



Proper System Flushing



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Is your plant compromised ?



**Without a proper flush, or cleaning, we take a
SIGNIFICANT chance of damage and lack of efficiency.
Energy savings lost !**





University District Plant

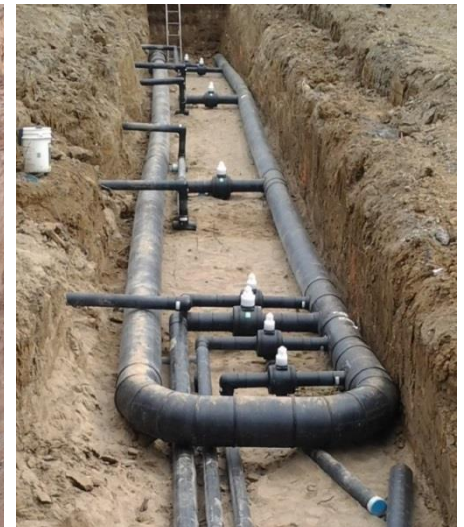


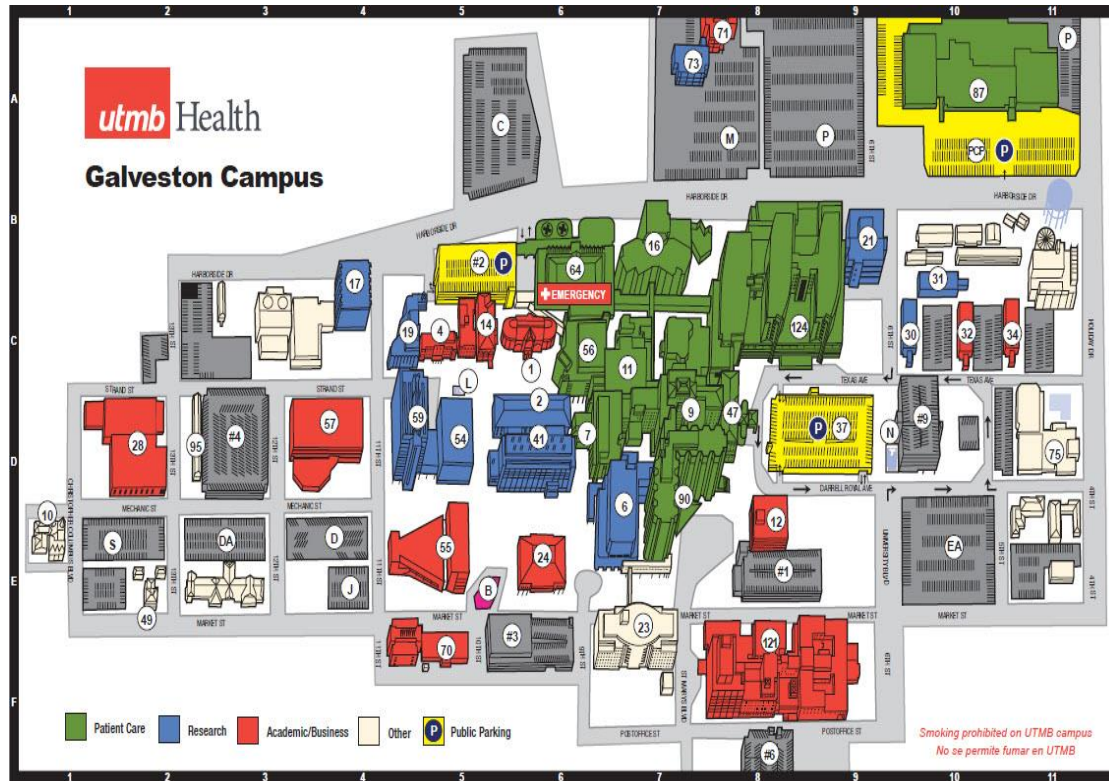
PROTECT
YOUR
INVESTMENT

- Any proper flush operation includes moving water at a high flow velocity. Chemical Passivation and clear water flush.
- “Based on the comment from the mechanical contractor, there is no way they reached the required velocity with a fire hydrant pushing water through a 16” pipe 1700’ long.”

