



# MEADOWBROOK PARK

MEADOWBROOK PARKWAY  
EL PASO COUNTY, COLORADO

WATER RESOURCE REPORT

JULY 22<sup>ND</sup>, 2021

Prepared by:

**Kimley»»Horn**

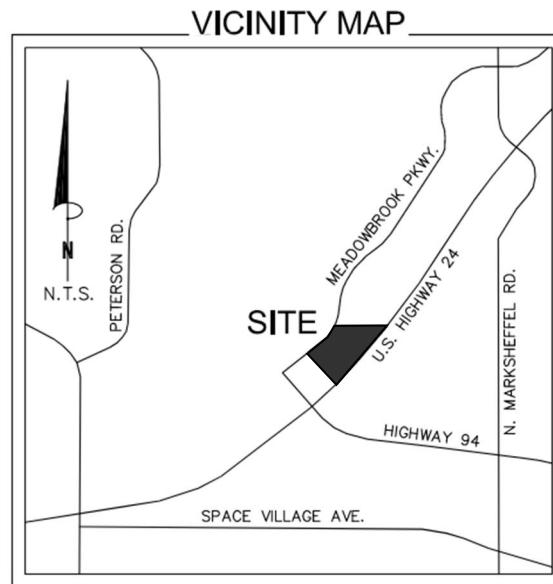
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## SUMMARY OF THE PROPOSED SUBDIVISION

### SITE LOCATION

The Site is located at the northeast corner of Meadowbrook Parkway and CO-24 and currently consists of Tract A of the 94/24 Business Park Filing No. 1 (the "Site"). More specifically, the Site is located in the southeast quarter of Section 8, Township 14 South, Range 65 West of the Sixth Principal Meridian, County of El Paso, State of Colorado. The Site is bounded by Meadowbrook Pkwy to the west, U.S. Highway 24 to the east, and existing commercial lots to the east and west. A vicinity map is provided below for reference:



### DESCRIPTION OF PROPERTY

The overall site is approximately 8.010 acres of partially undeveloped land. The site development is anticipated to consist of 67 single family homes. Roadway infrastructure proposed within the site will provide access from the Project to adjacent right-of-way and access roadways. Project access will be obtained through Meadowbrook Pkwy.

A proposed street will run through the middle of the Project with two streets connecting to Meadowbrook Pkwy to provide a loop through the site for proficient emergency access.

The existing topography generally drains from east to west. The overall site varies in elevation from a low of approximately 6322 feet to a high of approximately 6353.

There are two points of connection for proposed water service to the Site. Both connections will be made off the 12-inch line within Meadowbrook Pkwy from the northeastern and northwestern corners of the Project. Refer to **Appendix A** for an overview of the water system and points of connection.

The water design presented herein will focus on the water demands anticipated with development of the Site.

## INFORMATION REGARDING SUFFICIENT QUANTITY OF WATER

### CALCULATION OF WATER DEMAND

The water system demands were based on a formal letter of Commitment sent by the CMD for Meadowbrook Park dated May 10<sup>th</sup>, 2021. See **Appendix A** for reference.

Demand Factors/Allowed Flows:

- Domestic Annual Water Demand
  - 14.7 AF/yr
- Irrigation Annual Water Demand
  - 3.3 AF/yr
- Average Day Demand
  - 0.159 GPM per Unit
- Maximum Day Demand
  - 0.318 GPM per Unit

Based on this information, the domestic water and irrigation demand was calculated as follows:

DOMESTIC WATER DEMAND CALCULATIONS							
Parcel	Building Type	Lot Count	Estimated Gross Floor Area	Average Day Demand	Average Day Demand	Max Day Demand	Max Day Demand
		EA	SF	GPM/Unit	GPM	GPM/Unit	GPM
Area A	Residential	10	10,643	0.159	1.6	0.318	3.2
Area B	Residential	5	5,321	0.159	0.8	0.318	1.6
Area C	Residential	8	8,514	0.159	1.3	0.318	2.5
Area D	Residential	15	15,964	0.159	2.4	0.318	4.8
Area E	Residential	13	13,835	0.159	2.1	0.318	4.1
Area F	Residential	16	17,028	0.159	2.5	0.318	5.1
<i>Total Flow Rates:</i>				<i>Average Day</i>	<i>10.7</i>	<i>Max Day</i>	<i>21.3</i>

Section 2.6 of the Colorado Springs Utilities (CSU) standards was used to analyze the proposed water system. CSU standards and Water distribution systems design scenarios is as follows:

- Static Scenario
  - No demands on the system. Maximum pressure = 170 psi.
- Average Day Scenario
  - Average demands on the system based on conversion listed above. Minimum pressure = 50 psi.
- Maximum Day + Fire Flow Scenario
  - fire flow demand of 2,500 gpm at each hydrant. Minimum pressure = 20 psi

Pipe Sizing Calculations:

- WaterCAD was used to size water mains.
- Minimum Diameter = 8 inches for water mains, 6 inches for hydrant laterals

The proposed water main will be tapping into existing water lines in two (2) locations. Both connections will be made off the 12-inch line within Meadowbrook Pkwy from the northeastern and northwestern corners of the Project.

The site falls within the CMD which uses groundwater for the water system. An HGL of 6505 was used to model the connections to the existing system based off the fire flow test provided in May 2021. The fire flow results can be reviewed in **Appendix A**. The high and low proposed finish grades for the site are approximately 6342 and 6321. The full hydraulic analysis using WaterCAD can be reviewed in **Appendix A** of this report.

The system will have an average day demand of 11.1 GPM and a max day demand of 22.3 GPM based on the Criteria. Based on the results of the WaterCAD analysis, it is anticipated that the existing system has capacity for the proposed development.

The buildings within the development shall be constructed per the 2018 International Fire Code (IFC) and 2018 International Building Code (IBC), or most current code. The proposed buildings will require fire flows per the International Fire Code.

Water main design calculations and the WaterCAD pipe network Model are provided in **Appendix A**.

### CALCULATION OF QUANTITY OF WATER AVAILABLE

Cherokee Metro District has a “Water Provider Supplement to Water Resource Report for Meadowbrook Park” attached as a part of the Appendix. The supplemental information confirms the availability of water to service this project. This project will be served by Cherokee Metro District water mains only.

With 4,443.0 AFY of exportable supply and 4,211.3 AFY of commitments, CMD has a water balance of 231.7 AFY before the subject development. After commitment of 18.0 AFY to this development, the District will have 213.7 AFY remaining for additional commitments. Below is a table showing the district’s water balance with the new development.

Water Balance Before New Commitment	231.7 AFY
New Commitment: Meadowbrook Park	18.0 AFY
Water Balance Remaining	213.7 AFY

### INFORMATION REGARDING SUFFICIENT DEPENDABILITY OF WATER SUPPLY

Currently Cherokee Metro District serves approximately 7000 residential taps and 600 commercial taps in addition to bulk users in eastern El Paso County including Schriever Air Force Base and several small developments located along State Highway 94.

