



CROSS CREEK – MULTIFAMILY

Neighborhood 1, Map Area B

AURORA, COLORADO

AMENDMENT #01 TO MASTER UTILITY STUDY

JULY 2021

Prepared by:

Kimley»Horn

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RESPONSIBLE PARTY CERTIFICATION

"Landmark Companies" hereby certifies that the sewer and water system for the Cross Creek Multifamily project will be constructed according to the design presented in this report. I understand that the City of Aurora does not and shall not assume liability for the sewer and water system designed and/or certified by my engineer. I understand that the City of Aurora reviews utility plans but cannot, on behalf of Landmark Companies and/or their successors assign of future liability for improper design. I further understand that approval of the Plat and/or Development Permit does not imply approval of my engineer's utility design."

Attest:

Landmark Companies

Notary Public

Authorized Signature

ENGINEER'S STATEMENT

"I hereby state that this Compliance Letter for the preliminary utility design of Cross Creek Multifamily was prepared by me (or under my direct supervision) in accordance with the provisions of the City of Aurora Standards and Specifications for the Design and Construction of Public and Private Improvements for the Responsible Parties thereof. I understand that the City of Aurora does not and shall not assume liability for utility facilities designed by others."

Kevin Johnk, P.E.

Registered Professional Engineer

State of Colorado No. 53395

INTRODUCTION

The purpose of this Master Utility Report, Amendment #01 (REPORT AMENDMENT) is to amend the Cross Creek Initial Phase Development Utility Report for Cross Creek (ORIGINAL MASTER REPORT), prepared by High Country Engineering, Inc. and approved by the City on October 30, 2002.

This REPORT AMENDMENT depicts Map Area B as shown in Cross Creek Framework Development Plan, prepared by Norris Design, and dated February 12, 2018. This area was originally anticipated as 9.8 acres of commercial development.

The Applicant proposes the replacement of approximately 8.25 acres of this original commercial area - designated as Office in the Original Master Report - for the development of approximately 272 units of multifamily housing.

This REPORT AMENDMENT demonstrates the water and sanitary sewer associated with the development of Map Area B is consistent with the City requirements and will not cause negative impacts to the existing utility infrastructure.

A Final Utility Compliance Letter will be prepared with subsequent development submittals to ensure appropriate utility system design on-Site, as well as compliance with the ORIGINAL MASTER REPORT.

GENERAL LOCATION AND PROJECT DESCRIPTION

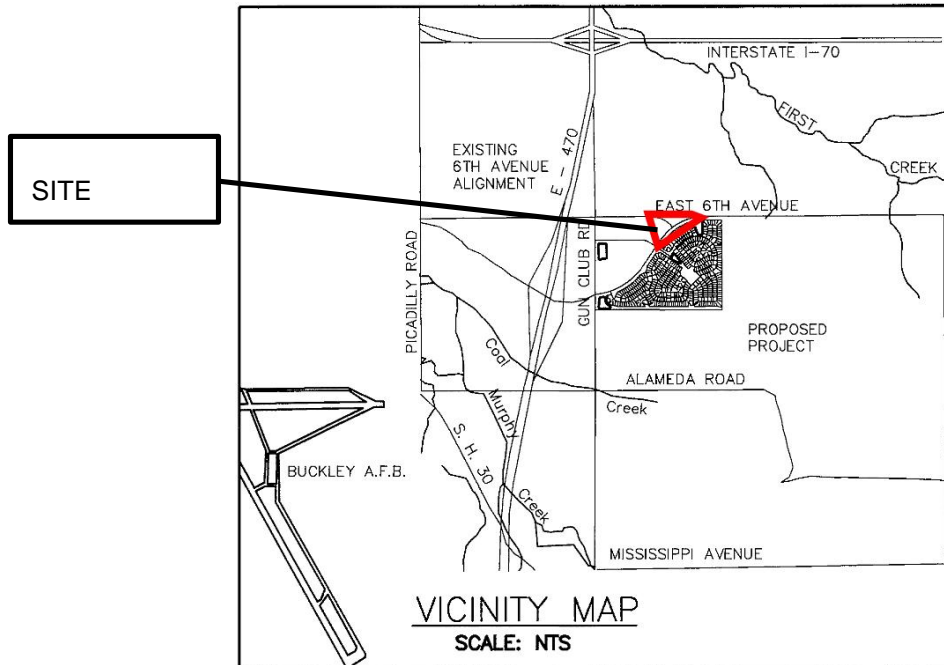
SITE LOCATION

The Overall Cross Creek development is located in Section 7, Township 4 South, Range 65 West of the Sixth Principal Meridian, County of Arapahoe, State of Colorado.

Map Area B is approximately 10.0 acres, according to the ORIGINAL MASTER REPORT, and is located at the northeast corner of Cross Creek. The Site is bounded by 6th Avenue to the north, Catawba Way to the west, and 6th Parkway to the east.

The proposed Multi-Family development (The SITE or the PROJECT) is located within the western portion of Map Area B.

A vicinity map is provided below for reference:



DESCRIPTION OF PROPERTY

Map Area B is shown in the ORIGINAL MASTER REPORT as approximately 10 acres of office development. The PROJECT is anticipated to replace approximately 8.25 acres of that area to develop approximately 272 units of multifamily housing, along with associated drives, parking, utilities, landscape/hardscape improvements, and other project amenities to support the development.

The existing vacant ground cover consists of sparse vegetation of native weeds and grasses. A review of the Natural Resource Conservation Service (NRCS) Web Soil Survey determined that the Site is made up of Fondis Silt Loam, consistent with an NRCS Soil Types of C. Soil Types C have been utilized for calculations included within this report. The NRCS study is found in **Appendix A** of the report.

The SITE is located within Sanitary Basin C of the ORIGINAL MASTER REPORT.

There is an existing 12" sanitary sewer line that runs along Catawba Way along the entire project frontage. An 8" sanitary stub is provided off of this line, at the intersection of 5th Ave, to serve the SITE. Additionally, there is an existing 30" RCP sanitary line that runs along 6th Pkwy where all of the Basins of Cross Creek (1-6 in the ORIGINAL MASTER REPORT) outfall to.

GIS shows it as a 12 inch water main.

As Builts say this is PVC.

There is an existing 8" water line that runs along Catawba Way along the entire project frontage. Additionally, there is an existing 30" water line that runs along 6th Pkwy where all of the Distribution Regions of Cross Creek (1-6 in the ORIGINAL MASTER REPORT) connect to. The utility map from the ORIGINAL MASTER REPORT has been included in **Appendix A** for reference.

The sanitary sewer and water designs presented herein will focus on the sanitary sewer flows and water demands anticipated with development of the Site.

DESIGN CRITERIA

REGULATIONS

This Project will substantially comply with the current City of Aurora Water, Sanitary Drainage Infrastructure Standards & Specifications.

SANITARY SEWER SYSTEM DESIGN CRITERIA

The sanitary sewer criteria utilized to design the system were assumed as follows:

Flow Calculations:

- Residential sewage contribution shall be based on 101-gpcd average flows.
- Minimum residential population density shall be figured on a basis of 2.77 persons per dwelling unit and approximately 272 dwelling units proposed for the PROJECT.
- Estimates shall include allowances for a maximum infiltration of 10% of average flow.

$$\text{Multi-Family: } \left(68 \frac{\text{Gallons}}{\text{Capita}} \times 2.77 \frac{\text{person}}{\text{DU}} \times 272 \text{ DU} \right) = 51,234 \frac{\text{Gallons}}{\text{Day}} + 10\% \text{ Infiltration} = 56,357 \frac{\text{Gallons}}{\text{Day}}$$

$$\text{Office: } \left(68 \frac{\text{Gallons}}{\text{Capita}} \times 22 \frac{\text{person equivalent}}{\text{Acre}} \times 1.75 \text{ Acres} \right) = 1,498 \frac{\text{Gallons}}{\text{Day}} + 10\% \text{ Infiltration} = 1,648 \frac{\text{Gallons}}{\text{Day}}$$

$$\text{Total: } 58,005 \frac{\text{Gallons}}{\text{Day}}$$

Pipe Sizing Calculations:

- Sanitary Sewer mains shall be eight-inch (8") diameter or larger. Service connections are four-inch (4") diameter or larger.
- Minimum Slope for a 4" sewer size = 2%
- Minimum Slope for a 8" sewer size = 0.4%
- The flow velocity shall not exceed 10 feet per second flowing full or half-full using Manning's formula (and N=0.011 for PVC) or (N=0.013 for RCP).
- If the City of Aurora requires the Developer to install a collection main larger than needed to adequately serve the development, the Town may reimburse the Developer for the extra materials cost and depth of excavation above what is required for the development. Extra material costs shall include on the difference between the size of pipe and manholes. Extra depth costs shall include only the extra depth of excavation required to install the pipe in excess of what would have been required for the development. Material prices must be verified from supplier's invoices and the extra depth costs must be shown on the Contractor's bid sheet. All prices must be accepted by the Town prior to start of construction.

Cross Creek Map Area B is part of the overall Cross Creek development. The previous developer installed a 12" sanitary line along Catawba Way and provided an 8" stub at the intersection of 5th Ave to serve the Site. It is estimated that the proposed 8-inch main will serve approximately 272 multi-family units (DUs).

• Day Flow (w/ 10% infiltration): 58,005 GPD or 40.28 GPM

- Peak Hour Demand (PF of 4): 146 GPM

Per Section 5.03.9, Aurora Water criteria states sanitary sewer is 68 gpcd. 101 gpcd is the water demand.

Please check this calculation:
 $68 \times 22 \times 1.75 = 2,618$
gpd

Please remove.

Will the proposed stub also serve the office use?

Please revise based on calculation error from above.

