

# Pacific Water Demand Management Newsletter

## April 2010



Welcome to the second edition of the Pacific Water Demand Management Newsletter – a brief update every 2 months on demand management and water loss happenings and activities in the Pacific.

Your contributions are most welcome and appreciated – please feel free to share upcoming and past events, activities, highlights, or anything else you see of value to be shared.

Please disseminate widely to your networks.

### Quick Quiz!

1. Non-revenue water (NRW) is the difference between system input volumes and billed authorized consumption. True or False?
2. How many of the 73 territorial authorities in New Zealand use metering and volumetric charging for domestic water consumption?\*

Find the answers at the bottom of the newsletter.

\*Taken from Water New Zealand Pipeline Newsletter, March 4 2010. To sign up go to <http://www.waternz.org.nz/pipeline.html>

## ➤ SAVE MONEY - THINK WATER & ENERGY!

Every aspect of a water system requires energy - from collection, treatment of water, transmission and distribution, to wastewater treatment and pumping.

Electricity or diesel used to pump water from source to reservoirs or into the distribution system is generally one of the largest variable costs for water utilities.

By efficiently managing your water supply (i.e. reducing leakage in pipes and at a household level) – you can gain significant savings in energy. These valuable savings can be spent elsewhere – on asset upgrades or repair, staff training, leak detection equipment etc.

Why pay to pump and treat thousands of litres of water a day – only for hundreds of those precious litres to disappear into the soil!

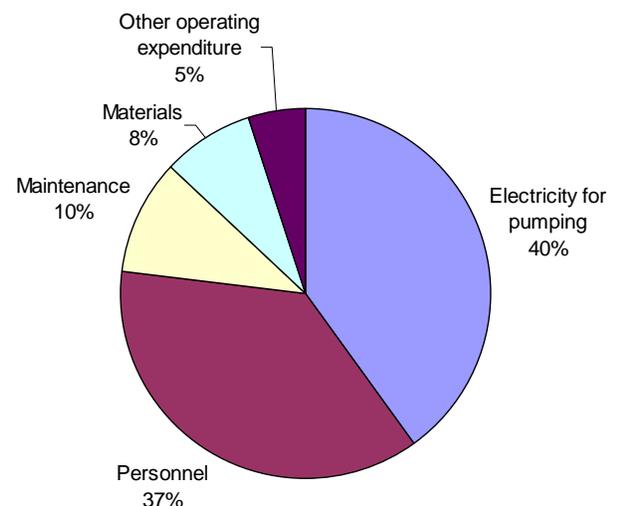


Figure 1: Sample breakdown on water supply utility expenditure.

## ➤ HOUSEHOLD WATER CONSERVATION

Leakage at a household level – for example from kitchen and bathroom taps, toilet cisterns, shower heads etc – is identified by many as a large issue in the Pacific, along with wasteful use of water.

Many Pacific utilities have already conducted awareness programmes on household water conservation – it is important to realise however that this needs to be ongoing and not just a once off activity. Good communication between a water supplier and its customers is vital for efficient and effective management!

The table on the right is from the CUWCC Practical Plumbing Handbook – take a look and see how many gallons can be conserved a day by showering with a low-flow showerhead or flushing with an efficient toilet! (Note: 1 gallon = 3.8 litres)

Follow the link below to the “Resources for Utilities” web-page on the SOPAC Pacific Water site. Here you can find two examples – from Honolulu Board of Water Supply and Sydney Water – of awareness brochures distributed to consumers to encourage them to conserve water in the home.