Cherokee Metro District water is sourced entirely from groundwater in two regions. The majority is recovered from the alluvial Upper Black Squirrel (UBS) Aquifer in eastern El Paso County via 20 wells. The remainder is sourced from two wells in deep bedrock aquifers in the northern part of the county on the “Sundance Ranch” property. Water from eight of the 20 wells in the eastern part of the county can only be used to serve a fixed list of customers. Water for the main service area of CMD comes only from the remaining 12 wells in UBS along with the two wells at the Sundance Ranch.

The supplement to the Water Resource Report provided by Cherokee Metro District provides a description of the water supply, calculations demonstrating quantity, and evidence of water system source.

## INFORMATION REGARDING SUFFICIENT WATER QUALITY

Cherokee Metro District uses a water system based on groundwater sources and water is treated to conform to all Federal and State regulatory requirements. Additional information is provided in the providers supplement to this Report.

## PUBLIC AND PRIVATE COMMERCIAL WATER PROVIDERS

Cherokee Metro District has a “Water Provider Supplement to Water Resource Report for Meadowbrook Park” attached as a part of the Appendix. This supplement provides content that meets or exceeds the provided content provided in this Water Resource Report.

## REFERENCES

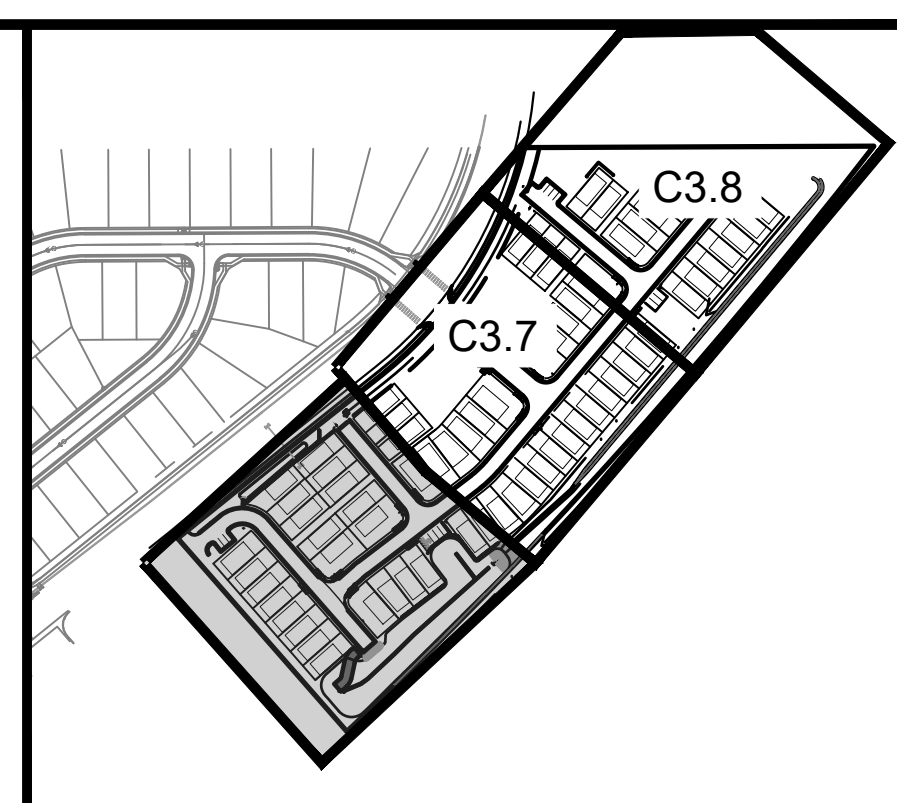
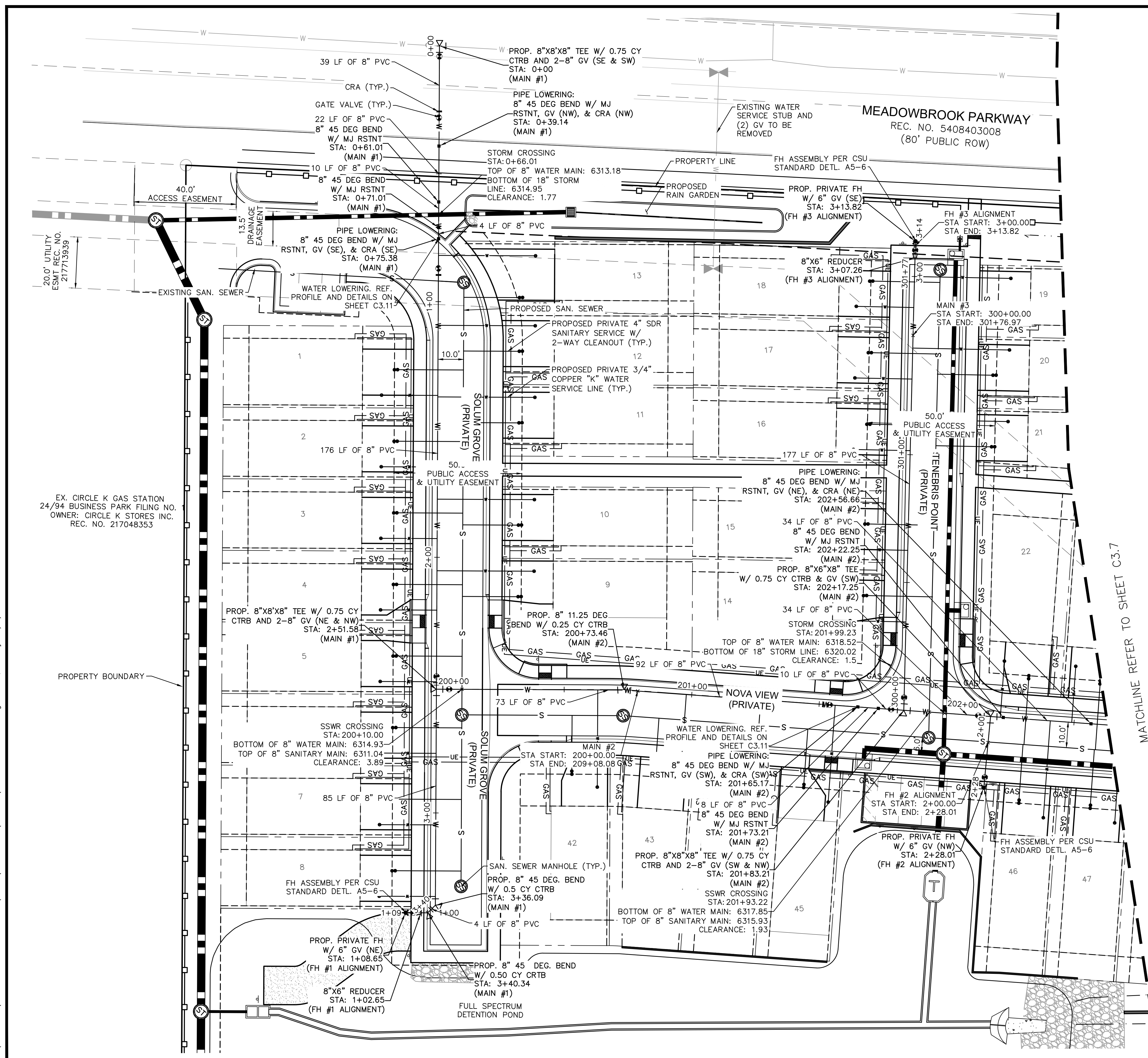
Colorado Springs Utilities Water Line Extension & Service Standards 2019, City of Colorado Springs; July 1, 2019.

