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MaP Testing's 5-year Anniversary:

A proven process for development & implementation
of meaningful product performance standards

John Koeller, P.E.
Koeller and Company
Yorba Linda, California

watersmart08
INNOVATIONS

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A historical perspective & update on MaP Testing

Toilet Fixtures



Origin of a problem...and a solution!

- EPA Act 92 mandates 1.6-gal maximum flush
- Early U.S. 1.6-gal siphonic toilets did not flush well
- Why? Because many mfrs simply converted a 3.5-gallon toilet to flush with 1.6 gallons
 - No engineering - no hydraulic redesign - same tank size
 - Same tank, but use an “early closing” flapper
 - No rigorous performance requirements
- PLUS, many models could be adjusted to increase the flush volume back to 3 - 4 gals!

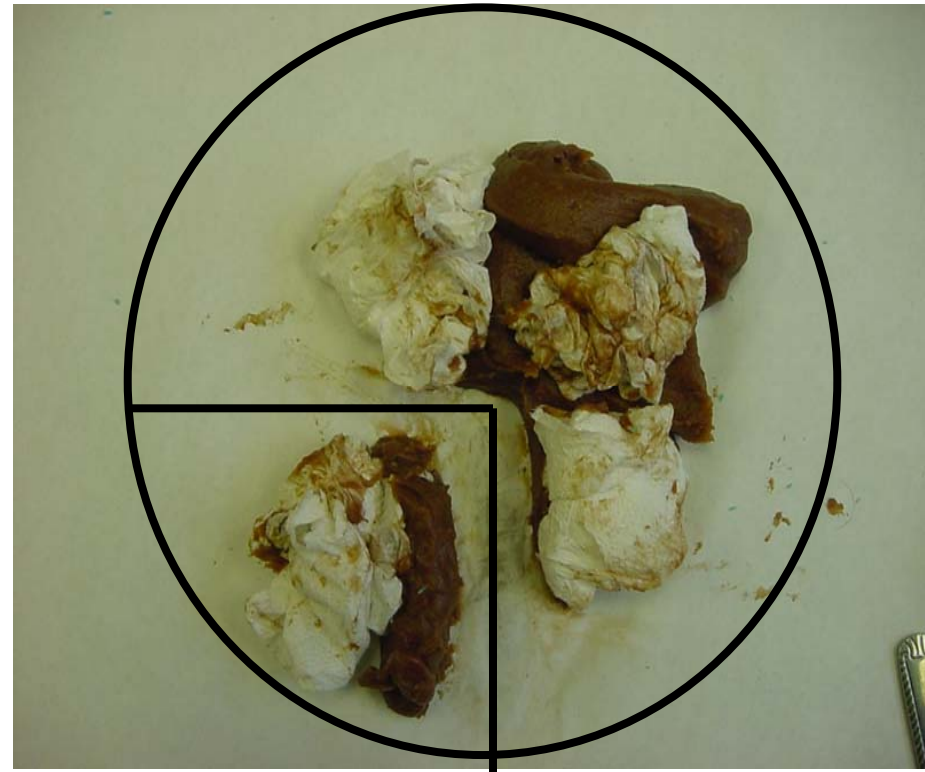
U.S.-Canadian Certification Process - 3 major problems remain today!!

1. Testing fails to replicate “real world” conditions
 - Sponges?
 - Paper wads....maybe!
 - Granules?
 - Plastic balls?
2. 100% removal of waste
not required!!
3. Pass/fail only - no rating
or ranking of performance
for consumers



Certification in North America

- Only 22 of 28 media required to clear fixture - 75+%!!
- Question: Would a consumer be satisfied with a toilet that cleared only 75% of waste?





Like saying....

✓ Pilot to passengers:

“Folks, this aircraft will only be using 3 of its 4 engines on this trip!
But, we’ll be OK...”

✓ Car salesman to customer:

“Sir, the brakes on this new vehicle will stop the car at least 75% of
the time!”

✓ Plumber to homeowner:

“This toilet will regularly remove 75% of the waste!”



Result...

