

November 15, 2024

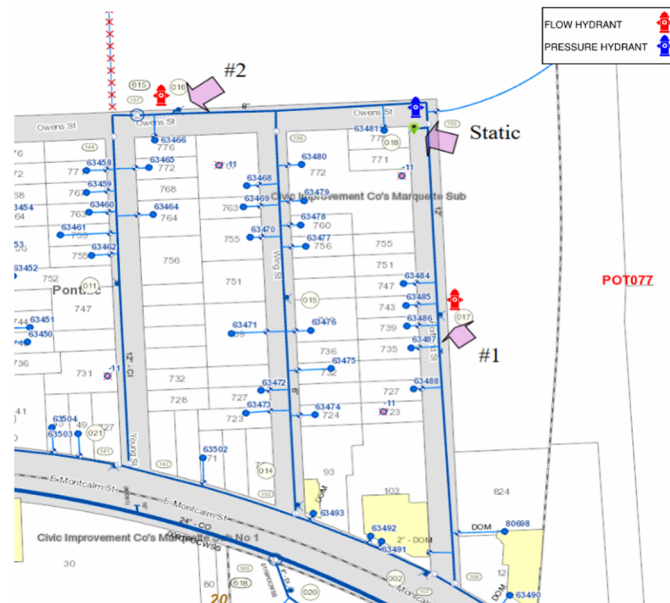
Shannon Selby
Detroit Regional Partnership
 1001 Woodward Avenue, Suite 800
 Detroit, Michigan 48226

Hydrant Flow Test – RACER Fiero Industrial Land

To whom it may concern:

Test Details and Background

MSG conducted two water flow tests, also known as hydrant flow tests, to measure the water supply available to the site. The test was performed for the Detroit Regional Partnership (DRP) through the Verified Industrial Properties (VIP) program, assisting site owners within the 11-County Detroit Region to cover the costs associated with due diligence and promotion. The hydrant flow test is one of the due diligence tests performed. These flow tests will also assist with future building fire protection system designs (by others) within the development. The test involved measuring flow of water out of a municipal fire hydrant while recording how much the water pressure has dropped (from no flow to test flow). Our procedure in performing the water flow tests did adhere to the requirements set forth by the National Fire Protection Association (NFPA). The tests were performed at the corner of Owens and Portland St on November 1, 2024 at 9:50AM at the locations indicated in the photo below. The test was performed Kevin Schultz and Joel Dzuris who was in attendance to witness the test. Exact hydrant locations are shown in the photo below:



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Results

Based on the data collected at the locations above, results are as follows:

Test Location 1

Static Pressure:	55psi
Residual Pressure:	49psi
Pitot Gauge:	30psi (Flowed from one 2-1/2" outlet)
Flow:	919.35 GPM

Test Location 2

Static Pressure:	55psi
Residual Pressure:	49psi
Pitot Gauge:	25psi (Flowed from one 2-1/2" outlet)
Flow:	839.25 GPM

Conclusion

Given the conditions on November 1, 2024 at the locations described above, the flow at location 1 is 919.35 GPM and 839.25 GPM at location 2. Further due diligence is recommended for any potential site development.

For questions, please contact me by email at ccook@manniksmithgroup.com.