Calculations, which are included in Appendix B, were performed to analyze the capacity of the existing 8" sanitary stub provided to serve this site. Assuming a minimum allowable slope of 0.4%, the pipe was found to flow approximately 40% full during a peak scenario (0.33 CFS).

Non-typical wastes will not be directed through the sanitary sewer.

Comparison with Original Master Report Calculations:

The Report anticipated approximately 10 acres of Office Type 1 uses, with an equivalent population of 65, loading rate of 500 gallons/day/acre, infiltration factor of 10%, and a peaking factor of 4, resulting in an average daily flow of 3.8 gallons per minute, or 5,472 gallons per day, and a peak demand of 14.2 gallons per minute, or 20,448 gallons per day.

- Avg. Day Flow (w/ 10% infiltration): 5,472 GPD or 3.8 GPM
- Peak Hour Demand (PF of 4): 14.2 GPM

The proposed change from the Original Master Report represents a significant increase in demand anticipated value within the Original Master Report. The primary source of this increase is the addition of Multi-Family development to the parcel. Additionally, the City-recommended infiltration factor has increased from 1.7 as shown in the Original Master Report, to 2.77 as shown in the Report Amendment, an increase of 163%.

Does this number include flows from the Data Center to the north?

During this increase in demand for Basin C, calculations were performed for the 8" sanitary sewer in 6th Pkwy, which are included in Appendix B. Assuming the following pipe flow characteristics were found:

Provide analysis for the 12 inch in S Catawba Way to ensure capacity. Include off site flows from connections to the north and west of area of interest.

- ORIGINAL MASTER REPORT: 714 GPM (Peak Demand), approx. 10% full
- REPORT AMENDMENT: 845.8 GPM (Peak Demand), approx. 11% full

As shown above, despite the increase in sanitary demand, the 8" stub off Catawba Way as well as the 30" sanitary pipe in 6th Pkwy still maintain adequate capacity to serve the Site.

WATER SYSTEM DESIGN CRITERIA

The water demand rates and distributions system design are based on the City of Aurora Standards and Specifications for Water.

Water Distribution Loading:

The domestic water and fire flow design has been based on the following typical demand rates, consistent with the City Criteria as outlined below in Tables 1 and 2.

Table 1: Domestic Water Demands			
Use	Average Day	Max Day	Max Hour
Industrial	1,200 gpd/acre	3,360 gpd/acre	5,400 gpd/acre
Commercial/Retail	1,500 gpd/acre	4,200 gpd/acre	6,750 gpd/acre

Table 2: Fire Flow Demands¹	
<i>Use</i>	<i>Demand (gpm)</i>
Industrial	3,500
Commercial/Retail	2,500

¹For the purposes of a conservative analysis, 2,500gpm fire flow demand has been utilized for both the commercial and residential planning areas.

Based on the typical demand rates as summarized in Tables 1 and 2, the resulting water demands for the Project are as follows:

Table 3: Water Demand Analysis Summary			
<i>Area/Land Use</i>	<i>Demand (gpm)</i>		
	<i>Average Day</i>	<i>Max Day</i>	<i>Peak Hour</i>
Building 1	10.49	29.38	47.21
Building 2	10.49	29.38	47.21
Building 3	10.49	29.38	47.21
Building 4	10.49	29.38	47.21
Building 5	5.44	15.23	24.48
Building 6	5.44	15.23	24.48
Rec / Leasing Office	0.22	0.61	0.98
Total	53.06	148.58	237.80

Water Distribution Modeling:

Bentley WaterCAD was utilized for the modeling of the proposed water distribution system. The Project is located in Zone 3 with an HGL of 5,720 ft. Consistent with the City Criteria and ISO Criteria, the system has been analyzed based on the maximum day plus fire flow demand with a minimum residual pressure of 20 psi. The system also meets the criteria for maximum allowable velocity of 10.0 fps for 12-inch mains and 15.0 fps for 8-inch mains for all scenarios. The fire flow component of the water distribution system was evaluated to display 2,500 gpm of flow is available at each hydrant and throughout the system while maintaining allowable pressures. It is noted that only 1,500 gpm is required for residential areas, however it is assumed that if the system may provide a higher fire flow, it will be able to withstand this lower fire flow demand where needed.

The WaterCAD Model was created to run three scenarios as follows:

- Average Day Demand
- Max Day plus Fire Flow
- Peak Hour

Provide this analysis in Appendix B.

Please confirm these velocities with max velocity table in Section 5.02.2.

The model assumes an 8-inch diameter water main internal to the site, connecting to the 8-inch existing water main at two locations within Catawba Way. Table 4 below, provides a summary of the proposed water system for each of the above noted scenarios.

Confirm diameter size on existing utility map.

Table 4: Water Model Summary				
Scenario	Min Pressure (psi)	Max Pressure (psi)	Max Velocity (fps)	
			Domestic (8")	Fire (6")
Average Day	76	81	0.07	-
Max Day + Fire	76	81	0.12	39.71
Peak Hour	76	81	0.32	-

Fire Flow Modeling

Bentley WaterCAD was utilized for the modeling of the anticipated fire flow demands. Per the City criteria, the system shall provide a minimum of 2,500 gpm for 2-hours for commercial areas and 1,500 gpm for residential areas. For this system, we chose to analyze 2,500 gpm to display a more conservative situation. The fire flow report provided displays fire demand being available at each node in the system. This displays that the future development will be able to construct a fire line anywhere in the system and still have sufficient pressures to meet the fire flow requirements. Based on the analysis, the required fire flow will be available, and the system will withstand these pressures for any duration of time assuming the water main properties remain constant.

The full results of the WaterCAD Model are included in **Appendix B**.

Water Connectivity

There is an existing 8" water line to the project site. Additionally, there is an existing 30" water main of Cross Creek (1-6 in the ORIGINAL MASTER REPORT has been included in the project. The utility map from the ORIGINAL MASTER REPORT has been included in the project.

The water main in Catawba is 8 inches south of the intersection at Catawba and 6th. I included an existing water utility map as the last sheet in this document. Please reference and revise accordingly.

CONCLUSION

COMPLIANCE WITH STANDARDS

This master utility report amendment complies with the City of Aurora Standards and Specifications for Wastewater and Water Distribution Systems. The proposed sanitary sewer and domestic water systems will provide adequate capacity to serve the Cross Creek Multifamily Development.

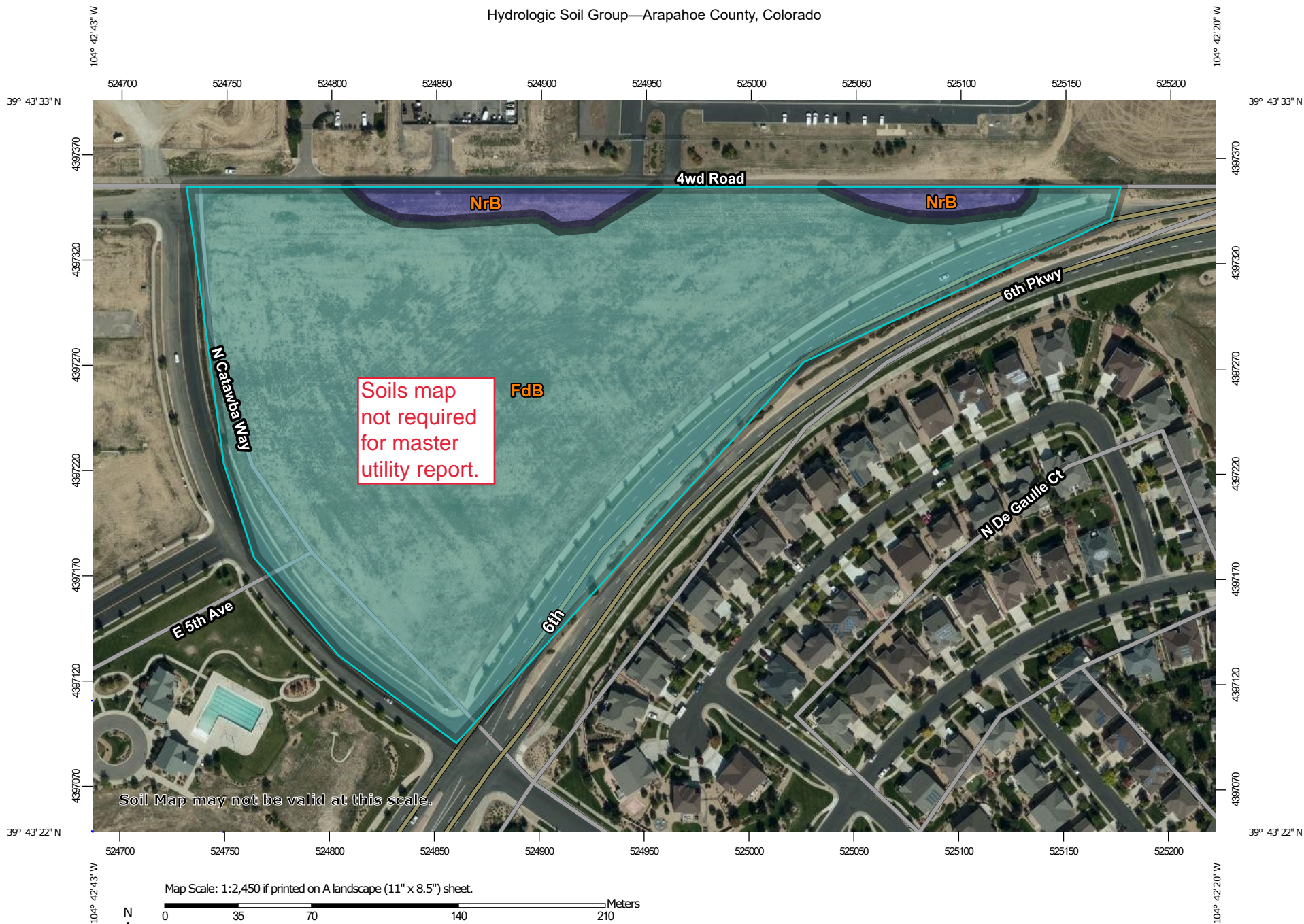
REFERENCES

Water, Sanitary Sewer & Storm Drainage Infrastructure Standards and Specifications, City of Aurora; September 2019.

