

# Centrally Managed POU Treatment for Compliance with the Arsenic Rule

Orlando, FL

February 2003

# Centrally Managed POU

- Cooperative agreement between NSF and the EPA OGWDW
- Supplemental funding
  - NWRI
  - Kinetico
  - NSF

# Project Purpose

- Identify, measure, and record conditions for successful implementation of centrally managed POU treatment for compliance with the SDWA

# Project Management Group

- ASDWA (California)
- AWWA
- NRW (CRWA)
- NWRI
- NDWC
- WQA

# Issues

- Mandatory compliance in 2006.
- 4,100 small communities affected.
- First time EPA guidance for Point-of-Use treatment.
- Technology works in homes.
- Will it work for the community.

# Questions to Answer

- Will people use these devices?
- What are the real costs?
- Can the community manage them long term?

# Important Project Factors

- Community selection
- Equipment selection
- Monitoring
- Operation and maintenance
- Costs

# Community Selection

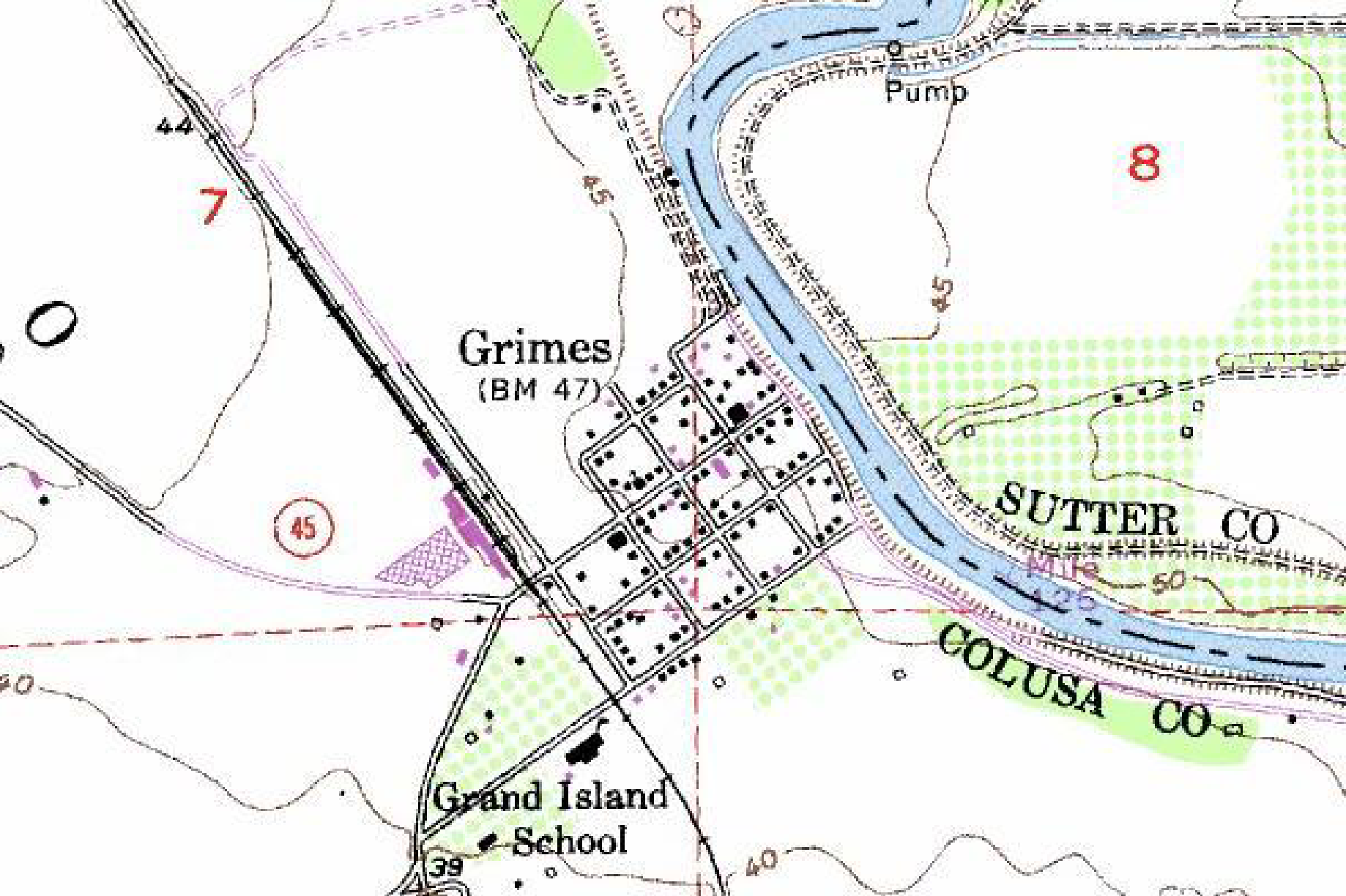
- Size (25-100 connections)
- As 20 – 50 (<50)
- Otherwise in compliance
- Water quality
- Local/state support
- Not a collection of homes

