

TOPS Veterinary Rehabilitation

HydroFLOW Case Study: Hydro-Treadmill Therapy Pool



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Background

On 9/22/11, TOPS Veterinary Rehabilitation initiated a test pilot to study the effectiveness of *HydroFLOW*'s water conditioning technology on our canine therapy pools. For background, we are in the business of veterinary rehabilitation, and one of the treatment options we employ often is hydro-treadmill therapy. We have two 1,000 gallon therapy pools, supported by a large sand filtration system (pool sized system), a dual-speed filtration pump and a booster pump (for jets). Prior to the test we were treating our pools with a low level chlorine dosage alongside a Copper Ionization system. As well, typical chemicals to raise and lower pH, oxidizers, etc. were used on a regular basis. The pools were filled with water from our well, which has a high level of sulfur in the water (19 ppm), although the water is treated. Our pool walls had obtained a greenish color, which we speculate was either from the sulfur that remained in the water after it was treated or algae growth. Our interest in testing the *HydroFLOW* system was twofold: 1) to see if we could maintain bacteria levels at a 0 rate by utilizing the system with a decreased amount of pool chemicals; and 2) to see if the system would have any effect on the greenish color of the pool walls. We have been told that a single dog in a pool contributes dirt and bacteria level equal to approximately 75 people. While we have no data to support this, it is unquestionable that a dog puts a much higher load on the system than a person. Utilizing a pool for approximately 8 -10 dogs per day compounds this effect, especially in a very small pool. Testing of the *HydroFLOW* system lasted for 9.5 weeks.



Photograph showing treatment of client's dog on the day the *HydroFLOW* water conditioner was installed (09.22.2011)



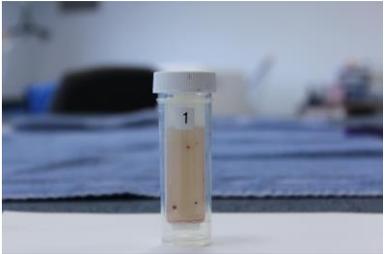
Photograph of installed *HydroFLOW* water conditioner

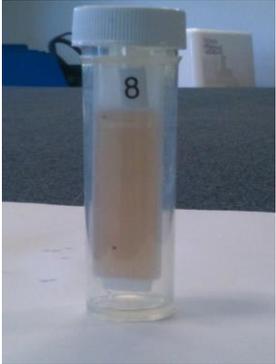


Photograph of Tom McCauley taking bio measurements using a dip slide

Documentation

We offer the following photos as documentation of our findings.

Condition	Picture	Assessment
<p>Baseline measurement. Pool water prior to backwash after evening shock the night prior.</p>		<p>Following normal protocol, (without <i>HydroFLOW</i> installed and normal chemical additions) our pool is essentially bacteria free. 5 colonies appeared.</p>
<p>Baseline measurement. Pool wall prior to backwash and after evening shock the night prior.</p>		<p>Following normal protocol, (without <i>HydroFLOW</i> installed and normal chemical additions) our pool wall shows many colonies.</p>
<p>Prior to <i>HydroFLOW</i> installation. This reading therefore is after the pool water has stabilized (pH, etc.) following the backwash. Expected result is minimal colonies.</p>		<p>Following a 2 day stabilization period to get pH adjusted, etc. our pool water continues to show it is essentially bacteria free, with one colony appearing.</p>
<p>Baseline after dogs without <i>HydroFLOW</i>. The pool was put into service for a single day with bacteria being introduced through dogs in the pool. This test was taken the following morning after evening sanitation.</p>		<p>Test shows that our normal protocol without <i>HydroFLOW</i> is effective at killing bacteria after a day of bacteria being introduced to the pool through dogs using underwater treadmill. No colonies appeared.</p>

