ENGINEER'S WATER SUPPLY ANALYSIS
FARMINGTON REGIONAL CENTER
MARCH 17, 2025

This report contains an assessment of the water supply available at the proposed Farmington Regional Center located at approximately 579 Lagoon Drive in Farmington, Utah. This report is prepared at the direction of:

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SUMMARY

The purpose of this report is to determine the water supply that is available for the proposed fire sprinkler system for Farmington Regional Center to determine the available fire flow, and to determine the water supply available for this proposed building. The available water supply was determined by conducting a water flow test using existing fire hydrants located nearby the proposed building to measure available water flow while recording the static and residual pressures.

WATER FLOW TEST AND ANALYSIS

The water supply was determined by performing a water flow test. The water flow test was performed at 1:30 pm on March 13, 2025, by Protection Consultants, Inc., and Farmington City Water Department. The water flow test is attached to this water supply analysis. The available water supply was determined by conducting a water flow test using existing fire hydrants located near the proposed Regional Center to measure the available water flow while recording the static and residual pressures. Based on results of this flow test the water supply available for this project was measured to be:

Static Pressure:	92 psi
Residual Pressure:	88 psi
Flow:	1,463 gpm

This flow test represents the current pressures and volume available from the 10" water line which runs under Lagoon Drive. This test provides a good representation of the water pressures and volume that can be expected from this water system at this location during the year. Based on the results of this test PCI calculates a theoretical fire flow of **6,968 gpm** at **20 psi**.

Prior to the design of the fire sprinkler system, the pressures should be adjusted to account for lower pressures that could be encountered during periods of peak demand and after possible further development of the immediate area. A 10% reduction in water pressures used for the fire sprinkler system design is recommended. The water supply that should be used for the design of the fire sprinkler system should be:

Static Pressure:	83 psi
Residual Pressure:	79 psi
Flow:	1,463 gpm

WATER SUPPLY ANALYSIS

Information about the water system was obtained through an interview with Abe Wangsgard, Water Superintendent with Farmington Public Works. There are two water tanks serving this east side portion of Farmington. The first water tank is C1 and has a storage capacity of 2 million gallons. The second water tank is B1, and this tank has a storage capacity of 2 million gallons. These two tanks combine for a total storage of 4 million gallons. A new 2 million gallon tank is currently under construction and will provide additional water to this area. The Farmington City water system is a gravity fed system. Various lines feed the west side of Farmington west of interstate I-15. Three water lines feed this area of Farmington. A 12" water line goes under I-15 underground following Clark Lane. An 18" water line feeds the area and follows Glovers lane and a 12" line goes under I-15 in Burke Lane. A 10" water line runs under Lagoon Drive and will feed the proposed Regional Center.

The results of water flow testing finds this system **capable** of providing a theoretical fire flow of approximately **6,968 gpm** at **20 psi**. The Farmington Regional Center will consist of a single level of 34,934 square feet. The building will consist of type III-B construction.

The required fire flow per Table B105.1 in the 2018 Edition of the International Fire Code (Attached) for a building of this size and construction type is **4,000 gpm** for a

period of four hours. In accordance with the exception noted in IFC B105 (Attached) the required fire flow (up to 25% of the initial value but not less than 1,000 gpm) may be obtained through the installation of a fire sprinkler system in all areas of the building, where approved by the Authority Having Jurisdiction. A reduction in the fire flow requirements for this building **WILL NOT BE** required where the available fire flow of **6,968 gpm** is more than the required fire flow of **4,000 gpm**. This building will be provided with a fire sprinkler system.

CONCLUSIONS AND RECOMMENDATIONS

The data collected for this analysis reflects the pressures and flows that are available in this water system at this time and throughout the year. Fluctuations in pressures and flows can be expected during periods of high demand. The resultant water supply is contained in the Summary section of this report.

If there are any questions regarding this analysis, please contact the author.

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WATER FLOW TEST REPORT

PROJECT NAME: FARMINGTON REGIONAL CENTER
STREET ADDRESS: (APPROXIMATELY) 579 LAGOON DRIVE
CITY: FARMINGTON STATE: UTAH

TESTED BY: PROTECTION CONSULTANTS INC. WITNESSED BY: FARMINGTON CITY WATER DEPARTMENT
TEST DATE: 03/13/2025 TEST TIME: 1:30 PM TEMPERATURE: 50 °F PROJECT ELEVATION: 4,268 FT.