Cross Creek Initial Phase Development Utility Report, Prepared by High County Engineering, Inc., Approved October 30, 2002.

APPENDIX A

Hydrologic Soil Group—Arapahoe County, Colorado



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Arapahoe County, Colorado
 Survey Area Data: Version 16, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 3, 2018—Dec 4, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
FdB	Fondis silt loam, 1 to 3 percent slopes	C	14.4	94.9%
NrB	Nunn-Bresser-Ascalon complex, 0 to 3 percent slopes	B	0.8	5.1%
Totals for Area of Interest			15.2	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

APPENDIX B

Channel Report

Capacity Analysis (ORIGINAL MASTER REPORT CONDITIONS) - 6th Pkwy Sanitary Main

Circular

Diameter (ft) = 2.50

Invert Elev (ft) = 1.00

Slope (%) = 0.40

N-Value = 0.011

Calculations

Compute by: Known Q

Known Q (cfs) = 1.57

Highlighted

Depth (ft) = 0.39

Q (cfs) = 1.570

Area (sqft) = 0.49

Velocity (ft/s) = 3.18

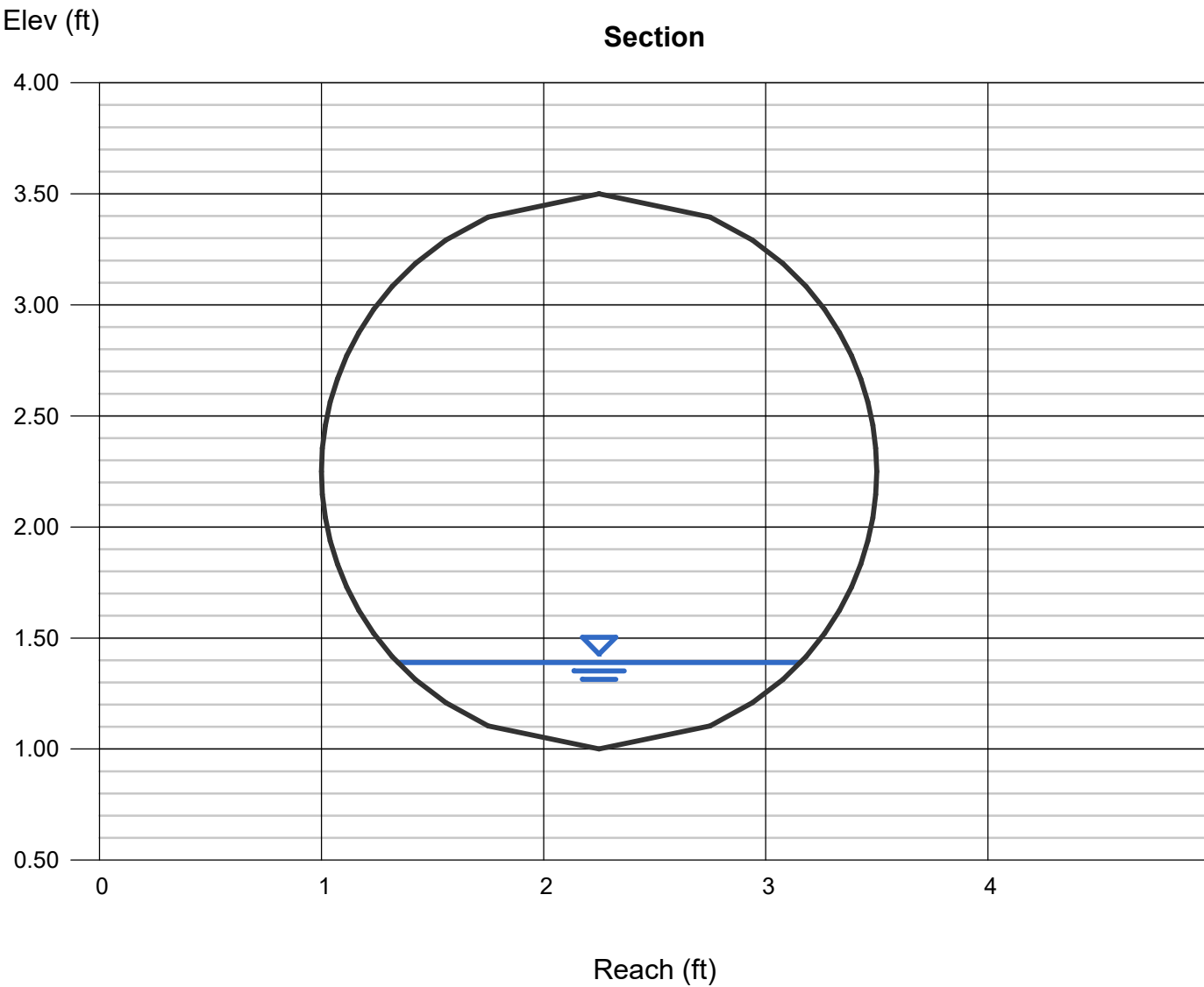
Wetted Perim (ft) = 2.04

Crit Depth, Yc (ft) = 0.41

Top Width (ft) = 1.82

EGL (ft) = 0.55

Provide circular worksheet
for 12 inch main in S
Catawba Way.



Channel Report

Capacity Analysis (PROPOSED REPORT AMENDMENT CONDITIONS) - 6th Pkwy Sanita

Circular

Diameter (ft) = 2.50

Invert Elev (ft) = 1.00

Slope (%) = 0.40

N-Value = 0.011

Calculations

Compute by: Known Q

Known Q (cfs) = 1.86

Highlighted

Depth (ft) = 0.42

Q (cfs) = 1.860

Area (sqft) = 0.54

Velocity (ft/s) = 3.42

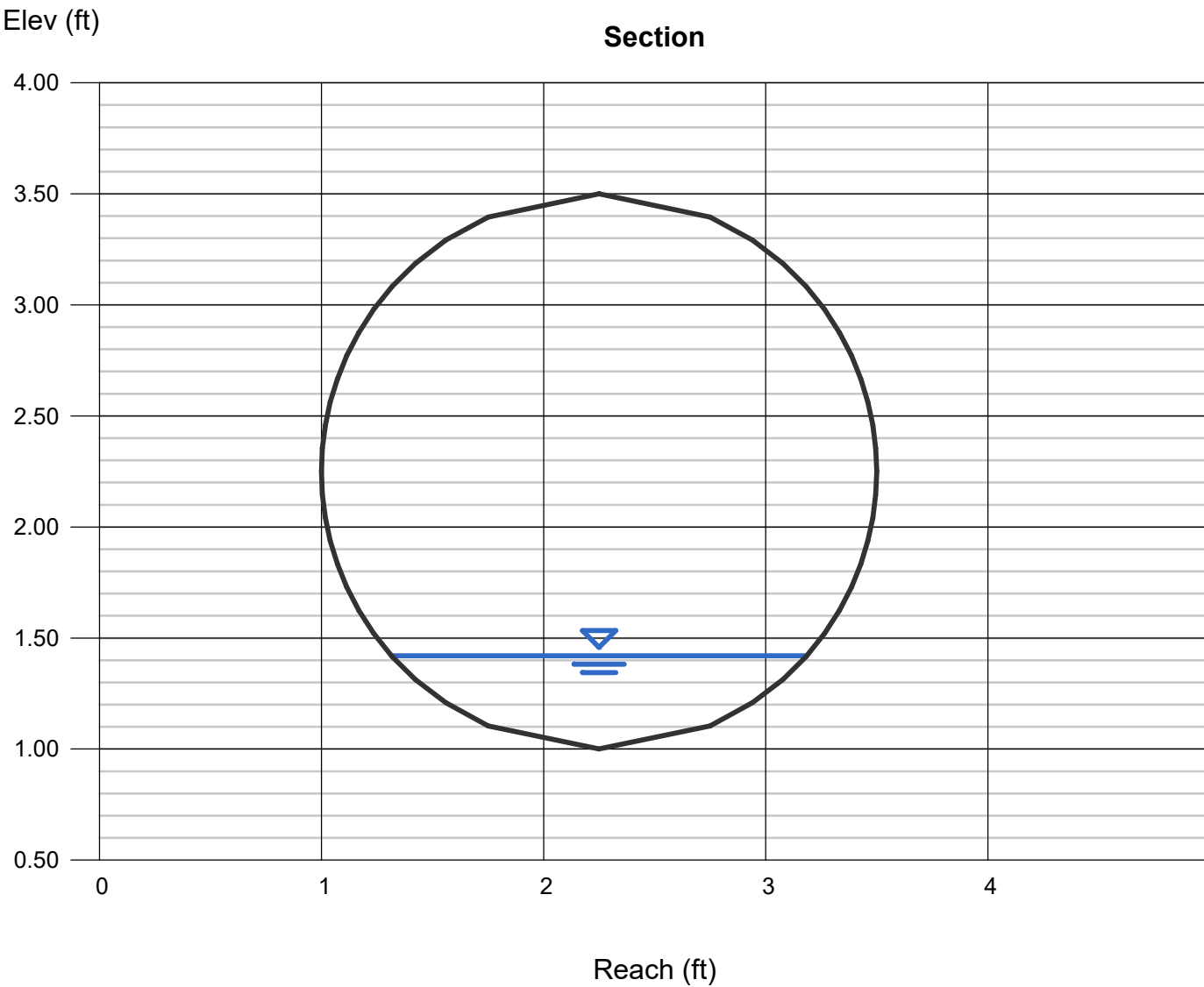
Wetted Perim (ft) = 2.11

Crit Depth, Yc (ft) = 0.45

Top Width (ft) = 1.87

EGL (ft) = 0.60

Update Q based on
calculation error
(typ on all relevant
model worksheets?)



