



PRELIMINARY UTILITY REPORT

**LOT 2-H, METZLER RANCH
FILING NO. 3, 1ST AMENDMENT**

**MURPHY USA FUEL STATION
186 Metzler Drive, Castle Rock, CO 80108**

Town of Castle Rock Project Number: SDP24-0001

PREPARED FOR:
Murphy Oil USA, Inc.
200 Peach Street
El Dorado, AR 71730
Contact: Grant Dennis
Phone: (870) 315-3430

PREPARED BY:
Galloway & Company, Inc.
1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920
Contact: Kyle Goodwin
Phone: (719) 900-7227

DATE:
November 11, 2024



Utility Report Approval Blocks
Lot 2-H, Metzler Ranch Filing No. 3, 1st Amendment (Murphy USA Fuel Station)

Engineer's Statement:

The enclosed utility report, and exhibits, were prepared by me or under my direct supervision and is correct to the best of my knowledge and belief. Said utility report has been prepared in accordance with applicable Town of Castle Rock criteria and is in conformance with the master utility plans for the affected area. I accept responsibility for any liability caused by negligent acts, errors, or omissions on my part in preparing this report.

Signature: _____

Kyle R Goodwin

State Of Colorado No. 63208

(Affix Seal)

Owner/Developer's Statement:

As Owner/Developer of Land(s) identified within this report; I agree to proceed, implement and comply with all recommendations and requirements outlined herein.

Name of Developer

Authorized Signature

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- A. Water Demands
- B. Water Storage
- C. Water Hydraulic Analysis and Modeling *(N/A – Not Included Herein)*
- D. Wastewater Flows
- E. Wastewater Hydraulic Modeling *(N/A – Not Included Herein)*
- F. Maps and Plans

I. Project Location and Description

Site Location

The subject property is ±1.25 acres and is located within the North Blue Water Pressure Zone at 186 Metzler Drive, the east corner of Founders Parkway and Metzler Way, within the municipal boundaries of Castle Rock, Colorado.

Description of Property and Land Use

The site is currently one parcel, Lot 2-H, Metzler Ranch Filing 3 1st Amendment. There is an existing parking lot, curb and gutter, fast food restaurant building, electric gear and miscellaneous utilities that serve the existing building on site. Murphy USA proposes to construct a new 2,824 square foot convenience store and fuel canopy with six (6) MPDs (12 fueling positions). The proposed improvements will include new underground fuel storage tanks, concrete parking lot and drive isles, sidewalks, domestic water and sanitary sewer services, signage, trash enclosure & landscaping.

II. Calculated Water Demands

Average Day Demands (ADD)

Land Use

Table per Town of Castle Rock Water System Design Criteria Manual, Section 4.4.1

Land Use	Typical ADD/Unit	Typical SFEs/Unit
Industrial / Other Commercial	1,200 gpd/acre	3.0/acre

ADD = ADD/Unit X Site Acreage

ADD = 1,200 gpd/acre X 1.25 acres = **1,500 GPD**

SFE = SFEs/Unit X Site Acreage

SFE = 3.0/acre X 1.25 acres = **3.75 SFE**

Fixture Units (Provided for building permit)

The average day demand was computed using values based on 2018 International Plumbing Code.

WSFU ITEM	FIXTURE	QTY	CW	HW	TOTAL
P-1	WC	3	5	0	15
P-2	LAV	2	1.5	1.5	6
P-5	HOSE BIBB	1	3	0	3
P-7	MOP SINK	1	2.25	2.25	4.5
P-10	3 COMP	1	3	3	6
P-11	HAND SINK	1	1.5	1.5	3
P-12	WATER FILTER	1	3	0	3
P-13	HAND SINK	1	1.5	1.5	3
P-14	URINAL	1	5	0	5
-	YARD HYDRANT	0	3	0	0
P-6	DRINKING FOUNTAIN	1	0.25		0.25
TOTAL (WSFU)					48.75

Max Day Demands (MDD)

The Max Day Demand (MDD) was calculated using demand factors from the Town of Castle Rock Water System Design, 2018 Criteria Manual.

