



Town Council Agenda - Final

Mayor Jason Gray
Mayor Pro Tem Kevin Bracken
Councilmember Ryan Hollingshead
Councilmember Laura Cavey
Councilmember Desiree Lefleur
Councilmember Max Brooks
Councilmember Tim Dietz

Tuesday, February 7, 2023

6:00 PM

Town Hall Council Chambers

100 North Wilcox Street

Castle Rock, CO 80104

Phone in: 720-650-7664

Meeting code: 2489 644 9794

www.CRgov.com/CouncilMeeting

This meeting is open to the public and will be held in a virtual format in accordance with the Town Council Electronic Participation, Connected, and Hybrid Meeting Policy. Public may choose to attend in person at Town Hall, or electronically or by phone if preferred. This meeting will be hosted online and can be accessed at www.CRgov.com/CouncilMeeting, or phone in by calling 720-650-7664, meeting code 2489 644 9794 (if prompted for a password enter "Feb7Council"). All Town Council Meetings are also streamed online in real time at www.CRgov.com/WatchCouncil, and are broadcast for Comcast Cable subscribers on Channel 22 (please note there is a delay to the broadcast).

All times indicated on the agenda are approximate. Remote participants please visit www.CRgov.com/CouncilComments to sign up to speak to an item, and for related instructions. Public Comments may also be submitted in writing online by 1:00 p.m. February 7, 2023, to be included in the public record.

5:00 pm COUNCIL DINNER & INFORMAL DISCUSSION

6:00 pm INVOCATION

6:05 pm CALL TO ORDER / ROLL CALL

- PLEDGE OF ALLEGIANCE

- COUNCIL COMMENTS

1. [APPT](#) Appointment: Castle Rock Water Commission
[2023-001](#)

- UNSCHEDULED PUBLIC APPEARANCES

Reserved for members of the public to make a presentation to Council on items or issues that are not scheduled on the agenda. As a general practice, the Council will not discuss/debate these items, nor will Council make any decisions on items presented during this time, rather will refer the items to staff for follow up.

Comments are limited to three (3) minutes per speaker. Time will be limited to 30 minutes. Residents will be given priority (in the order they signed up) to address Council, followed by non-residents representing Castle Rock businesses, then non-residents and businesses outside the Town of Castle Rock, as time permits.

- TOWN MANAGER'S REPORT

2. [ID 2023-012](#) Update: Calendar Reminders
3. [ID 2023-013](#) Update: Water Billing System Rollout
4. [ID 2023-014](#) Update: Residential Unit Data (through December 31, 2022) with Potential Buildout Estimates
5. [ID 2023-015](#) Update: Undeveloped Property Inquiries (through January 20, 2023)
6. [ID 2023-016](#) Development Services Project Updates
7. [ID 2023-017](#) Update: Quasi-Judicial Projects

- **TOWN ATTORNEY'S REPORT**

- **ACCEPTANCE OF AGENDA**

If there are no changes, additions or deletions to the agenda, a motion to accept the agenda as presented will be accepted.

- **CONSENT CALENDAR**

These items are generally routine in nature or have been previously reviewed by Town Council and will be voted on in a single motion without discussion. Any member of Town Council may remove an item from the Consent Calendar.

8. [RES 2023-010](#) Resolution Approving the 2023 Spot Water Lease Agreement Between the Town of Castle Rock, Bow Mar Owners, Inc., and Bow Mar South, Inc. [Chatfield Reservoir, Douglas County]
9. [MIN 2023-004](#) Minutes: January 17, 2023 Town Council Meeting

- **ADVERTISED PUBLIC HEARINGS & DISCUSSION ACTION ITEMS**

Public comment will be taken on items and limited to four (4) minutes per speaker. Remote participants please visit www.CRgov.com/CouncilComments to sign up to speak to an item, and for related instructions. Public Comments may also be submitted in writing online by 1:00 p.m. February 7, 2023, to be included in the public record.

10. [DIR 2023-004](#) Discussion/Direction: Neighborhood Traffic Calming Program Amendments
11. [DIR 2023-005](#) Discussion/Direction: Knobcone Drive Neighborhood Traffic Calming Request
12. [DIR 2023-006](#) Discussion/Direction: Parking Permit Program
13. [DIR 2023-007](#) Discussion/Direction: Draft 2023 Community Survey

14. [DIR 2023-008](#) **Discussion/Direction: Tasting Licenses for new Fermented Malt Beverage and Wine Retailer Licenses**
15. [RES 2023-011](#) **Resolution Approving Updates to the 2022 Wastewater Master Plan** *[Entire Castle Rock Water Service Area]*
16. [RES 2023-012](#) **Resolution Approving the First Amendment to the Town of Castle Rock Service Agreement with AECOM Technical Services, Inc., for the Craig & Gould North Infrastructure Improvements** *[Located in Historic Downtown Castle Rock]*
17. [RES 2023-013](#) **Resolution Approving a Purchase and Sale Agreement between TDK Holdings, LLC and the Town of Castle Rock for Tributary Water Rights along Deer Creek** *[Jefferson and Douglas County near Chatfield Reservoir]*

- **ADDITIONAL UNSCHEDULED PUBLIC APPEARANCES**

The Council has reserved this time only if the original 30 minutes allocated for Unscheduled Public Appearances as an earlier part of this agenda has been fully exhausted and speakers who signed up to speak were unable to be heard during the original 30 minutes allocated this topic. Residents will be given priority (in the order they signed up) to address Council, followed by non-residents representing Castle Rock businesses, then non-residents and businesses outside the Town of Castle Rock, as time permits.

- **ADJOURN**



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 1. **File #:** APPT 2023-001

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Shannon Eklund, Executive Assistant

Appointment: Castle Rock Water Commission

Executive Summary

The Castle Rock Water Commission recently received the resignation of John Wright. The vacancy was advertised, and five candidates submitted applications. An interview panel consisting of the Commission Chair Todd Warnke, Council Liaison Mayor Jason Gray and Director of Castle Rock Water Mark Marlowe, interviewed the candidates on January 31, 2023. The interview panel is unanimously recommending the appointment of Angie Brown to fulfill the term ending May 31, 2023.

The Castle Rock Water Commission makes recommendations to Town Council related to the master plan for water-related capital improvements; rates and fee structures; and policies. Meetings are scheduled on the fourth Wednesday of each month starting at 6 p.m., at the Castle Rock Water facility, 175 Kellogg Court. Meetings are open to the public, and one or more Councilmembers may attend.

Proposed Motion

"I move to approve the appointment of Angie Brown to the Castle Rock Water Commission for a partial term ending May 31, 2023."



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 2. **File #:** ID 2023-012

To: Honorable Mayor and Members of Town Council

From: David L. Corliss, Town Manager

Update: Calendar Reminders

Executive Summary

Attached is an outline of upcoming items of general interest.

TOWN COUNCIL MEETING

TOWN MANAGER'S REPORT

DAVID CORLISS, TOWN MANAGER
FEBRUARY 7, 2023



UPCOMING CALENDAR ITEMS

11 FEB **Fire and Rescue Department Awards Ceremony and Banquet – 6 p.m.**
The Oaks at Plum Creek, 321 Players Club Drive

20 FEB **Town Offices Closed for Presidents' Day**
MAC and Recreation Center modified hours

21 FEB **Town Council Meeting – 6 p.m., hybrid format (dinner at 5 p.m.)**
Council Chambers, online or phone-in

7 MAR **Town Council Meeting – 6 p.m., hybrid format (dinner at 5 p.m.)**
Council Chambers, online or phone-in

21 MAR **Town Council Meeting – 6 p.m., hybrid format (dinner at 5 p.m.)**
Council Chambers, online or phone-in

23 MAR **Open House: Pavement Maintenance Program, 4:30-6 p.m.**
The Ridge House at Founders Village, 4501 Enderud Boulevard

NEIGHBORHOOD MEETINGS

Scheduled on Town Calendar

13
FEB

Dawson Trails Residential SDP, 6:00 p.m., The Miller Activity Complex (MAC), Hybrid, 1st Meeting

Proposing to create two neighborhoods with 513 residential lots on 109 acres. Site to include two parks, drainage facilities and open space and located in the north/central area of Dawson Trails.

16
FEB

Mount Royal Lots PD Amendment, 5:00 p.m., Philip S. Miller Library, Hybrid, 3rd Meeting

Proposing to create three residential lots from private open space on a 1.5-acre property located west of Mount Royal Dr. and W. Prestwick Way.

*These Meetings are Tentative

27
FEB

***Dawson Trails Costco SDP, 6:00 p.m., TBD, Hybrid, 1st Meeting**

Proposing to build a 160,000 sq. ft. Costco retail store, a fueling station, car wash, and requisite parking. The property is approx. 19.7 acres and located north of the future Crystal Valley Interchange east of Dawson Trails.

28
FEB

***Joslyn Annexation, 6:00 p.m., TBD, Hybrid, 1st Meeting**

Proposing to annex a 76-acre parcel to build six industrial buildings with phased construction located in unincorporated Douglas County, northwest of land in the Town owned by Castle Rock Development Corp. and west of the Plum Creek Water Reclamation Facility.

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Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 3. **File #:** ID 2023-013

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Mark Marlowe, Director of Castle Rock Water

Update: Water Billing System Rollout

Executive Summary

Mark Marlowe will make a presentation to Council to provide information about the Castle Rock Water's new billing system rollout.



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 4. File #: ID 2023-014

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Tara Vargish, PE, Director, Development Services
Brad Boland, AICP, Long Range Project Manager

Update: Residential Unit Data (through December 31, 2022) with Potential Buildout Estimates

Executive Summary

The purpose of this quarterly residential unit data update is to provide an overview of development activity and estimated population projections. This update includes data through the fourth quarter of 2022, ending on December 31, 2022. The data outlines the maximum zoning entitlements and growth areas approved by Council and provides an update on the pace of activity in each area of Town. The current estimates show an approximate population of 82,710 through December 31, 2022, which is an increase of about 830 persons that was reported through the previous quarter. Staff continues to update the potential buildout estimates as more information becomes available. The potential high and low buildout calculations provide more realistic unit and population estimates to aid in planning for future Town resources.

Attachments

Staff Memorandum

Attachment A: Town of Castle Rock PD Zoning Map

Attachment B: Unit Data through December 31, 2022 with Potential Buildout Chart



Meeting Date: February 7, 2023

AGENDA MEMORANDUM

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Tara Vargish, PE, Director, Development Services
Brad Boland, AICP, Long Range Project Manager

Title: **Update: Residential Unit Data (through December 31, 2022)
with Potential Buildout Estimates**

Executive Summary

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Discussion

Castle Rock, through most of its history, is a growth community. The growth we are experiencing is consistent with residential and commercial building activity across the Front Range and throughout the State of Colorado. Therefore, the pace of growth is an ongoing discussion. Growth in Castle Rock remained steady for 100 years between its founding in 1881 and 1980 when it grew from an original population of 88 to approximately 4,000 residents. Castle Rock did not see significant residential growth after WWII, a trend common among other Front Range communities. Instead, the opening of the Outlet Mall in 1992 coincides with an increase in the residential growth rate that continues today. The population more than doubled between 1990 and 2000 when it grew from approximately 8,000 residents to more than 20,000 residents. The population doubled again through 2010 when it reached approximately 49,000 residents and continues to grow with the current population estimated at approximately 82,710 residents as of December 31, 2022.

Castle Rock's growth rate over the past 20 years has generally exceeded the economic conditions regionally and nationally. Given the pace of growth to date, data shows that existing larger planned communities such as Meadows, Founders, Castle Oaks / Terrain, and Crystal Valley Ranch have taken decades to reach this point in development. Predicting the pace of growth is difficult because it is influenced by many factors, most notably the economy, interest rates, the homebuilding market, topography and soil conditions as well as political decisions related to development regulations.

The data outlined herein provides information through the fourth quarter of 2022. The analysis compares the maximum number of zoned residential units to the number of units that received a certificate of occupancy. Zoning entitlements can be amended and home building is on-going. Therefore, this report is updated quarterly to provide information to Town Council and our residents.

Development Types and Impacts

The Town's existing zoning entitlements include approximately 130 planned developments (PD) and associated PD amendments. The Town consists of very few "straight" zoned areas such as R-1 Single-Family Residence District. Single family detached residential in PD's accounts for the majority of the Town's built environment. Areas within the planned developments that allowed for higher density attached or multi-family development were built with fewer homes than the maximum allowed within any section of a planned development. Therefore, some areas may not ever reach their maximum allowed number of residential units.

Unlike other communities in the Denver metro area, Castle Rock is not flat. Factors to consider regarding potential build-out include the Skyline-Ridgeline Ordinance, severe and moderate slopes, major drainage corridors and cap rock. Many of the planned developments were zoned prior to the Skyline-Ridgeline Ordinance; therefore, parts of the Town that were zoned to allow homes now have building height and location restrictions to protect our skylines and ridgelines.

In staff's opinion, based upon discussions with the master planned community development teams and the information provided herein, staff suggests the likelihood of full buildout to reach the entitled number of units is highly unlikely.

Entitlement Data

Each planned development (PD) on **Table A** shows the PD's name, date of original zoning approval and corresponding PD number depicted on the Town's Zoning District Map to help identify the areas included with the unit counts. The map in **Attachment A** shows the geographic location of each PD area. **Table B** compares estimates since 2017.

Residential areas within the Town that are straight-zoned are primarily located within the downtown and Craig and Gould subdivision, denoted as "Central Castle Rock" in

Table A. The “Maximum Zoned Units” and “Units Built (CO)” counts were further divided into single family (SF) or multi-family (MF) for each area. The SF numbers include single family detached and single family attached units, such as townhomes or paired homes. The multi-family numbers include single building attached units such as apartments or condominiums. In several cases, zoning for planned developments allows either single family or multi-family units within a specific planning area. In those situations, the units allowed were assigned to the multifamily category, as this represents the higher entitlement potential. If developed as single family homes, the number of units actually developed would be less.

Table A: Comparison of Maximum Zoned Units to Built Units, through December 31, 2022

Please note that these are estimates, and numbers are subject to change due to factors listed in this memo, as well as any future zoning amendment approvals.

PD #	Planned Developments (year initially zoned)	MAXIMUM ZONED UNITS			UNITS BUILT (CO)		
		SF	MF	Total	SF	MF	Total
130	Alexander Place (2020)	26	99	125	0	0	0
5	Arbors (2002)	38	80	80	0	0	0
7,8	Auburn Ridge (2013)	0	286	286	0	186	186
12	Brookwood (2003)	72	0	72	62	0	62
16	Cambridge Heights (2003)	0	100	100	0	0	0
17	Castle Highlands (1984)	132	200	332	127	200	327
19	Castle Meadows* (1989)	0	440	440	0	0	0
3,20,21,22,23,117	Castle Oaks /Terrain (2002)	1992	775	2767	2101	0	2101
25,26,27,28,104	Castle Pines Commercial / Promenade (1987)	0	1410	1410	0	1062	1062
29	Castle Ridge East (1996)	30	0	30	28	0	28
30,31	Castle Rock Estates - Diamond Ridge (1995)	126	0	126	126	0	126
33,87,88,89,90	Castleview Estates - The Oaks of Castle Rock (1985)	248	326	574	241	0	241
34	Castlewood Ranch (1998)	1300	0	1300	1282	0	1282
straight zones, downtown	Central Castle Rock (varies) NO maximum zoning**	1538	3462	5000	1535	1188	2723
40	Covenant At Castle Rock (2014)	58	0	58	58	0	58

42,43,44,45,46	Crystal Valley Ranch (2000)	2670	753	3423	2502	0	2502
		MAXIMUM ZONED UNITS			UNITS BUILT (CO)		
PD #	Planned Developments (year zoned)	SF	MF	Total	SF	MF	Total
47	Dawson Ridge*** (1986)	2447	5453	7900	0	0	0
52,9	Founders Village - Inc. Founders 24 and Bella Mesa (1985)	2776	2905	5681	2597	0	2597
54,55	Hazen Moore (2000)	243	0	243	161	0	161
56,57	Heckendorf Ranch (1985)	406	224	630	299	0	299
59	Hillside (2009)	120	0	120	0	0	0
118	Lanterns (2003)	1200	0	1200	268	0	268
62	Liberty Village (2004)	1245	0	1245	1081	0	1081
63,64,65	Maher Ranch (1988)	923	100	1023	771	96	867
70,72,73,74	Meadows (1985)	6867	4002	10869	7231	555	7786
75	Memmen Young Infill (1985)	559	476	1035	0	0	0
76,77,78,79,80	Metzler Ranch (1996)	1037	660	1697	742	580	1322
97,98,99,101,103	Plum Creek (1983)	3025	0	3025	1189	360	1549
100	Plum Creek Ridge (2006)	92	70	162	120	0	120
102	Plum Creek South (1985)	307	198	505	137	0	137
106,107,108	Red Hawk (1996)	660	268	928	821	0	821
129	Ridge Estates (2020)	52	0	52	0	0	0
110,111	Scott II (1987)	85	220	305	78	220	298
113	Sellers Landing PD (1982)	0	94	94	0	77	77
115	Stanbro PD (1987)	32	92	124	0	0	0
119	Villages at Castle Rock / Echelon (1981)	12	542	542	0	0	0
121	Wolfensberger - formerly Graham PD (1996)	0	56	56	0	56	56
122,123,124,112	Woodlands - Inc. Scott Ranch (1983) Woodlands Crossing (1987)	990	0	990	537	0	537
125,126	Young American (1983)	78	1138	1216	375	186	561

		MAXIMUM ZONED UNITS			UNITS BUILT (CO)		
		SF	MF	Total	SF	MF	Total
TOTAL UNITS		31,386	24,429	55,777	24,469	4,766	29,235
	POPULATION ESTIMATES	95,413	48,858	144,271	73,178	9,532	82,710

*Castle Meadows does not have a maximum cap in the zoning, however 440 MF units was listed in the most recent traffic study for this property. This property could develop with more or less residential units.

**Central Castle Rock includes straight zoned land as R-1, R-2, R-3, and B zone areas in the Downtown Overlay that allow multifamily. There is no maximum cap in the zoning, so land area and typical densities have been used to determine the area could develop out at 5,000 units.

*** Dawson Trails rezoning was approved by Council in the 3rd Quarter of 2022 (formally Dawson Ridge). As this report is through December 31, 2022, the Dawson Trails zoning documents had not been recorded, therefore the Dawson Ridge numbers are shown. Once the zoning documents have been recorded the numbers will be updated to reflect the new Dawson Trails zoning, likely in Q1 of 2023.

Table B: Total Estimates Comparison

End of Year	MAXIMUM ZONED UNITS			UNITS BUILT (CO)		
	SF	MF	Total	SF	MF	Total
2017 units	31,744	22,800	54,544	19,444	3,328	22,772
2017 population estimates	96,502	45,600	142,102	57,902	6,656	64,558
2018 units	31,744	22,800	54,544	20,498	3,828	24,326
2018 population estimates	96,502	45,600	142,102	61,106	7,656	68,762
2019 units	31,744	22,924	54,668	21,479	3,924	25,403
2019 population estimates	96,502	45,848	142,350	64,089	7,848	71,937
2020 units	31,770	23,162	54,932	22,438	4,001	26,439
2020 population estimates	96,581	46,324	142,905	67,004	8,002	75,006
2021 units	31,710	23,204	54,876	23,439	4,001	27,409
2021 population estimates	96,398	46,408	142,806	70,047	8,002	78,049

End of Quarter 2022	MAXIMUM ZONED UNITS			UNITS BUILT (CO)		
	SF	MF	Total	SF	MF	Total
1st Quarter 2022 units	31,710	23,204	54,876	23,674	4,001	27,675
1st Q population estimates	96,398	46,408	142,806	70,761	8,002	78,763
2nd Quarter 2022 units*	31,386	24,429	55,777	23,967	4,054	28,021
2nd Q population estimates	95,413	48,858	144,271	71,652	8,108	79,760
3rd Quarter 2022 units**	31,386	24,429	55,777	24,196	4,766	28,962
3rd Q population estimates	95,413	48,858	144,271	72,348	9,532	81,880

4th Quarter 2022 units	31,386	24,429	55,777	24,469	4,766	29,235
4th Q population estimates	95,413	48,858	144,271	73,178	9,532	82,710

*Maximum Zoned Unit data was thoroughly reviewed and corrections made for 2nd quarter 2022, resulting in a reporting of 1.6% higher overall entitlements for the Town than previously reported.

** Units Built (CO) was thoroughly reviewed and corrections were made to include four multi-family projects that received CO between 1st Quarter 2020 through 1st Quarter 2022 totaling 667 multi-family units that had not been accounted for previously.

Qualifiers

The data contained within **Table A** includes qualifiers, which can sometimes be difficult to predict. In some developments there is no land available to construct additional units. Examples include:

- Castle Highlands was zoned/entitled for 490 residential units in 1984. The existing number of platted lots and constructed homes is 422 with little land remaining to build the remaining homes allowed per the zoning entitlement.
- Memmen Young Infill was zoned/entitled for 1,035 residential units in 1985. The site includes severe topography, cap rock and areas that are subject to the Skyline/Ridgeline Ordinance, making it unlikely to reach full buildout. A rezoning application has been submitted for the majority of the property, which would reduce the number of entitlements.

The timing of these and other developments is unknown. Market conditions and site conditions impact development which may result in a reduction of unit counts at final development.

Several of the master planned communities have vesting rights while others do not. Some of the planned communities have vesting rights that have expired, but that does not allow for a significant change because all developments include legal agreements with the Town, referred to as Development Agreements (DA's,) that specifically outline required improvements and timing for those improvements. The agreements are a contract between the Town and the owner that would be difficult to eliminate even though the vesting expired.

Based upon review of historical data and updated data contained herein, staff noted that several themes emerged:

- Because changing market conditions result in adjustments throughout the lifetime of a development, we cannot predict a precise build-out number or year on larger planned developments or the community as a whole.
- We cannot show a reduction to the entitled number of units unless the development team requests a rezone to reduce the unit count.
- We can accurately outline known circumstances, meaning we can identify the difference between maximum entitled unit counts and the total platted lot counts,

where no additional lots can be constructed, and make estimates for the “realistic” potential buildout.

- We can update the data with new information to determine how local trends are effecting the pace and location of growth in the community.

Potential Buildout Estimates

Because of the many qualifiers associated with the maximum zoned units versus units built calculations, staff analyzed the zoning entitlements further for each planned development zoning area. Staff evaluated the potential buildout based on availability of land, site constraints, and overall feasibility of the development to realistically build the total amount of units allowed within each planned development. The high buildout and low buildout potential offers a more realistic range of units for each area when the planned development is fully built (**Attachment B**). While the current maximum units allowed per the zoning entitlements equates to a future Town population of approximately 144,300 persons, a more realistic future population would be closer to 114,000 to 125,000 persons, or about 41,000 to 46,000 total homes.

Findings

The data shows that the Comprehensive Master Plan adopted in 1999 and updated in 2002 and in 2017, was on track with projections that the Town may grow to an estimated 86,000 to 159,000 residents. The Town’s current data, through December 31, 2022, is estimating a maximum zoned/entitled population of 144,271 residents. On average, given the amount of land available for development, the likelihood of the larger planned developments reaching the maximum density allowed through entitlements is low because there are a larger number of entitled units remaining than available land to build those units. Potential buildout analysis estimates a more realistic buildout population of 114,000 to 125,000 persons.

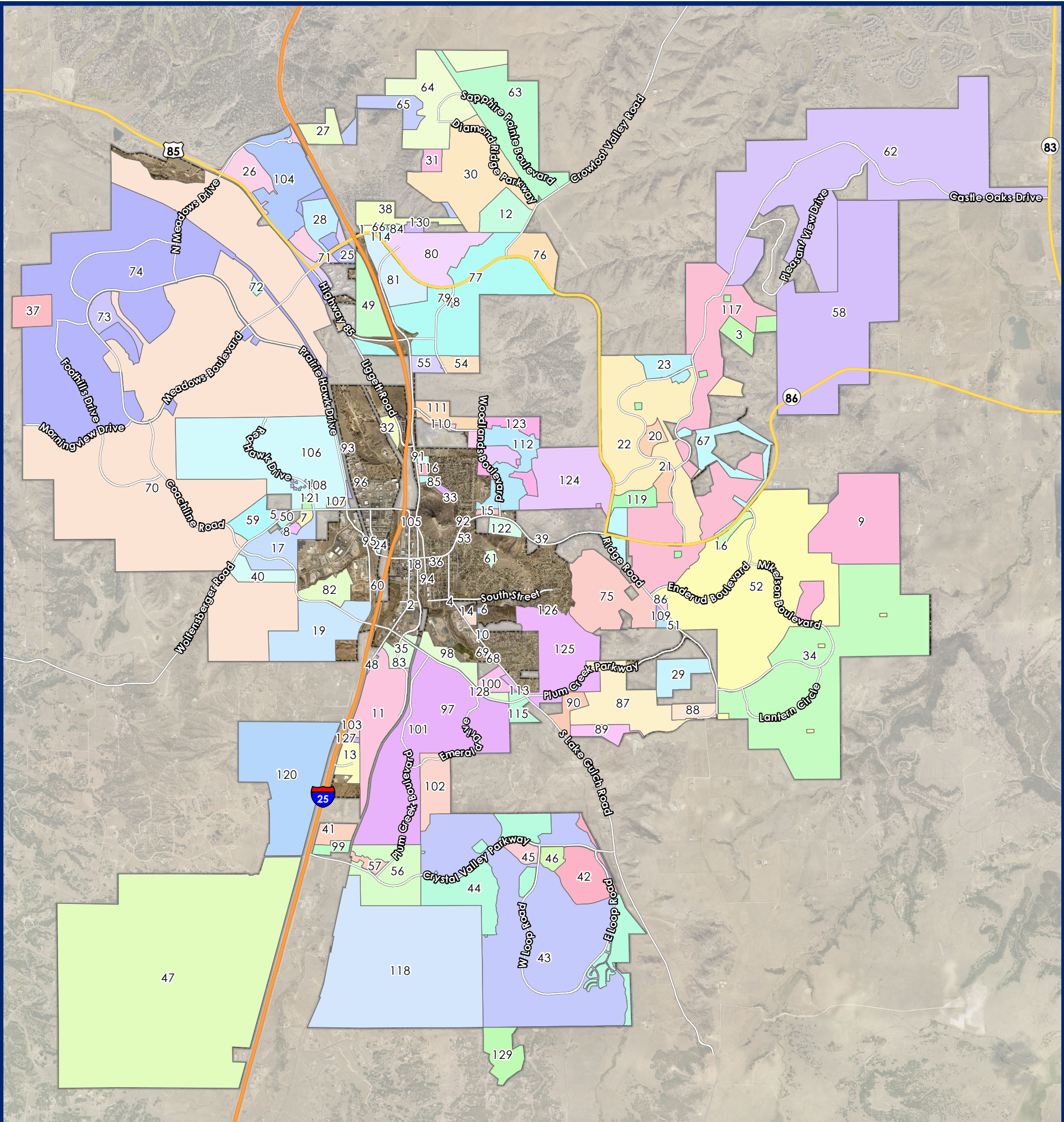
The Town of Castle Rock is an attractive community to live, work and play in, and we expect it will continue to attract residential and commercial growth for many years to come.

Attachments

Attachment A: Town of Castle Rock PD Zoning Map

Attachment B: Unit Data through December 31, 2022 with Potential Buildout Chart

T:\Development Review\Demographics Team\2022\3Q 2022



Planned Development Zoning

An illustration of the names and boundaries of all Planned Developments and Amendments. There is no significance represented by the colors used except to delineate boundaries. Numbers in table do not represent chronological order of Planned Development approvals. There are two types of zoning mapped within the Town: Standard Zone districts and Planned Development (PD) districts. Standard Zoning consists of a series of pre-established districts. The criteria for these zone districts (permitted uses, setback requirements, and maximum building heights) remain the same, no matter where the zone is located. Standard Zoning is an historic approach to land use management and is still in effect for the core of Town, which refers to the older downtown area and nearby residential areas. Each Planned Development district is unique and relates to a development plan that was prepared specifically for that property (typically large properties). All "newer" communities situated within the Town are zoned PD. For a detailed explanation of zoning requirements, specific to either Standard or PD Zoning districts, refer to Title 17 of the Town of Castle Rock Municipal Code.

00.250.51

Miles

Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or inconsistencies. Such discrepancies in data are inherent and in supplying this product to the public the Town of Castle Rock assumes no liability for its use or accuracy. For questions or comments regarding omissions, corrections, or updates please visit C6.gov.com/directory for contact information.