Cherokee Metropolitan District. “Water and Sewer Service to Meadowbrook Park. Commitment Letter No. 2021-07 (Revision of 2020-11).” Letter to Kevin Kofford. 6 May 2021.

## APPENDIX A – WATER SCHEMATIC & COMPUTATIONS



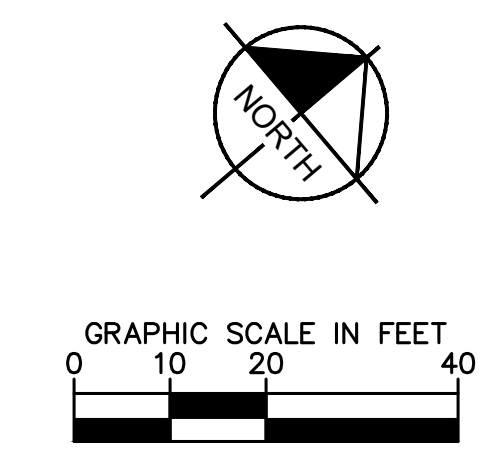
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- LEGEND**
- PROPERTY LINE
  - EXISTING WATER LINE & VALVE
  - PROPOSED WATER LINE & VALVE
  - - - LOT LINE
  - PROPOSED FIRE HYDRANT
  - SS — EXISTING SANITARY SEWER LINE & MANHOLE
  - S — PROPOSED SANITARY SEWER LINE & MANHOLE
  - PROPOSED STORM SEWER LINE & MANHOLE
  - PROPOSED STORM SEWER STRUCTURES

- NOTES:**
1. ALL WATER LINES TO BE BEDDED PER COLORADO SPRINGS UTILITIES SPECIFICATIONS.
  2. ALL CONDITIONS SHOWN TO BE "EXISTING" OR "ASSUMED" SHALL BE VERIFIED IN THE FIELD BY THE GENERAL CONTRACTOR PRIOR TO START OF CONSTRUCTION INCLUDING BUT NOT LIMITED TO POTHOLES OF EXISTING UTILITY ELEVATIONS AT CROSSINGS AND TIE-IN LOCATIONS. ANY DISCREPANCIES SHALL BE NOTED AND SUBMITTED TO THE OWNER AND THE ENGINEER FOR REVIEW. CHANGES TO THE ORIGINAL DESIGN OF THIS PROJECT DUE TO EXISTING SITE CONDITIONS MUST BE APPROVED BY BOTH THE ENGINEER AND OWNER PRIOR TO MAKING ANY CHANGES.
  3. THE HORIZONTAL DIMENSIONS BETWEEN PROPOSED UTILITY LINES MAY VARY SLIGHTLY BASED ON INSTALLED VALVES, ADAPTER, AND PUMPS.
  4. ALL APPURTENANCES ON HYDRANT LATERALS SHALL BE INSTALLED WITH MJ RESTRAINTS PER CSU STANDARDS.

**CAUTION NOTE (SERVICE LINES):**  
 CONTRACTOR SHALL MAINTAIN 1' OF VERTICAL SEPARATION AT ALL DRY UTILITY CROSSINGS. CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITY CROSSINGS TO VERIFY DEPTH AND COORDINATE WITH ENGINEER OF RECORD.



MATCHLINE REFER TO SHEET C3.7

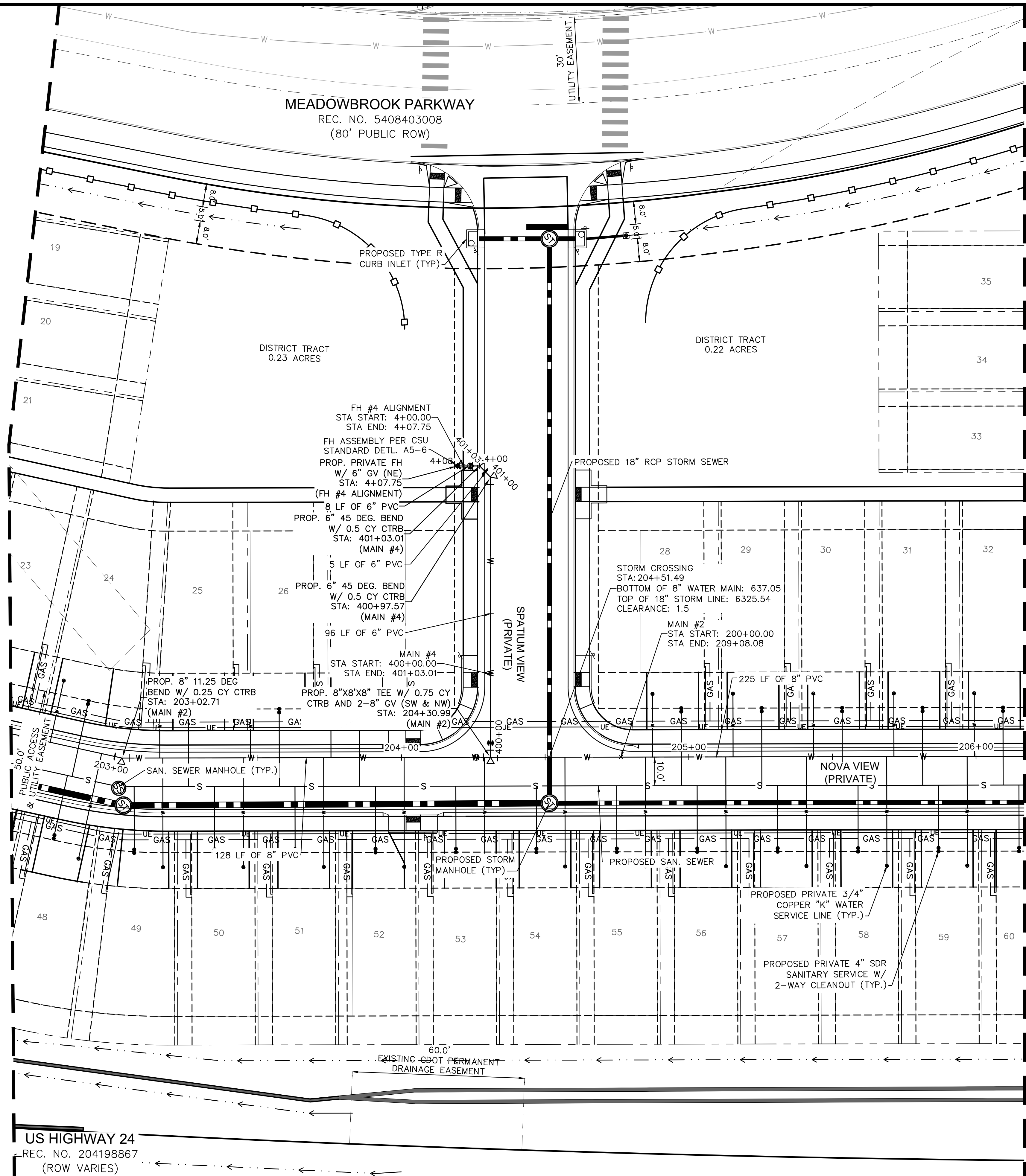
EX. CIRCLE K GAS STATION  
24/94 BUSINESS PARK FILING NO.  
OWNER: CIRCLE K STORES INC.  
REC. NO. 217048353