<http://www.pacificwater.org/pages.cfm/water-services/water-demand-management/resources-utilities.html>

**Daily Water Use: Conserving vs. Non-Conserving**  
The table compares conserving versus non-conserving water use for common activities around the home!

| Activity   | Frequency                           | Practice or fixture: conserving/ non-conserving | Water used per activity (gallons) | Gallons used per day:            |                     |     |
|--|-------------------------------------|---|-----------------------------------|----------------------------------|---------------------|-----|
|  |                                     |   |                                   | Conserving practices or fixtures | Non-conserving      |     |
| BATHROOM   | Toilet                              | High-efficiency toilet                          | 1.2 gal/flush (avg)               | 7                                |                     |     |
|  |                                     | Old pre-1994 toilet                             | 3.5 to 7 gal/flush                |                                  | 31 (avg)            |     |
|  | Shower                              | Modern low-flow showerhead                      | 2.5 gal/min                       | 20                               |                     |     |
|  |                                     | Old pre-1994 showerhead                         | 4 gal/min                         |                                  | 32                  |     |
| Bath   | Once/day                            | 1/3 full tub                                    | 15 gal                            | 15                               |                     |     |
|  |                                     | 2/3 full tub                                    | 30 gal                            |                                  | 30                  |     |
| Brushing teeth                                       | Twice/day                           | Brush & rinse                                   | .25 gal                           | .5                               |                     |     |
|  |                                     | Open tap  | 3.5 gal                           |                                  | 7                   |     |
| KITCHEN / LAUNDRY                                    | Cooking                             | Washing produce                                 | 2 gal/meal                        | 2                                |                     |     |
|  |                                     | Open tap  | 4 gal/meal                        |                                  | 4                   |     |
|  | Automatic dishwasher                | Once/day full load                              | Short cycle                       | 9 gal/load                       | 9                   |     |
|  |                                     |   | Pot scrub cycle                   | 14 gal/load                      |                     | 14  |
|  | Manual dishwashing                  | Once/day  | Basin filled                      | 5 gal/set                        |                     |     |
|  |                                     |   | Open tap                          | 30 gal/set                       |                     |     |
| Laundry  | 3 loads/ week                       | Super efficiency washer, 6.0 WF <sup>2</sup>    | 22 gal/load                       | 9                                |                     |     |
|  |                                     | Standard washer 12.0 WF                         | 45 gal/load                       |                                  | 19                  |     |
| OUTDOORS   | Landscape <sup>1</sup> 2,500 sq.ft. | 3 days/ week                                    | Water-efficient landscape         |                                  | 118                 |     |
|  |                                     |   | Traditional landscape (turf)      |                                  |                     | 500 |
|  | Car washing                         | Twice/ month                                    | Open hose without shutoff nozzle  | 180 gal/wash                     |                     |     |
|  |                                     |   | Bucket, hose with shutoff nozzle  | 20 gal/wash                      |                     |     |
| Total water used                                     |                                     |   |                                   | 180.5 gallons per day            | 637 gallons per day |     |
| Conserving practices or fixtures vs. non-conserving: |                                     |   |                                   |                                  |                     |     |

## ➤ METERING – “You can’t manage what you don’t measure”



The value of bulk metering (and universal customer metering) cannot be underestimated. Without this basic but fundamental data on “how much” water and “where” it is flowing – it is near impossible to effectively manage a water supply system.

Regular testing and repair of meters is similarly important. Meter under-registration (when the meter reads less flow than has actually gone through it) can affect utility revenue when customers are billed less than they have used.

*“Water utilities will need to incentivize their staff to undertake better billing practices, not only checking for illegal or bypass connections but also for connections with meter inaccuracies.”*

From Page 14, Designing an Effective Leakage Reduction and Management Program, Water & Sanitation Program Field Note, April 2008.

The full note, which includes informative case studies, can be found [here](#).