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Coordinate System: SPCS Colorado Central (8502)

Projection: Lambert Conformal Conic

Datum: North American 1983

Units: Feet US

Creation Date: 10/15/2020

Legend

1. 1-25 AND FOUNDERS PKWY CONOCO PD

2. 18 WILCOX PD

3. 1ST AMD TO CASTLE OAKS PRELIM PD SITE PLAN AMD 1

4. 710 SOUTH STREET

5. ARBORS PD

6. ASPEN MEADOWS PD

7. AUBURN RIDGE PDP NO.1

8. AUBURN RIDGE PDP NO.1 AMD 1

9. BELLA MESA PDP

10. BISHOP COURT PD

11. BROOKSIDE BUSINESS CENTER AMENDED

12. BROOKWOOD PD

13. BURT AT CASTLE ROCK PD

14. BW SQUARED PD

15. CALVARY CHAPEL PDP

16. CAMBRIDGE HEIGHTS PD

17. CASTLE HIGHLANDS MAJOR MODIFICATION

18. CASTLE MANOR PD

19. CASTLE MEADOWS INTERCHANGE OVERLAY PDP

20. CASTLE OAKS AMEND NO. 1 PPD, 2ND

21. CASTLE OAKS AMEND NO. 1 PPD, 3RD

22. CASTLE OAKS AMENDMENT NO. 1

23. CASTLE OAKS ESTATES PDP NO. 1

24. CASTLE PARK SOUTH PD

25. CASTLE PINES COMMERCIAL AMENDMENT (1995)

26. CASTLE PINES COMMERCIAL AMENDMENT (2000)

27. CASTLE PINES COMMERCIAL MAJOR MODIFICATION

28. CASTLE PINES COMMERCIAL PD

29. CASTLE RIDGE PD

30. CASTLE ROCK ESTATES I AMENDMENT

31. CASTLE ROCK ESTATES II PD

32. CASTLE ROCK MARINE PD

33. CASTLEVIEW CONDOMINIUMS PD

34. CASTLEWOOD RANCH MINOR AMENDMENT

35. CENTRE ON PLUM CREEK FLG 2 AMENDED

36. CHRISTIS EPISCOPAL CHURCH PD

37. CHURCH OF THE ROCK PD

38. COOPER-HOOK PD

39. COUNTRY ACRES PD

40. COVENANT AT CASTLE ROCK PDP

41. CREEKSIDE PD

42. CRYSTAL VALLEY RANCH 2ND AMENDMENT

43. CRYSTAL VALLEY RANCH 4TH AMENDMENT

44. CRYSTAL VALLEY RANCH MAJOR AMENDMENT

45. CRYSTAL VALLEY RANCH PDP AMENDMENT NO. 5

46. CRYSTAL VALLEY RANCH PDP AMENDMENT NO. 6

47. DAWSON RIDGE AMENDMENT

48. DEMIS PD

49. DOUGLAS COUNTY JUSTICE CENTER MAJOR MODIFICATION

50. EPIPHANY EVANGELICAL LUTHERAN CHURCH OF CASTLE ROCK PD

51. FAITH LUTHERAN CHURCH PD

52. FOUNDERS VILLAGE AMENDED (1986)

53. GANNON MED/DENTAL PD

54. HAZEN MOORE AMENDMENT

55. HAZEN MOORE PDP NO. 1

56. HECKENDORF RANCH AMD NO.1

57. HECKENDORF RANCH PDP AMD NO.4

58. HERITAGE FARM PD

59. HILLSIDE PDP

60. KREFF PD

61. LARRYS PD

62. LIBERTY VILLAGE 2ND AMENDMENT

63. MAHER RANCH MAJOR AMENDMENT (PHASE 1)

64. MAHER RANCH MAJOR AMENDMENT (PHASE 2)

65. MAHER RANCH PD

66. MAIN PLACE PD

67. MALL AND OFFICE CENTER INFILL

68. MASTER MAGNETICS 2 PD

69. MASTER MAGNETICS PD

70. MEADOWS FOURTH AMENDMENT

71. MEADOWS PARKWAY PD

72. MEADOWS PDP NO. 1

73. MEADOWS PDP NO. 2

74. MEADOWS THIRD AMENDMENT

75. MEMMEN YOUNG INFILL

76. METZLER RANCH 2ND MAJOR AMENDMENT

77. METZLER RANCH PD (1996)

78. METZLER RANCH PD 5TH AMENDMENT

79. METZLER RANCH PDP 4TH AMENDMENT

80. METZLER RANCH THIRD MAJOR AMENDMENT

81. MILESTONE OFFICE CAMPUS AMENDED (1998)

82. MILLER'S LANDING INTERCHANGE OVERLAY PDP

83. MILLER RANCH PD

84. MONTANA VISTA PDP

85. MOUNTAIN SHADOWS PD

86. MT. ZION LUTHERAN CHURCH PD

87. OAKS OF CASTLE ROCK AMD NO.1

88. OAKS OF CASTLE ROCK AMENDMENT NO. 3

89. OAKS OF CASTLE ROCK AMENDMENT NO. 4

90. OAKS OF CASTLE ROCK PD

91. OAKWOOD APARTMENTS PD

92. OAKWOOD PARK PD

93. OMNI STORAGE PD

94. P S MILLER HOUSE

95. PARK STREET BUSINESS CENTER II PD

96. PD (ORD# 3.60 & 3.61)

97. PLUM CREEK AMENDED

98. PLUM CREEK FIRST AMENDMENT

99. PLUM CREEK POINTE AMENDMENT

100. PLUM CREEK RIDGE PD

101. PLUM CREEK SECOND AMENDMENT

102. PLUM CREEK SOUTH PD

103. PLUM CREEK WEST PD

104. PROMENADE AT CASTLE ROCK PDP

105. Q-PETROLEUM PD

106. RED HAWK AMENDMENT NO. 1

107. RED HAWK CROSSINGS PDP NO. 1

108. RED HAWK PD

109. RIDGE VIEW PD

110. SCOTT II AMENDED

111. SCOTT II MAJOR MODIFICATION

112. SCOTT RANCH PD

113. SELLERS LANDING PD

114. SHOPPES ON FOUNDERS

115. STANBRO PD

116. STONE CREEK APARTMENTS PD

117. TERRAIN PDP

118. THE LANTERNS AMENDMENT NO. 3

119. VILLAGES AT CASTLE ROCK PD

120. WESTFIELD TRADE CENTER AMENDMENT

121. WOLFENBERGER PDP

122. WOODLANDS CROSSING PD

123. WOODLANDS MINOR MODIFICATION

124. WOODLANDS SECOND AMENDMENT

125. YOUNG AMERICAN PD

126. YOUNG AMERICAN SECOND AMENDMENT

127. YOUR STORAGE CENTER AT CASTLE ROCK PDP

128. YOUTH FOR CHRIST PD

129. RIDGE ESTATES

130. ALEXANDER PLACE PD

18

Data through December 31, 2022, please note that these are estimates, and numbers are subject to change

PD #	Planned Developments (year initially zoned)	MAXIMUM ZONED UNITS			UNITS BUILT (CO)			Potential HIGH Buildout				Potential LOW Buildout				Realistic Notes:
		SF	MF	Total	SF	MF	Total	SF	MF	Total	delta from Max Zoned	SF	MF	Total	delta from Max Zoned	
130	Alexander Place (2020)	26	99	125	0	0	0	0	134	134	9	26	99	125	0	Low is existing zoning High is recent Preapp proposal - would need a Rezone.
5	Arbors (2002)	38	80	80	0	0	0	0	80	80	0	38	0	38	-42	Zoning allows either 80 MF or 38 SF
7,8	Auburn Ridge (2013)	0	286	286	0	186	186	0	286	286	0	0	266	266	-20	High includes approved Lot 2 100 Unit MF. Low assumes a 20 unit decrease
12	Brookwood (2003)	72	0	72	62	0	62	72	0	72	0	72	0	72	0	All lots Platted, no more land to plat.
16	Cambridge Heights (2003)	0	100	100	0	0	0	0	63	63	-37	35	0	35	-65	High - Assumed MF at 9 units/acre (similar to Echelon Project) Low - Assumed SFA at 5 units/acre
17	Castle Highlands (1984)	132	200	332	127	200	327	131	200	331	-1	131	200	331	-1	All lots Platted, no more land to plat.
19	Castle Meadows (1989)	0	440	440	0	0	0	0	1500	1500	1060	0	400	400	-40	High - Property Builds out all MF at 12 du/acre Low - Property builds out with 400 MF, rest commercial.
3,20,21,22,23,117	Castle Oaks /Terrain (2002)	1992	775	2767	2101	0	2101	2277	0	2277	-490	2277	0	2277	-490	Includes North Basin SDP Phase II for 105 units. Phase I already platted, Phase II under review.
25,26,27,28,104	Castle Pines Commercial / Promenade (1987)	0	1410	1410	0	1062	1062	0	1362	1362	-48	0	1362	1362	-48	Includes approved Promenade multifamily zoning of 300 units
29	Castle Ridge East (1996)	30	0	30	28	0	28	28	0	28	-2	28	0	28	-2	All lots Platted, no more land to plat.
30,31	Castle Rock Estates - Diamond Ridge (1995)	126	0	126	126	0	126	126	0	126	0	126	0	126	0	All lots Platted, no more land to plat.
33,87,88,89,90	Castleview Estates - The Oaks of Castle Rock (1985)	248	326	574	241	0	241	367	0	367	-207	367	0	367	-207	SDP approved for 128 units. Applicant has submitted a preapp to amend for a few additional units. Unclear if zoning would allow. Developers have indicated that they need every unit possible to make project pencil out.
34	Castlewood Ranch (1998)	1300	0	1300	1282	0	1282	1292	0	1292	-8	1292	0	1292	-8	All lots Platted, no more land to plat.
straight zones, downtown	Central Castle Rock (varies) NO maximum zoning**	1538	3462	5000	1535	1188	2723	1538	3962	5500	500	1538	2962	4500	-500	Estimating potential development of Downtown to be plus/minus 500 of the 5000 estimated zoning number
40	Covenant At Castle Rock (2014)	58	0	58	58	0	58	58	0	58	0	58	0	58	0	All lots Platted, no more land to plat.
42,43,44,45,46	Crystal Valley Ranch (2000)	2670	753	3423	2502	0	2502	3051	96	3147	-276	3051	0	3051	-372	Commercial area can have multi-family at 24 du per acre
47	Dawson Ridge (1986)	2447	5453	7900	0	0	0	3408	2445	5853	-2047	2400	1600	4000	-3900	High based off current proposal, Low based off assumptions of 4000 units total
52,9	Founders Village - Inc. Founders 24 and Bella Mesa (1985)	2776	2905	5681	2597	0	2597	3345	0	3345	-2336	3234	0	3234	-2447	Bella Mesa allows for 711 single family units between both Planning Areas. Expect close to full build out to make project pencil out due to capstone.
54,55	Hazen Moore (2000)	243	0	243	161	0	161	161	0	161	-82	161	0	161	-82	All lots Platted, no more land to plat.
56,57	Heckendorf Ranch (1985)	406	224	630	299	0	299	404	0	404	-226	404	0	404	-226	Includes approved Canvas SDP. No other lots available for residential development
59	Hillside (2009)	120	0	120	0	0	0	120	0	120	0	120	0	120	0	Likely will build out to Zoning, SDP approved for 120 units
118	Lanterns (2003)	1200	0	1200	268	0	268	1200	0	1200	0	1200	0	1200	0	SDP approved for full development at 1200 units and is currently under construction
62	Liberty Village (2004)	1245	0	1245	1081	0	1081	1238	0	1238	-7	1238	0	1238	-7	All lots Platted, no more land to plat.
63,64,65	Maher Ranch (1988)	923	100	1023	771	96	867	767	96	863	-160	767	96	863	-160	All lots Platted, no more land to plat.
70,72,73,74	Meadows (1985)	6867	4002	10869	7231	555	7786	7434	1055	8489	-2380	7422	555	7977	-2892	MF High is based off estimate of 100 mixed units in TC and 400 units of Senior Housing in COI MF Low is based off complete commercial development in those areas SF High is based off SDP Amendment for last sf planning area for 77 units SF low is based off approved SDP for 65 units

75	Memmen Young Infill (1985)	559	476	1035	0	0	0	710	0	710	-325	600	0	600	-435	Realistic High includes proposed units of rezone (Founders Vista) and max units of remaining use area not in rezone. Realistic low knocks out some units of Founders Vista and puts remaining parcel at a more nominal 5 units per acre
76,77,78,79,80	Metzler Ranch (1996)	1037	660	1697	742	580	1322	751	660	1411	-286	751	660	1411	-286	Remaining property with entitlement of 69 units donated to the Town.
97,98,99,101,103	Plum Creek (1983)	3025	0	3025	1189	360	1549	1188	360	1548	-1477	1188	360	1548	-1477	Assumes no new construction. Only way to add more units is to rezone Golf Course or open space
100	Plum Creek Ridge (2006)	92	70	162	120	0	120	120	0	120	-42	120	0	120	-42	All lots Platted, no more land to plat.
102	Plum Creek South (1985)	307	198	505	137	0	137	140	0	140	-365	140	0	140	-365	All lots Platted, no more land to plat.
106,107,108	Red Hawk (1996)	660	268	928	821	0	821	887	0	887	-41	887	0	887	-41	All lots Platted, no more land to plat.
129	Ridge Estates (2020)	52	0	52	0	0	0	52	0	52	0	52	0	52	0	SDP approved 52 units
110,111	Scott II (1987)	85	220	305	78	220	298	78	220	298	-7	78	220	298	-7	All lots Platted, no more land to plat.
113	Sellers Landing PD (1982)	0	94	94	0	77	77	0	82	82	-12	0	82	82	-12	Includes recently approved 5 Unit SDP
115	Stanbro PD (1987)	32	92	124	0	0	0	32	92	124	0	16	46	62	-62	Low assumes significant flood plain issues impacting number of units significantly (estimate of 50%).
119	Villages at Castle Rock / Echelon (1981)	12	542	554	0	0	0	12	238	250	-304	0	238	238	-316	Single property allows for 12 units of SF. May not be feasible to build on property
121	Wolfensberger - formerly Graham PD (1996)	0	56	56	0	56	56	0	56	56	0	0	56	56	0	All lots Platted, no more land to plat.
122,123,124,112	Woodlands - Inc. Scott Ranch (1983) Woodlands Crossing (1987)	990	0	990	537	0	537	605	0	605	-385	605	0	605	-385	All lots Platted in Scott Ranch, no more land to plat. 54 units available in Woodlands Crossing
125,126	Young American (1983)	78	1138	1216	375	186	561	1012	186	1198	-18	825	186	1011	-205	High includes maximum number of units zoned in undeveloped planning areas. Low is based off recent PREAPP received minus 30 lots
		ZONED UNITS			UNITS BUILT (CO)			Potential HIGH Buildout				Potential LOW Buildout				
		SF	MF *	Total	SF	MF	Total	SF	MF	Total	delta from Max Zoned	SF	MF	Total	delta from Max Zoned	
TOTAL UNITS		31,386	24,429	55,777	24,469	4,766	29,235	32,604	13,173	45,777	(10,000)	31,247	9,388	40,635	(15,142)	
POPULATION ESTIMATES		95,413	48,858	144,271	73,178	9,532	82,710	99,116	26,346	125,462	(18,809)	94,991	18,776	113,767	(30,505)	

*Castle Meadows does not have a maximum cap in the zoning, however 440 MF units was listed in the most recent traffic study for this property. This property could develop with more or less residential units.

**Central Castle Rock includes straight zoned land as R-1, R-2, R-3, and B zone areas in the Downtown Overlay that allow multifamily. There is no maximum cap in the zoning, so land area and typical densities have been used to determine the area could develop out at 5,000 units.

*** Dawson Trails rezoning was approved by Council in the 3rd Quarter of 2022 (formally Dawson Ridge). As this report is through December 31, 2022, the Dawson Trails zoning documents had not been recorded, therefore the Dawson Ridge numbers are shown. Once the zoning documents have been recorded the report will be updated to reflect the new Dawson Trails zoning.



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 5. **File #:** ID 2023-015

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Tara Vargish, PE, Director, Development Services
Brad Boland, AICP, Long Range Project Manager

Update: Undeveloped Property Inquiries (through January 20, 2023)

Executive Summary

The purpose of this update is to provide a quarterly update on information related to potential development on entitled properties in Town that are undeveloped. In 2020, Town staff conducted a comprehensive review of existing zoning entitlements of land that has not yet been developed in Town. To better enable and graphically show this research, staff has generated a map identifying the remaining areas of land within the Town of Castle Rock that are currently entitled to development. The existing zoning entitlements have also been identified for each parcel. This update includes inquiries through January 20, 2023. Previous updates provided a series of maps. These maps have been migrated online as a single map and can be found as a tab on the Town's Development Activity Map and is available to the general public. The map can be accessed by going to

[CRgov.com/DevelopmentActivityMap](https://castlerock.maps.arcgis.com/apps/MapSeries/index.html?appid=5a1a1e455cf94fc7a10dd334276dfe16)

[<https://castlerock.maps.arcgis.com/apps/MapSeries/index.html?](https://castlerock.maps.arcgis.com/apps/MapSeries/index.html?appid=5a1a1e455cf94fc7a10dd334276dfe16)

[appid=5a1a1e455cf94fc7a10dd334276dfe16>](https://castlerock.maps.arcgis.com/apps/MapSeries/index.html?appid=5a1a1e455cf94fc7a10dd334276dfe16) and selecting the Undeveloped Property tab on the top of the page. The map is updated regularly to remove any parcels that are now under construction and also provide new information with respect to pending or approved land use approvals.



Meeting Date: Feb 7, 2023

AGENDA MEMORANDUM

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Tara Vargish, PE, Director, Development Services
Brad Boland, AICP, Long Range Project Manager

Title: **Update: Undeveloped Property Inquiries (through January 20, 2023)**

Executive Summary

The purpose of this update is to provide a quarterly update on information related to potential development on entitled properties in Town that are undeveloped. In 2020, Town staff conducted a comprehensive review of existing zoning entitlements of land that has not yet been developed in Town. To better enable and graphically show this research, staff has generated a map identifying the remaining areas of land within the Town of Castle Rock that are currently entitled to development. The existing zoning entitlements have also been identified for each parcel. This update includes inquiries through January 20, 2023. Previous updates provided a series of maps. These maps have been migrated online as a single map and can be found as a tab on the Town's Development Activity Map and is available to the general public. The map can be accessed by going to CRgov.com/DevelopmentActivityMap and selecting the Undeveloped Property tab on the top of the page. The map is updated regularly to remove any parcels that are now under construction and also provide new information with respect to pending or approved land use approvals.

Discussion

The intent of the review was to provide Town Council with up to date information about land uses which are allowed by right under the current zoning entitlements, and which could potentially be proposed for development at any time by a developer within the Town. Staff believes that by providing this information, we can better assist Town Council with questions and concerns from the residents of the Town when development is proposed for these sites.

Staff identified some of these existing entitlements that could lead to neighborhood concern regarding the types of uses that are allowed by right, as well as the proximity of these potential uses to existing neighborhoods. These properties were identified in the original staff memo and can be found below.

The full Town-wide "Undeveloped Property Map" is online through the Development Activity Map and generally shows all of the areas in Town that have not been developed or are not currently under construction. By selecting a parcel on the map, information regarding the

entitlements and any current land use applications is provided in a pop up window. The map is updated regularly to remove any of the identified areas/parcels that are now under construction and also provide new information with respect to pending or approved land use approvals and significant inquiries. The map can be accessed by going to CRgov.com/DevelopmentActivityMap and selecting the Undeveloped Property tab on the top of the page.

Reported Parcels of Interest

Some parcels in Town have been well known as being planned for development, such as the Meadows Town Center area, however other parcels may not have had any recent inquiries or activity, and therefore may not be as easily associated with future development. The parcels listed below were identified by staff as ones that may not be as well-known or have not had any recent inquiries. Staff has summarized each of these highlighted areas below, including the specific list of allowed uses from the approved zoning entitlements, and information on any recent inquiries regarding development of these parcels.

Reported Parcels of Interest with Recent Inquiries/Actions

Crystal Valley Ranch Commercial



The Crystal Valley Ranch Planned Development Plan was approved originally in 2007 with a 10.4-acre parcel zoned for neighborhood commercial. A 2019 rezoning reduced this

commercial land area to 4 acres. The property, shown above, is generally located at the southeast corner of West Loop Road and Crystal Valley Parkway with the following allowed uses:

Neighborhood Commercial: 10.4 acres, allowed uses are community centers, convenience stores with gasoline and car washes, financial institutions, laundries and dry-cleaning services, liquor stores, offices, places of public assembly, recreation center, membership clubs, health clubs, restaurants, lounges and fast food establishments with drive thru, retail stores and display shops, day care centers, single family, multi-family residential, small animal clinic, religious facilities.

An application for a Site Development Plan was accepted on January 4, 2023 and is under review. The proposed Site Development Plan is for a mixed-use development on the 4-acre parcel located on the southeast corner of Crystal Valley Parkway and W. Loop Road. The development will include 24 townhomes, and one mixed use building with 7,376 square feet of commercial space on the 1st floor and seven residential condominiums on the 2nd floor. The townhomes will be in building configurations of three, four and five attached homes in a building. Access to the site will be from Magwitch Drive. The applicant has hosted two hybrid neighborhood meetings on September 29, 2021 and December 14, 2021. A formal submittal has not been made at this time. Timing of the project is unknown. The property is located in Councilmember Dietz's District.

Woodlands Crossing



The 19-acre area is part of the Woodlands Crossing Planned Development which was approved in 1987 and is located on the south side of Highway 86 at Woodlands Blvd. The PD allows for the following uses:

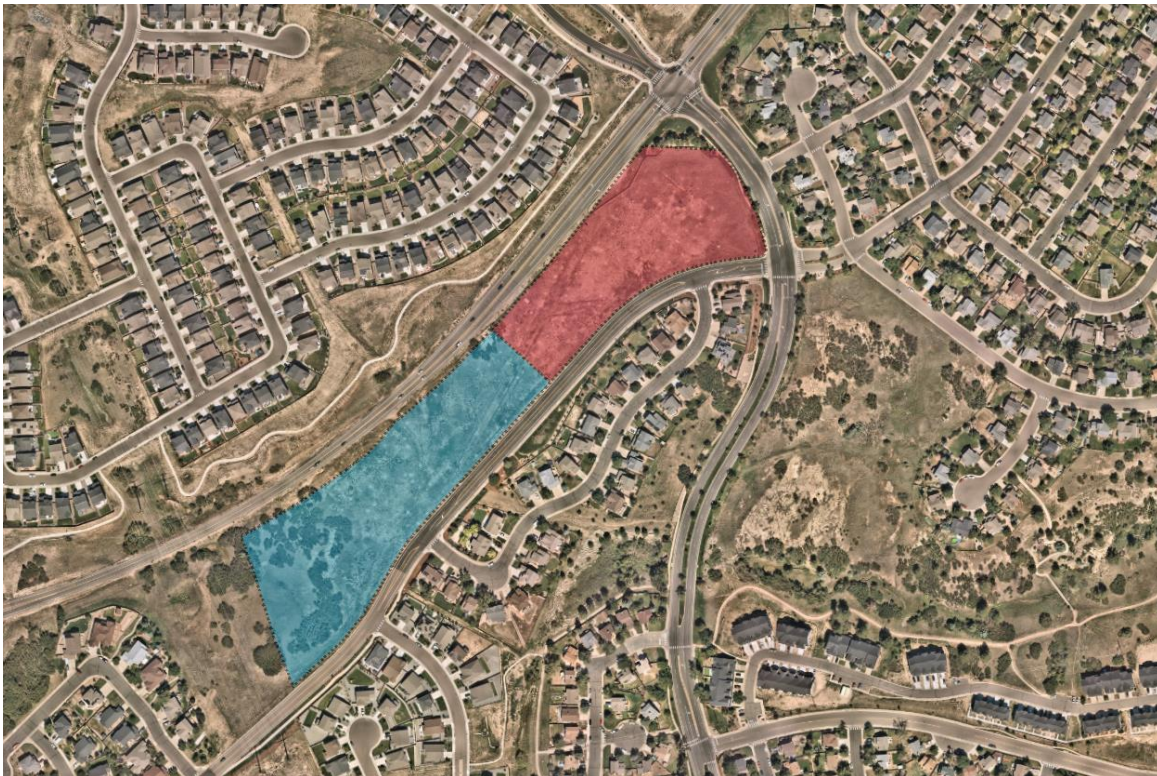
Low Density Multi-Family Use Area (Purple): 6 acres, allows townhomes, apartments, condominiums, attached and detached dwellings. 10 DU's per/ac are allowed maximum for multi-family uses and 6 DU's per/ac maximum are allowed for single family detached proposals.

Integrated Business Use Area (Red): 13 acres, allows retail, personal services, financial, indoor places of public assembly, automotive repair, general office, churches, restaurants, lounges and public buildings.

Town staff has received several informal inquiries about potential development of the property over the years. A pre-application was submitted in May 2022 inquiring on what the requirements would be to rezone a portion of the property to allow for 200 units of senior housing. No further action has been taken regarding the inquiry. The ownership of the identified area is fractured amongst several entities, potentially making development challenging at this time.

Reported Parcels of Interest –No Recent Inquires/Actions

Cambridge Heights Planned Development



The 11-acre property is located in the Cambridge Heights Planned Development (PD) was approved in 2003 and is currently showing ownership with a group outside the United States. The Planned Development is located along the south side of Highway 86 at Enderud Blvd., just east of the Sunstone/Terrain neighborhood. The PD zoning allows for multifamily on the south

portion of the property and neighborhood business uses allowed on the north portion of the property.

Neighborhood Business Use (Red): 4 acres, allows banks, financial institutions, restaurants and w/drive through services, convenience stores with gas and car washes, day care, general office, retail, light automotive services, other commercial uses similar in character, religious institutions. Automotive repair, bars and taverns are not allowed.

Multifamily Use (Blue): 7 acres, allows up to 100 units at 12-15 Dwelling Units (DU) per acre.

Town staff has not had any inquiries or contact with potential developers concerning this property.

Creekside Planned Development

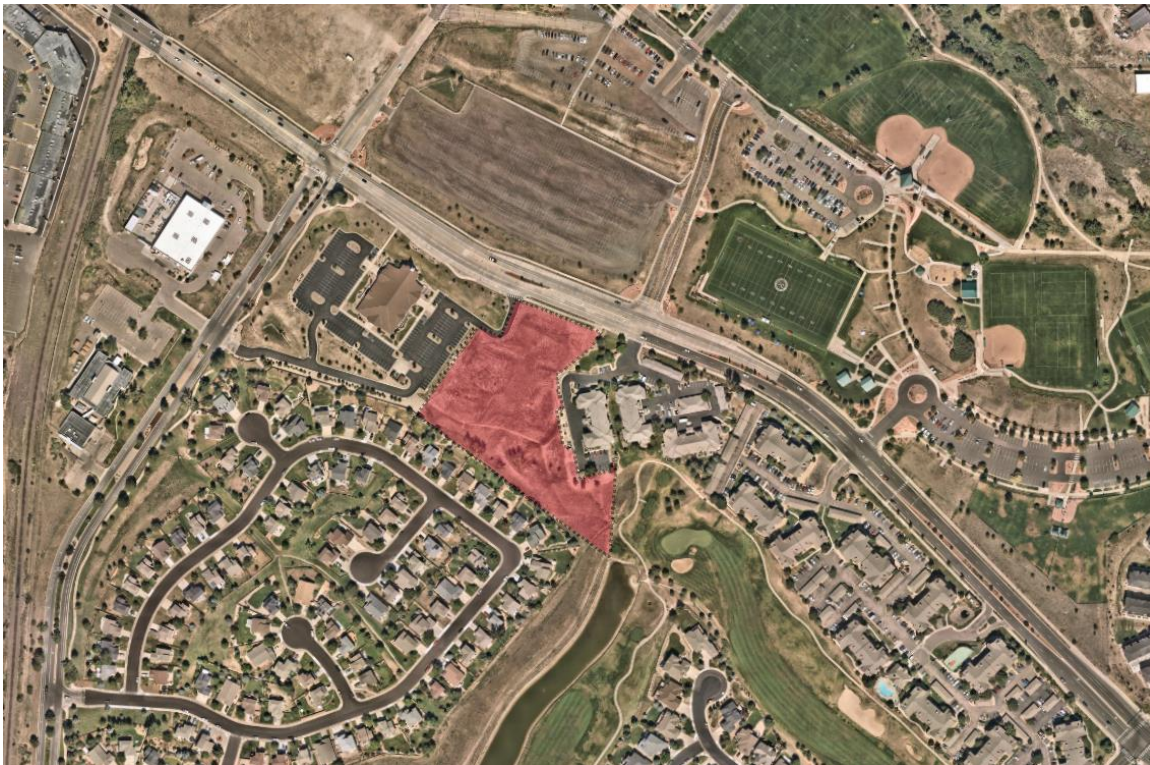


The 27-acre property is located in the Creekside Planned Development which was approved in 1984, and is shown on the map above. The PD is located along the I-25 frontage road just north of Crystal Valley Parkway. The zoning consists of commercial uses as listed below:

Commercial Use Area: 27 acres allowed uses are general commercial, financial, professional research laboratories, office and retail that include gas station. Automotive sales and service facilities, laundries, parking lots, personal services, public assembly, restaurants, lounges, fast food establishments, transit terminal, veterinary office and boarding kennels.