Things that get in the way of Proper FLUSHING

- Hassle to Mechanical Contractor
- Specifications all over the map !
 - Feet per second
 - Passivation Duration
 - Filtration
 - Procedures
 - Bypasses
 - House Pumps
- Lack of consistency





- **Upgrade & Harden Campus Mechanical Plant**
- **Place in service a 36" Underground Steel Chill Water line that had been sitting vacant for over a year.**
- **Flush and Clean @ 5'/sec or 17,000 GPM**
- **50 Micron Filtration, Cleaners, leave with Inhibitors**



- *Expose lines and remove bypass*
- *Access flush ports*





Mobilize HDPE Flush Connections for Supply & Return and complete fusion onsite



- ***Construct HDPE Flush Connections for Supply & Return***
- ***Install***





Install Connections



Install Supply and Return Manifolds



Mobilize Pumps & Filters



Connect and Prep System





***Load 50
Micron
Filtration***



- *Install drain lines and make up water*



- *Accommodate Personnel Access*



- *Clear Water Flush*
- *Filtrate & Passivate 48 Hours*
- *Filtrate & Clear Water Flush*





Results!

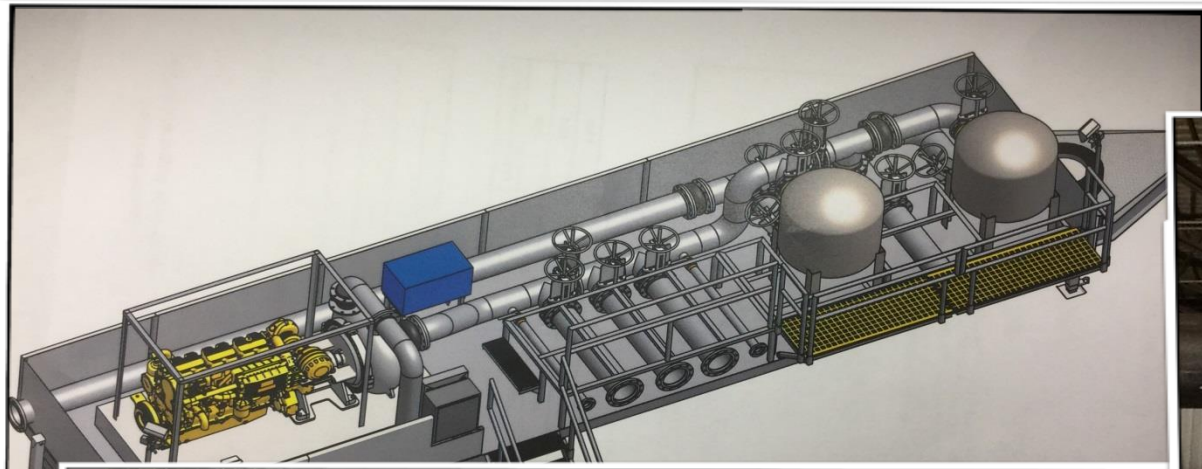
FLUSHING MEANS & METHODS

- *Clear Water Flush – 5 - 7 ft/sec
50 micron filtration – 1 hour*
- *Cleaning & Chemical
Passivation – 3 – 5 ft/sec ... 24
to 48 hours*
- *Final Clear Water Flush – dilute
the cleaning chemicals out and
use 5 micron filtration – tested
complete*