- ✓ Early ULFTs (1.6 gallon) = performance problems
 - ✓ Water utility complaints about sustainability of savings
 - ✓ Customer complaints about flush performance
 - ✓ Outcome: Manufacturers got the “message” and developed improved product (led to the 2nd generation of toilets in the late 1990s)
- ✓ ALSO..... water utility industry steps up to address:
 - ✓ Sustainability of water savings (flappers & adjustability)
 - ✓ Flush performance (customer satisfaction)



Three Water utility “responses” ...

- ✓ 2000 - Los Angeles Supplementary Purchase Specification (SPS) for tank-type toilets
 - Mandates durable flappers
 - Limits flush volume adjustability
 - Requires marking with flapper part no.
- ✓ 2003 - Maximum Performance (MaP) testing
 - Addresses flush performance issues
- ✓ 2005 - UNAR developed for WE programs



Maximum Performance Testing of Popular Toilet Models (MaP Testing)

- Cooperative Canadian & U.S. project - 2003
- Development sponsored by 22 water utilities and interested parties in U.S and Canada
- Purposes:
 - Give consumers information they needed on toilet flush performance
 - Provide water conservation programs with info for their approved “lists”



Maximum Performance Testing of Popular Toilet Models (MaP Testing)

- Cooperative U.S. and Canadian project - 2003
 - East Bay Municipal Utility District
 - Los Angeles Dept of Water & Power
 - Tampa Bay Water
 - Seattle Public Utilities
 - Calif Urban Water Conservation Council
 - Toronto, Ontario
 - Winnipeg, Manitoba
 - Greater Vancouver Regional District
 - Canada Mortgage & Housing Corp.
 - B.C. Buildings Corp. Victoria B.C.
 - Capital Regional District, Victoria B.C.
 - Canadian Water & Wastewater Association (Lead)
 - Region Durham, Ontario
 - Region Halton, Ontario
 - Region Waterloo, Ontario
 - Hamilton, Ontario
 - Region Peel, Ontario
 - Calgary, Alberta
 - Edmonton, Alberta
 - Montreal, Quebec
 - Ottawa, Ontario
 - Halifax, Nova Scotia



Maximum Performance Testing of Popular Toilet Models (MaP Testing)