Staff has not had any development inquiries specific to the Creekside PD within the last few years. The Town recently acquired a portion of this property in support of the future Crystal Valley Interchange which will have an impact upon this property and when it will develop.

Plum Creek Amended Planned Development Plan

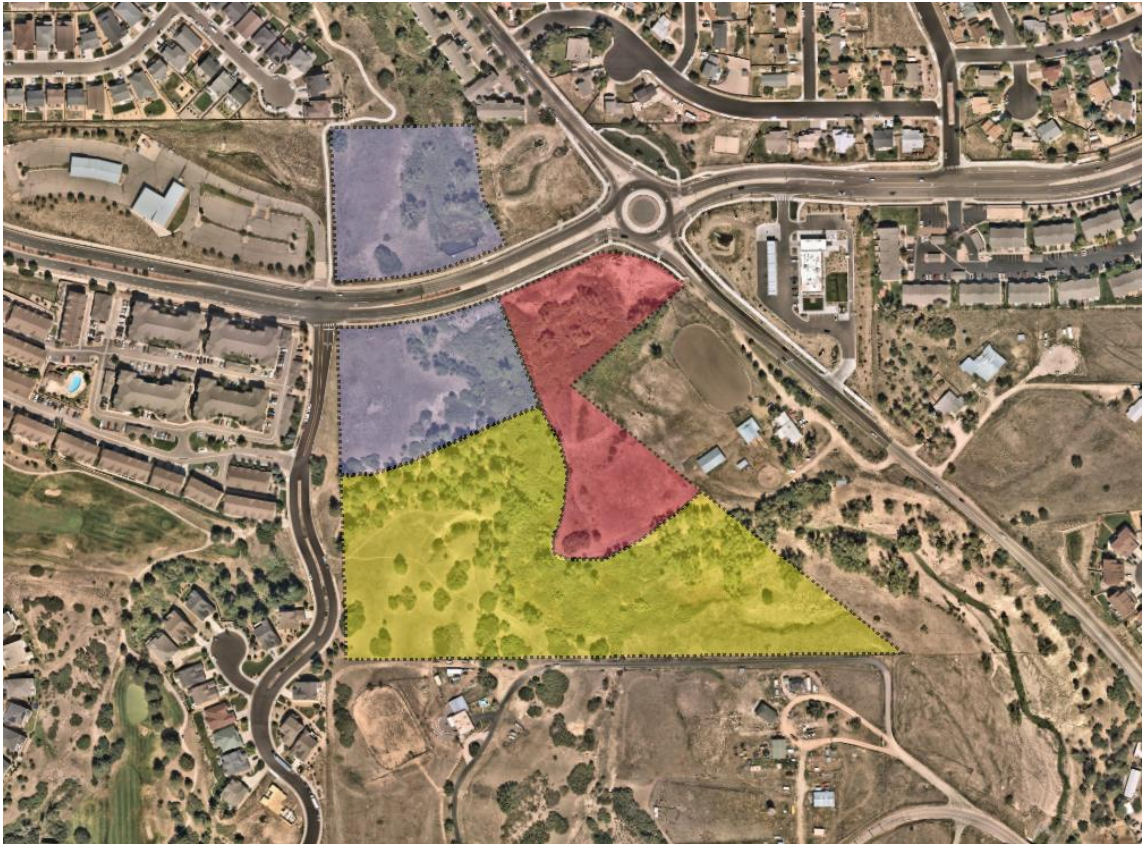


The 4-acre property is located in Plum Creek Amended Planned Development which was approved in 1985 and is located along the south side of Plum Creek Parkway just east of Plum Creek Boulevard, shown above.

Neighborhood Commercial: 4 acres, allows retail, financial services, restaurants and lounges, places of assembly, offices, community centers, transit hubs, automotive services, car wash, warehouse, mortuaries and light industrial uses. Zoning specifically prohibits outdoor storage of junked/wrecked vehicles.

Staff has received no inquiries about possible development of this parcel.

Stanbro Planned Development Plan



The 22-acre property is located in the Stanbro Planned Development Plan which was approved in 1987. The property is located on the northwest and southwest corners of Plum Creek Parkway and Lake Gulch Road. The zoning consists of a mixture of uses listed below:

Residential Use Area B (Purple): 7 acres, allows 6-10 DU's per/acre. Allows Single family, apartments and condominiums max 92 units allowed. Total of 124 maximum allowed units for Area A and B combined.

Residential Use Area A (Yellow): 11 acres, 32 single family units allowed.

Neighborhood Commercial Area (Red): 4 acres, allows personal services, financial, retail stores to include liquor stores, restaurants to include drive-through, gas station, automotive uses and child care centers.

The current property owner has contacted the Town numerous times over the past few years about the development potential of the Stanbro PD. Overall, these parcels have many constraints due to the existence of floodplain and possible access challenges. The neighborhood commercial area has had some inquiries, most recently in 2021 for a gas station. There are no current inquiries into this property.

Summary

After reviewing the existing zoning entitlements of land that has not yet been developed in the Town, staff identified the above properties as ones in need of closer review. Some of these properties have not elicited many development inquiries over the past few years due to a myriad of factors. Staff has researched the allowed uses of these identified areas/parcels to raise awareness of their status, as some of these specific parcels do not often come up in everyday conversation about development within Castle Rock. Staff's intent is to inform the Town Council of these properties, as well as provide initial zoning/entitlement information for their pending development within the Town of Castle Rock.

This memo is updated periodically to provide any information with respect to inquiries concerning the above listed Planned Developments or newly identified locations.



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 6. **File #:** ID 2023-016

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Tara Vargish, Director of Development Services

Development Services Project Updates

The high-growth nature of Castle Rock results in numerous and diverse questions from individuals seeking information about existing conditions and future plans. Information on community development activity and formal land use applications are located on the Town website under the Development Activity Map link.

Development activity continues to be strong, with continued interest for a variety of project types in Castle Rock. Permit activity remains steady, and homebuilders and commercial builders remain active.

Please see the attached Staff Memorandum for project details.

AGENDA MEMORANDUM

To: David L. Corliss, Town Manager

From: Tara Vargish, PE, Director of Development Services

Title: **Town Manager Report – Development Project Updates**

This report contains development updates and new submittals or requests that have been submitted to staff since the last update to Town Council. The high-growth nature of Castle Rock results in numerous and diverse questions from individuals seeking information about existing conditions and future plans and formal applications for development. More information on community development activity and formal land use applications are located on the Town website under the Development Activity Map link, which can be accessed at CRGov.com/DevelopmentActivityMap

New Quasi-Judicial Applications Requiring Public Hearings

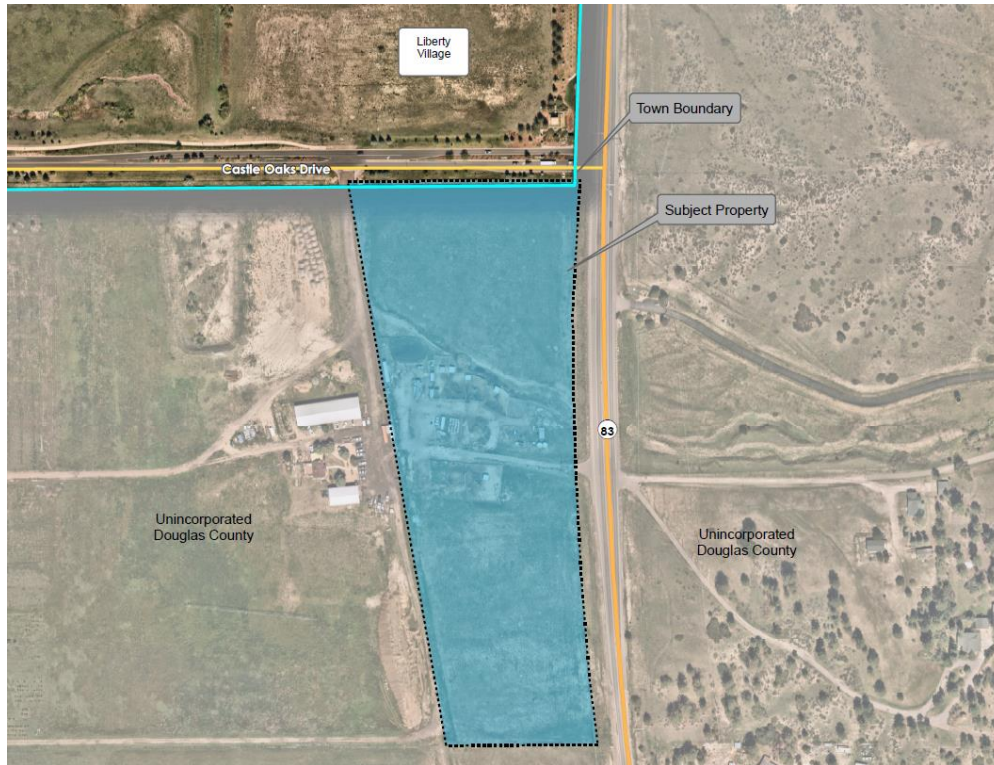
629 Sixth Street



A new quasi-judicial application for a design review by the Historic Preservation Board. Leah Terzulli submitted an application for a new single-family home at 629 Sixth Street. The property is located on the north side of Sixth Street between Cantril and Lewis Streets and is 0.14 acres (6098 square feet) in size. The applicant is proposing a two-story single-family home and a detached garage with an accessory dwelling above the garage. All applications for new construction in the Craig and Gould neighborhood require a public hearing before the Historic Preservation Board. The property is located within Councilmember LaFleur's district.

New Pre-Application Meeting Requests

Castle Oaks Parker Road Annexation



A pre-application meeting request was submitted seeking information on application and submittal requirements for the proposed annexation and zoning of a 13-acre property located at the southwest corner of Parker Road (CO 83) and Castle Oaks Drive. The applicant is proposing a blend of commercial uses such as senior care, memory care, medical services, retail, and mini-storage. The property is located adjacent to Councilmember Cavey's district.

Costco at Dawson Trails



A pre-application meeting request was submitted seeking information on application and

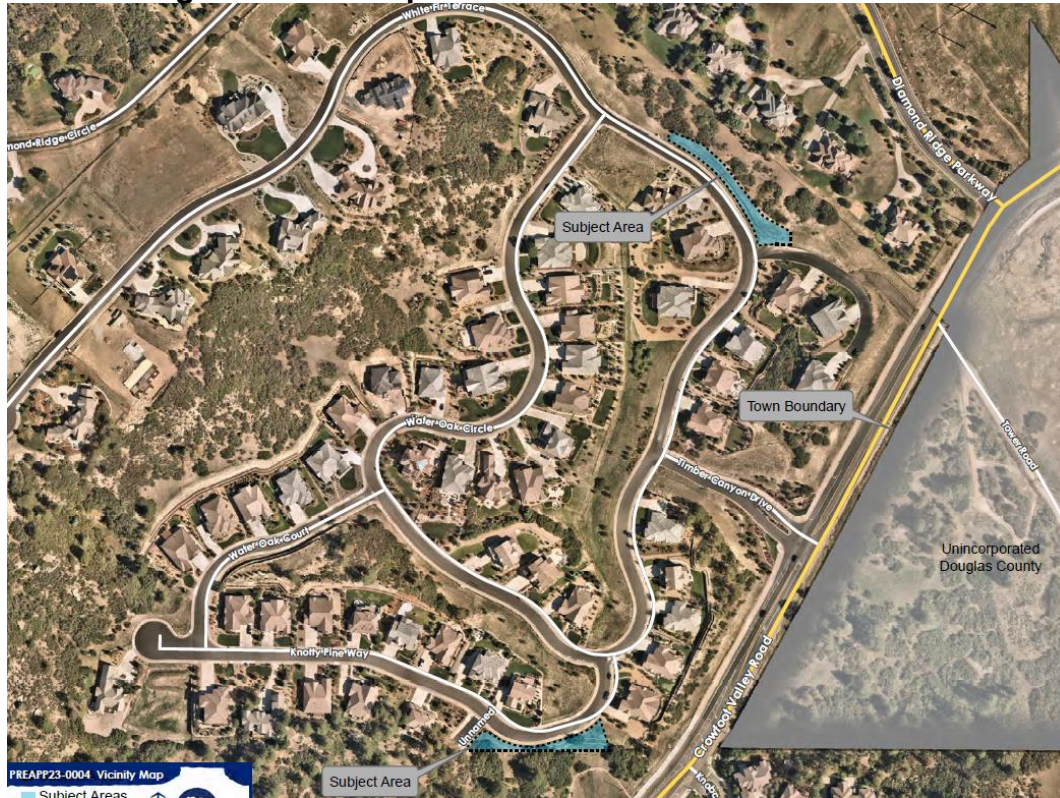
submittal requirements for a Site Development Plan for Costco in Dawson Trails Planning Area F-2. Planning Area F-2 is approximately 29.48 acres and is located northwest of Dawson Trails Boulevard and Interstate 25, just north of the future Crystal Valley Interchange. The Costco site itself is approximately 19.68 acres with the primary building of approximately 160,479 square feet and an adjacent fueling station and carwash. The remaining 9.92 acres are for future retail/commercial that will submit for a site development plan at a later date. The proposal is located in Councilmember Dietz's district.

Pioneer Landscape



A pre-application meeting request was submitted seeking information on application and submittal requirements for a Site Development Plan for a retail landscaping material business. The vacant property is located just northeast of South Wilcox Street and Brookside Circle in the Brookside Business Center Planned Development. The proposal is located in Councilmember Dietz's district.

Timber Ridge HOA Site Improvements



A pre-application meeting request was submitted by Timber Ridge HOA (Brookwood PD) seeking information on application and submittal requirements for potentially removing rock wall facades at two locations within HOA open space. The first rock wall is a 300-foot-long, three-tiered structure in Tract C (across the street from 5718 and 5696 Water Oak Circle). The second rock wall is a 100-foot-long, two-tiered structure in Tract F (adjacent to 1724 Knotty Pine Way). The HOA wishes to explore the Town's requirements for potentially removing the rock facades and re-grading the affected areas as they have determined that the cost to rebuild with structural retaining walls is cost prohibitive to them. This project is located in Councilmember Cavey's district.

Walmart Storage Container



A pre-application meeting request was submitted seeking information on application and submittal requirements for a proposed permanent exterior storage container to be added to the Walmart located at 133 Sam Walton Lane. The permanent storage container would be used to keep additional tire inventory on hand to meet customer demand. The container will be located on the west wall in front of the Auto Care Center. The storage unit is approximately 40 feet long, 10 feet tall, and 10 feet wide. No parking spaces or walkways into the building are to be blocked. The project is located in Councilmember LaFleur's district.

Ongoing Development Activity:

Commercial Development Activity

• Promenade:

- Alana at Promenade Apartments, building and site construction for 300 unit multi-family residential development, located on Alpine Vista Circle, west of Promenade Parkway.
- Buffalo Wild Wings, building and site construction, located on the southwest corner of Factory Shops Boulevard and New Memphis Court.
- Chipotle pad site, site plan, plat and construction documents approved, and building site plan approved for building elevations for a future Chipotle, located off Promenade Parkway north of Sam's Club. Revised domestic water service building connection location submitted.
- Lazy Dog Restaurant site plan review for a new stand-alone restaurant, located on the northeast corner of Castlegate Drive West and Promenade Parkway.
- Los Dos Potrillos, pad site construction, and restaurant site plan review for new 7,400 square foot restaurant, located west of TJ Maxx off Promenade Parkway. Grading only approved
- Promenade Commons Park, site plan, plat and construction document approved for new half-acre park connecting the Alana multi-family and the proposed commercial area, located on the west side of Promenade Parkway and Alpine Vista Circle.
- Whole Foods, site plan amendment to add EV charging stations in the existing parking

lot, located at 6384 Promenade Parkway.

- **Meadows:**

- Access road, construction documents approved for public street construction that will support future commercial/office developments, located northwesterly of the North Meadows Drive roundabout.
- Aspen View Academy, building and site construction for an addition, located at 2131 Low Meadow Boulevard.
- Bridge and access road, site construction, connection of the roundabout on North Meadows Parkway south, and then east crossing Plum Creek.
- Castle Rock Adventist Hospital Medical Office Building and site construction for a new 70,000-square-foot medical office building, located at 2350 Meadows Boulevard.
- Castle Rock Industrial at the Meadows Lot 1, site and building construction for new 80,000+/- square foot warehouse space, located on the future Timber Mill Parkway north of North Meadows Drive.
- Castle Rock Industrial at the Meadows Lot 2, site and building construction for new 80,000+/- square foot warehouse space, located on the future Timber Mill Parkway north of North Meadows Drive.
- Kum and Go, building and site construction for a 5,620 square foot Convenience Store and Fuel Canopy, located at the northwest corner of Meadows Parkway and Lombard Street.
- Lot grading, retaining wall, and waterline construction plan and plat approved, located on vacant commercial lots north of the AMC theatre.
- The Learning Experience, revised site development plan and construction plan review for a 10,000-square-foot, single-story daycare center to be located on Meadows Boulevard between Springbriar Drive and Shane Valley Trail.
- Meadows Parkway Intersection improvements, construction document review for improvements to the intersections of Meadows Parkway at Regent Street and Lombard Street.
- Meadows Senior Multi-Family, site plan, plat and construction document review for a new 4- story senior housing apartment development with 200 units, located near North Meadows Drive and Timber Mill Parkway.
- Meadows Affinity Senior Multi-Family, site plan and plat review for a new 4- story senior housing apartment development with 174 units, located near Meadows Parkway and Regent Street.
- Meadows Town Center Townhomes/Mixed-use, site plan and construction document review for 85 residential units with approximately 6,248 square feet of retail, located on three lots off Future Street.
- Moore Lumber at the Meadows, building and site construction for a new 16,880 square foot retail, warehouse, and office building, located at the north end of Regent Street.
- Prairie Hawk Dental, site plan review for new 5,100 square foot dental office building, located at the northeast corner of Prairie Hawk Drive and Limelight Avenue.
- Sol Danza Auto Repair, site plan review for new 4,600 square foot automotive service center, located near the intersection of Prairie Hawk Drive and Sol Danza Drive.

- **Downtown:**

- 221 Wilcox Street site and building construction for mixed- use building, with 28 residential units and 8,100 square foot retail space, located on the southwest corner of Wilcox Street and Third Street.

- Circle K, site plan review for new 3,700 square foot convenience store to replace the existing building on the site. Located at 310 South Wilcox Street.
- Douglas County Libraries, building and site construction for 62,000 square foot library building and demolition of the existing building, located at 100 South Wilcox Street.
- Eternal Rock Church, site plan review for new landscaping, signage, and storage, located at 2 Phelps Street.
- Keystone Hotel site plan approved for the addition of a new patio on the west side of the building, located at 217 Fourth Street.
- Perry Street Social, site development plan approved and construction document review to create a mini entertainment district, located at 404 North Perry Street.
- Pizza Hut Retail Center, building and site construction for a new commercial center located at 340 South Wilcox Street.
- Railroad Quiet Zone, Town project, construction documents approved for improvements at Second Street, Third Street, and Fifth Street.
- Scileppi properties, site plan review for a 6,000 square foot addition and the addition of seven parking spaces, located at 210 Third Street.
- The View, site and building construction for a 6-story building with mixed-uses including 218 residential units, located at Sixth Street and Jerry Street.
- **Dawson Trails Residential/Commercial:**
 - Dawson Trails, Planned Development Plan amendment approved for 2,064 acres with 5,850 residential dwelling units and a maximum of 3,200,000 square feet of commercial/non-residential uses, located to the west of I-25 and generally south and north of Territorial Road.
 - Dawson Trails Demo, construction plan review to demo infrastructure within the Dawson Trails development, located south of Territorial Road.
 - Dawson Trails construction plan review for grading only for approximately 134 acres, located north of Territorial Road.
- **Other Commercial Projects throughout Town:**
 - 282 Malibu commercial buildings, site development plan amendment review for a new patio and site construction for two 4,000 square foot commercial buildings, uses are unknown at this time, located at 282 Malibu Street.
 - Castle Rock Auto Dealerships, site development plan approved for service center expansion, located at 1100 South Wilcox Street.
 - Crowfoot Valley Road Right-of-Way Annexation of four parcels of Town owned land, located between Tower Road and the northern Town boundary.
 - Founders Marketplace, Dunkin Donuts, site plan review for a new restaurant with drive-through, located at the northeast corner of Founders Parkway and Aloha Court.
 - Founders Marketplace, Liberty Express Carwash, building TCO and site construction, located northeast of Fifth Street and Founders Parkway.
 - Founders Marketplace, McDonald's site plan review for new 5,140 square foot restaurant, located at Aloha Drive and Highway 86.
 - Founders Marketplace, Retail building, site development plan approved for mixed-use retail building, located on Ridge Road between King Soopers Fueling Station and IREA substation.
 - Garage Condos, site and building construction, located on Liggett Road.
 - Heckendorf Ranch Retail, building and site construction for a new 8,100 square foot

- retail building located on Crystal Valley Parkway west of Plum Creek Boulevard.
- Outlets at Castle Rock, site plan review, two new pad sites on the mall's west side on Factory Shops Boulevard.
- Phillip S. Miller Regional Park, construction plan approved for Play Loop Trail.
- Plum Creek Golf Course, site plan amendment review and building and site construction for a new clubhouse, located at Plum Creek Boulevard and Players Club Drive.
- Sanders Business Park, site construction for 2.4-acre site, located south of The Plum Creek Community Church. The future use is a facility for distribution of heating and plumbing equipment.
- Sanders Business Park, site construction for approximately 51,000 square feet of industrial flex space, located south of The Plum Creek Community Church.
- StorQuest, building and site construction for new 98,000 square foot self-storage and RV parking, located off Liggett Road west of Kellogg Court.
- T-Mobile small cell sites, construction documents for 4 locations in the public right-of-way: 1) Park Street and Eighth Street, 2) Factory Shops Boulevard & New Memphis, 3) Factory Shops and Outlet Entrance, 4) Limelight near Hospital ER Entrance.
- The Brickyard, erosion control and demolition plan approved for demolition of existing building on 4.5 acres, located on the south end of Prairie Hawk Drive.
- The Brickyard Planned Development Plan and Zoning Regulations, under review for a mixed-use development with a maximum of 600 multi-family dwelling units, located on the south end of Prairie Hawk Drive.
- The Famous Steak House, site development plan and interior building renovation, located in former Jarre Creek Brewery building south of Chili's.
- Verizon small cell sites, construction documents for multiple locations in public right-of-way: 1) Factory Shops Boulevard and New Beale Street, 2) Promenade Parkway and Castle Rock Parkway (approved plans), 3) Promenade Parkway (approved plans), 4) Castlegate Drive West (approved plans), 5) Castlegate Drive West and Castle Rock Parkway (approved plans), 6) Factory Shops Boulevard and Meadows Boulevard, 7) Mitchell Street near Mesa Middle School, 8) South Valley Drive north of Plum Creek Parkway, 9) Low Meadow Boulevard and Night Song Way, 10) South Gilbert Street between Gilbert and Sellers Drive at Birch Avenue, 11) Foothills Drive and Soaring Eagle Lane, 12) Foothills Drive and Morning View Drive.
- Walmart, site development plan approved for new drive-through ATM at the west end of the existing parking lot.
- Wellspring and Castle Oaks Covenant Church, annexation petition is to annex approximately 2.07 acres located at 498 East Wolfensberger Road, for future Wellspring and Castle Oaks Covenant Church facilities
- Woodlands Medical Office Building site plan review for a new 14,336 square-foot medical office building located near Woodlands Boulevard and Barranca Drive.
- Zaika Indian Restaurant, site plan review to enclose the existing patio on the south side of the building, located at 78 Allen Street.

Residential Development Activity:

- 302 North Lewis Street Historic Preservation application, 830 square foot detached garage.
- 306 North Lewis Street Historic Preservation application, 400 square foot addition.

- Alexander Way, annexation petition for 73.76 acres of land, located north of Alexander Place and Brewer Court.
- 544 Senter Drive, use by special review for a new two-story accessory dwelling unit with garage.
- Auburn Heights Apartments, rezoning application to amend the zoning and the currently approved site development plan for Lot 2 of Auburn Ridge.
- Avilla at Founders, site plan and construction document review, for 105 for-rent single-family dwellings, located on the northwest corner of Mikelson Boulevard and Mitchell Street.
- Bella Mesa pond, site plan, plat and construction documents approved for relocation of existing detention pond, located north of Mesa Middle School off Mitchell Street.
- Canvas at Castle Rock, site construction for 102 townhome units, located at Plum Creek Boulevard and Crystal Valley Parkway.
- Canyons South Longstory Avenue, under construction for water and sanitary mains for future development, located in Douglas County on the east side of Crowfoot Road.
- Canyons South Filing No. 3, construction plan review for water and sanitary mains for future development, located in Douglas County on the east side of Crowfoot Road.
- Crystal Valley Ranch Mixed-Use site plan review for 24 townhomes and a mixed-use building, located at the southeast corner of Crystal Valley Parkway and West Loop Road.
- Crystal Valley Ranch, site construction, single-family subdivisions, located southeast and southwest of Crystal Valley Parkway and West Loop Road. Also, in the southern interior portion of Loop Road, south of Loop Road, and between West Loop Road and the Lanterns property.
- Crystal Valley Ranch, construction plan approval for a recreation facility that will serve the new single-family home project, located at the southeast corner of West Loop Road and Crystal Valley Parkway.
- Echelon (formerly Caliber at Terrain), site and building construction for a 238-unit multi-family development, located in the northeast quadrant of Founders Parkway and State Highway 86.
- Founders Village, site construction, detached single-family home neighborhood, located northeast of Mikelson Boulevard and Mitchell Street.
- Founders Village the Enclave, site construction, 88 additional townhomes to complete the existing development located at Enderud Boulevard and Wagonwheel Trail.
- Front Street Triplexes, site plan review for two triplex buildings, located on Front Street between Fifth and Sixth Streets.
- Greystone Townhomes, construction plan and plat approved for one three-story building with 5 units, located northwest of Plum Creek Parkway and Gilbert Street.
- Hillside, site construction, single-family attached and detached age 55 and older, located at the northeast corner of Coachline Road and Wolfensberger Road.
- Lanterns/Montaine, home construction, 107 single-family lot subdivision, located in the northerly portion of the project.
- Lanterns/Montaine, home construction, 85 single-family lot subdivision, located in the south-central portion of the project.
- Lanterns/Montaine, grading and construction documents approved, 133 single-family lot subdivisions, located in the southeasterly portion of the project.

- Lanterns/Montaine, site construction for 165 single-family residential lots, located in the east interior of Montaine Circle and southeast portion of the property.
- Lanterns/Montaine, site construction for 82 single-family residential lots, located in the northerly interior of Montaine Circle.
- Lanterns/Montaine, site construction for 68 single-family residential lots, located in the northerly interior of Montaine Circle.
- Lanterns/Montaine, subdivision plat, construction documents, and erosion control plans approved for 183 single-family residential lots, located southwest of Montaine Circle.
- Lanterns/Montaine, construction documents approved for 117 single-family residential lots, located at the northeast corner of the Lanterns development.
- Lanterns/Montaine, site construction for family amenity center, located on the northeast corner of East Montaine Circle.
- Lanterns/Montaine, subdivision plat and construction documents for 182 single-family residential lots, located southwest of Montaine Circle.
- Liberty Village, site development plan review, for amended lot layout due to floodplain for 42 single-family lots, located on the south side of Castle Oaks Drive and Pleasant View Drive.
- Liberty Village, site construction for 19 lot single-family project at Missoula Trail and Castle Oaks Drive and completion of Castle Oaks Drive/bridge replacement within the Cobblestone Ranch property.
- Meadows, site construction, 209 single-family lot subdivision, located north of Red Hawk subdivision and west of Prairie Hawk Drive.
- Meadows, site construction for 57 single-family detached homes on the east and west sides of Coachline Road north of Wolfensberger Road.
- Meadows, site plan, plat and construction documents for 77 single-family detached homes on the west sides of Coachline Road north of Wolfensberger Road.
- Meadows, Paint Brush Park, Town Project, tributary improvements plans in review.
- Memmen Young Infill, rezoning, site development plan review, and associated 5-acre annexation under review, located west of Ridge Road and north of Plum Creek Parkway.
- Plum Creek Residential Planned Development plan amendment for three single-family lots, located near the intersection of Mount Royal Drive and Prestwick Way.
- The Oaks Filing 2A, site development plan review for 114 single-family lots on 165+/- acres, located south of Plum Creek Parkway and east of Eaton Circle.
- Oakwood Apartments, site construction and building permits, for senior housing project redevelopment, located on the northeast corner of Front Street and Oakwood Drive.
- Red Hawk, home construction, 29 single-family home project, located south of Melting Snow Way and east of Bent Wedge Point.
- Ridge at Crystal Valley, site construction for 142 single-family home project, located southwest of Loop Road in Crystal Valley Ranch. SIA amendment submitted to address modification to phasing plan for lots to be Temporary Green Zone.
- Sunset Point, site plan review for 525 single-family homes on 293 acres, located northeast of Mesa Middle School.
- Terrain North Basin, Phase 1, site construction for approximately 96 single-family home project, located along Castle Oaks Drive.

