



CWS Commercial Pool University of Maryland Case Study: 4 years

Effects and Statistics





University of Maryland

Cost/Systems Benefits of PoolMoss® Pro

The implementation of PoolMoss® Pro at Eppley Recreation Center (ERC) at the University of Maryland, College Park, was initiated and paid for by UMD Students and the Office of Sustainability's Fund in 2011. The results of using PoolMoss® Pro on ERC's four pools has become a notable, continuing success story for Eppley Recreation staff, the Office of Sustainability, and the University of Maryland and its leading position as a model green university.

This study illustrates the remarkably immediate impact PoolMoss® Pro makes on chemical cost, water use and cost, sewer cost and heating efficiency savings, as well as the comfort of users and ease of maintenance.

Study Parameters

- Administered by UMD staff and students, the water was managed according to state guidelines and recommendations from CWS. This speaks to the ease of implementation and management, and the level of support available from Creative Water Solutions
- Pool water and filtration parameters were measured and recorded every two hours, which meets with standards for accuracy
- Chemical costs and savings were computed by the University of Maryland to help quantify and validate the findings
- CWS helped analyze water and energy savings from the data supplied by the Maryland staff
- Baseline data was compiled for the time period September 1, 2010 – August 31, 2011
 - Chemical costs
 - Water usage from backwashing (gallons)
 - Water cost and sewer cost from backwashing (2013 values updated from previously published case study version with actual water/sewer costs for that year)
 - Heating cost for replacement water from backwashing
- The PoolMoss® Pro was installed September 1, 2011, and marks the beginning of Year One
- The PoolMoss® Pro dosage was reduced during years Three and Four to see how the system would respond after two years of reduced chemical spending, (59% and 47% less than 2010-2011, respectively)

**Baseline data: total chemicals used and cost (4 pools)
12 months prior to PoolNaturally® Plus system**

Before PoolMoss® Pro 2010-2011

Month yr	Poly A	Accutabs	Acid	CO ₂	Shock	Bicarb	Total
Sep-10	\$4,320	\$5,928	\$331			\$1,204	\$11,783
Oct-10		\$2,964	\$340				\$3,304
Nov-10						\$4,320	\$4,320
Dec-10		\$2,717	\$280				\$2,997
Jan-11		\$2,964					\$2,964
Feb-11		\$2,964	\$419	\$1,809	\$2,770		\$7,962
Mar-11							\$0
Apr-11		\$2,964	\$307				\$3,271
May-11		\$2,964	\$559				\$3,523
Jun-11		\$6,240	\$531				\$6,771
Jul-11		\$541	\$267	\$170			\$978
Aug-11		\$596	\$356	\$101			\$1,053
2010-11 Totals	\$4,320	\$30,842	\$3,390	\$2,080	\$2,770	\$5,524	\$48,926

First Year With PoolMoss® Pro 2011-2012

Month yr	Poly A	Accutabs	Acid	CO ₂	Shock	Bicarb	Total
Sep-11		\$324	\$356	\$156			\$836
Oct-11		\$325		\$260			\$585
Nov-11		\$54	\$216				\$270
Dec-11		\$162					\$162
Jan-12		\$541	\$267				\$808
Feb-12							\$0
Mar-12		\$1,300	\$492	\$10			\$1,802
Apr-12		\$780	\$163	\$333			\$1,276
May-12		\$6,240	\$164	\$360			\$6,764
Jun-12			\$492	\$75			\$567
Jul-12							\$0
Aug-12		\$6,240	\$419			\$564	\$7,223
2011-2012 Totals	\$0	\$15,966	\$2,569	\$1,194	\$0	\$564	\$20,293
Savings dollars	\$4,320	\$14,876	\$821	\$886	\$2,770	\$4,960	\$28,633
Savings percent	100%	48%	24%	43%	100%	90%	59%