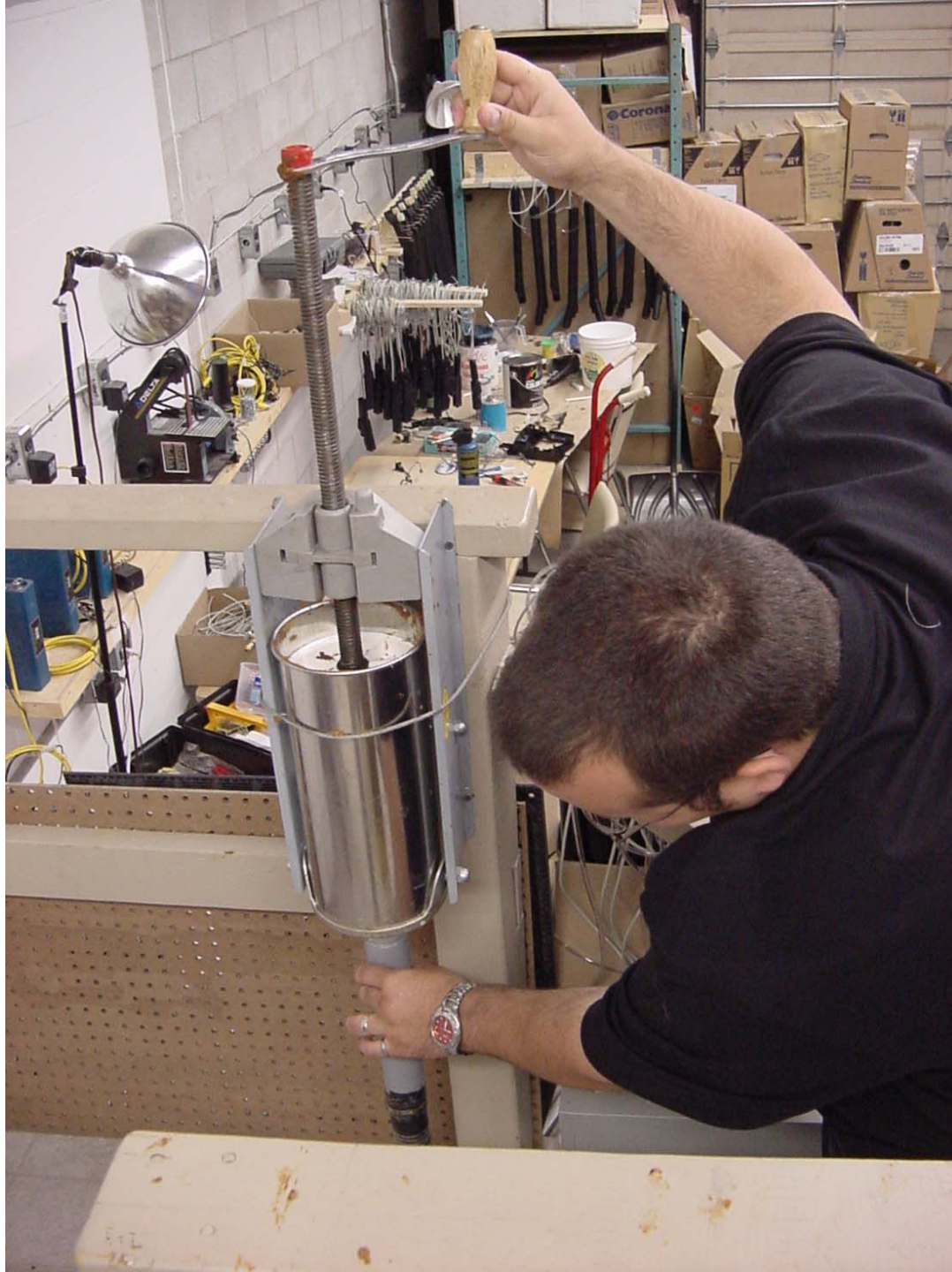
- Why MaP?because certification testing is a very poor measure of “real world” performance of toilet fixtures.... and consumers want to compare!
- MaP Features -
 - Replicates “real world” with special test media
 - An independent measure of toilet performance
 - Scientifically based minimum performance threshold for waste removal (250g)
 - User-friendly basis for toilet selection



Test Media: Soy Bean Paste

















Maximum Performance Testing of Popular Toilet Models (MaP Testing)

- ✓ Uncased soy bean paste: primary test media
- ✓ BUT, costs escalate
 - ✓ One-time use
 - ✓ Worldwide distribution
- ✓ Seek out a “re-usable” alternative =
encased soy bean paste





Maximum Performance Testing of Popular Toilet Models (MaP Testing)

