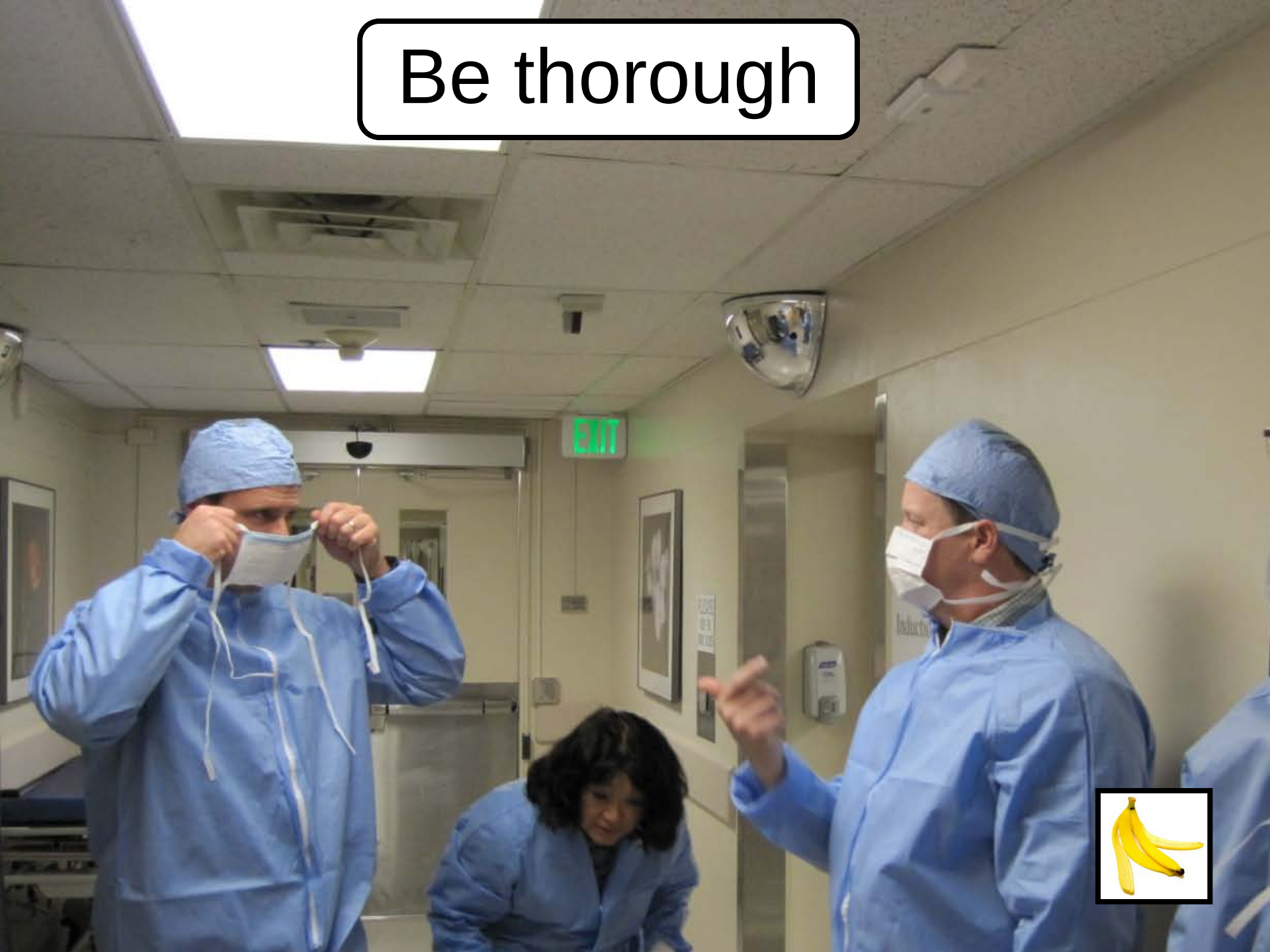
MaP Test Report No. (for internal use only)	Make	Model Name	Bowl Model Number	Valve Model Number	MaP Flush Performance (grams of solid waste removed from the toilet in a SINGLE flush)	Round Front (R) or Elongated (E) bowl	ADA-Comfort Height-Right Height Bowl	High-Efficiency Toilet (HET)	Rear Discharge (Back Outlet)	Floor-Mounted (F) OR Wall-Mounted (W)
10-134	American Standard	Afwall FloWise EL	3351.128 (top spud)	Sloan 111-1.2 (1-1/2")	800	E	*	YES	R	W
10-135	American Standard	Afwall EL	3351.160 (top spud)	Toto TET 1 DNCR (1-1/2")	1,000	E	*	NO	R	W
10-135	American Standard	Afwall EL	3352.160 (top spud; w/bedpan lugs)	Toto TET 1 DNCR (1-1/2")	1,000	E	*	NO	R	W
10-134	American Standard	Afwall FloWise EL	3352.128 (top spud; w/bedpan lugs)	Sloan 111-1.2 (1-1/2")	800	E	*	YES	R	W
13-092	American Standard	Priolo EL ADA	3695.128 (top spud)	Sloan 111-1.2 (1-1/2")	1,000	E	*	YES	R	F
13-092	American Standard	Priolo EL ADA	3696.128 (top spud; w/bed pan lugs)	Sloan 111-1.2 (1-1/2")	1,000	E	*	YES	R	F
13-094	American Standard	Priolo EL ADA	3695.016 flushometer bowl (top spud)	Toto TET 1 DNCR (1-1/2")	1,000	E	*	NO	R	F
13-094	American Standard	Priolo EL ADA	3696.016 flushometer bowl (top spud; w/ bed pan lugs)	Toto TET 1 DNCR (1-1/2")	1,000	E	*	NO	R	F
13-094	American Standard	Priolo EL ADA	3697.016 flushometer bowl (back spud)	Toto TET 1 DNCR (1-1/2")	1,000	E	*	NO	R	F
13-094	American Standard	Priolo EL ADA	3698.016 flushometer bowl (back spud; w/ bed pan lugs)	Toto TET 1 DNCR (1-1/2")	1,000	E	*	NO	R	F
13-092	American Standard	Priolo EL ADA	3697.128 flushometer bowl (back spud)	Toto TET 1 DNCR (1-1/2")	1,000	E	*	YES	R	F
13-092	American Standard	Priolo EL ADA	3698.128 flushometer bowl (back spud; w/ bed pan lugs)	Toto TET 1 DNCR (1-1/2")	1,000	E	*	YES	R	F

