

CUC – Leak Detection and 24 Hour Water Push

LCDR Travis Spaeth P.E.
travis.spaeth@cucgov.org
670-664-4282 Ext 337

Leak Detection Team

- Engineering Staff
 - Dave Hidalgo
 - Jake Parker
 - Joel Puyat
 - Charlie Guerrero
 - John Jetnil
 - LCDR Travis Spaeth
- Water Division Staff – Support
 - Chris Deleon Guerrero
 - Kraven Lizama
 - VJ Conception
 - Water Watch Crew – Paul Celis, Paul Maglona, Damian Pua, and Abraham Igisair

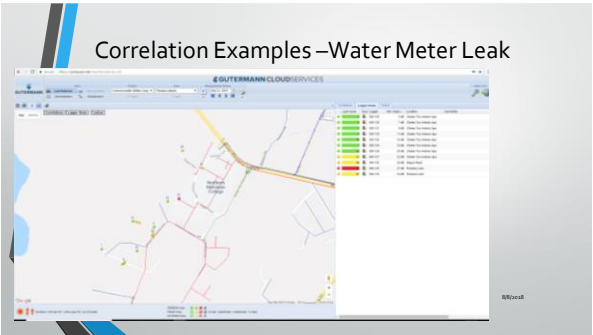
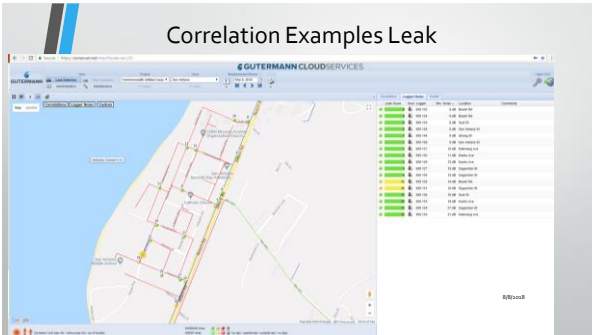
Leak Detection Tools

- Gutterman Zonescan – Correlating Data Loggers
- Subsurface Leak Detection LD-12 and LD-15 (sounding equipment)
- Tank Flow monitors
- GIS Database



Leak Correlation

1. Select Area to Survey
2. Deploy Loggers to Gate Valves, Hydrants, or Water Meters
3. Complete Logging During Day or Overnight (Preferred)
4. Collect Loggers
5. Upload Data to Website
6. Run Manual Correlations (if needed)
 - Software Reads Data from our GIS Database that was Uploaded



Alahai Ave - Garapan

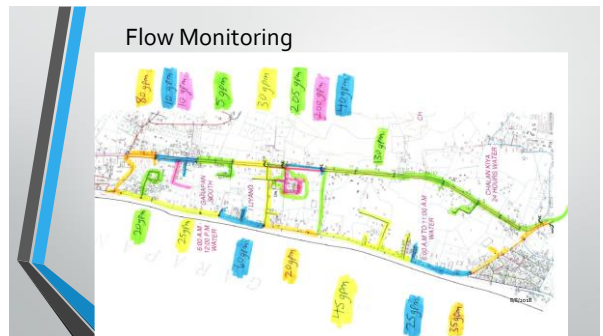


Correlation Examples South Garapan

Google Earth interface showing a map of South Garapan. The interface includes a sidebar with 'Correlation Cloud Data (143)' and a table of data points. The table has columns for Date, Time, Lat, Long, Alt, and Status. The data points are listed in a table with 6 columns: Date, Time, Lat, Long, Alt, and Status. The status column contains red and green icons.

