

ReWater

Water recycling in Australia

Winter 2012

Melbourne's MCG Water Recycling Facility

**Unique Class A
Plant in Geelong**

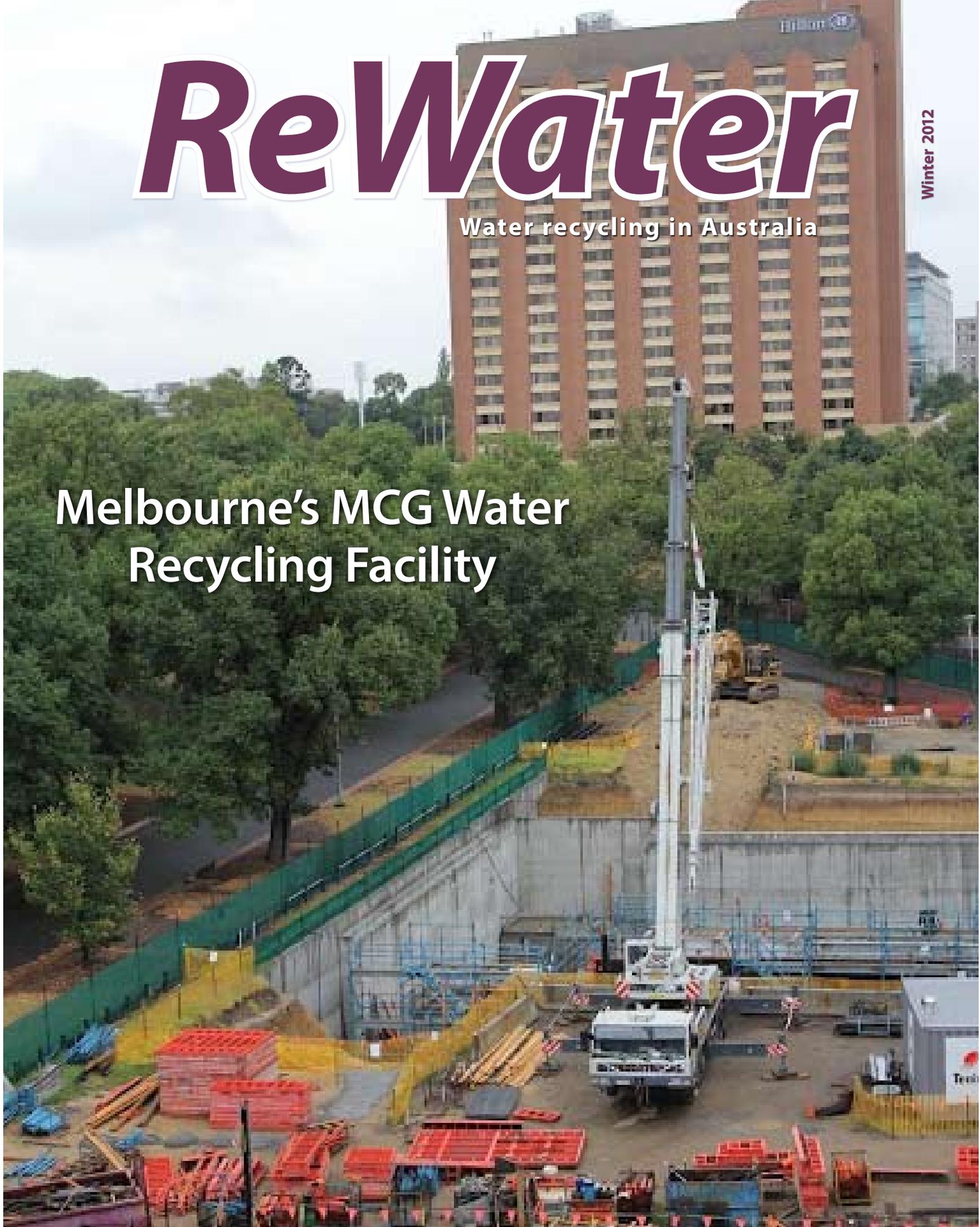
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Victoria's largest underground Water Recycling Facility (WRF) in Yarra Park adjacent to the MCG

Melbourne's MCG Water Recycling Facility

Victoria's largest underground Water Recycling Facility (WRF) in Yarra Park adjacent to the MCG is fast becoming a reality, with construction nearing completion and water to be supplied to the parkland ahead of schedule. The \$22m project, was funded by the Melbourne Cricket Club (\$16m) and the Victorian Government (\$6m).

Sewage from the local sewerage network will be treated to 'Class A' recycled water standards. The plant will be able to produce over 600 kilolitres of recycled water per day and will be re-used primarily for irrigation in Yarra Park surrounding the MCG and, as well as for cleaning and toilet flushing at the MCG and Punt Road Oval.

The plant has been built underground, measuring 25 x 31 m and ranges in depth from 4 to 8 m. The underground plant will be covered by topsoil and surf, having a minimal impact on the surroundings. The treatment process includes screening and grit removal, biological treatment, chemical treatment for phosphate removal, filtration via membrane bioreactor (MBR), ultrafiltration (UF), ultraviolet disinfection and chlorination.

The plant will undergo a comprehensive testing regime to ensure the water quality meets EPA guidelines and is expected to be turned on June/July, 2012. •

Source: www.mcg.org.au



About ReWater

ReWater is a newsletter designed to make information relevant to recycled water use in horticulture more accessible to horticulturalists (growers/farmers/landscapers), primary producers, members of the water industry and other interested people. It is part of the service provided by the Australian Coordinator for Recycled Water Use in Horticulture, which was initially funded by Horticulture Australia Limited and is now funded from Atura Pty Ltd and Arris Pty Ltd as a contribution to the recycled water industry of Australia.