<b>Kimley»Horn</b>	2020 KIMLEY-HORN AND ASSOCIATES, INC. 2 North Nevada Avenue Suite 300 Colorado Springs, Colorado 80903 (719) 453-0180
<b>MEADOWBROOK PARK</b> EL PASO COUNTY, COLORADO UTILITY AND WATER SERVICE PLANS <b>WATER PLAN</b>	DESIGNED BY: KK DRAWN BY: KK CHECKED BY: JH DATE: 10/09/2020
PRELIMINARY FOR REVIEW ONLY NOT FOR CONSTRUCTION 	PROJECT NO. 096956009 SHEET <b>C3.6</b>

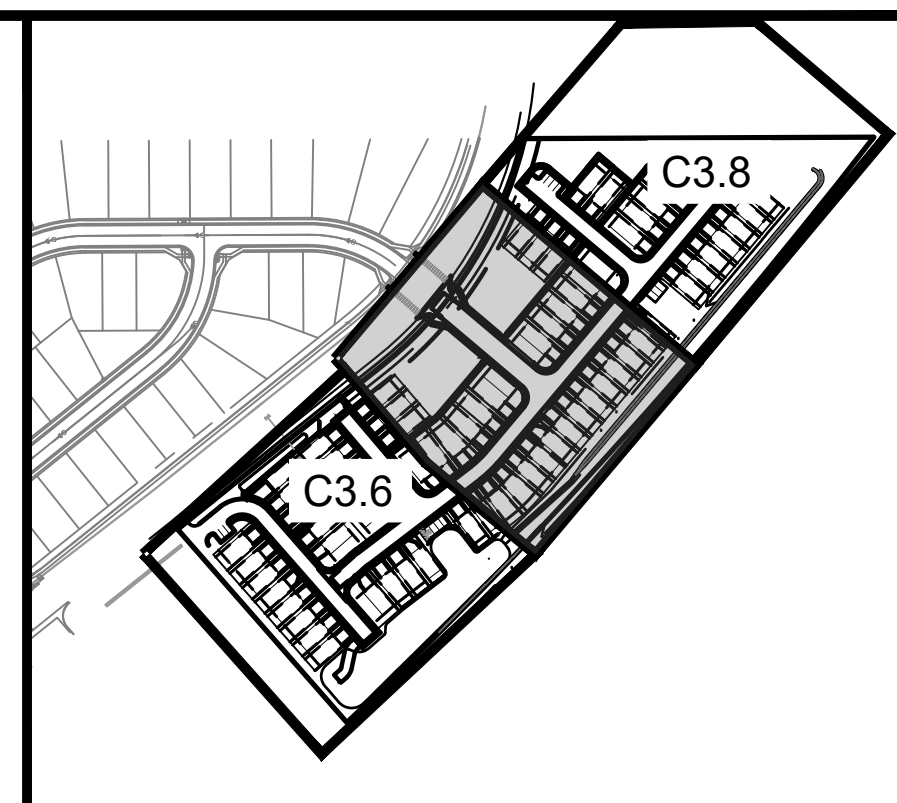


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MATCHLINE REFER TO SHEET C3.6



MATCHLINE REFER TO SHEET C3.8



**LEGEND**

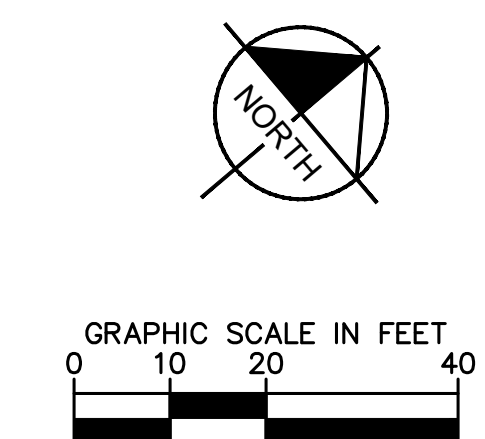
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NO.	REVISION	BY	DATE	APPR.

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2020 KIMLEY-HORN AND ASSOCIATES, INC.  
2 North Nevada Avenue Suite 300  
Colorado Springs, Colorado 80903 (719) 453-0180