- Terrain North Basin, Phase 2, site development plan review for approximately 105 single-family home project, located along Castle Oaks Drive.
- Terrain Upper Sunstone, home construction, 261 single-family home project, located south of State Highway 86 and east of King Soopers/Ridge Road.



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 7. **File #:** ID 2023-017

To: David L. Corliss, Town Manager

Through: Tara Vargish, Director Development Services

From: Kevin Wrede, Planning Manager

Update: Quasi-Judicial Projects

Executive Summary

The purpose and intent of this report is to provide Town Council with a summary of quasi-judicial projects. In order to provide all parties with due process under law, decision makers must be fair and impartial when considering quasi-judicial applications such as those included in this memorandum. Many of these projects do not have public hearing dates yet, but Town Council could be asked to consider them in the future.

New Applications

629 Sixth Street Historic Preservation Design Review

On-going Quasi-Judicial Applications (currently under review)

The full list of on-going quasi-judicial projects along with vicinity maps can be found on the attached Staff Memorandum.



Meeting Date: February 7, 2023

AGENDA MEMORANDUM

To: David L. Corliss, Town Manager

Through: Tara Vargish, Director Development Services

From: Kevin Wrede, Planning Manager

Title: **Update: Quasi-Judicial Projects**

Executive Summary

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New Quasi-Judicial Applications:

629 Sixth Street Historic Preservation Design Review:



Property owner, Leah Terzulli, has submitted an application for a Design Review by the Historic Preservation for a new single family home at 629 Sixth Street. The property is

located on the north side of Sixth Street between Cantril and Lewis Streets and is 0.14 acres (6098 sq. ft) in size. The applicant is proposing a two-story single family home and a detached garage with an accessory dwelling above the garage. All applications for new construction in the Craig and Gould neighborhood require a public hearing before the Historic Preservation Board. The property is located within Councilmember LaFleur's district.

On-going Quasi-Judicial Applications (currently under review):

544 Senter Drive Accessory Dwelling Unit:



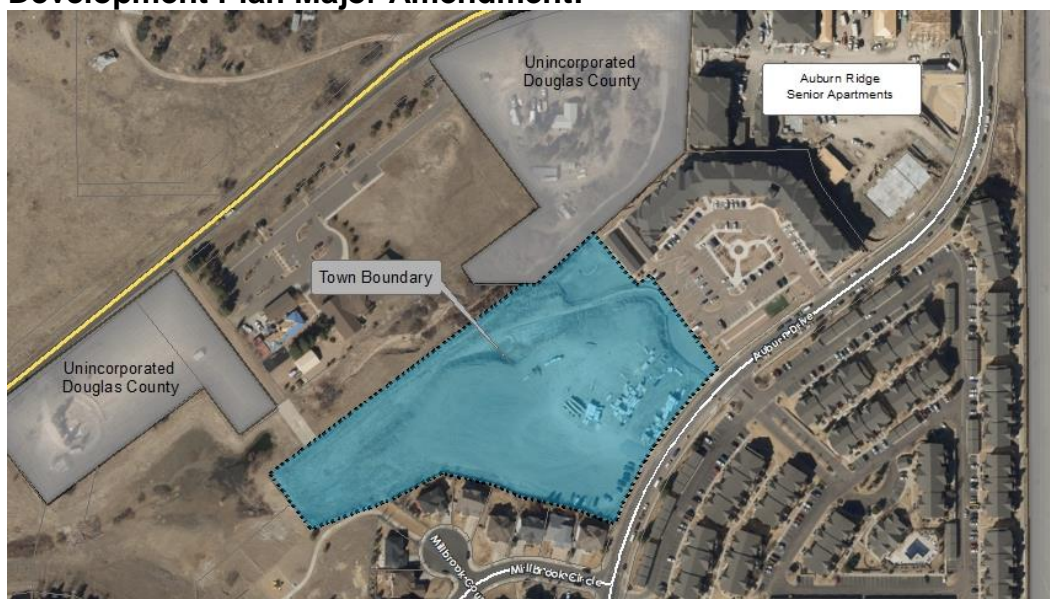
Property owners, Anthony and Irene Chin have submitted an application for a Use by Special Review for an Accessory Dwelling Unit. The accessory dwelling unit is a detached structure located in the south corner of the property. The proposed structure includes 2 stories with a garage and accessory dwelling totaling 1,112 square feet. The Use by Special Review will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The property is located in Councilmember LaFleur's district.

Alexander Way Annexation and Planned Development Plan:



The property owner has submitted an annexation petition to annex 73.76 acres north of the Alexander Place and Brewer Court intersection. The project is being referred to as Alexander Way. The property owner has submitted an application for a Planned Development Plan and Zoning Regulations for the annexation area and a 4.2-acre parcel that is already in the Town, for 77.96 acres total. The applicant is seeking zoning which would allow for 53 single family homes, 24 live/work units, and includes 30 acres of open space. This project will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The proposal is located adjacent to both Councilmember Cavey and Councilmember LaFleur's districts.

Auburn Heights Apartments Planned Development Plan Major Amendment and Site Development Plan Major Amendment:



The property owner has submitted an application to amend the zoning and the currently approved site development plan for lot 2 of Auburn Ridge, which is approximately 6 acres in size and generally located in the southwest quadrant of E. Wolfensberger Road and Auburn Drive, southwest of the Auburn Ridge Senior Apartments. Currently, the zoning permits 100 multi-family units for seniors. The zoning amendment seeks to permit 104 multi-family units for people of all ages and the SDP amendment seeks to rearrange the buildings on the site to reduce impacts to surrounding neighbors. The project is known as Auburn Heights Apartments and proposes a total of five apartment buildings containing a total of 104 units, a clubhouse, pool, dog run, playground, and 222 parking spaces. The proposed parking is a combination of attached garages, detached garages, and surface parking. Both the PDP Amendment and the SDP Amendment will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The project is located within Mayor Pro Tem Bracken's district.

Avilla at Founders Site Development Plan:



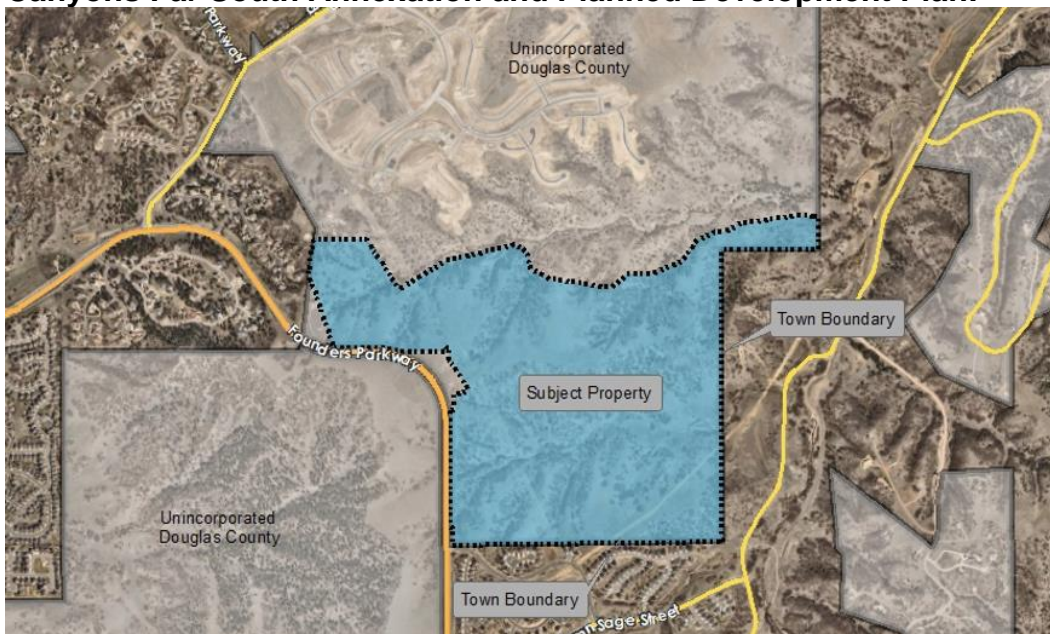
The property owner, NexMetro Communities, has submitted an application for a Site Development Plan (SDP) proposing a 105 unit for rent community on approximately 9 acres. The 105 units are composed of 71 single family detached homes and 17 paired homes (34 units). The property, which is within the Bella Mesa Planned Development (PD), is located at the northwest corner of Mikelson Blvd. and Mitchell St., south of Mesa Middle School. The SDP will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The property is located in Councilmember Brooks' district.

Brickyard Planned Development Plan:



Confluence Companies has submitted a quasi-judicial application for The Brickyard Planned Development Plan and Zoning Regulations, a mixed use development with a maximum of 600 multi-family dwelling units, and office, retail, hotel, performance venue and recreational space. The site is approximately 31 acres and is located on Prairie Hawk Drive, north of Plum Creek Parkway and south of Topeka Way. The proposed rezoning will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The project is located in Mayor Pro Tem Bracken's district.

Canyons Far South Annexation and Planned Development Plan:



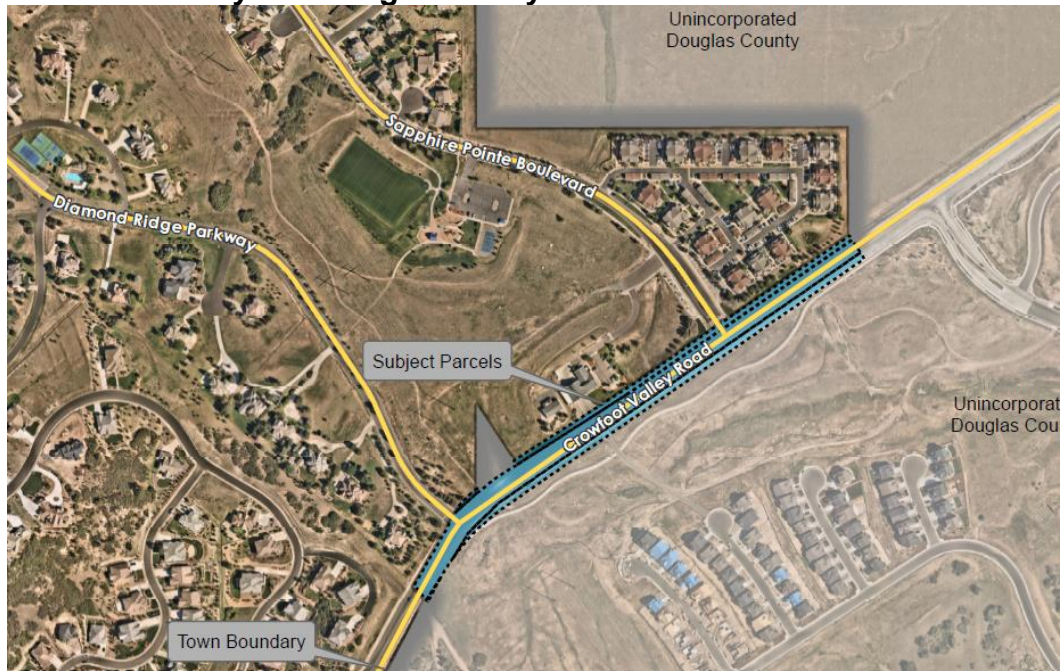
The property owner has submitted an annexation petition to annex a 409-acre site located south of Crowfoot Valley Road, east of Founders Parkway, north of Crimson Sky Drive and west of Castle Oaks Drive into the Town of Castle Rock. The owner has also submitted the Canyons Far South Planned Development Plan for zoning of the property for a new neighborhood consisting of 474 single-family homes and 60,000 sq. ft. of neighborhood commercial. The annexation and zoning will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The project is adjacent to Councilmember Cavey's district.

Chateau Valley Site Development Plan:



Highline Engineering & Surveying has submitted an application for the Chateau Valley Site Development Plan (SDP) proposing a 423-unit residential subdivision on 113 acres. The 423 units is composed of 297 single family detached homes and 63 paired homes (126 units). The property, which is within the Young American Planned Development (PD), is generally located east of Memmen Park, north of the Baldwin Park subdivision, and south of the Southridge Townhome subdivision. The Site Development Plan includes a total of 42.2 acres of open space. The SDP will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The property is located within Councilmember Brooks' district.

Crowfoot Valley Road Right of Way Annexation:



The Town of Castle Rock proposes to annex four parcels of Town-owned land that comprise a portion of the Crowfoot Valley Road right-of-way (ROW). The parcels total 4.4 acres and generally extend from Tower Road to approximately 500 feet east of the intersection of Crowfoot Valley Road and Sapphire Point Boulevard. The property will be zoned for public use and will remain ROW. The proposed annexation is part of a larger effort to bring Town-owned property into the Town's boundaries, and under Town law enforcement and code enforcement jurisdiction. The project will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The ROW parcels are adjacent to Councilmember Cavey's district.

Downtown Circle K Site Development Plan:



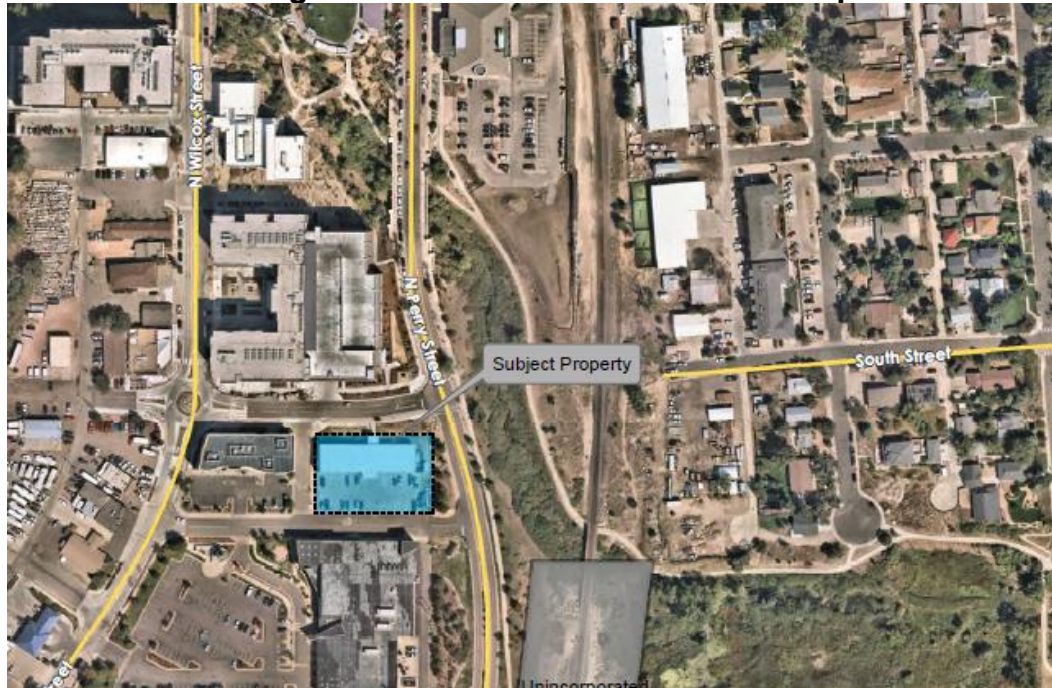
A new quasi-judicial application from Land Development Consultant, on behalf of Circle K, was submitted for a Site Development Plan for a new 3,700 sq. ft. convenience store building to replace the existing 1,838 sq. ft. building. No changes are proposed for the existing fueling station, which is to remain open during construction of the new convenience store building. The property is approximately 1.8 acres in size and located at 310 S. Wilcox St. in Downtown Castle Rock, south of the Castle Rock library. The SDP will require a public hearing before the Design Review Board for review and final decision. The project is located within Councilmember LaFleur's district.

Dunkin Donuts Site Development Plan:



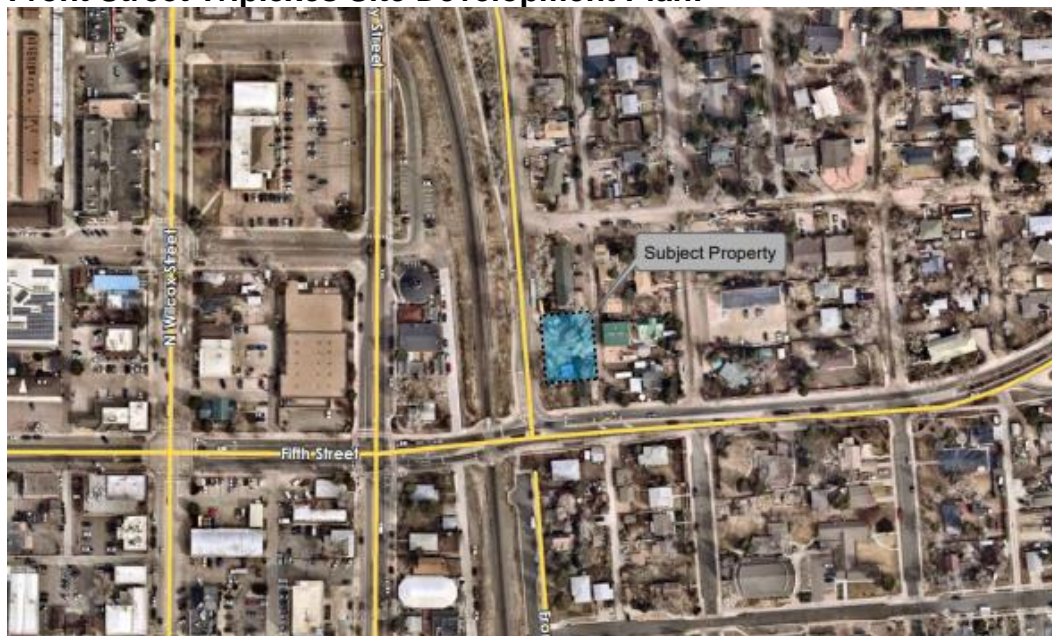
Ethos Architecture Group, on behalf of property owner Linden Partners, has submitted a Site Development Plan for a 2,340 square foot Dunkin Donuts with drive through. The proposed location is a 1.13-acre lot at the north east corner of Founders Pkwy. and Aloha Ct. within the Founders Marketplace development. The proposal will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The project is located within Councilmember Cavey's district.

Eternal Rock Evangelical Lutheran Church Site Development Plan Amendment:



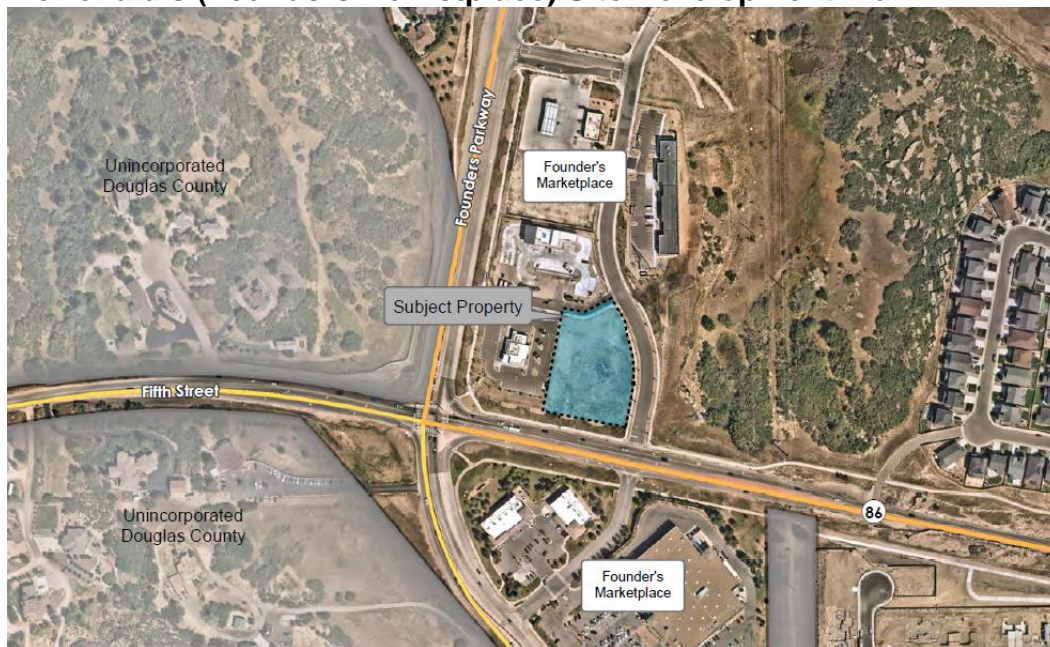
The property owner has submitted an application for a Site Development Plan known as Eternal Rock Evangelical Lutheran Church for approval of new landscaping, new signage, new storage facility, and to reconfigure the parking lot with the addition of a second entrance together with new curb/gutter/sidewalk along Phelps Street on the 0.63-acre property. The Downtown Site Development Plan will require a public hearing before the Design Review Board for review and final decision. The property is located in Councilmember LaFleur's district.

Front Street Triplexes Site Development Plan:



Total Development Corporation, on behalf of Front & Center, LLC, has submitted an application for a Site Development Plan for approval of two triplex residential buildings on a 0.273-acre lot on Front Street between Fifth and Sixth Streets. Each unit will be two bedrooms and 2.5 bathrooms and a total of 14 parking spaces will be provided on the property. The property falls within the Front Street Overlay District and the Craig & Gould neighborhood. The Site Development Plan will require a public hearing before Planning Commission who will provide a recommendation to Town Council who will review and decide on the project at a public hearing. The applicant has also submitted an application for architectural review by the Historic Preservation Board as the property is within the Craig & Gould neighborhood. A public hearing will be held before the Historic Preservation Board for review and approval of the project's architecture. The property is located in Councilmember LaFleur's district.

McDonald's (Founders Marketplace) Site Development Plan:



Strategic Land Solutions on behalf of McDonald's Corporation, has submitted a Site Development Plan application. The applicant is proposing a 5,140 square foot restaurant with a double drive through on a 1.38-acre lot located at the northwest corner of highway 86 and Aloha Drive. The Site Development Plan will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The project is located in Councilmember Cavey's district

Meadows – Affinity Senior Multi-Family Site Development Plan:



The property owner has submitted a Site Development Plan on a 7-acre site that is located south of Meadows Parkway, east of the movie theater and west of the Plum Creek Trailhead parking lot in the Meadows. The proposal is for an active adult, age-restricted development to include 174 units for lease at market rate. The 4-story building includes 1st floor parking. Amenities planned include a theater room, fitness center, game room, pub, golf simulator, indoor pool, workshop and community garden. The proposal requires public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The property is located in Mayor Pro Tem Bracken's district.

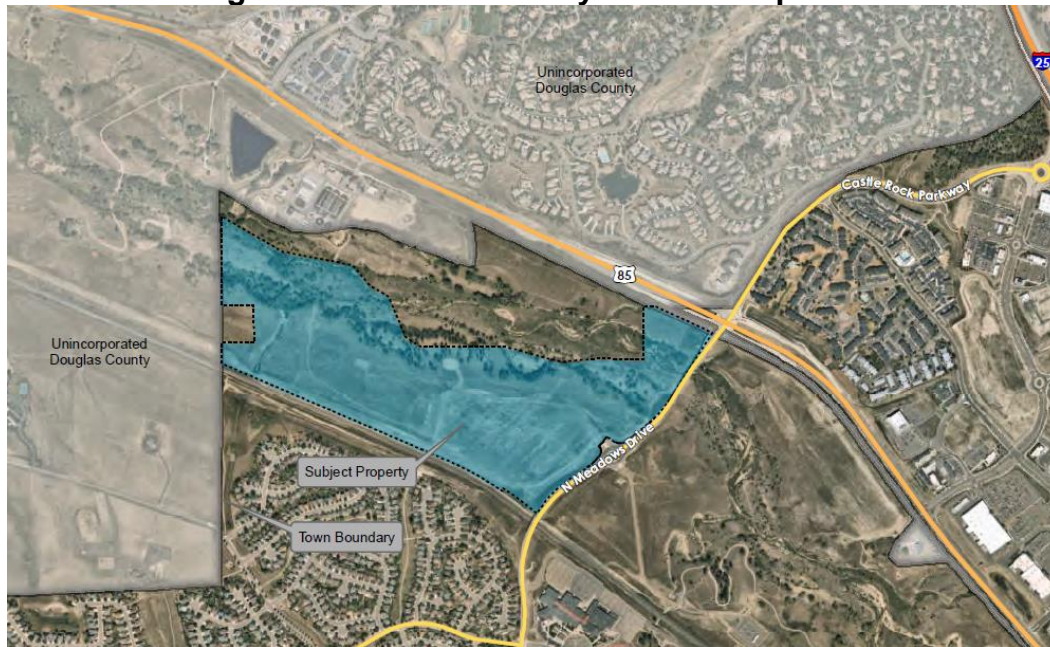
Meadows Filing 16 Site Development Plan Amendment:



A new quasi-judicial application was submitted from Castle Rock Development Co. for Meadows Filing 16, Parcel 6, for a residential Site Development Plan Amendment. The property is approximately 136 acres and is located east of Coachline Road, south of Red

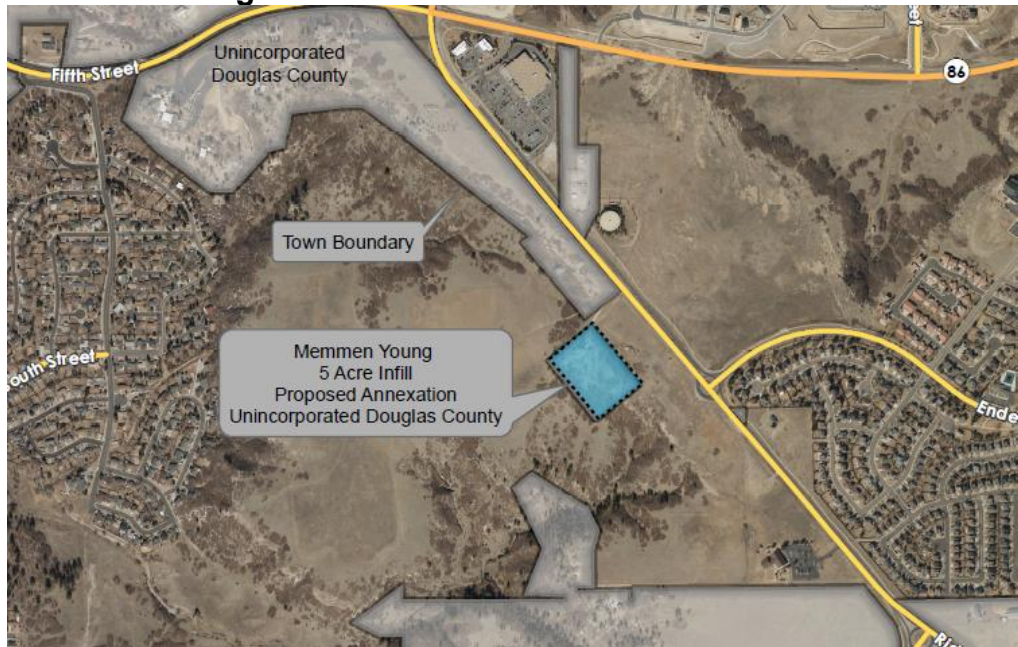
Hawk Ridge Golf Course, west and north of Town open space. The property has an approved site plan for 59 single family lots and proposed to dedicate 83 acres as public/private open space. The proposed Site Development Plan amendment proposes 77 lots for single family homes, 83 acres of Town owned open space, and an additional 30 acres of open space dedicated to the Meadows HOA. This SDP amendment also increases the buffer between the residential development and the adjacent golf course from the previously approved plan. The proposal requires public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. This property is located within Mayor Pro Tem Bracken's district.

Meadows Filing 19 Senior Multi-Family Site Development Plan:



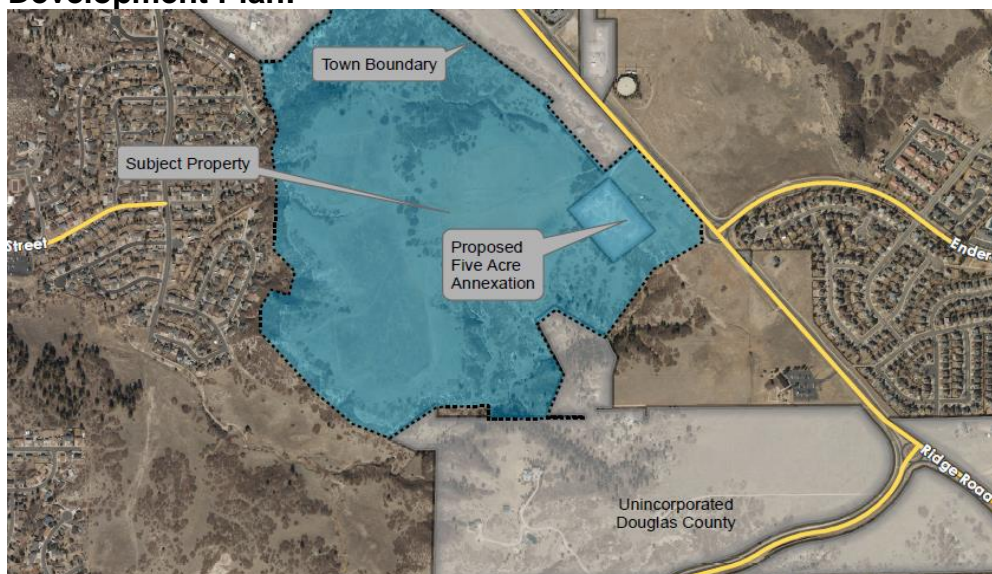
Ulysses Development has submitted a Site Development Plan for a 4-story 183,999 square foot senior housing apartment development that contains 200 units. The project is proposing an associated 271 parking spaces with the project and will contain a mixture of 1 and 2 bedroom units. The proposed location is a 5.5-acre site located west of Timber Mill Parkway and North Meadows Drive. The proposal requires public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The project is located in Councilmember Hollingshead's district.

