Integrated Operations

Incorporating hydraulic modeling into daily and seasonal operations and maintenance

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VEOLIA

Overview

1 Introduction

2 Key aspects to build and keep a hydraulic model useful

3 Operation & Maintenance uses and benefits

Veolia Water Idaho

One operational area

Boise, Eagle, Meridian and Ada County Idaho

Serving 265,000 people

Supply

45 MGD Average

21 MGD winter low

100 MGD summer peak

System

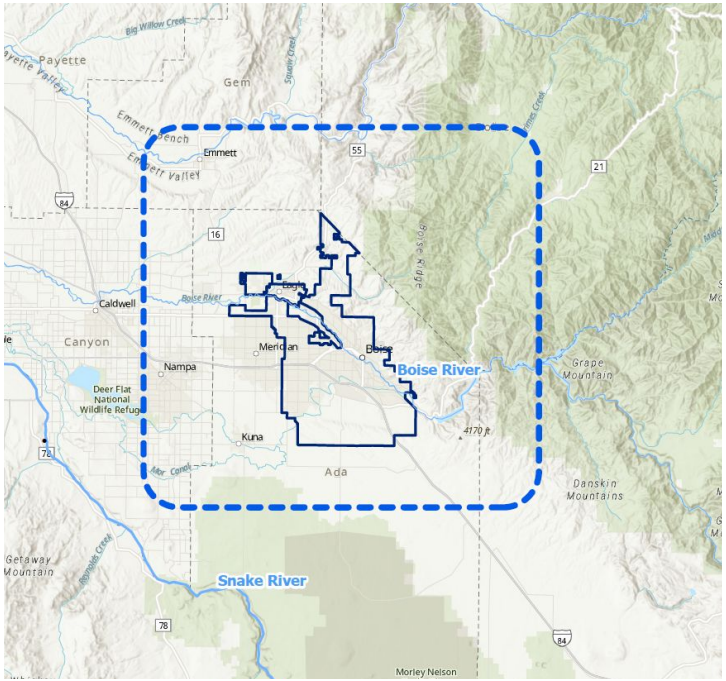
-2 surface water treatment plants -81 groundwater wells

