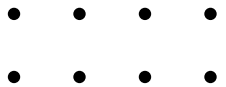




NRW ASSESSMENT AND REDUCTION PILOT STUDY

Kelvin Romain

CEO WASA



Summary of Activities Executed



Pilot DMAs:

- El Socorro South, West Moorings, Factory Road, and Blue Range
- General data collection for Pilot DMAs
- Planning of NRW reduction interventions
- Leak detection and repair
- Quantification of water volume reduction

Data analysis:

- Visual leaks and Leak repair
- Pressure investigation

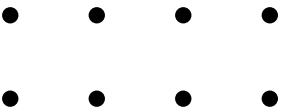
National Water Balance:

- Data collection
- Water Balance calculations and components

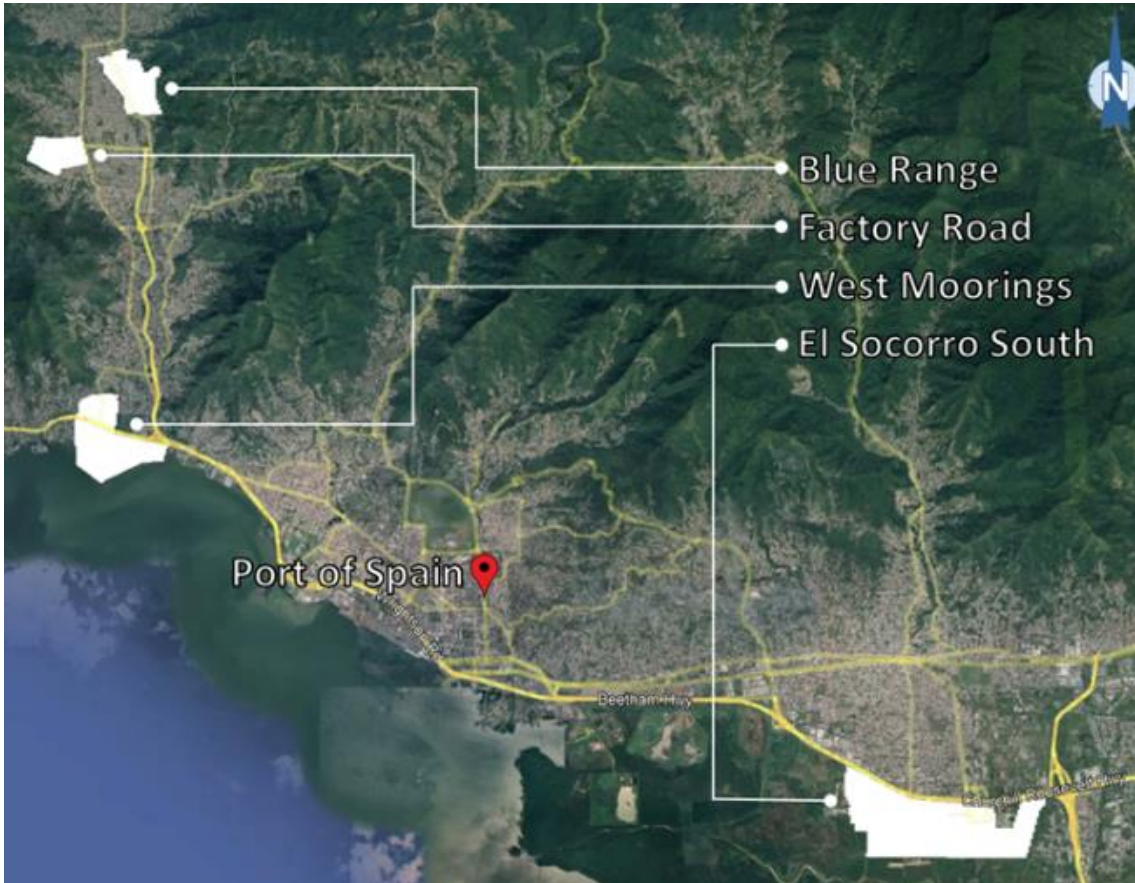
Performance Indicators:

