



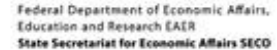
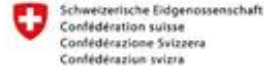
Cities Development Initiative for Asia

Tale of Two Cities: Pimpri - Chinchwad, India

Theme: Water Supply 24x7

Presented by:

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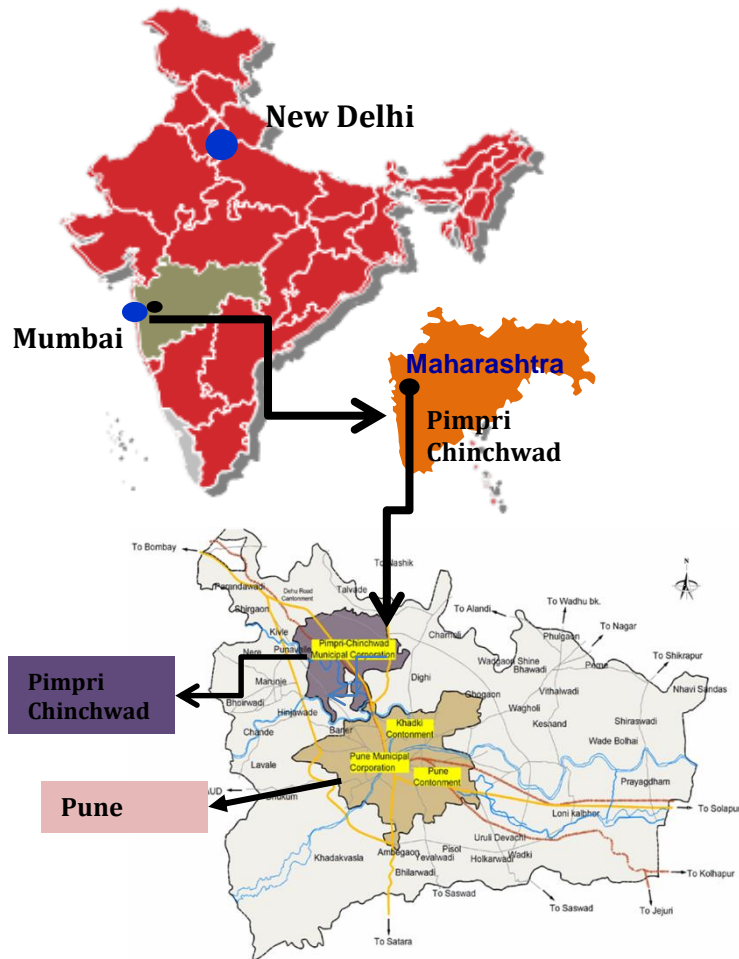


Contents

- Overview of the city
- Objectives and description of the project
- Before and After scenarios
- Results and conclusion



Overview of the city



- ❑ Establishment of Corp. :- 1982
- ❑ Area :- 177 sq. km.
- ❑ Population (Census 2011) :- 1.72 Million
- ❑ Current Population :- Around 2.1 Million
- ❑ Total Officers & Employees :- 7534
- ❑ Coverage of water supply connections : 87.2%
- ❑ Per capita supply of water (LPCD): 142
- ❑ Extent of metering of water connections: 97%

Objective and description of the project

To control physical losses and provide 24x7 water supply

Description of the project

- Zone establishment works
- Zone monitoring system
- Customer Survey, Meter Reading & Awareness Program
- Zone management
- Sharing of best practices and client training



