

# On the Water Front

Rocky Mountain Water Quality Analysts Association

First Quarter 2012

## Intro to FlowCAM

By Michelle Ryerson, MWRD

Water Quality Scientists at Metro Wastewater are starting a new adventure with the addition of a FlowCAM. Steve Lundt, limnologist for the District, leads the monitoring programs at Barr Lake, Milton, Horsetooth and Prospect Reservoirs. Steve, along with Water Quality Tech Jordan Parman will be running samples on the FlowCAM from the reservoirs to determine what types of algae are in waters and a concentration of each phylum. They are excited to see what this unique instrument can do.

The FlowCAM is used to analyze particles of in lake, river, and even industrial water. It helps identify and quantify algae and other particulate matter. Other uses for this unique instrument in the water/wastewater field include identification and classification of algae for taste and odor issues, cyanobacteria, invasive Zebra and Quagga Mussels, evaluation for particle removal, monitoring microbes, monitoring secondary treatment, and monitoring filamentous bacteria among many other uses.

How does it work? A very small amount of sample (about 0.5 mL) is pumped through a flow cell where an extremely fast camera system captures each particle. The optical system captures particle sizes from 2µm to 2mm at magnification from 2X, 4X, 10X and 20X. The magnification used depends on the particle of interest. The images are stored separately so they can be cataloged into a specimen library. Since each particle must be identified prior to being put in the library, there is a bit of time and effort involved at start-up. Once enough of the same



Jordan Parman at Metro Wastewater works on building the library on the new FlowCAM..

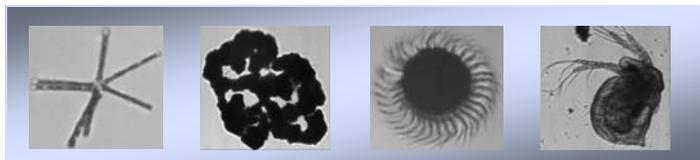
items are logged, the system uses pattern recognition software to recognize like items and automatically categorizes the items for you.

Looking for more uses? Look no further. Other industries use the FlowCAM too. Marine researchers use it to categorize plankton and analyze microorganisms in ballast water. Pharmaceutical companies use it to characterize particles like protein aggregates and differences between air droplets and silicone oil droplets in therapeutic protein formulations and vaccines. There food and beverage, plastics and abrasives manufacturers also use the technology.

If you would like to learn more about the FlowCAM, Westminster, Fort Collins, CU, Colorado Springs Utilities BOR and Division of Parks and Wildlife all have them. Here's the shameless plug ... Attend the RMWQAA Annual Symposium on April 27, 2012 where Kelly Cline of the City of Westminster will be giving a more in-depth presentation.

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Images from a reservoir sample run on the FlowCAM. From left to right: Asterionella, Microcystis, Ceriodaphnia, lateral view of Strombidium.



# Quagmire's

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## I'm a wellowner concerned about water quality, what should I test for?

As you well know, Quagmire, before you test your water, call your local, certified, water-quality laboratory. There's a list online at <http://www.cdphe.state.co.us/lr/pages/cert/SDWLIST.pdf>. The laboratory will provide you a sample container to hold your water sample. You must use the lab's sample container and not the peanut butter jar that your friend the yellow lab just licked clean.

With logistics taken care of, I was wondering, while playing in the yard, have you noticed that you or your 4-legged friends like to do your business on the wellhead that looks seductively similar to a fire hydrant? If so, you may want to test your water for **coliform bacteria** and **nitrate**. If coliform bacteria is present, then you need to fight the cats for a litter

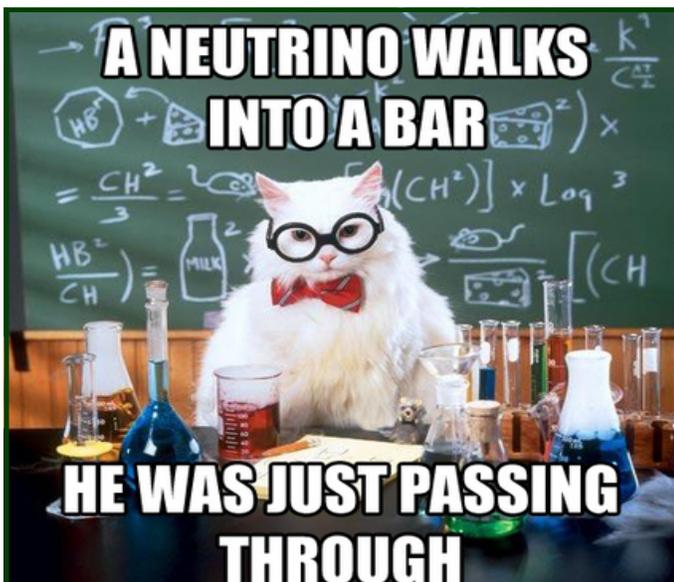
box or find a new special spot outside. If nitrate is present above the health standard, then you'll have to immediately stop making baby formula and install the right kind of water treatment/filtration.