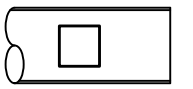
COMMENTS: FIRE FLOW: 6,968 GPM @ 20 PSI

HYDRANT & FLOW DATA

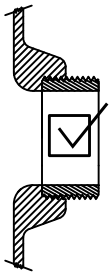
TEST HYDRANT (GAUGED):	STATIC:	92	PSI	RESIDUAL:	88	PSI	ELEVATION: 4,268 FT.
FLOW OUTLET DIAMETER:	OUTLET 1:	2.500	INCHES	OUTLET 2:		INCHES	
FLOW OUTLET C-FACTOR:	OUTLET 1:	0.90		OUTLET 2:			
FLOW HYDRANT (PITOTED):	OUTLET 1:	76	PSI	OUTLET 2:		PSI	
WATER FLOW VOLUME:	OUTLET 1:	1,463	GPM	OUTLET 2:		GPM	TOTAL: 1,463 GPM

FORMULA: $Q=29.83Cd^2\sqrt{P}$ Q: FLOW VOLUME d: OUTLET DIAMETER P: PITOT PRESSURE C: COEFFICIENT OF DISCHARGE

AREA MAP



C=0.97
PLAY PIPE



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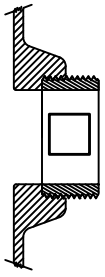

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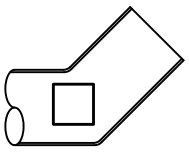

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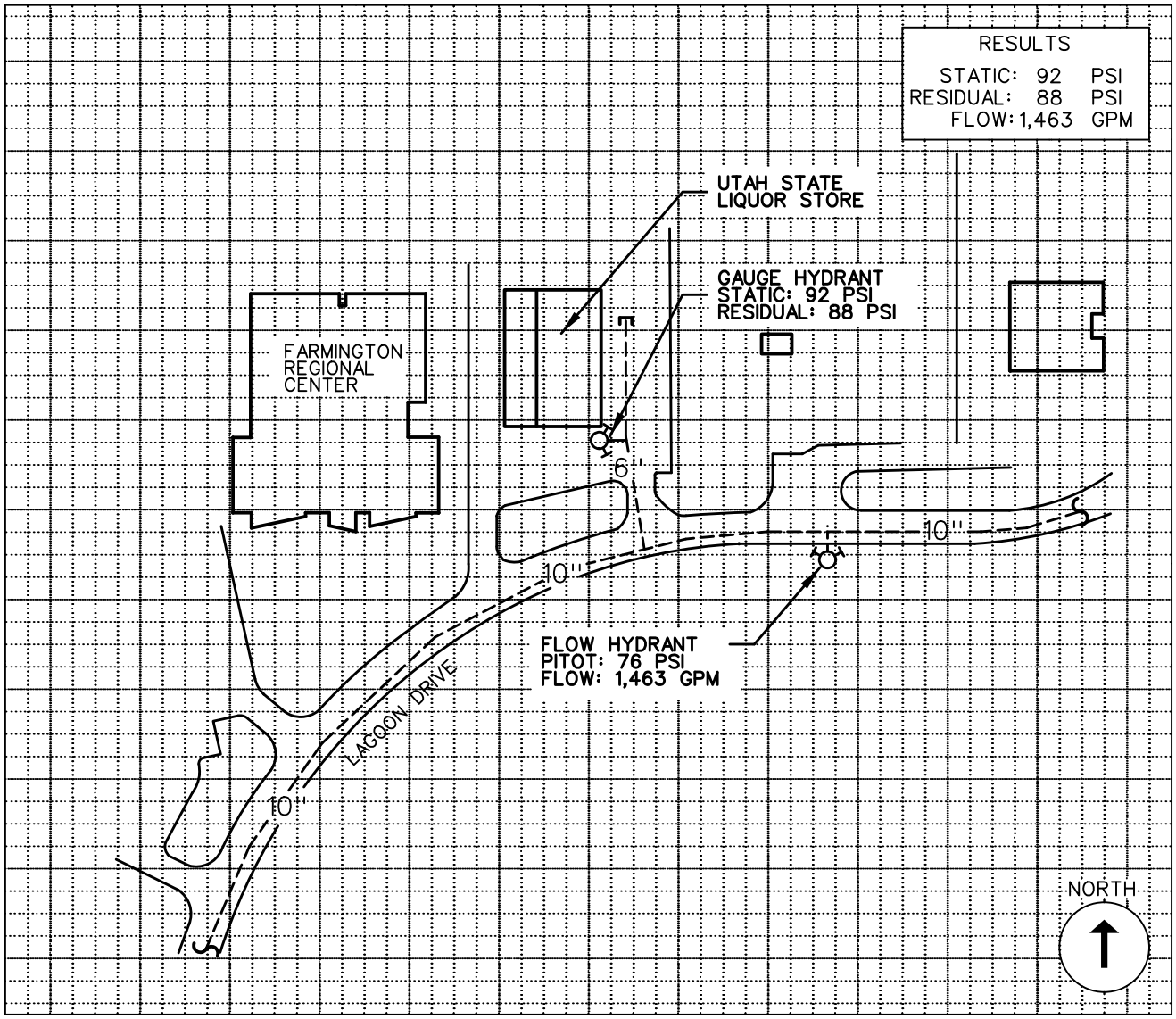
45 DEG.
PLAY PIPE