24X7 Pilot Zone - Summary



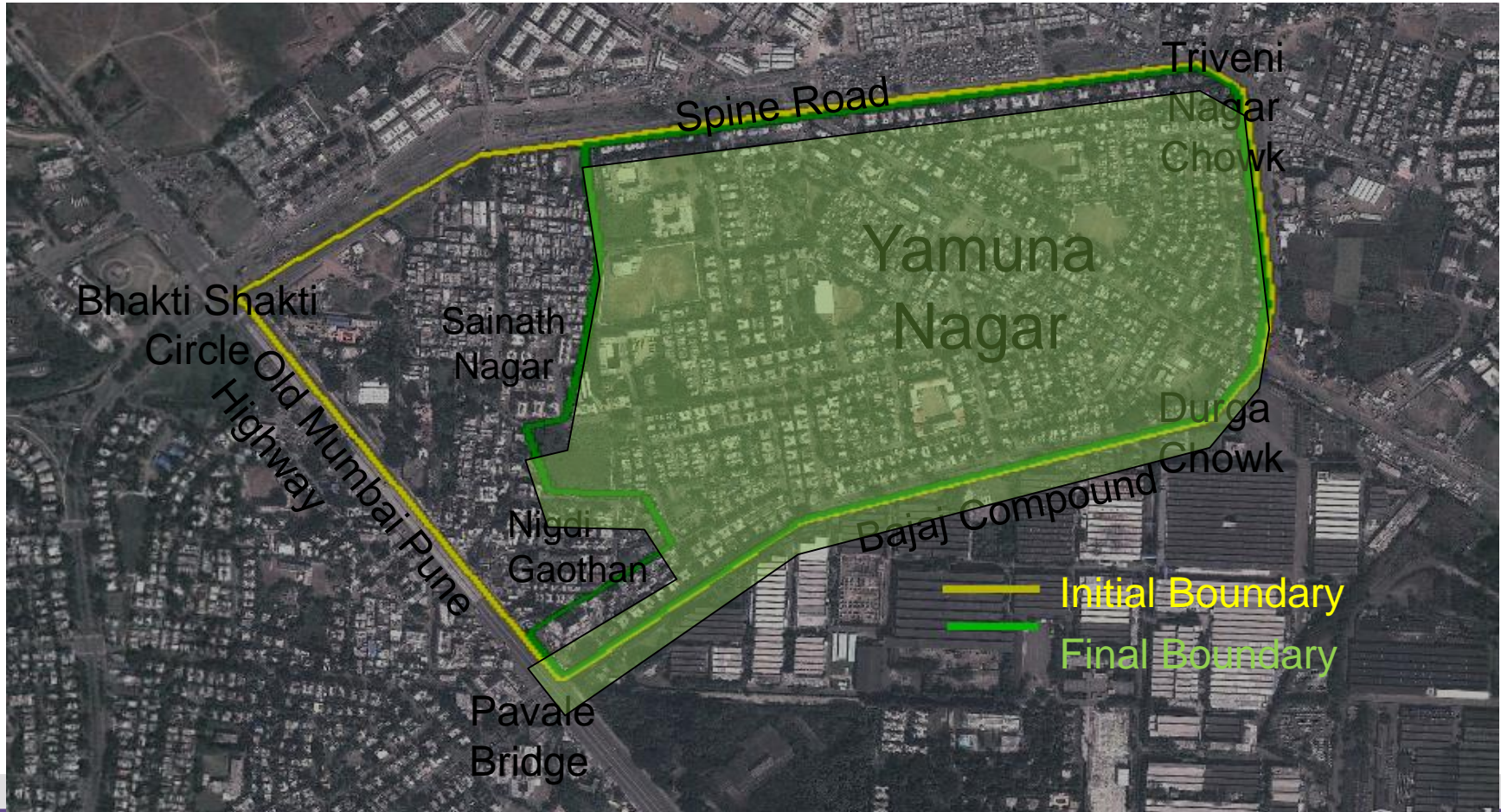
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Area : Yamuna Nagar

Connections: 2348

Population : 17023

Network Length: 20.3 KM



○ Network Study

- Network Survey, verification of information with existing and old maps, cross checks with old and new staff.
- Update of information on GIS
- Flow & Pressure measurements for understanding the network
- Planning of network changes for establishment of designed boundary