Back issues and instructions for subscribing to receive ReWater electronically on a quarterly basis can be accessed here: www.recycledwater.com.au/rewater

Your Feedback and Contributions

We would appreciate your feedback and are always looking for suggestions and contributions. Please email rewater@recycledwater.com.au or contact us on 03 9602 4001.

www.recycledwater.com.au

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Cross-Connection Detection by Fluorescence Spectroscopy

Researchers at the Water Research Centre, University of New South Wales (Australia), have used fluorescence spectroscopy to develop a rapid, sensitive portable tool for identification of cross-connections between recycled and drinking water sources.

The project investigated highly sensitive, low wavelength fluorescence as an intrinsic marker of recycled waters.

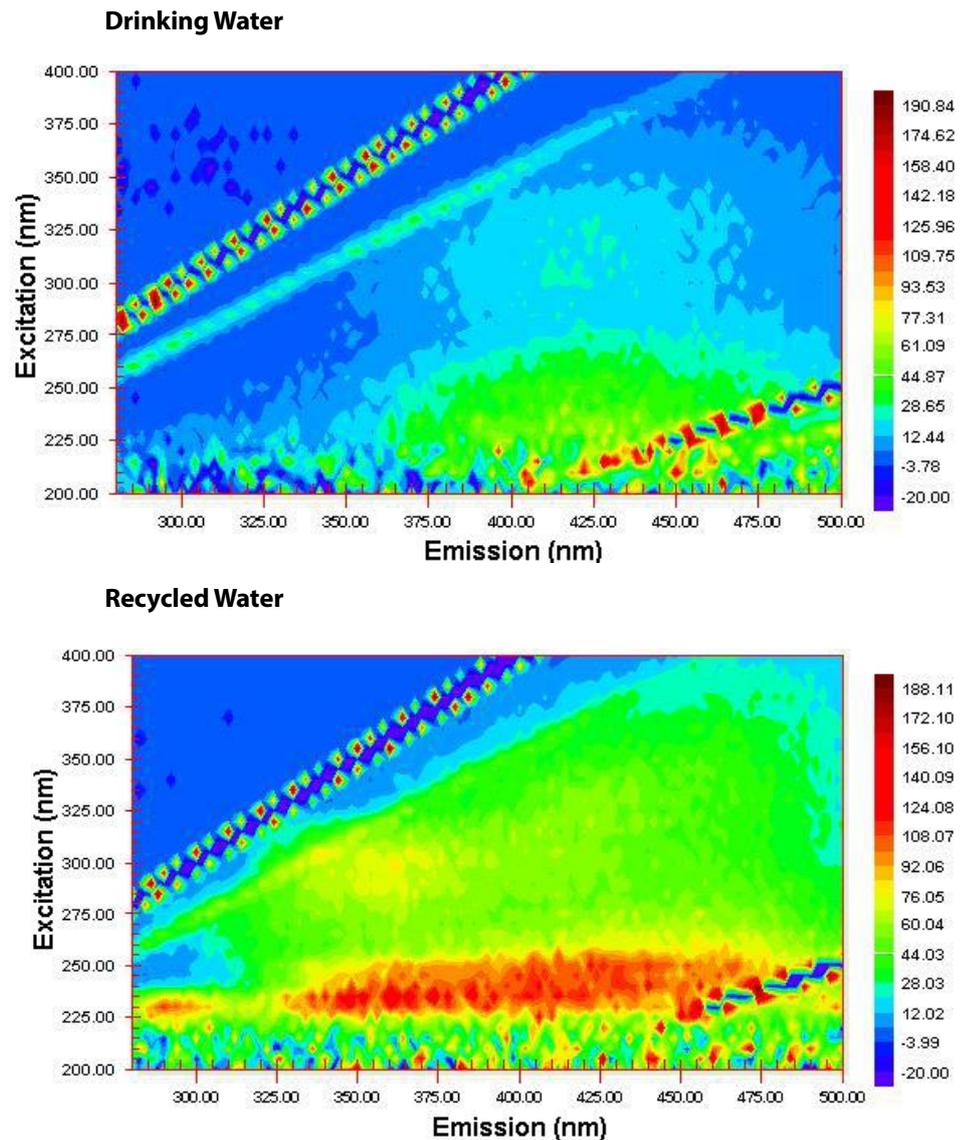
Grab samples from 5 recycled water dual reticulation networks across Australia were analysed by a number of typical water quality parameters as well as by fluorescence excitation-emission matrix (EEM) spectroscopy. This fast, sensitive, non-destructive technique results in a 3-dimensional "fingerprint" of water character and is able to show consistent differences between treatment stages of recycled water as well as differences between advanced treated recycled water and drinking water.

Probabilistic techniques showed fluorescence EEM spectroscopy to be a more sensitive method than analyses such as dissolved organic carbon and electrical conductivity, for discerning recycled water from drinking water. Multivariate data analyses (including PARAFAC and nPLS) were able to decompose EEMs into their underlying fluorescent components and identify the most appropriate area of the EEM to monitor for cross-connections and hence at which fluorescence regions to focus the development of a portable method.

Fluorimeters from Safe Training Systems, UK (www.safetrainingsystems.com) were identified as fulfilling the instrumentation requirements. Subsequent trials showed the fluorimeters were able to consistently discern recycled water from drinking water in situ over one month periods whilst also capturing variations in recycled water characteristics. The method is instantaneous, and only requires a 3 mL water sample.

The portable fluorimeters were subsequently used within an Australian dual reticulation water recycling system to survey for cross connections. One cross-connection was clearly identified within the 90 properties surveyed (marked in red in Figure 1). In this instance, the presence of the cross-connection was already known to the property residents and was removed immediately; however the finding was clear evidence of the ability of fluorescence spectroscopy to detect cross-connections in dual reticulation recycled water systems.