Memmen Young Infill Annexation:



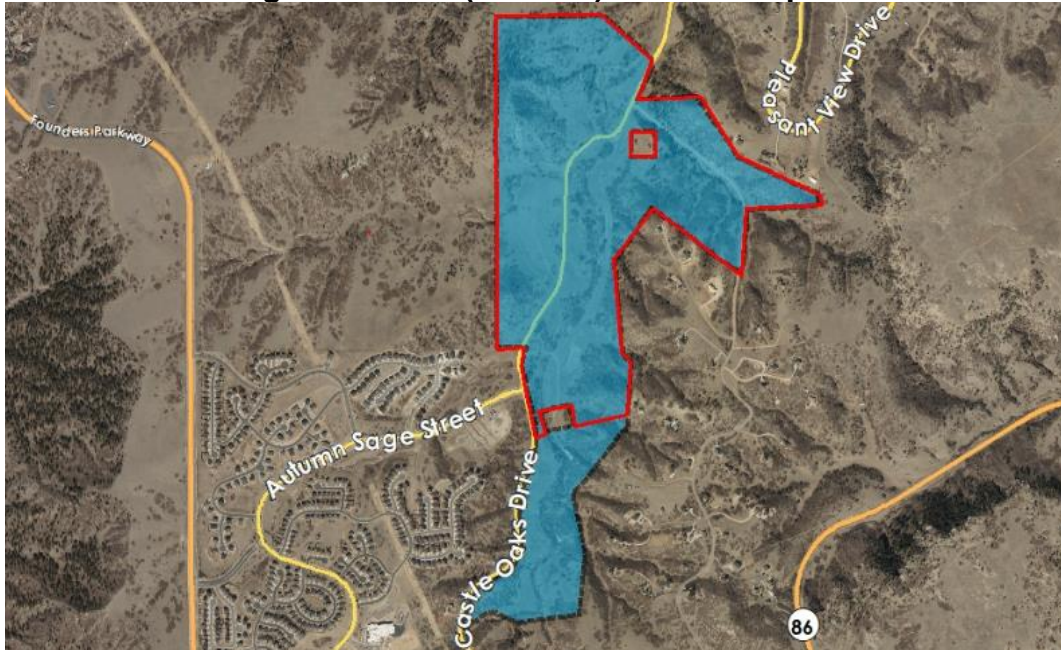
The property owner has submitted a Petition for Annexation for a five-acre parcel. The parcel is located south of Fifth Street, north of East Plum Creek Parkway, and west of Ridge Road. The 5-acre parcel is completely surrounded by the existing Memmen Young Infill Planned Development. A single family residence is currently on the property. The applicant will propose to incorporate the parcel into the Memmen Young Infill PD through the Major Amendment under review. The annexation of the parcel and the Memmen Young Infill PD Major Amendment would be considered concurrently during required public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The project is surrounded by Councilmember Brooks' district.

Memmen Young Infill Planned Development Plan and Founder's Vista Site Development Plan:



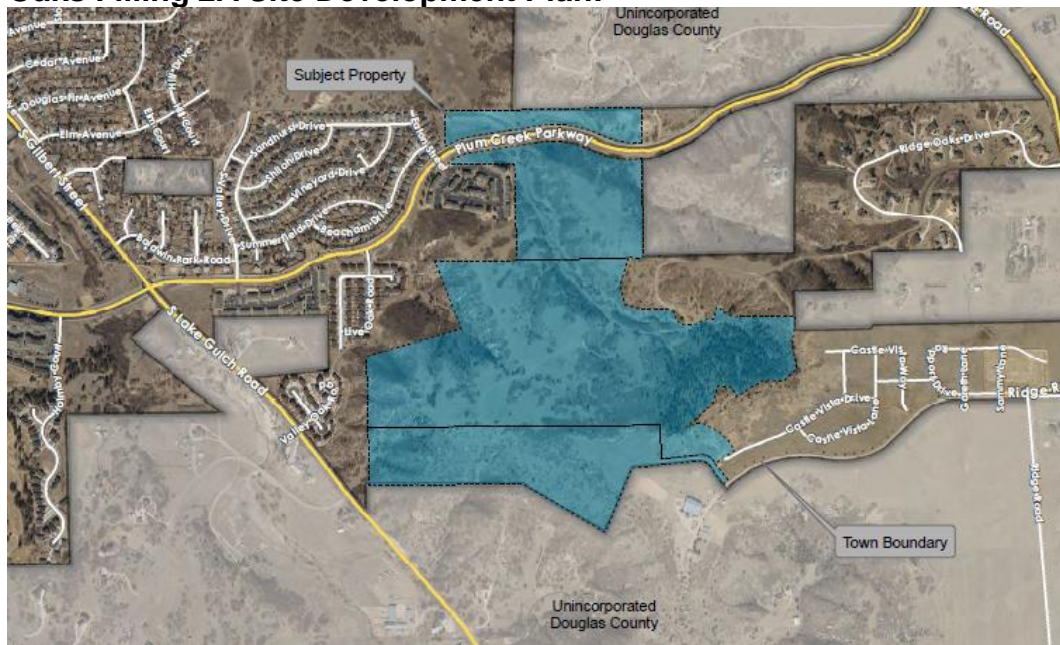
The property owner has submitted a Planned Development Plan and a Site Development Plan (SDP) for a 561-unit residential development within the Memmen Young Planned Development, also known as Founder's Vista. The Site Development Plan proposes 333 single-family homes and 228 paired homes. The proposed development is 180.5 acres in size of which 86.7 acres is proposed to be open space. The proposed Site Development Plan is contingent on the approval of the Memmen Young Infill Planned Development Major Amendment and the annexation of a 5-acre parcel. The Planned Development Plan Amendment will require public hearings before the Planning Commission for review and recommendation and the Town Council for review and final decision. If the Planned Development Plan Amendment is approved, then the Site Development Plan would move forward to public hearings before the Planning Commission for review and recommendation and the Town Council for review and final decision. The project is located in Councilmember Brooks' district.

North Basin Village at Terrain (Phase 2) Site Development Plan:



The property owner has submitted a Site Development Plan (SDP) for 105 single family homes on approximately 1,180 acres within the Terrain North Basin Phase 2 development. The proposed development also includes approximately 150 acres of Open Space dedication. The project is located along Castle Oaks Drive. The SDP will require public hearings before the Planning Commission for review and recommendation, and Town Council for review and final decision. The project is located within Councilmember Cavey's district.

Oaks Filling 2A Site Development Plan:



Henry Design Group, Inc., on behalf of the property owner, Castleview LLC, has submitted an application for a site development plan (SDP) for a residential neighborhood known as the Oaks of Castle Rock Filing 2A. The Oaks of Castle Rock Filing 2A is approximately 165 acres in size and generally located south of Plum Creek Parkway, east of Lake Gulch Rd., and west of N. Ridge Road. The SDP proposes 114 single-family homes, open space and a public trail system. The SDP will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The property is located in Councilmember Brooks' district.

Pinon Manor Apartment Planned Development Plan:



The property owner has submitted a rezoning application for 472, 481 and 498 S. Gilbert Street. The application proposes to consolidate three properties totally 3.25 acres into one zoning classification known as Pinon Manor Planned Development (PD). The rezoning would allow for the existing developed apartments to remain and to provide for the development of an adjacent parcel to contain 3 new apartment buildings with a total of 20 new dwellings. The PDP will require public hearings with the Planning Commission for review and recommendation and Town Council for review and final decision. The project is located within Councilmember Dietz's district.

Pioneer Ranch Annexation and Planned Development Plan:



The property owner has submitted an annexation petition to annex a 388-acre site located west of Founders Parkway and east of Front Street into the Town of Castle Rock. The applicant is proposing the Pioneer Ranch Planned Development Plan zoning to allow 1,123 dwelling units (a mix of single-family and multi-family), 78 acres of open space, and 39 acres dedicated for public uses, such as schools and parks. The annexation and planned development plan require public hearings before Planning Commission for review and recommendation and Town Council for review and final decision. The project is adjacent to Councilmember Cavey's district and Councilmember LaFleur's district.

Plum Creek Planned Development Amendment:



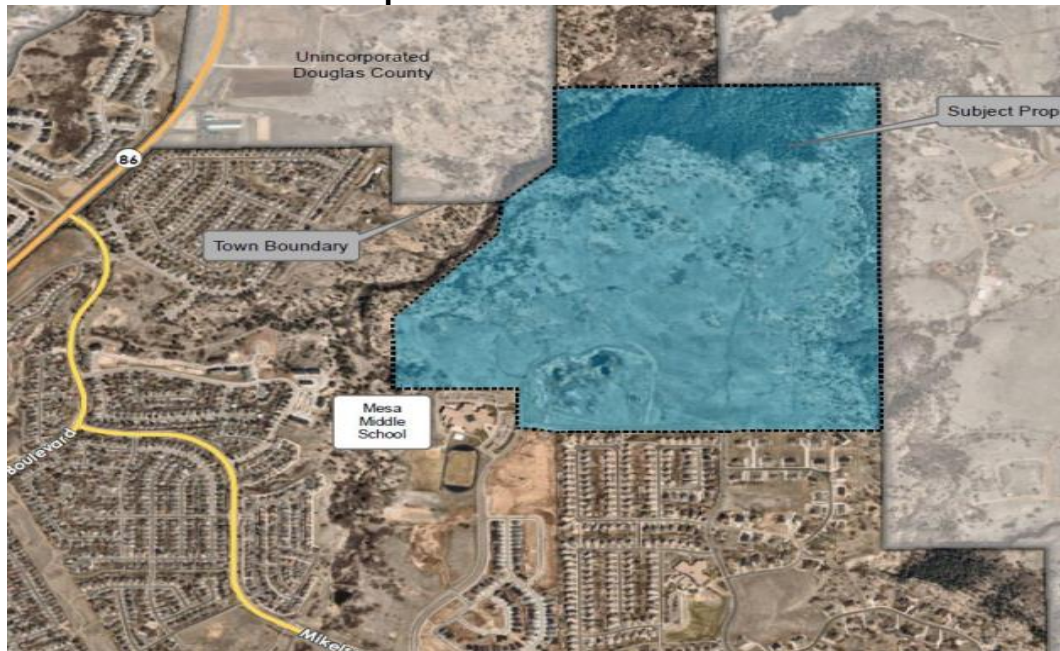
The Douglas Group, Inc. has submitted an application to amend a planned development plan to create 3 single family lots from a tract in Plum Creek Planned Development. The general location of the tract is directly west of the intersection of West Prestwick Way and Mount Royal Drive, in the southwest portion of Plum Creek Planned Development. The parcel size of Tract B is 1.5 acres. The applicant is proposing to create three lots ranging in size from 20,271 to 22,581 square feet. The proposal will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The project is located in Councilman Dietz's district.

Scileppi's/Slice Works Restaurant Downtown Site Development Plan:



The property owner, Scileppi Properties, LLC, has submitted an application for a Downtown Site Development Plan for an expansion to the Scileppi's/Slice Works restaurant. The expansion located on the east side of the existing building, where the existing parking lot is located, is approximately 6,000 square feet in size with 4,000 square feet of the expansion at ground level and 2,000 square feet within the basement. Seven on-site parking spaces will be located off the rear alley of the 0.278-acre property. The Downtown Site Development Plan will require a public hearing before the Design Review Board for review and final decision. The property is located in Councilmember LaFleur's district.

Sunset Point Site Development Plan:



The property owner, Fourth Investment USA, LLC, has submitted an application for a Site Development Plan (SDP) for a residential neighborhood known as Sunset Point, formally known as Bella Mesa North. Sunset Point is approximately 293 acres in size and generally located northeast of Mesa Middle School. The SDP proposes 525 single-family homes, dedicated open space and a trail system. The SDP will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. The property is located within Councilmember Brooks' district.

Wellspring and Castle Oaks Covenant Church Annexation:



The property owner has submitted a new quasi-judicial application for annexation of a parcel of land for Wellspring Community Center and Castle Oaks Covenant Church. The annexation petition is to annex approximately 2.07 acres located at 498 E. Wolfensberger Road, for future Wellspring and Castle Oaks Covenant Church facilities. After staff review, this annexation petition will be scheduled for Substantial Compliance and Eligibility hearings with Town Council. The annexation will require public hearings before the Planning Commission for review and recommendation and Town Council for review and final decision. This property is located adjacent to Mayor Pro Tem Bracken's district.

The Town's Development Activity map provides additional information on these quasi-judicial applications, as well as projects that are under administrative (non quasi-judicial) review. This map is available at: CRgov.com/developmentactivity.



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 8. **File #:** RES 2023-010

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Mark Marlowe, P.E., Director of Castle Rock Water
Matt Benak, P.E., Water Resources Manager
Lauren Moore, Water Resources Program Analyst

Resolution Approving the 2023 Spot Water Lease Agreement Between the Town of Castle Rock, Bow Mar Owners, Inc., and Bow Mar South, Inc. [Chatfield Reservoir, Douglas County]

Executive Summary

Castle Rock Water is seeking Town Council approval of a resolution (**Attachment A**) for a spot water lease with Bow Mar Owners, Inc. (Bow Mar). As the Town is not currently able to fully utilize excess storage supplies in Chatfield, Bow Mar wishes to lease some of the Town's surplus water stored in Chatfield Reservoir for use in their Substitute Water Supply Plan (SWSP). The leased water will be used by Bow Mar to replace inflow diversions made to the Patrick, Upper Tule, and Lower Tule Reservoirs from the South Platte River in 2023. While the Town currently owns 719 acre feet (AF) of storage in Chatfield, the Colorado Water Conservation Board (CWCB) allows for rental of the remaining permitted amount, for a total of 2,000 AF of storage. The Town currently has upwards of 317 AF of water stored in the reservoir with additional reusable supplies coming in each day.

If Council approves this lease, up to 115 AF of water would be released from the Town's Chatfield Reservoir storage into the main stem of the South Platte River. This release would occur between June 1, 2023 and October 31, 2023. The Town will assess a \$385 per AF price for the water, with a minimum lease of 20 AF. Initial payment of \$7,700 for the minimum 20 AF as well as a \$2,500 lease development fee will be required within 30 days from approval of this lease, with the remaining quantity to be paid upon subsequent releases. The potential revenue for this lease is up to \$46,775. The agreement will terminate at the end of 2023.

History of Past Town Council, Boards & Commissions, or Other Discussions

Castle Rock Water staff presented this item to the Castle Rock Water Commission at their meeting held on January 25, 2023, and the Castle Rock Water Commission voted unanimously (6 to 0) to recommend Town Council approval of the Resolution as presented.

Discussion

Castle Rock Water has a strategic goal to strive to maintain sustainable rates and fees, and demonstrate fiscal responsibility, accountability, and transparency. One of the tactics to achieve this goal is to maximize leasing opportunities for idle water rights. Over the past five years, the Town has generated over \$1.2M by leasing idle water rights to downstream users (see **Table 1** below). Until these water rights can be fully utilized by the Town, Staff will continue to seek out users that can put these rights to beneficial use.

Table 1. Revenue generated from leasing idle water rights to downstream users over the past five years.

2018	2019	2020	2021	2022
\$29,019.13	\$30,606.65	\$70,699.75	\$499,449.73	\$531,292.81

The Town currently owns 719 AF of storage space in Chatfield Reservoir and plans to eventually reach 2,000 AF of storage by 2031. As part of the option agreement the Town has with CWCB, the Town will purchase blocks of storage over the next 10 years. The Town recently purchased 129 AF in 2022, bringing the Town's total storage to 719 AF. The Town will then have two deferrals remaining until the full storage space is realized within the 10-year period.

As mentioned in the Executive Summary, the Town has been able to store excess supplies in Chatfield Reservoir over the past year, which have exceeded the purchased storage amounts (719 AF). Since the Town does not physically have a way to utilize these excess storage supplies at this point in time, CWCB has developed, and Town Council has approved, a lease agreement with the Town to lease the optioned storage space for \$50/AF. With a current annual lease rate for 1,281 AF (2,000 AF minus 719 AF), the Town will pay the State \$64,050 in 2023. The spot lease with Bow Mar would allow the Town to further maximize storage space within the reservoir and will help to cover the annual lease option of storage space with CWCB.

Budget Impact

If Council approves the agreement, Castle Rock Water would receive between \$10,200 and \$46,775 of additional revenue in 2023. The revenue will be deposited into the Water Resources Fund Capital Leases account 211-4375-393.70-00.

Staff Recommendation

Staff recommend approval of the resolution as presented.

Proposed Motion

"I move to approve the Resolution as introduced by title."

Alternative Motions

"I move to approve the resolution as introduced by title, with the following conditions: (list conditions)."

Item #: 8. File #: RES 2023-010

"I move to continue this item to the Town Council meeting on _____ date to allow additional time to (list information needed)."

Attachments

Attachment A: Resolution
Exhibit 1: Agreement

RESOLUTION NO. 2023-010

**A RESOLUTION APPROVING THE 2023 SPOT WATER LEASE
AGREEMENT BETWEEN THE TOWN OF CASTLE ROCK, BOW MAR
OWNERS, INC., AND BOW MAR SOUTH, INC.**

WHEREAS, the Town of Castle Rock (the "Town"), Bow Mar Owners, Inc., and Bow Mar South, Inc. (Bow Mar Owners, Inc., and Bow Mar South, Inc., being collectively referred to as "Bow Mar"), have agreed to the terms and conditions of the Spot Water Lease Agreement; and

WHEREAS, the Town owns certain water in the Chatfield Basin that is reusable and fully consumable after its first use for municipal purposes by the Town; and

WHEREAS, from time to time, a certain amount of this water is surplus to the needs and obligations of the Town ("Surplus Water"); and

WHEREAS, the Town anticipates it will have Surplus Water available from time to time in 2023; and

WHEREAS, Bow Mar desires to lease a certain portion of the Surplus Water from the Town in accordance with the terms and conditions of the Spot Water Lease Agreement for use in a Substitute Water Supply Plan as an additional source of water to replace depletions to the South Platte River from inflow diversions to the Patrick, Upper Tule, and Lower Tule Reservoirs.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF CASTLE ROCK, COLORADO AS FOLLOWS:

Section 1. Approval. The Spot Water Lease Agreement between the Town of Castle Rock and Bow Mar is hereby approved in substantially the same form attached as ***Exhibit 1***, with such technical changes, additions, modifications, or deletions as the Town Manager may approve upon consultation with the Town Attorney. The Mayor and other proper Town officials are hereby authorized to execute the Spot Water Lease Agreement by and on behalf of the Town.

PASSED, APPROVED AND ADOPTED this 7th day of February, 2023 by the Town Council of the Town of Castle Rock, Colorado, on first and final reading, by a vote of ____ for and ____ against.

ATTEST:

TOWN OF CASTLE ROCK

Lisa Anderson, Town Clerk

Jason Gray, Mayor

Approved as to form:

Approved as to content:

Michael J. Hyman, Town Attorney

Mark Marlowe, Director of Castle Rock Water

**TOWN OF CASTLE ROCK/ BOW MAR OWNERS, INC. & BOW MAR SOUTH, INC.
SPOT WATER LEASE AGREEMENT**

THIS SPOT WATER LEASE AGREEMENT (“Agreement”) is entered into _____, 2023 by and between the Town of Castle Rock, a home rule municipal corporation, acting by and through the Town the Castle Rock Water Enterprise (“Town”), as Lessor, whose address is 100 North Wilcox Street, Castle Rock, Colorado 80104 and Bow Mar Owners, Inc. (“Bow Mar Owners”) whose address is: 5380 Lakeshore Drive, Littleton, Colorado 80123, and Bow Mar South, Inc. (“Bow Mar South”) whose address is: c/o KC & Associates, LLC, P.O. Box 270487, Littleton, Colorado 80127 (collectively referred to as “Bow Mar”) as Lessees. Hereinafter, the Town, Bow Mar Owners and Bow Mar South may be collectively referred to as the Parties.

RECITALS

WHEREAS, the Town owns certain water in the Chatfield Basin that is reusable and fully consumable after its first use for municipal purposes by the Town. From time to time, a certain amount of this water is surplus to the needs and obligations of the Town (“Surplus Water”);

WHEREAS, the Town anticipates it will have Surplus Water available from time to time in 2023; and

WHEREAS, Bow Mar desires to lease a certain portion of the Surplus Water from the Town in accordance with the terms and conditions of this Agreement for use in a Substitute Water Supply Plan (“SWSP”) as an additional source of water to replace depletions to the South Platte River from inflow diversions to the Patrick, Upper Tule, and Lower Tule Reservoirs.

AGREEMENT

NOW THEREFORE, in consideration of the mutual agreements contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Town and the Bow Mar agree as follows:

1. Water Rights Lease. The Town hereby leases to Bow Mar a total of 115 acre-feet (AF) annually of the Surplus Water (“Leased Spot Water”), which will be made available from June 1, 2023 through October 31, 2023, with deliveries not to exceed 2 AF per day.

2. Deliveries.

A. Amount. The Town shall provide Bow Mar each day with flow measurement data at the discharge point for the Leased Spot Water for the preceding day. Notwithstanding the notice requirements below, the Town may provide flow measurement data by phone, fax, email or other suitable means to assure effective delivery management. The Town shall deliver the Leased Spot Water to Bow Mar on the following monthly schedule: 30.60 AF in June, 31.31 AF in July, 26.04 AF in August, 15.30 AF in September, and 6.51 AF in October. Actual day-to-day deliveries of Leased Spot Water to the Bow Mar will vary and are in the Town’s sole discretion, provided that the Town guarantees a minimum of 0.01 AF will be available daily. Bow Mar may verify at any time the accuracy of the flow measurement device used by the Town to measure the Leased Spot Water at the discharge point.

B. Location. Release from Chatfield Reservoir into the main stem of the South Platte River.

C. Acceptance of Deliveries. Subject to the non-refundable payment obligation below, Bow Mar may either accept or decline delivery of any portion of the Leased Spot Water the Town delivers to Chatfield Reservoir in accordance with this Agreement. Acceptance of delivery will be confirmed only by inclusion of Leased Spot Water in substitute water supply plan or augmentation plan accounting described below.

D. Accounting. Bow Mar must provide the Town with a weekly accounting of the water beginning on the 1st of each month it uses this supply as a replacement source. Bow Mar must supply the Town its augmentation accounting on a monthly basis, no later than the fifteenth day of the month following the month of accounting, or on a more frequent basis and at the times required to report to the water commissioner or division engineer as required by the Division of Water Resources.

3. Fees and Costs.

A. Lease Rate. Bow Mar shall pay to the Town **\$7,700.00** for the minimum lease of twenty (20) AF of Leased Spot Water. Additional leased quantities shall be paid at the rate of \$385 per acre-foot. Payment for the minimum lease quantity shall be made within ten days following mutual execution of this Agreement and is non-refundable. Payment for other quantities leased shall be made thirty (30) days following the issuance of an invoice from Castle Rock.

B. Lease Development Fee. Bow Mar will be responsible for a \$2,500 lease development fee to cover the Town staff time and costs to develop the Spot Water Lease. The Lease Development Fee (\$2,500) is due to the Town at the time of execution of this Agreement, which is not effective until such payment is made.

4. Quality of Leased Water. Leased Water shall be delivered “as is,” but shall be of a quality that meets all standards and effluent limitations specified in Colorado Discharge Permit System Permit No. CO-0038547, as amended, or in any other discharge permit issued by the Water Quality Control Division or by the U.S. EPA authorizing discharges from the Plum Creek Water Reclamation Authority facility, such quality to be measured at the authorized discharge point(s) specified in any such discharge permit. By entering into this Agreement and utilization of the Leased Spot Water, Bow Mar acknowledges that water meeting the requirements of this paragraph is suitable for replacement purposes and will accept such water as meeting the terms of this Agreement.

5. Lease Term. The term of this Agreement shall commence on its execution and expire December 31, 2023. By mutual written agreement of the Parties, this Lease Agreement may be renewed on the same or on different terms.

6. Lessees’ Obligations. Bow Mar’s obligations under this Agreement are limited to making the payments as described in paragraph 3 above.

7. Notice. All notices which may be required to be given by either Party to the other shall be made in writing and either hand delivered or sent by first class United States mail, postage prepaid, addressed as follows, or by facsimile, or via electronic means:

If to Town: Town of Castle Rock (Castle Rock Water)
Attn: Water Resources Manager (Matt Benak)
175 Kellogg Court
Castle Rock, CO 80109

with copy to: Town of Castle Rock
Attn: Town Attorney (Mike Hyman)
100 North Wilcox Street
Castle Rock, CO 80104

If to Lessees: Bow Mar Owners, Inc.
Attn: President (Ma Williams)
5380 Lakeshore Drive
Littleton, Colorado 80123

Bow Mar South, Inc.
Attn: Kevin Lessmann
c/o KC & Associates, LLC
P.O. Box 270487
Littleton, CO 80127

9. Assignment. Lessees may not assign its rights hereunder without the prior written consent of Lessor, which may be withheld in Lessor's sole discretion. In the event that Lessor consents to an assignment of Lessees' rights hereunder, the assignee shall execute an assumption agreement pursuant to which it shall assume Lessees' obligations hereunder. The terms of such assumption agreement must be approved by Lessor.

10. Entire Agreement. This Agreement represents the entire Agreement between the Parties on the matters set forth herein and supersedes all prior negotiations, representations or agreements respecting said matters whether written or oral.

11. Binding Effect. The execution of the Agreement by the Town as lessor and Bow Mar as lessees constitutes the execution of a binding lease agreement by the Parties on the terms and conditions contained herein and may not be modified except in writing signed by both Parties. This Lease shall be binding on the Parties' respective successors and assigns.

12. Controlling Law. This Lease Agreement shall be governed under, and construed pursuant to the laws of the State of Colorado.

(signature page to follow)

LESSOR:

ATTEST:

TOWN OF CASTLE ROCK

Lisa Anderson, Town Clerk

Jason Gray, Mayor

Approved as to form:

Approved as to content:

Michael J. Hyman, Town Attorney

Mark Marlowe, Dir. of Castle Rock Water

STATE OF COLORADO)
) ss.
COUNTY OF DOUGLAS)

The foregoing instrument as acknowledged before me this ___ day of _____, 2023 by
Lisa Anderson as Town Clerk and Jason Gray as Mayor of the Town of Castle Rock, Colorado.

Witness my official hand and seal.
My commission expires:

Notary Public

LESSEE:

Bow Mar Owners, Inc.

By: _____
Ma Williams, President

STATE OF COLORADO)
) ss.
COUNTY OF ARAPAHOE)

The foregoing instrument as acknowledged before me this ___ day of _____, 2023 by
Ma Williams as President of Bow Mar Owners, Inc.

Witness my official hand and seal.
My commission expires:

Notary Public

#S6WRALIF0D2ZIXv1

LESSEE:

Bow Mar South, Inc.

By: _____
Kevin Lessmann

STATE OF COLORADO)
) ss.
COUNTY OF ARAPAHOE)

The foregoing instrument as acknowledged before me this ____ day of _____, 2023 by
Kevin Lessmann of Bow Mar South, Inc.

Witness my official hand and seal.
My commission expires:

Notary Public



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 9. **File #:** MIN 2023-004

To: Honorable Mayor and Members of Town Council

From: Lisa Anderson, Town Clerk

Minutes: January 17, 2023 Town Council Meeting

Executive Summary

Attached are minutes from the January 17, 2023 Town Council meeting for your review and approval.



Town Council Meeting Minutes - Draft

Mayor Jason Gray
Mayor Pro Tem Kevin Bracken
Councilmember Ryan Hollingshead
Councilmember Laura Cavey
Councilmember Desiree Lefleur
Councilmember Max Brooks
Councilmember Tim Dietz

Tuesday, January 17, 2023

6:00 PM

**Town Hall Council Chambers
100 North Wilcox Street
Castle Rock, CO 80104
Phone in: 720-650-7664
Meeting code: 2497 923 6029
www.CRgov.com/CouncilMeeting**

This meeting is open to the public and will be held in a virtual format in accordance with the Town Council Electronic Participation, Connected, and Hybrid Meeting Policy. Public may choose to attend in person at Town Hall, or electronically or by phone if preferred. This meeting will be hosted online and can be accessed at www.CRgov.com/CouncilMeeting, or phone in by calling 720-650-7664, meeting code 2497 923 6029 (if prompted for a password enter "Jan17Council"). All Town Council Meetings are also streamed online in real time at www.CRgov.com/WatchCouncil, and are broadcast for Comcast Cable subscribers on Channel 22 (please note there is a delay to the broadcast).