Sensor Activated Water Closets

Waterless Urinals

Find Existing Leaks

Be thorough




PULL DOWN WITH TWO HANDS
01/21/2010 14:40


UNIVERSAL PRECAUTIONS
Sparkling clean
For your protection
11/18/2009 11:09

Campus:

Building / Area:

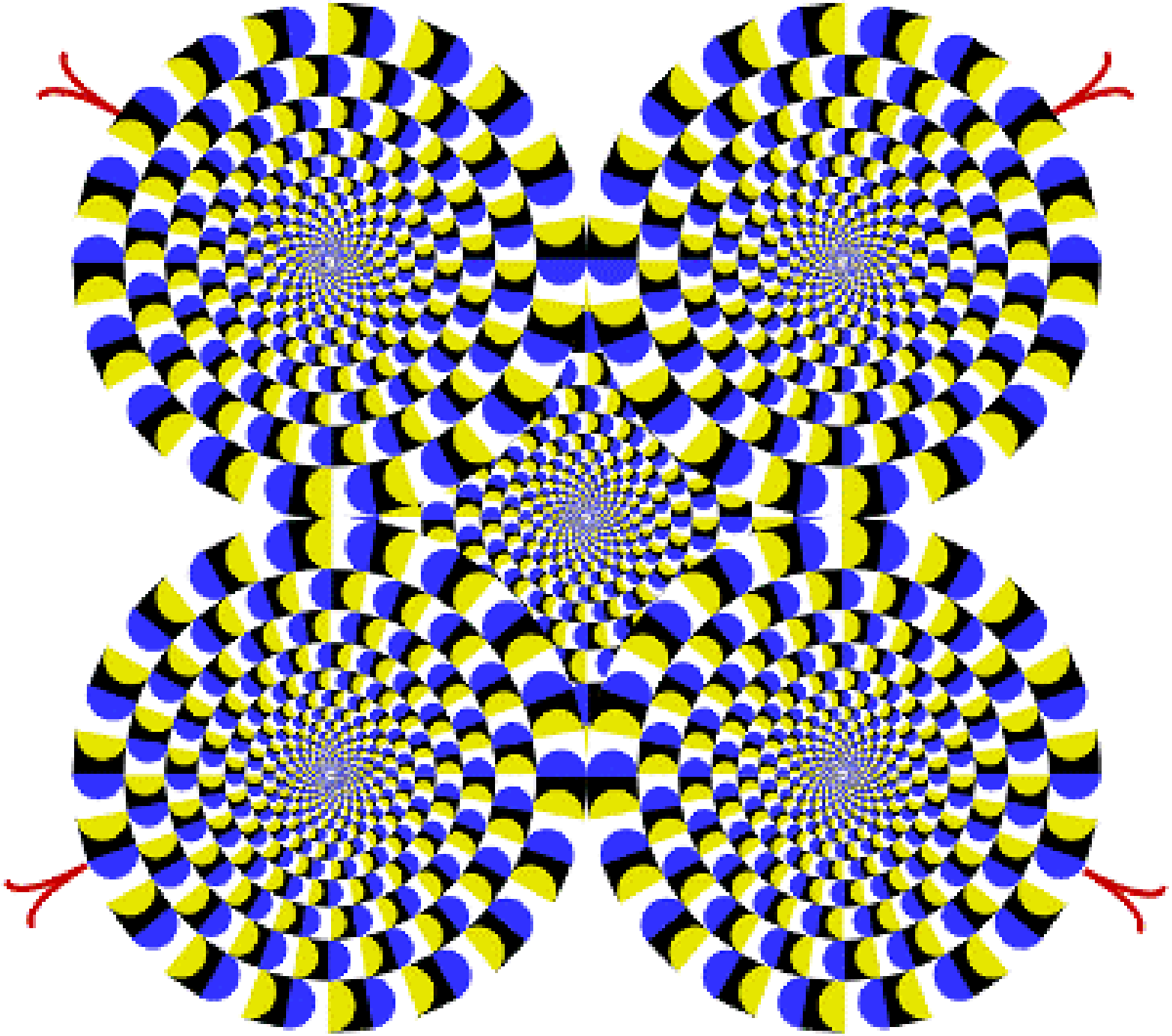
Blank = Audited N/A = Not Audited	Room Number	A) WH/FM 3.5 GPF WC	B) WH 3.5 GPF BPW	C) 2.5 GPM Hand Held (HH) or Fixed (F) Shower Head	D) Flushometer (F) or Tank-Type (TT) DF Retrofit Kit	E) Add 0.5/1.5 GPM FC/LF to 2.5 GPM Faucet	G) WH/FM 3.5 Tank-Type (TT) GPF WC	H) WH/FM 1.0 GPF Urinal			Picture Number
Totals											