○ Customer Study

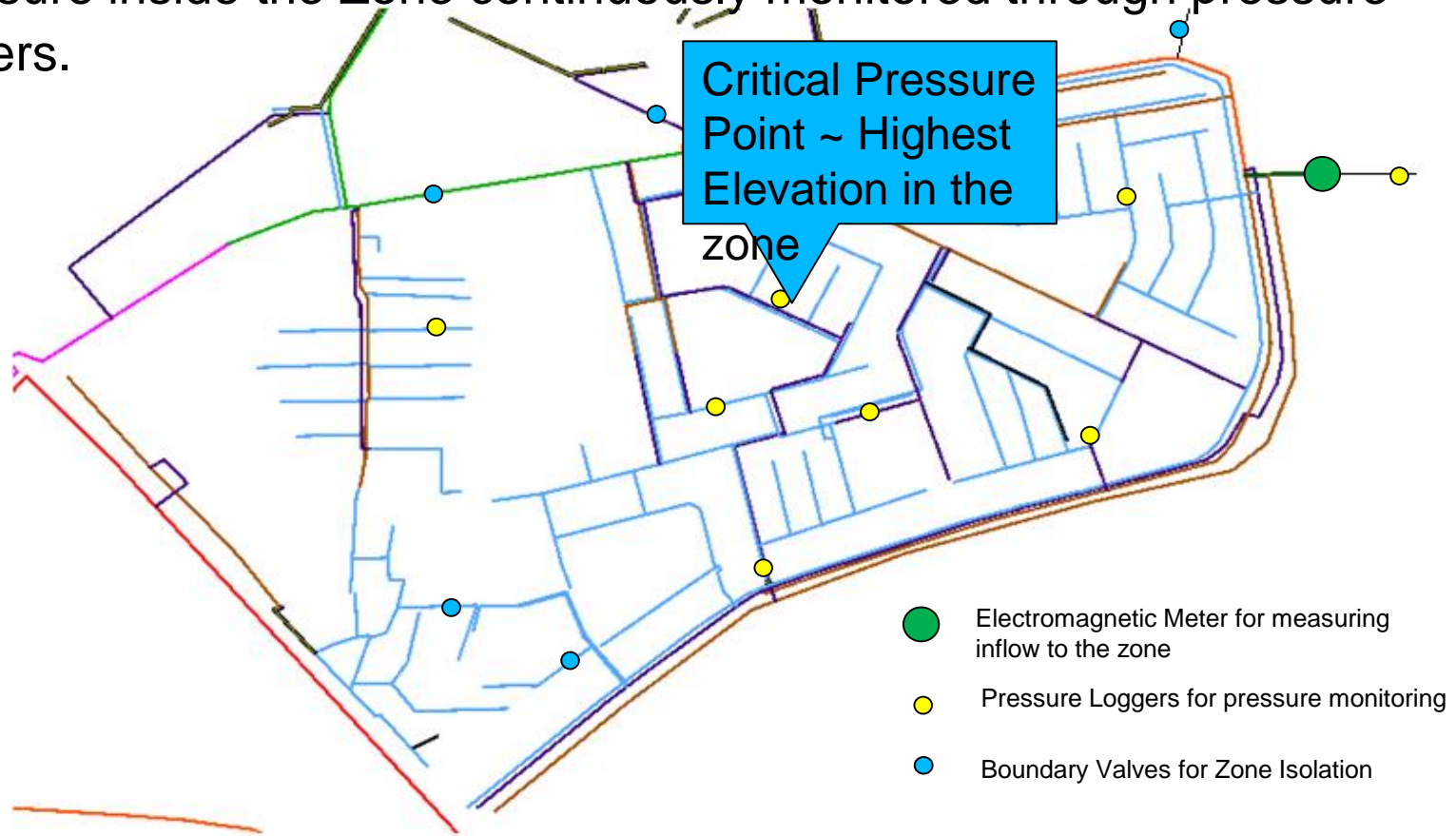
- Door to door survey for customer profiling in the zone
- Information on customer connections and water supply complaints

