March 31, 2021

Mr. Andy Sanders, P.E.
City of Germantown Public Works
7700 Southern Avenue
Germantown, TN 38138

Sent Via Email: asanders@germantown-tn.gov

RE: Glasgow Planned Development

Dear Andy:

At the request of the City of Germantown as a condition of approval, The Reaves Firm, Inc. conducted a preliminary design review for water distribution improvements meeting fire flow requirements for the Glasgow Planned Development (P.D.).

The development is located on the northeast corner of Farmington Boulevard and Kimbrough Road in the heart of Germantown and lies within the approximately 178-acre tract formerly occupied by the Germantown Country Club. It is projected that the Glasgow Planned Development will become one of the most sought after addresses in east Shelby County. This property, surrounded by long established residential neighborhoods, is being planned for redevelopment by the Farmington Kimbrough Group (FKG) and will include 366 individual lots, each with a buildable area of approximately 3,600 square feet. All the buildings in the subdivision will be sprinklered. Germantown's water distribution system surrounds the Country Club property without passing through the grounds in any significant way. The water distribution improvements will link the systems on all four sides of the project improving serviceability and reliability of the City's utility infrastructure.

The required fire flow for one and two-family dwellings for buildings of Type V-B construction having 3,600 square feet or less is 500 gpm for a duration of 0.5 hours. For buildings greater 3,601 square feet or more, the minimum sprinkler demand is 1/2 value in IFC Table B105.1(2) which could be as much as 1,000 gpm. It has been our experience that Fire Marshals in the region sometimes require a much higher fire flow. Consequently, we looked at 3,000 gpm as a minimum.

Flow tests made at three (3) locations are indicated in Exhibit B with the resultant pressures and flows used in the subsequent analysis. The system was analyzed for flow and pressure with a background consumption within the system of 1,400 gpm. The analysis is rudimentary for the purpose of determining whether the system will meet both fire flow as well as domestic demands. While valves and fittings are indicated on the plans, they are not included in the evaluation. We considered the final analysis will not significantly impact flows. What is not known is the demand outside the Glasgow P.D. system.

An example of fire flow calculations is as follows:

S = Static Pressure = (96.64)

R = Residual Pressure = (94.59)

M = minim residual pressure is 20 psi residual, or ½ the static pressure = (48.32)

Hydrant Flow = ([(S - M)/ (S-R)] $^{\wedge 0.54}$) gpm = (1,500x5.5091) = 8,263.67 gpm at ½ the static pressure

The following exhibits are included:

Exhibit A: Overall Water Plan

Exhibit B: Flow Tests

Exhibit C: Calculated Joint Locations and Demand

Exhibit D: Calculated Pipe Flows and Pressures

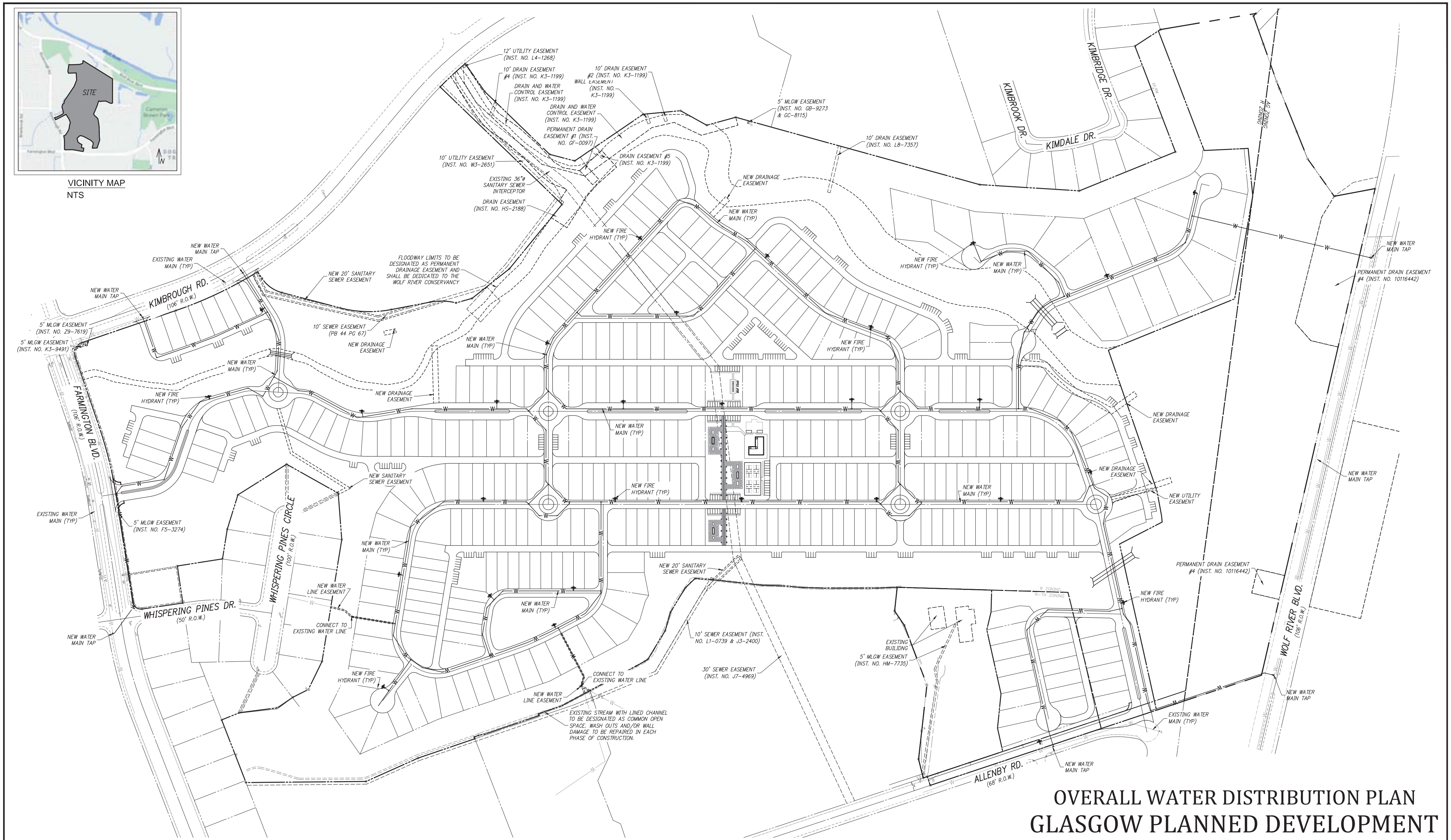
Exhibit E: Partial Water Distribution Plan – South

Exhibit F: Partial Water Distribution Plan - North

Fire flows throughout the Glasgow P.D. system is shown to be consistent with local requirements. Consequently, it is my opinion that a system as outlined will be sufficient to meet fire flow demands as well as domestic demands.

Sincerely,

Joseph Tomasello, P.E.
Senior Project Manager
Enc.