Actual Fixture Counts not matching Audit Count

$$\frac{1}{n}\sin x = ?$$

$$\frac{1}{n}\sin x = ?$$

$$six = 6$$



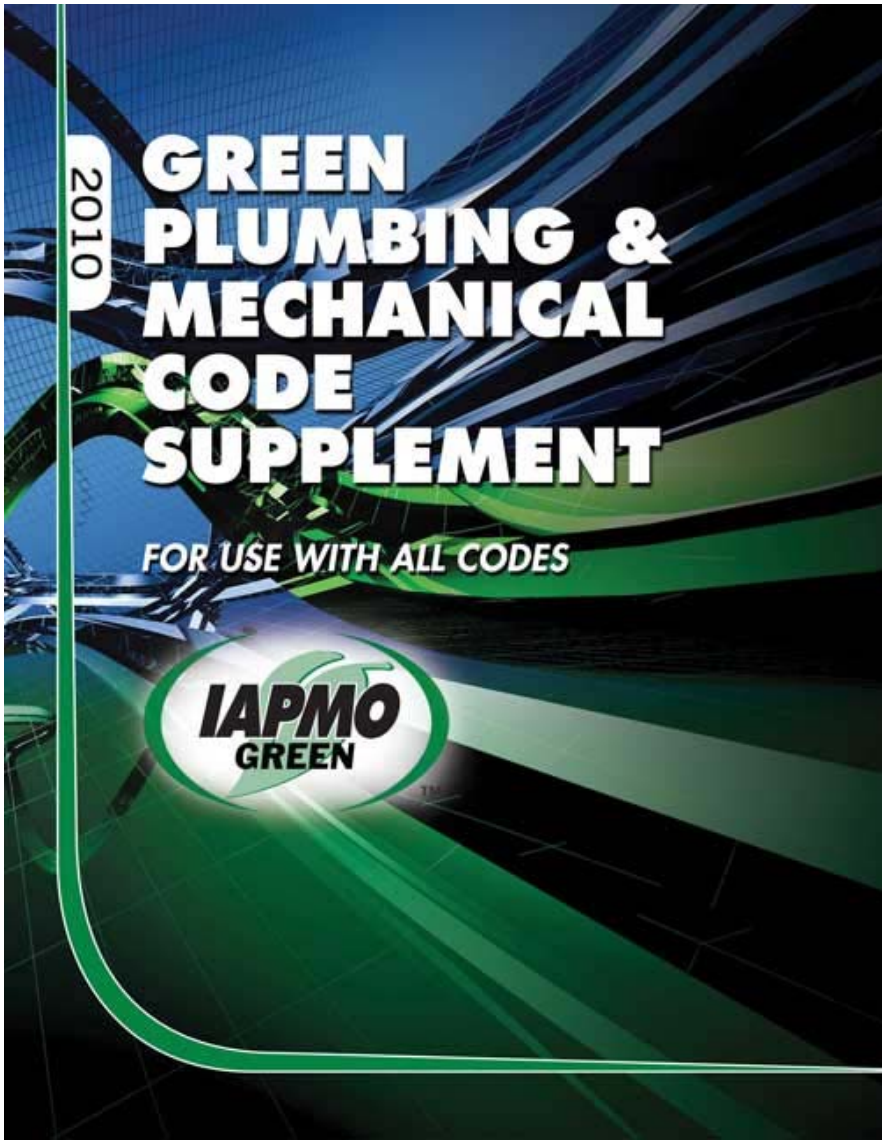
Troy's Toilet Trivia

Which toilet cubicle in a public restroom is usually the cleanest?