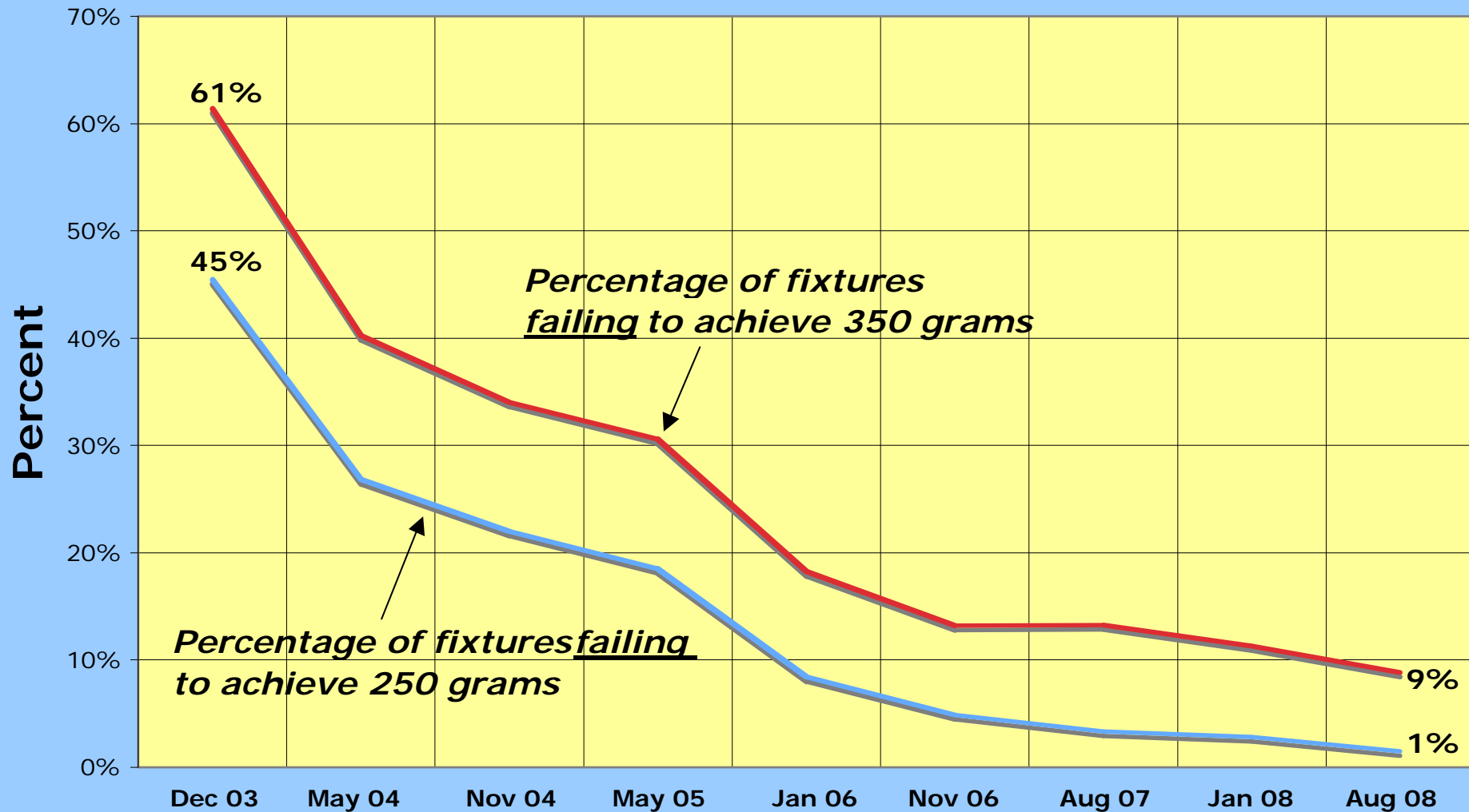
- ✓ 12th Edition report now posted (June 08)
 - 720+ different toilet fixture models tested for flush performance and rated!!
 - Tank-type AND flushometer valve fixtures
- ✓ Used or adopted by various large production builders, designers, specifiers, retailers, water utilities, consumers, & others for product selection
- ✓ Used by U.S. EPA for WaterSense Program
- ✓ Manufacturers worldwide now testing to MaP
- ✓ Manufacturers submit products for **independent testing**
- ✓ Future MaP initiatives -
 - Flushometer valve toilet fixtures
 - Urinals