DESIGNED BY: KK  
DRAWN BY: KK  
CHECKED BY: JH  
DATE: 10/09/2020

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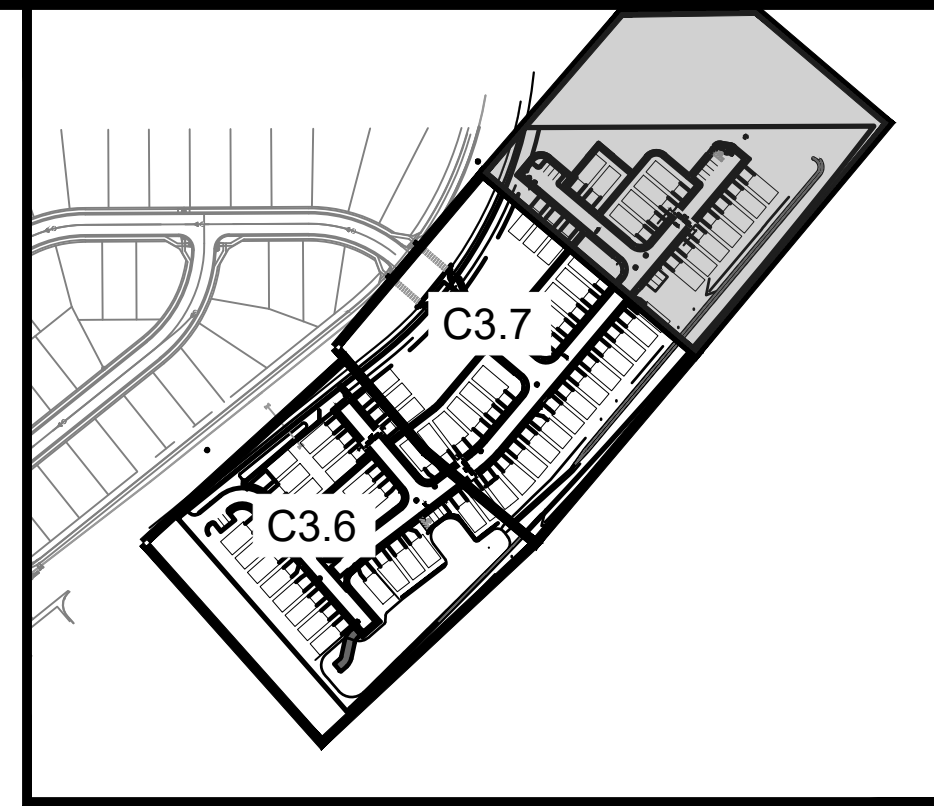
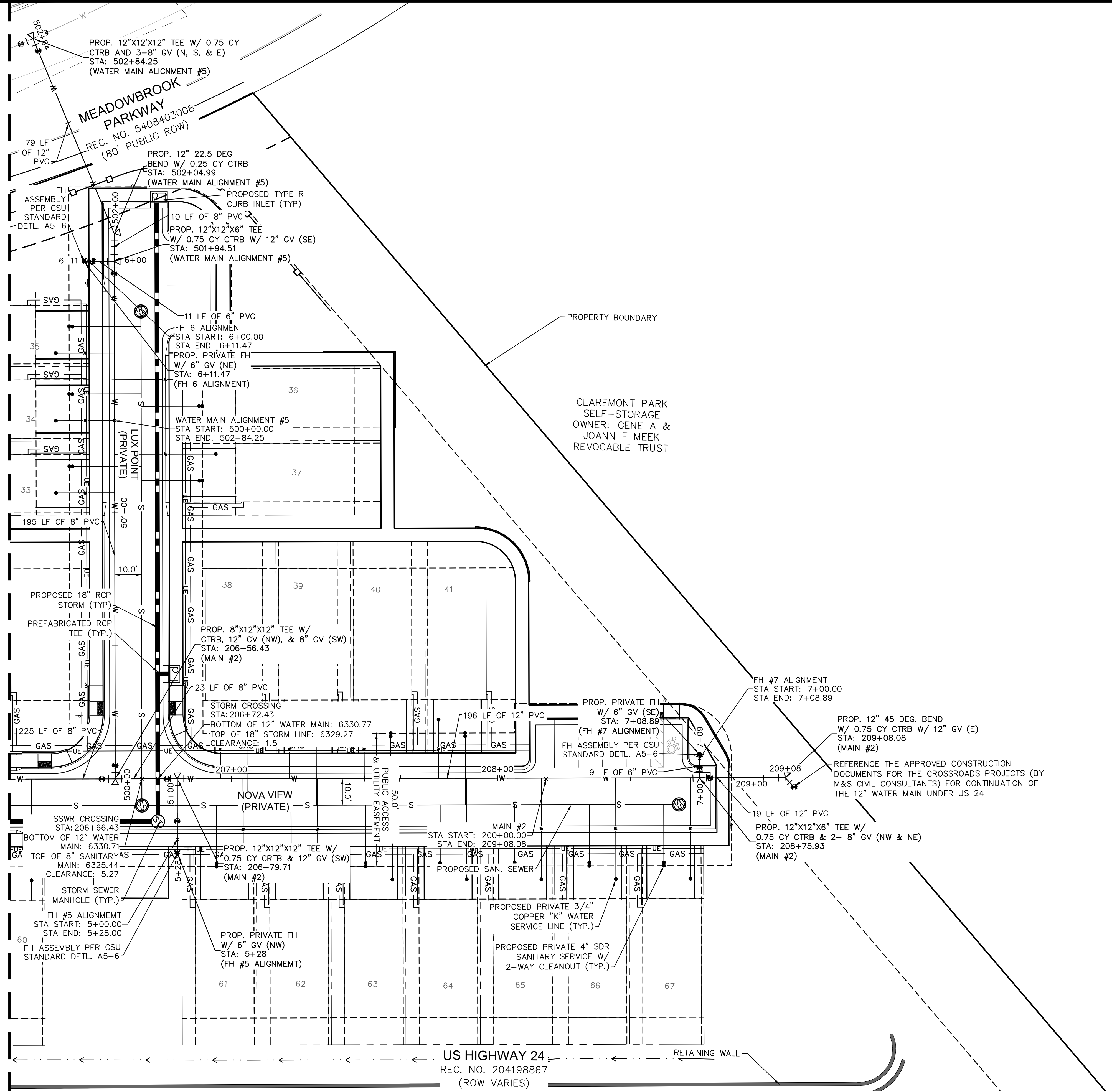
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Kimley-Horn and Associates, Inc.

PROJECT NO.  
096956009  
SHEET  
**C3.7**



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MATCHLINE REFER TO SHEET C3.7



KEY MAP  
NOT TO SCALE

**LEGEND**

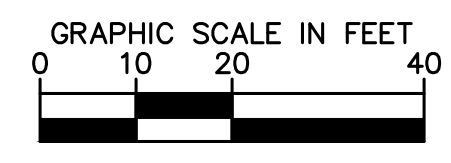
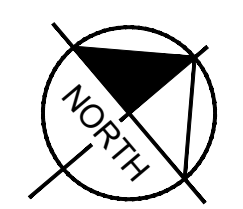
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PROJECT NO.  
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SHEET  
**C3.8**

<b>DOMESTIC WATER DEMAND CALCULATIONS</b>							
Parcel	Building Type	Lot Count	Estimated Gross Floor Area	Average Day Demand	Average Day Demand	Max Day Demand	Max Day Demand
		EA	SF	GPM/Unit	GPM	GPM/Unit	GPM
Area A	Residential	10	10,643	0.159	1.6	0.318	3.2
Area B	Residential	5	5,321	0.159	0.8	0.318	1.6
Area C	Residential	8	8,514	0.159	1.3	0.318	2.5
Area D	Residential	15	15,964	0.159	2.4	0.318	4.8
Area E	Residential	13	13,835	0.159	2.1	0.318	4.1
Area F	Residential	16	17,028	0.159	2.5	0.318	5.1
<b>Total Flow Rates:</b>				<b>Average Day</b>	<b>10.7</b>	<b>Max Day</b>	<b>21.3</b>

## Static Scenario

### Pipe Table - Time: 0.00 hours

Label	Diameter (in)	Material	Flow (Absolute) (gpm)	Velocity (ft/s)	Headloss (ft)
P-15	6.0	PVC	0.0	0.00	0.00
P-21	6.0	Ductile Iron	0.0	0.00	0.00
P-11	6.0	Ductile Iron	0.0	0.00	0.00
P-23	6.0	Ductile Iron	0.0	0.00	0.00
P-24	6.0	Ductile Iron	0.0	0.00	0.00
P-25	6.0	Ductile Iron	0.0	0.00	0.00
P-26	6.0	Ductile Iron	0.0	0.00	0.00
P-29	6.0	Ductile Iron	0.0	0.00	0.00
P-28	6.0	Ductile Iron	0.0	0.00	0.00
P-5	8.0	PVC	0.0	0.00	0.00
P-6	8.0	PVC	0.0	0.00	0.00
P-7	8.0	PVC	0.0	0.00	0.00
P-8	8.0	PVC	0.0	0.00	0.00
P-9	8.0	PVC	0.0	0.00	0.00
P-10	8.0	PVC	0.0	0.00	0.00
P-12	8.0	PVC	0.0	0.00	0.00
P-13	8.0	PVC	0.0	0.00	0.00
P-14	8.0	PVC	0.0	0.00	0.00
P-16	8.0	PVC	0.0	0.00	0.00
P-17	8.0	PVC	0.0	0.00	0.00
P-18	8.0	PVC	0.0	0.00	0.00
P-19	8.0	PVC	0.0	0.00	0.00
P-20	8.0	PVC	0.0	0.00	0.00
P-1	12.0	PVC	0.0	0.00	0.00
P-2	12.0	PVC	0.0	0.00	0.00
P-3	12.0	PVC	0.0	0.00	0.00
P-27	12.0	PVC	0.0	0.00	0.00
P-28	12.0	PVC	0.0	0.00	0.00
P-29	24.0	PVC	0.0	0.00	0.00
P-30	24.0	PVC	0.0	0.00	0.00