○ Hydraulic Isolation of the Zone

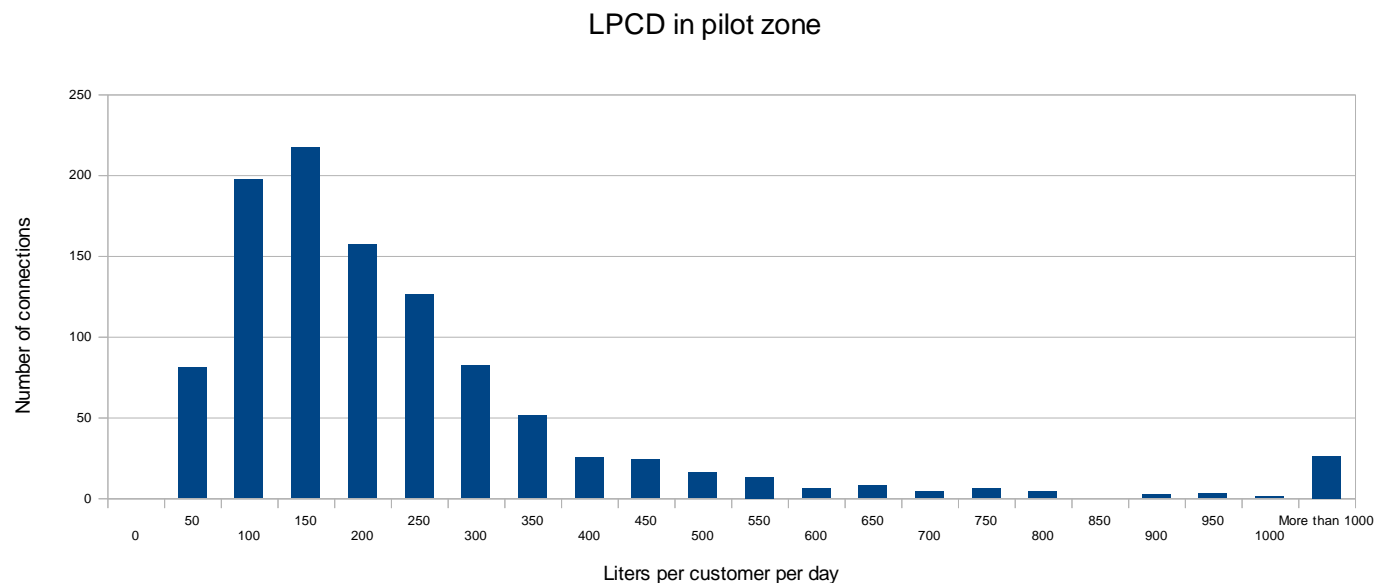
- Separation of supply sources for area inside and outside the zone boundary to sustain the zone
- Installation of boundary valves for establishment
- Pressure Zero Test, Helium test for confirmation of the boundary

Zone Monitoring System

- Inflow to the Zone measured with Electromagnetic Meter.
- Pressure inside the Zone continuously monitored through pressure loggers.



- Customer survey was conducted. Four meter readings taken before and after change over to continuous supply
- Flyers distributed for Customer Awareness on continuous supply
- Sample of results : 5.8 customers per connection, around 170-200 LPCD
- Average Consumption per Household: around 1.1 M³/Day
- Flyers distributed for customer awareness prior to continuous supply



○ Active Leakage Control

- Visible leaks surveys
- Invisible leak detection with Helium Technique and repairs

○ Source Planning for Continuous Supply

- Study on alternate supply points to the zone to enable continuous supply.
- Source changed from Elevated Service Reservoir (ESR) to Balancing Reservoir for continuous supply.

○ Pressure Management

- Average feed pressure to the zone reduced from 17 Mts (from ESR) to 5 Mts (from Balancing Reservoir).
- Average pressure in the zone maintained at optimum level, i.e. 5 Mts at critical pressure point.

