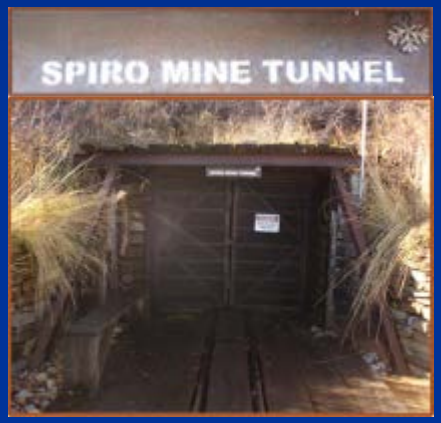
Project Update: Accumulation and Release within the Distribution System: Evaluation of Mechanisms and Mitigation



Spiro WTP

Judge Tunnel

Kyle MacArthur,
Water Operations Team Leader

Michelle De Haan, Water Quality and Treatment Manager

September 5, 2013

PARK CITY
1884

Project Background

- March 3, 2013 Council authorized City Manager to execute Water Research Foundation (WaterRF) project
- Metals accumulation and release within the distribution system: evaluation of mechanisms and mitigation
  - Project manager: WaterRF
  - Researchers: Confluence Engineers, USU
- Funding: City 200K; WaterRF 175K; USU 100K; In-kind from researchers and City

Work Completed to Date

- Industry Workshop: June 3th; 60 participants
  - Water systems throughout Utah
  - EPA Region 8
  - 10 from the Utah DDW
  - AWWA Regulatory Affairs Office (DC)

Monitoring

- Three types of monitoring conducted to better understand pipe scale accumulation and release mechanisms
  - Water source samples
  - Monthly distribution system samples at ten distribution system locations
  - Flushed solids/film
    - Very light loose particles of film dislodged by the camera body
    - Large solids not found indicating high velocity flushing may be effective, since the Water Dept. has increased use of practice twice a year in specific portions of town

Pipeline Videoing/Flushed Solids & Film

Recent Water Department Activities

- Repurposed Judge Tunnel water
  - Supports goal of reducing metals accumulation in distribution system
  - Prepares for DDW required 2014 compliance deadline to reduce antimony concentrations below drinking water standards
- Working with DWQ to develop permit limits and compliance periods for the Judge and Spiro Tunnel discharges

Recent Water Department Activities

- Long-term treatment plan
  - Includes treating Judge and Spiro water near the Spiro WTP, at Quinns Junction WTP or a combination of the two
  - First project: Pipeline to convey Judge Tunnel water to vicinity of Spiro WTP by end of 2015

WaterRF Upcoming Activities

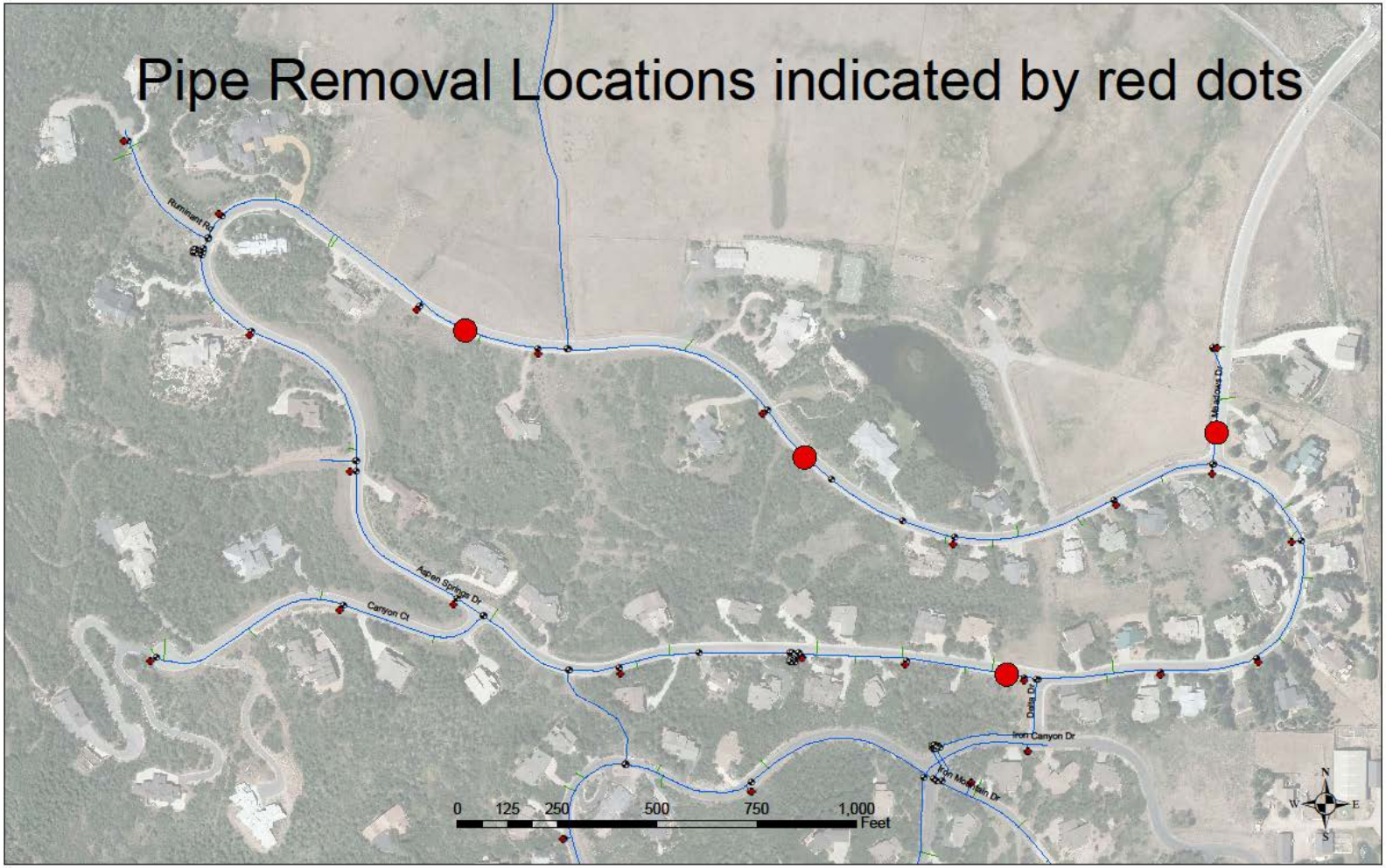
- Conduct pipe cleaning comparison and cost-benefit analysis for high velocity flushing, swabbing, and ice pigging
- Pilot test areas
  - 2500-2700 block of Aspen Springs Dr
  - 100-700 blocks of Park Avenue and Woodside Avenue