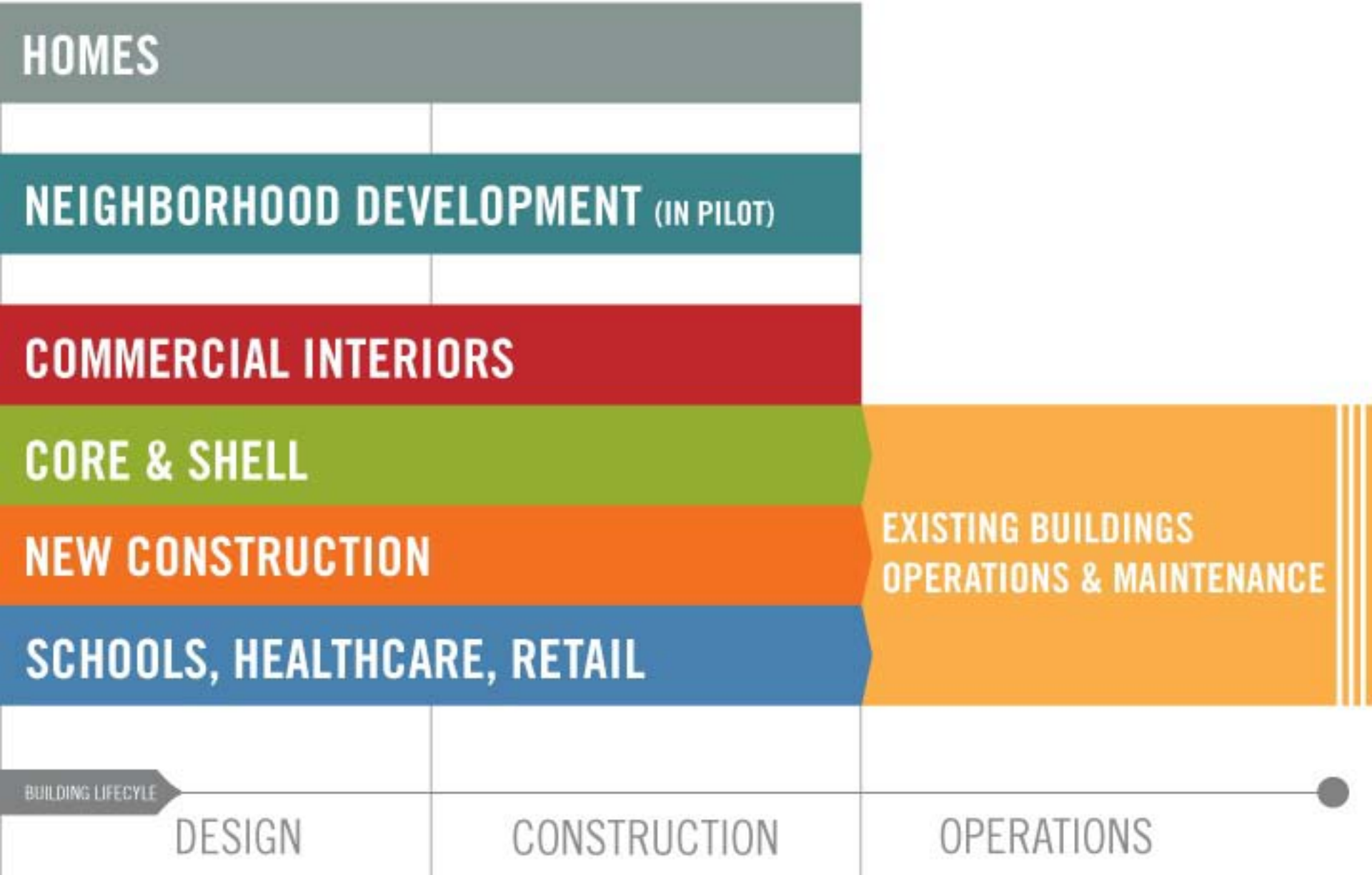
Over or Under Estimating Use Rates

- Water Closet
  - 3 / Day (Women)
  - 1 / Day (Men)*
- Urinal
  - 2 / Day (Men)
- Faucets
  - 1 Minute / Person / Day
- Shower Use
  - 8 Minutes / Day