OVERALL WATER DISTRIBUTION PLAN
GLASGOW PLANNED DEVELOPMENT
GERMANTOWN, TENNESSEE

TOTAL SITE AREA: 146.132 ACRES
OWNER: TRUIST BANK, TRUSTEE OF THE MARY C. ANDERSON REVOCABLE LIVING TRUST
DEVELOPER: FARMINGTON KIMBROUGH DEVELOPMENT GROUP
ENGINEER: THE REAVES FIRM, INC.
MARCH 31, 2021

THIS SITE LIES WITHIN THE WS-10 SEWER BASIN
THIS SITE LIES WITHIN THE FARMINGTON 9-I DRAINAGE BASIN

EACH LOT SHALL HAVE THE FOLLOWING EASEMENTS:
10' FRONT YARD
5' REAR YARD
3.5' SIDE YARD

SCALE 1" = 150'
0 150 300 450

100-YEAR FLOODZONE INFORMATION:
PORTIONS OF THIS PROPERTY LIES WITHIN THE 100-YEAR FLOODPLAIN AND FLOODWAY AS SHOWN ON FEMA MAP NUMBER 47157C0456G DATED FEBRUARY 6, 2013 FOR SHELBY COUNTY, TENNESSEE. BASE FLOOD ELEVATION: VARIES

The Reaves Firm
Engineering
Planning
Landscape Architecture
Land Surveying
6800 Poplar Avenue, Suite 101 Memphis, TN 38138
901.761.2016 Fax: 901.763.2847
www.ReavesFirm.com

EXHIBIT A

EXHIBIT B

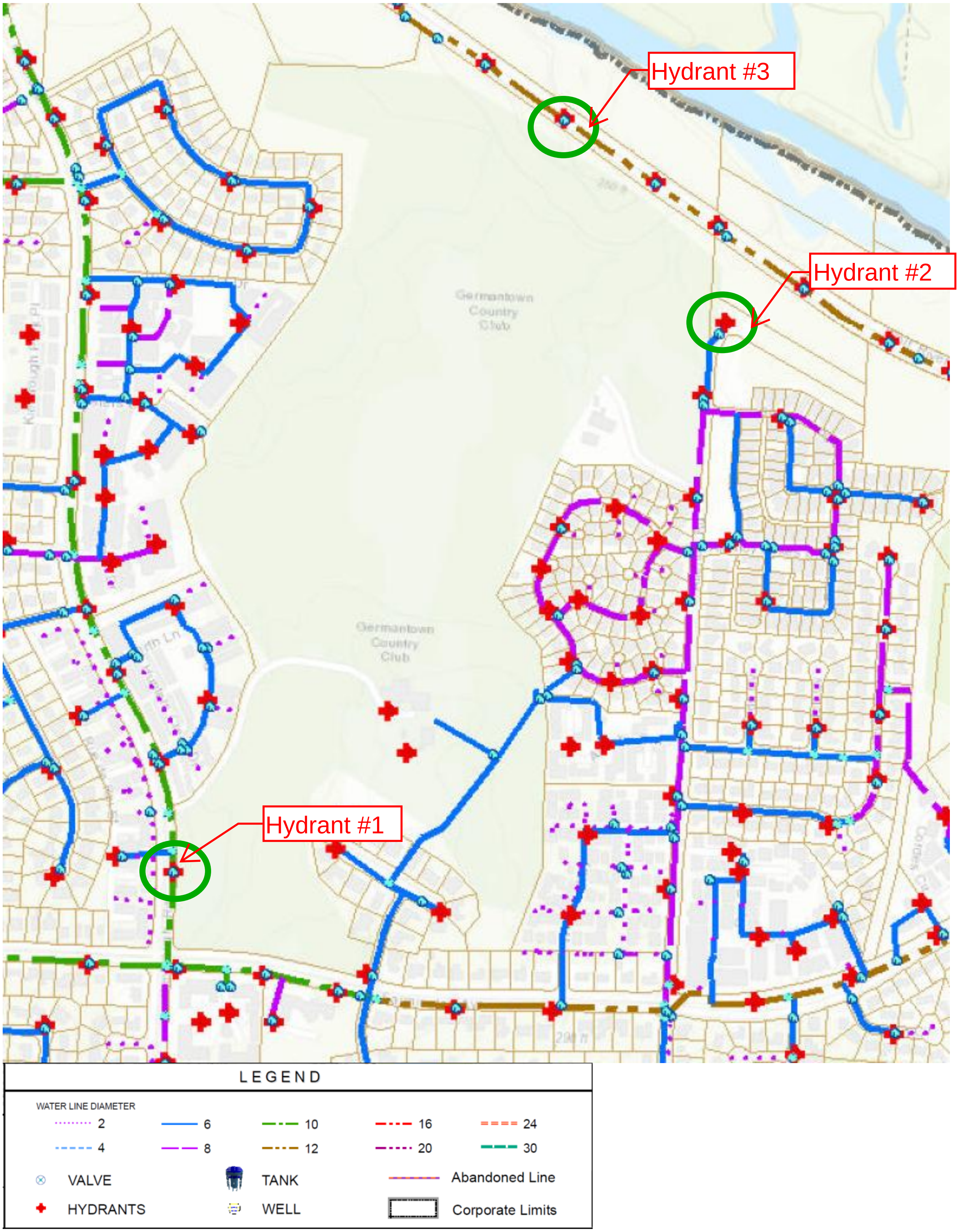

Hydrant #3
Hydrant #2
Hydrant #1
Germantown Country Club
Germantown Country Club
LEGEND
WATER LINE DIAMETER
2
4
6
8
10
12
16
20
24
30
VALVE
HYDRANTS
TANK
WELL
Abandoned Line
Corporate Limits

EXHIBIT B

Hydrant #1

HYDRANT FLOW TEST DATA

HYDRANT # & LOCATION: Kinbrough Road @ Club Entrance — DATE: 3/11/2021

TEST BY: Brian Goedde — Day or Week: Thursday — TIME OF DAY: 9:30 AM — MIN. OF FLOW: 2

WATER SUPPLIED BY: City Connection

PURPOSE OF TEST: Available Fire Flows Investigation

DATA

FLOW HYDRANT(S)	A1	A2	A3
SIZE OPENING:	2.5		
COEFFICIENT:	0.9		
PITOT READING:	82		
GPM:	**1519**	0	0

TOTAL FLOW DURING TEST: **1519** GPM

STATIC READING: 102 PSI — RESIDUAL: 100 PSI

RESULTS: AT 20 PSI RESIDUAL **11287** GPM — AT 0 PSI **12699** GPM

ESTIMATED CONSUMPTION: **3039** GAL.

REMARKS:

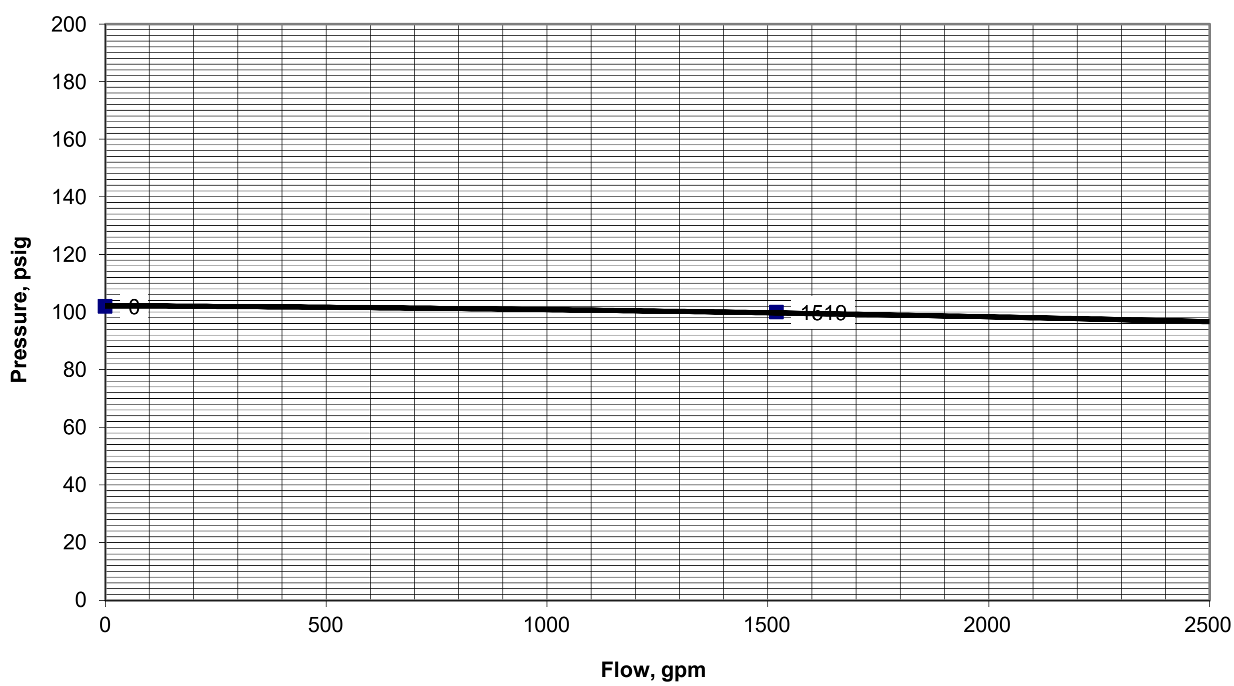


EXHIBIT B

Hydrant #2

HYDRANT FLOW TEST DATA

HYDRANT # & LOCATION: Allenby Road @ Club Maintenance Entrance DATE: 3/11/2021

TEST BY: Brian Goedde Day or Week: T□□r□day TIME OF DAY: 9:45 AM MIN. OF FLOW: 2

WATER SUPPLIED BY: City Connection

PURPOSE OF TEST: Available Fire Flows Investigation

DATA

FLOW HYDRANT(S)	A1	A2	A3
SIZE OPENING:	2.5		
COEFFICIENT:	0.9		
PITOT READING:	76		
GPM:	**1463**	0	0

TOTAL FLOW DURING TEST: **1463** GPM

STATIC READING: 110 PSI RESIDUAL: 102 PSI

RESULTS: AT 20 PSI RESIDUAL **5405** GPM AT 0 PSI **6024** GPM

ESTIMATED CONSUMPTION: **2926** GAL.

REMARKS:

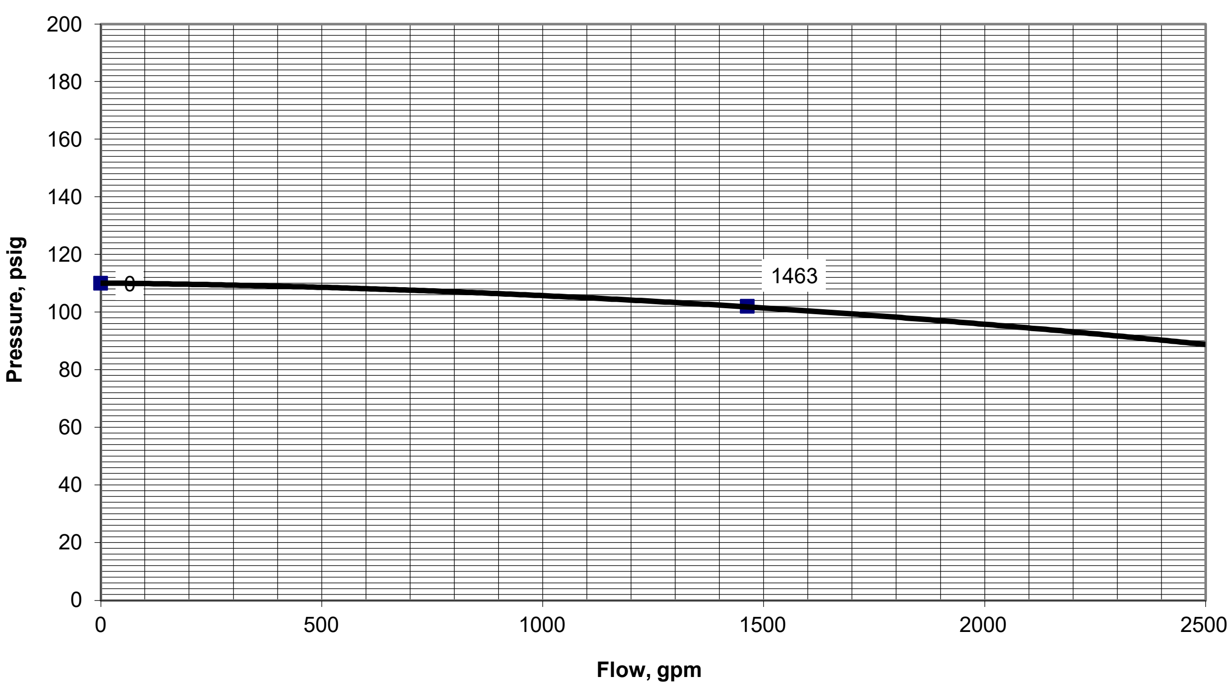


EXHIBIT B

Hydrant #3

HYDRANT FLOW TEST DATA

HYDRANT # & LOCATION Wold River Blvd North of Club DATE: 3/11/2021

TEST BY: Brian Goedde Day or Week: Thursday TIME OF DAY: 10:10 AM MIN. OF FLOW: 2

WATER SUPPLIED BY: City Connection

PURPOSE OF TEST: Available Fire Flows Investigation

DATA

FLOW HYDRANT(S)	A1	A2	A3
SIZE OPENING:	2.5		
COEFFICIENT:	0.9		
PITOT READING:	90		
GPM:	**1592**	0	0

TOTAL FLOW DURING TEST: **1592** GPM

STATIC READING: 100 PSI RESIDUAL: 99 PSI

RESULTS: AT 20 PSI RESIDUAL **16965** GPM AT 0 PSI **19138** GPM

ESTIMATED CONSUMPTION: **3184** GAL.

REMARKS:

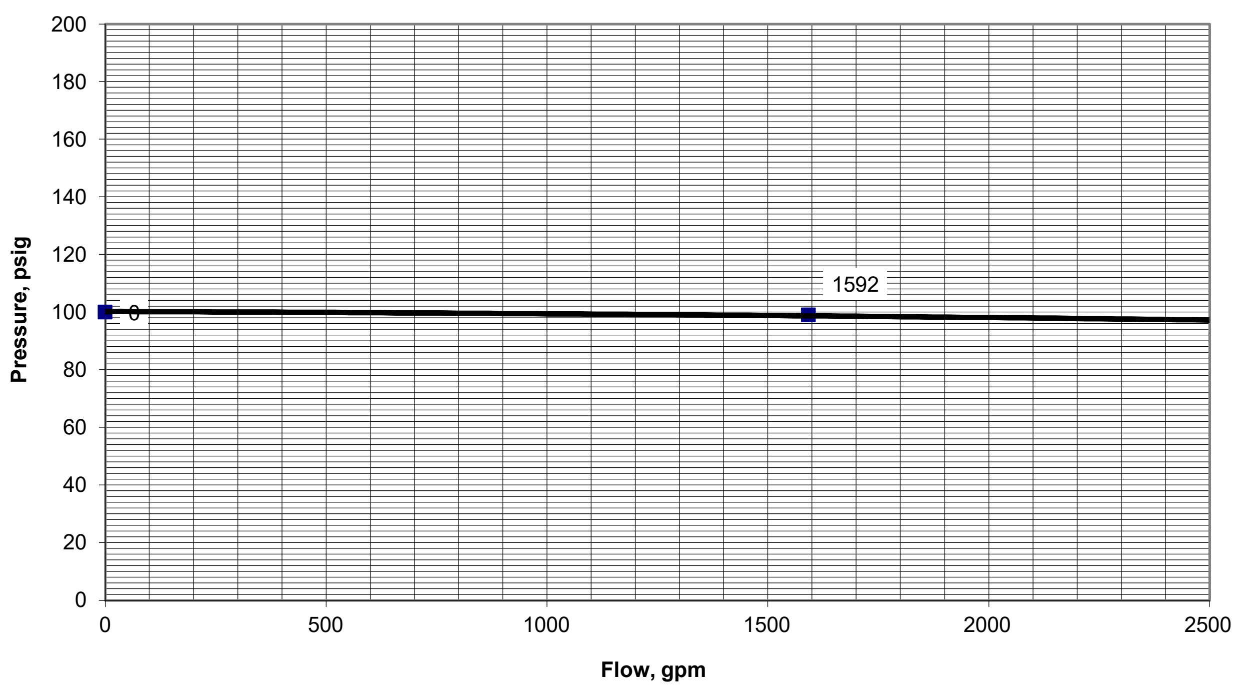


EXHIBIT C

Glasgow Water Distribution

Network Table - Links

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P133	34.66	6	-1500.00	17.02	120.57	0.013	0.00
Pipe P134	34.02	6	0.00	0.00	0.00	0.000	0.00
Pipe P135	12.00	6	0.00	0.00	0.00	0.000	0.00
Pipe P132	16.14	6	0.00	0.00	0.00	0.000	0.00
Pipe P129	21.77	6	0.00	0.00	0.00	0.000	0.00
Pipe P130	27.69	6	0.00	0.00	0.00	0.000	0.00
Pipe P131	27.39	6	0.00	0.00	0.00	0.000	0.00
Pipe P136	12.00	6	0.00	0.00	0.00	0.000	0.00
Pipe P140	13.66	6	0.00	0.00	0.00	0.000	0.00
Pipe P164	9.55	6	0.00	0.00	0.00	0.000	0.00
Pipe P165	11.40	6	0.00	0.00	0.00	0.000	0.00
Pipe P139	8.96	6	0.00	0.00	0.00	0.000	0.00
Pipe P137	14.40	6	-1500.00	17.02	120.57	0.013	0.00
Pipe P138	13.56	6	0.00	0.00	0.00	0.000	0.00
Pipe P28	73.56	6	0.00	0.00	0.00	0.000	0.00
Pipe P123	23.28	6	0.00	0.00	0.00	0.000	0.00
Pipe P122	11.99	6	0.00	0.00	0.00	0.000	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P120	9.26	6	-1000.00	11.35	56.90	0.014	0.00
Pipe P118	11.99	6	0.00	0.00	0.00	0.000	0.00
Pipe P117	10.12	6	0.00	0.00	0.00	0.000	0.00
Pipe P126	23.56	6	0.00	0.00	0.00	0.000	0.00
Pipe P127	9.94	6	0.00	0.00	0.00	0.000	0.00
Pipe P128	14.93	6	0.00	0.00	0.00	0.000	0.00
Pipe P124	16.80	6	0.00	0.00	0.00	0.000	0.00
Pipe P61	100.63	8	97.13	0.62	0.19	0.021	0.00
Pipe P60	258.67	8	97.13	0.62	0.19	0.021	0.00
Pipe P59	45.60	8	97.13	0.62	0.19	0.021	0.00
Pipe P63	154.02	8	0.00	0.00	0.00	0.000	0.00
Pipe P111	58.47	8	-29.28	0.19	0.02	0.025	0.00
Pipe P168	21.17	8	258.36	1.65	1.14	0.018	0.00
Pipe P58	39.20	8	97.13	0.62	0.19	0.021	0.00
Pipe P54	111.51	8	258.36	1.65	1.14	0.018	0.00
Pipe P52	154.32	8	258.36	1.65	1.14	0.018	0.00
Pipe P53	115.11	8	258.36	1.65	1.14	0.018	0.00
Pipe P57	100.15	8	97.13	0.62	0.19	0.021	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P56	82.62	8	97.13	0.62	0.19	0.021	0.00
Pipe P55	189.86	8	258.36	1.65	1.14	0.018	0.00
Pipe P110	65.87	8	-29.28	0.19	0.02	0.024	0.00
Pipe P107	65.90	8	268.94	1.72	1.23	0.018	0.00
Pipe P108	62.57	8	268.94	1.72	1.23	0.018	0.00
Pipe P109	62.59	8	-29.28	0.19	0.02	0.025	0.00
Pipe P89	36.50	8	309.96	1.98	1.60	0.018	0.00
Pipe P88	108.76	8	309.96	1.98	1.60	0.018	0.00
Pipe P106	58.45	8	268.94	1.72	1.23	0.018	0.00
Pipe P149	6.76	8	29.28	0.19	0.02	0.022	0.00
Pipe P161	61.49	8	153.81	0.98	0.44	0.019	0.00
Pipe P162	301.23	8	153.81	0.98	0.44	0.019	0.00
Pipe P163	290.74	8	153.81	0.98	0.44	0.019	0.00
Pipe P150	34.53	8	0.00	0.00	0.00	0.000	0.00
Pipe P151	202.90	8	0.00	0.00	0.00	0.000	0.00
Pipe P160	14.92	8	-153.81	0.98	0.44	0.019	0.00
Pipe P31	159.99	8	0.00	0.00	0.00	0.000	0.00
Pipe P30	78.24	8	0.00	0.00	0.00	0.000	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P29	101.26	8	0.00	0.00	0.00	0.000	0.00
Pipe P32	56.08	8	0.00	0.00	0.00	0.000	0.00
Pipe P185	199.50	8	309.96	1.98	1.60	0.018	0.00
Pipe P186	76.53	8	309.96	1.98	1.60	0.018	0.00
Pipe P187	111.18	8	309.96	1.98	1.60	0.018	0.00
Pipe P27	91.28	8	183.09	1.17	0.60	0.019	0.00
Pipe P17	48.57	8	-138.88	0.89	0.36	0.020	0.00
Pipe P16	100.36	8	-138.88	0.89	0.36	0.020	0.00
Pipe P15	91.71	8	-138.88	0.89	0.36	0.020	0.00
Pipe P18	183.71	8	-236.01	1.51	0.97	0.018	0.00
Pipe P26	12.65	8	183.09	1.17	0.61	0.019	0.00
Pipe P20	44.13	8	-236.01	1.51	0.97	0.018	0.00
Pipe P19	90.17	8	-236.01	1.51	0.97	0.018	0.00
Pipe P170	51.04	8	236.01	1.51	0.97	0.018	0.00
Pipe P171	75.31	8	236.01	1.51	0.97	0.018	0.00
Pipe P172	64.60	8	0.00	0.00	0.00	0.000	0.00
Pipe P173	136.80	8	0.00	0.00	0.00	0.000	0.00
Pipe P169	20.16	8	236.01	1.51	0.97	0.018	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P51	332.14	8	-646.66	4.13	6.25	0.016	0.00
Pipe P50	59.38	8	-646.66	4.13	6.25	0.016	0.00
Pipe P49	349.20	8	853.34	5.45	10.45	0.015	0.00
Pipe P48	21.34	8	853.34	5.45	10.45	0.015	0.00
Pipe P181	6.77	8	268.94	1.72	1.23	0.018	0.00
Pipe P184	356.67	8	309.96	1.98	1.60	0.018	0.00
Pipe P38	85.08	8	0.00	0.00	0.00	0.000	0.00
Pipe P121	9.26	10	0.00	0.00	0.00	0.000	0.00
Pipe P203	10.85	10	-370.71	1.51	0.75	0.018	0.00
Pipe P205	237.38	10	-645.30	2.64	2.10	0.016	0.00
Pipe P301	400	10	-957.30	3.91	4.36	0.015	0.00
Pipe P125	12.59	10	0.00	0.00	0.00	0.000	0.00
Pipe P199	40.20	10	1163.30	4.75	6.25	0.015	0.00
Pipe P200	25.91	10	1163.30	4.75	6.25	0.015	0.00
Pipe P201	125.34	10	-1163.30	4.75	6.25	0.015	0.00
Pipe P702	400	10	-388.88	1.59	0.82	0.017	0.00
Pipe P410	10	10	3680.22	15.03	52.78	0.013	0.00
Pipe P116	12.66	10	-865.76	3.54	3.62	0.016	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P115	115.82	10	-1134.70	4.64	5.97	0.015	0.00
Pipe P304	400	10	258.36	1.06	0.39	0.019	0.00
Pipe P305	400	10	-1215.66	4.97	6.79	0.015	0.00
Pipe p408	10	10	1486.52	6.07	9.85	0.014	0.00
Pipe P701	3	10	-388.88	1.59	0.81	0.017	0.00
Pipe P198	105.31	10	-1215.66	4.97	6.79	0.015	0.00
Pipe P190	27.91	10	645.30	2.64	2.10	0.016	0.00
Pipe P191	89.91	10	645.30	2.64	2.10	0.016	0.00
Pipe P192	109.26	10	388.88	1.59	0.82	0.017	0.00
Pipe P195	489.74	10	-957.30	3.91	4.36	0.015	0.00