Channel Report

Capacity Analysis (PROPOSED REPORT AMENDMENT CONDITIONS) - Catawba Way 8-

Circular

Diameter (ft) = 0.67

Invert Elev (ft) = 1.00

Slope (%) = 0.40

N-Value = 0.011

Calculations

Compute by: Known Q

Known Q (cfs) = 0.33

Highlighted

Depth (ft) = 0.28

Q (cfs) = 0.330

Area (sqft) = 0.14

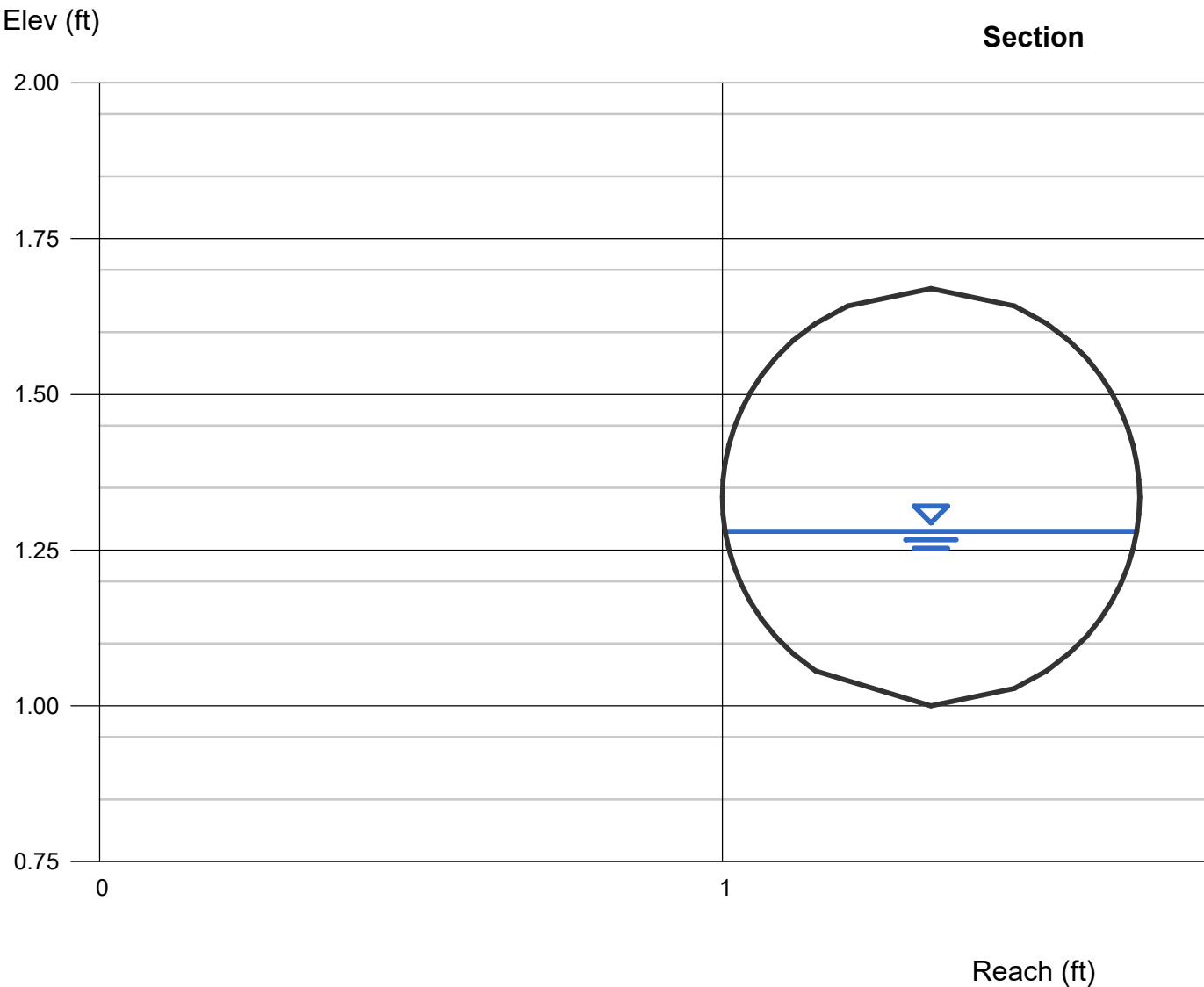
Velocity (ft/s) = 2.35

Wetted Perim (ft) = 0.94

Crit Depth, Yc (ft) = 0.27

Top Width (ft) = 0.66

EGL (ft) = 0.37



R-2
RESIDENTIAL
MEDIUM-DENSITY DISTRICT

E. 6TH AVE

BLDG 1
54 UNITS
(APPROX.)

FDP map includes
an additional 3.5
acres in this area.
Is this included in
the utility report?

BLDG 5
28 UNITS
(APPROX.)

Rec/Leasing Office
Assumed 0.21 AC
(APPROX.)

BLDG 2
54 UNITS
(APPROX.)

BLDG 3
54 UNITS
(APPROX.)

BLDG 6
28 UNITS
(APPROX.)

BLDG 4
54 UNITS
(APPROX.)

Secondary
Entry

Main Street
Entry

E. 5TH AVE

N. CATAWBA WAY

E. 6TH PKWY

Provide sanitary sewer map with design
points for onsite and offsite flows.
Include contours overlaid on a site
layout similar to this map.

Provide sanitary routing table to
show proposed flows from the
buildings and offsite flows. Confirm
total flow into existing mains.



Architecture + Planning
820 16th Street, Suite 500
(303) 825-6400
ktgy.com



LANDMARK AT TOWN CENTER
#210060 - SITE FEASIBILITY 2021.6.21

SITE FEASIBILITY

A.2

Cross Creek Multifamily
Aurora, Colorado

7/1/2021

Water Demands						
Area/Land Use	Number of Units	Area (AC)	Avg Flow (gpd)	Avg Flow (gpm)	Max Day Flow (gpm)	Peak Hourly Flow (gpm)
Building 1	54.00	-	15,107.58	10.49	29.38	47.21
Building 2	54.00	-	15,107.58	10.49	29.38	47.21
Building 3	54.00	-	15,107.58	10.49	29.38	47.21
Building 4	54.00	-	15,107.58	10.49	29.38	47.21
Building 5	28.00	-	7,833.56	5.44	15.23	24.48
Building 6	28.00	-	7,833.56	5.44	15.23	24.48
Rec / Leasing Office	-	0.21	315.00	0.22	0.61	0.98
Total	272.00		76,412.44	53.06	148.58	238.79

Fire Flow Demands		
Use	Demand (gpm)	Time Frame
Residential	1,500	2 hrs
Commercial/Retail	2,500	2 hrs

Ratio	Peaking Factor
Peak Hour : Average Day	4.5:1
Max Day: Average Day	2.8: 1

Domestic Water Demands - Commercial		
Average Day	Max Day	Max Hour
1500 gpd/acre	4200 gpd/acre	6750 gpd/acre

Domestic Water Demands - Residential	
People Per Unit	Average Day Per Capita Flow (gpd)
2.77	101

Water Demand Analysis Summary			
Area/Land Use	Demand (gpm)		
	Average Day	Max Day	Peak Hour
Building 1	10.49	29.38	47.21
Building 2	10.49	29.38	47.21
Building 3	10.49	29.38	47.21
Building 4	10.49	29.38	47.21
Building 5	5.44	15.23	24.48
Building 6	5.44	15.23	24.48
Rec / Leasing Office	0.22	0.61	0.98
Total	53.06	148.58	237.80

Provide map of watercad network with pipes and junctions labeled.

According to existing utility map on page 37, there is no 36 inch water main in this area. Please confirm.