Pilot testing schedule

Activity	Date(s)
Hydrant preparation	Sept 2-20
Pre-testing pipe extraction	September 16-17
Preliminary unidirectional flushing	September 18-20
High velocity flushing trials (am)	September 23
Swabbing preparation (pm)	September 23
Swabbing trails (all day)	September 24
Ice pigging preparation/making ice at QJWTP	September 24
Ice pigging trials (all day)	September 25
Post cleaning pipe extraction and hydrant reassembly	September 26-October 4

Park Avenue test area

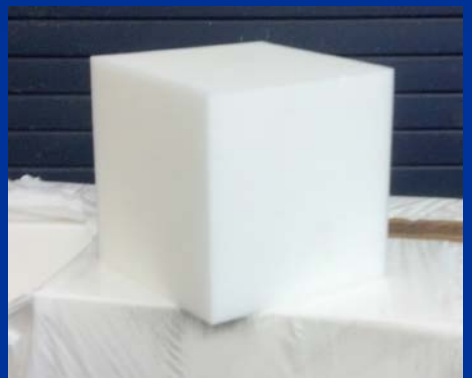
Aspen Springs Test Area

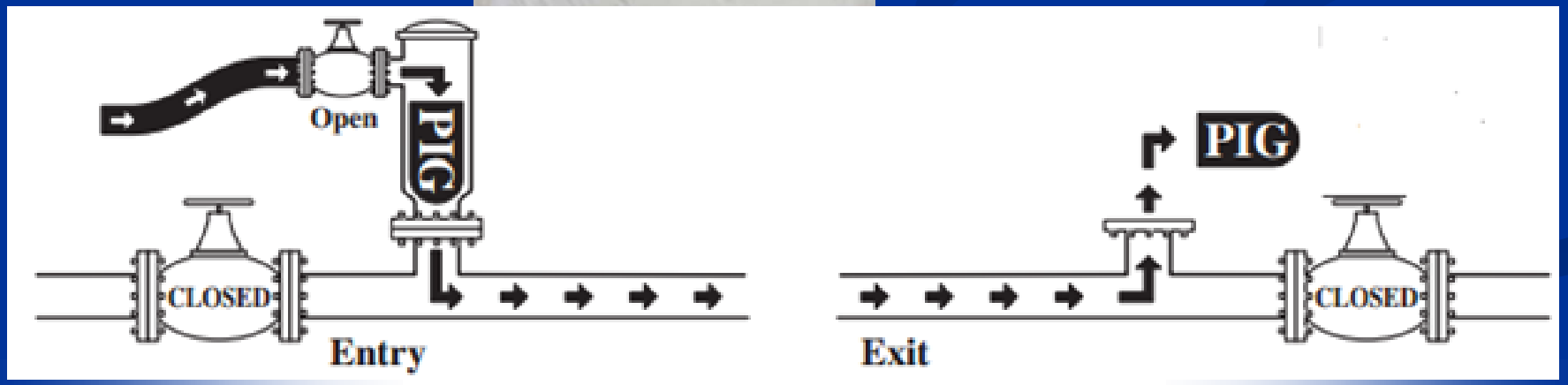


Flushing

Swabbing

- Liquid to be stored for USU analysis





Ice Pigging

- Ice Pigging harnesses the characteristics of a semi-solid material

- **An ice pig is a semi-solid material that *can be pumped like a liquid***

- **But *behaves like a solid* once the pig is formed in the pipe**

Controlling the semi-solid state

To maintain the correct consistency of the Ice Pig during an operation a **freezing point depressant is used**

- http://www.youtube.com/watch?v=HT1DMB9VCPg
- SBWRD approved disposal to sewer

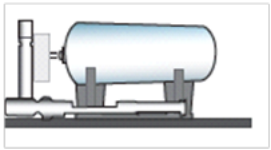
Planning → **Production** → **Delivery** → **Monitoring**

Pipes and fittings plans and operational requirements

Ice makers
Holding tanks

Delivery units
Support vehicles

Instrumentation




Agbar
environment

Public outreach to be conducted during pilot tests

- Door hangers and knocking on doors to explain activities
- Through e-notify me at http://www.parkcity.org/index.aspx?page=335 which will send an email to those that specified an interest in water projects
- City's monthly Newsletter article

Questions?