Maximum Day Demand/Average Day Demand: 2.5 MDD/ADD

Peaking factors are not applied to irrigation ADD demands, therefore, the final MDD is calculated using the following procedure:

MDD = Domestic ADD X Maximum Day Factor + Irrigation ADD

***Irrigation will be included in the Final Utility Plan ***

MDD = (1,500 X 2.5) + XXX = **1,982 GPD**

Peak Hour Demands (PHD)

The Peak Hour Demand (PHD) was calculated using demand factors from the Town of Castle Rock Water System Design, 2018 Criteria Manual.

Peak Hour Demand/Average Day Demand: 5.5 PHD/ADD

Peaking factors are not applied to irrigation ADD demands, therefore, the final PHD is calculated using the following procedure:

PHD = Domestic ADD X Peak Hour Factor + Irrigation ADD
***Irrigation will be included in the Final Utility Plan ***

$$\text{PHD} = (1,500 \times 5.5) + \text{XXX} = \underline{\underline{3,066 \text{ GPD}}}$$

III. Existing Water System

Existing Supply Facilities

The site is served by a 1-1/2" water service line provided by an 8" water main located in Metzler Drive. The existing structure was a fast food restaurant (KFC) with a water meter located inside the building.

The TOCR Water System Design, 2018 Criteria Manual, classifies restaurant land use with a typical ADD/Unit of 3.0 gpd/SF. Using the existing square footage of the structure (3,097 SF) it can be reasonably assumed that the existing supply facilities support an ADD of approximately 9,291 GPD.

Table per Town of Castle Rock Water System Design Criteria Manual, Section 4.4.1

Land Use	Typical ADD/Unit	Typical SFEs/Unit
Restaurant	3.0 gpd/SF	0.0075/SF

ADD = ADD/Unit X Building Square Footage

$$\text{ADD} = 3.0 \text{ gpd/SF} \times 3,097 \text{ SF} = \underline{\underline{9,291 \text{ GPD}}}$$

IV. Proposed Water System

Proposed Supply Facilities

The proposed utility plan will reuse the existing 1-1/2" water service line beginning at the gate valve near the outside limits of the utility easement corridor. A new water meter will be installed inside the proposed convenience store. Refer to **Appendix F** for more information. The final meter size will be determined based on the required demand of the total building water supply fixture units and any additional water usage, as shown on the commercial fixture unit worksheet to be provided to the Town of Castle Rock at the time of building permitting.

The calculated water demand is roughly 30% of the existing ADD. Therefore, no upsize is required to adequately service the proposed project. Any future development of the existing water infrastructure needed to serve this site is the responsibility of the developer

V. Calculated Wastewater Flows

Average Day Wastewater Flows (ADF)

Land Use

Table per Town of Castle Rock Water System Design Criteria Manual, Section 4.4.1

Land Use	Typical ADF/Unit	Typical SFEs/Unit
Industrial / Other Commercial	600 gpd/acre	3.0/acre

ADF = ADF/Unit X Site Acreage

ADF = 600 gpd/acre X 1.25 acres = **750 GPD**

SFE = SFEs/Unit X Site Acreage

SFE = 3.0/acre X 1.25 acres = **3.75 SFE**

Fixture Units (Provided for building permit)

The average day flows were computed using values based on the 2018 International Plumbing Code.

DFU ITEM	FIXTURE	QTY	DFU	TOTAL
P-1	WC	3	4	12
P-2	LAV	2	1	2
P-4	FLR DRAIN	3	2	6
P4A	FLR DRAIN	0	2	0
P-7	MOP SINK	1	2	2
P-4	FL. DRAIN W/ FUNNEL	1	2	2
P-9	FLR SINK	3	5	15
P-11	HAND SINK	1	2	2
P-13	HAND SINK	1	2	2
P-14	URINAL	1	2	2
P-6	DRINKING FOUNTAIN	1	1	1
TOTAL (DFU)				44

Peaking Factor

The Peaking Factor was calculated using demand factors from the Town of Castle Rock Wastewater Collection Design, 2018 Criteria Manual.