Pipe P180	1.00	10	-236.01	0.96	0.34	0.019	0.00
Pipe P146	57.49	10	388.88	1.59	0.82	0.017	0.00
Pipe P147	11.43	10	-524.52	2.14	1.43	0.017	0.00
Pipe P141	24.04	10	2722.92	11.12	30.21	0.013	0.00
Pipe P167	11.78	10	-1163.30	4.75	6.25	0.015	0.00
Pipe P143	46.97	10	388.88	1.59	0.82	0.017	0.00
Pipe P145	380.09	10	388.88	1.59	0.82	0.017	0.00
Pipe P197	366.76	10	-957.30	3.91	4.36	0.015	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P196	278.60	10	-957.30	3.91	4.36	0.015	0.00
Pipe P183	127.77	10	1163.30	4.75	6.25	0.015	0.00
Pipe P189	34.24	10	-645.30	2.64	2.10	0.016	0.00
Pipe P188	103.86	10	-645.30	2.64	2.10	0.016	0.00
Pipe P37	101.36	10	-645.30	2.64	2.10	0.016	0.00
Pipe P36	76.17	10	-645.30	2.64	2.10	0.016	0.00
Pipe P35	173.00	10	-645.30	2.64	2.10	0.016	0.00
Pipe P9	326.52	10	-236.01	0.96	0.33	0.019	0.00
Pipe P34	52.92	10	-645.30	2.64	2.10	0.016	0.00
Pipe P39	113.43	10	-2722.92	11.12	30.21	0.013	0.00
Pipe P81	103.25	10	2131.65	8.71	19.20	0.014	0.00
Pipe P41	13.73	10	-2722.92	11.12	30.22	0.013	0.00
Pipe P40	98.84	10	-2722.92	11.12	30.21	0.013	0.00
Pipe P47	103.25	10	-341.43	1.39	0.65	0.018	0.00
Pipe P62	674.64	10	-645.30	2.64	2.10	0.016	0.00
Pipe P22	175.11	10	-236.01	0.96	0.33	0.019	0.00
Pipe P33	177.13	10	-645.30	2.64	2.10	0.016	0.00
Pipe P23	144.92	10	-236.01	0.96	0.33	0.019	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P24	140.17	10	-236.01	0.96	0.33	0.019	0.00
Pipe P25	152.16	10	-236.01	0.96	0.33	0.019	0.00
Pipe P21	177.21	10	-236.01	0.96	0.33	0.019	0.00
Pipe P10	8.00	10	-138.88	0.57	0.12	0.020	0.00
Pipe P11	93.97	10	-138.88	0.57	0.12	0.020	0.00
Pipe P12	112.56	10	-138.88	0.57	0.12	0.020	0.00
Pipe P13	8.83	10	-138.88	0.57	0.12	0.020	0.00
Pipe P14	21.84	10	-138.88	0.57	0.12	0.020	0.00
Pipe P101	94.80	10	1370.71	5.60	8.47	0.015	0.00
Pipe P42	17.87	10	-2464.56	10.07	25.12	0.013	0.00
Pipe P43	151.70	10	-2464.56	10.07	25.12	0.013	0.00
Pipe P44	10.85	10	-731.65	2.99	2.65	0.016	0.00
Pipe P96	11.77	10	-336.70	1.38	0.63	0.018	0.00
Pipe P102	188.59	10	1370.71	5.60	8.47	0.015	0.00
Pipe P114	48.91	10	-1370.71	5.60	8.47	0.015	0.00
Pipe P113	961.70	10	-370.71	1.51	0.75	0.018	0.00
Pipe P105	91.27	10	865.76	3.54	3.62	0.016	0.00
Pipe P104	13.53	10	1370.71	5.60	8.47	0.015	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P103	103.25	10	504.95	2.06	1.33	0.017	0.00
Pipe P87	97.62	10	-731.65	2.99	2.65	0.016	0.00
Pipe P86	472.71	10	768.35	3.14	2.90	0.016	0.00
Pipe P85	358.57	10	768.35	3.14	2.90	0.016	0.00
Pipe P84	210.18	10	768.35	3.14	2.90	0.016	0.00
Pipe P83	91.28	10	768.35	3.14	2.90	0.016	0.00
Pipe P90	49.83	10	-336.70	1.38	0.63	0.018	0.00
Pipe P95	100.08	10	-336.70	1.38	0.63	0.018	0.00
Pipe P94	100.30	10	-336.70	1.38	0.63	0.018	0.00
Pipe P93	68.65	10	-336.70	1.38	0.63	0.018	0.00
Pipe P92	173.89	10	-336.70	1.38	0.63	0.018	0.00
Pipe P91	299.22	10	-336.70	1.38	0.63	0.018	0.00
Pipe p409	400	12	-177.86	0.50	0.08	0.020	0.00
Pipe P4	41.81	12	-841.22	2.39	1.41	0.016	0.00
Pipe P5	291.39	12	-841.22	2.39	1.41	0.016	0.00
Pipe P1	298.16	12	-452.34	1.28	0.45	0.017	0.00
Pipe P2	20.48	12	-452.34	1.28	0.45	0.017	0.00
Pipe P3	21.49	12	-841.22	2.39	1.41	0.016	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P6	37.02	12	-841.22	2.39	1.41	0.016	0.00
Pipe P204	30.00	12	0.00	0.00	0.00	0.000	0.00
Pipe P202	146.94	12	779.44	2.21	1.23	0.016	0.00
Pipe P193	30.00	12	1486.52	4.22	4.05	0.015	0.00
Pipe P7	439.22	12	-841.22	2.39	1.41	0.016	0.00
Pipe P206	1570.10	12	841.22	2.39	1.41	0.016	0.00
Pipe P8	36.23	12	-841.22	2.39	1.41	0.016	0.00
Pipe P73	82.67	12	779.44	2.21	1.23	0.016	0.00
Pipe P74	102.82	12	3502.36	9.94	19.81	0.013	0.00
Pipe P75	40.53	12	3502.36	9.94	19.81	0.013	0.00
Pipe P76	199.62	12	3502.36	9.94	19.81	0.013	0.00
Pipe P153	44.84	12	-98.53	0.28	0.03	0.022	0.00
Pipe P152	99.58	12	-452.34	1.28	0.45	0.017	0.00
Pipe P71	36.44	12	779.44	2.21	1.23	0.016	0.00
Pipe P72	61.84	12	779.44	2.21	1.23	0.016	0.00
Pipe P80	108.75	12	3502.36	9.94	19.81	0.013	0.00
Pipe P97	91.29	12	-743.83	2.11	1.12	0.016	0.00
Pipe P98	226.58	12	-743.83	2.11	1.12	0.016	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P99	142.12	12	-743.83	2.11	1.12	0.016	0.00
Pipe P77	20.64	12	3502.36	9.94	19.81	0.013	0.00
Pipe P142	103.25	12	-207.13	0.59	0.11	0.020	0.00
Pipe P78	179.19	12	3502.36	9.94	19.81	0.013	0.00
Pipe P79	308.47	12	3502.36	9.94	19.81	0.013	0.00
Pipe P65	122.38	12	779.44	2.21	1.23	0.016	0.00
Pipe P66	418.62	12	779.44	2.21	1.23	0.016	0.00
Pipe P67	32.76	12	779.44	2.21	1.23	0.016	0.00
Pipe P68	157.03	12	779.44	2.21	1.23	0.016	0.00
Pipe P45	95.97	12	-524.52	1.49	0.59	0.017	0.00
Pipe P46	189.22	12	-524.52	1.49	0.59	0.017	0.00
Pipe P64	6.00	12	779.44	2.21	1.22	0.016	0.00
Pipe P166	10.87	12	3502.36	9.94	19.81	0.013	0.00
Pipe P157	47.24	12	-98.53	0.28	0.03	0.022	0.00
Pipe P156	159.57	12	-98.53	0.28	0.03	0.022	0.00
Pipe P155	61.77	12	-98.53	0.28	0.03	0.022	0.00
Pipe P154	114.26	12	-98.53	0.28	0.03	0.022	0.00
Pipe P69	203.46	12	779.44	2.21	1.23	0.016	0.00

