



TECHNICAL MEMORANDUM

TO: BRIAN JOHNSON, WATER SYSTEM
SPECIALIST
FROM: KERRI SIDEBOTTOM, P.E.
DATE: NOVEMBER 4, 2022
SUBJECT: 240 15TH STREET SE FIREFLOW
AVAILABILITY
CITY OF PUYALLUP, PIERCE COUNTY,
WASHINGTON
G&O #21415.13

Per your request, I have analyzed the available fire flow for 240 15th Street SE in the central part of the City's water service area. The setup of the hydraulic model and the assumptions used to determine the static pressure and available fire flow are noted below.

- The available fire flows and pressures are modeled at Nodes J-542, J2148, J2150, and J2152 and corresponding to existing hydrants SE033, SE230, SE031, and SE032, respectively, as shown in the attached Figure 1.
- Water system demands are based on projected 2038 demands and reservoirs are depleted of fire suppression and equalizing storage, as established in the *2019 Water System Plan (WSP)*, approved by the Department of Health (DOH). The City's water model was updated in 2021 to reflect additional system improvements since the WSP was developed.
- All pump stations are idle, and the Salmon Springs source is operating at 1,100 gpm.

The hydrants are located in Zone 1, which is supplied by Maplewood Springs and the 15th Avenue SE Reservoirs. The existing water system was modeled as-is, with no improvements.

The available pressure under 2038 peak hour demands at the hydrant is included in Table 1.



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TABLE 1

Peak Hour Pressure

Node	Hydrant	Elevation (feet)	Peak Hour Pressure (psi)
J-542	SE033	55	47
J2148	SE230	52	49
J2150	SE031	52	49
J2152	SE032	52	49

Available fire flow was modeled at four existing hydrants: Hydrant SE230 (Node J2148), which is located on an 8-inch stub off of an 8-inch loop, Hydrants SE031 (Node J2150) and SE032 (Node J2152), which are located on an 8-inch loop, and Hydrant SE033 (Node J-542), which is located on an 8-inch main on the east side of the site. The results of the fire flow modeling are included in Table 2. The modeled fire flow is available at any hydrant individually, but not more than one simultaneously.

TABLE 2

Modeled Fire Flow Availability

Node	Hydrant	Available Fire Flow (gpm)	Residual Pressure at Available Fire Flow (psi)	Minimum System Pressure at Available Fire Flow (psi)
J-542	SE033	2,150 ⁽¹⁾	22	22
J2148	SE230	1,560 ⁽¹⁾	30	30
J2150	SE031	2,450 ⁽²⁾	20	20
J2152	SE032	2,460 ⁽¹⁾	22	22

(1) Limited by maximum system-wide velocity of 10 fps.

(2) Limited by minimum system-wide pressure of 20 psi at all water service locations.