Second Year With PoolMoss® Pro 2012-2013

Month yr	Poly A	Accutabs	Acid	CO ₂	Shock	Bicarb	Total
Sep-12		\$1,215	\$383	\$75	\$464		\$2,136
Oct-12		\$405	\$1,215	\$273			\$1,893
Nov-12		\$675	\$360	\$884			\$1,919
Dec-12		\$810	\$248		\$232		\$1,290
Jan-13		\$1,215	\$180	\$313	\$696		\$2,404
Feb-13		\$1,823	\$180	\$324			\$2,327
Mar-13		\$1,350	\$338	\$88			\$1,775
Apr-13		\$1,620	\$45				\$1,665
May-13		\$1,755	\$878	\$173	\$232		\$3,038
Jun-13		\$1,485	\$135	\$173	\$116		\$1,909
Jul-13		\$1,350	\$360	\$522	\$348		\$2,580
Aug-13		\$1,620	\$833	\$219	\$522		\$3,193
2012-2013 Totals	\$0	\$15,323	\$5,153	\$3,043	\$2,610	\$0	\$26,128
Savings dollars over Before PoolMoss® Pro	\$4,320	\$15,520	-\$1,763	-\$963	\$160	\$5,524	\$22,798
Savings percent over Before PoolMoss® Pro	100%	50%	-52%	-46%	6%	100%	47%

Third Year With PoolMoss® Pro 2013-2014

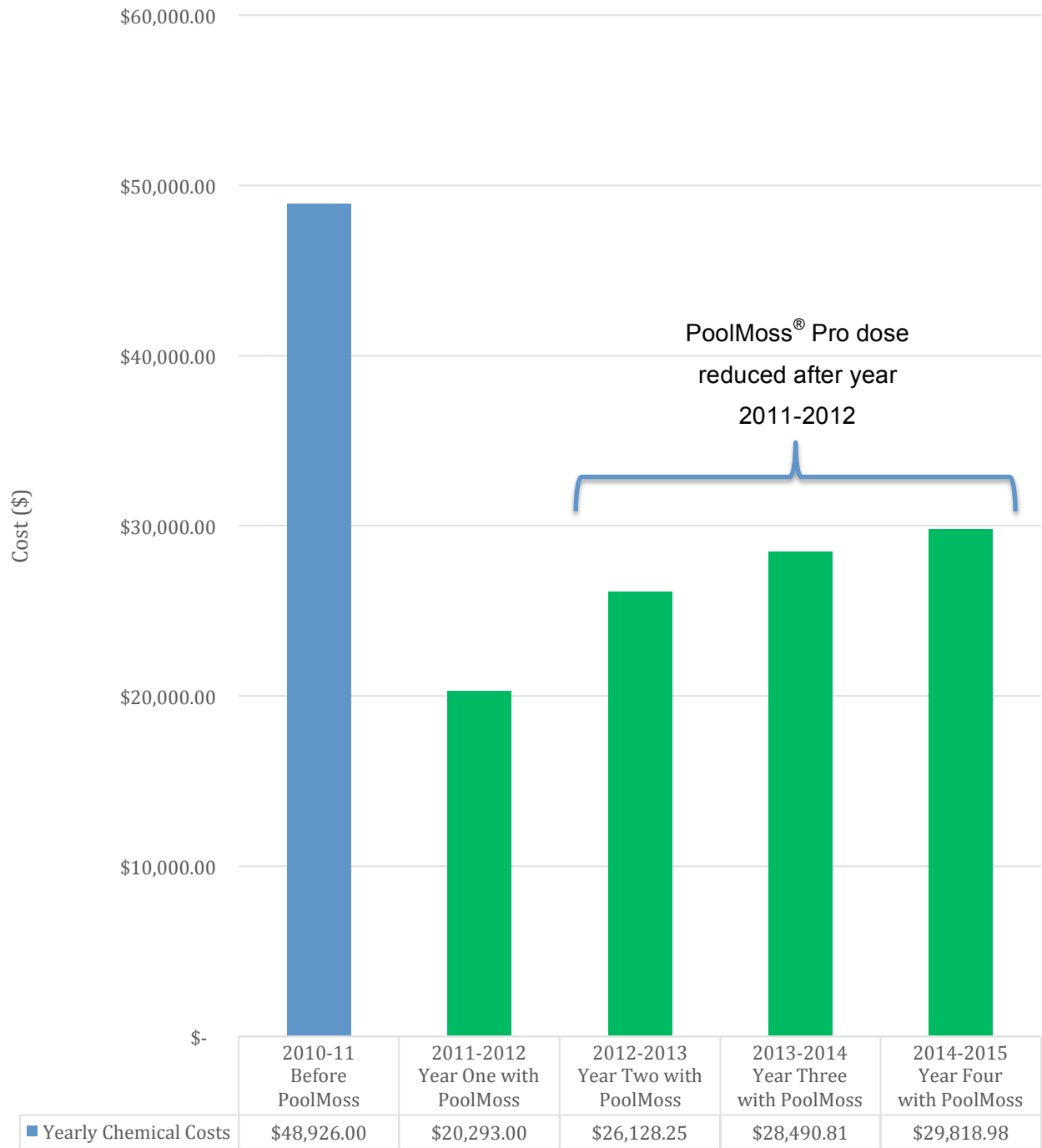
Month yr	Poly A	Accutabs	Acid	CO ₂	Shock	Bicarb	Total
Sep-13		\$6,480	\$338	\$341			\$7,159
Oct-13				\$643			\$643
Nov-13		\$3,240	\$338	\$85			\$3,663
Dec-13				\$250			\$250
Jan-14		\$3,240		\$129	\$2,320		\$5,689
Feb-14							\$0
Mar-14		\$3,240	\$338	\$231			\$3,808
Apr-14				\$365			\$365
May-14				\$340			\$340
Jun-14		\$3,240		\$440	\$2,320		\$6,000
Jul-14				\$386			\$386
Aug-14				\$188			\$188
2013-2014 Totals	\$0	\$19,440	\$1,013	\$3,398	\$4,640	\$0	\$28,491
Savings dollars over Before PoolMoss® Pro	\$4,320	\$11,402	\$2,378	-\$1,318	-\$1,870	\$5,524	\$20,435
Savings percent over Before PoolMoss® Pro	100%	37%	70%	-63%	-68%	100%	42%