- Level of Service
- Physical / Commercial Losses
- Non-Revenue Water

PILOT DMAs



Pilot DMAs



General Data Collection:

- Flow and pressure data
- Number of leaks found
- Number of leaks repaired
- Mapping of leaks found
- Length of roads inspected for visual leak

Length of mains and customers (Jan 2023)



DMA Name	Building Count/Customers		Length of Mains (km)	Pipe Materials
	Domestic	Commercial		
El Socorro South	698	85	10	PVC, CI
West Moorings	1055	5	20	AC, GWI, PVC
Factory Road	324	23	3.8	AC, PVC, GWI
Blue Range	571	0	6.3	PVC, CI, DI



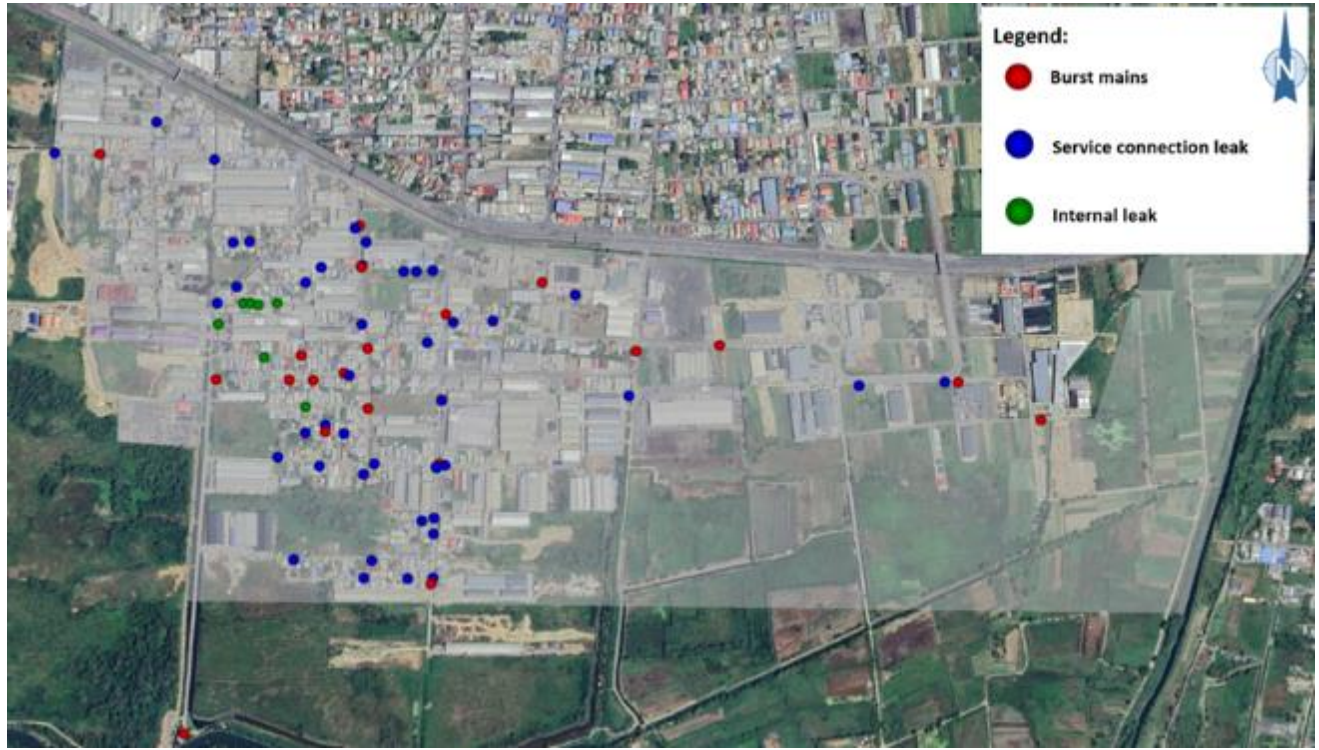
El Socorro South – Visual Leak Detection

