



June 26, 2018

Ms. Pam Acre
City of Northglenn
Stormwater Coordinator
11701 Community Center Drive
Northglenn, CO 80233

Re: Kiwanis Pool-Splash Pad Utility Service Memo

Dear Ms. Acre:

JR Engineering is providing this memo and calculations to show that the proposed and existing water and sewer service lines have adequate capacity to provide the needed service to the existing pool pump house and the proposed pool house concession and restroom facilities. There is also going to be a splash pad constructed with the other improvements on site.

Information provided to us from the City of Northglenn indicates that the existing water service to the site is a 2" line and the static pressure in the area is 82 p.s.i. The existing pump house will have limited demand on the system once the pools are filled for the summer. The splash pad will also have limited demand once the onsite storage tank is filled for the summer. The proposed pool house concession and restroom facility will add 6 flush valve toilets; 1 flush valve urinal; 6 single headed showers and 2 lavatory sinks to the system demand. Based on the AWWA M-22 worksheet, the demand on the system has a fixture value of 263, which equates to a 78.4 gpm adjusted demand. The worksheet indicates that a 2" meter is needed to meet the required demands.

The 4" sanitary service capacity was verified using the Haesteeds "Flow-master" program. The service line slope was set at 2.0%; the discharge of 78.4 gpm was used and the program was set to solve for the normal depth of a 4" line. The program gave us a depth of 2 inches with velocities of 4.01 ft/s.

With this information it was determined that the proposed utility service line sizes will be adequate to meet the demands of the proposed improvements to the site.

If you have any questions, please feel free to contact me.

Sincerely,

JR ENGINEERING, LLC

Kurtis W. Williams,
Client Manager



ACWWA Water Demand Estimate and Meter Sizing Using Fixture Values

(Based on AWWA M22 Manual, Second Edition and ACWWA Rules and Regulations)

ACWWA Project Number Kiwanis Outdoor Splash Pad

Building address or number

Residential or Non-Residential Non-Residential ▼

Pressure Zone at Project 80 ▼
(Obtained from ACWWA or Hydrant Test)

Fixture or Appliance	Fixture Value (at 60 psi)	Number of Fixtures	Subtotal Fixture Value
Toilet (tank)	4		0
Toilet (flush valve)	35	6	210
Urinal (wall or stall)	16		0
Urinal (flush valve)	35	1	35
Bidet	2		0
Shower (single head)	2.5	6	15
Sink (lavatory)	1.5	2	3
Kitchen Sink	2.2		0
Utility Sink	4		0
Dishwasher	2		0
Bathtub	8		0
Clothes Washer	6		0
Hose connections (with 50 ft of hose)			
1/2 in.	5		0
5/8 in.	9		0
3/4 in.	12		0
Miscellaneous			
Bedpan washers	10		0
Drinking fountains	2		0
Dental units	2		0
Combined Fixture Value			263
Demand (gpm)			67
Pressure Adjustment Factor			1.17
Total Adjusted demand (gpm)			78.4
Preliminary Demand Size			1 1/2"
Velocity (fps)			14.2
Required ACWWA Meter Size			2"

Review by: _____

Approved by: _____

Kiwanis 4 Inch Sanitary

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Roughness Coefficient	0.010
Channel Slope	2.00 %
Diameter	4.00 in
Discharge	78.40 gal/min

Results

Normal Depth	2.00 in
Flow Area	0.04 ft ²
Wetted Perimeter	0.52 ft
Top Width	0.33 ft
Critical Depth	0.24 ft
Percent Full	49.9 %
Critical Slope	0.00690 ft/ft
Velocity	4.01 ft/s
Velocity Head	0.25 ft
Specific Energy	0.42 ft
Froude Number	1.96
Maximum Discharge	0.38 ft ³ /s
Discharge Full	0.35 ft ³ /s
Slope Full	0.00499 ft/ft
Flow Type	SuperCritical

GVF Input Data

Downstream Depth	0.00 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.00 in
Profile Description	
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.00 %
Normal Depth Over Rise	49.94 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s

Kiwanis 4 Inch Sanitary

GVF Output Data

Normal Depth	2.00	in
Critical Depth	0.24	ft
Channel Slope	2.00	%
Critical Slope	0.00690	ft/ft