Gray & Osborne, Inc.
CONSULTING ENGINEERS

MEMORANDUM

TO:	BRIAN JOHNSON, WATER SYSTEM SPECIALIST,
FROM:	KERRI SIDEBOTTOM, P.E.
DATE:	MAY 5, 2022
SUBJECT:	PARCEL 5745001371 FIREFLOW AVAILABILITY CITY OF PUYALLUP, PIERCE COUNTY, WASHINGTON G&O #21415.11

Per your request, I have analyzed the available fire flow for Parcel 5745001371 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-464, J2142, J1792, and J2144; corresponding to existing hydrants SW008, SW249, SW023, and an existing 8-inch stub, 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.

Table 1

Peak Hour Pressure

Node	Hydrant	Elevation, Feet	Peak Hour Pressure, psi
J-464	SW008	39	54
J2142	SW249	40	54
J1792	SW023	39	54
J2144	8-inch stub (no hydrant)	39	54

Available fire flow was modeled at three existing hydrants: hydrant SW008 (Node J-464), which is located on a 12-inch main along West Pioneer at 3rd Street SW; hydrant SW249 (Node J2142), which is located on an 8-inch main along 3rd Street SW south of W Pioneer; and hydrant SW023 (Node J1792), which is located on an 8-inch main along 3rd Street SW north of 4th Avenue SW. An additional result was recorded for Node J2144, which represents an existing 8-inch stub connected to the 12-inch main in West Pioneer, though no hydrant currently exists here. 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

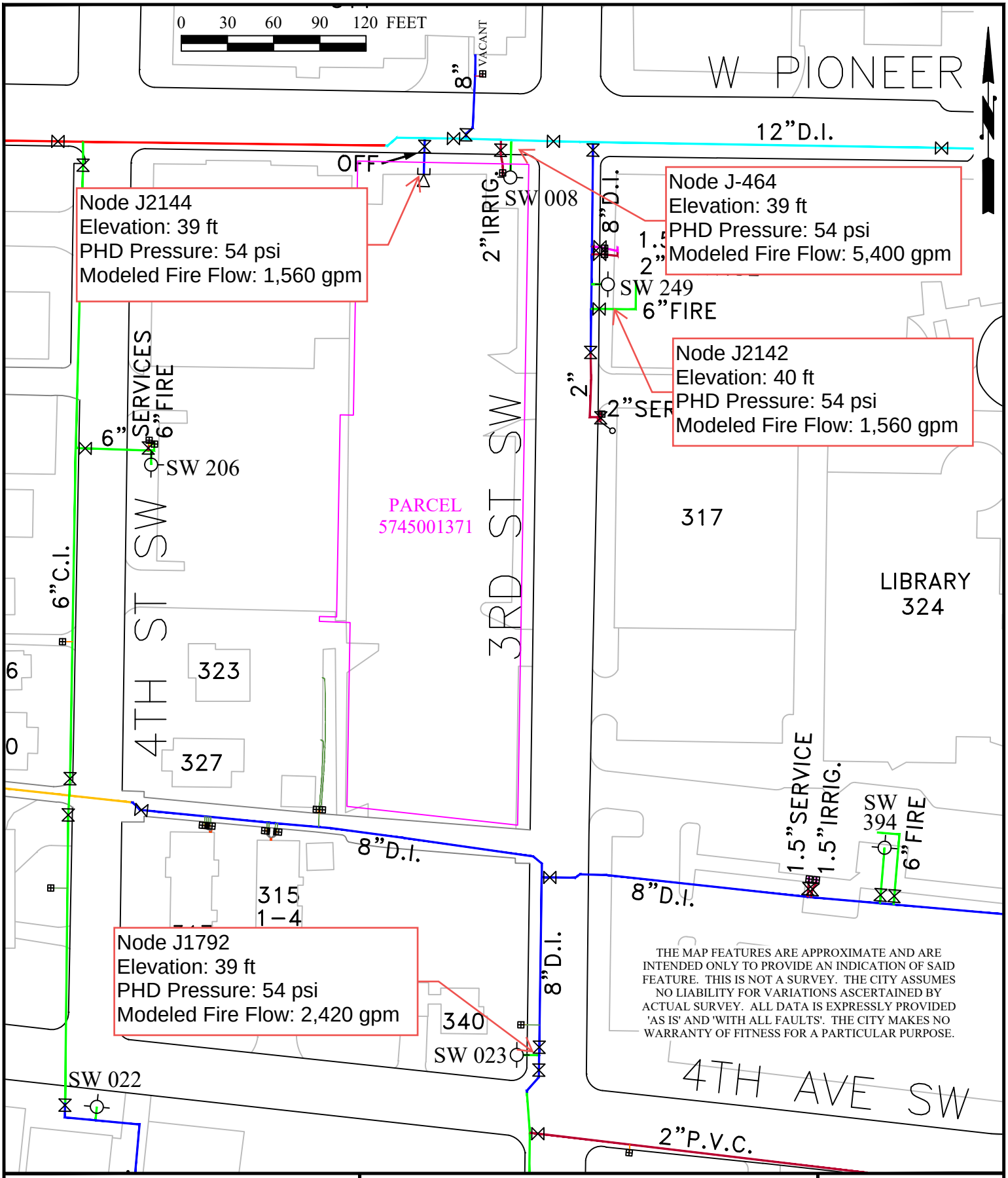
Node	Hydrant	Available Fire Flow, gpm	Residual Pressure at Available Fire Flow, psi	Minimum System Pressure at Available Fire Flow, psi
J-464	SW008	5,400(1)	32	30
J2142	SW249	1,560(1)	42	30
J1792	SW023	2,420(1)	38	30
J2144	8-inch stub (no hydrant)	1,560(1)	44	30

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

Fire flow to all analyzed nodes is limited by the 10 fps maximum velocity through the 12-inch and 8-inch pipes that surround the site.

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 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/sr
Encl.



CITY OF PUYALLUP
PUBLIC WORKS
WATER DIVISION

HYDRAULIC MODEL FOR PARCEL 5745001371

SCALE AS SHOWN

04/28/2022

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