Average Day Scenario

Pipe Table - Time: 0.00 hours

	Length (Scaled) (ft)	Diameter (in)	Material	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Hazen-Williams C
	1,282	12.0	PVC	0	0.03	0.000	150.0
P-2	1,512	12.0	PVC	0	0.03	0.000	150.0
P-3	1,661	36.0	PVC	44	0.01	0.000	150.0
P-4	947	30.0	PVC	44	0.02	0.000	150.0
P-5	865	30.0	PVC	44	0.02	0.000	150.0
P-6	163	8.0	PVC	20	0.12	0.000	150.0
P-7	347	8.0	PVC	-9	0.06	0.000	150.0
P-8	246	8.0	PVC	0	0.00	0.000	150.0
P-9	324	8.0	PVC	24	0.16	0.000	150.0
P-10	119	8.0	PVC	26	0.17	0.000	150.0
P-11	64	8.0	PVC	14	0.09	0.000	150.0
P-12	152	8.0	PVC	5	0.03	0.000	150.0
P-13	78	8.0	PVC	9	0.06	0.000	150.0
P-14	124	8.0	PVC	9	0.06	0.000	150.0
P-15	142	8.0	PVC	-2	0.01	0.000	150.0
P-16	79	8.0	PVC	-2	0.01	0.000	150.0
P-17	179	8.0	PVC	-12	0.08	0.000	150.0
P-18	123	8.0	PVC	-2	0.01	0.000	150.0
P-19	62	8.0	PVC	6	0.04	0.000	150.0
P-20	186	8.0	PVC	5	0.03	0.000	150.0
P-21	188	8.0	PVC	1	0.00	0.000	150.0
P-22	92	8.0	PVC	-10	0.06	0.000	150.0
P-23	59	8.0	PVC	-10	0.06	0.000	150.0
P-24	178	8.0	PVC	-8	0.05	0.000	150.0
P-25	141	8.0	PVC	-29	0.18	0.000	150.0
P-25	50	12.0	PVC	-53	0.15	0.000	150.0
P-26	259	8.0	PVC	0	0.00	0.000	150.0

30 inch line is steel

Calculations should take into account analysis at high point of site. Is 5,570 ft the high point of the site to be conservative? (typ for all model runs)

Average Day Scenario

Junction Table - Time: 0.00 hours

	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
	5,570.00	0	5,720.00	65
	5,570.00	0	5,720.00	65
	5,570.00	0	5,720.00	65
	5,570.00	0	5,720.00	65
	5,570.00	0	5,720.00	65
	5,570.00	0	5,720.00	65
J-6	5,570.00	0	5,720.00	65
J-7	5,570.00	0	5,720.00	65
J-8	5,570.00	0	5,720.00	65
J-9	5,570.00	0	5,720.00	65
REC/LEASING OFFICE	5,570.00	0	5,719.99	65
J-11	5,570.00	0	5,719.99	65
BLDG 5	5,570.00	5	5,719.99	65
J-13	5,570.00	0	5,719.99	65
BLDG 1	5,570.00	10	5,719.99	65
J-15	5,570.00	0	5,719.99	65
BLDG 2	5,570.00	10	5,719.99	65
J-17	5,570.00	0	5,719.99	65
J-18	5,570.00	0	5,719.99	65
J-19	5,570.00	0	5,719.99	65
BLDG 6	5,570.00	5	5,719.99	65
BLDG 4	5,570.00	10	5,719.99	65
J-22	5,570.00	0	5,720.00	65
BLDG 3	5,570.00	10	5,720.00	65

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
83	R-1	5,720.00	<None>	53	5,720.00

Peak Hour Scenario

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Material	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Hazen-Williams C
P-1	1,282	12.0	PVC	-41	0.12	0.000	150.0
P-2	1,512	12.0	PVC	-41	0.12	0.000	150.0
P-3	1,661	36.0	PVC	198	0.06	0.000	150.0
P-4	947	30.0	PVC	198	0.09	0.000	150.0
P-5	865	30.0	PVC	198	0.09	0.000	150.0
P-6	163	8.0	PVC	88	0.56	0.000	150.0
P-7	347	8.0	PVC	-41	0.26	0.000	150.0
P-8	246	8.0	PVC	0	0.00	0.000	150.0
P-9	324	8.0	PVC	110	0.70	0.000	150.0
P-10	119	8.0	PVC	119	0.76	0.000	150.0
P-11	64	8.0	PVC	63	0.40	0.000	150.0
P-12	152	8.0	PVC	24	0.16	0.000	150.0
P-13	78	8.0	PVC	39	0.25	0.000	150.0
P-14	124	8.0	PVC	39	0.25	0.000	150.0
P-15	142	8.0	PVC	-8	0.05	0.000	150.0
P-16	79	8.0	PVC	-8	0.05	0.000	150.0
P-17	179	8.0	PVC	-56	0.35	0.000	150.0
P-18	123	8.0	PVC	-10	0.06	0.000	150.0
P-19	62	8.0	PVC	27	0.17	0.000	150.0
P-20	186	8.0	PVC	24	0.16	0.000	150.0
P-21	188	8.0	PVC	2	0.02	0.000	150.0
P-22	92	8.0	PVC	-45	0.29	0.000	150.0
P-23	59	8.0	PVC	-45	0.29	0.000	150.0
P-24	178	8.0	PVC	-37	0.24	0.000	150.0
P-25	141	8.0	PVC	-129	0.82	0.000	150.0
P-25	50	12.0	PVC	-239	0.68	0.000	150.0
P-26	259	8.0	PVC	0	0.00	0.000	150.0

Peak Hour Scenario

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,570.00	0	5,719.98	65
J-2	5,570.00	0	5,719.99	65
J-3	5,570.00	0	5,719.99	65
J-4	5,570.00	0	5,719.99	65
J-5	5,570.00	0	5,719.99	65
J-6	5,570.00	0	5,719.99	65
J-7	5,570.00	0	5,719.97	65
J-8	5,570.00	0	5,719.99	65
J-9	5,570.00	0	5,719.99	65
REC/LEASING OFFICE	5,570.00	1	5,719.91	65
J-11	5,570.00	0	5,719.88	65
BLDG 5	5,570.00	24	5,719.87	65
J-13	5,570.00	0	5,719.87	65
BLDG 1	5,570.00	47	5,719.87	65
J-15	5,570.00	0	5,719.87	65
BLDG 2	5,570.00	47	5,719.87	65
J-17	5,570.00	0	5,719.88	65
J-18	5,570.00	0	5,719.92	65
J-19	5,570.00	0	5,719.91	65
BLDG 6	5,570.00	24	5,719.91	65
BLDG 4	5,570.00	47	5,719.91	65
J-22	5,570.00	0	5,719.92	65
BLDG 3	5,570.00	47	5,719.92	65

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
83	R-1	5,720.00	<None>	239	5,720.00

Max Day Scenario
Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Diameter (in)	Material	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)	Hazen-Williams C
P-1	1,282	12.0	PVC	-23	0.07	0.000	150.0
P-2	1,512	12.0	PVC	-23	0.07	0.000	150.0
P-3	1,661	36.0	PVC	110	0.03	0.000	150.0
P-4	947	30.0	PVC	110	0.05	0.000	150.0
P-5	865	30.0	PVC	110	0.05	0.000	150.0
P-6	163	8.0	PVC	49	0.32	0.000	150.0
P-7	347	8.0	PVC	-23	0.15	0.000	150.0
P-8	246	8.0	PVC	0	0.00	0.000	150.0
P-9	324	8.0	PVC	61	0.39	0.000	150.0
P-10	119	8.0	PVC	59	0.38	0.000	150.0
P-11	64	8.0	PVC	26	0.17	0.000	150.0
P-12	152	8.0	PVC	0	0.00	0.000	150.0
P-13	78	8.0	PVC	26	0.17	0.000	150.0
P-14	124	8.0	PVC	26	0.17	0.000	150.0
P-15	142	8.0	PVC	-3	0.02	0.000	150.0
P-16	79	8.0	PVC	-3	0.02	0.000	150.0
P-17	179	8.0	PVC	-32	0.21	0.000	150.0
P-18	123	8.0	PVC	2	0.01	0.000	150.0
P-19	62	8.0	PVC	20	0.13	0.000	150.0
P-20	186	8.0	PVC	15	0.10	0.000	150.0
P-21	188	8.0	PVC	5	0.03	0.000	150.0
P-22	92	8.0	PVC	-25	0.16	0.000	150.0
P-23	59	8.0	PVC	-25	0.16	0.000	150.0
P-24	178	8.0	PVC	-18	0.12	0.000	150.0
P-25	141	8.0	PVC	-72	0.46	0.000	150.0
P-25	50	12.0	PVC	-133	0.38	0.000	150.0
P-26	259	8.0	PVC	0	0.00	0.000	150.0

Max Day Scenario

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,570.00	0	5,719.99	65
J-2	5,570.00	0	5,720.00	65
J-3	5,570.00	0	5,720.00	65
J-4	5,570.00	0	5,720.00	65
J-5	5,570.00	0	5,720.00	65
J-6	5,570.00	0	5,720.00	65
J-7	5,570.00	0	5,719.99	65
J-8	5,570.00	0	5,720.00	65
J-9	5,570.00	0	5,720.00	65
REC/LEASING OFFICE	5,570.00	1	5,719.97	65
J-11	5,570.00	0	5,719.96	65
BLDG 5	5,570.00	0	5,719.96	65
J-13	5,570.00	0	5,719.96	65
BLDG 1	5,570.00	29	5,719.96	65
J-15	5,570.00	0	5,719.96	65
BLDG 2	5,570.00	29	5,719.96	65
J-17	5,570.00	0	5,719.96	65
J-18	5,570.00	0	5,719.97	65
J-19	5,570.00	0	5,719.97	65
BLDG 6	5,570.00	15	5,719.97	65
BLDG 4	5,570.00	29	5,719.97	65
J-22	5,570.00	0	5,719.97	65
BLDG 3	5,570.00	29	5,719.97	65

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
83	R-1	5,720.00	<None>	133	5,720.00

Is this max day
plus fire flow as
required in Section
5.02.1?