Leak Type	Dec 2022	Jan-Mar 2023	TOTAL
Burst Main	9	14	23
Service Connection	4	43	47
Internal Leak	0	7	7
GRAND TOTAL	13	64	77

El Socorro South – Visual Leak Repair (16 March 2023)

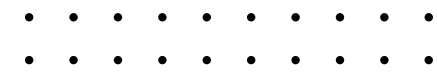


Leak location clustering



Type of Leak	Days
Age of oldest unrepaired leak	95
Average age of unrepaired leaks	51
Average turn around-time of leak repair	32
Average time before a leak is endorsed to repair team	2

Leak Type	Repaired Leaks	Backlog
Burst Main	21	2
Service Connection	38	9
Internal Leak	1	6
GRAND TOTAL	60	17



El Socorro South – Spot Pressure Survey

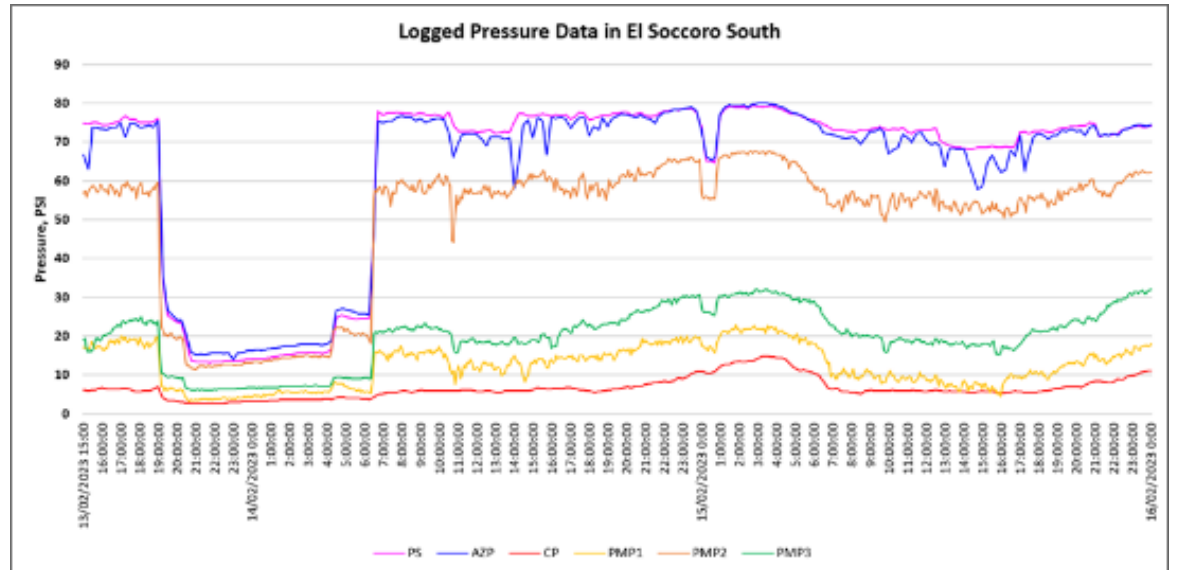
Pressure investigation prior to installing a PRV at the inlet to understand the distribution of the water pressure across the network



Actions:

- investigate possible cause(s) of the reduction of pressure between the western and eastern side of the DMA
- Installation of loggers at intersection of Streets Chanka Trace and Chotoo Road and the roundabout in El Socorro Ext. 2

El Socorro South – Pressure Monitoring Points



El Socorro South – Pressure Monitoring Points



- Checked logged data to confirm pressure differences
- Top sounding to locate the gate valves
 - pinpointed 2 locations endorsed to WASA for replacement
- 1 of the 2 valves was excavated, status: almost closed causing the considerable pressure to drop across the network.