# Community Search

- Maryland
- Michigan
- Arizona
- Utah
- California





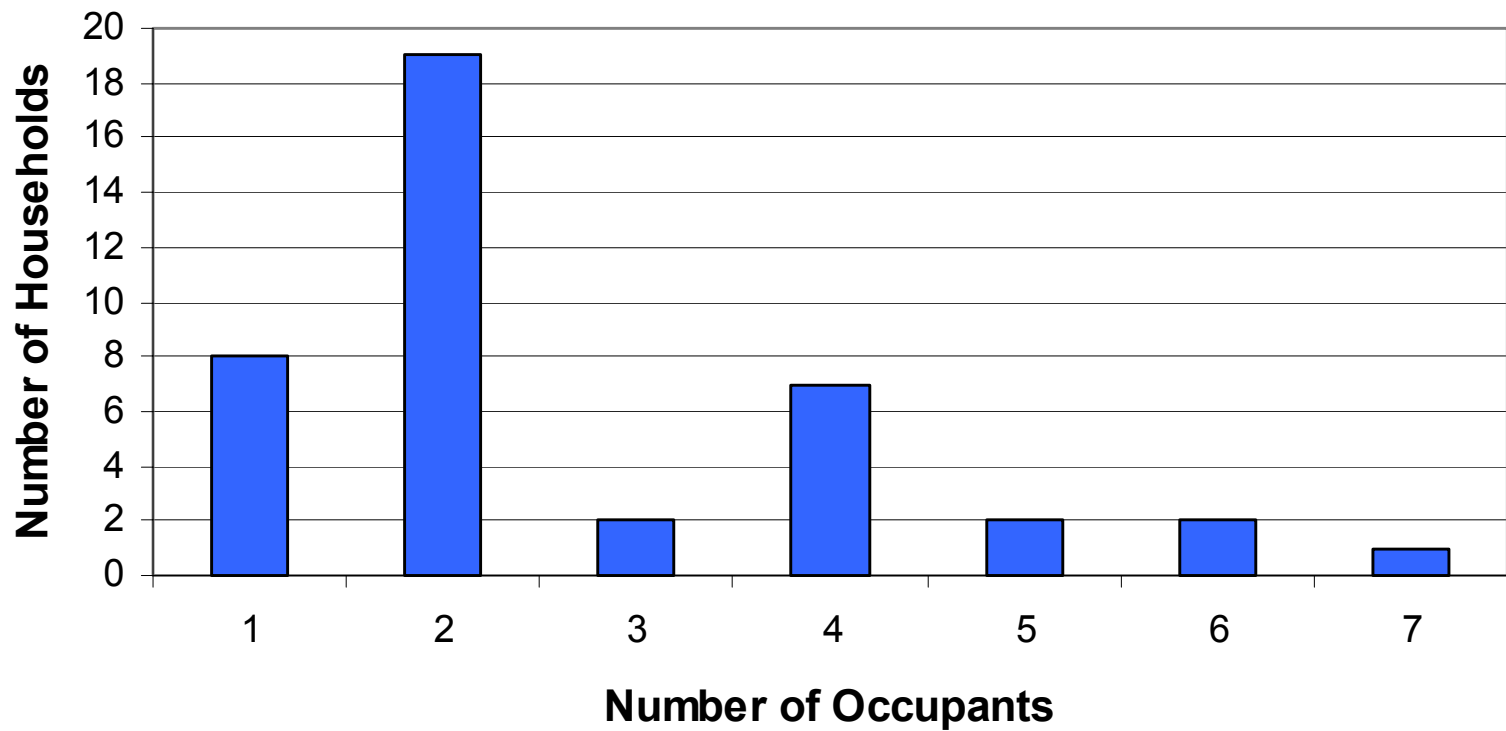


# Demographics

- 114 Installations, 11 non participants (3RO)
- 102 Residences and 12 other sites
- Other sites are school, post office, library, community hall, 2 restaurants, a market, and two other businesses
- Also a day care center at one of the residences.