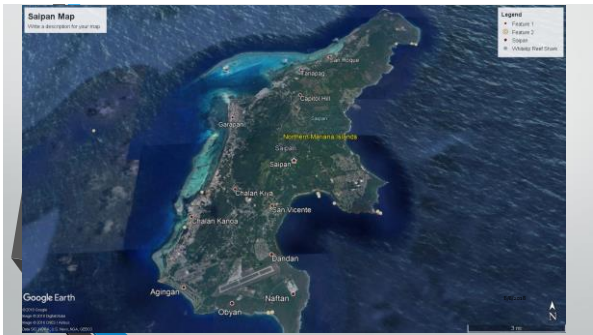
Date	Time	Lat	Long	Alt	Status
2009-01-01	00:00	12.12	102.12	100.0	Red
2009-01-01	00:01	12.12	102.12	100.0	Red
2009-01-01	00:02	12.12	102.12	100.0	Red
2009-01-01	00:03	12.12	102.12	100.0	Red
2009-01-01	00:04	12.12	102.12	100.0	Red
2009-01-01	00:05	12.12	102.12	100.0	Red
2009-01-01	00:06	12.12	102.12	100.0	Red
2009-01-01	00:07	12.12	102.12	100.0	Red
2009-01-01	00:08	12.12	102.12	100.0	Red
2009-01-01	00:09	12.12	102.12	100.0	Red
2009-01-01	00:10	12.12	102.12	100.0	Red
2009-01-01	00:11	12.12	102.12	100.0	Red
2009-01-01	00:12	12.12	102.12	100.0	Red
2009-01-01	00:13	12.12	102.12	100.0	Red
2009-01-01	00:14	12.12	102.12	100.0	Red
2009-01-01	00:15	12.12	102.12	100.0	Red
2009-01-01	00:16	12.12	102.12	100.0	Red
2009-01-01	00:17	12.12	102.12	100.0	Red
2009-01-01	00:18	12.12	102.12	100.0	Red
2009-01-01	00:19	12.12	102.12	100.0	Red
2009-01-01	00:20	12.12	102.12	100.0	Red
2009-01-01	00:21	12.12	102.12	100.0	Red
2009-01-01	00:22	12.12	102.12	100.0	Red
2009-01-01	00:23	12.12	102.12	100.0	Red
2009-01-01	00:24	12.12	102.12	100.0	Red
2009-01-01	00:25	12.12	102.12	100.0	Red
2009-01-01	00:26	12.12	102.12	100.0	Red
2009-01-01	00:27	12.12	102.12	100.0	Red
2009-01-01	00:28	12.12	102.12	100.0	Red
2009-01-01	00:29	12.12	102.12	100.0	Red
2009-01-01	00:30	12.12	102.12	100.0	Red
2009-01-01	00:31	12.12	102.12	100.0	Red
2009-01-01	00:32	12.12	102.12	100.0	Red
2009-01-01	00:33	12.12	102.12	100.0	Red
2009-01-01	00:34	12.12	102.12	100.0	Red
2009-01-01	00:35	12.12	102.12	100.0	Red
2009-01-01	00:36	12.12	102.12	100.0	Red
2009-01-01	00:37	12.12	102.12	100.0	Red
2009-01-01	00:38	12.12	102.12	100.0	Red
2009-01-01	00:39	12.12	102.12	100.0	Red
2009-01-01	00:40	12.12	102.12	100.0	Red
2009-01-01	00:41	12.12	102.12	100.0	Red
2009-01-01	00:42	12.12	102.12	100.0	Red
2009-01-01	00:43	12.12	102.12	100.0	Red
2009-01-01	00:44	12.12	102.12	100.0	Red
2009-01-01	00:45	12.12	102.12	100.0	Red
2009-01-01	00:46	12.12	102.12	100.0	Red
2009-01-01	00:47	12.12	102.12	100.0	Red
2009-01-01	00:48	12.12	102.12	100.0	Red
2009-01-01	00:49	12.12	102.12	100.0	Red
2009-01-01	00:50	12.12	102.12	100.0	Red
2009-01-01	00:51	12.12	102.12	100.0	Red
2009-01-01	00:52	12.12	102.12	100.0	Red
2009-01-01	00:53	12.12	102.12	100.0	Red
2009-01-01	00:54	12.12	102.12	100.0	Red
2009-01-01	00:55	12.12	102.12	100.0	Red
2009-01-01	00:56	12.12	102.12	100.0	Red

1. Select Zones
2. Select Isolation Points
 1. Want to select bigger zones initially
 2. Work into smaller sections if flowrates are high
3. Monitor flowmeter while team isolates gate valves (zones)
4. Reopen to double check consistency
5. Document results

[illegible]

CUC Moving Water from All over the Island

1. Kagan serving Kagan, Papaga, San Vicente, Dandan, and helps with As Lito
2. Isley, Kobleville, and Obyan Wells – Now serving the entire south side of the island up to Quartermaster Rd. (As Gonno to Chalan Lau Lau/Gualo Rai areas)
3. Marpi – Varies but ideally serves entire north side thru Lower Base while supplementing Puerto Rico at times
4. Capital Hill, Agag, Sablan Quarry wells, & Donnie Springs – Services entire Capital Hill area all the way to Southern Garapan



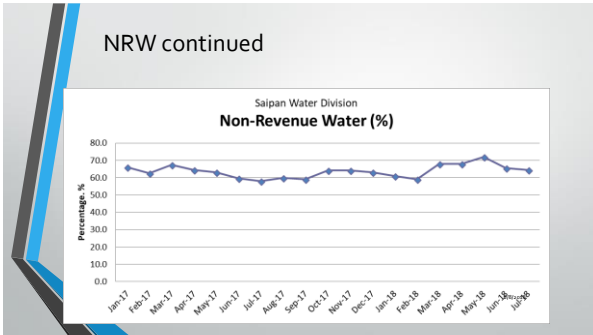
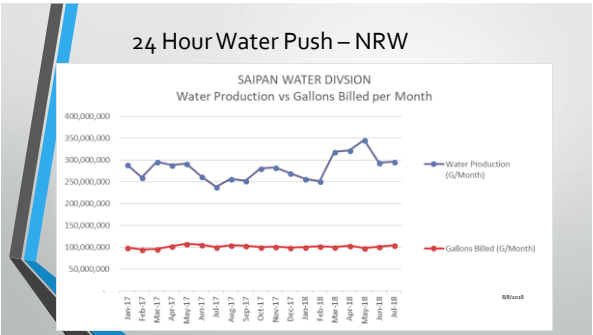
24 Hour Water NRW (Non-Revenue Water)

What is NRW?

Basically it is the difference in the amount of water produced and the amount of water billed

$NRW = (Water\ Production - Billed\ Water) / Water\ Production * 100 = \% NRW$

Consists of a combination of leaks, theft, tank overflows, improper or unmetered customers, under-registering water meters, and miscellaneous usage (flushing, sampling, fire fighting)



CUC Repair Crews

CUC Crews Fix Between 50 and 130 leaks per month