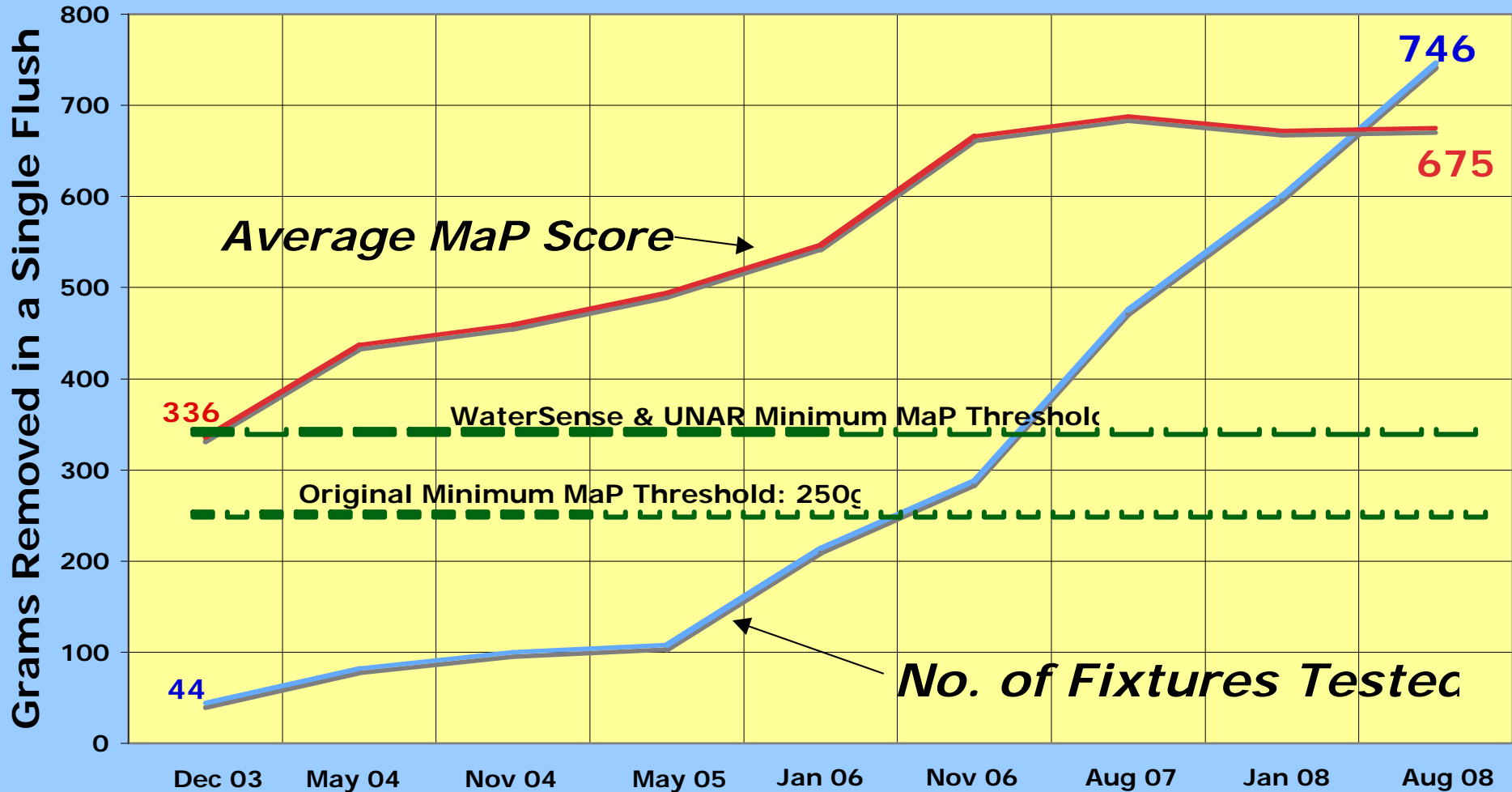
Performance Progress through MaP Testing

- Early ULFTs (1.6gal) - minimal testing, poor performance
- Today's ULFTs - MaP testing leads to improved performance
- New HETs (1.0 to 1.28gal) - MaP testing is leading to outstanding performance