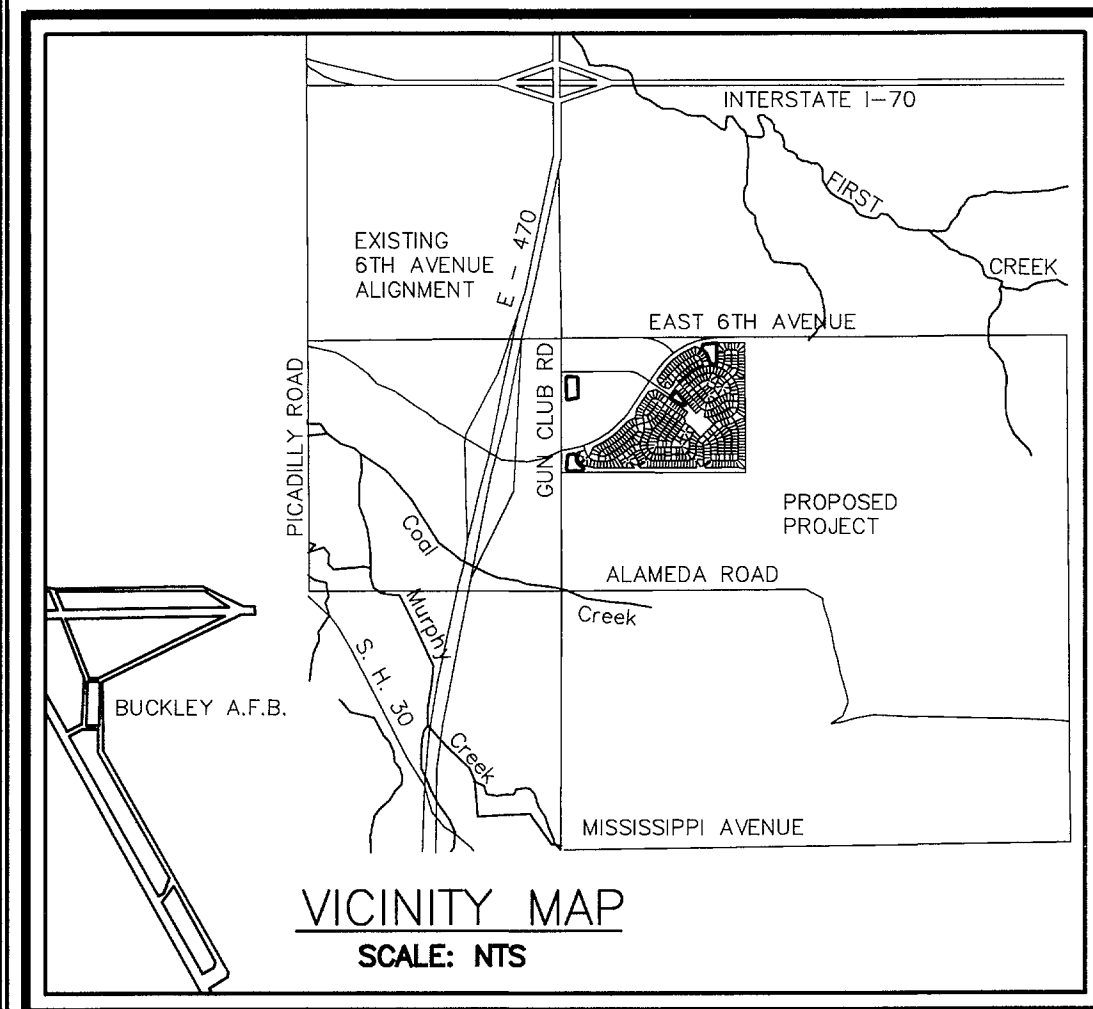
Fire Flow Node FlexTable: Fire Flow Report

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Velocity of Maximum Pipe (ft/s)	Pipe w/ Maximum Velocity
J-1	True	1,500	2,500	61	J-2	7.69	P-7
J-2	True	1,500	2,500	62	J-1	7.47	P-25
J-3	True	1,500	2,500	65	BLDG 1	7.47	P-25
J-4	True	1,500	2,500	65	BLDG 1	7.47	P-25
J-5	True	1,500	2,500	65	BLDG 1	7.47	P-25
J-6	True	1,500	2,500	65	BLDG 1	7.47	P-25
J-7	True	1,500	2,500	63	BLDG 3	8.58	P-6
J-8	True	1,500	2,500	56	J-9	15.96	P-8
J-9	True	1,500	2,500	48	J-8	15.96	P-26
REC/LEA SING OFFICE	True	1,500	2,500	61	BLDG 1	8.86	P-9
J-11	True	1,500	2,500	55	BLDG 5	16.33	P-10
BLDG 5	True	1,500	2,500	50	J-11	16.33	P-10
J-13	True	1,500	2,500	55	BLDG 1	16.33	P-10
BLDG 1	True	1,500	2,500	54	J-15	16.33	P-10
J-15	True	1,500	2,500	54	BLDG 2	16.33	P-10
BLDG 2	True	1,500	2,500	54	J-15	16.33	P-10
J-17	True	1,500	2,500	57	BLDG 1	16.33	P-10
J-18	True	1,500	2,500	61	BLDG 6	9.34	P-25
J-19	True	1,500	2,500	60	BLDG 6	10.84	P-19
BLDG 6	True	1,500	2,500	54	J-19	16.05	P-20
BLDG 4	True	1,500	2,500	60	J-22	9.91	P-25
J-22	True	1,500	2,500	60	BLDG 4	11.47	P-23
BLDG 3	True	1,500	2,500	61	J-22	10.20	P-25

These velocities
exceed the criteria in
Section 5 or as
stated on page 9.
Please address.

APPENDIX C

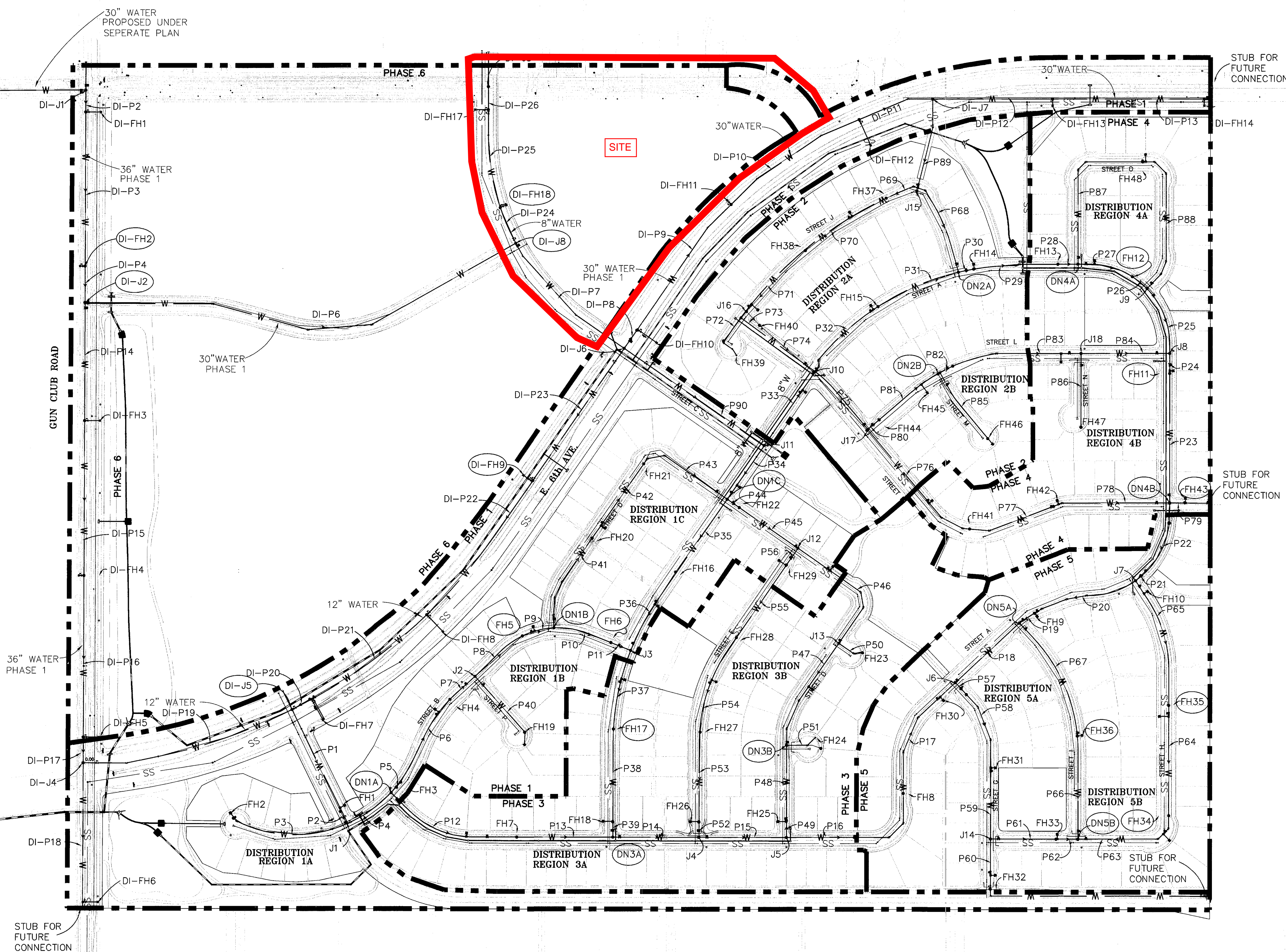
202189 1/3



CROSS CREEK SUBDIVISION WATER EXHIBIT

pages from ORIGINAL MASTER REPORT

E 470



NOTE: THE STREET AND LOT LAYOUT IN THESE PLANS IS CONCEPTUAL IN NATURE. APPROVAL OF THIS PLAN DOES NOT CONSTITUTE APPROVAL OF THE STREET AND LOT LAYOUT.

INDICATES A DEMAND MODELED IN ONE OR MORE SCENARIOS.

ORIGIN BENCHMARK

COA ID 19 042 RAILROAD SPIKE IN WEST SIDE POWER POLE, EAST SIDE GUN CLUB ROAD 0.4 MILES NORTH OF ELLSWORTH AVENUE 0.2 MILES SOUTH OF 6th AVENUE.
ELEV. = 5558.69

PROJECT BENCHMARK

A FOUND 3" BRASS CAP IN (CITY OF AURORA) RANGE BOX LS 16848 AT THE INTERSECTION OF 6th AVENUE AND GUN CLUB ROAD.
ELEV. = 5554.79

GRAPHIC SCALE

(IN FEET)

Horiz. 1 inch = 200 ft.