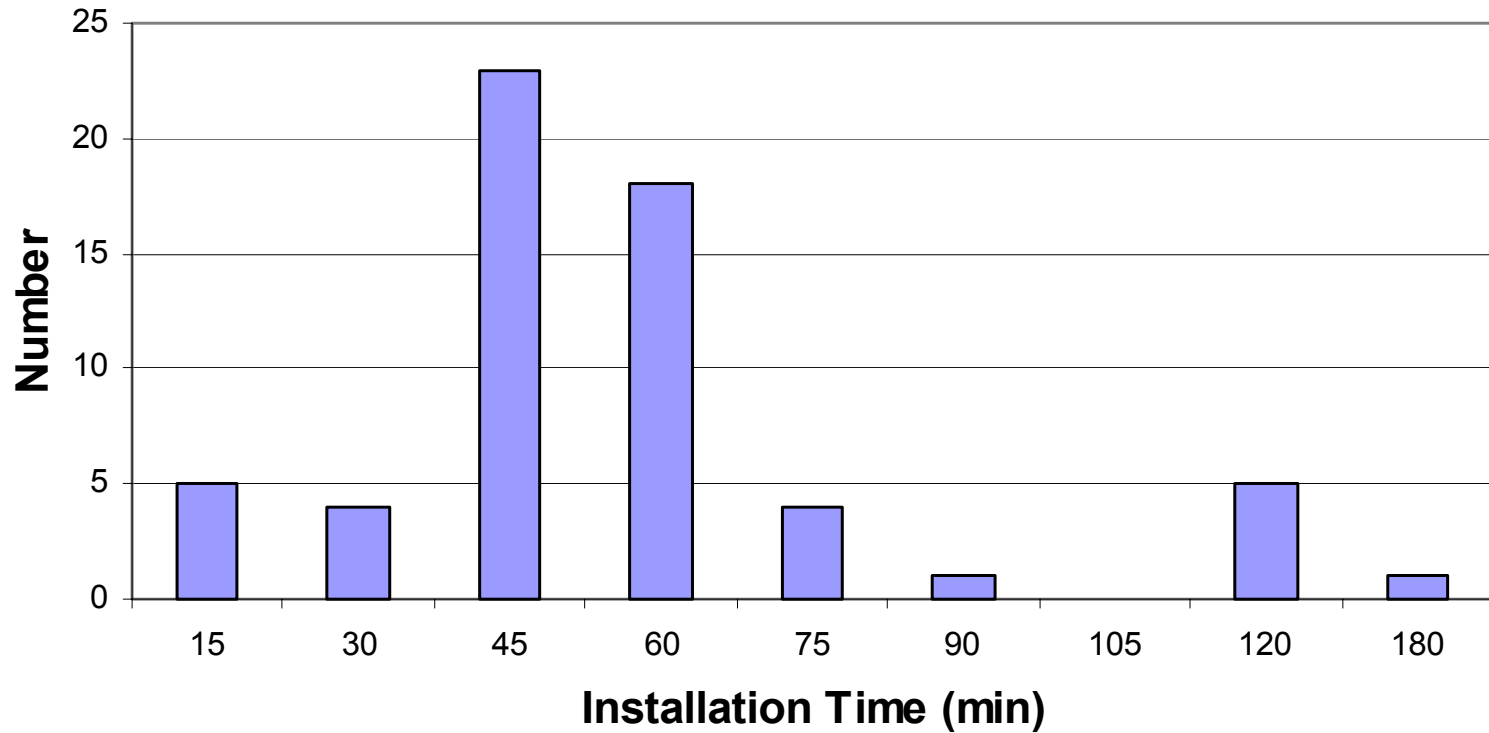
# Demographics

Frequency Distribution of Household Size



# Labor Costs

Frequency Distribution of Installation Times