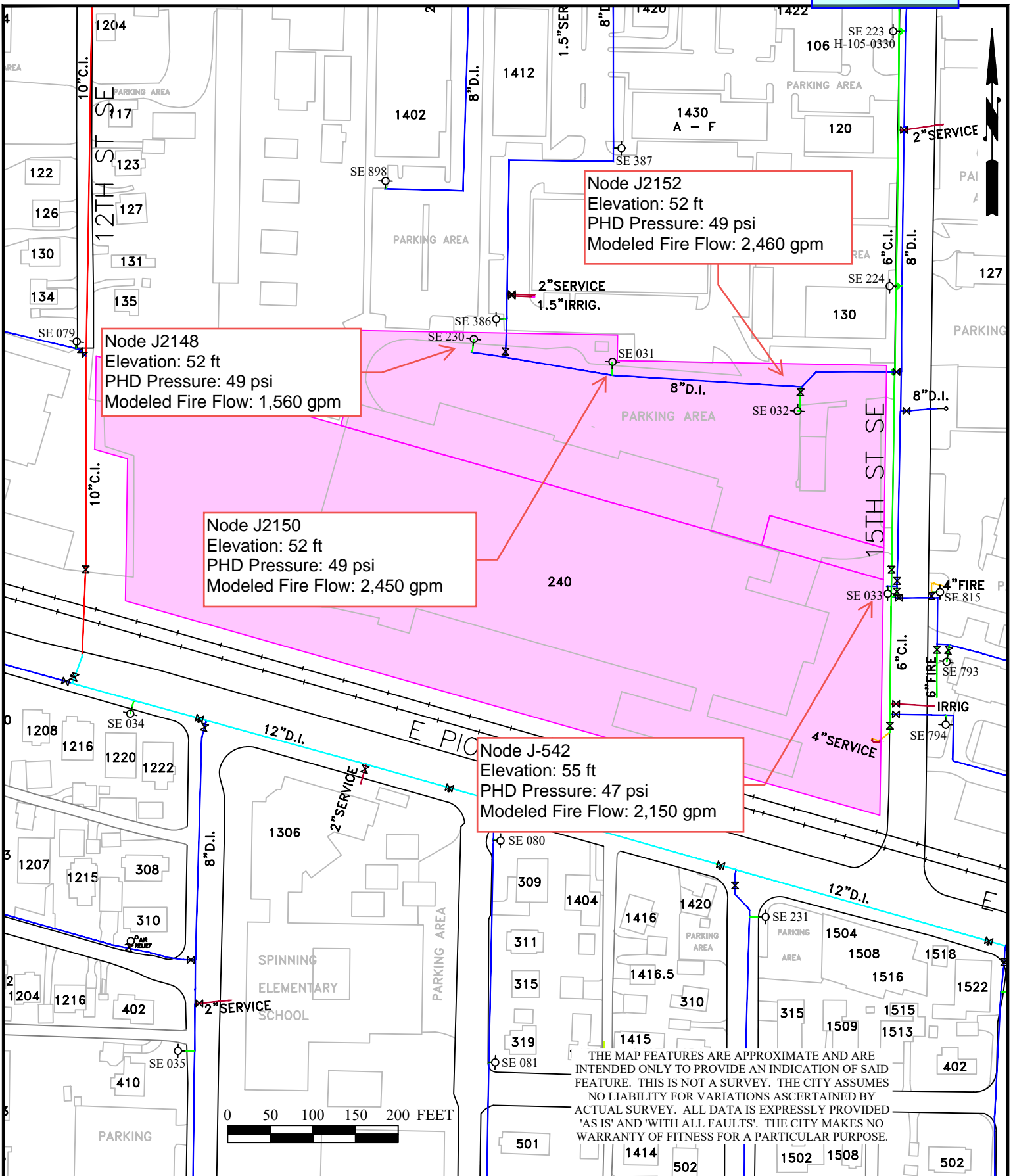
Fire flow to Hydrants SE033, SE230, and SE032 is limited by the 10 fps maximum velocity through the 8-inch piping along 15th Street SE and within the site. Fire flow to Hydrant SE031 is limited by the 20 psi minimum pressure requirement.

The Department of Health and City Standards for water distribution systems are to meet the peak hourly demand of the system, while providing a minimum pressure of 30 psi system-wide. Under peak daily demand with a fire flow, the system is designed to maintain a minimum pressure of 20 psi system-wide. Although the peak hourly demand



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pressure may currently be higher than these standards, the Developer must recognize that the City may not provide pressure higher than 30 psi in the future. The flows and pressures determined in this memo are based on the approximate hydrant elevation at ground level. The Developer may design their sprinkler system for whatever pressure they wish; however, they must recognize and be responsible for conditions when the pressure may be less than currently exists.



THE MAP FEATURES ARE APPROXIMATE AND ARE INTENDED ONLY TO PROVIDE AN INDICATION OF SAID FEATURE. THIS IS NOT A SURVEY. THE CITY ASSUMES NO LIABILITY FOR VARIATIONS ASCERTAINED BY ACTUAL SURVEY. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. THE CITY MAKES NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.



CITY OF PUYALLUP
PUBLIC WORKS
WATER DIVISION

HYDRAULIC MODEL FOR 240 15TH ST SE PROPERTIES

SCALE AS SHOWN

10/31/2022

COP/PW/WATER/S_MAINT/PDF/QSEC/
PG108/MODEL FOR 240 15TH ST SE