Gray & Osborne, Inc.
CONSULTING ENGINEERS

MEMORANDUM

TO:	BRIAN JOHNSON, WATER SYSTEM SPECIALIST
FROM:	KERRI SIDEBOTTOM, P.E.
DATE:	JANUARY 4, 2022
SUBJECT:	2511 INTER AVENUE SE FIRE FLOW AVAILABILITY CITY OF PUYALLUP, PIERCE COUNTY, WASHINGTON G&O #21415.08

Per your request, I have analyzed the available fire flow at two existing hydrants located at 2511 Inter Avenue 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 measured at Nodes J-135 and J2130, corresponding to existing Hydrants SE232 and SE764, respectively, as shown on 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 Washington State 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 Zone 1, which is supplied by Maplewood Springs and the 15th Avenue SE Reservoirs. The system was modeled as-is, with no new piping proposed at this time.

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

TABLE 1

Peak Hour Pressure

Node	Hydrant	Elevation (ft)	Peak Hour Pressure (psi)
J-135	SE232	60	45
J2130	SE764	60	45

Available fire flow was measured at two existing hydrants. Hydrant SE232 (Node J-135) is located on an existing 12-inch main along Inter Avenue SE, and Hydrant SE764 (Node J2130) is located on an existing 8-inch dead-end main extending north from Inter Avenue SE to the site. The results of this modeling are included in Table 2. The modeled fire flow is available at either hydrant individually, but not both simultaneously.

TABLE 2

Modeled Fire Flow Availability

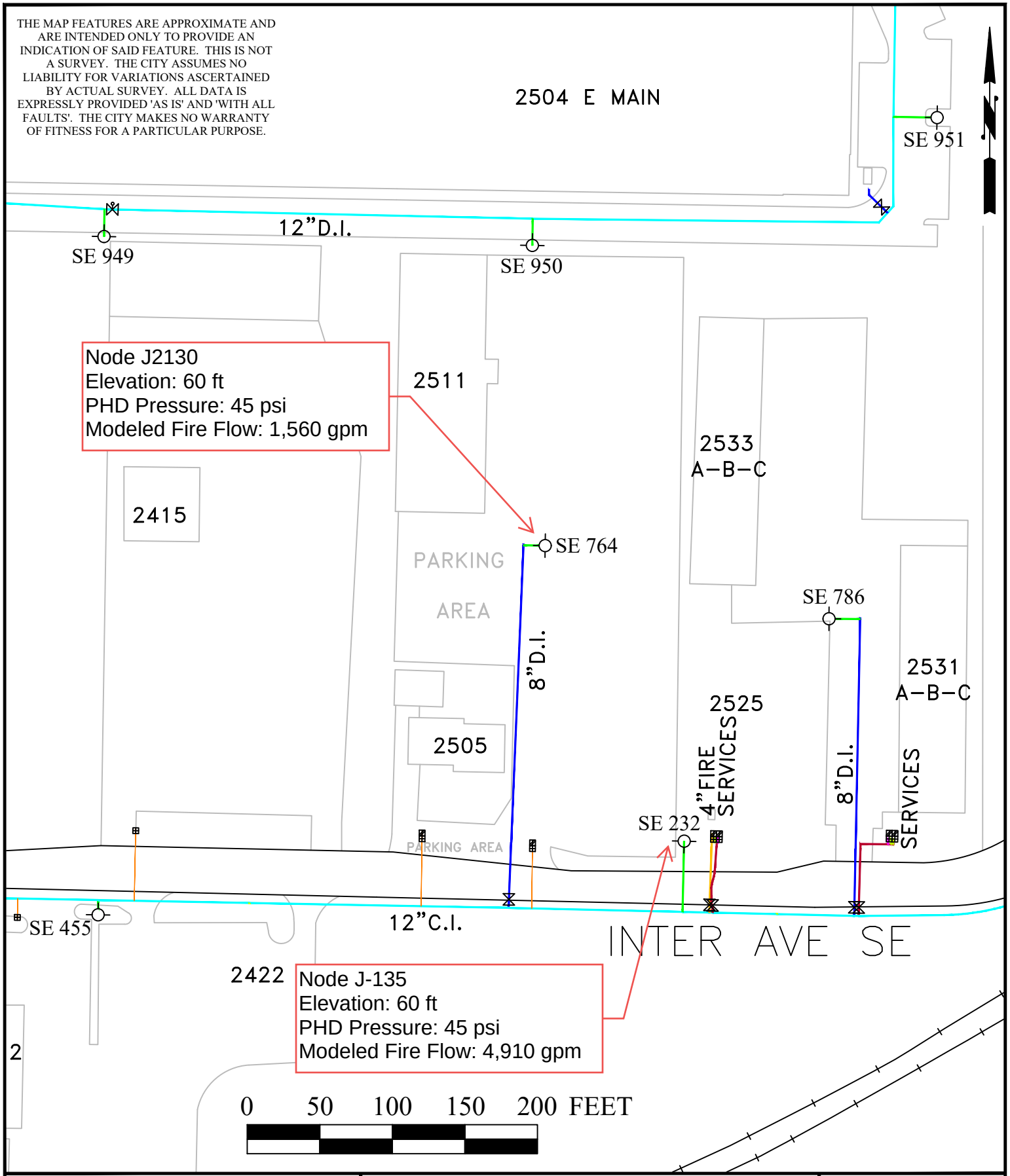
Node	Hydrant	Available Fire Flow (gpm)	Residual Pressure at Available Fire Flow (psi)	Minimum System Pressure at Available Fire Flow (psi)
J-135	SE232	4,910 (1)	20	20
J2130	SE764	1,560 (2)	30	30

(1) Limited by minimum pressure of 20 psi at service locations system-wide.
(2) Limited by maximum system-wide velocity of 10 fps.

Fire flow to Hydrant SE764 is limited by the 10 fps maximum velocity through the existing 8-inch pipe, while fire flow to Hydrant SE232 is limited by low pressure at the hydrant location.

The DOH 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 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.

KS/hh
Encl.



CITY OF PUYALLUP
PUBLIC WORKS
WATER DIVISION

HYDRAULIC MODEL FOR 2511 INTER AVE SE

SCALE AS SHOWN

12/29/2021

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