EXHIBIT C

Glasgow Water Distribution

Link ID	Length ft	Diameter in	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor	Quality
Pipe P70	113.34	12	779.44	2.21	1.23	0.016	0.00
Pipe P159	58.49	12	-452.34	1.28	0.45	0.018	0.00
Pipe P158	13.83	12	-452.34	1.28	0.45	0.018	0.00

EXHIBIT D

Glasgow Water Distribution

Network Table - Nodes

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J1	270.62	0	0.00	499.13	99.01
Junc J2	271.10	0	0.00	499.26	98.86
Junc J3	271.00	0	0.00	499.27	98.91
Junc J4	270.9	0	0.00	499.30	98.97
Junc J5	271.5	0	0.00	499.36	98.73
Junc J6	270	0	0.00	499.77	99.56
Junc J7	270	0	0.00	499.82	99.58
Junc J8	269.50	0	0.00	500.44	100.07
Junc J9	271	0	0.00	500.49	99.44
Junc J10	276	0	0.00	499.91	97.02
Junc J11	276.90	0	0.00	500.01	96.68
Junc J12	277	0	0.00	500.01	96.63
Junc J13	277.80	0	0.00	500.03	96.29
Junc J14	279	0	0.00	500.04	95.78
Junc J15	279	0	0.00	500.04	95.78
Junc J16	279.10	0	0.00	500.04	95.73
Junc J17	280	0	0.00	500.08	95.36

EXHIBIT D

Glasgow Water Distribution

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J18	281	0	0.00	500.11	94.94
Junc J19	280.5	0	0.00	500.13	95.17
Junc J20	281.50	0	0.00	500.31	94.81
Junc J21	279.80	0	0.00	500.45	95.61
Junc J22	278.70	0	0.00	500.54	96.12
Junc J23	278.70	0	0.00	500.58	96.14
Junc J32	277.12	0	0.00	500.84	96.94
Junc J33	267.50	0	0.00	498.76	100.20
Junc J34	267.50	0	0.00	498.75	100.20
Junc J35	277.35	0	0.00	498.69	95.91
Junc J36	269.75	0	0.00	500.06	99.79
Junc J37	269.30	0	0.00	500.06	99.99
Junc J38	268.50	0	0.00	500.06	100.33
Junc J39	267.80	0	0.00	500.06	100.64
Junc J40	269	0	0.00	500.06	100.12
Junc J41	269.80	0	0.00	500.06	99.77
Junc J42	270.5	0	0.00	499.04	99.03
Junc J43	269	0	0.00	499.41	99.84

EXHIBIT D

Glasgow Water Distribution

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J44	289	0	0.00	499.95	91.40
Junc J45	289.50	0	0.00	500.42	91.39
Junc J46	289.75	0	0.00	500.92	91.50
Junc J47	294.30	0	0.00	501.08	89.60
Junc J48	269	0	0.00	501.29	100.65
Junc J49	269.80	0	0.00	501.29	100.31
Junc J50	283.22	0	0.00	523.45	104.09
Junc J51	286.27	0	0.00	526.88	104.26
Junc J52	289	0	0.00	529.87	104.37
Junc J53	289.50	0	0.00	530.28	104.33
Junc J54	289.75	0	0.00	530.73	104.42
Junc J55	294.30	0	0.00	534.54	104.10
Junc J56	269.90	0	0.00	498.48	99.04
Junc J57	269.80	0	0.00	498.51	99.10
Junc J58	278.5	0	0.00	498.57	95.36
Junc J59	277.35	0	0.00	498.68	95.90
Junc J60	277.1200	0	0.00	498.76	96.04
Junc J61	275.50	0	0.00	499.44	97.03

EXHIBIT D

Glasgow Water Distribution

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J62	275.6	0	0.00	499.22	96.89
Junc J63	274.38	0	0.00	495.57	95.84
Junc J66	268.5	0	0.00	498.02	99.45
Junc J67	289.33	0	0.00	531.11	104.76
Junc J68	290.1	0	0.00	530.94	104.35
Junc J69	290.1	0	0.00	530.78	104.29
Junc J70	290.5	0	0.00	530.65	104.06
Junc J71	291.50	0	0.00	530.52	103.57
Junc J72	289.20	0	0.00	530.31	104.47
Junc J73	281	0	0.00	500.12	94.94
Junc J74	280	0	0.00	500.10	95.37
Junc J75	280	0	0.00	500.09	95.36
Junc J76	279.80	0	0.00	500.08	95.45
Junc J77	277.1	0	0.00	500.03	96.60
Junc J78	274.48	0	0.00	502.71	98.89
Junc J79	287	0	0.00	500.58	92.54
Junc J80	293.63	0	0.00	524.42	100.00
Junc J81	279.80	0	0.00	524.41	105.99

EXHIBIT D

Glasgow Water Distribution

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J82	298.45	0	0.00	524.26	97.85
Junc J83	293.76	0	0.00	523.75	99.66
Junc J84	292.87	0	0.00	523.71	100.02
Junc J85	289.50	0	0.00	523.52	101.40
Junc J86	284.85	0	0.00	523.27	103.31
Junc J87	284	0	0.00	523.13	103.62
Junc J88	283.78	0	0.00	523.09	103.69
Junc J89	282.7500	0	0.00	522.91	104.06
Junc J90	282.4700	0	0.00	522.83	104.15
Junc J91	282.78	0	0.00	522.73	103.97
Junc J92	282.50	0	0.00	520.69	103.21
Junc J93	281	0	0.00	519.89	103.51
Junc J94	280	0	0.00	515.93	102.23
Junc J95	279.80	0	0.00	515.52	102.14
Junc J97	278.50	0	0.00	511.97	101.16
Junc J98	279.25	0	0.00	505.86	98.19
Junc J99	278.50	0	0.00	503.71	97.58
Junc J100	278.40	0	0.00	503.49	97.53

EXHIBIT D

Glasgow Water Distribution

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J101	278.50	200	200.00	501.51	96.63
Junc J104	278.53	0	0.00	501.24	96.50
Junc J105	276.79	0	0.00	500.63	96.99
Junc J108	270.51	0	0.00	498.22	98.67
Junc J109	267.59	0	0.00	498.25	99.94
Junc J110	268.30	0	0.00	498.07	99.56
Junc J111	268.80	0	0.00	498.05	99.33
Junc J112	270.20	0	0.00	498.24	98.81
Junc J113	270.20	0	0.00	498.34	98.86
Junc J114	269.50	0	0.00	498.39	99.18
Junc J115	268.70	0	0.00	498.45	99.55
Junc J116	268.90	0	0.00	498.51	99.49
Junc J117	268.90	200	200.00	498.52	99.49
Junc J118	269.55	0	0.00	498.62	99.26
Junc J119	269.55	0	0.00	498.88	99.37
Junc J122	278.50	0	0.00	502.69	97.14
Junc J123	277	0	0.00	501.09	97.10
Junc J124	277.41	0	0.00	500.98	96.87