LEGEND

- DN# DEMAND NODE
- FH# FIRE HYDRANT
- J# JUNCTION NODE
- P# DEVELOPER PIPE
- DFH# DISTRICT FIRE HYDRANT
- DFP# DISTRICT PIPE
- DNJ# DISTRICT JUNCTION

THIS REPRODUCIBLE MYLAR IS A FACSIMILE OF A SIGNED AND SEALED PRINT TRANSMITTED TO THE CITY OF AURORA.

10/21/02
RICK ROME, P.E.
COLORADO REGISTRATION NUMBER 35103
CROSS CREEK SUBDIVISION
PREPARED FOR:
US HOME
9990 PARK MEADOWS DRIVE
LOVE TREE, CO 80124
ATTN: VARNEL ROBERTS

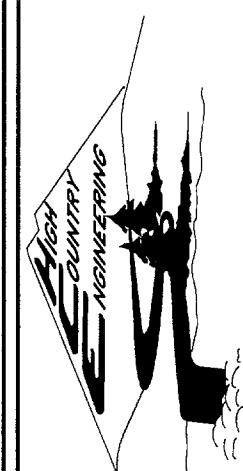
APPROVED FOR ONE YEAR FROM THIS DATE
10-30-2002

10/21/02
Director of Public Works
10-21-02
Date
10/21/02
Date
10/21/02
Date

CALL TO ACTION
CENTER OF COLORADO
1-800-922-1987
or 534-6700
OWNER
CROSS CREEK SUBDIVISION
BEFORE THE MARKING OF UNDERGROUND
UTILITIES

DES.	DR.	CK.	DATE	NO.	DATE	REVISION	BY
			10/02				

HIGH COUNTRY ENGINEERING INC.
14 INVERNESS DRIVE EAST SUITE D-186
ENGLEWOOD, CO 80110
PH (303) 925-0544 FX (303) 925-0547



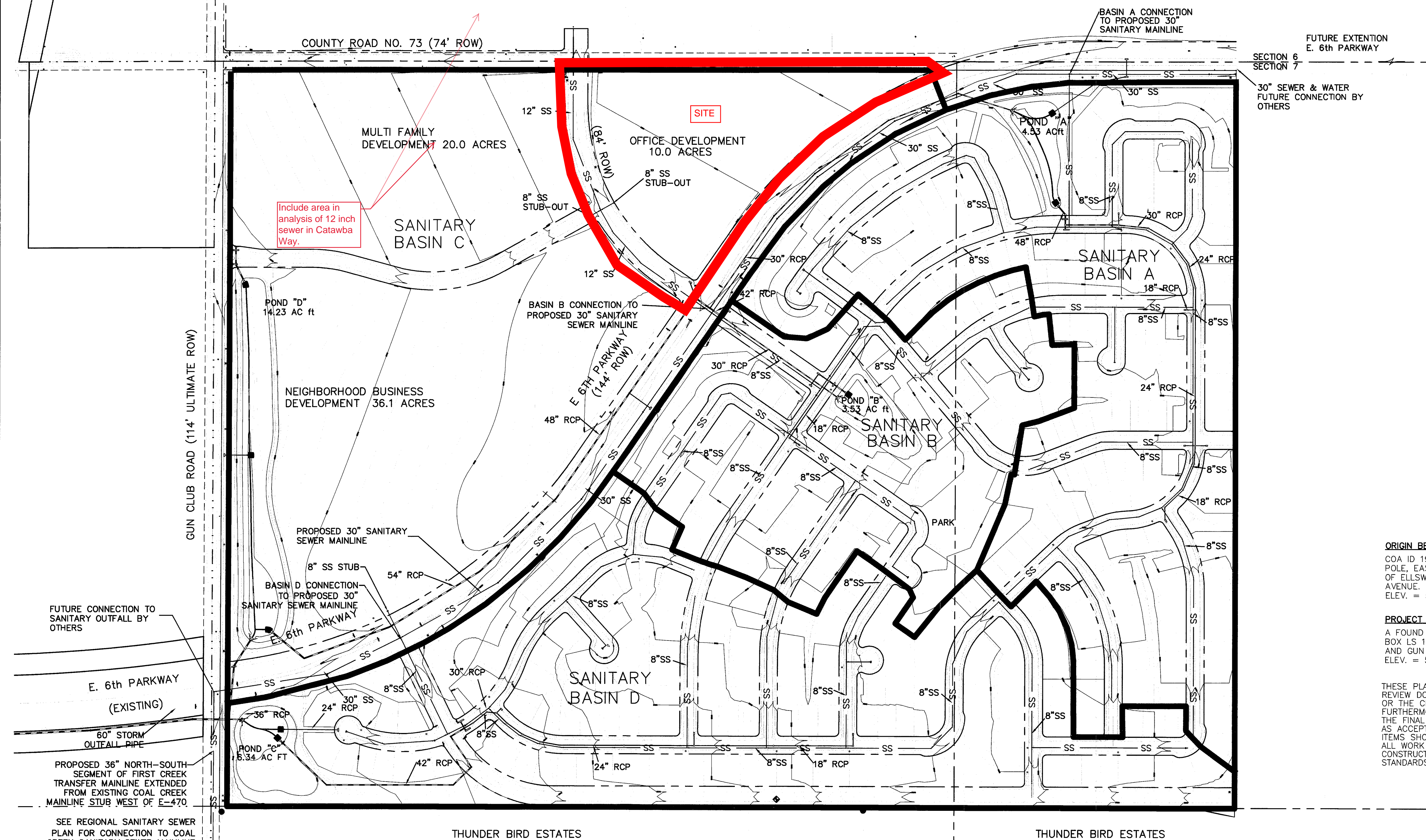
US HOME
AURORA, COLORADO
CROSS CREEK
WATER EXHIBIT

PROJECT NO.
2022004.54

202189 1/3

202189 3/3

pages from ORIGINAL MASTER REPORT




Sanitary Basin C Outfall
Worksheet for Circular Channel

pages from ORIGINAL
MASTER REPORT

Project Description	
Project File	j:\word\202\2004\local utility\corss cr.fm2
Worksheet	Basin C Sanitary Outfall
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Mannings Coefficient	0.011
Channel Slope	0.40 %
Diameter	8.00 in
Discharge	357.6 gpm

Sanitary Pipe in
Catawba Way is 12"
Diameter



Results	
Depth	5.8 in
Flow Area	0.27 ft²
Wetted Perimeter	1.37 ft
Top Width	0.59 ft
Critical Depth	0.42 ft
Percent Full	72.95
Critical Slope	0.59 %
Velocity	2.92 ft/s
Velocity Head	0.13 ft
Specific Energy	0.62 ft
Froude Number	0.76
Maximum Discharge	0.97 cfs
Full Flow Capacity	0.90 cfs
Full Flow Slope	0.31 %
Flow is subcritical.	

Cross Creek Development Local Sanitary Sewer Flow

Total Acreage= 218

Service Description	Service Area Acres	Dwelling Units	Persons per DU	Population	Demand gpd/cap	Average Daily Flow gpm	Infiltration @ 10% gpm	Total Ave. Daily Flow gpm	Peak Factor	Peak Flow * gpm
Residential										
Single Fam. Basin A	50.2	182.8	3.2	584.96	80	32.5	3.2	35.7	4.0	133.2
Single Fam. Basin B	29.2	106.3	3.2	340.16	80	18.9	1.9	20.8	4.0	77.5
Single Fam. Basin D	55.2	200.9	3.2	642.88	80	35.7	3.6	39.3	4.0	146.4
Multi Family	20	354	1.7	601.8	80	33.4	3.3	36.8	4.0	137.1
Residential subtotals=>	154.6	844		2169.8		120.5	12.1	132.6		494.2
	Service Area Acres	Service Type Assumed	Equivalent Persons Per Acre	Equivalent Population	Ave. Daily Flow gal/day/ac	Average Daily Flow gal/day	Infiltration @ 10% gal/day	Total Ave. Daily Flow gpm	Peak Factor	Peak Flow * gpm
Commercial & Retail										
Commercial	10	1	6.52	65	500	3.5	0.3	3.8	4.0	14.2
Retail	36.1	4	25.00	903	2000	50.1	5.0	55.2	4.0	205.6
Comm.& Retail Totals=>	46.1			968		53.6	5.4	59.0		219.8
Basin C Total				1569.8	80	87.2	8.7	95.9	4.0	357.6
Site Grand Totals=>	200.7			3137.8		174.2	17.4	191.6		714.0

pages from ORIGINAL
MASTER REPORT

Table 2, Cross Creek Sanitary Sewer Demand by Basin

Land Use Area	Service Units	Equiv. Pop. / Unit	Loading Rate gpd/cap*	Avg. Day Flow gpm	Avg. Day + infiltration gpm	Peak Hour (gpm)	% Full Pipe @ 0.4% Slope
Cross Creek Sanitary Basin A	182.8	3.2	80	32.5	35.7	133.2	8" dia. 39.5% full
Cross Creek Sanitary Basin B	106.3	3.2	80	18.9	20.8	77.5	8" dia. 29.6% full
Cross Creek Sanitary Basin D	200.9	3.2	80	35.7	39.3	146.4	8" dia. 41.6% full
Total for Basins A, B and D	490			87.1	95.8	357.1	
Multi Family Sanitary Basin C	354	1.7	80	33.4	36.8	137.1	
Onsite Retail Sanitary Basin C	36.1 ac.	N/A	2000 gal/day/ac	50.1	55.2	205.6	
Onsite Comm. Sanitary Basin C	10.0 ac.	N/A	500 gal/day/ac	3.5	3.8	14.2	
Total Sanitary Basin C				87.2	95.9	357.6	8" dia. 73.0% full
Cross Creek Sanitary All Basins				174.2	191.6	714.0	

SITE

* DU = Dwelling Unit; cap = capita

** SFE = Single Family Equivalent

*** See calculations in Appendix B

DOMESTIC WATER SYSTEM

Domestic Distribution Design Standards

pages from ORIGINAL MASTER REPORT

Water demand rates and distribution system design are based on the City of Aurora Public Utility Improvements, Section 4 (Reference 1). The Average Day Demand for the residential use was developed by using the proposed layout and the typical water demand rates of 145 gpd/cap. The Average Day Demand for the neighborhood business development is based on 2.10 gpd/asf and a floor area ratio of 0.23. The office development demand is based on 2.24 gpd/asf and a floor area ratio of 0.28.