-36 storage tanks -1,500 miles pipe

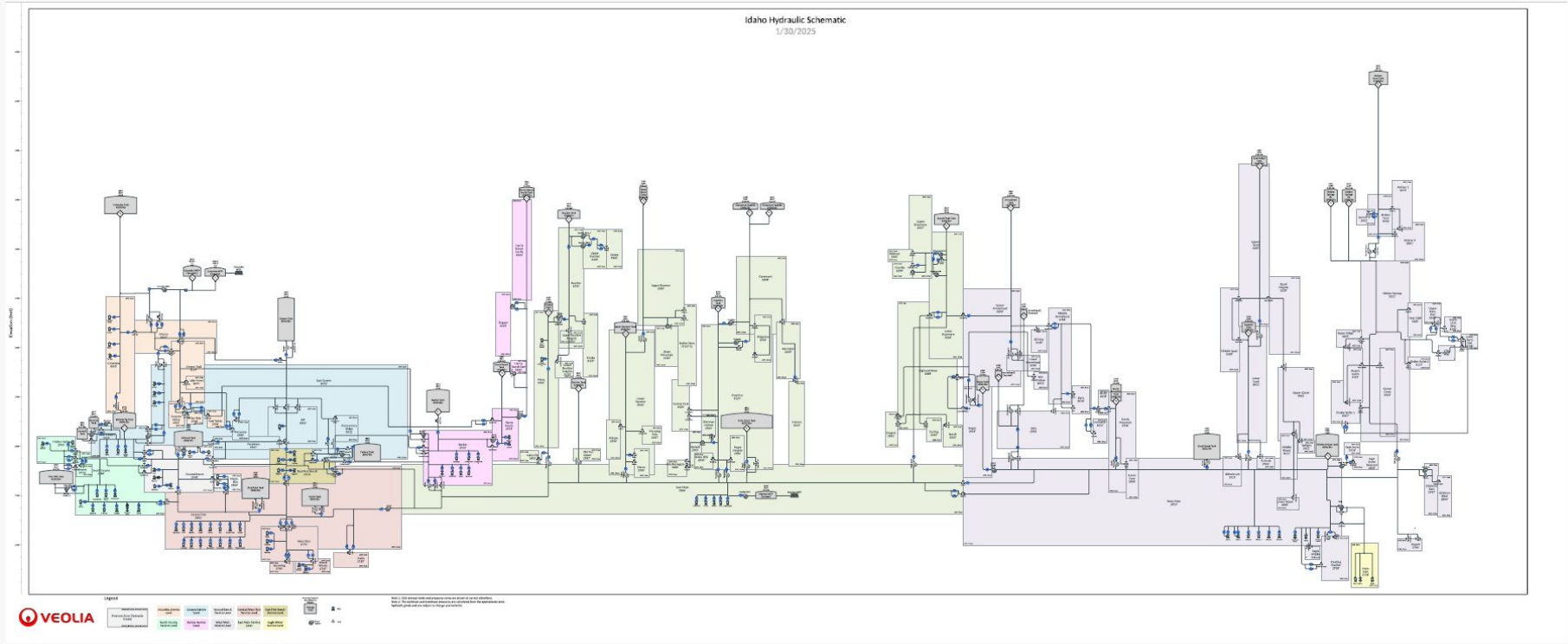
-42 booster stations -150 PRV stations

-117 pressure zones

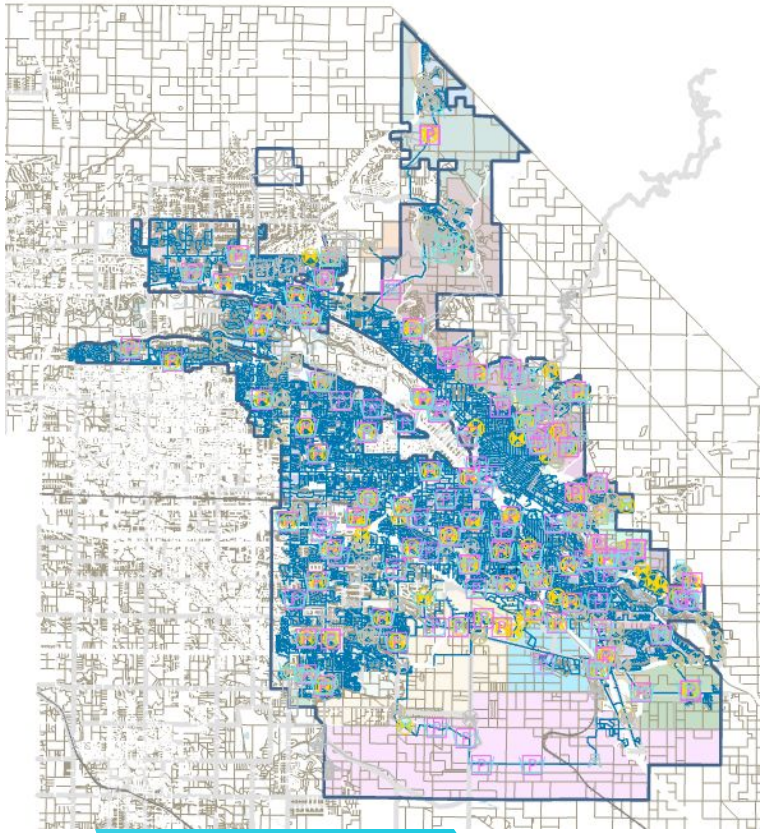
-1 hydraulic model with many scenarios



Hydraulic Schematic



Key Elements for using a Hydraulic



Utility Support

Leadership support and encouragement, visibility

Close Communication, Collaboration, and Feedback across Departments

Engineering, Operations, Field Crews

In-house support and capabilities

On-site modeler available in real-time

Key Elements for using a Hydraulic Model

Usable Scenarios

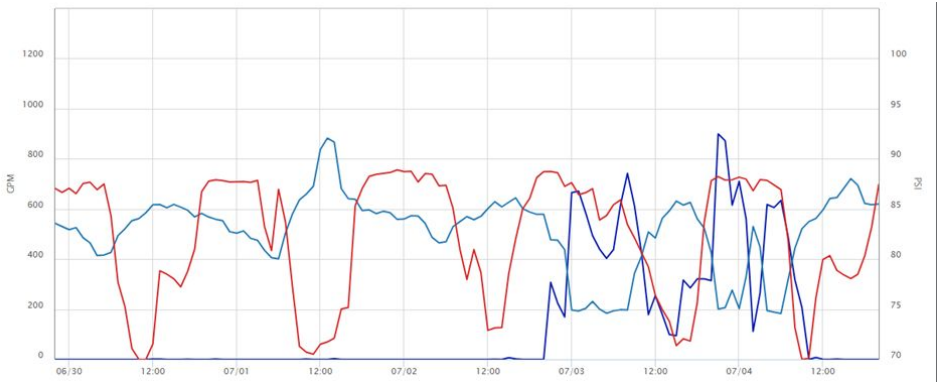
Low Demand, Peak Demand,
Fire Flow (Steady State),Extended Period (EPS),
Future, “What If”