# Equipment Selection

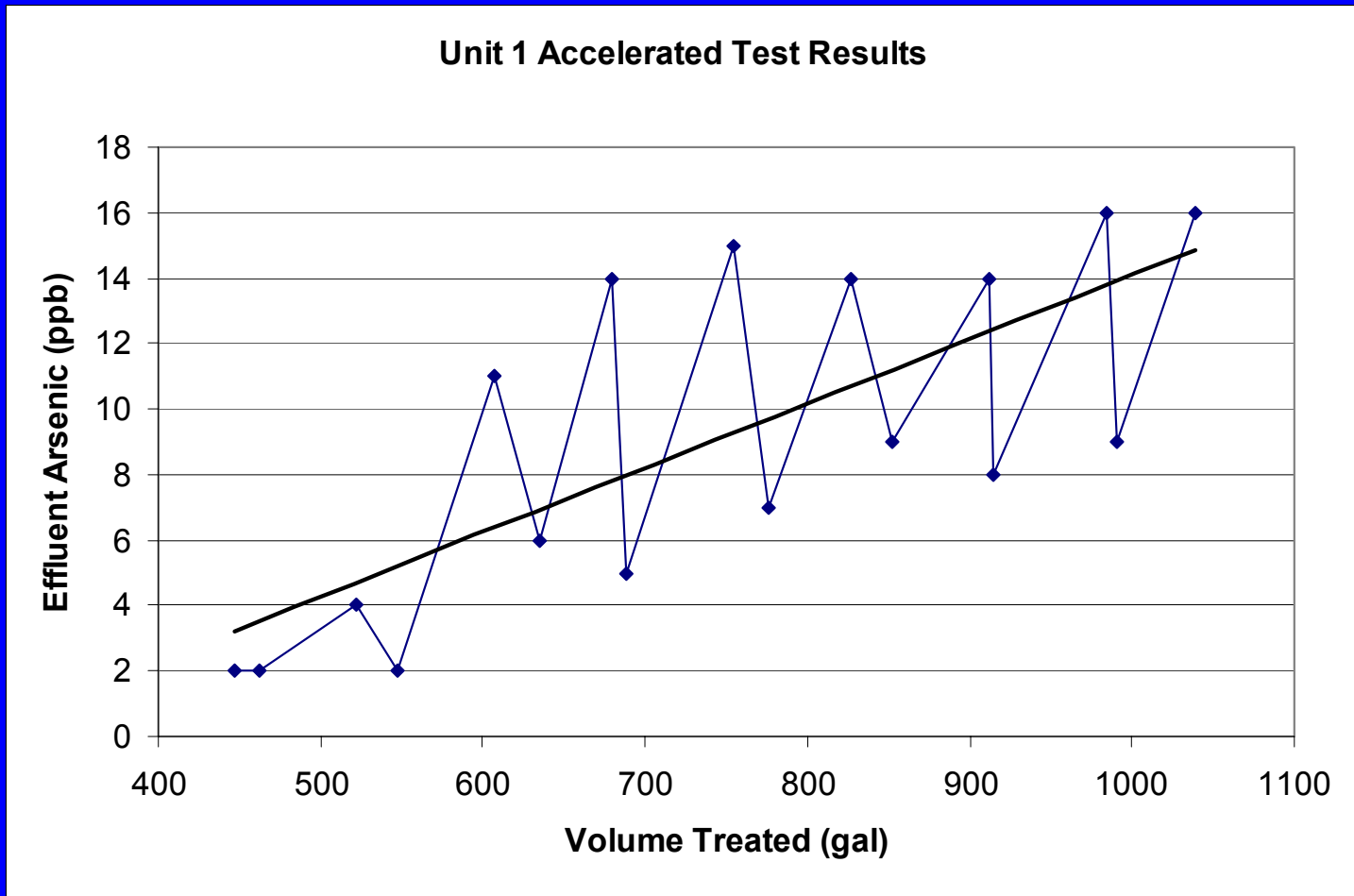
- Media preferred
- Fail safe/metering
- Local experienced service provider
- Warrantee
- Commercially available
- Certified
- Waste removal costs