**Static Scenario**  
**Junction Table - Time: 0.00 hours**

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)	Concentration (Calculated) (mg/L)
J-8	6,314.47	0.0	6,505.00	82	(N/A)
J-5	6,315.20	0.0	6,505.00	82	(N/A)
J-7	6,315.30	0.0	6,505.00	82	(N/A)
J-10	6,315.91	0.0	6,505.00	82	(N/A)
J-1	6,316.00	0.0	6,505.00	82	(N/A)
AREA A	6,316.84	0.0	6,505.00	81	(N/A)
J-6	6,317.07	0.0	6,505.00	81	(N/A)
J-2	6,317.88	0.0	6,505.00	81	(N/A)
J-3	6,318.02	0.0	6,505.00	81	(N/A)
AREA B	6,319.76	0.0	6,505.00	80	(N/A)
AREA C	6,321.79	0.0	6,505.00	79	(N/A)
AREA D	6,323.42	0.0	6,505.00	79	(N/A)
J-16	6,325.49	0.0	6,505.00	78	(N/A)
J-15	6,327.22	0.0	6,505.00	77	(N/A)
J-4	6,329.91	0.0	6,505.00	76	(N/A)
J-20	6,330.00	0.0	6,505.00	76	(N/A)
J-21	6,330.35	0.0	6,505.00	76	(N/A)
AREA E	6,331.01	0.0	6,505.00	75	(N/A)
J-19	6,331.22	0.0	6,505.00	75	(N/A)
AREA F	6,337.12	0.0	6,505.00	73	(N/A)

**Reservoir Table - Time: 0.00 hours**

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	6,505.00	0.0	6,505.00
R-2	6,505.00	0.0	6,505.00



## Average Day Scenario

### Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
AREA F	6,337.12	2.5	6,505.00	73
J-19	6,331.22	0.0	6,505.00	75
AREA E	6,331.01	2.1	6,505.00	75
J-21	6,330.35	0.0	6,505.00	76
J-20	6,330.00	0.0	6,505.00	76
J-4	6,329.91	0.0	6,505.00	76
J-15	6,327.22	0.0	6,505.00	77
J-16	6,325.49	0.0	6,505.00	78
AREA D	6,323.42	2.4	6,505.00	79
AREA C	6,321.79	1.3	6,505.00	79
AREA B	6,319.76	0.8	6,505.00	80
J-3	6,318.02	0.0	6,505.00	81
J-2	6,317.88	0.0	6,505.00	81
J-6	6,317.07	0.0	6,505.00	81
AREA A	6,316.84	1.6	6,505.00	81
J-1	6,316.00	0.0	6,505.00	82
J-10	6,315.91	0.0	6,505.00	82
J-7	6,315.30	0.0	6,505.00	82
J-5	6,315.20	0.0	6,505.00	82
J-8	6,314.47	0.0	6,505.00	82

**Average Day Scenario**  
**Pipe Table - Time: 0.00 hours**

Label	Diameter (in)	Material	Flow (Absolute) (gpm)	Velocity (ft/s)	Headloss (ft)
P-15	6.0	PVC	0.0	0.00	0.00
P-21	6.0	Ductile Iron	0.0	0.00	0.00
P-11	6.0	Ductile Iron	0.0	0.00	0.00
P-23	6.0	Ductile Iron	0.0	0.00	0.00
P-24	6.0	Ductile Iron	0.0	0.00	0.00
P-25	6.0	Ductile Iron	0.0	0.00	0.00
P-26	6.0	Ductile Iron	0.0	0.00	0.00
P-29	6.0	Ductile Iron	0.0	0.00	0.00
P-28	6.0	Ductile Iron	0.0	0.00	0.00
P-5	8.0	PVC	4.8	0.03	0.00
P-6	8.0	PVC	4.8	0.03	0.00
P-7	8.0	PVC	4.8	0.03	0.00
P-8	8.0	PVC	4.8	0.03	0.00
P-9	8.0	PVC	1.6	0.01	0.00
P-10	8.0	PVC	3.2	0.02	0.00
P-12	8.0	PVC	1.3	0.01	0.00
P-13	8.0	PVC	1.1	0.01	0.00
P-14	8.0	PVC	1.3	0.01	0.00
P-16	8.0	PVC	1.3	0.01	0.00
P-17	8.0	PVC	3.4	0.02	0.00
P-18	8.0	PVC	2.5	0.02	0.00
P-19	8.0	PVC	5.9	0.04	0.00
P-20	8.0	PVC	5.9	0.04	0.00
P-1	12.0	PVC	4.0	0.01	0.00
P-2	12.0	PVC	0.8	0.00	0.00
P-3	12.0	PVC	0.8	0.00	0.00
P-27	12.0	PVC	0.8	0.00	0.00
P-28	12.0	PVC	6.7	0.02	0.00
P-29	24.0	PVC	6.7	0.00	0.00
P-30	24.0	PVC	4.0	0.00	0.00

**Reservoir Table - Time: 0.00 hours**

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	6,505.00	4.0	6,505.00
R-2	6,505.00	6.7	6,505.00

## Max Day Scenario

### Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
AREA F	6,337.12	5.1	6,505.00	73
J-19	6,331.22	0.0	6,505.00	75
AREA E	6,331.01	4.1	6,505.00	75
J-21	6,330.35	0.0	6,505.00	76
J-20	6,330.00	0.0	6,505.00	76
J-4	6,329.91	0.0	6,505.00	76
J-15	6,327.22	0.0	6,505.00	77
J-16	6,325.49	0.0	6,505.00	78
AREA D	6,323.42	4.8	6,505.00	79
AREA C	6,321.79	2.5	6,505.00	79
AREA B	6,319.76	1.6	6,505.00	80
J-3	6,318.02	0.0	6,505.00	81
J-2	6,317.88	0.0	6,505.00	81
J-6	6,317.07	0.0	6,505.00	81
AREA A	6,316.84	3.2	6,505.00	81
J-1	6,316.00	0.0	6,505.00	82
J-10	6,315.91	0.0	6,505.00	82
J-7	6,315.30	0.0	6,505.00	82
J-5	6,315.20	0.0	6,505.00	82
J-8	6,314.47	0.0	6,505.00	82