The portion of the Peak Design Flow calculation exclusive of infiltration and inflow (I/I) shall be determined by multiplying the ADF in the preceding section by a peaking factor (PF). The PF is a function of ADF, and is computed as follows:

$$PF = 3.65 \times [(ADF)^{-0.168}] \text{ The maximum PF shall be 5.0, and ADF shall be expressed in units of million gallons per day (MGD)}$$

$$PF = 3.65 \times [(0.00075)^{-0.168}] = \mathbf{12.23 \text{ (Use 5.0)}}$$

Peak Design Flows (PDF)

The PDF is determined by multiplying the ADF by the calculated peaking factor, plus an I/I allowance equal to ten percent of the ADF as expressed by the following formula:

$$PDF = \text{peak base flow} + \frac{1}{7} \text{allowance} = (ADF \times PF) + (0.1 \times ADF)$$

$$PDF = (750 \times 5.00) + (0.1 \times 750) = \underline{\mathbf{3,825 \text{ GPD}}}$$

VI. Existing Wastewater System

Existing Collection System

The existing collection system consists of an 8" collector located along the easterly side of Founders Parkway. The site is served by an existing 6" sanitary service line and grease interceptor.

The TOCR Wastewater Collection Design, 2018 Criteria Manual, classifies restaurant land use with a typical ADF/Unit of 1.5 gpd/SF. Using the existing square footage of the structure (3,097 SF) it can be reasonably assumed that the existing supply facilities support an ADF of approximately 4,646 GPD.

Table per Town of Castle Rock Water System Design Criteria Manual, Section 4.4.1.1

Land Use	Typical ADD/Unit	Typical SFEs/Unit
Restaurant	1.5 gpd/SF	0.0075/SF

ADF = ADF/Unit X Building Square Footage

$$ADF = 1.5 \text{ gpd/SF} \times 3,097 \text{ SF} = \underline{\mathbf{4,646 \text{ GPD}}}$$

VII. Proposed Wastewater System

Proposed Wastewater Facilities

The proposed utility plan will reuse the existing 6" wastewater service line beginning at the east side of the existing retaining wall. A new grease interceptor will be installed to service the convenience store. Refer to **Appendix F** for more information.

The calculated wastewater flow is roughly 50% of the existing ADF. Therefore, no upsizing is required to adequately service the proposed project. Any future development of the existing wastewater infrastructure needed to serve this site is the responsibility of the developer.

VIII. References

1. Water System Design, Town of Castle Rock, December 2018
2. Wastewater Collection Design, Town of Castle Rock, December 2018

APPENDIX A

Values based of **2018 International Plumbing Code**

ERU = 300 GPD

PROJECT - 2824 SF						
WSFU CALCULATION						
ITEM	FIXTURE	QTY	CW	HW	TOTAL	
P-1	WC	3	5	0	15	
P-2	LAV	2	1.5	1.5	6	
P-5	HOSE BIBB	1	3	0	3	
P-7	MOP SINK	1	2.25	2.25	4.5	
P-10	3 COMP	1	3	3	6	
P-11	HAND SINK	1	1.5	1.5	3	
P-12	WATER FILTER	1	3	0	3	
P-13	HAND SINK	1	1.5	1.5	3	
P-14	URINAL	1	5	0	5	
-	YARD HYDRANT	0	3	0	0	
P-6	DRINKING FOUNTAIN	1	0.25		0.25	
TOTAL (WSFU)					48.75	
PEAK GPM (FLUSH TANKS)					29.10	
PEAK GPM (FLUSH VALVES)					50.00	
PEAK GPM (WEIGHTED AVR*)					34.325	

APPENDIX B

To: Castle Rock Fire & Rescue Department

From: Kyle Goodwin, PE

Date: January 19, 2024

Re: Confirmation Memo for Required Fire Flow

The subject property is ±1.25 acres and is located within the North Blue Water Pressure Zone at 186 Metzler Drive, the east corner of Founders Parkway and Metzler Way, within the municipal boundaries of Castle Rock, Colorado.