Now, Quagmire, if you are just coming home from your teeth cleaning and were told your teeth were mottled or you are planning to hear the tap-tap-tap of new puppy claws on a hardwood floor, then test for **fluoride** in your water. Fluoride is naturally occurring in Colorado and many residential wells may not have treatment devices capable of removing the excess fluoride. Test your water before investing in any treatment or filtration devices.

When fluoride levels are elevated (above the health standard of 4.0 mg/L or when radon levels are detected in your home test for **radioactive components**. These include gross alpha/beta, uranium, radium-226, and radon-222. Over long periods of times and constant exposure, radioactive components can lead to kidney disease or increase your risk for cancer.

As much as I know you like to drink smelly water from the lake, you may not like unusual odors or taste in your home water. A rotten egg or sewage smell may indicate **sulfur** in the water or excess **iron**. A salty taste can be from **chloride**, **sulfate**, or **total dissolved solids**. A metallic or bitter taste can be from **copper**, a low **pH**, or **zinc**. If you notice blue-green staining on your dog bowl or pipes along with a metallic taste, you can be sure you have too much copper in your water.

Quagmire, take care of your wellhead. Be sure that there are no visible cracks, that stormwater drains away from the wellhead, and it is adequately protected from surface contaminants. This means you must store your paint and pesticides away from the wellhead. It's your water so protect it!



A cat *and* a scientist—Quagmire—what do you think of that?

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Nitrate/Nitrite Nitrogen	Coliform-Total, Fecal, E. coli
Copper and Lead	Metals by ICP-MS & AA
Fluoride	Biosolids- Soils Analysis, 503
Total Coliform	Regs, Fecal Coliform
Metals by ICP-MS & AA	DMRQA Participant

## Changing Phases The New Faces of Greeley



Gary shows off his new granddaughter, Madalynn., who is now two.

Gary Heinze is one of the newest faces at the City of Greeley's Water Pollution Control Facility Laboratory, but he's no newcomer to wastewater. Gary was a Plant Operator/Lab Analyst at the JBS Lone Tree Treatment plant east of Greeley for 25 years. He

also operated wastewater plants for the Town of Ault from 1984-1994 and the Town of Severance from 1986-1994 as a contracted operator. Over the years he has taken numerous operation and laboratory classes, which has made him a great addition to the City of Greeley.

As a Water Quality Analyst, Gary now performs plant and permit analyses such as BOD, TSS, TVSS, TS, TVS, pH, AmmN, NO<sub>2</sub>, NO<sub>3</sub>, PO<sub>4</sub>, SO<sub>2</sub>, Iron, Volatile Acids, E Coli, Fecal Coli. He also does sample collection, biosolids testing, and river monitoring. Gary currently possesses a class "A" Wastewater and class "A" Industrial Wastewater Treatment License's. One professional goal of his is to take the RMWQAA Analyst Exams in the near future.

"I tremendously enjoy my current position with the City of Greeley. It involves many changing and rewarding challenges. The people I work with are top notch in their field and are great to work with and for. Producing an end product from our lab, for them that is useful and representative will always be an ongoing goal of mine."

At home Gary has a wonderful family and feels fortunate to have them all healthy and living close by to visit. He enjoys fishing, camping, reading, cooking and following the Rockies and Broncos.

Sheri Mathe is another new face and Water Quality Analyst with the City of Greeley. Sheri earned her B.S. Business Administration with emphasis in HR Management from Regis University in 2006, but also has an interesting laboratory history. From 1978-1990 she was a Microbiology Assistant/Phlebotomist at Poudre Valley Hospital in Fort Collins. From there she moved on to the beer business as a Laboratory QA Technician at Anheuser Busch for five years.

Sheri Mathe just hanging out; enjoying the sunshine.



She spent her next three years as Quality Control Technician for Kodak's Wet Lab/Thermal Media in Windsor, CO. After Kodak, she was Project Manager/Sample Control Officer, LIMS Technician at Paragon Analytics Environmental Laboratory in Fort Collins.