**Max Day Scenario**  
**Pipe Table - Time: 0.00 hours**

Label	Diameter (in)	Material	Flow (Absolute) (gpm)	Velocity (ft/s)	Headloss (ft)
P-15	6.0	PVC	0.0	0.00	0.00
P-21	6.0	Ductile Iron	0.0	0.00	0.00
P-11	6.0	Ductile Iron	0.0	0.00	0.00
P-23	6.0	Ductile Iron	0.0	0.00	0.00
P-24	6.0	Ductile Iron	0.0	0.00	0.00
P-25	6.0	Ductile Iron	0.0	0.00	0.00
P-26	6.0	Ductile Iron	0.0	0.00	0.00
P-29	6.0	Ductile Iron	0.0	0.00	0.00
P-28	6.0	Ductile Iron	0.0	0.00	0.00
P-5	8.0	PVC	9.6	0.06	0.00
P-6	8.0	PVC	9.6	0.06	0.00
P-7	8.0	PVC	9.6	0.06	0.00
P-8	8.0	PVC	9.6	0.06	0.00
P-9	8.0	PVC	3.2	0.02	0.00
P-10	8.0	PVC	6.4	0.04	0.00
P-12	8.0	PVC	2.5	0.02	0.00
P-13	8.0	PVC	2.3	0.01	0.00
P-14	8.0	PVC	2.5	0.02	0.00
P-16	8.0	PVC	2.5	0.02	0.00
P-17	8.0	PVC	6.6	0.04	0.00
P-18	8.0	PVC	5.1	0.03	0.00
P-19	8.0	PVC	11.7	0.07	0.00
P-20	8.0	PVC	11.7	0.07	0.00
P-1	12.0	PVC	7.9	0.02	0.00
P-2	12.0	PVC	1.7	0.00	0.00
P-3	12.0	PVC	1.7	0.00	0.00
P-27	12.0	PVC	1.7	0.00	0.00
P-28	12.0	PVC	13.4	0.04	0.00
P-29	24.0	PVC	13.4	0.01	0.00
P-30	24.0	PVC	7.9	0.01	0.00

**Reservoir Table - Time: 0.00 hours**

Label	Elevation (ft)	Flow (Out net) (gpm)	Hydraulic Grade (ft)
R-1	6,505.00	7.9	6,505.00
R-2	6,505.00	13.4	6,505.00

**Fire Flow Results**  
**Fire Flow Report - Time: 0.00 hours**

Label	Demand (gpm)	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)
H-1	0.0	True	0.0	2,501.0	74	H-5
H-2	0.0	True	0.0	2,501.0	77	H-5
H-3	0.0	True	0.0	2,501.0	56	J-16
H-4	0.0	True	0.0	2,501.0	65	H-5
H-5	0.0	True	0.0	2,501.0	59	AREA F
H-6	0.0	True	0.0	2,501.0	72	H-5
H-7	0.0	True	0.0	2,501.0	73	H-5
H-8	0.0	True	0.0	2,501.0	69	H-5





# CHEROKEE METROPOLITAN DISTRICT

6250 Palmer Park Blvd., Colorado Springs, CO 80915-2842

Telephone: (719) 597-5080 Fax: (719) 597-5145

May 6<sup>th</sup>, 2021

Danny Mientka

The Equity Group

90 S Cascade Avenue, Suite 1500

Colorado Springs, CO 80903

*Sent via email: [kevin.kofford@kimley-horn.com](mailto:kevin.kofford@kimley-horn.com)*

Re: Water and Sewer Service to **Meadowbrook Park**  
Commitment Letter No. **2021-07 (Revision of 2020-11)**

Dear Danny Mientka,

As requested, this document will serve as a formal Letter of Commitment from the Cherokee Metropolitan District to provide municipal water and sewer services Meadowbrook Park located at the North corner of U.S. Highway 24 and State Highway 94. The location for this proposed development is located within the District's established boundaries and therefore is eligible for service connections from the District.

Cherokee Metropolitan District staff, along with the developer, have determined that the following will be the total water demand required by this development:

Type of Use	Demand (AF/yr)
Domestic	14.7
Irrigation	3.3
<b>Total</b>	<b>18.0</b>

Based on a conservatively low 0% consumptive use of domestic water, the development is expected to produce 13,160 gallons of wastewater per day, representing 0.5% of CMD's wastewater capacity. This is in line with anticipated wastewater demand for this area of the District.

This water and wastewater commitment is hereby made exclusively for this specific development project at this site within the District. To confirm this commitment you must provide the District with a copy of the final plat approval from El Paso County Development Services within 12 months of the date of this letter. Otherwise, the District may use this allocation for other developments requesting a water commitment. If the subject project is re-platted, you must submit a new commitment request

prior to submitting the re-plat to El Paso County, which may result in a recalculation of the water demand for the project.

If I may be of further assistance please contact me at your convenience.

Sincerely,

A handwritten signature in cursive script, appearing to read "Amy Lathen", written over a horizontal line.

Amy Lathen  
General Manager

Cc: Peter Johnson; Water Counsel w/ encl: sent via email  
Steve Hasbrouck; Board President w/ encl: sent via email  
Jeff Munger, Water Resource Engineer  
Kevin Brown; Jr. Water Resource Engineer

## FIRE FLOW TEST

DATE 5/12/21 TIME 1400

LOCATION Meadowbrook Pkwy

TANK LEVEL 19.75 ft

BOOSTER RUNNING 1825 GPM

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RESIDUAL HYDRANT NUMBER: N/A

LOCATION:

Newt Dr. & Meadowbrook Pkwy 38.844477, -104.692405

STATIC LINE PRESSURE 110 PSI

DYNAMIC LINE PRESSURE 82 PSI

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FLOW HYDRANT NUMBER: 2234-3

LOCATION:

Meadowbrook Pkwy 38.845232, -104.691159

Flow/Pressure

READING:

GPM 2040

PSI 29.5

Results taken from gauge on the Big Boy Pitot-less Hose Monster

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TAKEN BY: A. Wenger; K. Love

REVIEWED BY: Nicholas Griffin

RESULTS SENT TO: [Kevin.Kofford@kimley-horn.com](mailto:Kevin.Kofford@kimley-horn.com)



# **CHEROKEE METROPOLITAN DISTRICT**

**6250 Palmer Park Blvd., Colorado Springs, CO 80915-2842**

**Telephone: (719) 597-5080 Fax: (719) 597-5145**

## **Water Provider Supplement to Water Resource Report for Meadowbrook park**

May 10<sup>th</sup>, 2021

Commitment 2021-07

This document has been prepared to satisfy El Paso County's requirement of a Water Provider's Supplement in support of **Meadowbrook Park** at **the north corner of U.S. Highway 24 and State Highway 94**

## **Introduction**

Cherokee Metropolitan District (CMD) is a Title 32 special District which provides water and wastewater to a 5000-acre enclave of unincorporated El Paso county surrounded by the City of Colorado Springs. Currently CMD serves approximately 7000 residential taps and 600 commercial taps in addition to bulk users in eastern El Paso County including Schriever Air Force Base and several small developments located along State Highway 94.

CMD water is sourced entirely from groundwater in two regions. The majority is recovered from the alluvial Upper Black Squirrel (UBS) Aquifer in eastern El Paso County via 20 wells. The remainder is sourced from two wells in deep bedrock aquifers in the northern part of the county on the “Sundance Ranch” property. Water from eight of the 20 wells in the eastern part of the county can only be used to serve a fixed list of customers. Water for the main service area of CMD comes only from the remaining 12 wells in UBS along with the two wells at the Sundance Ranch.

## **Calculation of Anticipated Water Demand**

The subdivision will include 67 residential lots with 0.88 acres of fully irrigated common space and 1.07 acres of 60% reduced watering native grass. This development will have 3000 square foot lots with limited opportunities for on-lot landscaping. Based on billing records of similar small lot developments in the District and El Paso County, a lower presumptive water use value is applicable than with traditional single family subdivisions.