The site is currently one parcel, Lot 2-H, Metzler Ranch Filing 3 1st Amendment. There is an existing parking lot, curb and gutter, fast food restaurant building, electric gear and miscellaneous utilities that serve the existing building on site. Murphy USA proposes to construct a new 2,824 square foot convenience store and fuel canopy with six (6) MPDs (12 fueling positions). The proposed improvements will include new underground fuel storage tanks, concrete parking lot and drive isles, sidewalks, domestic water and sanitary sewer services, signage, trash enclosure & landscaping.

Total Building Area: 2,824 sq-ft
Building Construction Type: II-B
Sprinkled: No

Required Fire Flow: 1500 gpm

Required Duration: 2 hours

Signed: _____
Castle Rock Fire and Rescue

Please contact us with any questions or concerns,

Sincerely,

Kyle Goodwin, PE #63208
Civil Engineering Project Manager
KyleGoodwin@GallowayUS.com

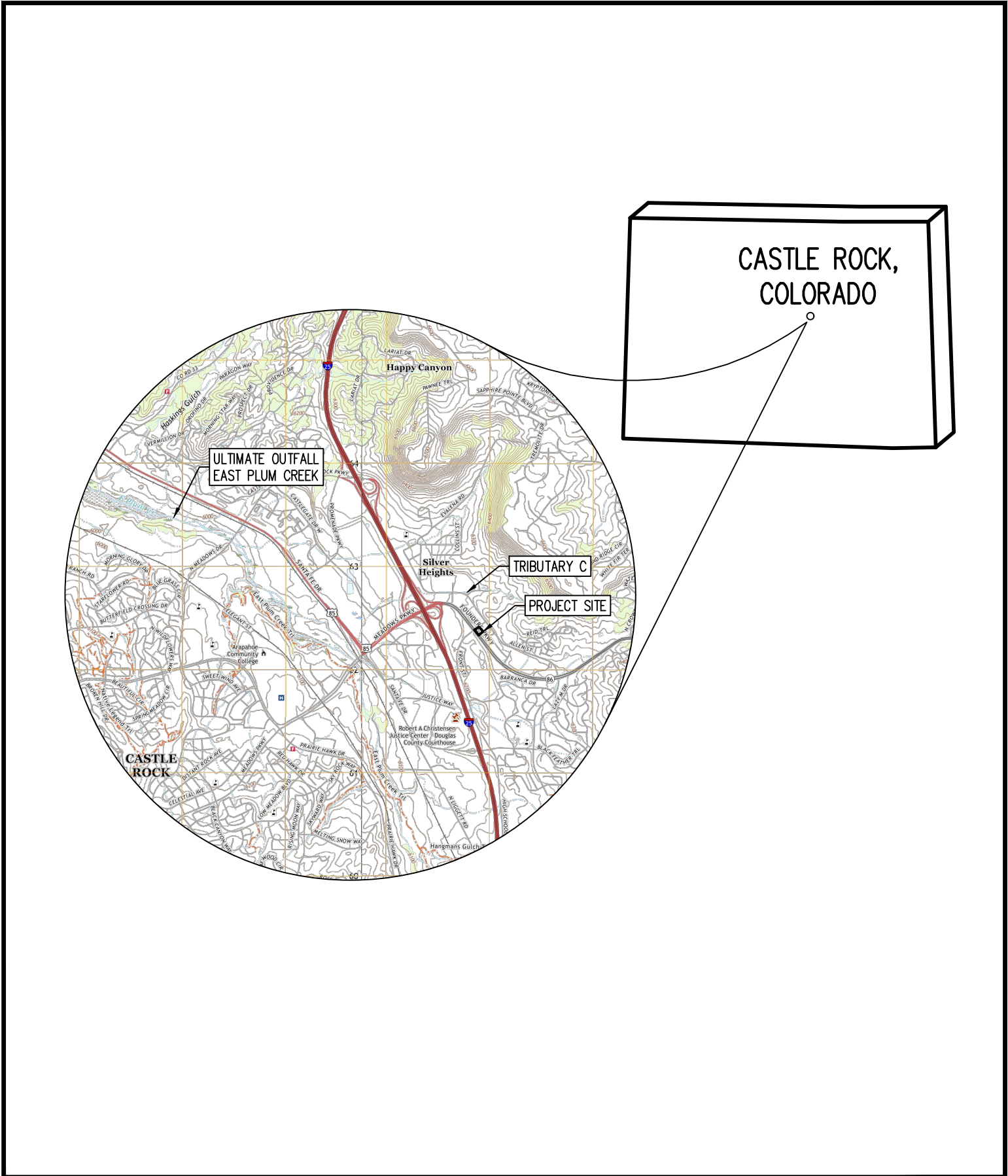


APPENDIX D

Values based of **2018 International Plumbing Code**

PROJECT - 2824 SF				
DFU CALCULATION				
ITEM	FIXTURE	QTY	DFU	TOTAL
P-1	WC	3	4	12
P-2	LAV	2	1	2
P-4	FLR DRAIN	3	2	6
P-4A	FLR DRAIN	0	2	0