All times indicated on the agenda are approximate. Remote participants please visit www.CRgov.com/CouncilComments to sign up to speak to an item, and for related instructions. Public Comments may also be submitted in writing online by 1:00 p.m. January 17, 2023, to be included in the public record.

COUNCIL DINNER & INFORMAL DISCUSSION

INVOCATION - Larry Munsinger, Calvary Castle Rock

CALL TO ORDER / ROLL CALL

Present: 6 - Mayor Gray, Mayor Pro Tem Bracken, Councilmember Cavey, Councilmember LaFleur, Councilmember Brooks, Councilmember Dietz

Not Present: 1 - Councilmember Hollingshead

PLEDGE OF ALLEGIANCE

COUNCIL COMMENTS

Mayor Gray and Councilmembers acknowledged the pending snowstorm and advised extra caution and safety.

Councilmembers Cavey and LaFleur addressed the recent traffic fatalities within our community and offered their condolences.

UNSCHEDULED PUBLIC APPEARANCES

No items presented to Council.

TOWN MANAGER'S REPORT

Kristin Read, Assistant Town Manager, presided over the meeting introducing Deputy District Attorney of the 18th Judicial District, Jacob Kremin, who presented information on human trafficking.

[ID 2023-007](#)**Overview of Snow and Ice Management**

Dan Sailer, Director of Public Works, presented the Snow and Ice Control program overview to Council.

Councilmembers questioned the process to direct citizen complaints regarding snow removal efforts to the Town. Sailer suggested directing citizens to our website for contact information and encouraged citizens to report specific issues or the need for service during snow events.

Councilmember LaFleur asked if the Town was fully staffed in regard to snowplow operators and Sailer responded that all CDL positions were currently filled, noting as well that other Town departments also provide resources for snow removal efforts. LaFleur also cited the Denver 'Snow Angel' program which matches volunteers to assist elderly citizens with snow removal and questioned if the Town had interest in looking into a similar program. Assistant Town Manager, Read, noted a similar service available in Castle Rock provided by Aging Resources of Douglas County.

[ID 2023-008](#)**Update: Calendar Reminders**[ID 2023-009](#)**Update: Monthly Department Reports**[ID 2023-010](#)**Update: Quasi-Judicial Projects**[ID 2023-011](#)**Development Services Project Updates****TOWN ATTORNEY'S REPORT**

No report.

ACCEPTANCE OF AGENDA

Moved by Mayor Pro Tem Bracken, seconded by Councilmember Cavey, to Approve the Agenda as presented. The motion passed by a vote of:

Yes: 6 - Gray, Bracken, Cavey, LaFleur, Brooks, Dietz

Not Present: 1 - Hollingshead

CONSENT CALENDAR

Moved by Mayor Pro Tem Bracken, seconded by Councilmember Brooks, to Approve the Consent Calendar as presented. The motion passed by a vote of:

Yes: 6 - Gray, Bracken, Cavey, LaFleur, Brooks, Dietz

Not Present: 1 - Hollingshead

- [RES 2023-002](#) **Resolution Waiving the Formal Written Sealed Bid Requirement on the Basis of Sole Source and Approving an Equipment and Services Acquisition Agreement with Academy Sports Turf, Inc., for the Matney Park Athletic Field Synthetic Turf Replacement Project** *[Location: 5790 Lantern Circle, Castle Rock, CO 80104]*
- [RES 2023-003](#) **Resolution Waiving the Formal Written Bidding Requirement on the Basis of Sole Source and Approving an Equipment and Services Acquisition Agreement with Pall Corporation for the Plum Creek Water Purification Facility Pall Membrane Filter Module Replacement Project** *[Entire Castle Rock Water Service Area]*
- [RES 2023-004](#) **Resolution Waiving the Formal Written Sealed Bid Requirement on the Basis of Sole Source and Approving an Equipment and Services Acquisition Agreement with PSI Water Technologies, Inc., for the Tank 17A and Tank 17B Monoclor Residual Control System Project** *[Tanks 17A and 17B in Castle Rock, CO]*
- [RES 2023-005](#) **Resolution Approving a Construction Contract with 53 Corporation, LLC, for the East Plum Creek Reach 6 Stabilization Project** *[Adjacent to Plum Creek Water Reclamation Facility]*
- [MIN 2023-003](#) **Minutes: January 3, 2023 Town Council Meeting**

QUASI JUDICIAL HEARINGS

- [RES 2023-006](#) **Resolution Approving a Site Development Plan for a Mixed-Use, Multi-Family Development in the Meadows Town Center** *[3.93 Acres Mixed Use/Multifamily - Located Northeast, Southeast and Southwest of the Intersection of Mercantile and Future Streets in the Meadows Town Center]*
- Tara Vargish, Director of Development Services, introduced proposal as a mixed-use development to include multifamily residential townhomes, apartments and commercial use to include retail and restaurant.
- Stephanie Fuentes, of The Garrett Companies, presented to Council the architectural elements and amenities of the plan.
- Councilmember Lafleur asked for confirmation that the town homes and apartments were for rent. Councilmember Cavey and Mayor Pro Tem Bracken questioned parking space allocations for the residential units as well as parking concerns for retail business.
- No public comment received.
- Mayor Gray spoke in favor of the proposed site development plan as presented, clarifying that parking requirements were previously approved and the current applicant is meeting the requirements as defined.

Councilmember Brooks encouraged future discussion related to the parking issue in this area. Councilmembers concurred the issue warranted further discussion moving forward.

Moved by Councilmember Brooks, seconded by Councilmember LaFleur, to Approve Quasi-Judicial Resolution 2023-006 as presented. The motion passed by a vote of:

Yes: 6 - Gray, Bracken, Cavey, LaFleur, Brooks, Dietz

Not Present: 1 - Hollingshead

ADVERTISED PUBLIC HEARINGS & DISCUSSION ACTION ITEMS

[RES 2023-007](#) Resolution Approving the Agreement Between ACM Dawson Trails VIII JV LLC and the Town of Castle Rock Regarding the Marketability of Title to Certain Water Rights *[Dawson Trails]*

Mark Marlowe, Director Castle Rock Water, presented the Town's water dedication requirements for non-renewable ground water rights. The developer, Dawson Trails, has decided to move forward with a quiet title action, essentially a decree that identifies the Town has a marketable title to the water rights in lieu of a title opinion, which the Town will accept.

Moved by Councilmember Dietz, seconded by Councilmember LaFleur, to Approve Resolution 2023-007 as presented. The motion passed by a vote of:

Yes: 6 - Gray, Bracken, Cavey, LaFleur, Brooks, Dietz

Not Present: 1 - Hollingshead

[RES 2023-008](#) Resolution Approving a Service Agreement with Anderson Consulting Engineers, Inc., for the Mitchell Gulch Retention Pond Improvements Project *[Mitchell Gulch just north of Mikelson Boulevard]*

Marlowe presented item to Council. Project involves an old stock pond, which by Colorado law required the Town to acquire the related water rights. The Town will evaluate utilizing this pond as a stormwater retention pond. Recreational opportunities, as well and preservation of habitat, will also be considered by the Town.

Council endorsed the project and was appreciative of the efforts to preserve it for the surrounding community.

No public comment received.

Moved by Councilmember Brooks, seconded by Councilmember LaFleur, to Approve Resolution 2023-008 as presented. The motion passed by a vote of:

Yes: 6 - Gray, Bracken, Cavey, LaFleur, Brooks, Dietz

Not Present: 1 - Hollingshead

[RES 2023-009](#) Resolution Approving a Service Agreement with Olsson, Inc., for the

East Plum Creek/Sellers Gulch Confluence Project

Marlowe continued introduction of the project, identified to be within the downtown corridor where Sellers Gulch and East Plum Creek meet. At issue is the maintenance of the water level to preserve the channel vegetation and habitat. Project also provides the opportunity to implement the Confluence Master Plan in regard to amenities that would add to the downtown experience.

Councilmember LaFleur inquired about the impact on beavers and dams they create. Marlowe confirmed there would be an interruption most likely during development, additionally speaking to the Preble's Mouse habitat concerns.

Councilmember Cavey asked for confirmation if the project encompasses DDA suggestions. Marlowe confirmed that stakeholders will be involved to develop a vision of what the community would like to see.

Mayor Gray emphasized this is a big project and everyone is interested in developing this into a great downtown experience for the community.

Moved by Councilmember LaFleur, seconded by Councilmember Cavey, to Approve Resolution 2023-009 as presented. The motion passed by a vote of:

Yes: 6 - Gray, Bracken, Cavey, LaFleur, Brooks, Dietz

Not Present: 1 - Hollingshead

ADDITIONAL UNSCHEDULED PUBLIC APPEARANCES**ADJOURN**

Meeting adjourned at 7:41 pm.

Moved by Councilmember LaFleur, seconded by Councilmember Cavey, to Adjourn. The motion passed by a vote of:

Yes: 6 - Gray, Bracken, Cavey, LaFleur, Brooks, Dietz

Not Present: 1 - Hollingshead

Submitted by:

Robbie Schonher, Assistant Town Clerk



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 10. **File #:** DIR 2023-004

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Daniel Sailer, Public Works Director

Discussion/Direction: Neighborhood Traffic Calming Program Amendments

Status Summary

Staff have compiled information on the current status of the Neighborhood Traffic Calming Program (Program) (**Attachment A**), a neighborhood resident driven program that has been in place since 2007 with one revision in 2015. The purpose of the Program is to provide residents and staff a consistent, feasible, and manageable procedure for addressing neighborhood traffic concerns on residential streets where documented speeding problems or other traffic factors exist that may adversely affect the overall residential quality of life. A comprehensive review of all aspects of the current program is provided (**Attachment B**) the following is a summary of this review.

In 2012 the Town's Transportation Design Criteria Manual was updated to require developers to install traffic calming treatments on residential streets when a certain length of uninterrupted travel (no significant curves or intersection control) exists. This has resulted in several installations of traffic calming devices shown on the attached map (**Attachment C**).

The Neighborhood Traffic Calming Program is considered a quality of life program by staff. While concern about safety is consistently cited as the reason to construct traffic calming treatments, it is important to start with how we distinguish the two. There is no question that vehicle speeds can pose a safety risk. The severity of vehicle speeds on injury severity when a cyclist or pedestrian is involved has been well studied nationally. Severity of incidents in these cases dramatically increases with higher speeds (typically above 20 mph see Figure 1). Ninety percent of pedestrians survive being hit by cars traveling at 20 miles per hour. At 30 mph, that drops to 50%. In reality, the practicality of designing streets to force all drivers to travel at this speed, or lower, is cost prohibitive. Streets that are designed to handle higher speeds that are posted appropriately, and have appropriate sight lines are considered to be a safe driving environment. Additionally, traffic incidents occur as the result of three general reasons: 1) Driver behavior, 2) Vehicle condition, and 3) Roadway environment. Staff utilizes statistical analysis to help us understand if the roadway environment is a potential contributing factor. This is how staff technically defines a safe driving environment. High Safety is a value we know the community desires to maximize in all of our programs. The Town has other programs that address crash and capacity issues that affect safety. If staff is made aware or identifies a safety issue that can be addressed with physical improvements, a targeted project is created and implemented with other community priorities.

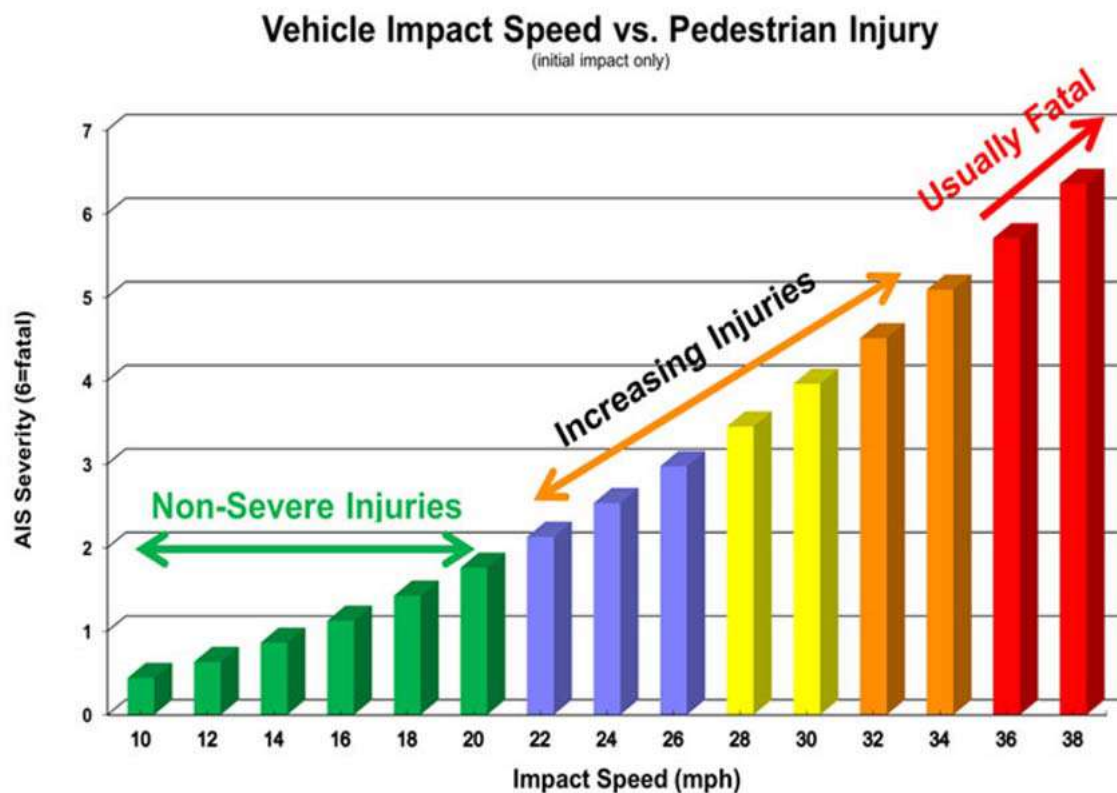


Figure 1. FHWA chart of vehicle impact speed verse pedestrian injuries

When the roadway environment has an appropriate speed limit posted, as required by State law to be determined by an engineering evaluation if differing from the Model Traffic Code, and incident history does not indicate that the roadway environment is a contributing factor, then concerns about speed fall into a quality of life concern. Safety risks still exist in this case, but the probability of incidents occurring are lower. The existing Neighborhood Traffic Calming Program is built on this premise. Its goal is to assist neighborhoods that have a shared perspective on what their comfort level with vehicle speeds are.

The map provided shows the streets that have had traffic calming treatments installed since the program's inception in 2007. We receive several inquiries about traffic calming, 10 in the last six months. An average of five petitions per year have been received in the Program over the last seven years, which has resulted in two infrastructure projects. In one other instance, a petition case met the threshold criteria and then through an education and outreach effort, speeds reduced, so the project was deemed complete and no further action was needed. For both infrastructure projects, speeding 5 MPH or more over the speed limit by a significant majority of drivers has been reduced by 7 to 14 MPH and to within the posted speed limit. The other petitioned streets did not meet the speed or traffic volume threshold for the Program. In all instances where vertical treatments were installed, speed reduction of the driver population was achieved.

Staff reviewed other similar jurisdiction programs. Compared to other programs, the Town's is currently the most accessible to residents for mitigation measures of any of the programs reviewed. From our review of other communities, our conclusion is Castle Rock's current program is working well and effective at slowing traffic when projects are implemented. Staff recommends keeping the current Program in place, and expand the program to include:

Item #: 10. File #: DIR 2023-004

Modify the approval process for collectors with no direct driveway access to be determined by Town Council with input from the broader community.

Allow for neighborhoods that don't meet the program criteria to privately fund improvements only if the surrounding neighborhood supports their installation as defined in the current program. Since staff review would be needed for all privately funded projects, it's recommended that our current private development review fees be considered to apply to each application.

History of Past Town Council, Boards & Commissions, or Other Discussions

There will be a presentation on February 6, 2023 to the Public Works Commission to obtain the Commission's recommendation to Town Council on this matter. An update on their recommendation will be provided at the Town Council meeting.

Attachments

Attachments:

A- Current Town Council Approved Program

B- Comprehensive review of Program

- a. Program Purpose
- b. Why this is not a "Safety" Program
- c. Features of the Current Program
- d. Request and Budget Status
- e. Current Request Needs
- f. Other Jurisdiction Programs
- g. Project Performance
- h. Recommendations

C- Map of Traffic Calming Devices



Revised Neighborhood Traffic Calming Program

Adopted by Town Council on: October 20, 2015

Resolution #: 2015- 85

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1.0 INTRODUCTION

In response to concerns about vehicle speeds and cut through traffic on residential streets, the Town of Castle Rock has developed this Neighborhood Traffic Calming Program. This guide outlines the Program, its objectives and goals, and the process that should be followed when working with a neighborhood on the development of a traffic calming plan. Also included are examples of "tools" that may be used on the streets as part of a traffic calming project.

This program is only for traffic calming issues within existing neighborhoods and on existing streets. Information regarding traffic calming devices that are being installed as part of a new development is included within the Public Works Department's "Transportation Design Criteria Manual".

2.0 PROGRAM MISSION STATEMENT AND OBJECTIVES

The Mission of the Town of Castle Rock Neighborhood Traffic Calming Program is:

To provide a consistent, feasible, and manageable procedure for addressing neighborhood traffic concerns on residential streets where documented speeding problems or other traffic factors exist that may adversely affect the overall residential quality of life.

The objectives of the Neighborhood Traffic Calming Program (NTCP) are to:

- To provide for a "neighborhood driven" process to address concerns about cut through traffic and speeds on residential streets.
- Improve neighborhood livability by reducing the impact of vehicular traffic on residential streets.
- Encourage appropriate driver behavior and reduce the number of vehicles exceeding the posted speed limit on residential streets.

The objectives of this policy are to:

- Ensure a consistent approach to the initiation and approval of a traffic calming study and development of a traffic calming project.
- Define the existing traffic conditions on the street or within the neighborhood that warrant the initiation of a traffic calming study and project.
- Integrate aspects of education, enforcement and engineering in the development of traffic calming projects.
- Encourage citizen involvement in developing solutions to neighborhood traffic concerns.
- Effectively balance the goal of reducing traffic impacts with the needs of the Town's emergency response personnel.
- Efficiently allocate the use of Town funding and resources.

3.0 POLICIES

The following policies provide detail on different aspects of the Neighborhood Traffic Calming Program.

3.1 Compatibility with Existing Policies

Neighborhood traffic projects should be implemented in a manner that is consistent with current Town plans, policies, and practices. Town staff will follow the warrants and placement guidelines contained in the Manual on Uniform Traffic Control Devices (MUTCD) when considering the installation of any new traffic signs and markings. Implementation of measures will also adhere to the American Association of State Highway and Transportation Officials (AASHTO) policy manuals and Town engineering standards.

3.2 Comprehensive Approach

Depending upon the type of problems being addressed and the street configuration within a neighborhood, the traffic calming study may often need to include adjacent streets to the one that is the object of the neighborhood complaint. This must be done to ensure that the solution to the traffic problems on one street isn't simply shifting the problem to an adjacent one.

When reviewing neighborhood traffic issues and developing mitigation plans, a team of Town staff members (Staff Team) led by the Public Works Department will determine where on the street in question the speed and volume data will be collected. The Staff Team will also define the project study area using logical boundaries, such as the roadway system (collectors, arterials, etc.), drainage-ways, or the neighborhood boundaries.

The Staff Team that defines this area will be made up of members from the Fire, Police, Community Relations, Public Works, and Development Services departments. If needed, members of other departments may be asked to join the team. The Staff Team will also identify the streets that are eligible to receive physical street treatments.

The focus of this program is to address concerns that residents have about the cut through volume and speed of traffic on their streets. It is not intended to address access, noise, congestion or other street related issues. The program is also not meant to be used for intersection issues or safety problems. All of these types of concerns and problems will be addressed through the Town's normal operational efforts and its capital improvement program.

3.3 Emergency Response

It is important that any physical device or treatment installed as part of a traffic calming project not interfere with emergency vehicle access or unreasonably reduce response times. To achieve this goal, example devices in the "traffic calming toolbox" that negatively impact emergency response times have been identified. The Town of Castle Rock's Fire and Police departments will be involved in the design of each project and their input will be considered before any plan is finalized or approved. The local emergency responders (Fire and Police departments) will be invited to each neighborhood meeting when implementation of any physical devices is being considered so that they may explain to the neighborhood their concerns about possible impacts on emergency response times.

3.4 Eligible Streets

Streets are typically grouped into three classifications:

- arterials
- collectors
- residential streets, also referred to as local streets

These classifications relate to the volume and nature of traffic using the streets and to the function that they have been designed to provide. For example, residential streets serve neighborhoods and have the lowest posted speed limits and the highest number of driveways.

Collector streets are generally used to "collect" traffic from residential streets and take it to nearby arterials. Collectors are also used within commercial areas. Collector streets will generally have more lanes, be wider and have a higher posted speed limit than residential streets.

Arterial streets are designed to move large amounts of traffic at higher speeds. They will generally be at least four lanes wide, have only a limited number of driveways to adjacent properties and have a higher posted speed limit than other types of streets. They often form the boundaries of neighborhoods, but rarely have any house frontage. Arterial and collector roadways are often further categorized as being either a "minor or major" facility.

The emergency responders generally refer to this classification system when they select their emergency response routes. Physical traffic calming devices that may cause delay to emergency vehicles ("delay inducing" devices) such as traffic circles and speed humps will not be considered for use on roadways that have been identified as critical emergency response routes without the approval of the Police and Fire departments. These streets would still be eligible for other traffic calming elements, such as "neck-downs", radar feedback signs, and the educational programs. As a clarification, while the roundabouts that have been installed throughout town are similar to traffic circles, they have been installed to control traffic, just as a traffic signal or stop sign does. They have not been installed to control speeding.

This traffic calming program is intended to address excessive speeding and cut through traffic on local residential streets. Traffic calming projects on collector roadways will only be considered when at least 50% of the platted lots fronting the collector street are residential, either a school or public facility that generates high pedestrian traffic is present, and the collector street must have a posted speed limit of 30 mph or less. Arterial streets are not eligible for traffic calming treatments as they serve as critical emergency response and snow removal routes and typically do not have residential frontage. The Staff Team that defines the project area will also identify the streets that are not eligible to receive physical street treatments.

In order to be eligible for the NTCP, the traffic studies conducted by the Town must show that the following "thresholds" are met or exceeded:

- The 85th percentile speed must be 30 miles per hour (mph) or greater, or, in the case of streets with posted speeds higher than 25 mph, the 85th percentile speed must be at least 5 mph over the posted speed limit. And a residential street must have a traffic volume greater than 500 vehicles per day (vpd), or, at least 20% of the traffic on the street must be determined to be "cut through traffic" by the Staff Team.
- A collector street within a residential area must have a traffic volume greater than 1,500 vpd.

3.5 Keeping Traffic on Appropriate Facilities

The traffic calming program is also intended to discourage traffic from "cutting through" a neighborhood on a residential street rather than using the arterial and collector street system. Collector or arterial roadways are the most desirable facilities for through traffic, but traffic will sometimes use residential streets to bypass congested intersections or to take a shorter route. Traffic calming treatments may be used to discourage traffic that, in the opinion of the Town's Traffic Engineer, should be using adjacent arterial and collector streets instead of neighborhood residential streets.

3.6 System of Devices vs. a Single Device

Traffic calming treatments are more effective when they are installed as part of a "system" rather than individually. Spot reductions in speed have been shown to lead to increased speeding at other points on a street. A traffic calming plan should be designed so as to calm traffic along an entire street, and not simply at the location where the study was taken. Generally physical treatments should be spaced approximately 400 to 600 feet apart to keep traffic speeds fairly consistent along the length of the street.

3.7 Landscaping and Aesthetics

Landscaping and other aesthetic treatments are critical components in the effectiveness of certain neighborhood traffic calming tools and in providing neighborhood enhancements.

A number of the devices, such as raised medians, traffic circles, and curb extensions are more effective when landscaping or other elements have been installed so as to change the appearance of the street and break up a driver's "view". By having these vertical, aesthetic treatments, the devices are more effective in changing drivers' perceptions and their

behavior. Landscaping and other treatments will be included in designs whenever possible.

Landscaping materials used in the designs must comply with the current Town policies regarding water demands. Maintenance of landscaping will be performed by either the property owner adjacent to the traffic calming devices, the neighborhood homeowners association (HOA) or by a civic association (CA), under a maintenance and licensing agreement with the Town. If an agreement cannot be reached, only non-irrigated vertical features will be installed. The Town will not be responsible for watering the landscaping elements installed as part of the project.

3.8 Permanent vs. Temporary Installations

Temporary installations are generally not as attractive or effective as permanent installations, making it difficult to test their effectiveness or public acceptance; therefore temporary installations will not be permitted. However, the temporary installation of radar speed feedback signs will be permitted during Phase 1 of the program.

3.9 Drainage Considerations

When designing a traffic calming feature, it is important that storm drainage within the area be carefully considered and accommodated. Physical treatments must not impede storm drainage within the street or create drainage problems for adjacent property owners. In some cases, the potential for drainage problems or changes in drainage patterns may limit or restrict the use of certain physical treatments.

3.10 Neighborhood Involvement

As stated in Section 2.0, "Program Mission Statement and Objectives", the NTCP is a neighborhood "driven" process that allows residents living along the street and in the study area to help identify and solve issues along their street(s). One of the most critical issues when developing an effective traffic calming plan is the involvement of residents in the study area. Residents of the area must be able to provide input on the extent of the traffic problem and to help in identifying appropriate solutions. Each neighborhood will have its own set of concerns, with some being more apparent than others. It becomes much clearer as to how complex many traffic issues are when neighbors meet and share their various perspectives and experiences.

The Town's staff will facilitate a series of meetings that will allow residents to participate in the creation of the traffic calming plan for their neighborhood. The person bringing the issue to the Town will be the "point of contact" (POC) responsible for circulating a petition; this is the initial step that must be taken before the process is started. The POC will also assist Town staff in organizing meetings and notifying the affected homeowners.

3.11 Minimum Threshold Determination

Documented traffic conditions, that either meet, or exceed, defined minimum traffic volume and speed thresholds, must be present in order for a street to be eligible for the traffic calming program. Studies will be conducted by Town staff to measure vehicle speeds and daily traffic volumes to determine if a traffic calming project may be initiated.

The minimum thresholds within this program are not intended to imply the number of vehicles (volume) that a street can handle (capacity). It is not the intention of this program to reduce the volume of traffic on a particular street to the thresholds established.

3.12 Approval of a Neighborhood Traffic Calming Plan

The traffic calming plan, developed to address the traffic issues on the street, or for other streets within the study area, must be approved by at least 50% of the property owners along the streets where the traffic calming features will be installed. If the plan is not approved then the project will be closed, and become eligible for the program in one year.

3.13 Commitment of Funding

Although no commitment can be made, the Town of Castle Rock may include funding in each year's budget for the implementation of traffic calming projects. Traffic calming studies will be initiated once an approved neighborhood petition has been received, and while the projects may move on to the design stage, the commitment of funding for the construction of any physical treatments will be based upon the order in which final designs have been approved by the homeowners along the street(s) where the traffic calming measures will be installed. Projects that have been designed and approved, but for which funding is not available, will have the highest priority for any future Town funding.

3.14 Use of Private Funding

A neighborhood homeowners' association, special district, or other organized entity may elect to provide funding for an approved traffic calming project, or even to contract for the construction of the project themselves.

The following conditions must be met in order for a privately funded project to be implemented, or constructed, by the Town:

- Town staff will prepare a preliminary cost estimate that will include design, permitting, construction and inspection costs.
- An additional 15% will be added to the project cost estimate to cover possible "over-runs".
- The Town and the funding entity will enter into a contract that will specify all of the conditions and responsibilities of each party for completion of the project. The contract will also specify the responsibilities and funding for any necessary maintenance activities.
- All agreements must be approved by Town Council.
- It will be the responsibility of the neighborhood to raise the funds needed to complete the project. All funding must be received by the Town before the Town will schedule construction. Once the project has been completed, any unused funds will be returned to the funding entity.
- If the neighborhood elects to design and construct the project, Town staff will work with the group on the design, review, permitting and construction process that must be followed.

3.15 Device Removal

This section refers only to the removal of traffic calming devices that have been installed through this program and cannot be used to remove traffic calming devices that were installed as part of a new development.

If after a minimum period of one (1) year, the property owners along the street(s) where the traffic calming devices were installed desire that the traffic calming devices be removed; the Town will require that a vote be taken. The area that will be included in the voting process will be the same as that participating in the initial vote approving the installation of the devices.