The District estimates a presumptive use value of 0.22 Acre-Feet per Year (AFY) per Single Family Equivalent (SFE) as a conservative estimate for actual water use in these small lot developments. Actual small lot single family use is close to 0.20 AFY even in low precipitation years and this higher value accounts for distribution system losses. 67 lots at 0.22 AFY per lot yields 14.74 AFY for domestic and inside lot irrigation use.

Water demand for the 1.95 acres of common space was calculated using El Paso County’s fully irrigated landscaping estimate of 2.43 feet of water per year. Applying this to the 0.88 acres of fully irrigated common space and the 1.07 acres of 60% reduced watering common space yields an irrigation use estimate of 3.18 AFY. The total for irrigation and domestic use across the development is projected to be 18.0 AFY.

## **Water Supplies**

Cherokee has eight wells (numbered 1-8) that are restricted to serving a maximum of 653 AFY to a fixed list of customers within the Upper Black Squirrel Creek Designated Basin (the Basin). Excess allocation for these wells is unavailable for new developments, even if those developments are located inside the Basin, so this water is tracked separately from CMD’s general exportable supply portfolio. Water from CMD’s other alluvial wells is exported for use



outside the UBS basin. The total annual volume available to CMD from these exportable supplies is 3,985 Acre-Feet per Year (AFY) (Table 1). The physical yield of these wells is significantly higher than their annual appropriation, allowing for flexibility in satisfying irrigation season demand.

**Table 1:** Water rights and tributary status of Exportable Wells

Well Number	Water Right (AFY)	2019 Use (AFY)	Permit Number	Aquifer	Aquifer Status
Well 9	176	132	14145-FP-R	UBS Alluvium	Tributary
Well 10	176	108	14146-FP-R	UBS Alluvium	Tributary
Well 11	244	161	6821-FP-R	UBS Alluvium	Tributary
Well 12	244	149	11198-FP	UBS Alluvium	Tributary
Well 13	1268	975	49988-F	UBS Alluvium	Tributary
Well 14	0	0	52429-F	UBS Alluvium	Tributary
Well 15*	281	145	54070-F	UBS Alluvium	Tributary
Well 16*	219	123	54069-F	UBS Alluvium	Tributary
Well 17*	175	151	63094-F	UBS Alluvium	Tributary
Well 18	225	138	16253-RFP-R	UBS Alluvium	Tributary
Well 19	95	79	20567-RFP-R	UBS Alluvium	Tributary
Well 20	400	38	4332-RFP	UBS Alluvium	Tributary
Well 21	290	0	81782-F	UBS Alluvium	Tributary
DN-4**	110	110	78315-F	Denver Aquifer	Non-Tributary
AR-1***	147.7	155	75881-F	Arapahoe Aquifer	Non-Tributary
<b>Total</b>	<b>3984.7</b>	<b>2464</b>			

\*Wells 15, 16, and 17 can produce a combined 609 AFY despite their total individual allocations equaling 675 AFY. This reduction is reflected in the total.

\*\*CMD holds additional water rights in the Denver Aquifer associated with the Sundance Ranch property but this particular well has a maximum annual recorded yield of 110 AFY

\*\*\*As of December 2019 AR-1 has 2040 AF of banked water which allows actual pumping to exceed allocation on a limited basis

CMD is developing owned water supplies to increase available water and improve flexibility in provision of summer flows. By the end of 2021, these new wells will contribute 458 AFY of capacity to the CMD system (Table 2) for a total of 4,443.0 AFY. Since 2011, actual demand from CMD customers has fallen 30-35% below commitments, partially due to some committed developments being incomplete but largely due to water saving measures undertaken by CMD customers.

**Table 2:** New water supplies slated for completion in 2021

Well Number	Water Right (AFY)	Permit Number	Aquifer	Aquifer Status
Albrecht Well	153.5	27571-FP	UBS Alluvium	Tributary
DA-1	40.3	83604-F	Dawson	Not Non-Tributary
DA-4	64.5	83603-F	Dawson	Not Non-Tributary
AR-1 Expansion	200	75881-F	Arapahoe	Non-Tributary
<b>Total</b>	<b>458.3</b>			

By the end of 2021, CMD will have a total of 4,443 AFY of exportable water supplies sourced from alluvial and deep bedrock aquifers. Further development in the Denver Basin is not planned at this time and instead CMD is focusing on acquiring new renewable supplies proximate to existing infrastructure.

## Water Commitments

CMD's water commitments stand at 4,211.3 AFY before the addition of the proposed development. These commitments are broken down below in Table 3. The Tipton and Kane commitments are related to an arrangement from the mid-2000's where developers reserved commitments on two new wells. The water from these wells is considered fully committed to these developers even if they have not yet begun the projects associated with the reserved commitments. Due to a complex legal history, the "Kane" water right was not tied to a specific physical water well but instead operates as a commitment served from CMD's general supply portfolio. The "Tipton" water right corresponds to CMD's Well 18.

**Table 3:** CMD Commitments before addition of new development

Commitments	AFY
In-District (2015)	2693
Committed Since 2015	506.3
Schriever Air Force Base	537
Kane	200
Tipton	225
Construction	25
Parks	25
<b>Total</b>	<b>4211.3</b>

## Water Balance

With 4,443.0 AFY of exportable supply and 4,211.3 AFY of commitments, CMD has a water balance of 231.7 AFY before the subject development. After commitment of 18.0 AFY to this development, the District will have 213.7 AFY remaining for additional commitments.

**Table 4:** Water balance with new development

Water Balance Before New Commitment	231.7 AFY
New Commitment: Windermere Subdivision	18.0
<b>Water Balance Remaining</b>	<b>213.7 AFY</b>

## Other Relevant District Information

### Recent Water Acquisitions/Losses

CMD has not acquired any new water rights since 2015 but has been developing owned water rights into production wells. CMD has not engaged in any water trades nor lost any water rights in the last year. The District is not currently under contract to purchase new water rights although CMD is investigating purchases of renewable water rights proximate to its existing infrastructure on an ongoing basis.

### New Augmentation Plans

CMD is currently pursuing a replacement plan in partnership with Meridian Service Metropolitan District (MSMD) in order to maximize the efficiency of its water supplies.

### Major Water System Capital Improvements

CMD has been actualizing owned water by drilling wells and beginning production on several well sites. In February 2020 CMD brought the Sweetwater 5 well (81782-F) online as well 21. In April 2021 CMD brought the Albrecht well (27571-FP-R) online as well 22. It is not yet connected to the overall system pending CDPHE approval.

CMD recently expanded production from well AR-1 (75881-F), its only well in the Arapahoe aquifer, and will soon install pumps in two existing wells in the Dawson Aquifer (83603-F & 83604-F). Beyond these projects, additional well construction in the Denver Basin is not anticipated at this time, although CMD has a substantial amount of undeveloped water rights in the Denver Basin Aquifers.

Existing CMD wells have had a series of upgrades to improve quality and efficiency within in the last year. More incremental improvements in the distribution system to improve

reliability and resiliency include deeper computer integration, well rehabilitations, upgrades to treatment systems, and emergency generator refurbishment.