P-7	MOP SINK	1	2	2
P-9	FLR SINK	3	5	15
P-11	HAND SINK	1	2	2
P-13	HAND SINK	1	2	2
P-14	URINAL	1	2	2
P-6	DRINKING FOUNTAIN	1	1	1
TOTAL (DFU)				44

APPENDIX F



MURPHY USA FUEL STATION

186 METZLER DRIVE, CASTLE ROCK, CO 80108

VICINITY MAP

Project No: MOC89

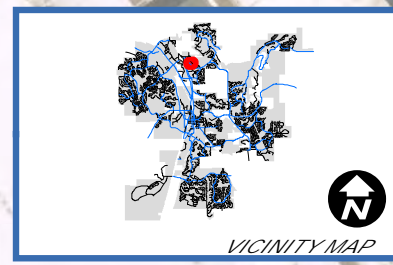
Drawn By: CMWJ

Checked By: KG

Date: 01/17/2024

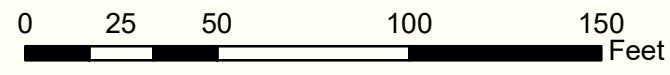
Galloway

1155 Kelly Johnson Blvd., Suite 305
 Colorado Springs, CO 80920
 719.900.7220 • GallowayUS.com



Legend

- Sanitary Sewer
- Stormwater Conduit
- Fiber
- Raw Water Distribution Main
- Water Distribution Main



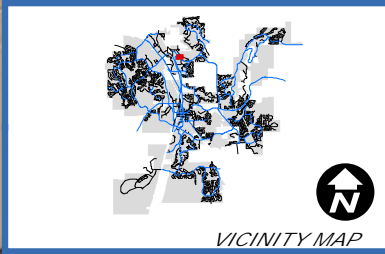
1 inch = 50 feet

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CASTLE ROCK UTILITIES MAP (INTERNAL USE ONLY)

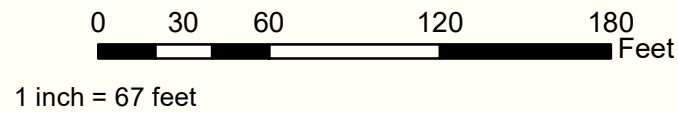
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Legend

- Sanitary Sewer
- Stormwater Conduit
- Fiber
- Raw Water Distribution Main
- Water Distribution Main



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CASTLE ROCK UTILITIES MAP (INTERNAL USE ONLY)

Date: 11/25/2019

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