The valve was replaced and set at fully open and the effect on pressure is being monitored

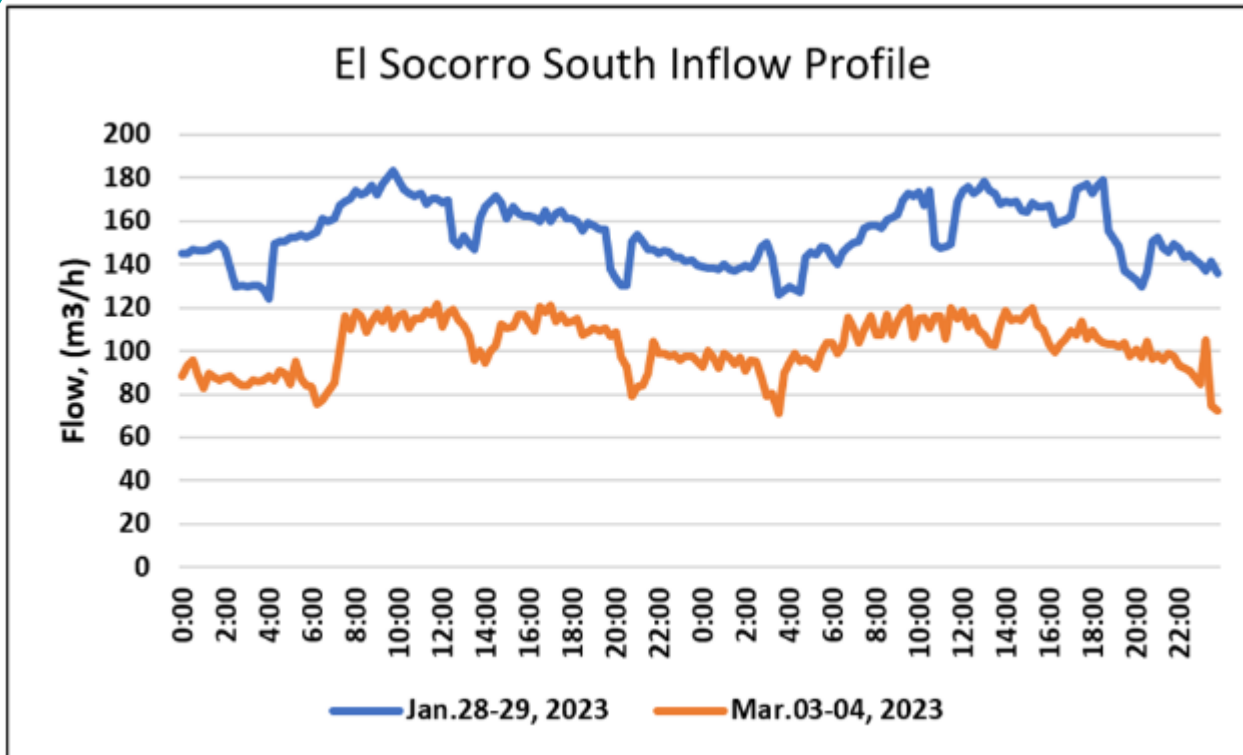
Replaced 4" valve at El Socorro roundabout



Pinpointing valve location



El Socorro South – Observations



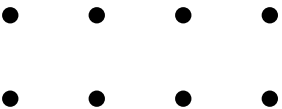
- Repaired 35 leaks
- Average flow rate Jan. 28-29 was 154.40 m³/h
- Average flow rate Mar. 03-04 was 102.23 m³/h
- Saving: 52.18 m³/h or equivalent to 11,480 IG/h
- Savings achieved at 61 psi