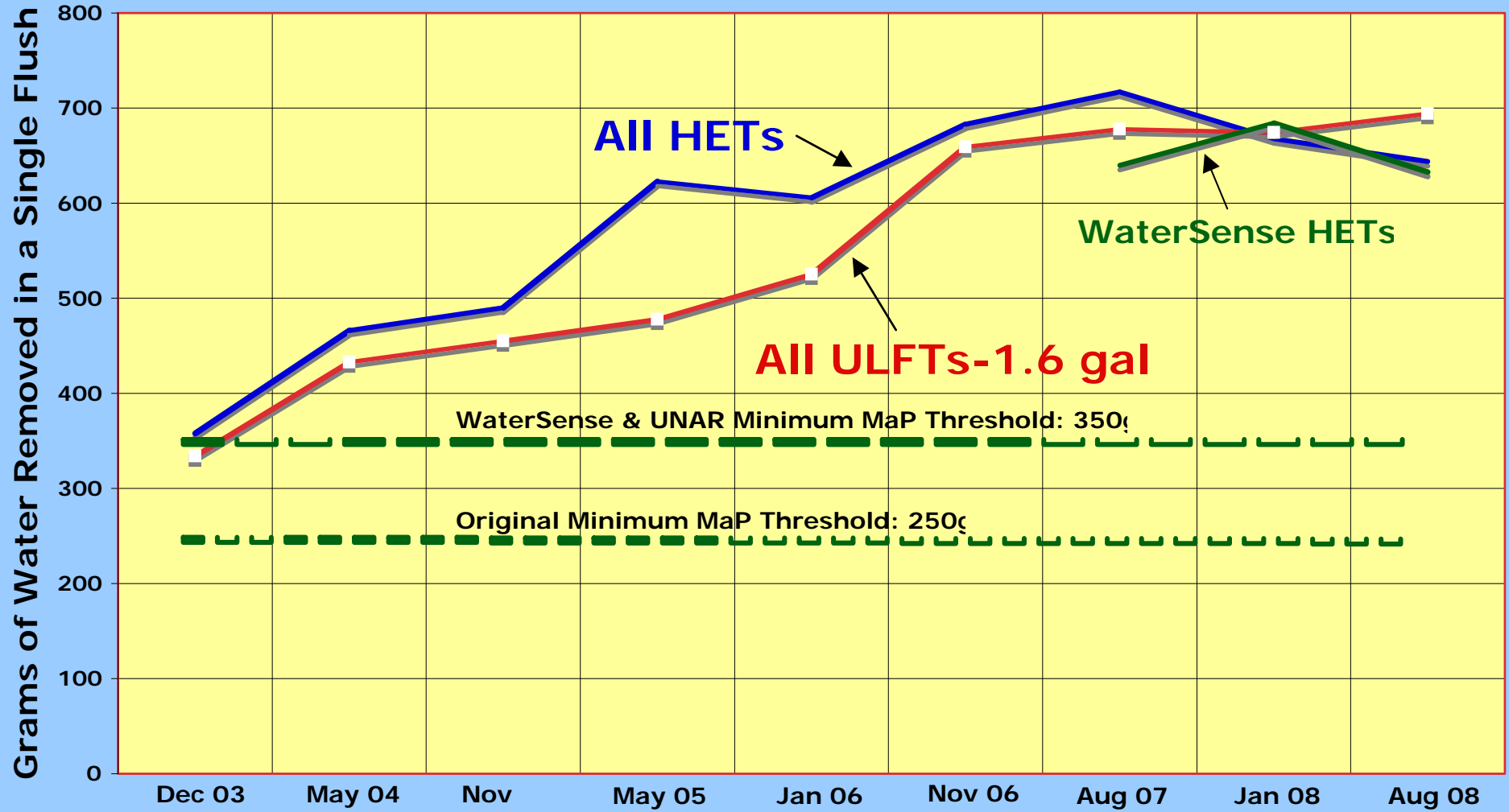
Percentage of MaP-tested fixtures failing to meet minimum performance