## ➤ Instant reduction in leakage with pressure management

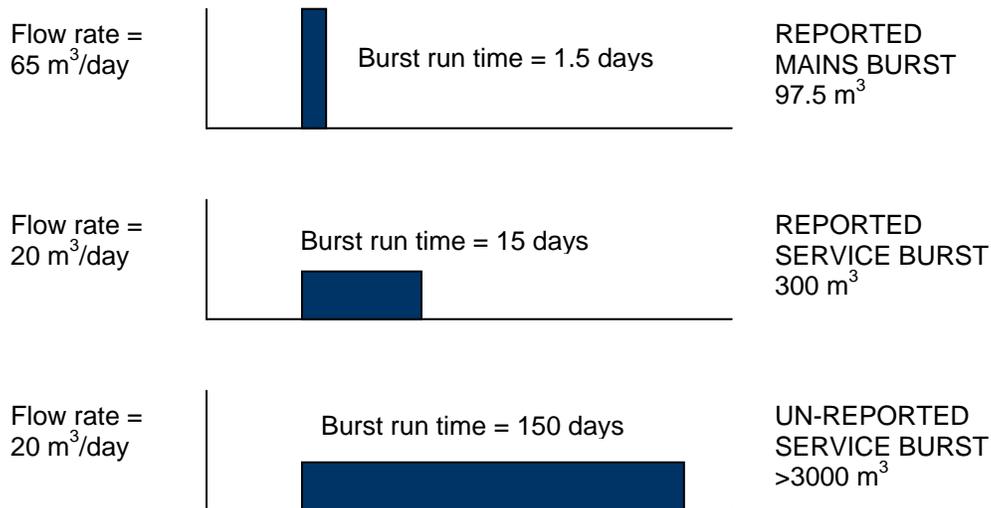


Managing the distribution network so that adequate pressure is maintained is important because:

1. The chance of backflow occurring or contaminants entering the system through a break in the pipe is reduced → less risk of unsafe water delivered to consumers.
2. With controlled and appropriate pressures: background leakage is reduced, less water hammer effect and less stress on mains → less frequent bursts, breaks and leaks.

Interestingly, visible mains bursts (such as the one shown at left!) do not make up the largest component of real losses – as these are usually fixed quickly. Instead, background leakage and long-running smaller unreported (or reported but deferred) leaks waste a lot more water – the length of time leaks are left and not repaired is key!

The total volume of water lost from a burst or leak = flow rate ( $\text{m}^3/\text{day}$  or  $\text{gal}/\text{day}$ ) x length of runtime (days).



## ➤ WDM Programme Activities Update: North Pacific

The Federated States of Micronesia (FSM) and the Republic of the Marshall Islands (RMI) are among the pilot countries selected for the WDM Programme. Utilising regional knowledge and experience, a “buddy” system between Pohnpei Utilities Corporation (PUC) in FSM and their counterparts at Majuro Water & Sewer Company (MWSC) in RMI was recently conducted from 16<sup>th</sup> – 19<sup>th</sup> March.

Best practices in water demand management were shared, and operator and management level training provided in the identified priority areas of leak detection, loss management, pressure management and utility operations. Training took place in both a formal and informal environment, and led to the development of lasting relationships and knowledge within MWSC to improve water demand and utility management practices.

Technical assistance was also provided to MWSC, RMI to develop a system water balance – initial recommendations being to improve bulk metering and implement a customer meter calibration and repair database.

Pohnpei Utilities Corporation (PUC) in FSM are acknowledged as implementing most water loss management best practices and during the recent mission from 10<sup>th</sup> – 12<sup>th</sup> March, their practices were documented for inclusion in a regional knowledge sharing resource, which is currently being developed and will be shared with other utilities.

For further information or to contribute to the next newsletter, please contact:

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### Quiz Answers

1. True. NRW includes apparent losses due to metering inaccuracies, illegal connections, leakage in transmission and distribution, and unbilled authorised consumption (e.g. water for firefighting).

2. Only 11 of the 73 territorial authorities in New Zealand use metering and volumetric charging for domestic water consumption, with a further 8 across parts of their jurisdictions.

**SOPAC**

**nzaid**

"The world's population has increased four-fold over the last hundred years, but we don't have a single drop of new water." (S. Maxwell, State of the Water Industry 2009)