El Socorro South – Observations

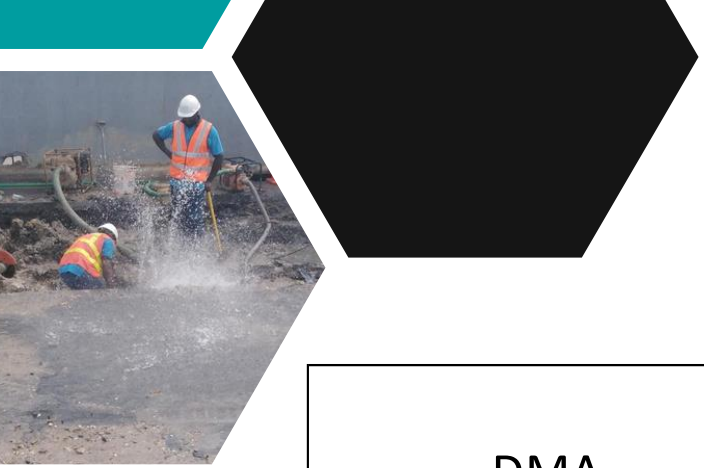


Average pressure is **61psi** – pressure reduction will further reduce losses, new leaks and extend life of assets
Pressure could possibly be reduced to **30psi** which means leakage will be halved, new leak will be reduced by about **50%**

SUMMARY VISUAL LEAK IN PILOT DMAs

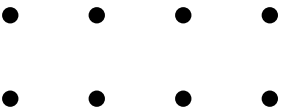


Leak Analysis as of 16th March 2023



DMA	Key Characteristics			Visual Leaks Found (Dec22-Mar23)		
	Mains Lm (km)	Customers (Nc)	Service conn (Nsc)	Mains	Service Connections	Internal (house plumbing)
El Socorro South	10	783	705	23	47	7
West Moorings	20	1,060	954	19	17	0
Factory Road	3.8	327	294	4	8	1
Blue Range	6.3	571	514	22	14	0
Total	40.1	2,741	2,467			
Total Leaks Found				68	86	8
Total Leaks Repaired				36	44	1
Outstanding Leaks				32	42	7
				47%	49%	88%

NATIONAL WATER BALANCE and KEY PERFORMANCE INDICATORS





WASA – National Water Balance (2022)

System Input Volume 247 MIGD 100%	Authorized Consumption 143 MIGD 58%	Billed Authorized Consumption 141 MIGD 57%	Billed Metered Consumption 45 MIGD / 18%	Revenue Water 141 MIGD 57%		
			Billed Unmetered Consumption 96 MIGD / 39%			
	Water Losses 104 MIGD 42%	Unbilled Authorized Consumption 2 MIGD 1%		Unbilled Metered Consumption 0 MIGD	Non-Revenue Water 106 MIGD 43%	
				Unbilled Metered Consumption 2 MIGD / 1%		
		Commercial Losses 24 MIGD 10%		Unauthorized Consumption 2 MIGD / 1%		
				Under-estimation of Unmetered Billed Consumption 14 MIGD / 6%		
				Customer Meter Under-Registration 8 MIGD / 3%		
		Physical Losses 80 MIGD / 32%				

Moving Forward

- “Doing nothing is more expensive than doing something”
- NRW is slowly increasing
- Pilot Study showed that:
 - Finding and fixing visual leaks reduced water losses
 - Not all leaks are visual – there are underground leaks that need locating
 - Proactive engagement in leakage location proved successful
 - Scope for pressure management is evident
- WASA’s NRW Vision
 - Adopting a structured NRW reduction program will free additional needs for extra water sources moving to a 24x7 sustainable water supply
 - Implementing institutional improvements to enable the organization to reduce carbon emissions, become resilient, agile, and adaptable to future challenges



A decorative border on the left and right sides of the slide, composed of several hexagonal tiles. The tiles contain images of water splashing, construction workers in hard hats and safety vests working on a site, and a solid black hexagon. The background is white.

THANK YOU

Kelvin Romain

CEO WASA

*Combating climate change through NRW
reduction*

Two horizontal decorative lines at the bottom of the slide, one on the left and one on the right. Each line is a solid teal bar with a row of small black dots underneath it.