Maximum Day Demands and Peak Hour demands are based on the City published factors and are summarized as follows:

Table 3: Water Demand Peak Factors

	Maximum day	Peak Hour
Residential	2.8	4.5
Commercial	2.00	3.98
Office	2.47	3.13

SITE

The resulting demand rates and factored demands for Cross Creek are summarized as follows:

Table 4, Water Demand Summary

Land Use	Number of Units	Average Day (gpm)	Max. Day (gpm)	Peak Hour (gpm)
Single Family	490	157.9	442.1	710.5
Multi Family	354	60.6	169.7	272.7
Office	2.8 asf Acres	6.3	15.5	19.6
Retail	8.3 asf Acres	17.4	34.9	69.3
Totals =>		242.2	662.1	1072.1

SITE

The Insurance Services Office (ISO) fire suppression criteria are referenced in the City's Public Utility Improvements standards manual (Reference 1). The ISO provides for fire flow criteria based, in part, on the relative distance between structures of a certain type. For Single Family Detached structures the following table, Table 5, Fire Flow Requirements Criteria, lists the fire flow requirements and requirements for commercial structures, which are part of the Cross Creek development. Other criteria from the City's Manual are also included and compared to the values obtained from the modeling discussed in the next section:

Table 5: Fire Flow Requirement Criteria

Single Family Dwelling Spacing	Minimum Total Fire Flow Volume GPM	Residual Pressure Max Day + Fire psi	Cross Creek Min. Residual Pressure psi	Maximum 8" pipe Velocity fps	Cross Creek Maximum Velocity fps
31 feet to 100 feet	750	20	N/A	15	N/A
11 feet to 30 feet	1000	20	N/A	15	N/A
10 feet or less	1500	20	46.9	15	5.8
Commercial	4000	20	52.3	15	8.5

The fire flow component of the water distribution system was evaluated by assuming a cluster of three fire hydrants flowing at least 500 gallons per minute (gpm) for a total fire flow of 1,500 gpm in a concentrated area. Three areas were selected, including the area of highest elevation in the southeast corner of the development (Max Day + Fire # 3). An additional scenario was run using the commercial fire suppression flow rate of 4,000 gpm divided over three hydrants along E. 6th Parkway. These scenarios were evaluated with full flow fire demand in order to evaluate residual pressures and velocity in pipes. Results of these evaluations appear in Table 5 above.



LEGEND:

- Fire Hydrants
- Proposed Fire Hydrants
- Water Valves**
- JRV
- Ball
- Butterfly
- BFZV
- BO
- OK
- △ FLAPGATE
- △ GV
- △ PRV
- Plug
- ZV
- Proposed Water Valves
- Water Fittings**
- Building
- Cap
- Cross
- Elbow End
- Hydrant Tee
- Main Tee
- Meter Tee
- Tee
- Plug
- Reducer
- Service Tee
- Wvl Tap
- Proposed Water Fittings
- Water Test Stations
- Irrigation Meters, Big Meters
- Water Manhole
- Proposed Water Manholes
- Water Storage
- Water Wells

OWNER, WATER, TYPE

- Aurora, Potable
- Private, Potable

Water Mains

- CCI, Denver, EDCV
- Aurora, Potable
- Private, Potable

OWNER, WATER, TYPE

- Aurora, Potable
- Private, Potable

Abandoned Point

- all other values

POINTTYPE

- Filling
- Hydrant
- Manhole
- Meter
- Valve
- Abandoned Mains
- Pressure Zones
- Water Facilities Security Area
- Address Points
- Easement Line
- Parcels
- Street Name Geocoded Line
- CITY LIMITS

FUTURE UTILITIES CORRIDOR

THIS IS THE PROPOSED LOCATION FOR A 66" WATER LINE WITH FOUR ALTERNATE ROUTES. IF YOU HAVE ANY QUESTIONS REGARDING ANY CONSTRUCTION WITHIN THIS CORRIDOR PLEASE CONTACT THE CITY OF AURORA, CAPITAL PROJECTS DIVISION (720)-859-4300

*** RESTRICTED AREA ***

AURORA WATER SECURITY AREA

THIS INFORMATION HAS BEEN BLOCKED FOR SECURITY PURPOSES. CONTACT AURORA WATER, ENGINEERING DIVISION FOR DETAILS AT (303)-739-7376

NOTES:

THE CITY OF AURORA, WATER DEPARTMENT ASSUMES NO RESPONSIBILITY OR LIABILITY OF ANY KIND TO ANY USER OF THIS MAP.

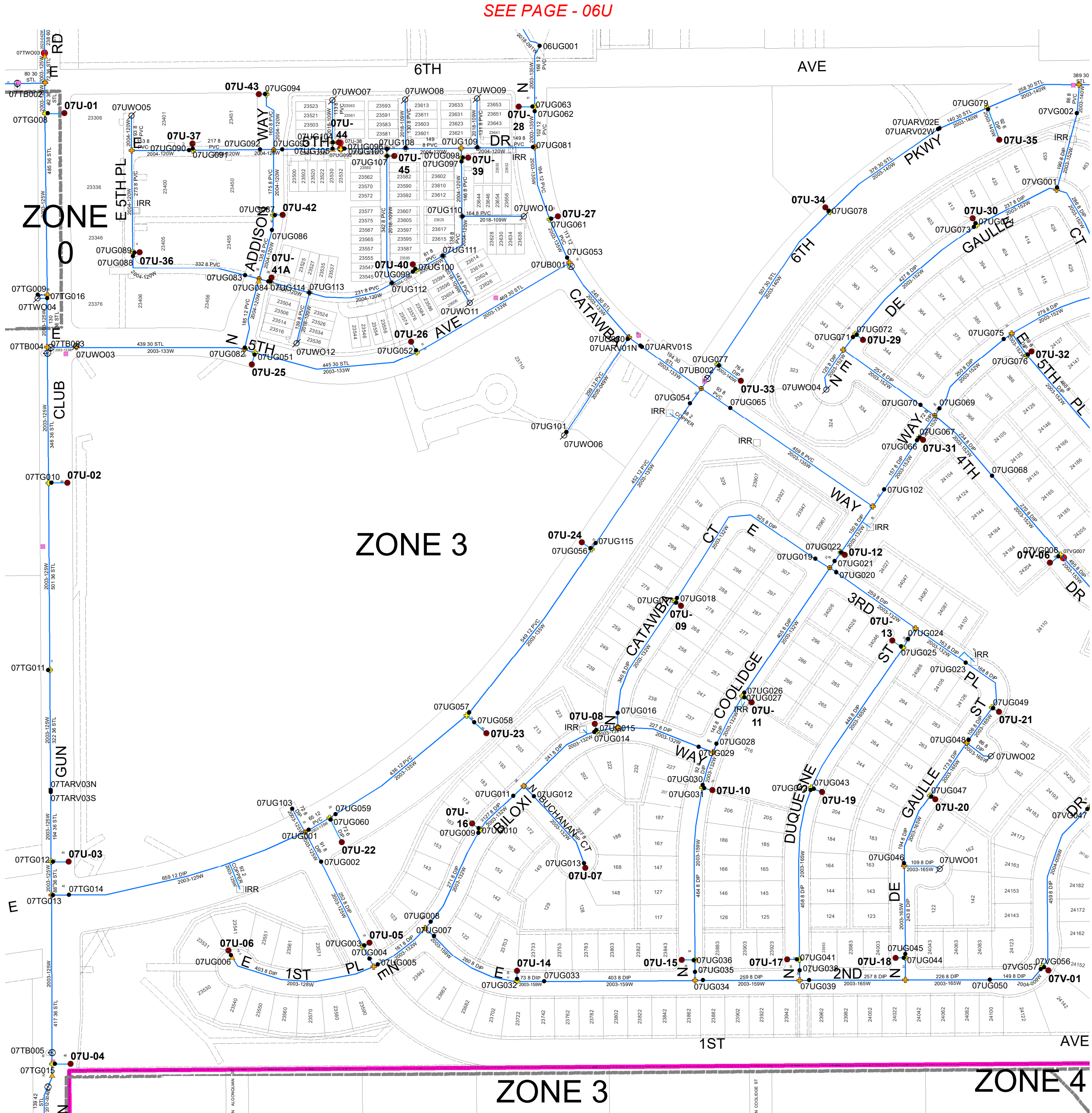
LOCATIONS ON THIS MAP ARE APPROXIMATE AND ARE INTENDED TO SERVE AS AN AID IN GRAPHIC REPRESENTATION ONLY.

BEFORE EXCAVATION CALL THE CITY OF AURORA WATER OPERATIONS AT (303)-326-8645 TO SCHEDULE FIELD LOCATIONS OF WATER, STORM AND SANITARY LINES.

PLEASE REPORT ANY ERRORS OR OMISSIONS ON THIS MAP TO THE CITY OF AURORA, AURORA WATER, ENGINEERING DIVISION, GIS SECTION.

PLOT DATE:

July 4, 2021



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