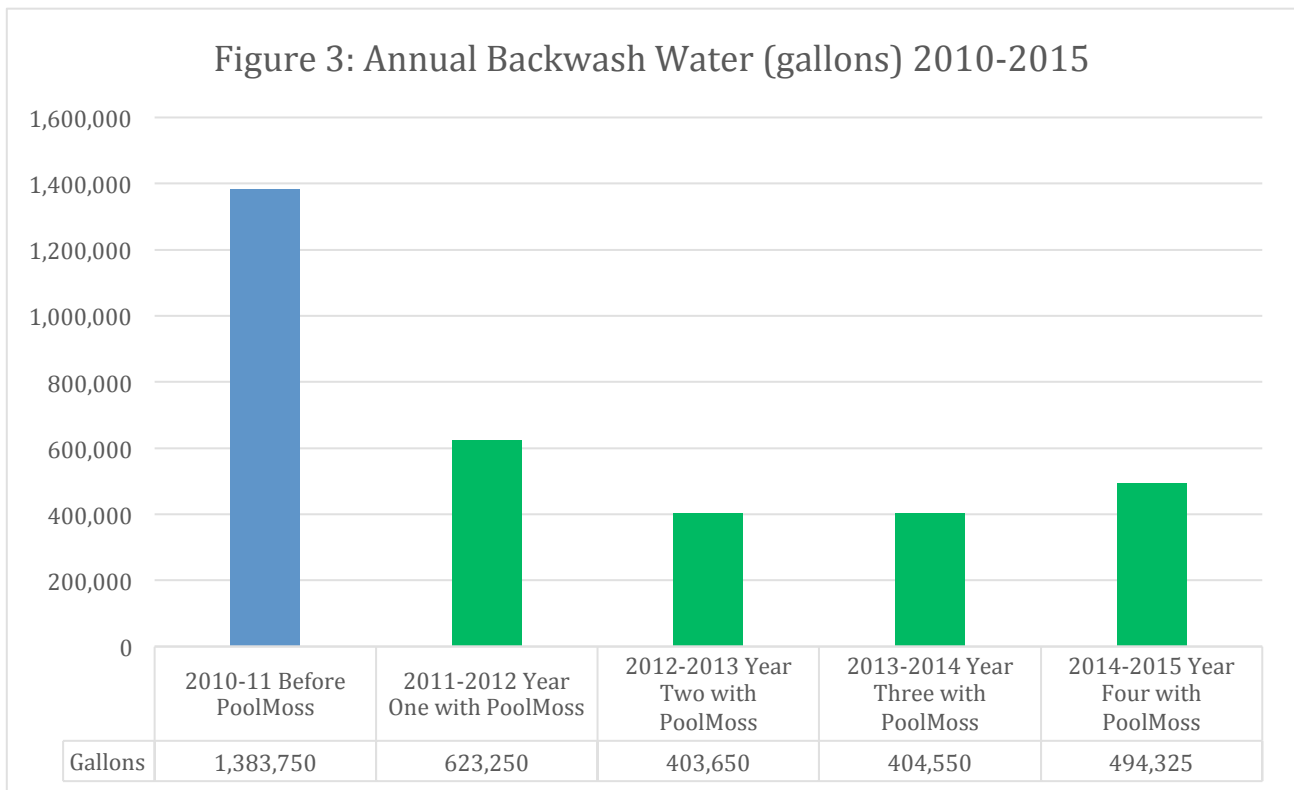