☑ FLOW TEST CONDUCTED IN ACCORDANCE WITH NFPA 291 "RECOMMENDED PRACTICE FOR FIRE FLOW TESTING AND MARKING OF HYDRANTS

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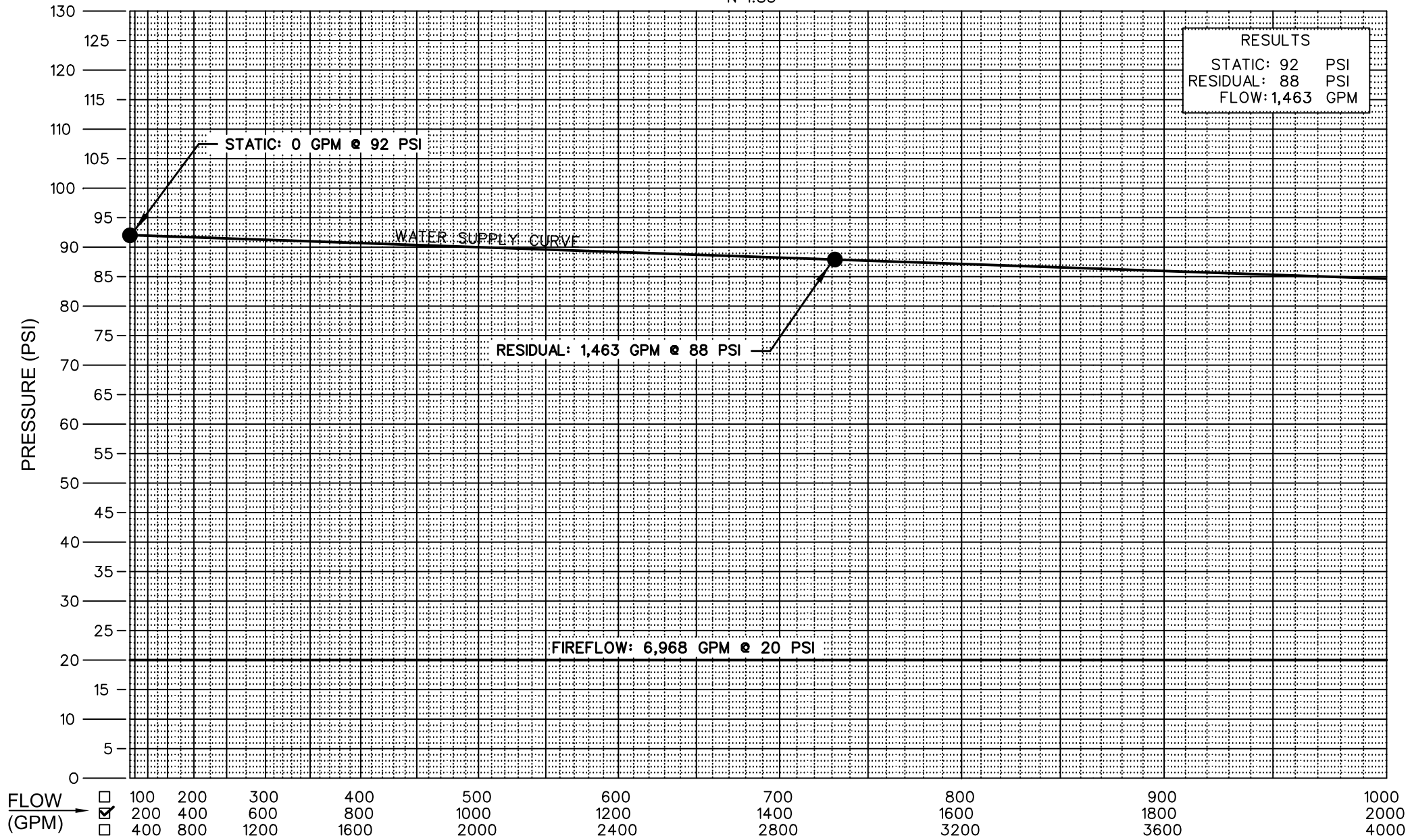
WATER FLOW GRAPH

N=1.85



EXPLAIN ANY VARIABLES IN OPERATION OF WATER SYSTEM THAT WOULD AFFECT EITHER STATIC PRESSURE OR FLOW VOLUMES AT A DIFFERENT TIME OF DAY OR DURING THE YEAR.