# Equipment Selection

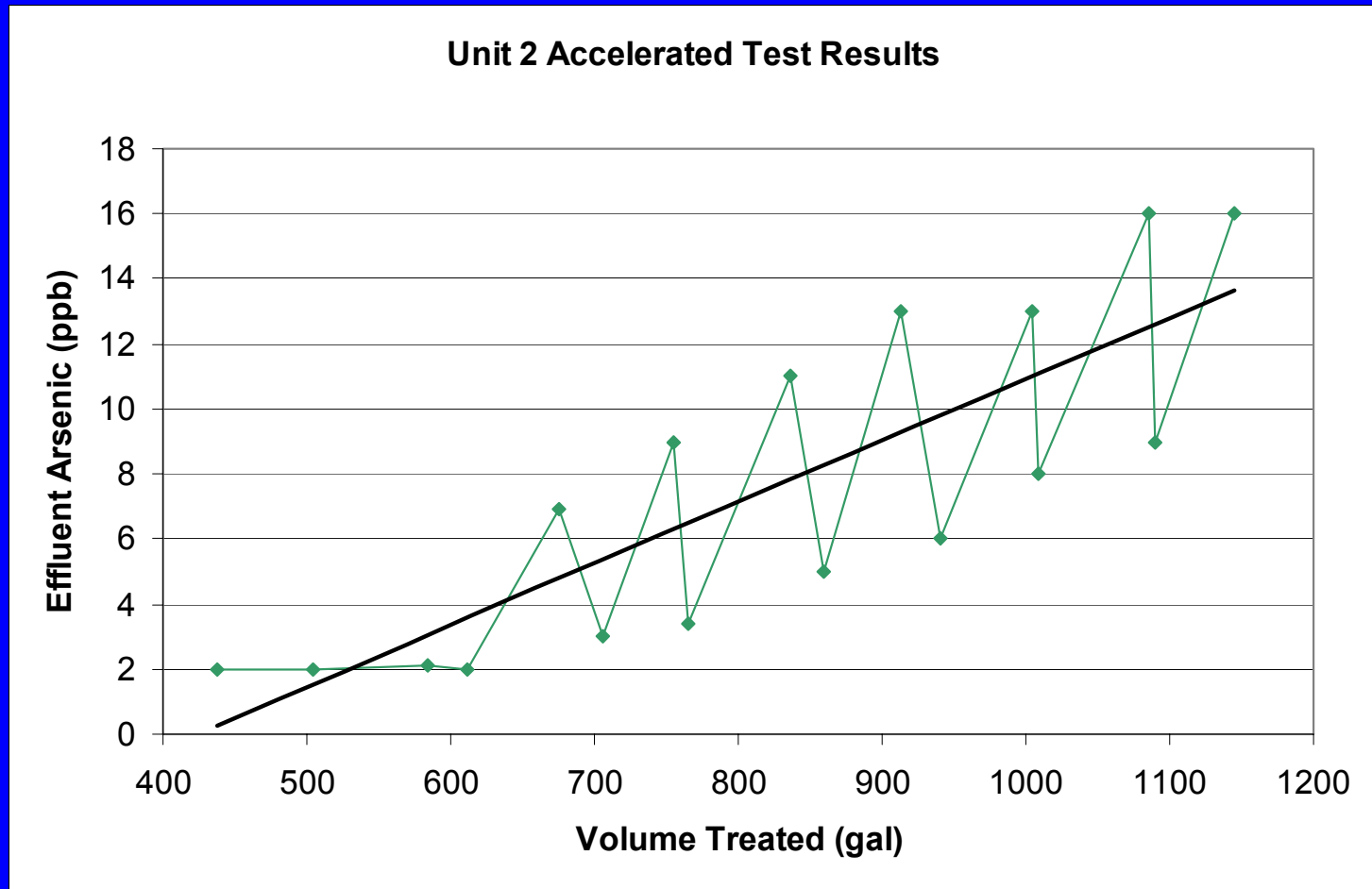
- Three finalists all using activate alumina
- Final selection decided by availability of experienced local provider acceptable to the community.