Sheri's current duties include BOD, Solids, pH, AmmN, NO<sub>2</sub>, NO<sub>3</sub>, PO<sub>4</sub>, SO<sub>2</sub>, Iron, Volatile Acids, COD, E Coli, Fecal Coliforms, Alkalinity, Chloride, sample collection, biosolid testing, river monitoring, and of course, *other duties as assigned*.

When Sheri isn't at work, she enjoys her three dogs, a beagle, a cock-a-poo, and a 40 pound pug! She lives in Fort Collins and has a daughter, Miranda, who is now 19 years old and pre-med aspiring to become a family physician. In the future Sheri hopes to travel more, scuba dive, ski, and try new activities!

RMWQAA welcomes both Sheri and Gary!

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**Mark Orr 303-973-8184 mark@summitsci.com**

# Rocky Mountain Water Quality Analysts Association

2012 Water Quality Symposium

CenturyLink Conference Center

Friday, April 27, 2012

8:00 am — 4:00 pm

3898 South Teller  
Lakewood, CO 80235

PH. 720.962.4000  
www.meetinco.com

<b>Conference Topics</b>
<b><i>Whole Effluent Toxicity (WET) Testing and You Part II: Characterizing the Outcomes From Newly Imposed Effluent Limitations Following the First Year of Additional Regulation</i></b> Shannon Phelps, SeaCrest Group
<b><i>Topic TBD</i></b> Elizabeth Gardener, Denver Water
<b><i>The Use of Modified Methods for Compliance Reporting</i></b> Derek Walker, Hach Company
<b><i>Citizen's Guide to Colorado Water Quality Protection</i></b> Andrew Todd, CWQCC and Caitlin Coleman, CWFE
<b><i>Getting the Low Down on Ultra Low Level Mercury Analysis Using EPA Method 1631</i></b> Ginger Wynne, City of Fort Collins
<b><i>Microscopic Particulate Analysis (MPA): Guidance Document, Flow-Logic, and Organism Significance Model</i></b> Rhonda Birdnow, Denver Water, Rhonda Duncan, CH Diagnostic, Carrie Howe-Carlson, Microsearch Laboratory and Anne Berlemann, CO Springs Utilities
<b><i>2011 Limnocorral Study at Barr Lake</i></b> Jordan Parman, Metro Wastewater
<b><i>Algae Monitoring</i></b> Kelly Cline, City of Westminster

Please Submit a Separate Registration Form for Each Attendee

Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Email Address: \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
Employer: \_\_\_\_\_  
Title/Position: \_\_\_\_\_

Check the Appropriate Registration:

- \$15 membership only
- \$65 member symposium registration
- \$80 non-member symposium registration (\$15 membership + \$65 symposium registration)
- \$80 member renewal & symposium registration
- \$10 late fee (REQUIRED if registering after April 17, 2012)

Make checks payable to **RMWQAA** and include with registration form.

The day will include giveaway prizes, games, lunch, snacks, and tons of educational fun!

Look for updated Conference information on our website at [www.RMWQAA.org](http://www.RMWQAA.org)

### Register By Mail

RMWQAA  
PO Box 29407  
Thornton, CO 80229-0407

### Register Online

[www.rmwqaa.org](http://www.rmwqaa.org)  
Paypal accepted  
with additional fee

# One World, One Water Center

By Hope Dalton, OWOW Advisory Council

Adapted from <http://www.mscd.edu/owow/>

Have you heard what's new at one of our local higher-education institutions? It's the opening of the One World, One Water Center for Urban Water Education and Stewardship at Metropolitan State College of Denver. OWOW...That's a mouthful!

The One World, One Water Center is a new program at Metro State that will help students develop skills to become urban water stewards through course-work, special events that relate to water curriculum, and applied learning activities. There will also be a special emphasis on internships for students.

Beginning in Fall 2012, Metro State will pilot a Water Studies Minor. The new minor will provide students with skills necessary to become more knowledgeable about Colorado's limited water resources and how to preserve both the supply and the quality of this precious resource.

What does this mean for you?

- Resumes from new grads might have a water minor along with that chemistry, biology, or environmental science major
- Students may be contacting you looking for internship opportunities
- Students will be wanting tours and events

For more information, please contact the OWOW Director Tom Cech by email at [tcech@mscd.edu](mailto:tcech@mscd.edu) or by phone at 970-371-9598.



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## Analyst of the Year

The RMWQAA presents an award at the annual Water Quality Symposium to an analyst who excels in the water/wastewater laboratory field. The association is now looking for nominees for the 2012 Analyst of the Year.