The research is part of the PhD thesis of Adam Hambly (UNSW), supervised by Dr Stuart Khan, Dr Rita Henderson, Prof. Richard Stuetz, and Prof. Andy Baker. The project has been funded by the Australian Research



Council (Linkage Project LP0776347) along with 8 Australian water companies (Allconnex Water, City West Water Ltd, Melbourne Water Corporation, South East Water Ltd, Sydney Olympic Park Authority, Sydney Water Corporation, Water Corporation and Yarra Valley Water Ltd). For more information contact Adam Hambly at the Water Research Centre, University of New South Wales. •

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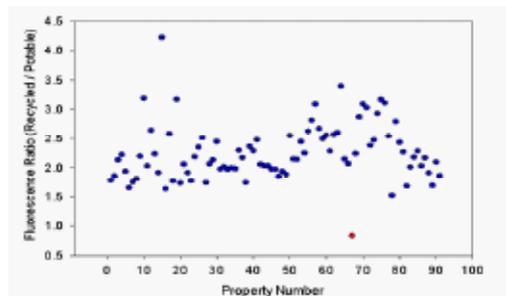


Figure 1 Cross Connection Survey; Fluorescence Ratio (y-axis) is defined as the fluorescence of recycled water to the fluorescence of potable water



Unique Class A Plant in Geelong

A new recycled water plant being built in North Geelong will save two billion litres of drinking water a year. The \$94 million Northern Water Plant, located next to the Shell Geelong Refinery, is a major water-saving initiative. The plant will treat trade waste from the refinery and domestic sewage from Geelong's expanding northern suburbs.

The facility will produce two types of Class A recycled water for the Shell Refinery. It will also produce a third type of Class A water for supply to sporting fields at nearby Stead Park. The project is being delivered by Barwon Water in partnership with Shell.

The opportunity was borne from investigations by Barwon Water into options to meet future growth, which included a new treatment plant in the northern suburbs. Concurrently Shell was developing strategies to better manage wastewater, including building their own plant.

"The concept was developed in 2003 during one of the most severe droughts ever experienced in the Geelong region," Barwon Water's General Manager of Capital Projects Paul Northey told ReWater magazine. "The Northern Water Plant was a natural fit to meet the needs of both organisations, with added

benefits to the community."

The Australian Government is contributing \$20 million and the Victorian Government \$9.2 million toward the project. Shell and Barwon Water will meet the remainder of the cost. The project is designed to treat 7.5 ML/day and up to 20.7 ML/day of wet weather flow through a conventional wastewater plant. The Class A plant will then further treat 5 ML/day of wastewater via ultra-filtration and reverse osmosis to produce medium and low salinity Class A recycled water.

The high concentration of refinery wastewater presented a risk to conventional designs. A pilot plant was operated in 2010, which confirmed the mixed wastewater could be treated. Located 300 metres from residential property, the plant's design includes enclosed systems and onsite odour treatment.

"For the project to be a success, we needed to invest in the best available technology,"

Paul Northey said. "The need to treat wet weather flow, prevent odour, consistently produce three types of recycled water and meet EPA requirements has resulted in quite a complex but robust plant."

The plant will commence validation trials in late 2012. Recycled water supply is expected by early 2013.

The key messages are:

- 2000ML/year drinking water substitution.
- Improved management of wet weather flow.
- Removal of Shell's trade waste from the sewer.
- Irrigation of public sports grounds.

Source: www.barwonwater.vic.gov.au

Contributor: Peter Stapleton, Email: Peter.Stapleton@barwonwater.vic.gov.au

Recycled water securing a region's future

In an attempt to secure water, food and the future of farmers, three Victorian councils are joining forces to push for the creation of a Bunyip Food Belt.

In an attempt to secure water, food and the future of farmers, three Victorian councils are joining forces to push for the creation of a Bunyip Food Belt.

This area is home to some of Australia's most fertile agriculture land and produces food for Melbourne's growing population. Urban growth is taking over farmland, which means food production areas need to be protected or new ones developed.

Investigations are currently underway to determine the feasibility of a project that would see excess water from the Eastern Treatment Plant diverted to irrigate high value food crops in the Bunyip Food Belt area.

Cardinia Shire Council Chief Executive, Garry

McQuillan, said the project is highly valued by the three councils as it has the potential to become a key economic driver for the region.

"This project could see an improved economy with excellent employment opportunities, which could then lead to the establishment of manufacturing industries and overseas export," he said.

By the end of 2012 there will be at least 100 GL of Class A water available, which is not fit for drinking, but is suitable for horticultural irrigation. The Bunyip Food Belt area would initially involve approximately 28,500 ha, with the potential for an additional 8,000 ha for food production and would use up to 30 GL of Class A recycled water per year.

The area has excellent soils, a good climate and access to markets in Melbourne, now they will also have access to a reliable water source.

"This project will ensure high quality agricultural land, close to Melbourne, is retained for food production purposes, whilst also utilising Class A water from the Easter treatment plant that would otherwise flow out into Bass Straight," Mr McQuillan said.

The proposed pipeline would be approximately 116 Km long, from the Eastern Treatment Plant at Carrum Downs to Cardinia, which would also involve the creation of employment in the area. •

Source: www.arris.com.au

Greywater potential in England – GreySmart could help!

Much of the England is currently in drought after two very dry winters. Despite recent rain, the wettest April in over 100 years, the drought situation still exists.

The affected area stretches from Cornwall to Yorkshire, covering 40 counties, with some under significant environmental stress and others in full drought and with temporary water use restrictions in place. The south east of England is one of the areas hardest hit by the drought and this area is also the most densely populated, with London's population alone at over 7.5 million.

There has been suggestion of large scale water transfer and trading schemes being a possible solution, pumping water from the wetter north of the country or Wales to the drought affected areas. The capital costs of these schemes were estimated in 2006 in a [UK Environment Agency report](#) and are in the region of £9 to £15 billion or between £2.4 to £14 million/ML/day.