# Unit 1 Accelerated

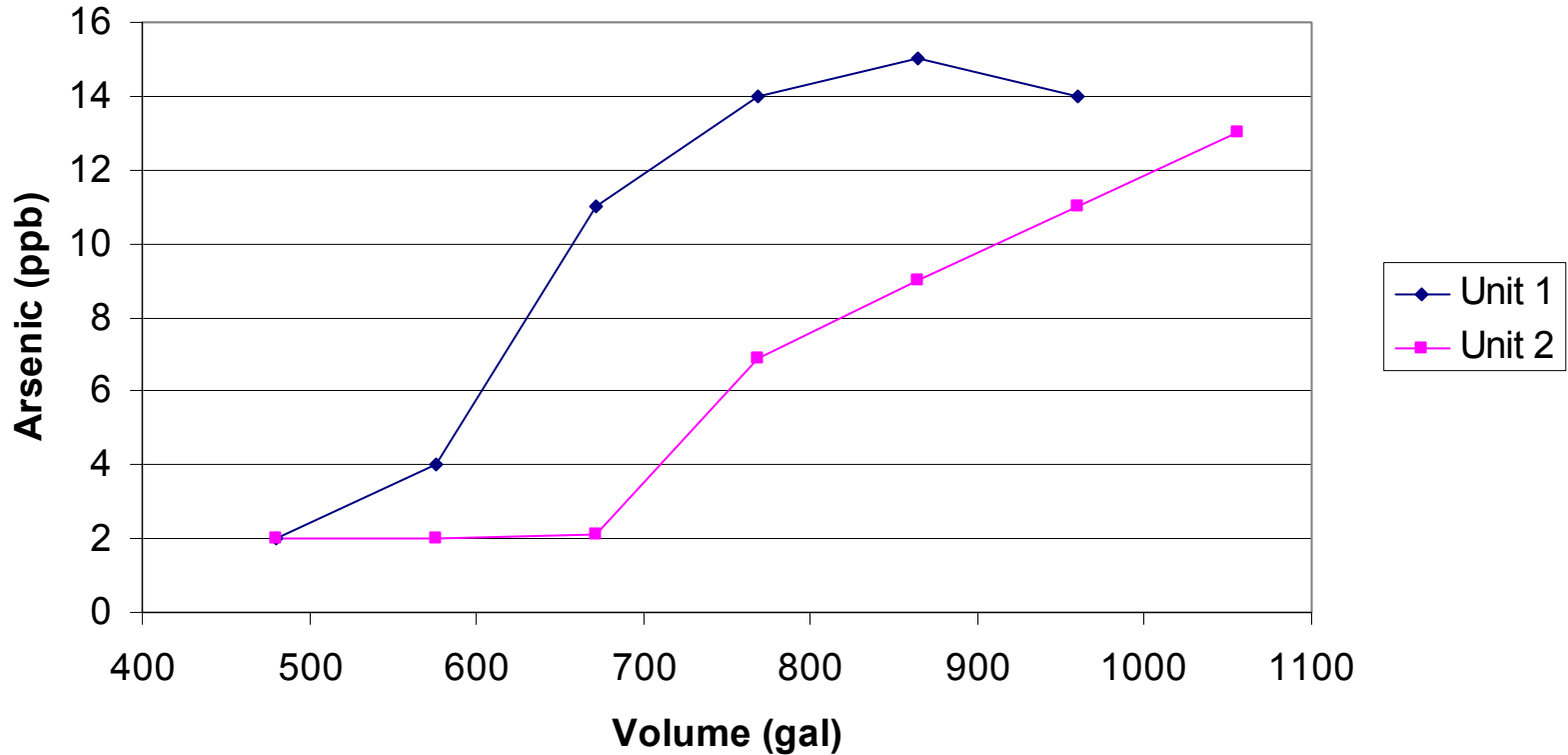


# Unit 2 Accelerated



# Modified Accelerated

## Accelerated Test Estimated Capacities



# Accelerated Test Results

- Units will exceed rated capacity on Grimes water.
  - AA units 800 – 1100 gallons
  - FE units 1600 gallons
- Actual breakthrough data underestimated because of flow.
  - PSI as low as 15, affecting meter readings
- Will be useful for WET test.