Active Leakage Control

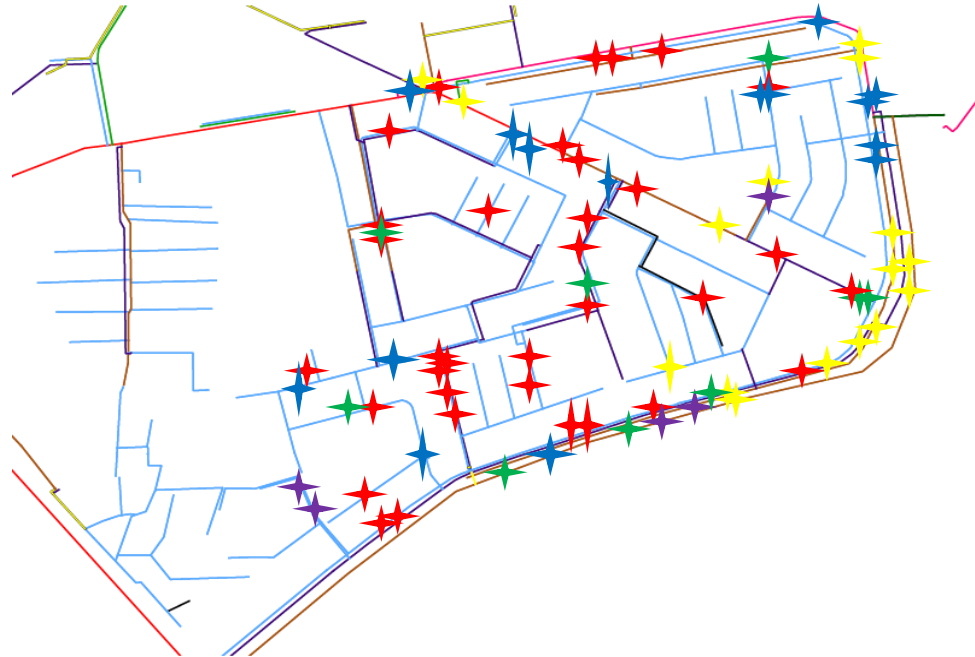


- Helium leak detection : Team from Suez formed by Jakarta experts
- Found total 122 invisible (underground) leaks in five rounds
- Visible leaks and customer tank overflows detected and rectified in the zone

Leaks found using Helium Technique



- Ferrule Leaks ★
- Service Pipe Leaks ★
- Joints Leaks ★
- Pipe Cracks ★
- Dry Pits ★



Sharing of Best Practices & Client Training

- Introduction of new leak repair practices – Ease at work and long life of Repair

- Leak Clamps for Pipe Cracks
- Leak Clamps for Pipe joints
- Strap Saddle for Service Connection



- Introduction of online meter sampling system

- Class C Meter with Automatic Reading Facility
- Remote transfer (Radio + GPRS) of Data



- Training of Client Staff

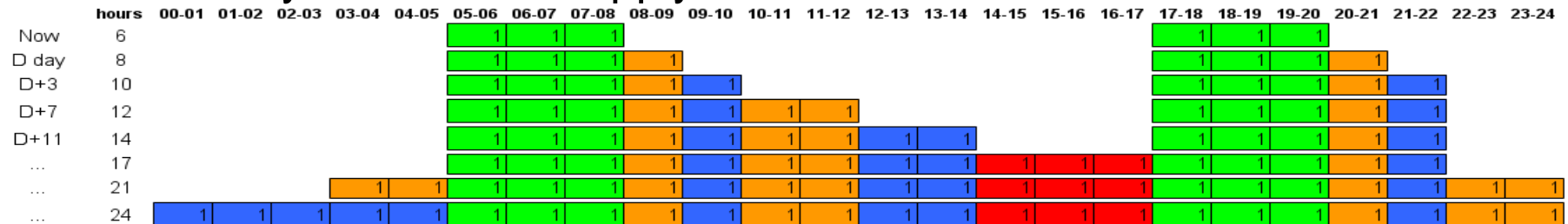
- On Equipments – Flow & Pressure Metering, Pipe & Cable Location
- On Practices – NRW Management, Hydraulic Modelling