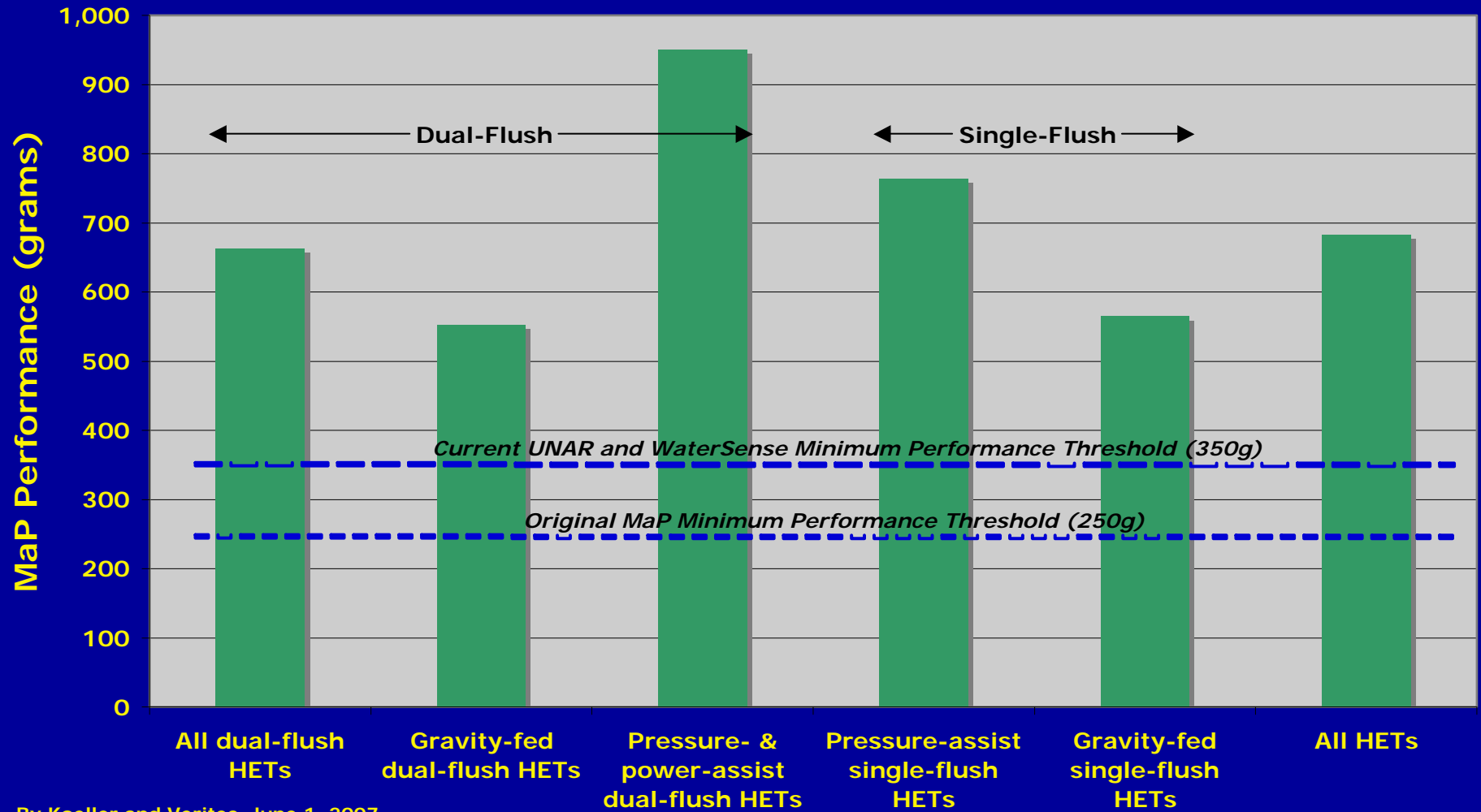
Toilet Fixtures Tested - Average MaP Score



Average MaP Scores - 2003 to 2008



MaP Scores for HETs (1.28 gpf - 4.8 Lpf and less)





High-Efficiency Toilet (HET) Specifics

- TODAY: Over 300 different HET models available
(220+ WaterSense certified!)
 - ✓ 26 mfrs of dual-flush HETs with 143 different models
 - ✓ 14 mfrs of 1-gal single-flush pressure-assist HETs - 47 models
 - ✓ 15 mfrs of 1.28-gal single-flush gravity HETs - 62 models
 - ✓ 4 mfrs of 1.28 flushometer valve toilets for commercial - 12 models
- 2008 is seeing dozens more!



What's Next?

- New MaP test for flushometer bowl-valve HET combinations (1.28 gal)
 - “Super log”
 - Toilet seat covers & paper towels
 - More floating media
- U.S. EPA WaterSense Program - test protocol for flushometer bowl-valve combinations
- More “matched” flushometer bowl-valve combinations from single manufacturers
 - Kohler, American Standard, Toto, Zurn & ??



Thank you...

Contact...

**John Koeller, P.E.
Koeller & Company
Yorba Linda, California**

**Tel. (714) 777-2744
koeller@earthlink.net**

**Bill Gauley, Prof. Engr.
Veritec Consulting, Inc.
Mississauga, Ontario**

**Tel. (905) 696-9391
bill@veritec.ca**