Nanaimo’s Water Audit

April 22, 2013

Reservoir #1 source meter validation
Nanaimo’s Conservation Measures

- Universal metering & expanded block billing
- Full-cost accounting
- Summer watering restrictions
- RDN & Team WaterSmart
- Toilet rebate program
- Water Conservation Strategy
Why do a Water Audit?

- Water Conservation Strategy 2008 identified a Water Audit as a priority for the City.

- The Water Audit carried out in accordance with AWWA M36 Water Audits & Loss Control Programs.
What did we do?

- Stage 1 - Desk top study
- Stage 2 – Field work to validate results
Nanaimo’s Water Consumption Trend

Litres per capita demands - all uses

- Annual Avg
- Winter Avg
- Summer Avg
- Peak Day
- Low Day
- Linear (Annual Avg)
- Linear (Peak Day)
Per person water use – how does Nanaimo stack up?

Provincial, National & Municipal Water Use Comparisons

- British Columbia: 606 L per Person per Day (Total), 353 L per Person per Day (Residential Use)
- Canada: 510 L per Person per Day (Total), 274 L per Person per Day (Residential Use)
- Nanaimo: 492 L per Person per Day (Total), 251 L per Person per Day (Residential Use)
- Nanaimo Indoor: 198 L per Person per Day
- Netherlands: 124 L per Person per Day
Residential Use

- Canadian annual average: 274 L/person/day
- British Columbia average: 353 L/person/day
- Capital Regional District: residential 297 L/person/day
- Nanaimo annual averages:
  - Single Family Residential: 251 L/person/day
  - Single Family Residential Seasonal Demands:
    - summer 962 L/dwelling/day
      (or 21-28 m³/ha/day for irrigation)
    - winter indoor use 198 L/person/day
Water Balance

Revenue Water 72%

- Residential: 51%
- Industrial, Commercial & Institutional: 21%
- City Use: 15%
- Leakage: 10%
- Metering Errors: 3%
Customer meter under registration

- Factors affecting meter accuracy:
  - age of the meter
  - proper sizing

- Work completed for analysis:
  - validated accuracy of the bulk source meters
  - tested residential meters to gauge age/accuracy relationship
  - reviewed consumption records for large meters to determine if meters were properly sized
  - reviewed City of Nanaimo meter sizing standards
  - undertook flow profile monitoring on large customer meters
Key findings from the Water Audit

- The City’s bulk water meters are accurate
- Actual leakage 9.83% of water supplied
- 50% of large industrial and commercial meters are oversized and under recording
- Residential meters:
  - Average age 14 years
  - 97.8% accurate
  - Lose accuracy and revenue beyond 24 years
Key findings from the Water Audit (continued)

- Infrastructure Leakage Index 1.54
Water Audit Recommendations

- Create a new section in the City’s Manual of Engineering Standards and Specifications for meter sizing
- Allocate funding for a meter replacement program
  - to replace older residential meters, and
  - to replace larger oversized industrial & commercial meters
- Consider a water loss management program to address leakage
- Undertake future water audits
We're using Nanaimo's water wisely

This Lawn Isn't Dead, It's Just Sleeping

CITY OF NANAIMO