More than 50% of the properties returning a ballot must vote in favor of the removal. As with the vote to install the devices, the ballots must be signed by property owners. If the vote passes, devices will be scheduled for removal when funding is available.

All of the traffic calming devices that were installed as part of the project must be removed. Devices, installed as part of a system, will not be removed individually. If after at least one year following completion of the removal, the property owners along the street(s) where the traffic calming devices were installed should then decide if they want the Town to re-install the devices, and studies show the minimum thresholds for installation are still met, the entire cost of the design and installation will be paid by the property owners along the street where the devices had been removed per the conditions outlined in Section 3.14.

The Town will always have the authority to revise, remove or maintain a traffic calming device if it believes such actions are needed in the interest of public safety.

3.16 Device Modification

If an individual, neighborhood group, or homeowner association (point of contact) want to modify the existing traffic calming plan then the point of contact needs to reach out to the homeowners who previously voted on the plan, or live on the street with the traffic calming measures to determine if other homeowners share the same concerns. This will be accomplished through a petition. More than 50% of homeowners who live on the street with the traffic calming measures will need to sign the petition seeking a modification to the traffic calming plan. Town staff will provide the petition.

Upon receipt of the petition staff will verify names on the petition and then work with the point of contact and homeowners in the study area to facilitate new meetings to discuss possible modifications of the plan.

A new working group will be selected from homeowners in the study area. A preferred plan will be created and voted upon by the homeowners that live along the street where the modifications are proposed to be made. More than 50% of the homeowners on the street where the traffic calming is to be installed/modified must return the ballot and vote to approve the plan. If less than 50% of the homeowners vote in favor of the plan then the current plan will remain.

Staff will develop costs of modifications and budget based on availability of program funds if modifications are approved.

3.17 Toolbox of Physical Features that May be Used

A "toolbox" of devices that may be used for neighborhood traffic calming projects in the Town of Castle Rock is included as Appendix B of this guide. The toolbox includes a variety of treatments that, depending upon the specific traffic issues (speeding, or cut-through traffic) needing to be addressed, may be considered. Since some of the devices are intended to address very specific types of traffic conditions they may not all be suitable for every project. The toolbox contains a brief discussion of the pros and cons for each device, their possible impacts to emergency response and their estimated costs. Additional traffic calming techniques not included in the "toolbox" may also be added by the Staff Team as part of the plan.

3.18 Physical Features that May Not be Used

Some devices have been intentionally excluded from the Toolbox and shall not be considered for use within the Town of Castle Rock. The devices, as well as reasoning for their exclusion, are as follows:

Speed "Dips"

Speed "dips" are basically drainage cross pans that are being installed for speed control instead of for drainage purposes. "Dips" can cause undue delays and damage to fire department equipment. They can actually lead to new speeding issues since many newer automobiles are more comfortable when crossing the "dips" at higher speeds.

Speed "Bumps"

A speed "bump" is a parking-lot style treatment designed for very slow traffic speeds. Speed bumps are very damaging to fire equipment and don't allow for streets to be plowed following snow falls. They can also be very dangerous to bicyclists. A speed bump shouldn't be confused with a "speed hump", which has been approved for use on town streets. A "speed hump" has a much wider base and doesn't pose any of the safety issues that a "bump" does.

Rumble Strips

Rumble strips are not suitable for residential use due to the noise that they produce.

Stop Signs

Stop signs are traffic control devices, not speed control devices. They are used to assign "right-of-way" at an intersection according to the requirements of the Manual of Uniform Traffic Control Devices, the Federal manual that regulates signing, signalization and markings on a public street. Studies have shown that when stop signs have been installed to control speeds, there is an increase in number of intentional violations at the intersections, creating a very dangerous condition. Drivers tend to know when a stop sign has been installed for speed control, and they become frustrated by the unnecessary stop. They may even speed up when pulling away from the intersection to "make up for lost time". This behavior is just the opposite of that desired. Improper use of stop signs can create pedestrian safety issues, increased vehicular accidents, increased speeds between intersections, increased noise and air pollution, and can breed disrespect for all traffic control devices. Additionally, unwarranted stop signs create an enforcement problem and penalize all motorists, even the ones who travel within the posted speed limit.

4.0 ESTABLISHING A NEIGHBORHOOD TRAFFIC CONTROL PROGRAM

This section explains how a traffic calming project may be requested and the steps that should be followed in its implementation. Generally the process is divided into 3 steps:

- Project initiation, studies, and public outreach
- The implementation of a neighborhood education program, increased police enforcement, and other passive treatments
- The design and construction of physical treatments

These steps will include a number of tasks that will need to be completed and are more fully described as follows:

4.1 Project Initiation and Studies

This section describes how a project is approved for study and the speed and volume thresholds must be met in order for traffic calming techniques to be warranted.

4.1.1 Project Initiation

Traffic calming projects may be requested by individuals, neighborhood groups, homeowners associations, or anyone who feels that a problem exists on a residential street. When a request has been made of the Town to reduce speeding and cut through traffic on a street, staff will begin the process of determining the conditions that exist and the degree of concern that exists among residents along the street.

The first step that staff will take is to discuss the traffic situation and concerns with the person(s) making the request in order to better understand their concerns and the reasons they feel that a problem exists. This person will be the neighborhood "point of contact" (POC) during the process and help Town staff organize meetings and distribute information. At the request of the original POC another resident may be asked to be the POC later in the process. The POC's role is simply to help Town staff in the process. A packet of informational material concerning the Town's traffic calming program will be given to the person. This packet will include a guide to the NTCP, some brochures about the program that can be given to other residents of the neighborhood, and a petition form.

Undertaking a traffic calming project requires a significant expenditure of staff time and, in some cases, town funds. The Town wants to know that at least five (5) other homeowners along the street of concern believe that a traffic problem exists before traffic speed and volume studies are scheduled. A petition will be given to the POC, and it must be returned to the Town with the signatures of at least 5 other homeowners (one signature per property) living along the street in addition to that of the POC. When giving the POC the blank petition, staff will discuss with the POC

the boundary in which the petition is to be circulated.

While circulating the petition, we encourage residents to discuss their observations and concerns with each other to see if there is a desire to undertake a project. As can be seen from this guide, a significant amount of time may be required of the neighborhood during the process.

The POC shall notify the president of the homeowner's association, or the association's management company of their intention to circulate the petition and explain the issues that the POC is hoping to resolve. The POC will be asked to verify on the petition that this has been done. This step is not required if no HOA exists.

Once a petition has been submitted to the Town, staff will discuss with the POC the next steps that will be taken in evaluating the request.

4.1.2 Data Collection

Once a petition has been received and approved, the Town's Traffic Engineering Division will collect traffic volume and speed data to determine the conditions that presently exist on the street. The study data will be collected on weekdays so as to determine the normal traffic loads. If a school is located within the area, and the Staff Team believes that it would have an impact on the traffic conditions present on the street, the study will be conducted when the school is in session. If a commercial center, a recreation center, park or other significant traffic generator creates an impact within the study area, traffic counts on Saturday and Sunday may be conducted as well. Staff will attempt to schedule the study during a time when there are no special events being planned along the street.

4.1.3 Minimum Threshold Determination

In order to qualify for the implementation of the NTCP, the traffic conditions on the street must meet both of the following minimum "thresholds":

- 1) The street must have an 85th percentile speed (see the definition in Appendix A) of 30 miles per hour or greater or at least 5 miles per hour above the posted speed limit if the limit is higher than 25 miles per hour. Most residential streets within the Town limits are posted at 25 miles per hour, and
- 2) The street must have a traffic volume of at least 500 vehicles per day, or at least 20% of the traffic on the street must be found to be "cut through", as determined by Town staff.

For eligible collector streets, the traffic volume must be greater than 1,500 vpd.

For neighborhoods that are not "built out", the Staff Team will consider the specific traffic issues and concerns relative to the rate of development to determine if a project should be immediately pursued or if it should be delayed until the neighborhood is closer to completion.

4.1.4 Determination of the Study Area

If after evaluating the data, Town staff determines that the street is eligible for the traffic calming program. The Staff Team will meet to determine if other streets need to be included within the study area. The Staff Team will also determine the study area limits so that residents within the area can be notified of meetings and given an opportunity to participate.

4.1.5 Presentation of the Results to the POC and Identification of the Next Steps

Town staff will meet with the POC to discuss the information that was collected and if it has met the minimum thresholds. If the street qualifies for the program, the POC will be asked to help organize a meeting of residents within the study area.

If the thresholds are not met, the Town will not proceed with the traffic calming project, but Staff will notify the POC and work with the POC and other residents from the Study area on other possible approaches, such as driver awareness and educational programs. The street may be "re-studied" after one year to determine if the thresholds are then met.

If the POC so chooses, an appeal of staff's decision may be made by submitting a written request. This request must be signed by at least 5 of the people who signed the initial petition submitted by the POC. The request must be submitted to the Director of Public Works for an evaluation. Public Works will then present the request to the Public Works Commission for its review and recommendation. This meeting is open to the public and a time will be offered to anyone wanting to speak. Staff will then present the appeal to the Town Council. At this meeting, the recommendations of staff and the Commission will be presented. As at the Commission meeting, time is available for the public to present their information and observations.

If Town Council denies the appeal, the process will stop and the street(s) will be eligible for reevaluation after one year. If Council approves the appeal, the project will move forward.

4.1.6 Meeting with the Study Area to Discuss Traffic Study

Town staff will meet with POC and residents from the study area, if the minimum threshold criterion is met, to discuss the results of the traffic study. At the meeting staff will also discuss what actions may be taken during the Program, and how the process will proceed. The first steps taken to reduce the traffic impacts on the street will focus on Education, Enforcement and Passive Treatments, as described in Section 4.2, below.

4.2 Phase 1 – Driver Education, Police Enforcement and Passive Treatments

The first action that will be taken is to first initiate driver awareness and educational programs; to work with the Police Department on targeted speed enforcement; and to identify possible changes in street signing and markings (passive treatments). This will be done to see if reductions in vehicle speeds and cut through traffic can be achieved before moving on to the more expensive, physical treatments. These actions will be decided upon by the residents of the study area, in cooperation with the Staff Team and may occur either separately or concurrently.

4.2.1 Educational Efforts

Town staff will provide educational, and driver awareness tools to help reduce traffic speeds and volumes. These tools may include:

- Yard signs
- "Traffic treaties" – *A petition championed by the POC or assistants who gather pledges from neighborhood residents to drive the speed limit.*
- "Traffic" awareness campaign

4.2.2 Passive Treatments Installed

Depending upon the nature of the traffic issues staff may decide to implement passive treatments either on the street, at intersections where the street being

studied connects to another, or both. These treatments may include the following:

- Regulatory signage, such as turn restrictions and other operational changes
- Pavement markings (parking lanes, bicycle lanes, or visual narrowing)
- Changes in parking restrictions

4.2.3 Targeted Police Enforcement and Advisory Signing

At the discretion of Town's Police Department, "targeted" police enforcement may be used to control speeding problems. It should be noted that targeted enforcement may be initiated at any time during this process as part of the Department's enforcement procedures.

The Town may also install temporary radar speed feedback signs that provide feedback to the driver about their speeds.

4.2.4 Re-evaluation

Within four months following the initiation of the efforts described above, Town staff will re-evaluate the neighborhood traffic conditions to determine if the traffic problems still exist. Additional data will be collected to see if speeds and traffic volumes have changed and if the thresholds are still met. If the thresholds are still met, the project is eligible to proceed on to implementation of physical treatments.

If the speed and traffic volume thresholds are no longer met, the project will be considered complete and no additional actions will be taken.

The Staff Team will also meet with the POC and residents from the study area to present the results of the re-evaluation. If the street is eligible for the NTCP, the residents will be asked if they want to proceed with the development of a traffic calming plan. If they do, the Staff Team will begin the steps outlined in Section 4.3 for Phase 2 - Project Development and Implementation.

4.3 Phase 2 - Project Implementation

If the thresholds are still met after the follow-up study, and the neighborhood chooses to proceed, staff will begin to work with them on the development of a traffic calming plan.

4.3.1 Determination of Project Limits, Possible Restrictions, and Conceptual Plan

Town staff will establish the boundaries of the project area in order to identify the streets that will need some type of traffic calming features. This area may be a single street or may involve a wider area, as discussed in Section 3.2. During this meeting, the street classification(s) and the emergency response corridors within the area will be identified. Staff members from the Police Department, the Fire Department, Public Works, Community Relations, and Development Services will be asked to attend this meeting.

Once the project limits have been established, staff will prepare a conceptual plan showing the minimum number and approximate locations of the traffic calming devices that will be needed. This will be done to prevent a problem on one street from simply being shifted to another. This information will provide the basis of the plan that will be developed by the neighborhood working group.

Conditions that exist within the area that may restrict the use of some of the devices in the "toolbox" will also be identified and discussed.

4.3.2 Facilitated Neighborhood Meetings and Plan Development

Staff Team will develop a public outreach plan to facilitate neighborhood meetings

with residents and other stakeholders on the development of a traffic calming plan. It is important that everyone have an opportunity to express their different perspectives of the traffic issues in the study area.

Public meetings will be held to allow residents an opportunity to share their experiences and to learn about the issues facing their neighbors. Each of the properties within the study area will receive either an email, or mailing, about the project meetings. If the study area is included within an HOA, the president of the HOA will be notified of any meetings and invited to attend. The schedule for all public meetings will also be posted on the Town's website and on the street of concern to notify all Town residents and people driving on the street(s).

Although a street may seem to be the "property" of the residents living along it, the street is actually "public property" and available for use by everyone. Because of this, people who must use this street, but don't actually live along it, will be notified about the meeting via the Town's website or signs posted along the street(s) of concern. These additional "stakeholders" may include representatives of nearby schools, users of area park and recreation facilities, public organizations, or simply residents living along adjacent streets. The boundary of the study area that could possibly be impacted by the traffic calming plan will be used to determine who is invited to the meetings. Of course, the meetings will be open to anyone, invited or not.

If at all possible, the meetings should be held within the study area to make it easier for anyone interested to participate. Town staff will work with the POC to find a suitable location and time for the meeting. Town staff will attend and help facilitate the public meetings.

4.3.3 Development and Approval of a Traffic Calming Plan

The steps for development and approval of the plan will generally be as follows:

Step #1 – Meeting to identify the traffic problems and possible actions

Once the Staff Team has completed their conceptual design, the POC will be contacted to help assist the Town in arranging a meeting of residents within the study area. Prior to the meeting, Town staff will distribute information to all of the properties within the study area, which will include details of the issues being discussed, a map showing the limits of the study area, and the results of the traffic study. A copy of the NTCP policy will also be included along with an agenda of items to be discussed at the meeting. This information will be sent to the HOA, and posted on the Town's website announcing the meeting the project.

The first meeting will be held to solicit input from residents and other stakeholders in the study area regarding their observations and concerns with existing traffic patterns on the street(s).

A presentation on the various traffic calming measures contained in the "toolbox" will be made in order to explain the "pros and cons" of each, how they may be used and what changes each are designed to produce. Staff will show the project limits and explain how they were developed.

Town staff will present their conceptual plan with the understanding that it has not been finalized and that it won't be without the input and approval of the residents within the study area. The plan showing the Staff's recommendation of approximate number and locations of the devices will be presented, along with an explanation of how the base plan was developed. It is also important to be aware of the Town's budget limitations and how and when their project could be implemented. Town staff will also discuss any other traffic calming projects presently underway and how this could affect implementation of the neighborhood's project.

At this meeting, the attendees will be asked to select a "working group". This group will meet and prepare a traffic calming plan for the study area's consideration. The Town feels that this group should be made up of residents from the street of concern and the broader study area who:

- Have different opinions about the need for traffic calming
- May have knowledge about traffic calming devices/treatments
- Live in different parts of the study area on streets where traffic calming devices may be installed
- Live within the study area on streets where no devices are being installed

Town staff will also attend and help facilitate these meetings.

Step #2 – Meeting to refine the preferred traffic calming plan

Once the Working Group has been selected, it will meet to prepare a draft traffic calming plan. This meeting may occur during the meeting discussed in Step #1, or later, depending upon the decision of the group. The working group will present their proposed traffic calming plan and solicit input from those attending the meeting(s). Proposed modifications to the plan will be discussed and the measures to be included in the final plan will be identified and approved by those present. While the plan may differ from the Town's conceptual plan, it should be developed using the traffic calming treatments included in the Toolbox shown in Appendix B and within the parameters for device spacing and emergency response requirements incorporated in the Town's conceptual plan. Treatments not listed in the Toolbox may be considered if approved by the Staff Team.

Once the draft plan has been prepared, it will be distributed to residents within the study area and also posted on the Town's website for the general public.

Step #3 – Neighborhood approval

A ballot will be mailed to each property fronting the street where the devices will be installed. The ballot will ask if the proposed plan should be implemented.

More than 50% of the returned ballots must vote to approve the plan before it can be scheduled for implementation. Ballots must be signed by property owners and may not be completed by renters. There will be a 30 day voting period before the ballots are counted.

Should the ballot measure fail to get more than 50%, the project will come to an end without any traffic calming measures being installed. The street will then become eligible for the program again one year from the end of the 30-day voting period.

Step #4 – Study area notification of the voting results and the "next steps" in the program

Once the ballots have been counted, the study area will be notified of the results and the next steps that will be taken. The HOA will also be notified of the results and requested to distribute the information to the remainder of the study area.

4.3.4 Final Design and Implementation

Once the preferred plan has been approved for implementation, final engineering plans, specifications, and cost estimates will be prepared by Town Staff. If sufficient funding exists in the Town's budget, construction will then be scheduled. The study area will be kept informed as to the estimated schedule for completion of the project.

4.3.5 Order of Project Implementation

Although several traffic calming requests may be in the design and approval process at any one time, the commitment of any Town funding for the implementation of any project will not be made until the plan has been approved. Town funding for these projects will be limited to the amount included in the Town's approved budget. It may be possible that only one project per year can be constructed. Any project that has gone through the process and received the required approvals, after the Town has already obligated its available funding, will be given priority for any future Town funding that is made available for the Traffic Calming program. A project may remain on the "waiting for funding list" for a maximum of 3 years before having to be re-evaluated.

Should there not be sufficient Town funding available, the residents will have the option of funding the installation themselves.

4.3.6 Follow-up Study.

In order to gauge the effectiveness of the program, Town staff will conduct a "follow-up" study to determine what traffic changes have occurred since the traffic calming features were installed. The study will not only gather data from the street that was the subject of the program, but other adjacent streets as well to see if any shifts in traffic patterns has occurred. This data will be useful in grading the effectiveness of the project, as well as identifying how best to plan and implement future projects.

The data will be collected within 6-12 months following the completion of the project. If the data shows that the measures have not reduced the 85th percentile speed and/or cut through traffic volumes to a level below the Program's thresholds, the Town will notify the residents of the study area to see if a majority of them want to pursue other measures.

Appendix A: Glossary of Terms

85th Percentile Speed

The 85th percentile speed is the speed at or below which 85 percent of the motorists drive on a given road. This speed indicates the speed that most motorists on the road consider safe and reasonable under ideal conditions. It is often used by traffic engineers as a guideline for the setting speed limit on a roadway.

Arterial Street

Arterial streets are major roadways designed to carry high volumes of traffic at higher speeds. They not only move traffic between the different areas and neighborhoods of Castle Rock, but also connect to the major roadways leading into and out of town. Examples of arterial streets within Castle Rock include Wolfensberger Rd., Meadows Pkwy., Founders Pkwy., and Ridge Rd.

Collector Street

Collector streets are designed to provide a balance between traffic movement and land access within residential, commercial, and industrial areas. Collector streets often do not provide direct residential frontage but do often provide access to schools and parks. Collectors typically link arterial streets with neighborhood (local) streets and fall between the two in the roadway classification hierarchy. They will generally have higher traffic volumes and speeds than local streets but less than arterials. Examples of collector streets are Scott Blvd, Mikelson Blvd, Enderud Blvd. and Gilbert St.

Cut-Through Traffic

Cut-through traffic is defined as traffic using neighborhood streets that has no "origin or destination" on the residential street(s) or in the neighborhood, and is not required to use the street. For example, travel through a neighborhood in order to avoid a congested arterial or intersection. These trips generally are simply passing through the neighborhood and do not have either an origin or a destination within a neighborhood.

Daily Traffic

This is the number of vehicles passing a certain point on a roadway during a 24-hour period. These counts are two-directional and usually obtained from a mechanical traffic counter placed on the roadway for a continuous 48 hour period. The counting period will be conducted between Tuesday and Thursday and may include weekends if the Study Area is near a park, recreation area, or other weekend traffic generator.

Emergency Response Route

Emergency responders, such as Fire, Police, and ambulance, must be able to respond to calls throughout the community. Emergency response routes are those commonly used routes that allow responders to reach residents and businesses in a safe and efficient manner.

Physical Devices

Physical devices refer to traffic calming devices placed within the street. Examples of these are raised medians, traffic circles, curb extensions, speed cushions and speed humps. Nonphysical devices would include such things as signage, roadway striping, etc. that may guide, but not restrict, traffic movement.

Point of Contact (POC)

This refers to the person who made the initial request to the Town that traffic speeds and/or cut through traffic on a residential street are a concern. This person will be asked to circulate a petition along the street in question to determine if other residents have the same concern. The POC will also be asked to assist Town staff in setting up neighborhood meetings and in distributing information. The POC may be changed during the course of the study. The POC has the same rights and influence as other residents within the Study Area.

Residential Streets

Residential streets carry traffic within a neighborhood and provide access to residences along the street. These streets generally are designed for lower volumes and lower speeds. They will usually have on-street parking and direct driveway access.

Study Area

The study area will be defined by the Staff Team for each traffic calming project. It will include the street of concern, but may also include other streets that may be impacted by the installation of traffic calming features, such as traffic diversion that may occur when traffic calming features are installed on another street. It may also include residents that live on other streets but have to use the street(s) that are a concern.

Traffic Treaties

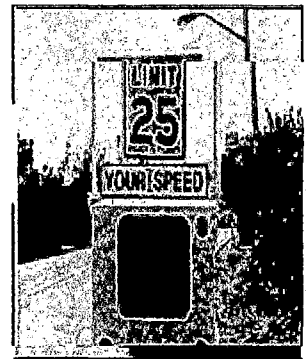
A petition championed by the POC, or assistants who gather pledges from neighborhood residents that pledge to drive the speed limit.

Traffic Calming Toolbox

Toolbox Overview

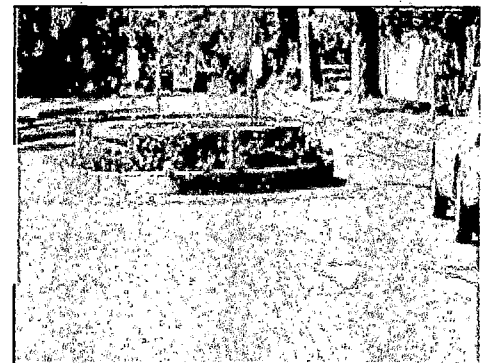
EDUCATION, ENFORCEMENT, & LOW-COST TOOLS:

- *Neighborhood Education Programs*
- *Speed Limit Signing*
- *Striping / Visual Narrowing*
- *Speed Monitoring Display*
- *Traditional Police Enforcement*



ENGINEERING (PHYSICAL) TOOLS:

- *Entry Islands*
- *Speed Cushions*
- *Raised Pedestrian Crossing*
- *Curb Extensions*
- *Partial Medians*
- *Traffic Circles*



Traffic Calming Toolbox Overview



Traffic Mitigation Tool		Relative Effectiveness		Associated Impacts						
		Speed Reduction	Cut-Through Reduction	Emergency Response	Enforcement Needs	Loss of On-Street Parking	Restricts Access	Maintenance	Noise	Relative Cost
Education, Enforcement, and Low-Cost Tools	Neighborhood Education Programs	Minimal	Minimal	No change	None	None	None	None	No change	Low (varies)
	Speed Limit Signing	Minimal	No	No change	Requires Enforcement	None	None	Minimal	No change	Low (\$200 and up)
	Striping / Visual Narrowing	Minimal	No	No change	None	Possible	None	Yes	No change	Low-Med (\$1K-\$5K)
	Speed Monitoring Display	Yes	No	No change	None	None	None	Minimal	No change	Med (\$2500)
	Traditional Police Enforcement	Yes	Minimal	No change	Requires Enforcement	None	None	None	No change	High
Engineering (Physical) Tools	Entry Islands	Yes	Minimal to Moderate	No change	None (Self-Enforcing)	Possible	None	Yes	No change	Med (\$10K-\$20K)
	Speed Cushion	Yes	Moderate (w/system of devices)	Minimal	None (Self-Enforcing)	Possible	None	Yes	Increases noise	Low-Med (\$1K-\$5K)
	Raised Pedestrian Crossing	Yes	Moderate (w/system of devices)	Increases time	None (Self-Enforcing)	Yes	None	Yes	Increases noise	Med (\$10K-\$40K)
	Curb Extensions	Yes	Minimal (w/system of devices)	No change	None (Self-Enforcing)	Possible	None	Yes	No change	Med (\$25K-\$40K)
	Partial Medians	Yes	Minimal (w/system of devices)	Minimal	None (Self-Enforcing)	Yes	Dependent Upon Application	Yes	No change	Med (\$25K-\$40K)
	Traffic Circles	Yes	Moderate (w/system of devices)	Increases time	None (Self-Enforcing)	None	None	Yes	No change	Med-High (\$25K-\$60K)

NEIGHBORHOOD EDUCATION PROGRAMS



DESCRIPTION:

PROGRAMS DESIGNED TO INCREASE DRIVER AWARENESS OF NEIGHBORHOOD TRAFFIC SAFETY ISSUES

APPLICATION:

Neighborhoods where speeding or other traffic safety concerns have been identified. Programs may include educational signing and stickers, speed pledges, and other means of increasing driver awareness and commitment to safety when driving in neighborhoods.



Effectiveness:

- Educational programs have been shown to produce some reduction in traffic speeds among residents of the targeted neighborhood. Results vary widely based on the type of program and neighborhood.

Other Advantages:

- Can be implemented often much sooner than physical treatments
- Relatively low cost
- Can often affect a much larger area (entire neighborhood) than a targeted, physical treatment

Delay to Emergency Vehicles:

- None

Other Disadvantages:

- Results may be minimal and may decrease after initial use
- Not self enforcing
- If signs are used, increased visual pollution from signs in the neighborhood



Special Considerations:

- None

Cost:

- Dependent upon programs used

SPEED LIMIT SIGNING



DESCRIPTION:

SIGNS THAT DEFINE THE LEGAL DRIVING SPEED UNDER NORMAL CONDITIONS. SPEED LIMITS ARE SET BASED ON ENGINEERING STUDY AND DETERMINATION OF APPROPRIATE SPEED FOR A GIVEN ROADWAY.

APPLICATION:

Streets where additional notification of the speed limit may assist with awareness.



Effectiveness:

- Motorists will generally drive at the speed at which they feel comfortable given the existing roadway conditions, regardless of posted speed

Other Advantages:

- Provides clear definition of legal speed limit
- Provides context for enforcement efforts
- Provides goal for traffic calming efforts

Delay to Emergency Vehicles:

- None

Other Disadvantages:

- Typically not effective in and of themselves
- Not self enforcing
- Requires on-going police enforcement
- Unrealistically low speed limits are difficult to enforce and tend to be disregarded
- More visual pollution from signs in the neighborhood

Special Considerations:

- Speed limits set by an engineering analysis tend to be higher than limits set by political pressures

Cost:

- \$200 per installation
- Additional cost may be required for study to determine what posted speed should be



STRIPING / VISUAL NARROWING

DESCRIPTION:

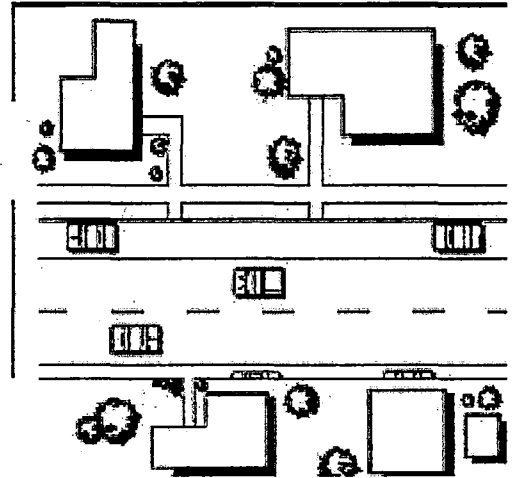
UNIQUE STRIPING ADDED TO STREETS TO VISUALLY NARROW THE LANE.

APPLICATION:

- *Wide streets where physical narrowing is either not feasible or cost-prohibitive*
- *Can be used in conjunction with on-street bicycle lanes and/or parking lane designation*

Effectiveness:

- Can result in minor reductions to vehicular speed.