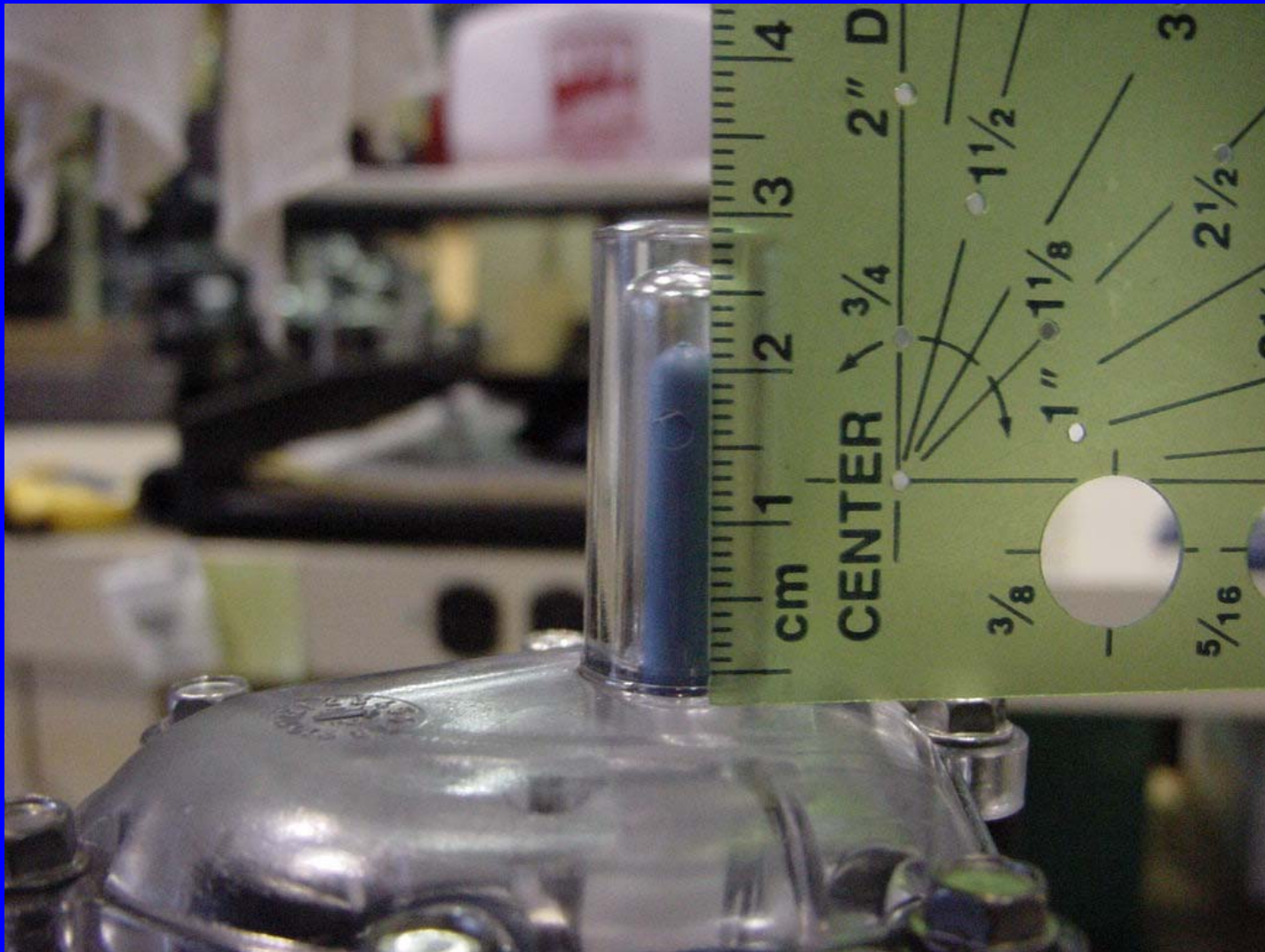


# Installation Issues

- Old plumbing, plumbing not conforming to codes
- No suitable location to install the faucet
- Difficulty finding shut-off valves
- Installers had to crawl under homes to connect lines to refrigerators
- Difficulty mounting filter under the sink

