ESRI SERUG Conference

May 3, 2007

ArcGIS for Development of Unidirectional Flushing Programs

Keith D. Hodsden, P.E.

Senior Client Service Manager

MWH Soft

Kelcia D. Mazana, E.I.

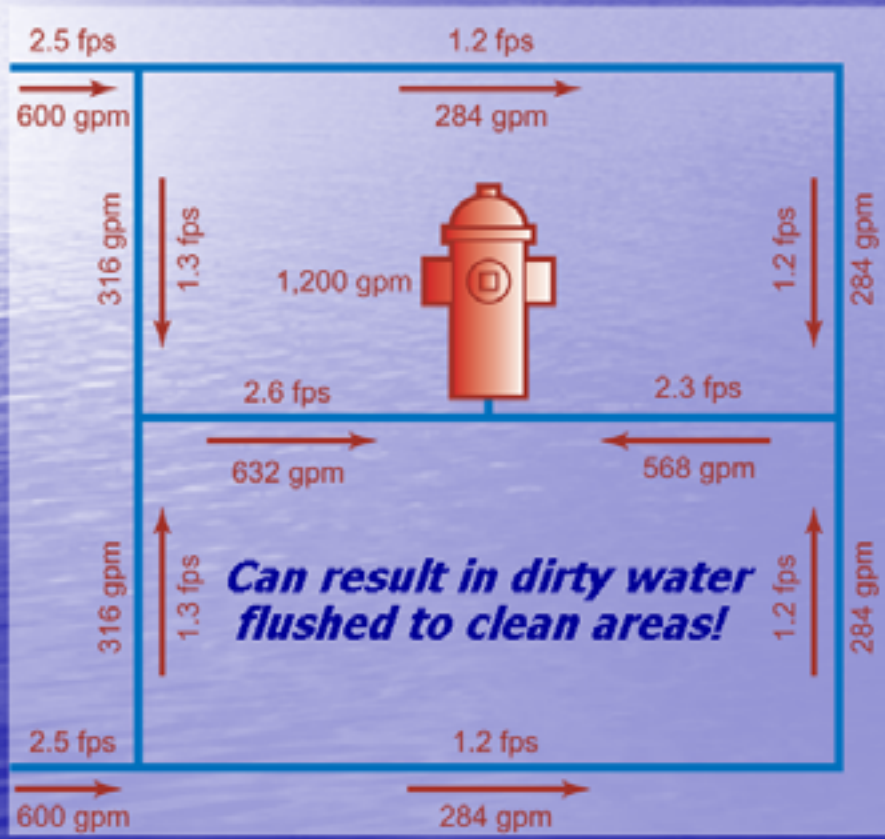
Project Engineer

REISS ENVIRONMENTAL

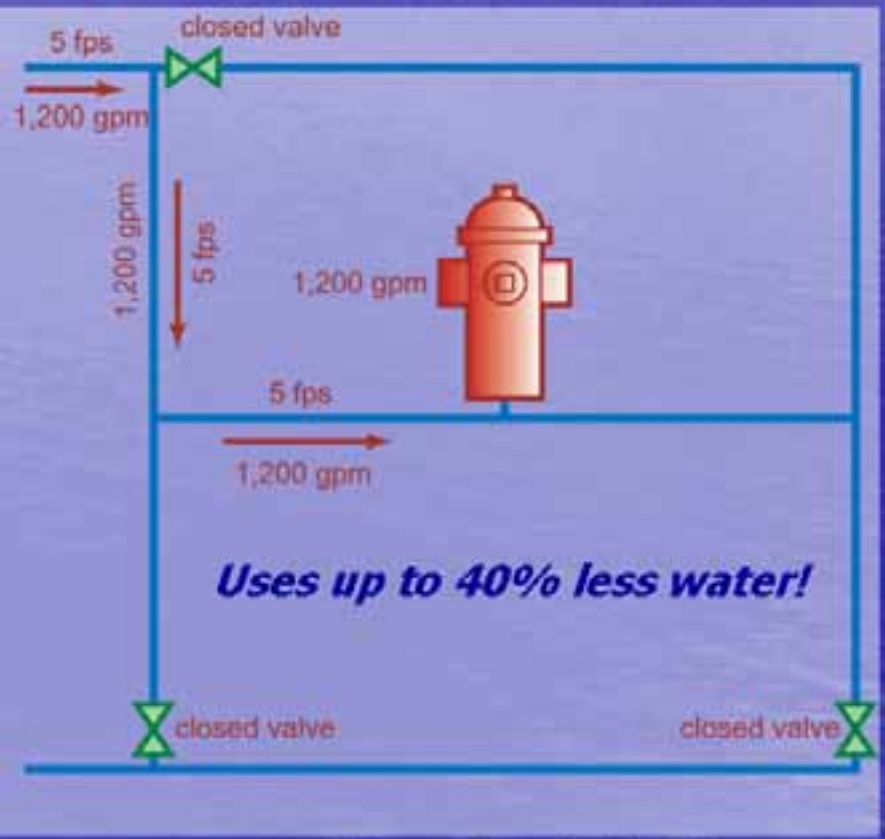
Flushing Methods to Clean Mains

- Water from all directions
- Low flow velocities
- Less scouring
- Don't control flushing direction

- Water channeled
- Higher flow velocities
- More scouring and better cleaning
- Systematic valve operation



Conventional Flushing



Unidirectional Flushing

Unidirectional Flushing Benefits

Hydraulics

- √ Helps control corrosion
- √ Removes sediments w/o damaging pipes
- √ Restores system flows and pressure
- √ Restores hydraulic capacity of mains
- √ Prolongs system life
- √ Reduces CIP and operational costs

Water Quality

- √ Restores disinfectant residual
- √ Reduces disinfectant demand and DBP concentrations
- √ Curbs bacteria regrowth
- √ Dislodges biofilm
- √ Eliminates taste and odor problems
- √ Improves water quality
- √ Diminishes potential for waterborne disease outbreaks
- √ Assists in meeting regulatory compliance

Unidirectional Flushing Steps

- Test/Exercise/Identify valves & hydrants (field)
  - Complete any needed repairs
- Divide water distribution system into flush zones (office)
- Set targets for flushing velocities (office)
- Develop step-by-step flushing sequences (office)
- Create maps for each flushing sequence (office)
- FLUSH! (field)

Advantages of ArcGIS

- Spatial Analysis
  - Joining hydrant/valve layers to UDF model
  - Finding appropriate valves
- Model Building
  - Extracting elevation data
  - Calculating hydrant lateral length
- Data Integration
  - Easily import critical data for hydrants and valves
- Visualization & Results Presentation
  - Visualizing flush zones and sequences
  - Developing field journal (Flush Book)