

Technical Memorandum

Date: December 23, 2020

Project: 20-2737.0406

To: Mr. Tony Doran, Engineering Associate
Ms. Kim McMillan, PE, City Engineer
City of Tualatin

From: Brian Ginter, PE
Claire DeVoe, PE

Re: Water System Capacity Analysis – Herman Road Industrial Park

Introduction

As requested, this memorandum has been prepared to present the findings of our analysis of the water service to the proposed Industrial Park located at 1005 SW Herman Road for the City's use in determining necessary water system improvements.

Background

The City's water system hydraulic model was used to perform a hydraulic analysis of pressure and fire flow performance in the City's water system under maximum day demand conditions with fire flow events evaluated at the site.

The proposed development is a set of two warehouses. The proposed developments are located within the City's existing Pressure Zone A, served by the A level reservoirs at a nominal hydraulic grade of 296 feet above mean sea level (msl). Figure 1 illustrates the development site with proposed piping, adjacent water system infrastructure, and the location of the modeled fire flow tests.

Fire flow demand was provided in TVFR's review of the proposed site plan provided by the City. Fire flow demand to the northern building (Building 1) was stated as 1,688 gpm and demand to the southern building (Building 2) as 1,500 gpm, plus sprinkler demand. As sprinkler demand is currently unknown, hydrants were evaluated at the stated fire flow as well as maximum available flow. If sprinkler demand exceeds the stated maximum available flow, pipes sizes will need to be reviewed.

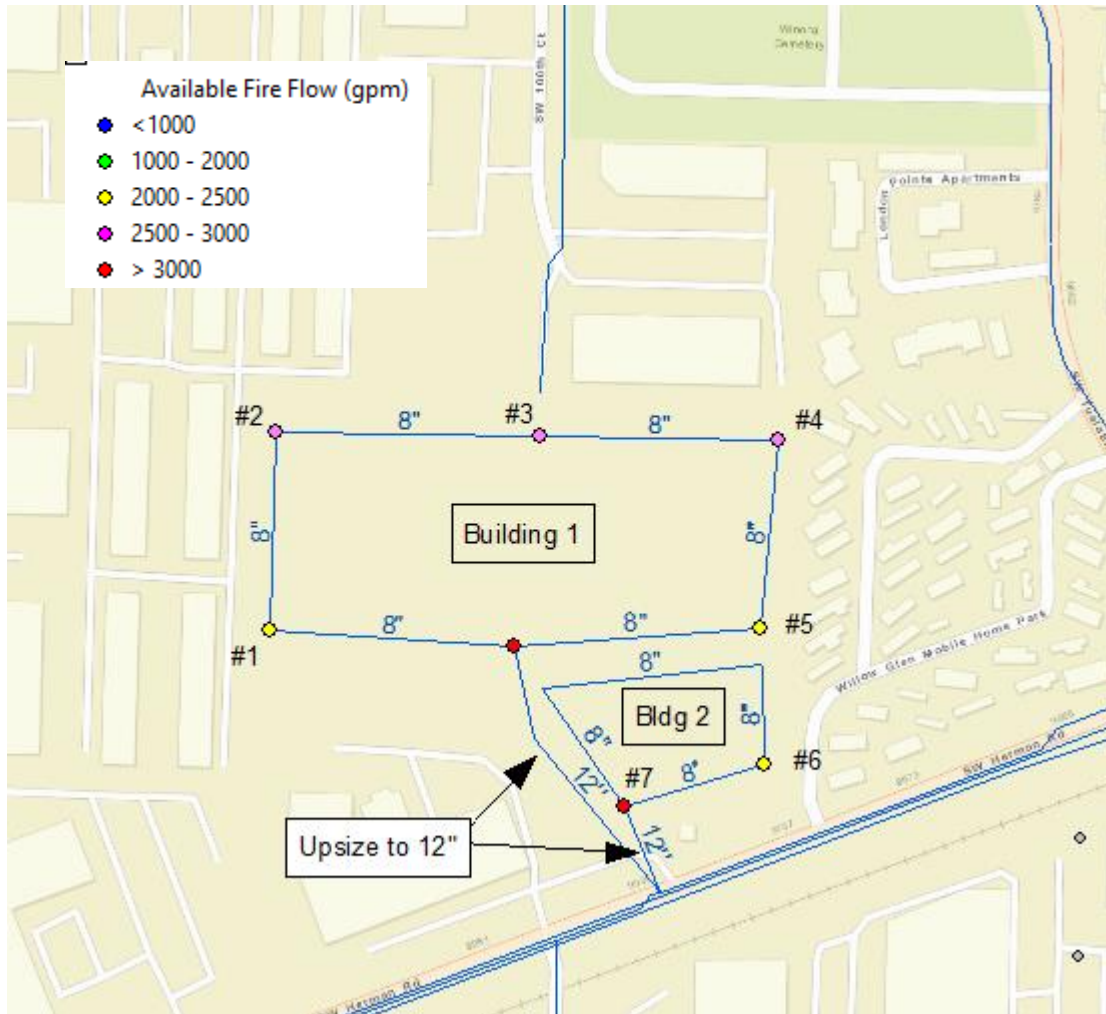


Figure 1. Proposed Industrial Development Site and Water System Infrastructure

Analysis and Findings

Available fire flow was modeled at the seven proposed fire hydrant locations onsite (shown in Figure 1). Hydrants 1-5 were evaluated at 1,688 gpm, and hydrants 6 and 7 were evaluated at 1,500 gpm fire flow. Conditions were run under 2040 Maximum Day Demand (MDD), low flow rates from Portland supply PRVs, and existing conditions plus the proposed onsite piping.

The hydrant locations, static pressure, and available fire flow are summarized in Table 1.

Table 1
Fire Flow Analysis Results

Hydrant #	Location	Required Fire Flow (gpm)	Residual Pressure at Required FF (psi)	Available Fire Flow at 25 psi and < 10fps (gpm)
1	SW corner of Building 1	1,688	43	2,251
2	NW corner of Building 1	1,688	39	2,611
3	N edge of Building 1	1,688	41	2,885
4	NE corner of Building 1	1,688	41	2,598
5	SE corner of Building 1	1,688	45	2,255
6	SE corner of Building 2	1,500	49	2,404
7	Site entrance off Herman Road	1,500	51	3,525

Based on the findings of this analysis and a review of overall system improvement needs presented in the Water System Master Plan, there are no additional required water distribution system improvements necessary to serve fire suppression flows to the proposed development.

However, the single 8-inch connections to Herman Road should be upsized to 12-inch diameter to meet fire flow velocity requirements. The proposed 8-inch diameter looped mains are adequate to serve expected fire flow demands at both properties.

It is the developer’s responsibility to size fire suppression sprinkler systems as these facilities are outside the scope of this analysis.

Please do not hesitate to contact us if you have any questions or comments in this regard. We would be happy to meet with you personally to discuss the findings presented in this memorandum.