# Monitoring

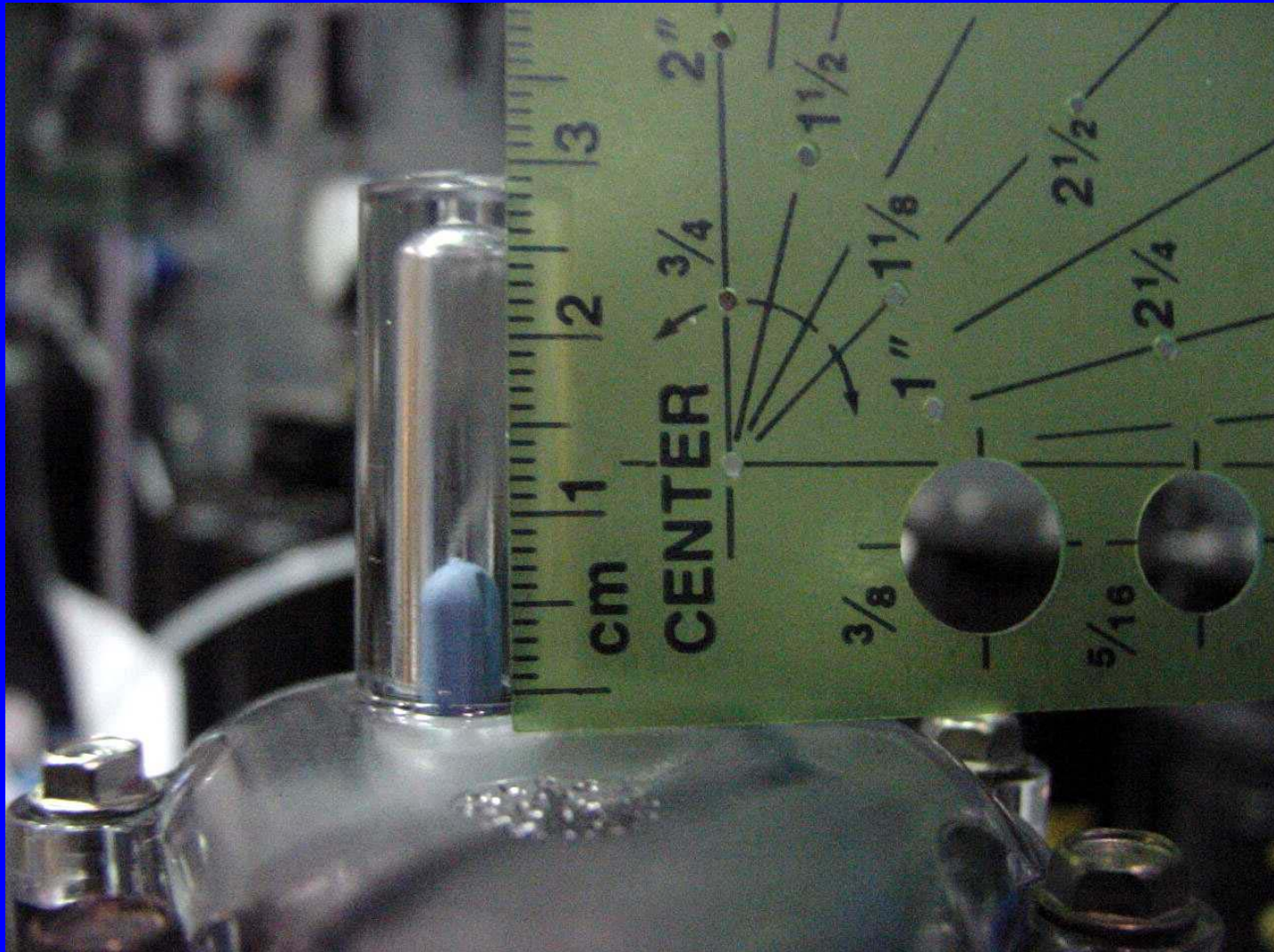
- 100 percent at installation
- Quarterly (weighted to end)
- Six month inspections
- Meters read at all sampling times
- Minimum fecal, hpc



Total Gallons = 0



Total Gallons = 300



Total Gallons = 500 & shut off



# Installation Sampling Data

- Arsenic hit of 10 ppb on a composite of two samples
- The two were individually analyzed, measured 26 ppb from coffee maker at Jack's Market
- Sampled again on 11/13, no Arsenic detected
- Installer probably sampled untreated water in reservoir

# Installation Sampling, cont.

- Sampled raw water throughout the day, throughout the distribution system
- Sampled treated water for Fecal Coliform and HPC analysis

# Installation Sampling

- Arsenic in raw water ranged from 22 to 30 ppb
- No discernable trends over time, no difference between AM and PM samples
- No Fecal Coliforms detected in any samples
- HPC counts ranged from 29 CFU/ml to >5700 CFU/ml

# Waste Disposal

- Cartridges passed California WET test (TCLP)
- Home disposal.

# Cost and O&M

- Document sustainable maintenance
- Document community acceptance
- Document compliance
- Document accessibility
- Document actual use

# Cost to Date

- \$43,410 POU devices and parts
- \$16,712 Installation labor
- \$4,417 Replacement cartridges
- \$3,350 Replacement labor

# Summary

- Most installations completed in one month
- 12 installations more difficult to schedule
- Initial sampling completed at installation, all units  $<2$  ppb As, no fecal.
- Final report December 03

# Summary Cont.

- Treatment units will belong to Grimes.
- California DHS and community to decide if this approach will work.
- Cartridges will be provided to Grimes at a discount for three years after study.