

**THE AURORA HIGHLANDS SUBDIVISION FILING NUMBER 7 AND  
FUTURE FILINGS ADJACENT TO THE EAST - PLANNING AREAS  
64, 65 & 80**

**PRELIMINARY UTILITY REPORT**

**May 2020**

**Prepared For:**



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<b>APPROVED FOR ONE YEAR FROM THIS DATE</b>	
<b>City Engineer</b>	<b>Date</b>
<b>Aurora Water Department</b>	<b>Date</b>

within West Village Avenue at Design Points 9.1, 9.2 and 9.3 of the Master Utility Study.

- Refer to Appendix C for basin designations and calculations.

## D. CONCLUSIONS

### 1. Domestic Water

- This Preliminary Utility Report for The Aurora Highlands Subdivision Filing Number 7 and Future Filings Adjacent to the East - Planning Areas 64, 65 & 80 is in compliance with the City of Aurora domestic water design criteria. Pressures at connections to water mains were taken from *The Aurora Highlands Master Utility Report*, HR Green, January 2020 and demonstrate compliance.
- The domestic water system is comprised of mostly 8-inch lines and a single 12-inch line and is proposed to tie into the existing network and will satisfy the requirements for the Maximum Day Demand + Fire Flow scenario.

- No water system exists at this time.

### 2. Sanitary Sewer

- This Preliminary Utility Report for The Aurora Highlands Subdivision Filing Number 7 and Future Filings Adjacent to the East - Planning Areas 64, 65 & 80 is in compliance with the City of Aurora sanitary sewer design criteria.
- The following conclusions are drawn based on this study:
  - Proposed 8" local sanitary sewer lines will tie into a larger 10" and 12" proposed sanitary trunk lines.
  - The sanitary alignment can maintain minimum slopes and acceptable design depths for the proposed development within the majority of the project area. All City of Aurora design standards in regard to pipe capacity and layout will be adhered to.
  - The Aurora Highlands Subdivision Filing Number 7 and Future Filings Adjacent to the East - Planning Areas 64, 65 & 80 can be referenced in *The Aurora Highlands Master Utility Report*, HR Green, January 2020. Design Points 8, 9 and 13 of this report correspond to Design Points 9.1, 9.2 and 9.3 of the HR Green Report. The loadings determined at these design points are lower than the respective loadings generated in *The Aurora Highlands Master Utility Study*. Therefore, no revisions or amendments are required and this study can be considered in compliance with the *Master Utility Report*.

Unit comparison  
has been added to  
the conclusions.

Can you include a point  
showing the master utility  
studies assumption for total  
units compared to the total  
units being shown here for  
the respective planning  
areas.



# SANITARY SEWER DEMAND CALCULATIONS

PROJECT: TAH Filing No. 7  
DATE: 5/13/2020  
BY: Eric Pearson

Provide the excel table for this spreadsheet and the water model.

POPULATION DENSITY			COMMERCIAL / SCHOOLS / INDUSTRIAL			
Multi-Family	2.77	People per Unit		Commercial	Schools / Industrial	
Single-Family	2.77	People per Unit	Average Flow Generation	1500	1200	gpd/acre
Age Restricted	2.77	People per Unit		0.0023213	0.00185704	gpd/acre
Average Flow Generation	68	gpcpd	Equivalent Population	22	18	capita/acre

PEAKING FACTOR			
PF = 5/(p^0.167) Where p = Population in thousands			
Min. PF =	1.7	Max PF =	4

Excel tables for water and sanitary have been included with this submittal.