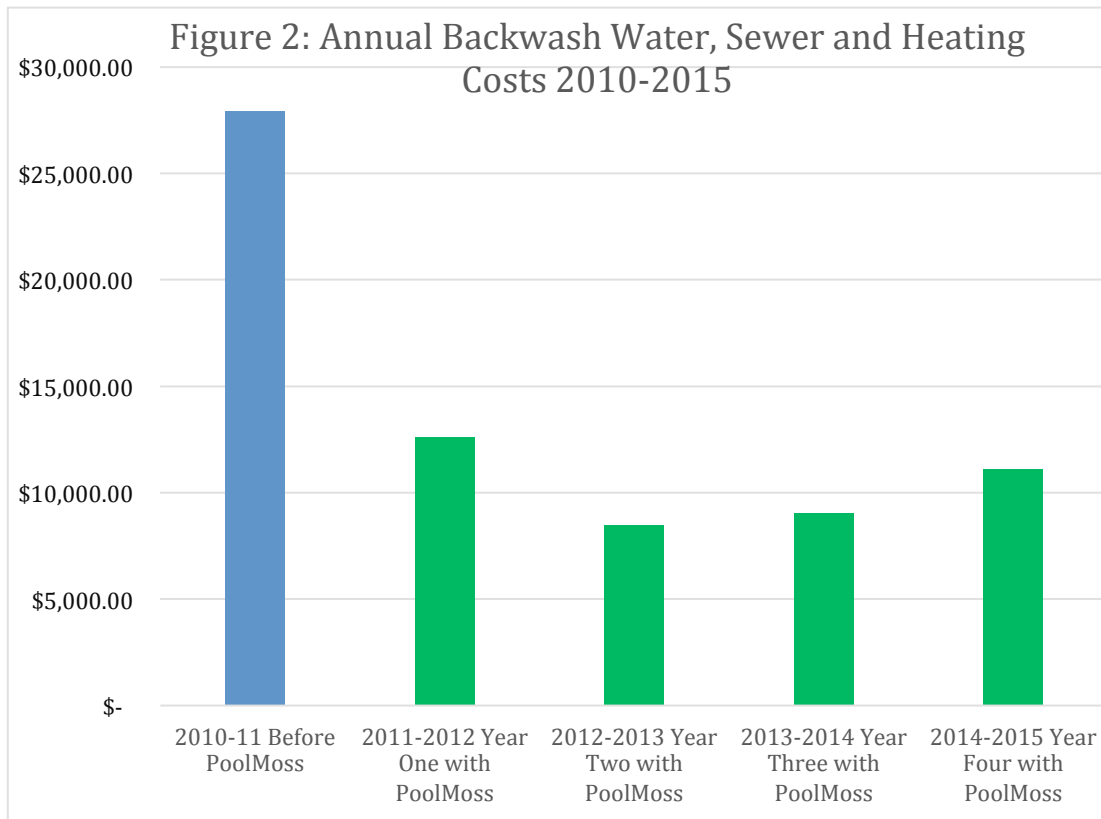