Whilst there are significant educational campaigns from many of the water companies in the drought affected areas, the focus is around water usage reduction rather than water reuse in the home and there appears to be limited interest or material promoting greywater use. The UK Environment Agency published an [Information guide for domestic users in May 2011](#) but this does not include water from washing machines as this is thought to be 'too contaminated'. There is therefore significant potential to promote and utilise some of the research and information gained from the Australian experience in the use of greywater in the home.

The GreySmart product labelling program, developed by Atura Pty Ltd and hosted by SavewaterAlliance, is one of the tools that could be further developed for use in England. The program analysed and assessed a wide variety of household products, from laundry detergents, to shampoos and cleaning products and provided a ranking of products as either; GreySmart which means they are ideal for use if greywater will be used to irrigate the garden or GreySmart with care which means they are OK for use if greywater will be used to irrigate the garden but will probably need some management of the soil within a year or two.

There is a [European Union Ecolabelling program](#) already in existence but this is based on more general environmental criteria, from the extraction of the raw materials, to production, packaging and transport, consumer use and recycling, rather than the products appropriateness for use as garden irrigation water. Which?, the largest consumer body in the UK and the equivalent to Australian Choice, also tests laundry detergents for

washability (against a variety of stains) and also calculates a cost per wash. They do not currently provide any consumer advice about products which could be used, without the need for further treatment, for garden irrigation.

The costs of a GreySmart program in the UK would be a fraction of the cost of large scale transfer schemes with the potential for signifi-

cant water savings and would have the additional benefits of consumer education and maintaining the English country garden. •

Read more: www.dailymail.co.uk

For more information contact Clare Diaper clare@atura.com.au

Images: EU Ecolabel



Low water levels at the Pitsford Reservoir in Northamptonshire in February 2012



Two boys play football in the River Lavant in Sheepwash Lane, Lavant, near Chichester, West Sussex, which should be flowing with water at this time of year

Dissolved Air Flotation for Dairy wastewater

One of the world's leading dairy product companies is achieving high efficiency discharge targets from a new \$1.5 million wastewater treatment facility for treating effluent from its Southern NSW manufacturing site.

The company chose a high-performance high-efficiency DAF (Dissolved Air Flotation) system, designed and successfully installed by CST Wastewater Solutions.

The wastewater treatment plant is capable of treating 300,000 litres of effluent daily, meeting the local council's demanding discharge standards as well as reducing the discharge fees paid to the council. The DAF system at the plant was regarded as preferable to costly microbial treatment because the dissolved air flotation process was straightforward and did a good job with a favourable return on investment (ROI).

DAF treatment reduces the high levels of Suspended Solids (SS) and Biological Oxygen Demand (BOD) in the wastewater sufficiently to allow discharge into the local authority's sewerage system.

The wastewater load released to the sewerage system has seen the following benefits:

- Dissolved solids – 20 per cent reduction
- Suspended solids – 90 per cent removal
- BOD – 70 per cent removal
- Oil and grease – 98 per cent removal.

The full calculation of ROI has yet to be carried out by the dairy company. Investment and running costs will be balanced against the reduced discharge fees imposed by the local council.

CST Wastewater Solutions completed the treatment plant project ahead of the works schedule that the client company had submitted to the council.

Besides the dairy industry, other typical applications for the CST Wastewater Solutions DAF system include paper manufacturing, oil industry, wineries, tanneries, textile industry, large laundries, chemical industry, refineries, sludge thickening, and primary and secondary clarification in municipal and industrial biological wastewater plants.

"CST's DAF flotation system has been developed in line with the most advanced solids/liquid separation techniques," said Michael Bambridge, Managing Director of CST Wastewater Solutions. It features a low volume circular flotation cell, coupled with a high efficiency air-dissolving reactor, to achieve 95 per cent air saturation. Mr Bambridge also said that "Costs are reduced as the DAF flotation process requires less

chemical pre-treatment for flocculation to occur. Further savings are achieved because DAF clarifiers are not as expensive to build and install compared to complex bacterial processes or large settling basins."

The DAF treatment process at the dairy company includes a 94,000 L buffer tank, with the floated sludge being collected in a smaller 30,000 L tank. The Dissolved Air Flotation process introduces micro bubbles into the wastewater and with the aid of chemicals removes suspended matter, reducing the pollutant levels in the wastewater. The bubbles released by the DAF process carry the suspended matter to the surface of the flotation cell, where the matter is removed by a rotating scoop or surface skimmer.

The DAF system uses a unique double-injector air dispersal method that results in an exceptionally efficient separation of solids from liquids. The method works by combining hydraulic distribution and filtration in a single system. In the double-injector system, the first stage of air dissolving, up to a theoretical maximum saturation of 50 per cent, occurs in the high turbulence, high intensity mixing zone of the vessel's central column.

The second stage occurs in the larger volume of the vessel, where longer air-liquid contact provides a large exchange with very fine bubbles and a high exchange surface. Raw wastewater, saturated with air, is then introduced into the main body of the flotation tank through a series of openings located around the circumference of the lower part of the central column.

Solids are rapidly carried to the surface by the micro bubbles and are evenly distributed as sludge on the surface of the flotation tank in a uniform hydrodynamic condition.

The sludge float is then removed by a rotating adjustable scroll scoop or by a surface skimmer, without disturbing the sludge blanket.