EXHIBIT D

Glasgow Water Distribution

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J125	277.12	0	0.00	500.84	96.94
Junc J126	276.76	0	0.00	500.65	97.01
Junc J127	267.50	0	0.00	500.77	101.07
Junc J128	267.50	0	0.00	500.68	101.04
Junc J129	267.67	0	0.00	500.61	100.93
Junc J130	267.50	0	0.00	498.76	100.20
Junc J131	267.50	0	0.00	498.76	100.20
Junc J132	267.90	0	0.00	498.76	100.03
Junc J134	268.30	0	0.00	498.77	99.86
Junc J137	276.67	0	0.00	500.60	97.03
Junc J138	269.30	0	0.00	499.05	99.55
Junc J139	269.80	0	0.00	499.05	99.33
Junc J140	269.50	0	0.00	498.88	99.39
Junc J141	269	0	0.00	498.88	99.61
Junc J144	276.21	1000	1000.00	498.97	96.52
Junc J146	278.60	0	0.00	500.79	96.27
Junc J148	278	0	0.00	500.03	96.21
Junc J149	280.50	0	0.00	500.09	95.15

EXHIBIT D

Glasgow Water Distribution

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J150	279.50	0	0.00	500.04	95.56
Junc J151	279.29	0	0.00	500.64	95.91
Junc J154	282.58	0	0.00	500.43	94.39
Junc J155	284.28	0	0.00	523.09	103.47
Junc J156	289.25	0	0.00	530.73	104.63
Junc J157	280.0	0	0.00	515.52	102.05
Junc J158	279.75	0	0.00	505.86	97.97
Junc J159	277.29	0	0.00	500.63	96.78
Junc J160	274.66	0	0.00	499.59	97.46
Junc J162	271.01	1500	1500.00	494.04	96.64
Junc J163	270.05	0	0.00	498.88	99.15
Junc J164	270.70	0	0.00	498.34	98.64
Junc J165	269.30	0	0.00	498.05	99.12
Junc J166	274.88	1500	1500.00	493.83	94.87
Junc J167	271.30	0	0.00	498.87	98.61
Junc J168	270.80	0	0.00	498.87	98.82
Junc J169	277.95	0	0.00	500.40	96.39
Junc J170	277.45	0	0.00	500.40	96.60

EXHIBIT D

Glasgow Water Distribution

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J171	270.50	0	0.00	500.42	99.63
Junc J172	271.70	0	0.00	499.23	98.59
Junc J173	270	0	0.00	498.90	99.18
Junc J174	269	0	0.00	498.81	99.58
Junc J175	270	0	0.00	498.50	99.01
Junc J176	270	0	0.00	498.45	98.99
Junc J179	276	0	0.00	500.04	97.08
Junc J180	279	0	0.00	500.04	95.78
Junc J181	270	0	0.00	499.08	99.26
Junc J182	270.80	0	0.00	499.04	98.90
Junc J183	269.80	0	0.00	499.04	99.33
Junc J184	269.30	0	0.00	499.04	99.55
Junc J185	269.45	200	200.00	499.05	99.49
Junc J186	269.45	0	0.00	499.06	99.49
Junc J187	269.85	0	0.00	499.04	99.31
Junc J188	270.10	0	0.00	499.02	99.19
Junc J189	272	0	0.00	499.26	98.47
Junc J190	270	0	0.00	501.29	100.22

EXHIBIT D

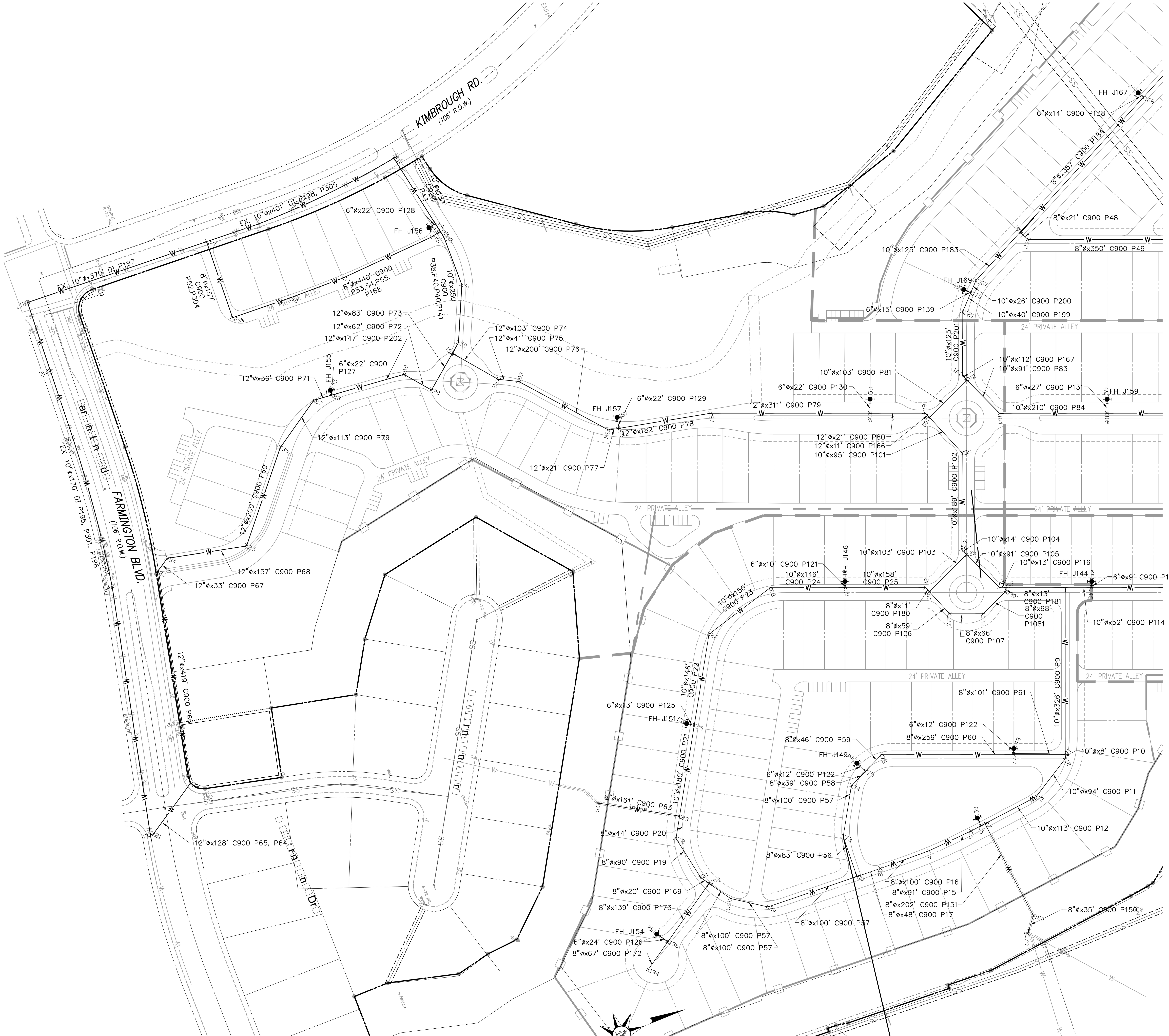
Glasgow Water Distribution

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J191	278.50	0	0.00	501.44	96.60
Junc J192	280	0	0.00	500.43	95.51
Junc J193	280.5	0	0.00	500.38	95.27
Junc J194	283.44	0	0.00	500.43	94.02
Junc J207	277.13	0	0.00	500.24	96.67
Junc J208	268.39	0	0.00	498.55	99.73
Junc J209	267.74	0	0.00	498.43	99.96
Junc J210	268.16	0	0.00	499.63	100.30
Junc J211	267.80	0	0.00	499.88	100.56
Junc J212	267.50	0	0.00	499.82	100.66
Junc J213	274.48	0	0.00	502.83	98.94
Junc J215	288.66	0	0.00	526.56	103.08
Junc J216	287.0	0	0.00	528.30	104.56
Junc J217	288.20	0	0.00	529.51	104.56
Junc J220	293.94	0	0.00	531.83	103.08
Junc J221	277.9400	0	0.00	500.65	96.50
Junc J222	271	0	0.00	500.49	99.44
Junc J145	275.71	0	0.00	499.49	96.97