Fourth Year With PoolMoss® Pro 2014-2015

Month yr	Poly A	Accutabs	Acid	CO ₂	Shock	Bicarb	Total
Sep-14			\$368	\$378			\$746
Oct-14		\$3,240	\$368	\$263	\$1,740		\$5,611
Nov-14				\$122			\$122
Dec-14		\$3,240		\$115			\$3,355
Jan-15		\$3,240	\$368	\$248			\$3,856
Feb-15				\$235	\$1,740		\$1,975
Mar-15				\$99			\$99
Apr-15		\$3,240	\$735	\$306			\$4,281
May-15		\$3,240	\$368	\$134			\$3,741
Jun-15		\$3,240		\$261	\$1,740		\$5,241
Jul-15			\$368	\$117			\$485
Aug-15				\$307			\$307
2014-2015 Totals	\$0	\$19,440	\$2,573	\$2,586	\$5,220	\$0	\$29,819
Savings dollars over Before PoolMoss® Pro	\$4,320	\$11,402	\$818	-\$506	-\$2,450	\$5,524	\$19,107
Savings percent over Before PoolMoss® Pro	100%	37%	24%	-24%	-88%	100%	39%

Figure 1: Yearly Chemical Costs 2010-2015





Water and Energy Savings

- **First year on PoolMoss® Pro**
 - 760,500 gallons saved due to decreased frequency of backwashing filters
 - \$15,362 saved in water, sewer and water heating costs
- **Second year on PoolMoss® Pro**
 - 809,100 gallons saved due to decreased frequency of backwashing
 - 48,600 gallons saved over and above savings in year one with PoolMoss® Pro
 - \$15,798 saved in water sewer and water heating costs
 - \$436 saved over and above savings in year one with PoolMoss® Pro
- **Over 4 years on PoolMoss® Pro, ERC saved \$70,000 in water, sewer and energy costs from reduced backwashing alone (over 2010-2011 level)**
- **Over 4 years on PoolMoss® Pro, saved 3.6 million gallons of water from backwashing alone (over 2010-2011 level)**

Chemical Savings

- **First year on PoolMoss® Pro**
 - \$28,633.00 compared to the same time period before starting PoolMoss® Pro
- **Second year on PoolMoss® Pro**
 - \$22,798.00 compared to before PoolMoss
- **Years 3 and 4, with a reduced dose of PoolMoss® Pro produced 42% and 39% chemical cost savings over 2010-2011**
- **Over 4 years on PoolMoss® Pro, ERC used \$90,972.96 less in chemicals**
- **In 2015-2016, PoolMoss® Pro dose will be returned to normal and a decrease in chemical costs is expected.**

Total Savings

- **First year on PoolMoss® Pro**
 - \$43,995 compared to the same time period before starting PoolMoss® Pro
- **Second year on PoolMoss® Pro**
 - \$46,936 compared to the same time period before starting PoolMoss® Pro

Cost of the PoolMoss® Pro

- **12 months on the two indoor pools and 6 months on the two outdoor pools has an MSRP of approximately \$46,000**



UV System

- UV system is used less, because it wasn't having much effect
- System required less maintenance. The UV crystal was able to "see" the water more clearly, because it wasn't blocked by organic matter and contamination

A few benefits in Human Terms (from UMD):

Staff Benefits

- Less stress about problem conditions arising
- More time available (and applied toward) record keeping, accountability, customer service, and staff training
- No late-night/early-morning shocking
- No discernable organic contamination
- More stable pools= less attention to making adjustments
- Less frequent preventative maintenance
 - Heater
 - Probes
 - Vacuuming/scrubbing

Total Savings Highlights

- The decrease in chemical use, water use, and energy use align with the University's Sustainability mission, making it a worthwhile cost shifting in the short term. Over 4 years on PoolMoss[®] Pro, total hard costs for operating the pools at ERC were the same or slightly higher than before using PoolMoss[®] Pro.
- Long term benefits of the system, which affect capital expenses are decreased corrosion of pumps, pipes, seals, underwater lights, pool fixtures, natatorium fixtures, etc.

Creative Water Solutions

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