Key characteristics of the DAF system from CST Wastewater Solutions include:

- high air saturation efficiency > 90 per cent
- automatic control of the injected air
- automatic control of the sludge blanket
- flexible operation: recycle, partial flow or full flow



For further information, please contact Mr Michael Bambridge, Managing Director, CST Wastewater Solutions, 16/20 Barcoo Street, Roseville 2069, PO Box 82, Lane Cove 1595, NSW, Australia, Tel: 02 9417 3611 Fax: 02 9417 0097 email: info@cstwastewater.com web: www.cstwastewater.com

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Modelling the fate of organic contaminants through sewage treatment plants and the environment

Palisade 2012 Asia-Pacific Risk Conference in Sydney

Recycling of water from sewage treatment plants has increased considerably over the last decade as many parts of Australia experienced below average rainfall resulting in reduced runoff to fresh water supplies (via surface and ground water) across the country. To maintain water supplies to many major cities, water authorities have adopted two strategies; (i) use water more efficiently and (ii) diversify the source of water. Sewage effluent has been one of the sources where water has been recycled for a range of uses. The risks posed by microbial and chemical hazards in recycled water are predominantly managed through treatment

Sensitivity analysis with @ Risk to inform management strategies to minimise risks.

or by onsite restrictions on how the water is used. Water authorities have the best control over the treatment process and so this process is most often used to manage the risk posed by hazards in recycled water. This project modelled certain physical properties of organic chemical hazards found in sewage water and their behaviour (partitioning) in the environment when irrigating with recycled water. By capturing the variability of effluent produced by the treatment system and partitioning in the environment with probability distribution functions, a sensitivity analysis was used to: 1) identify if risks posed by organic chemicals were managed; 2) identify

critical control points in the treatment process and the environment where the recycled water was used. The critical control points identified treatment components that could be optimised to remove organic chemicals or onsite restrictions that may be required to manage risk appropriately. •

Contributors/sources: Dr Daryl Stevens, Principal Scientist ATURA Pty Ltd, website: www.atura.com.au
More information: www.palisade.com (scroll down three screens to find case study and link to down load presentation)

GOOD READS and website links

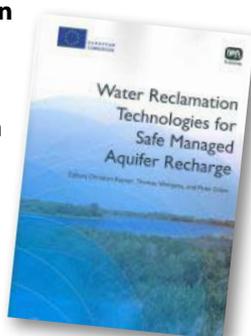
Water Reclamation Technologies for Safe Managed Aquifer Recharge

Editor(s): Christian Kazner, Thomas Wintgens, Peter Dillon

Publication Date: 15 Apr 2012 • ISBN: 9781843393443

Pages: 460 • Paperback

As an outcome of the European Commission 6th Framework project "RECLAIM WATER" led successively by Thomas Wintgens and Christian Kazner this new IWA publication has just been released. The 460 page book focuses on developing hazard mitigation strategies using engineered water treatment technologies in combination with natural treatment in soil and aquifers to provide safe water supplies for non-potable and potable uses. A number of case study sites in Australia, Belgium, China, Israel, Italy, Mexico, South Africa and Spain were studied. At these, the effectiveness of pre-recharge treatment, aquifer passage and post-recovery treatment were recorded for a range of hazards in reclaimed and stormwater source waters. Hazards included numerous trace organics, bulk organics, pathogens, antibi-



otic resistance genes, nutrients and inorganics. This was set within a risk management/water safety plan context to reveal the different relative importance of each treatment barrier and the differences in aquifer treatment characteristics at each MAR (Managed Aquifer Recharge) site in relation to variables such as aquifer residence time, flow path length, aquifer redox state and temperature. In addition to chapters on MAR sites, there are chapters dealing with each class of hazards, treatment processes, measurement methods, risk assessment and European regulations. The text does not claim to be comprehensive for all circumstances, but it provides valuable insights at individual sites and across sites and is expected to be useful for those interested in water quality aspects of water recycling via managed aquifer recharge.

For further information: www.iwapublishing.com

Source: Peter Dillon, Peter.Dillon@csiro.au; www.iah.org

Top detergents for your clothes, garden and water recycling

A study was undertaken by CHOICE, in cooperation with City West Water and the Water Services Association of Australia to compare 49 detergents for wash performance, their impact on gardens when laundry greywater is used and the impact on recycling at waste water treatment plants.

By choosing the right detergent, you can get a great wash, and at the same time, make a big difference to the cost of treating water so that it can be recycled, and safely use greywater occasionally on the garden.

Results of the study including what to look for in a detergent and recommended detergents can be found on the [website](#). You can also enter a competition to win a washing machine by watching the Choice top detergents video and answering a few simple questions. Good luck!

Source: www.savewater.com.au

Water Reuse makes it to Hollywood

From the company that brought you *An Inconvenient Truth*, *Food, Inc.* and *Waiting for Superman* now comes an engaging documentary about our most precious resource...**WATER!**

The Last Call at the Oasis brings to light water problems in the United States and worldwide, exposes the defects in water systems, government policy and public perception, re-educates film goers about the water cycle, and singles out water reuse as a leading solution to the global water crisis.

The film doesn't beat around the bush about the public perception challenges surrounding water reuse and uses every irreverent "toilet to tap" type phrase you could ever imagine. While most water reuse professionals may cringe at these scenes, the general public seems to take it for what it is and respond to the overarching message to "Get Over It." The film stars Jack Black, as the hero of water reuse in the most irreverent but surprisingly effective way. Also featuring activist Erin Brockovich, respected water experts including Peter Gleick, Jay Famiglietti and Robert Glennon and social entrepreneurs championing revolutionary solutions, the film posits that we can manage this problem if we are willing to act now.

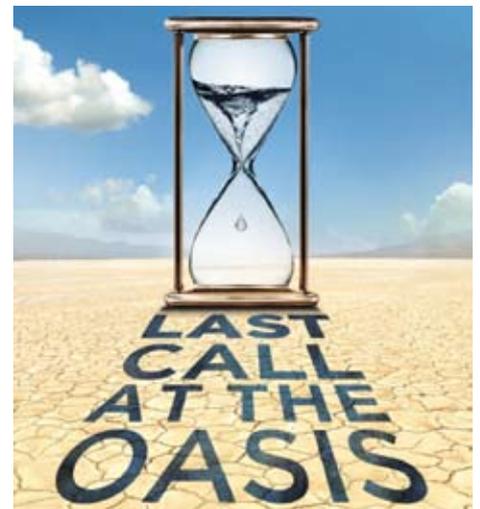
In addition to this feature length movie a new video presentation titled "Downstream: A simple story about the need for water reuse technology for a sustainable future" has been released by the WaterReuse Research Foundation. The seven-minute video is positioned as a timely companion to recent documentaries that probe water scarcity and the off-putting reaction that some people

have to drinking water that has been through a wastewater treatment plant. "Downstream" aims to put into perspective that there is much most of us do not realize about the current use and reuse of water.