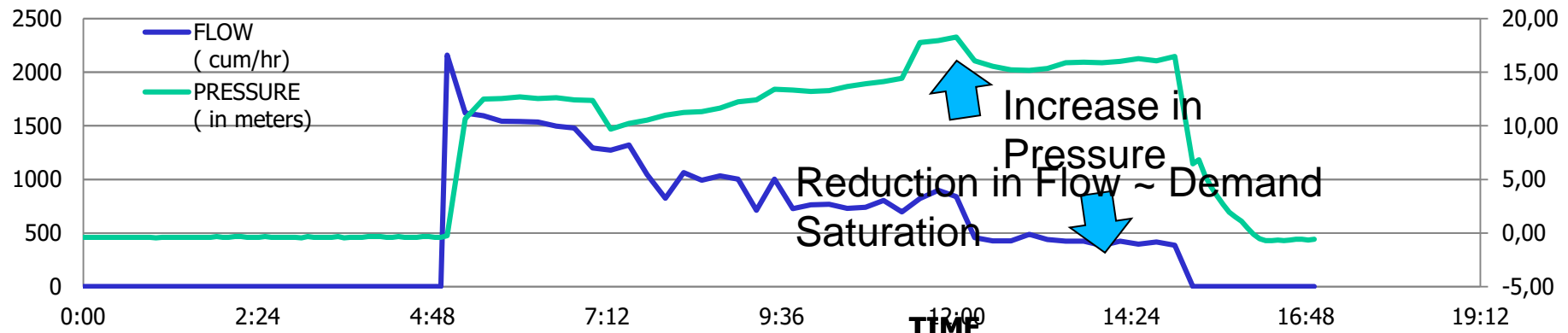
Change Over to Continuous Supply



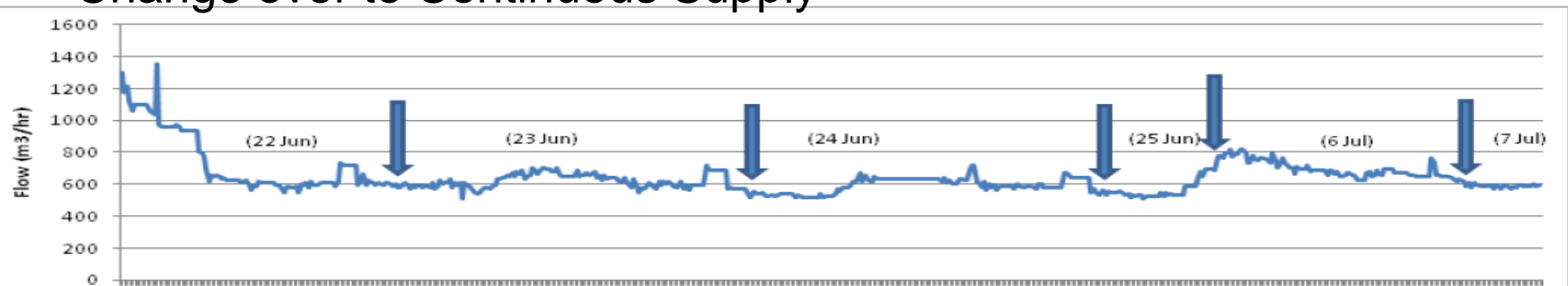
Gradually increase in Supply



Achieved Demand Saturation with increase in Pressure

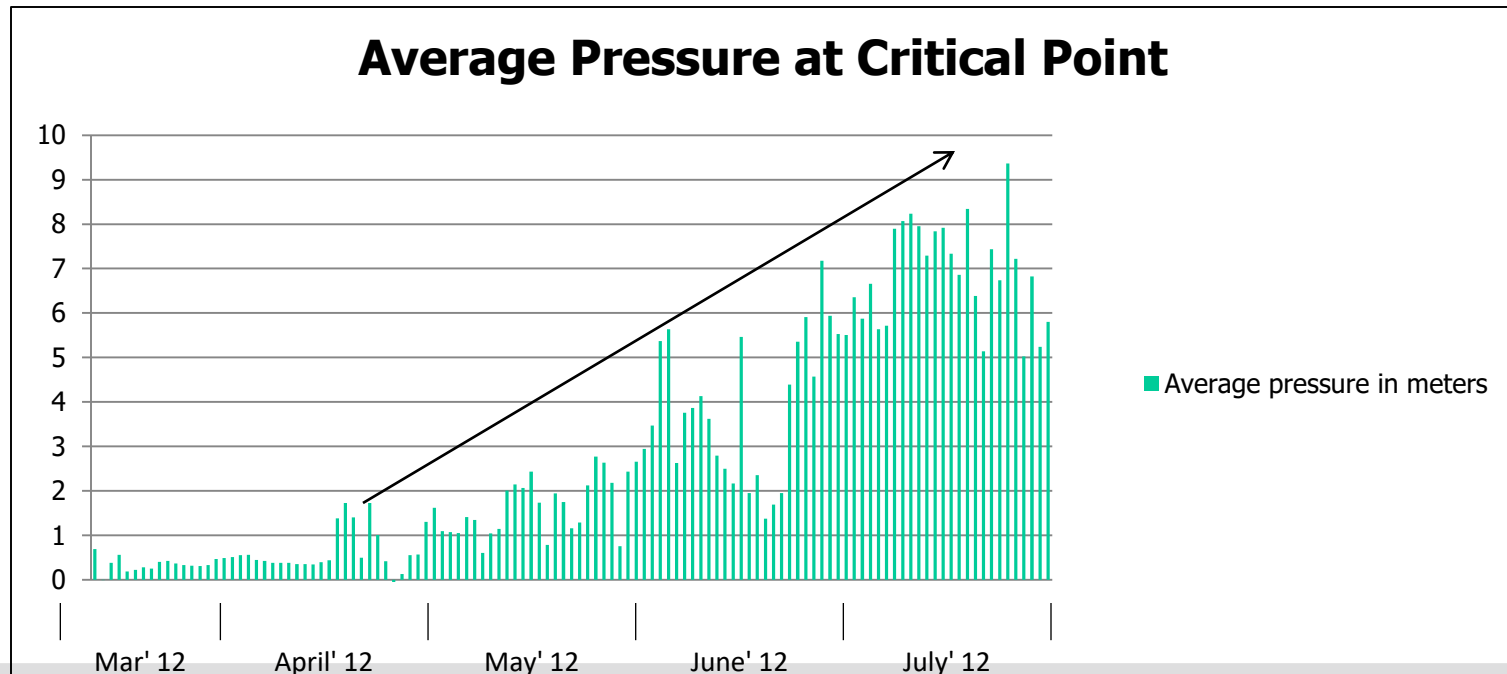


Change over to Continuous Supply



Impact of Continuous Supply

- Increase in average and peak pressure at Critical Points.
- Supply reliability. Reduced dependency on in house sumps and overhead tanks for customer.
- Reduction in pumping, energy cost for customers.