**NASA Mission Control
Houston, Texas**

Patent Pending - Self Contained Flush Unit – Class 601

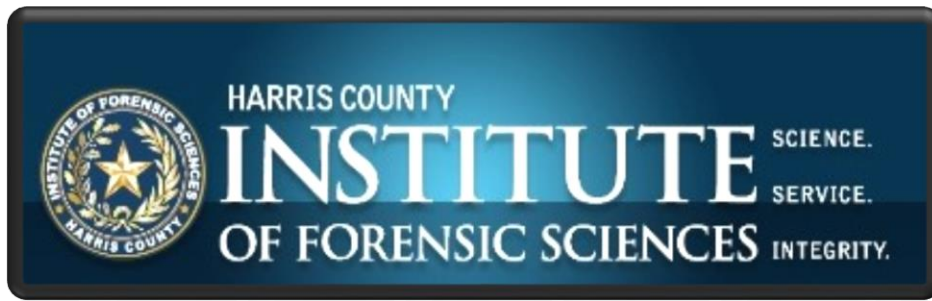


TEXAS A&M UNIVERSITY

STUDENT APARTMENT COMPLEX CONNECTED TO PLANT

- 3 separate units
- Hot & Chill Water Combined
- 6" & 8" Steel
- Aquatherm piping
- 5' ft/sec – 24 Hours
- Class 402 with Hose Connections

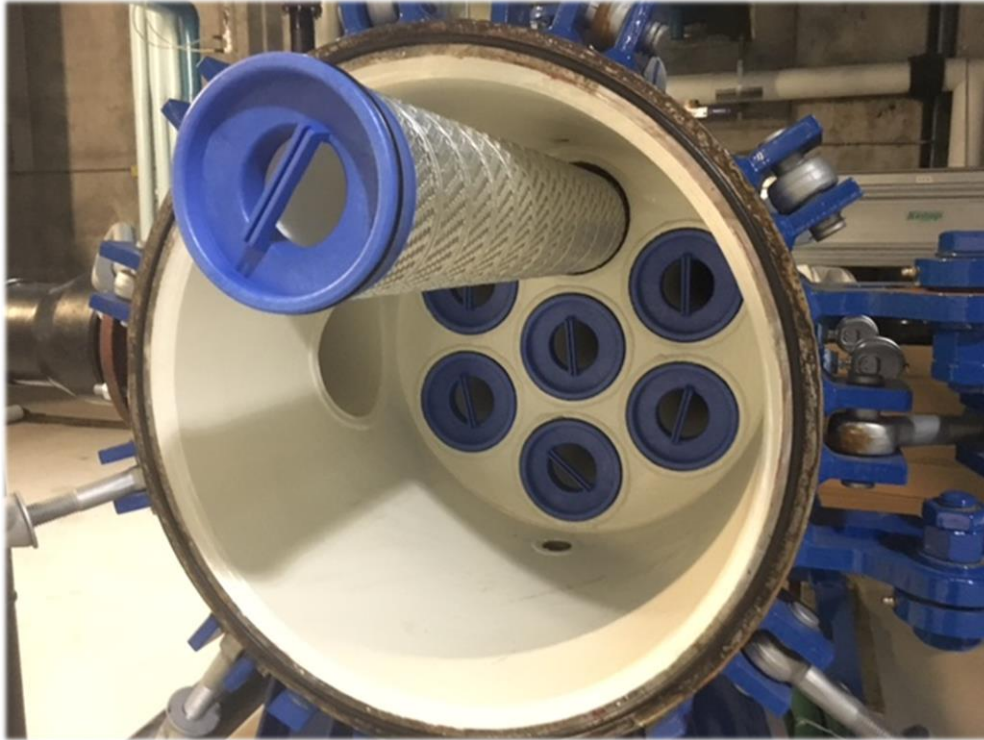




- *6" HDPE Connections*
- *Dual 21k Frac Tanks-
Water Batteries*
- *Class 601 Flush Unit*



If the train has left the station



- *Evaluate what is in your central plant*
- *Plant does not have to go off line*
- *Test with side stream filtration and / or leave in place*
- *Insure future flushes are done on new connections*
- *Results*
 - *reduce maintenance costs*
 - *energy savings*
 - *lengthen equipment life cycle*



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The End