Using vivid imagery, "Downstream" provides a transparent view of treatment technologies and reveals that water reuse does not involve drinking water directly from our toilets. The video shows that in the world of water, we are all downstream. The majority of the world's population drinks from rivers and streams that contain treated wastewater. "The Downstream video has given audiences an informed understanding of the need for water reuse as a sustainable water resource. It unlocks the viewer's emotional and intellectual curiosity and leaves them with a clear understanding of the urban water cycle," said Rich Nagel, General Manager of the West Basin Municipal Water District in Carson, CA.

"Downstream" was developed as part of a WaterReuse Research Foundation project conducted on behalf of the WRF by a team led by Linda Macpherson of CH2M HILL, Dr. Shane Snyder of the University of Arizona, Ian Law of IBL Solutions, and Steve Johnson of Johnson and Associates, LLC. Expert review was provided by George Tchobanoglous, a Professor Emeritus at the University of California-Davis and Dr. Paul Slovic of Decision Research.

"This is among the most important work of the WaterReuse Research Foundation. When water reuse is presented to the public clearly, transparently, and without stigmatizing images, this project has shown that the public sees water reuse as the smart, commonplace and sustainable strategy that it is," said Wade Miller, Executive Director of the WaterReuse Research Foundation. • For information on Last call at the Oasis see www.lastcallattheoasis.com. To learn more about the movie, visit their website [Sustainable solutions for a thirsty planet: www.athirstyplanet.com](http://Sustainable.solutions.for.a.thirsty.planet.com)



NEWS innovations & information

Australia

The National 2012 savewater! awards®

The National 2012 savewater! awards® are now open for entries. This year's awards program consists of nine categories, with three open internationally. The categories are:

- The Prime Minister's Water Wise Award
- Australian Achiever
- Business
- Community Groups
- Educational Institutions
- Government
- Photographic
- Product Innovations
- Water Utilities

For more information visit www.savewater.com.au

ACT

ACT water supply to last 20 years

A new report has found water security in the ACT is strong, and is likely to stay that way for the next two decades. Last September the ACT Government asked the Independent Competition and Regulatory Commission to investigate how recycled water is used in the ACT, including stormwater, treated wastewater and rainwater.

Its draft report has found the Territory has a high level of water security that could last for the next 20 years, thanks to residents using less water and major investments such as the Cotter Dam expansion.

A 2023 target of reducing per capita water use by a quarter is set to be met a decade early. "Existing dams are full and the completion of the enlarged Cotter Dam will increase current ACT dam capacity by more than a third," the report says. But the report did sug-

gest a more integrated approach to water planning in the ACT. "A key finding is a fully integrated and adaptive approach to water planning be adopted. It is within this context that secondary water options should be considered for their economic, environmental and social contribution to the water system as a whole," said Senior Commissioner Malcolm Gray. The report also recommends the ACT Government develop a clear approval process for residential stormwater harvesting and grey water schemes.

Source: ABC Online, www.abc.net.au

Victoria

Victoria opts for recycling over desal

Melbourne won't need another desalination plant for up to 50 years under a new plan to manage the city's water, the Victorian government says. Using recycled water for non-drinking purposes, as well as developing a system where people will be rewarded for saving water, are key elements of the strategy. The Office of Living Victoria (OLV) will develop a regulatory impact statement of minimum water standards for new buildings.

Water Minister Peter Walsh said more water runs off Melbourne's streets and into the ocean than the city uses in a year. Storm water harvesting and using recycled water for non-drinking purposes, such as maintaining sporting ovals and parks, was the key to managing Melbourne's long-term water needs rather than expensive infrastructure, he said.

Source: [Ninemsn, www.news.ninemsn.com.au](http://www.news.ninemsn.com.au)

Class A plant carbon neutral

Western Water's Class A Recycled Water Plant in Melton has become the first such plant in Australia to be certified carbon neutral. The plant, which is powered by a biogas cogeneration facility, was certified carbon neutral by the Australian Government initiative, Low Carbon Australia, last month. Reducing carbon emissions is an important part of Western Water's commitment to sustainability. The cost of carbon emissions is set to grow as customer numbers increase and water treatment becomes more energy-intensive. Having a carbon neutral Class A Recycled Water Plant will not only benefit the environment, but will also flow through as a better financial bottom line and better value for customers.

The \$2 million cogeneration facility, which began operation in 2010, captures methane emissions from the water recycling process to produce 100% renewable electricity to power the Class A plant. Water produced at the Class A plant is piped to households in Eynesbury, north-west of Melbourne, and will be supplied to the planned suburb of Toolern, in Victoria's fastest growing region.

Source: [Western Water, www.westernwater.com.au](http://www.westernwater.com.au)

New South Wales

Yuck factor of recycled sewage may not be such a big obstacle

Sydney residents would rather drink highly purified sewage as part of a planned recycling scheme than consume the smaller amount of effluent already present in the city's water supplies, researchers have found. The study,

carried out with US researchers, suggests that the "yuck factor" associated with recycled sewage can be overcome once people learn they already drink it.