RESIDENTIAL SINGLE FAMILY										COMMERCIAL / SCHOOLS / INDUSTRIAL										with this submittal.		Slope	Pipe Velocity (ft/sec)	Percent Full at given Slope	
Basin	Design Point	Notes	No. of Units	No. of Acres	Population Density (people/unit)	Equivalent Population	Average Flow Generation (gpcpd)	Average Day Flow (mgd)	Infil. @ 10% (mgd)	Land Use	Total Acres	Population Density	Equivalent Population	Average Flow Generation (gpd/acre)	Average Day Flow (mgd)	Infil. @ 10% (mgd)	Cumulative Population	Peak Factor							
TAH Subdivision Filing No. 7																									
1	1	PA-59 Future School from Master Utility Study	172	N/A	2.77	476	68	0.032	0.003	School							476	4.0	0.13	0.13	0.5	8	2.24	25.2%	
1A	1A											18.9	18	340	1200	0.022	0.002	340	4.0	0.09	0.09	0.7	8	2.18	17.0%
2	2		11	N/A	2.77	30	68	0.002	0.000									30	4.0	0.01	0.01	1.0	8	1.16	2.5%
3	3		10	N/A	2.77	28	68	0.002	0.000								28	4.0	0.01	0.01	1.0	8	0.97	3.4%	
4	4		89	N/A	2.77	247	68	0.017	0.002								247	4.0	0.07	0.07	0.9	8	2.06	13.6%	
5			51	N/A	2.77	141	68	0.010	0.001								141	4.0	0.04	0.04					
	5	Sum of Basins 4 & 5	140	N/A	2.77	388	68	0.026	0.003								388	4.0	0.11	0.11	0.6	8	2.25	20.1%	
6			125	N/A	2.77	346	68	0.024	0.002								346	4.0	0.09	0.10					
7			114	N/A	2.77	316	68	0.021	0.002								316	4.0	0.09	0.09					
	6	Sum of Basins 6 & 7	239	N/A	2.77	662	68	0.045	0.005								662	4.0	0.18	0.18	0.4	8	2.2	36.3%	
8	7		12	N/A	2.77	33	68	0.002	0.000								33	4.0	0.01	0.01	1.0	8	1.16	2.5%	
9			10	N/A	2.77	28	68	0.002	0.000								28	4.0	0.01	0.01					
	8	Sum of Basins 6, 7, 8 & 9	261	N/A	2.77	723	68	0.049	0.005								723	4.0	0.20	0.20	0.4	8	2.27	38.0%	
	9	Sum of Basins 1, 1A, 2, 3, 4, 5, 6, 7, 8, 9	594	N/A	2.77	1645	68	0.112	0.011		18.9	18	340	1200	0.022	0.002	1986	4.0	0.53	0.55	0.4	10	2.92	52.1%	
10			99	N/A	2.77	274	68	0.019	0.002								274	4.0	0.07	0.08					
11			25	N/A	2.77	69	68	0.005	0.000								69	4.0	0.02	0.02					
	10	Sum of Basins 10 & 11	124	N/A	2.77	343	68	0.023	0.002								343	4.0	0.09	0.10	0.6	8	2.15	18.4%	
12			33	N/A	2.77	91	68	0.006	0.001								91	4.0	0.02	0.03					
13			42	N/A	2.77	116	68	0.008	0.001								116	4.0	0.03	0.03					
14			59	N/A	2.77	163	68	0.011	0.001								163	4.0	0.04	0.05					
	11	Sum of Basins 10, 11, 12, 13 & 14	258	N/A	2.77	715	68	0.049	0.005								715	4.0	0.19	0.20	0.4	8	2.25	38.0%	
15			50	N/A	2.77	139	68	0.009	0.001								139	4.0	0.04	0.04					
	12	Sum of Basins 10, 11, 12, 13, 14 & 15	308	N/A	2.77	853	68	0.058	0.006								853	4.0	0.23	0.24	0.4	8	2.34	43.6%	
	13	Sum of Basins 1, 1A 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 & 15	902	N/A	2.77	2499	68	0.170	0.017		18.9	18	340	1200	0.022	0.002	2839	4.0	0.77	0.79	0.4	12	3.25	46.5%	
Design Point Total			902	N/A	2.77	2499	68	0.170	0.017		18.9	18	340	1200	0.022	0.002	2839	4.0	0.77	0.79	0.4	12	3.25	46.5%	



This is not necessary any more. These criteria have been incorporated into the standards and specifications.

## Master Utility Design Criteria for Water and Sanitary Sewer 2020

### Water System Design Criteria

#### Water Demand per Zoning Classification

##### *Residential*

The residential (single family and multifamily) water use demands will be calculated using the information in **Table 1**.

**Table 1. Residential Water Use Criteria**

Zoning	People per Unit	Average Day Per Capita Flow (gpd)
Residential	2.77	101

Peaking factors for residential are:

- Max Day/Average Day = 2.8
- Max Hour/Average Day = 4.5

##### *Non-Residential*

Water use criteria for commercial and industrial land use types and parks and greenbelts are shown in **Table 2**.

**Table 2. Non-Residential Water Use Criteria**

Zoning	Average Day (gpd/acre)	Max Day (gpd/acre)	Max Hour (gpd/acre)
Commercial	1,500	4,200	6,750
Industrial (including schools)	1,200	3,360	5,400
Parks & Greenbelts	1,800	5,040	N/A

#### Fire Flow Criteria

The system shall be analyzed to meet the maximum day plus fire flow demand (as determined by ISO criteria) with a residual pressure of no less than 20 psi at any point in the water distribution system. The fire flow demands by land use type are shown in **Table 3**.

**Table 3. Fire Flow Demands**

Use Classification	Fire Flow Demand
Residential	1,500 gpm for 2 hrs
Commercial/Multifamily	2,500 gpm for 2 hrs
Industrial	3,500 gpm for 3 hrs