*3 / Day if no urinals

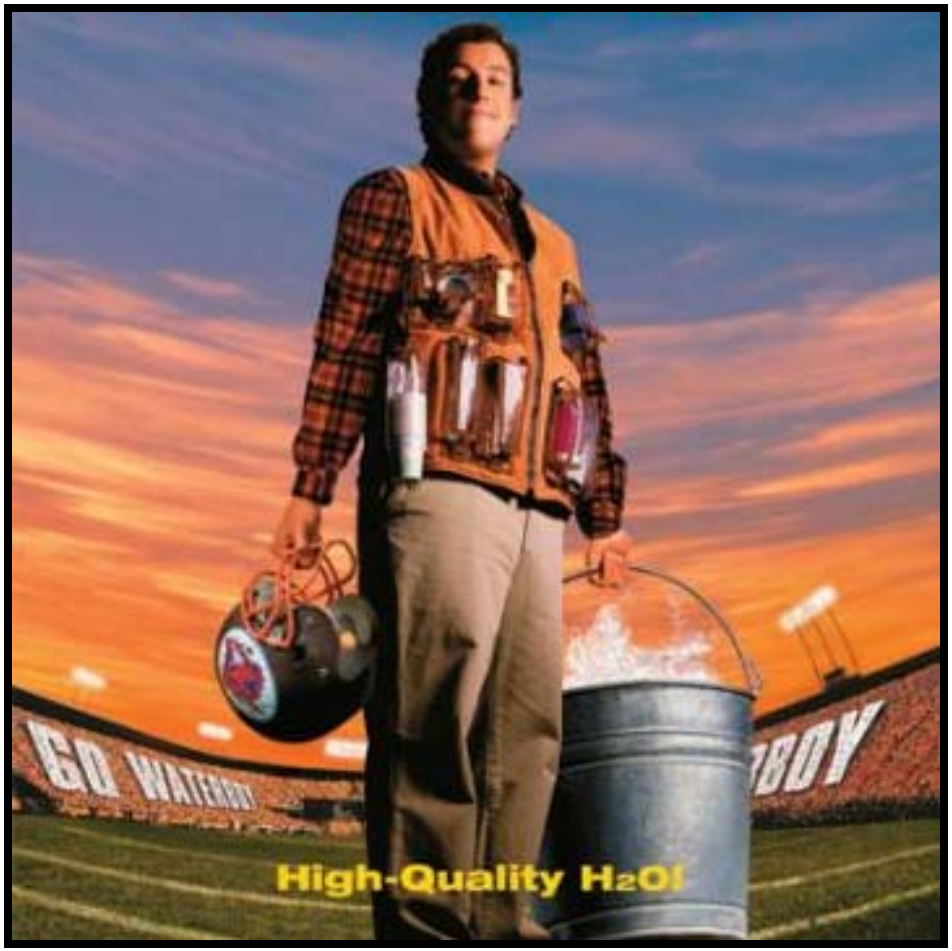


Over or Under Estimating Use Rates



Measuring with Bucket and Stopwatch

- Measure twice and average