The findings coincide with a state government review of Sydney's water plan, as reported in the Sydney Morning Herald, which will examine the viability of adding treated effluent to drinking water. About 60,000 residents in Richmond and Windsor drink a mix of recycled sewage, stormwater and river water. Treated effluent is discharged from sewage treatment plants along the Hawkesbury-Nepean River before being collected and re-treated at North Richmond and delivered to homes.

Source: [Sydney Morning Herald, www.smh.com.au](http://www.smh.com.au)

NSW Government delivers \$46 million in Cronulla

Minister for Finance & Services, Greg Pearce, and the Member for Cronulla, Mark Speakman, announced two projects worth \$46 million at the Cronulla Wastewater Treatment Plant, designed to improve the service delivery to customers and the surrounding community.

"The NSW Liberals & Nationals are getting on with the job of improving services for the community and providing infrastructure upgrades for the long term," Mr Pearce said. The Cronulla Wastewater Treatment plant covers a catchment area of approximately 12,000 hectares and services 223,000 people. The two projects between Sydney Water, Abigroup and CH2MHill will create 100 jobs and improve the reliability of the existing infrastructure that will ensure the plant continues to perform in line with environmental requirements.

Source: [Sydney Water, April 20, 2012, www.sydneywaternews.com.au](http://www.sydneywaternews.com.au)

Queensland

Could recycled water have stopped Brisbane floods?

Dr Stuart Khan, Senior Lecturer at the School of Civil and Environmental Engineering at the University of New South Wales, reports that ironically, the massive floods that were experienced after the drought, could be the strongest argument yet for using recycled water. His article argues that, if Brisbane had not backed away from a scheme to drink its recycled sewage, there may not have been the rising waters that devastated our third largest city in January 2011.

Like many reservoirs, Lake Wivenhoe has two roles, providing security of drinking water supply by storing as much water as possible and protecting Brisbane from otherwise inevitable regular flooding by maintaining as

much empty space as possible. Thus, the bottom 1,165 billion litres is kept as full as possible for drinking water supply and the top 1,450 billion litres is maintained empty for flood control.

If recycled water from the Western Corridor recycled water project (WCRWP) was used directly as part of Brisbane's water supply (WCRWP can produce around 35% of total water consumption for Brisbane and surrounds), Lake Wivenhoe could be relied upon for considerably less water supply. This would allow additional space in the dam for flood mitigation. The flood mitigation capacity would be increased by around 425 billion litres, which is an increase of around 30 per cent.

In terms of water storage capacity, this new-found 425 billion litres of flood mitigation space is the same as immediately constructing a new equivalent sized reservoir, without the cost of construction and without having to relocate a single home or farm. With careful management, this additional storage capacity would have been sufficient to capture and contain the entire peak flow into Wivenhoe Dam that occurred between 9th and 13th January 2011. There would have been no flood in Brisbane.

Source: [ABC Local, www.abc.net.au](http://www.abc.net.au)

Western Australia

We want to drink recycled water: survey

At least three in four West Australians have flushed away common fears of drinking recycled water and now support adding it to the main supply, according to a Water Corporation survey. Support for the controversial practice that includes treating sewerage has steadily increased since the state government started a two-year trial in November 2010.

Treated wastewater is being pumped into the Gnangara Mound aquifer, where it mixes with naturally occurring water. Once the trial concludes in December it will then be used by households.

Source: [WA News, www.watoday.com.au](http://www.watoday.com.au)

South Australia

Water research looks at underground supplies

A study focused in the Willunga basin will try to find out which of South Australia's underground water resources are most sustainable. The National Centre for Groundwater Research and Training at Flinders University in Adelaide hopes to work out how quickly the aquifers recharge. The study also will look at rivers in central Australia. The findings could be used to determine how much water can be used from underground aquifers in the Murray-Darling Basin.

Source: ABC News, www.abc.net.au

International

South Florida cuts water use by 20 percent

South Floridians are using about 20 percent less water per person each day for drinking, bathing and sprinkling yards than they did a decade ago. This is estimated at 30 billion US gallons (114GL) saved over the course of a year, enough unused water to fill 45,900 Olympic-sized swimming pools. Though water consumption per person has been declining for decades, water managers point to a combination of factors that are accelerating the trend. They include newer water-efficient toilets and other fixtures, tougher restrictions on lawn irrigation and stepped utility rates designed to make customers pay a premium for excessive water use. In addition one Golf & Country Club in Hollywood is irrigating the fairways and greens with 'reclaimed' wastewater.

Source: MiamiHerald.com

US recycled water projects get federal funding

Federal funding will help Eastern Municipal Water District pay for a new pipeline to carry recycled water for irrigation in Menifee. Eastern Municipal Water District, headquartered in Perris, was awarded more than US\$1 million from the U.S. Bureau of Reclamation for two recycled water projects. One of the projects is a 9,000-foot (2.7km) recycled water pipeline for the 2,100-home Audie Murphy Ranch development in Menifee. The project will deliver 600 acre-feet (740ML) of recycled water per year to be used for landscaping.

Source: Press-Enterprise, www.pe.com

Water district eyeing test site

Eastern Municipal Water District (EMWD) have asked the city of Hemet to consider entering into an agreement where the district would build an 80-acre (0.32 km²) pond near

Diamond Valley Lake to test the feasibility of using recycled water to irrigate golf courses. The council heard the proposal during its May 8 work study session and the item is likely to come back for a vote in the coming weeks. Under the proposal, EMWD would lease a piece of land just east of Diamond Valley Lake from Metropolitan Water District, which owns the lake just south of Hemet.

Source: Press-Enterprise, www.pe.com

School's recycling team means that it's easy being green

For the past six years, Great Seneca Creek Elementary School has been recognized as a Leadership in Energy and Environmental Design (LEED) school by the U.S. Green Building Council. Great Seneca is one of 61 schools in Maryland, Virginia and Washington that have been recognized for having a building that focuses on energy conservation and being friendly to the environment. Water related include, a mural in the main lobby which shows the Earth's water cycle, from clouds on the ceiling to tiles in the floor representing the stream that the school is named after. In the toilets, they use waterless urinals, dual-flush toilets and motion-activated sinks to save water and learn about water conservation.