TABLE B105.1(1)
REQUIRED FIRE FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

FIRE-FLOW CALCULATION AREA (square feet)	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
0–3,600	No automatic sprinkler system	1,000	1
3,601 and greater	No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2) at the required fire-flow rate
0–3,600	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	500	$^1/_2$
3,601 and greater	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	$^1/_2$ value in Table B105.1(2)	1

For SI: 1 square foot = 0.0929 m^2, 1 gallon per minute = 3.785 L/m.

TABLE B105.1(2)
REFERENCE TABLE FOR TABLES B105.1(1) AND B105.2

FIRE-FLOW CALCULATION AREA (square feet)					FIRE FLOW (gallons per minute)[b]	FLOW DURATION (hours)
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
0–22,700	0–12,700	0–8,200	0–5,900	0–3,600	1,500	2
22,701–30,200	12,701–17,000	8,201–10,900	5,901–7,900	3,601–4,800	1,750	
30,201–38,700	17,001–21,800	10,901–12,900	7,901–9,800	4,801–6,200	2,000	
38,701–48,300	21,801–24,200	12,901–17,400	9,801–12,600	6,201–7,700	2,250	
48,301–59,000	24,201–33,200	17,401–21,300	12,601–15,400	7,701–9,400	2,500	
59,001–70,900	33,201–39,700	21,301–25,500	15,401–18,400	9,401–11,300	2,750	
70,901–83,700	39,701–47,100	25,501–30,100	18,401–21,800	11,301–13,400	3,000	3
83,701–97,700	47,101–54,900	30,101–35,200	21,801–25,900	13,401–15,600	3,250	
97,701–112,700	54,901–63,400	35,201–40,600	25,901–29,300	15,601–18,000	3,500	
112,701–128,700	63,401–72,400	40,601–46,400	29,301–33,500	18,001–20,600	3,750	
128,701–145,900	72,401–82,100	46,401–52,500	33,501–37,900	20,601–23,300	4,000	4
145,901–164,200	82,101–92,400	52,501–59,100	37,901–42,700	23,301–26,300	4,250	
164,201–183,400	92,401–103,100	59,101–66,000	42,701–47,700	26,301–29,300	4,500	
183,401–203,700	103,101–114,600	66,001–73,300	47,701–53,000	29,301–32,600	4,750	
203,701–225,200	114,601–126,700	73,301–81,100	53,001–58,600	32,601–36,000	5,000	
225,201–247,700	126,701–139,400	81,101–89,200	58,601–65,400	36,001–39,600	5,250	
247,701–271,200	139,401–152,600	89,201–97,700	65,401–70,600	39,601–43,400	5,500	
271,201–295,900	152,601–166,500	97,701–106,500	70,601–77,000	43,401–47,400	5,750	
295,901–Greater	166,501–Greater	106,501–115,800	77,001–83,700	47,401–51,500	6,000	
—	—	115,801–125,500	83,701–90,600	51,501–55,700	6,250	
—	—	125,501–135,500	90,601–97,900	55,701–60,200	6,500	
—	—	135,501–145,800	97,901–106,800	60,201–64,800	6,750	
—	—	145,801–156,700	106,801–113,200	64,801–69,600	7,000	
—	—	156,701–167,900	113,201–121,300	69,601–74,600	7,250	
—	—	167,901–179,400	121,301–129,600	74,601–79,800	7,500	
—	—	179,401–191,400	129,601–138,300	79,801–85,100	7,750	
—	—	191,401–Greater	138,301–Greater	85,101–Greater	8,000	

For SI: 1 square foot = 0.0929 m^2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.
a. Types of construction are based on the *International Building Code*.
b. Measured at 20 psi residual pressure.

TABLE B105.2
REQUIRED FIRE FLOW FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE FLOW (gallons per minute)	FLOW DURATION (hours)
No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2)
Section 903.3.1.1 of the *International Fire Code*	25% of the value in Table B105.1(2)[a]	Duration in Table B105.1(2) at the reduced flow rate
Section 903.3.1.2 of the *International Fire Code*	25% of the value in Table B105.1(2)[b]	Duration in Table B105.1(2) at the reduced flow rate

For SI: 1 gallon per minute = 3.785 L/m.
a. The reduced fire flow shall be not less than 1,000 gallons per minute.
b. The reduced fire flow shall be not less than 1,500 gallons per minute.

SECTION B106
REFERENCED STANDARDS

B106.1 General. See Table B106.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, standard title, and the section or sections of this appendix that reference the standard.

TABLE B106.1
REFERENCED STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
IBC—21	*International Building Code*	B104.2
IRC—21	*International Residential Code*	Table B105.1(1)
IWUIC—21	*International Wildland-Urban Interface Code*	B103.3
NFPA 1142—17	*Standard on Water Supplies for Suburban and Rural Fire Fighting*	B103.3