Regular Updates

Pipe, Facilities, Operational Controls, Demand

Regular Calibration and Validation

Field Testing and SCADA access, use, verification



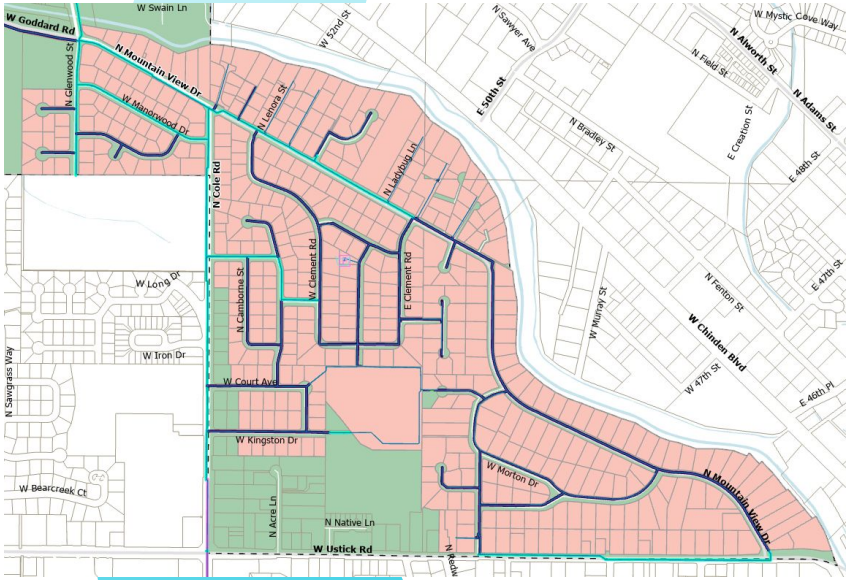
Uses of the Hydraulic Model

Planned Daily Operations

Tank level control settings, VFD pressure setpoints, PRV high and low pressure setting modifications

- Coordinate lead/lag
- Identify “limiting” conditions such as low or high pressure at customer meters, fire flow, pipe headloss restrictions
- Construction flushing

Uses of the Hydraulic Model



Emergencies

Main breaks, SCADA malfunction (e.g. tank draining), PRV or booster failure

- Pressure impacts
- Isolated customers
- Creative/atypical operations like opening pressure zone separation isolation valve

Uses of the Hydraulic Model

Seasonal Maintenance

Tanks offline for painting, treatment plant maintenance shutdown, booster station repairs, well rehabilitation

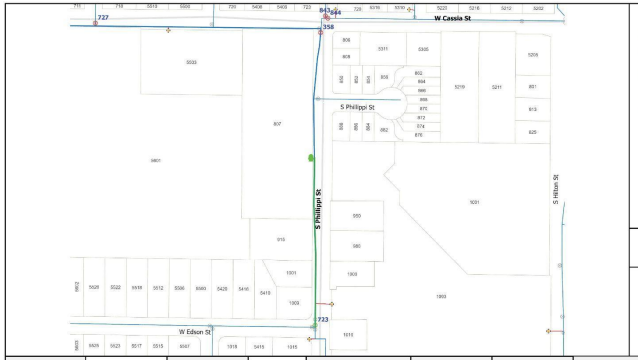
- Flow direction changes
- Fire flow availability notifications to Fire Department
- Headloss impacting high/low pressure areas with facilities offline

Uses of the Hydraulic Model

Annual Programs

Traditional and Unidirectional Flushing, Sampling Programs

- Simulate flow and velocity attained during flushing
- Water age and source trace calculations for tank level, well impact, sample station locations
- Identify pipe replacement locations



Zone	CF-05-NEW	Sequence	2	Hydraulics	Model	Field	Water Quality	Initial Value	Final Value
Date of Flush		Start Time		Static Pressure	48 psi				
Duration	3.7 min.	Open Hydrant	55762	Res. Pressure	35 psi		Turbidity		
Valves to Open	723			Discharge Flow	998 gpm		Disinf. Res.		
				Available Flow	1,542 gpm		pH		
Valves to Close	358(650, 651, 761, 806, 843, 844, 727)			Total Pipe Len.	470.4 ft		Iron		
				Min Flushing Vol	1,218 gal		Odor		
Pipes to Flush	54655,54656,54657,54739,54747			Desired Flushing Vol	3,655 gal		HPC		
				Min Flushing Time	1.2 min.		Color		
				Desired Flushing Tim	3.7 min.		Other		

Questions?

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