- Measure 10% of similar devices throughout facility



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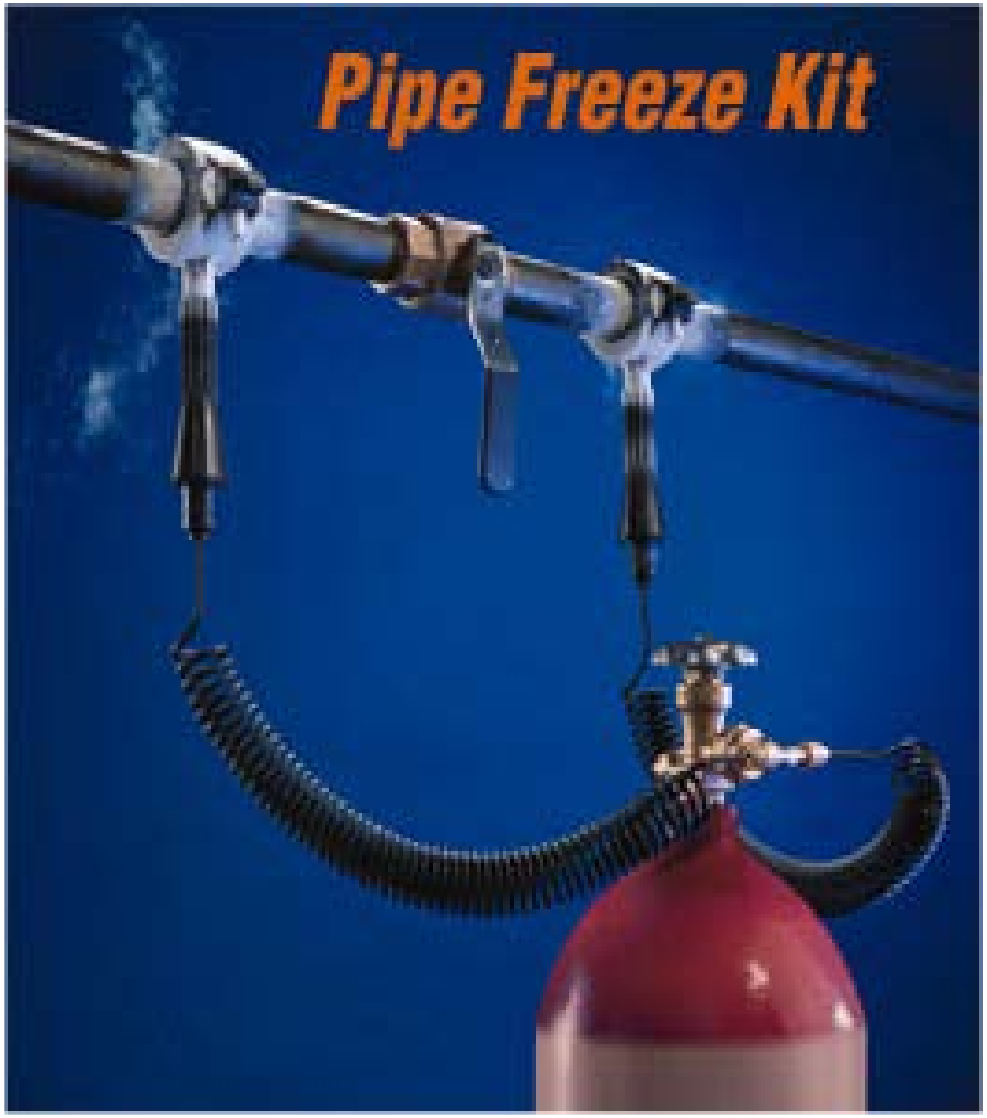
Lowering GPF without changing bowl