Nominations can be made by any member or group of members of the RMWQAA. You may nominate someone from your own lab or any other lab. Nominations should be returned with the registration form or submitted by email to

**president@rmwqaa.org** by **April 15, 2012**. Please include your name, workplace and title as well as your nominee's information.

The RMWQAA Board will choose a winner from the nominations and the new Analyst of the Year will be announced at the 2012 Symposium. Please write up your nomination including a detailed description of why you feel your nominee should win. Many nominees may be deserving, but without adequate information, there is no basis to judge.

Some possible criteria for selection include:

- Significant positive impacts on the laboratory.
- Exceptional dedication to the workplace or field.
- Developed new procedures or techniques.
- Participated in volunteer community activities.

## Symposium Registration Waiver

### Analysts!

It has been brought to our attention that not all analysts' companies pay for them to attend the Water Quality Symposium. Every year some analysts can't attend due to cost, or pay out of pocket to attend. With the hope of keeping more analysts involved in this great networking and learning and opportunity, we are offering two free admissions to the 2012 Water Quality Symposium.

### Applicants must meet the following criteria:

- Must hold a current RMWQAA membership
- Would otherwise be paying for their own attendance
- Must be able to get off work the day of the conference to attend (RMWQAA will not be able to compensate for any time off work)
- Must submit Waiver Form by **April 12, 2012**.

To keep things fair, we will randomly draw two "winners", and will let all entrants know the outcome no later than April 15, 2012. Please download a form from the website and submit by fax, mail, or email.

# The CFR and Bottled Water Regulations

By Hope Dalton

Adapted from the Federal Register <http://www.gpo.gov/fdsys/pkg/FR-2011-10-19/pdf/2011-26707.pdf>

The EPA regulates drinking water through established national primary drinking water regulations (NPDWRs) consisting of maximum contaminant levels (MCLs), but who regulates the bottled water industry? The FDA.

In the 1993 Federal Register, FDA (Food and Drug Administration) published a proposal to revise the bottled water quality standard regulations. FDA wanted to establish or modify the allowable levels in bottled water for 5 inorganic chemicals and 18 synthetic organic chemicals. These same 23 chemicals were identified as having an established MCL under the Safe Drinking Water Act (SDWA). Since EPA consider sulfate to be a secondary contaminant, the bottled water industry wanted to maintain the existing allowable level.

In a final rule published March 26, 1996, FDA adopted the proposed allowable levels for the 5 inorganic chemicals and 17 of the synthetic organic chemicals. FDA deferred final action on the proposed allowable level of 0.006 mg/L for the chemical di(2-ethylhexyl)phthalate (DEHP) until April 2010.

In 2010, the FDA announced it was reopening the comment period for the 1993 proposed rule to seek further comment on the allowable level for DEHP in the bottled water quality standard. FDA provided updates on the use of DEHP in bottles and lid gaskets as well as a comparison of international standards on DEHP. As a result, bottled water manufacturers are required to monitor their finished bottled water products as well as their source water for DEHP at least once each year under the current good manufacturing practice (CGMP) regulations for bottled water.

This final rule, effective April 16, 2012, will ensure that FDA's standards for the minimum quality of bottled water, as affected by DEHP, will be no less protective of the public health than those set by the Environmental Protection Agency (EPA) for public drinking water.



Are you ready to

**celebrate**

the Year of Water with the RMWQAA?

If yes, then contact us at [newsletter@rmwqaa.org](mailto:newsletter@rmwqaa.org) to tell us you are interested in hosting a tour for RMWQAA lab rats. We'll do the rest.

For more information on other events or to put your Water Fairs and other public outreach events on the calendar visit Water 2012 at <http://water2012.org/>.

## The Rocky Mountain Water Quality Analysts Association

### Annual Scholarship Application

2012/2013 can be found at:

[www.rmwqaa.org](http://www.rmwqaa.org)

This annual scholarship was created by the RMWQAA board members in 2008 to encourage and assist students who wish to pursue higher education in the water environment field by providing a scholarship to be used toward education at a college or university. The student winner must show proof of enrollment in an environmental related program at a college or university to receive a scholarship check. The RMWQAA scholarship is for \$1,000 and is given annually. The scholarship also entitles the recipient to a one-year complimentary membership in the Rocky Mountain Water Quality Analysts Association.

#### To qualify for this scholarship:

- You must be enrolled in a 2yr or a 4yr college or university for study related to the water environment profession.
- You must submit an application and essay by the **July 31, 2012** deadline.

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