Before and After



Before

- Supply – 2 to 3 Hours twice a Day
- Major complaints from the area for low pressure and uneven supply
- Two stage pumping to supply the area. High energy cost
- Loss of pressure due to large flows in short time. Average pressure at critical points < 1 mts

After

- Supply – 24 hours since July 2012
- No complaints from area for low pressure or uneven supply
- Single stage pumping to supply the area. Reduction in energy cost
- Average pressure of 5mts and peak pressure of 7mts at critical point in the area

Results & Conclusion



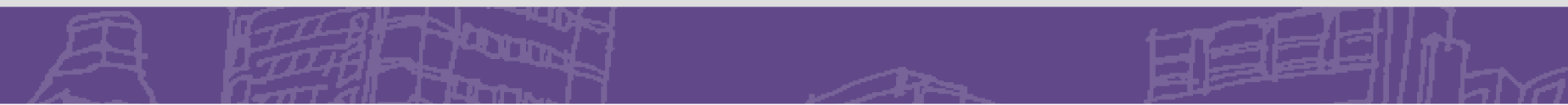
- The pilot study for continuous supply was successfully implemented.
- The methodology developed by SE to convert intermittent to continuous water supply requires limited investment.
- Focus on management of supply is the key.
- Asset Mapping, Customer Profiling, Zoning and Active Leakage Control to be implemented to improve demand and supply management.
- Customer Awareness Program is required to limit wastage of water.

Estimated 20% - 50% Water is lost in Transmission and Distribution in most cities before it reaches the Customer

- If Utility has to charge the full cost (including losses) double the actual production cost – Customer will have to pay
- When Utility adds production capacity (Treatment Plant) only half the actual volume produced – It actually delivers
- If Utility moves to Continuous Supply (Intermittent to 24 Hours) Physical losses will multiply increasing the demand in the system. –

How to Control Physical Losses and provide 24X7 Supply

- Sectorization of Distribution Network
- Active Leakage Control
- Pressure Management



Active Leakage Control



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Current – Leakage Management

- Customer Complaint on Leaks in Road
- Visible Leaks found by Network Operators during regular operations
- No invisible leak detection

**Reactive
Maintenance**

Proposed – Leakage Management

- Reduce ALR (Awareness, Location, Repair) time
- Actively find leaks to reduce losses
 - Visible Leak detection
 - Invisible Leak detection
 - *Continuous Monitoring – Keep the leakage levels low*
 - *Map the leaks – Inputs to decisions on Network Rehab*

**Active Leakage
Control**



Leak Detection Works

- **Visible Leak Detection and Repair**
- **Invisible Leak Detection and Repair**

Conventional Method - Acoustic Detection (Based on three basic Principles/ Requirements)

- Leak Noise – Requires water in the system, to create noise at leak point
- Quality of Leak Noise – Requires high pressure in the system, to detect leak noise
- No Background noise Interference – Detection is affected by background noise. Preferable to be carried out during Night Time, when it is less noisy

Advanced Method – Helium Gas based Detection (Suitable for Indian Conditions of Intermittent Supply)

- Leaks can be detected during period of 'No Supply'
- Leak detection possible even in low Pressure
- Detection can be carried out any time of the day
- Accurate pin-pointing is possible.



WATER SUPPLY PROJECT FOR PIMPRI CHINCHWAD CITY FOR WATER FROM ANDRA AND BHAMA ASKHED DAM AND ALLIED WORKS

- **To cater the demand of water for the city in the year 2045**
 - Government has sanctioned a water quota of 267 MLD per day from the Andra and Bhama-Askhed dam for the Pimpri Chinchwad City.
- **A Detailed Project Report was prepared by the PCMC through Maharashtra Jeevan Pradhikaran and the indicative cost of the project is about 76.059 Million USD**
 - The whole project will be carried out by the PCMC in various packages
 - Construction of the Water Treatment Plant of 300 MLD capacity at Chikli
 - Construction of the jackwell and the pumping station at the Andra Dam and providing & laying the rising main from this location to the Break Pressure Tank & Construction of Break Pressure Tank at Navlakh Umbre(Tal- Maval, Pune) for the capacity to hold the water from both the pumping stations Andra dam and
 - Construction of the jackwell and pumping station at the Bhama-Askhed dam, providing and laying the rising main from the jackwell at Bhama-Askhed dam to the Break Pressure tank
 - Providing and laying Gravity main from BPT to Water Treatment Plant at Chikhli

