



Technical Memorandum

Date: September 20, 2021
Project: 20-2737.0408
To: Mr. Tony Doran, Engineering Associate
City of Tualatin
From: Claire DeVoe, PE
Reviewed By: Brian Ginter, PE
Re: Water System Capacity Analysis – Tualatin Logistics Park



Introduction

As requested, this memorandum has been prepared to present the findings of our analysis of the water service to the proposed Tualatin Logistics Park located at 20400 SW Cipole Road. This memorandum presents the findings of this analysis for the City's use in determining the water system improvements necessary to meet fire flow and pressure requirements.

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 proposed connection points to the existing east-west 12-inch diameter main connecting SW Cipole Rd to 124th Ave at the south side of the property. The hydraulic model was updated to include a proposed 8-inch connection to the existing 12-inch in the southwest as presented in the preliminary design drawings (C2.0) submitted to the City by VMLK Engineering and Design (drawings dated April 2021). The proposed development is zoned as industrial with a 3,000 gpm fire flow and limited domestic demand. The proposed development is located within the City's existing Pressure Zone A, served by the A level reservoirs at a nominal hydraulic grade (HGL) of 300 feet above mean sea level (msl). Figure 1 illustrates the development site and adjacent water system infrastructure.

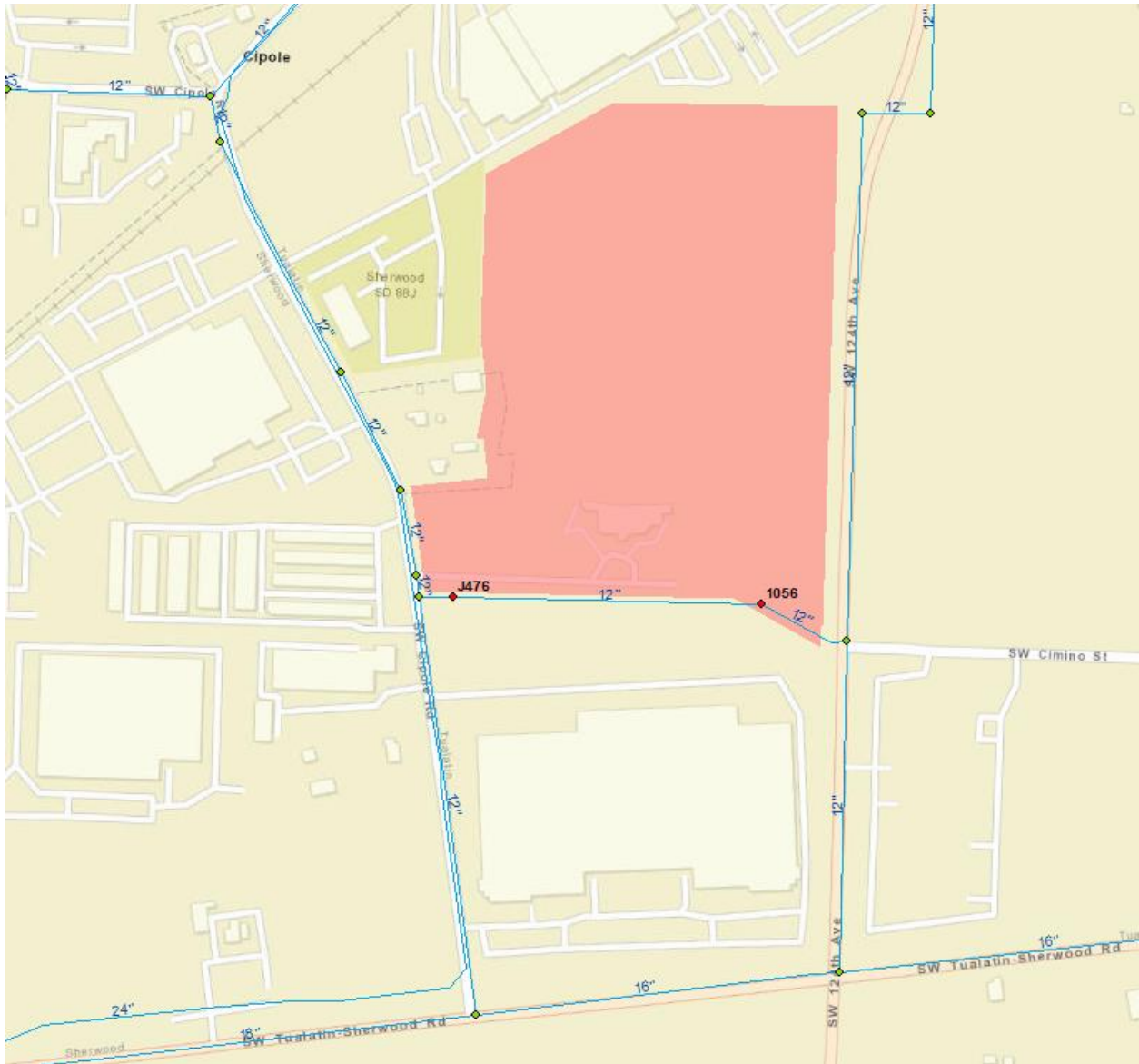


Figure 1. Proposed Development Site and Existing Water System Infrastructure

Analysis and Findings

The hydraulic model was updated as described above and fire flow performance tested at the location of the proposed 8-inch diameter connections.

A summary of specific model conditions for this analysis is presented below. The A Level is relatively isolated from the B and C Levels, therefore only A Level settings are shown.

Demand Conditions: 2040 Maximum Day Demand

Fire Flow: 3,000 gpm

Reservoir Levels: Operational, Equalization, and Fire Storage Depleted (A Level Reservoirs at 42 ft, 290 ft HGL)

Portland Supply Valves: Winter High Settings (400 gpm at Leveton, 700 gpm at 108th/Ops, 100 gpm at Park, 700 gpm at 72nd)

Physical Condition: Existing facilities plus proposed connections

The model nodes representing the proposed connections, the fire flow capacity tested, and the calculated minimum pressure within the area influenced by the fire flow in Pressure Zone A are summarized in Table 1 below:

Table 1
Fire Flow Analysis Results

Model Node ID	Location	Elevation (ft)	Fire Flow Rate (gpm)	Static Pressure (psi)	Residual Pressure (psi)
J476	Approx. 100 ft west of SW Cipole Rd, @ proposed 8" connection	170	3,000	50	42
1056	Approx. 200 ft east of SW 124 th Ave, @ proposed 8" connection	171	3,000	50	41

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 required water system improvements necessary to serve domestic and fire suppression flows to the proposed development, up to 3,000 gpm. The existing 12-inch diameter main between SW 124th Ave and SW Cipole Rd is adequate to serve the required fire flow and continue to meet flow and pressure requirements for the surrounding area without further improvements. It is the developer's responsibility to size internal (private) fire and domestic mains for adequate service pressure, private hydrants, and 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.