Sincerely,

Charlie Cook

Charlie Cook, Mechanical Engineer
Mannik Smith Group

Attachment: POT 077 018 767 Portland 20241101

FLOW TEST RESULTS

OAKLAND COUNTY WATER RESOURCES COMMISSIONER WATER MAINTENANCE UNIT - HYDRANT FLOW TEST FORM									
Date:	11/1/2024				Time:	9:50 AM			
CVT:	Pontiac				Street Address:	767 Portland			
Map Sheet ID:	POT077018				Company Name:	Mannik & Smith Group			
Tester Name:	Kevin Schultz				Witness:	Joel Dzuris			
Purpose for Testing:	Flow Capacity for Future Development				CAMS Work Order Number:	1292101			
Residual Hydrant #:	Sheet #: (ABC123)	POT077			Static Pressure Reading, (P _S):		55	PSI	
	3 Digit Hydrant#	018			Residual Pressure Reading, (P _R):		49	PSI	
If residual pressure loss is minimal (less than 10 PSI) open additional hydrants (see page #2).									
Q_{Actual} = Actual during the flow test. This is the sum of all flow hydrant G.P.M. Q_{20psi} = Theoretical flow with a residual pressure of 20 psi P_{PT} = Pressure reading from Pitot tube P_R = Residual pressure from the residual hydrant P_S = Static pressure from the residual hydrant h_R = Difference in pressure between the static pressure measured at the residual hydrant and the desired residual pressure (20 psi). h_F = Difference in pressure between the static pressure and the residual pressure measured at the residual hydrant									
Nozzle conversion: 2-1/2" = 6.25 in ² 3-3/4" = 14.06 in ² 4-1/2" = 20.25 in ² * If d=2.5" then C_d = 1. If d >2.5", then C_d is based on P_{PT}. If d>2.5" and P_{PT} >= 7 then C_d = 0.83.									
Flow Hydrants Used - Minimum 10 PSI Residual Pressure Loss									
#F1 Flow Hydrant	Flow Hydrant #:	017	Page #:	POT077	Pitot Tube Reading, (P _{PT}):		30	PSI	
	Manufacturer:	East Jordan			Model:	6BR	Year:	1984	
	Nozzle Diameter in Inches (d):	2.5	*Nozzle Diameter Coefficient, (C _d):		1	Nozzle Shape Coefficient, (C _s):		0.9	
	Math:	Q _{Actual} = 29.84*(d ²)*(P _{PT} ^{1/2})*(C _d)*(C _s) = flow in G.P.M.				29.84*(6.25)*(5.48)*(1)*(0.9) =		919.35	GPM
	Remarks:								
#F2 Flow Hydrant	Flow Hydrant #:	016	Page #:	POT077	Pitot Tube Reading, (P _{PT}):		25	PSI	
	Manufacturer:	East Jordan			Model:	6BR	Year:	1978	
	Nozzle Diameter in Inches (d):	2.5	*Nozzle Diameter Coefficient, (C _d):		1	Nozzle Shape Coefficient, (C _s):		0.9	
	Math:	Q _{Actual} = 29.84*(d ²)*(P _{PT} ^{1/2})*(C _d)*(C _s) = flow in G.P.M.				29.84*(6.25)*(5)*(1)*(0.9) =		839.25	GPM
	Remarks:								
#F3 Flow Hydrant	Flow Hydrant #:		Page #:		Pitot Tube Reading, (P _{PT}):			PSI	
	Manufacturer:				Model:		Year:		
	Nozzle Diameter in Inches (d):		*Nozzle Diameter Coefficient, (C _d):			Nozzle Shape Coefficient, (C _s):			
	Math:	Q _{Actual} = 29.84*(d ²)*(P _{PT} ^{1/2})*(C _d)*(C _s) = flow in G.P.M.				29.84*(0)*(0)*(0)*(0) =			GPM
	Remarks:								
#F4 Flow Hydrant	Flow Hydrant #:		Page #:		Pitot Tube Reading, (P _{PT}):			PSI	
	Manufacturer:				Model:		Year:		
	Nozzle Diameter in Inches (d):		*Nozzle Diameter Coefficient, (C _d):			Nozzle Shape Coefficient, (C _s):			
	Math:	Q _{Actual} = 29.84*(d ²)*(P _{PT} ^{1/2})*(C _d)*(C _s) = flow in G.P.M.				29.84*(0)*(0)*(0)*(0) =			GPM
	Remarks:								
Total G.P.M. is the sum of all Flow Hydrant G.P.M.		(F1)+(F2)+(F3)+(F4)				1758.6		Total G.P.M. (Q _{Actual})	
		(919.35)+(839.25)+()+()							
Math Formula: Q _{20psi} = Q _{Actual} * (h _R ^{0.54} / h _F ^{0.54}), Where: h _R = P _S - 20, h _F = P _S - P _R									
h _R =		(55) - 20 =		35 PSI		h _F =		(55) - (49) = 6 PSI	
FLOW AT Q ₂₀ PSI =						1758.6 * (6.82 / 2.63) =		4557.87 = Q _{20psi} GPM	
FLOW AT Q ₂₀ PSI may be less than calculated above depending on the capacity of the water source									

OAKLAND COUNTY WATER RESOURCES COMMISSIONER

WATER MAINTENANCE UNIT - HYDRANT FLOW TEST FORM

LOCATION MAP