Fixture Footprints are not all the same

System Shut-downs vs. Freezing



Beta-Testing

Problematic Existing Conditions

Aerators vs. Flow Control


VOLVO
RUBBLE MASTER
RM 100

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Straying from Water Audit Recommendations

Low Water Flow Concerns: Maintenance Problems

Low Water Flow Concerns: User Negative Feedback

Putting Water Efficiency Ahead of User or Building needs

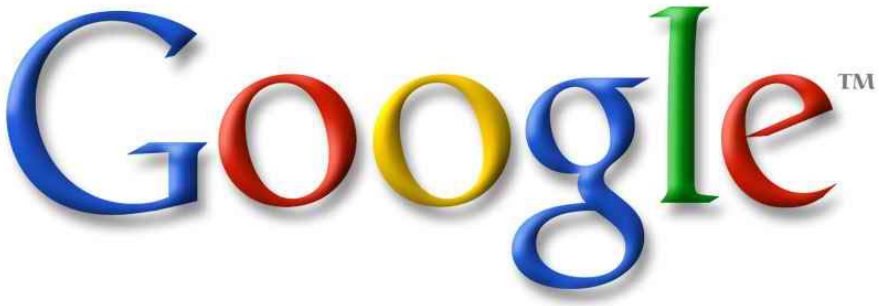
Troy's Toilet Trivia

What percentage of Americans feel better about themselves after flushing the toilet?


Waiting for the perfect time

Irrigation (Xeriscaping)

Think you're not eligible for rebates ?



Utility Rate Trends…

10 %

$9.00
$8.00
$7.00
$6.00
$5.00
$4.00
$3.00
$2.00
$1.00
$-

2002 2003 2004 2005 2006 2007 2008 2009

Water
Waste


HONEST !
NOTHING OVER A...
$1
.25

Follow-up Audits / Stop looking for new products

Boiler Stack Economizer Condensate Recovery

Cost: $1,090
Water / Sewer Savings: 720 GPD
Return on Investment: 5 Months

Prioritize Work via ROI Durations

Objectives

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2. Installation
3. The Human Factor


THE
END
IS
AT HAND
1. PETER. 4. 7.)

BONUS ROUND !!!

What day is World Plumbing Day?