Source: Washington Post, www.washingtonpost.com

Space shuttle astronauts declare recycled urine a great taste

Astronauts aboard the space station celebrated a space first by drinking water that had been recycled from their urine, sweat and water that condenses from exhaled air. They said "cheers," clicked drinking bags and toasted NASA workers on the ground who were sipping their own version of recycled drinking water.

Later on, NASA found it is not just mechanical glitches that make the International Space Station a tough place to operate. Engineers trouble-shooting a problem with the station's \$US250 million (\$271 million) water recycling system, which processes urine into clean water for drinking, believe the cause is a high concentration of calcium in the astronauts' urine, which clogs the system.

Source: www.dailytelegraph.com.au

Source: www.news.com.au

When does water recycled from wastewater become water again...?

A recent article reports that the problem in Southern California is not limited water - there is an entire ocean of water just off the coast but that the problem is that water suitable for drinking is limited and becoming more so. Local agencies are looking for

technological solutions to meet demand. A seawater reclamation project in Oxnard is a huge step toward solving some of those issues. Another option is recycled water with reverse osmosis, however there are legislative barriers to be overcome. A bill before state legislators, AB 2398, would remove reverse-osmosis water from the definition of "wastewater" and from the health and safety code. The bill would require an increase in California's recycling goal to 1.5 million acre-feet (1850GL) of water per year by the year 2020 and 2.5 million acre-feet (3083GL) per year by the year 2030.

Sheldon Berger, director of the United Water Conservation District, said that locally, the definitions of "recycled water" and "wastewater" must be changed because farmers cannot use recycled water if they want to sell produce to major food suppliers, which ban the use of wastewater.

Source: Ventura Country Star, www.vcstar.com



EVENTS diary dates

Australia



Enviro 2012- 7th Australian Conference and Exhibition Integrating Business and the Environment

24-26 July 2012

Adelaide Convention Centre South Australia

ENVIRO 2012 is the 7th event in a series that is Australia's largest meeting of business and the environment. Every two years, industry, government and the environmental service sectors gather to shape policy and progress on sustainable enterprise. Experts and innovators join with business leaders, practitioners and policy makers to advance Australia's position as a leader in sustainable business practices, innovation and technologies.

ENVIRO 2012 will apply proven sustainable practices to all aspects of the event including energy, waste, resources, transport, catering and water.

Wherever possible and practical, strategies will be utilised to reduce the carbon 'footprint' of the event and minimise waste and consumption of resources. Emissions that cannot be avoided will be offset.

More information:

www.enviroconvention.com.au



Small Water and Wastewater Systems (SWWS) National Conference

26-28- September 2012

Newcastle, NSW

The aim of the conference is to provide a learning and knowledge-sharing opportunity for all areas of decentralised water systems. In the 20th Century there was a push towards centralisation to achieve economies of scale and to satisfy public and environmental health issues. Today decentralised water systems are re-emerging as long term solutions to water scarcity and constraints of the centralised approach.

Registration is now available [here](#)

More information: Australian Water Association



Stormwater 2012

October 15-19, 2012

Sofitel Melbourne on Collins, Melbourne

The 2nd National Stormwater Conference will be held from the 15th - 19th October 2012 in Melbourne, Australia.

The profile of stormwater has steadily increased in recent years and now more than ever, industry and government are looking for opportunities to effectively manage stormwater as a resource and to deliver improved environments. Stormwater 2012 will provide an excellent opportunity for practitioners from across the industry to gather, network and learn about the myriad of cutting edge projects and research that is being generated by this dynamic and rapidly growing industry sector.

More information:

www.stormwatervictoria.com.au

International

Stormwater Symposium 2012

July 18 - 20, 2012

Sheraton Baltimore City Center, Baltimore

The two-day event will be in cooperation with the Chesapeake Water Environment Association (CWEA). Building on a tradition of strong stormwater related education in the mid-Atlantic region, this event will focus on national issues, including the proposed national stormwater rulemaking, regional issues, developing technologies, and management approaches that are key to this growing and evolving topic. This symposium will bring together practitioners, regulators, academics, manufacturers, and visionaries to network and exchange information on the challenges, successes and opportunities related to stormwater.

More information: www.wef.org



27th Annual WaterReuse Symposium

September 9-12, 2012

Hollywood, Florida, USA

The WaterReuse Association is accepting abstracts for the 27th Annual WaterReuse Symposium, which will be held September 9-12, 2012 in Hollywood, Florida. Presented by the WaterReuse Association and cosponsored by the American Water Works Association and

the Water Environment Federation, the Symposium will feature more than 100 technical presentations, tours, an awards luncheon, and an exhibit hall.

More information: www.watereuse.org



WEFTEC 2012

September 29 - October 3, 2012, New Orleans, Morial Convention Center, New Orleans, LA SA

WEFTEC®, the Water Environment Federation's Annual Technical Exhibition and Conference, is the biggest meeting of its kind in North America and offers thousands of water quality professionals from around the world the best water quality education and training available today. Also recognized as the world's largest annual water quality exhibition, WEFTEC's massive show floor provides unparalleled access to the field's most cutting-edge technologies and services.

More information: www.weftec.org



WERF Research Forum

January 28-29, 2013, Chicago.

The 8th annual WERF Research Forum will be held in Chicago on January 28 and 29, 2013. Each year, this forum brings together some of the industry's top researchers and experts along with WERF subscribers from around the world. Discussion centers around emerging water quality issues and research, as well as new technological breakthroughs and practical applications. Further details to come.

More information: www.werf.org

IWA Forthcoming events

Worldwide events 2012

More information: www.iwapublishing.com