EXHIBIT D

Glasgow Water Distribution

Node ID	Elevation ft	Base Demand GPM	Demand GPM	Head ft	Pressure psi
Junc J196	282.08	0	0.00	500.43	94.61
Junc J25	278.79	0	0.00	500.64	96.13
Junc J28	278.79	0	0.00	500.74	96.17
Junc J30	278.10	0	0.00	500.79	96.49
Junc J64	273.30	0	0.00	495.94	96.47
Junc J161	274.16	0	0.00	499.59	97.68
Junc J26	278.80	0	0.00	500.69	96.15
Resvr 1	502.93	#N/A	-1486.52	502.93	0.00
Resvr 2	524.39	#N/A	177.86	524.39	0.00
Resvr 3	498.45	#N/A	388.88	498.45	0.00
Tank 4	525.07	#N/A	-3680.22	535.07	4.33



SCALE 1" = 100'

0 100 200 300

100-YEAR FLOODZONE INFORMATION:

PORTIONS OF THIS PROPERTY LIES WITHIN THE 100-YEAR FLOODPLAIN AND FLOODWAY AS SHOWN ON FEMA MAP NUMBER 47157C0456G DATED FEBRUARY 6, 2013 FOR SHELBY COUNTY, TENNESSEE. BASE FLOOD ELEVATION: VARIES

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Land Surveying
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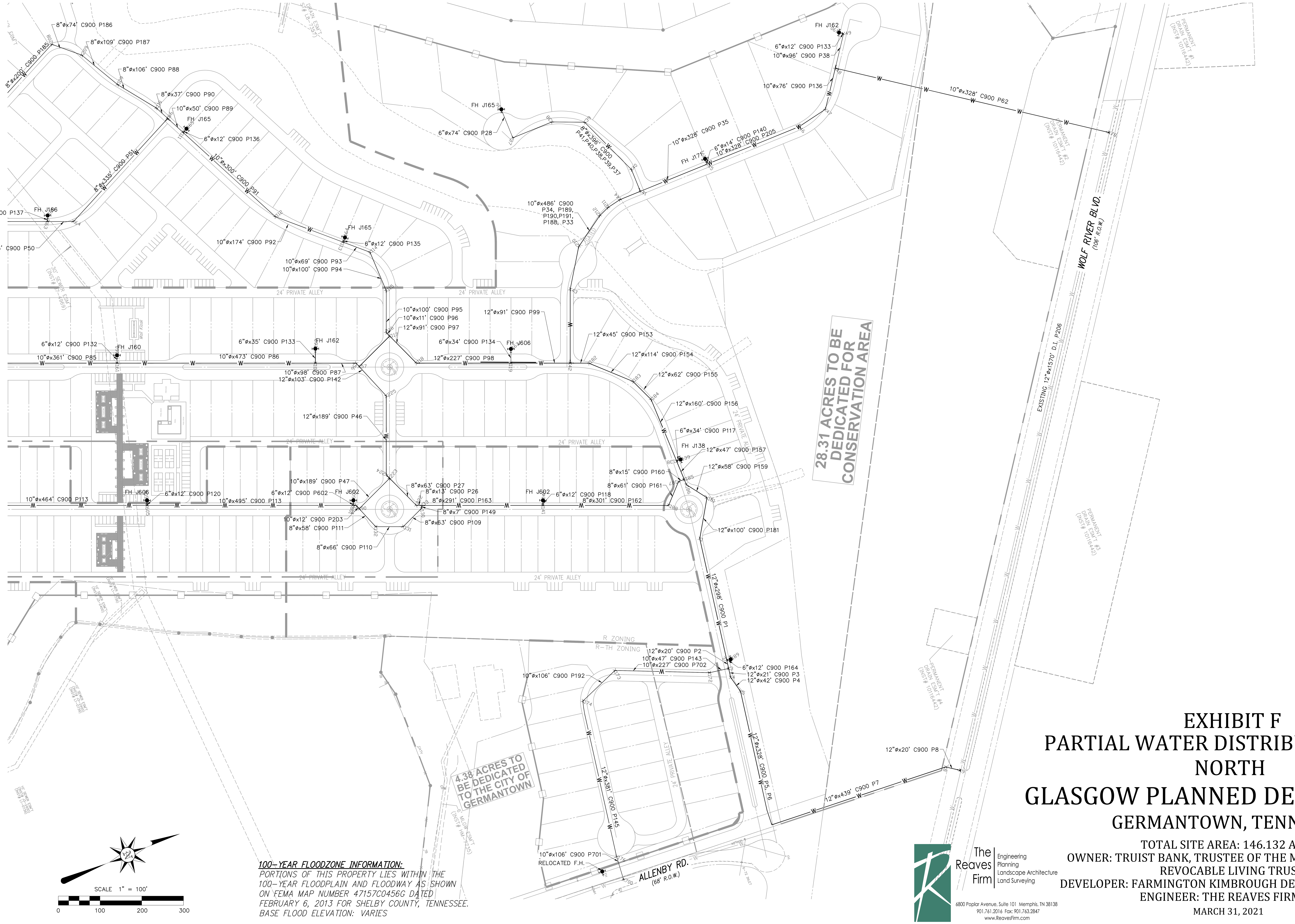
EXHIBIT E
PARTIAL WATER DISTRIBUTION PLAN SOUTH
GLASGOW PLANNED DEVELOPMENT
GERMANTOWN, TENNESSEE

TOTAL SITE AREA: 146.132 ACRES
OWNER: TRUIST BANK, TRUSTEE OF THE MARY C. ANDERSON REVOCABLE LIVING TRUST
DEVELOPER: FARMINGTON KIMBROUGH DEVELOPMENT GROUP
ENGINEER: THE REAVES FIRM, INC.
MARCH 31, 2021



100-YEAR FLOODZONE INFORMATION:
PORTIONS OF THIS PROPERTY LIES WITHIN THE 100-YEAR FLOODPLAIN AND FLOODWAY AS SHOWN ON FEMA MAP NUMBER 47157C0456G DATED FEBRUARY 6, 2013 FOR SHELBY COUNTY, TENNESSEE. BASE FLOOD ELEVATION: VARIES

EXHIBIT F
PARTIAL WATER DISTRIBUTION PLAN NORTH
GLASGOW PLANNED DEVELOPMENT
GERMANTOWN, TENNESSEE

TOTAL SITE AREA: 146.132 ACRES
OWNER: TRUIST BANK, TRUSTEE OF THE MARY C. ANDERSON REVOCABLE LIVING TRUST
DEVELOPER: FARMINGTON KIMBROUGH DEVELOPMENT GROUP
ENGINEER: THE REAVES FIRM, INC.
MARCH 31, 2021

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