<p>After two weeks with <i>HydroFLOW</i> and normal chemical dosage, but without additional backwash having taken place. This tests if the <i>HydroFLOW</i> system has any negative effect on bacteria levels and also gives us a baseline with the <i>HydroFLOW</i> system but without a chemical reduction.</p>		<p>Test shows that the <i>HydroFLOW</i> had not increased bacteria levels. No colonies appeared. ** Note, test 5 eventually developed 10 colonies. I happened to look at the slides on 3/15 (5 days post dip), and noted that all the other dips tests hadn't changed, but this one went from 0 to 4.</p>
<p>After four weeks with <i>HydroFLOW</i> and normal chemical dosage, but without additional backwash having taken place.</p>		<p>Test shows that the <i>HydroFLOW</i> had not increased bacteria levels. No colonies appeared, even as the date elapsed since the prior backwash continued to grow.</p>
<p>After six weeks with <i>HydroFLOW</i> and normal chemical dosage. Backwash and chemical reduction taking place next.</p>		<p>Test shows that the <i>HydroFLOW</i> had not increased bacteria levels. No colonies appeared, and the elapsed time between previous backwash has reached its maximum. No effect on filter pump pressure was seen.</p>
<p>After eight weeks with <i>HydroFLOW</i> and chemical reduction of 25% and with Copper system turned off.</p>		<p>We are now testing the <i>HydroFLOW</i> with our copper ionization sanitation system removed from service and chemicals reduced by 25%. This followed a backwash. Test confirms <i>HydroFLOW</i> can effectively maintain a bacteria free environment even with a 25% chemical reduction.</p>

<p>After 1.5 weeks with chemical reduction of 50% and Copper system turned off (9.5 weeks into the test).</p>		<p>Although our intention was to reduce chemicals by 25% this test shows further reductions to 50% of our (normally low anyway) still maintain a bacteria free presence with the <i>HydroFLOW</i> system in place.</p>
<p>Conclusion of test pool wall test. We did not expect dramatically different results than start of test, due to the bacteria harboring nature of the pool plaster.</p>		<p>There is a definite improvement in the amount of bacteria on the pool walls as a result of the <i>HydroFLOW</i> system being in place. We expect further reductions to take place as time passes.</p>

Findings

After reviewing the results, we offer the following assessment:

1. There continued to be no effect on the greenish color of the pool walls. This was not a promised result, but a possible one.
2. We believe the data to conclusively show that we could reduce chemical usage in our pools and maintain a sanitary environment by implementing the *HydroFLOW* system.
3. We believe the data to also lead us to believe we can reduce chemical usage even further than we had expected to / desired to, but we will continue our 25% chemical usage reduction (versus 50%) to maintain a minimal chlorine signature in the pool at all times.
4. The clarity of the pools remained excellent throughout the test. There was no noticeable degradation of water clarity.
5. There was no noticeable change in filter pump pressure. We believe this is due to the fact that the filter pump is below grade, putting additional gravitational pressure on it. This is consistent with our history of the pool where we nearly never seeing the pump pressure rise prior to backwashing.

Overall Impression

When I first read about the *HydroFLOW* system I was skeptical. I agreed to test the technology and was very surprised at the results. I was happy to see that during the *HydroFLOW* system test we were able to reduce our chemical load by up to 50% and shut off our Copper sanitation system with no negative effects seen in our water balance and with no increase in bacterial growth. Though the *HydroFLOW* did not kill all of the bacteria on the wall, it greatly reduced the number of colonies that we had when we were using our full chemical and copper sanitation system. We place 6-10 dogs in the pool each day, and with only 1,000 gallons to circulate, dirt and dander - bacteria can quickly accumulate. The clarity and water quality stayed pristine with the *HydroFLOW* system, even during our busiest swim times. Though after the test we increased our chemicals back to 75% of our original amounts, we will still be saving money by decreasing the amount of chemicals we use daily, and believe further testing may enable us to decrease our chemical utilization even further. I recommend *HydroFLOW* as an effective method of reducing bacterial growth in pool systems similar to ours.

A handwritten signature in cursive script that reads "Laurie McCauley DVM".

Laurie McCauley, DVM, CCRT