Other Advantages:

- Can be used to alert drivers to pedestrians and bicycles
- Does not require removal of on-street parking
- Can be used with other devices
- Easy to install

Delay to Emergency Vehicles:

- None

Other Disadvantages:

- Generally not as effective in reducing speeds as physical narrowing
- May require frequent maintenance/re-striping if lines are ignored by drivers



Variations:

- On-street bicycle lanes
- Parking lane designation

Special Considerations:

- None

Cost:

- \$1,000-\$5,000 depending upon striping configuration and length of roadway segment

SPEED MONITORING DISPLAY



DESCRIPTION:

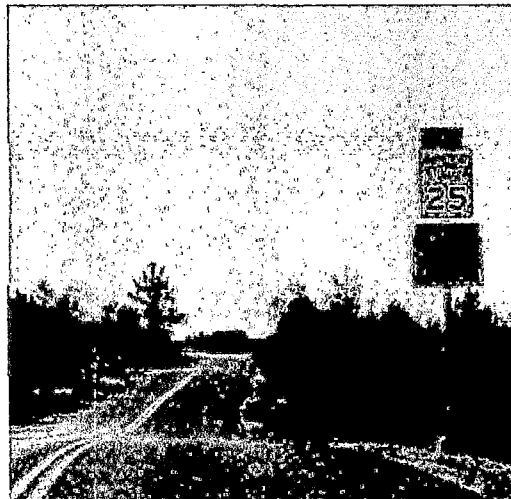
PERMANENTLY MOUNTED RADAR DISPLAY THAT INFORMS DRIVERS OF THEIR SPEED COMPARED TO THE SPEED LIMIT.

APPLICATION:

Any street where speeding is a problem

Effectiveness:

- May cause responsible drivers to slow down in the vicinity
- May cause unfamiliar drivers to slow down in the vicinity



Other Advantages:

- Educational tool
- Some drivers may assume it is linked to photo radar

Delay to Emergency Vehicles:

- None

Other Disadvantages:

- Not self enforcing
- Ongoing maintenance needed
- May lose effectiveness on familiar motorists
- Display may detract from neighborhood character

Special Considerations:

- Vandalism may be an issue

Cost:

- \$2,500 per installation

TRADITIONAL SPEED ENFORCEMENT



DESCRIPTION:

POLICE PRESENCE TO MONITOR SPEEDS AND ISSUE CITATIONS.

APPLICATION:

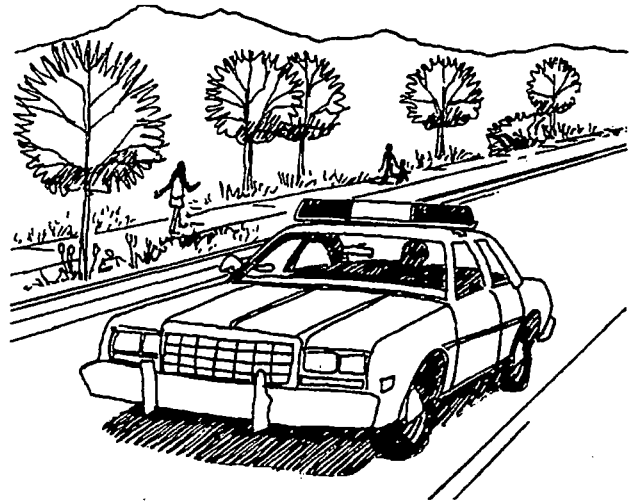
- Streets with documented speeding problem and need for quick mitigation
- Locations where restrictions are being violated

Effectiveness:

- Motorists generally slow down in the areas of active enforcement

Other Advantages:

- Flexible measure that can be implemented in almost any location at short notice



Delay to Emergency Vehicles:

- None

Other Disadvantages:

- Not self enforcing; temporary measure
- Fines do not typically cover cost of enforcement
- Disrupts efficient traffic flow on high volume streets
- Short "memory effect" on motorists when enforcement officers no longer present

Special Considerations:

- Often helpful in school zones
- May be used during "learning period" when new devices or restrictions first implemented

Cost:

- High cost primarily due to the staffing requirements

ENTRY ISLAND

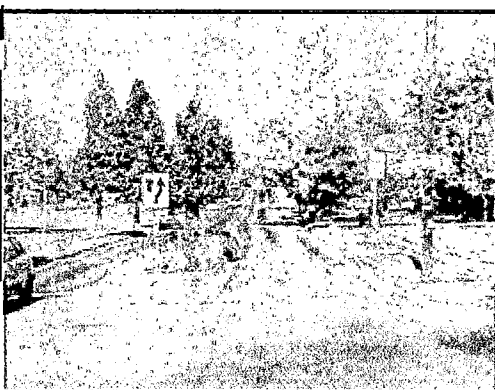
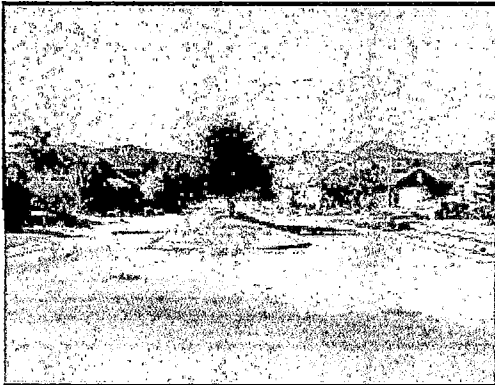
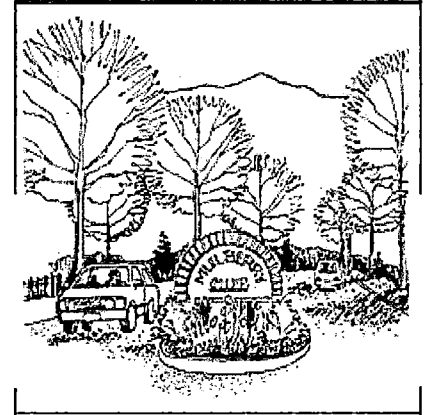
(Also known as: ENTRY MEDIAN or NEIGHBORHOOD IDENTIFICATION ISLAND)

DESCRIPTION:

A RAISED ISLAND IN THE CENTER OF A TWO-WAY STREET ADJACENT TO AN INTERSECTION, TYPICALLY AT THE PERIMETER OF A NEIGHBORHOOD.

APPLICATION:

Placed in a roadway to define the entry to a residential area and/or to narrow each direction of travel and interrupt sight distance along the center of the roadway



Effectiveness:

- Vehicles may slow down as they pass through the narrowed section

Other Advantages:

- Can notify motorists of change in roadway character
- Opportunity for landscaping and/or monumentation for aesthetic improvements
- May discourage cut-through traffic

Delay to Emergency Vehicles:

- 1 to 2 seconds typically

Other Disadvantages:

- Need for maintenance (and irrigation)
- May necessitate removal of on-street parking
- Snow plows must negotiate device

Variations:

- Can incorporate neighborhood identification signing and monumentation

Special Considerations:

- Care should be taken not to restrict pedestrian visibility at adjacent crosswalk

Cost:

- \$10,000 to \$20,000 depending on landscape type, intensity, irrigation needs, etc.

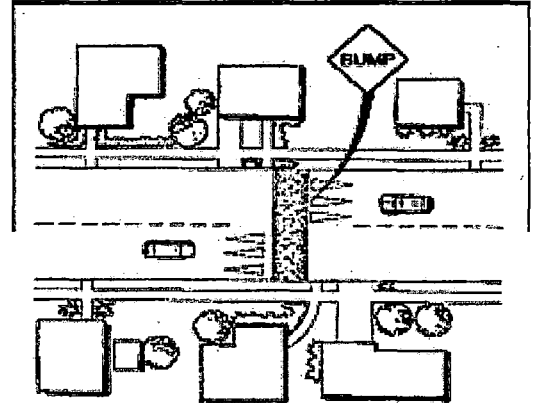
SPEED HUMP

DESCRIPTION:

SPEED HUMPS ARE AREAS OF PAVEMENT RAISED A MAXIMUM OF 4 INCHES IN HEIGHT OVER A LENGTH OF 12 FEET. THEY WORK BY FORCING MOTORISTS TO SLOW DOWN TO COMFORTABLY PASS OVER THEM. THEY ARE MARKED WITH SIGNS AND PAVEMENT MARKINGS.

APPLICATION:

Local or collector streets where speed control is desired

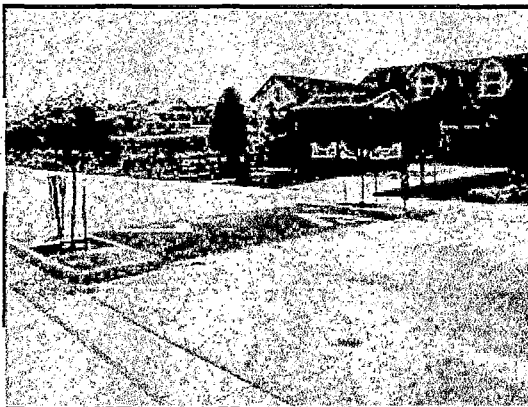


Effectiveness:

- Demonstrated reduction in average speed of 2-8 mph

Other Advantages:

- Self Enforcing
- Requires minimum maintenance; pavement markings must be maintained



Delay to Emergency Vehicles:

- 3 to 6 seconds per hump

Other Disadvantages:

- May damage emergency response vehicles if not carefully designed
- May increase traffic noise in vicinity of hump
- Snow plows must negotiate device

Special Considerations:

- Should not be used on critical emergency response routes
- Longer designs can minimize impact on long wheelbase vehicles

Cost:

\$1,000-\$5,000

RAISED PEDESTRIAN CROSSING

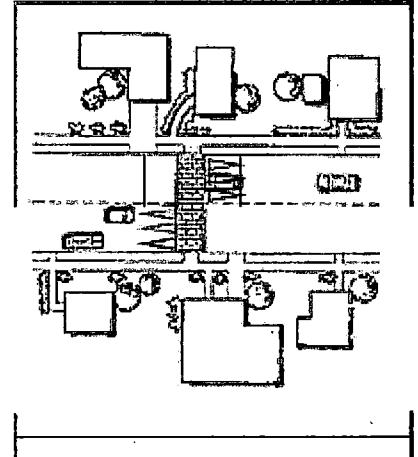
(Also known as: RAISED CROSSWALK)

DESCRIPTION:

FLAT-TOPPED SPEED TABLE BUILT AS A PEDESTRIAN CROSSING. COMMONLY INCLUDES A MEDIAN REFUGE ISLAND, OR CURB EXTENSIONS, OR BOTH TO SHORTEN CROSSING AND IMPROVE SAFETY.

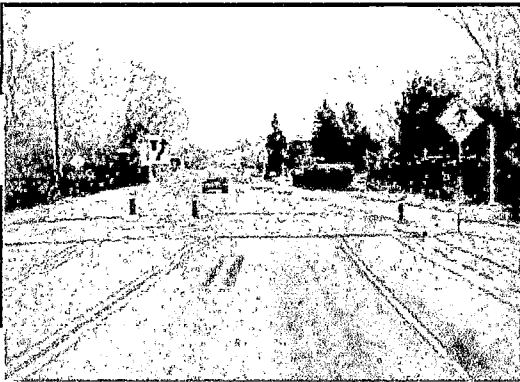
APPLICATION:

- Local or collector streets where speed control and pedestrian crossing designation are desired



Effectiveness:

- Demonstrated reduction in average speed of 2-8 mph



Other Advantages:

- Increases pedestrian visibility in the crosswalk
- Clearly designates the crosswalks
- Opportunity for landscaping in median
- Requires minimum maintenance; pavement markings must be maintained

Delay to Emergency Vehicles:

- 4 to 6 seconds per raised crossing

Other Disadvantages:

- May damage emergency response vehicles if not carefully designed
- May increase traffic noise in vicinity of crosswalk
- May create drainage issues where raised crossing extends from curb to curb
- May necessitate the reduction of on-street parking in certain configurations
- Snow plows must negotiate device

Variations:

- Specialty pavement treatments
- With median refuge island
- With curb extensions
- With median island and curb extensions

Special Considerations:

- Appropriate near schools and recreation facilities

Cost:

- \$10,000 to \$40,000 depending on median, curb extensions, pavement type, and irrigation needs



CURB EXTENSION

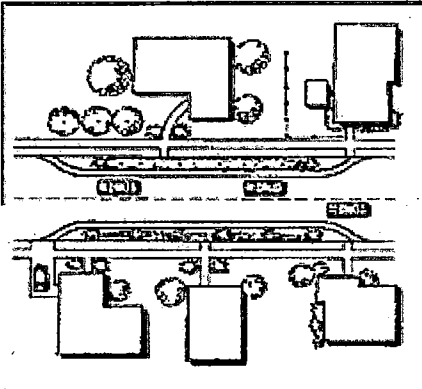
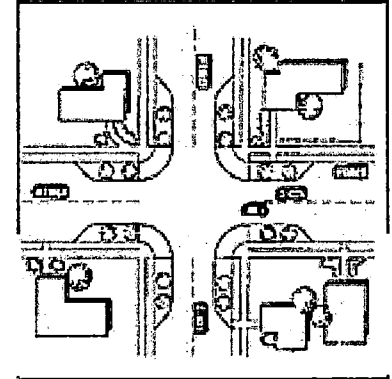
(Also known as: NECKDOWN)

DESCRIPTION:

SEGMENTS OF ROADWAY NARROWING WHERE ROADWAY EDGES OR CURBS ARE EXTENDED TOWARD THE CENTER OF THE ROADWAY. VEHICLES MAY SLOW AS THEY PASS THROUGH THE NARROWED SECTION.

APPLICATION:

- Typically used adjacent to intersections where parking is restricted
- Can be used to narrow roadway and shorten pedestrian crossings
- Can be used mid-block



Effectiveness:

- May slow traffic by changing the character of a wide street to a narrow street

Other Advantages:

- Pedestrian visibility increased and crossing distance reduced
- Can "reclaim" pavement for pedestrian and streetscape amenities or landscaping

Delay to Emergency Vehicles:

- Estimated to be less than 2 seconds

Other Disadvantages:

- Creates drainage issues where curb and gutter exist
- May result in the loss of on-street parking
- Snow plows must negotiate device

Variations:

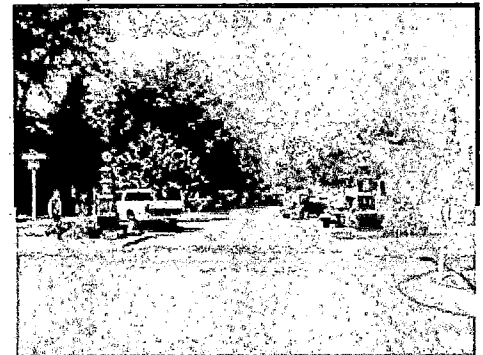
- Mid-block curb extensions often used in conjunction with pedestrian crossing treatments
- Can be designed with a curb chase to maintain existing flowline

Special Considerations:

- Curb extensions should not extend into bicycle lanes where present

Cost:

- \$25,000 and up depending on landscaping, pavement treatments and storm drainage considerations (need for new inlets)



PARTIAL MEDIANS

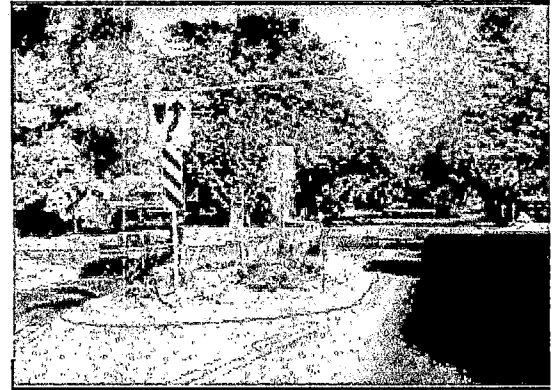


DESCRIPTION:

RAISED ISLAND IN THE CENTER OF THE ROADWAY WITH ONE-WAY TRAFFIC ON EACH SIDE.

APPLICATION:

Used on wide streets to narrow each direction of travel and to interrupt sight distances down the center of the roadway



Effectiveness:

- Narrowed travel lanes provide "friction" and can slow vehicle speeds

Other Advantages:

- Changes the character of the roadway to a place where slower speeds are appropriate
- Significant opportunity for landscaping and visual enhancement of the neighborhood
- Can utilize space which otherwise would be "unused" pavement
- Can be used to control traffic access to adjacent properties if desired

Delay to Emergency Vehicles:

- Estimated 1 to 2 seconds or more depending on length of median, narrowness, parking etc.

Other Disadvantages:

- Long medians may impact emergency access potential and reduce staging area
- May interrupt driveway access and result in U-turns
- May necessitate removal of on-street parking
- Snow plows must negotiate device

Variations:

- Medians of various lengths can be constructed
- Can be constructed mid-block only to allow all turning movements at intersection
- Can be extended through intersections to preclude left turning access, or side street through movement if desired

Special Considerations:

- Vegetation should be carefully designed not to obscure visibility between motorists, bicyclists and pedestrians at intersection and pedestrian crossing areas
- Maintain 18 foot wide space on each side where parking exists, or 11' wide space without parking

Cost:

- \$25,000 for short (30' +/-) landscaped median
- Cost increases with length, landscaping, etc.



TRAFFIC CIRCLE

DESCRIPTION:

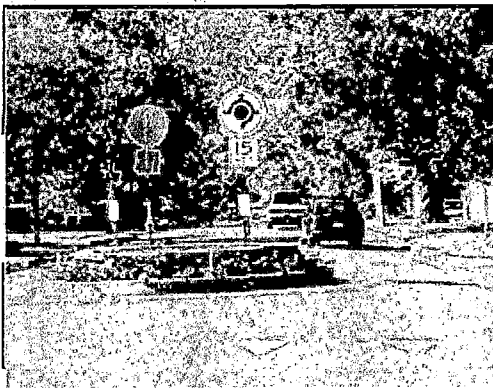
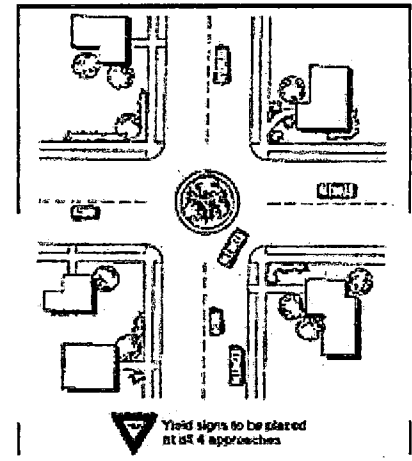
TRAFFIC CIRCLES ARE RAISED CIRCULAR MEDIANS IN AN INTERSECTION WITH COUNTERCLOCKWISE TRAFFIC FLOW. VEHICLES MUST CHANGE THEIR TRAVEL PATH TO MANEUVER AROUND THE CIRCLE AND ARE TYPICALLY CONTROLLED BY "YIELD ON ENTRY" ON ALL APPROACHES.

APPLICATION:

- Streets where speed control is desired
- Intersections where improved side street access is desired

Effectiveness:

- 2 to 13 mph reduction in average automobile speed one block from the circle
- Vehicles slowed to 15 or 20 mph through the circle



Other Advantages:

- Provides increased access to street from side street
- Breaks up sight-lines on straight streets
- Opportunity for landscaping in the intersection

Delay to Emergency Vehicles:

- 2 to 10 seconds per circle depending on the design

Other Disadvantages:

- Definition of right-of-way is contrary to the "yield to the vehicle on the right" rule
- Relatively expensive if curb extensions are required
- May impede left turns by large vehicles
- On streets with bicycle facilities, bikes must merge with traffic around circle
- Snow plows must negotiate device

Variations:

- With or without curb extensions on the corners
- With or without diverter islands
- Different sizes and dimensions affect magnitude of speed reduction
- Island with barrier curb and gutter face or tapered/mountable face

Special Considerations:

- Requires extensive signing
- Maintenance concerns associated with plowing, sweeping and asphalt maintenance around circle
- Minimum 20' clearance is required around circle
- May require educational campaign and learning period

Cost:

- \$10,000 to \$40,000



Town of Castle Rock

100 North Wilcox Street
Castle Rock, CO 80104

Agenda Memorandum

Agenda Date: 10/20/2015

Item #: 6. File #: RES 2015-85

To: Honorable Mayor and Members of Town Council

From: Thomas Reiff, Transportation Planner

Resolution: Repealing and Reenacting the Neighborhood Traffic Calming Program

Executive Summary

The purpose of this item is to review and gain approval from Town Council on proposed revisions to the Town's Neighborhood Traffic Calming Program (NTCP). This is a follow up to the April 28, 2015 meeting when Council directed Staff to amend the current NTCP based on feedback and experience gained from previous projects.

This program was originally established to uniformly assist residents of a local residential Town street where vehicle speeds or cut through traffic is perceived by them to negatively impact their quality of life. The program is resident driven meaning they decide whether to proceed if a concern is verified by a formal study as well as which traffic calming measures to implement. The proposed Program revisions are based on experiences of Staff while managing and implementing the Program since it was last revised in 2012.

The following bullet points reflect the main subject matter of the proposed changes.

- Amend the public outreach and involvement approach in the program, including Home Owners Associations
- Establishment of the study area and impacted residents
- Revision of the data collection methods
- Clarification of what happens to a traffic calming project that does not get approved by residents
- Process for how to modify an existing traffic calming plan
- More clearly define the term Point of Contact and role in the process
- Clarification of program terms and definitions

To better review the proposed changes, a redlined copy of all the proposed changes is attached for your review (**Attachment B**).

Budget Impact

Item #: 6. File #: RES 2015-85

No budgetary impacts are expected.

Staff Recommendation

Staff recommends that Town Council approve the proposed resolution repealing and reenacting the NTCP. This item was reviewed with the Public Works Commission at their August meeting. The Commission unanimously voted to recommend approval of the proposed program amendments.

Proposed Motion

"I move to approve a Resolution Repealing and Reenacting the Neighborhood Traffic Calming Program as presented by staff. "

Attachments

Staff Report

Attachment A Resolution

Attachment B Redline Version of the Proposed Revisions to the NTCP



STAFF REPORT

To: Honorable Mayor and Members of Town Council
From: Thomas Reiff, Transportation Planner
Title: A Resolution Repealing and Reenacting the Neighborhood Traffic Calming Program

History of Past Town Council, Boards & Commissions, or Other Discussions

On April 28, 2015, the program was discussed with Town Council seeking direction on the future of the program. Staff asked Council if the program should be amended, left unchanged, or eliminated. After deliberating the issue Council directed staff to amend the existing program.

The proposed revisions were presented to the Public Works Commission on August 3, 2015. At the meeting Staff discussed the revisions and provided the Commissioners with a redlined version of the document with all the proposed changes. The Commissioners agreed with the changes and provided additional modifications that are discussed below. The Commissioners ultimately decided to recommend that Town Council adopt the proposed changes which includes the modifications provided by the Commissioners.

Discussion

Following the Town Council's direction from April 28, 2015, Staff has amended the existing NTCP based on lessons learned from recent traffic calming projects, in addition to the proposed changes from the Public Works Commissioners. The last time the program was revised was in 2012. The revisions are primarily based on experiences that staff has encountered while managing and implementing the NTCP. More recently, during the Appleton Way traffic calming project, staff learned several lessons and identified a number of potential adjustments to the current program. These potential areas for revisions include:

- Process related issues such as public outreach and involvement, which was a primary concern recognized during the Appleton Way project
- Ascertaining the study area and impacted residents, which is key to the success of the program
- Working with the appropriate Home Owner's Association (HOA) was also identified as an issue with the program. Currently, there is no requirement to contact the HOA and include it in the process
- Data collection methods also need to be better defined, such as length of time and location of traffic counters based on adjacent land uses

- Another shortcoming of the program is the lack of direction in how to address a situation where the working group's proposed traffic calming plan is not approved by the residents along the street of concern. Currently the program does not address this issue.

These were the primary concerns identified with the current program during the Appleton Way project and should be accounted for in future project requests by residents.

Some of the proposed changes include the following;

1. The public outreach and involvement will include not only homeowners living along the street of concern, but also include people who need to drive on the street to get in and out of the neighborhood, as well as homeowners along other streets that may be impacted due to traffic calming installed on the street of concern. Residents in the study area will receive either email, or mailings, about project meetings. Notice will also be presented on the Town's website and on the street of concern.
2. The Point of Contact (POC) will also need to notify the President of the governing Homeowners Association (HOA), or the management company, if an HOA exists. The POC is the resident who initiates the contact and brings the concern to Town staff's attention. The term is more clearly defined in the amended Glossary of Terms.
3. Data collection is proposed to occur during an average weekday, but may include weekend counts if staff believes nearby commercial, parks, or other traffic generators create an impact in the study area.
4. It is proposed that should a traffic calming plan not receive the required 50 percent or more approval of property owners on the street of concern then the project comes to an end with no treatments being installed. The street becomes eligible for the program again in one year.
5. Additional clarification is proposed to be added that better explains the public meeting process should a project qualify and also how the public meetings will be noticed (e.g. Town's web site, and street signs)
6. Language will be added stating that additional traffic calming treatments not identified in the Toolbox of Appendix B may be used upon staff approval.
7. A section to modify an existing traffic calming plan is also proposed should a homeowner want the traffic calming treatments on the roadway modified.

Revisions proposed by the Public Works Commission include the following;

1. The term "Traffic Treaty" needs to be defined within the document. Staff added the term and definition to the Program's Glossary of Terms.
2. Regarding the work by the "Staff Team", the Commission requested that the document to identify what department leads the team. The document was revised to show that Public Works would lead the staff team.
3. In Section 3.4 of the document a question was raised if the 50% threshold for the number of properties fronting the collector refers to individually platted lots or the total street frontage. Staff amended the document to read 50% of the platted lots.

4. Under Device Modifications section, the text should read that current homeowners along the street sign the petition. The text was revised and no longer refers to previous homeowners who voted on the plan.

The last issue from the Commission was asking what happens to a current on-going traffic calming project should this document get amended prior to the project being complete. What policies would apply? All current projects in process will follow the guidelines that were in place when the application was made.

To better review the proposed changes, a redlined copy of all the proposed changes is attached for your review (**Attachment B**). The proposed changes from the Commission are also included and highlighted yellow in the attachment.

RESOLUTION NO. 2015-85

**A RESOLUTION REPEALING AND REENACTING THE NEIGHBORHOOD
TRAFFIC CALMING PROGRAM**

WHEREAS, Town Council adopted the existing Neighborhood Traffic Calming Program on May 15, 2012 by Resolution No. 2012-31 ("2012 Program"); and

WHEREAS, it has been determined that it is appropriate and necessary to make certain revisions and updates to the 2012 Program as presented in the 2015 Neighborhood Traffic Calming Program,

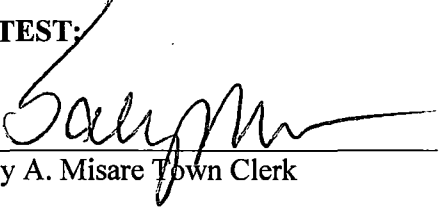
WHEREAS, the proposed revisions to the policy have been discussed and approved by the Town Council.

**NOW, THEREFORE BE IT RESOLVED BY THE TOWN COUNCIL OF
THE TOWN OF CASTLE ROCK AS FOLLOWS:**


Section 1. Repeal and Reenactment. The 2012 Program is hereby repealed and reenacted as the 2015 Neighborhood Traffic Calming Program in the form attached as *Exhibit 1*, is hereby adopted by Town Council as a policy for use by the Public Works Department.

PASSED, APPROVED AND ADOPTED this 20th day of October 2015, by the Town Council of the Town of Castle Rock, Colorado, on first and final reading by a vote of 7 for and 0 against.

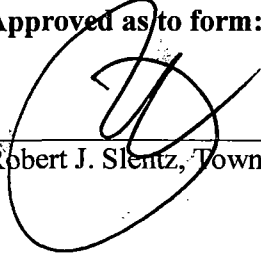
ATTEST:


Sally A. Misare Town Clerk

TOWN OF CASTLE ROCK


Paul Donahue, Mayor

Approved as to form:


Robert J. Slentz, Town Attorney

Approved as to content:


Bob Goebel, Public Works Director

Attachment B – Comprehensive Review of the Neighborhood Traffic Calming Program

Program Purpose

The Neighborhood Traffic Calming Program was first adopted by Town Council in 2007 and re-adopted with a few revisions to the voting procedures in 2015. It was created in response to concerns about vehicle speeds and cut through traffic on residential streets. As such, only residential streets with direct driveway access are currently eligible, with a very few exceptions to certain collector classification streets as discussed in the Features of the Current Program section. The purpose of the Program is to provide residents and staff with a consistent procedure that is community driven and fiscally conscious for addressing neighborhood traffic concerns on residential streets where documented speeding problems or other traffic factors exist that may adversely affect the overall residential quality of life.

The Program utilizes a neighborhood driven process. The reason for this is that the people that are generating the concern are the neighbors themselves. As a result, not all neighbors are supportive of these types of treatments. Treatments also generate increased noise and delay emergency response times and negatively impact snow and ice management operations. It seeks to improve neighborhood livability by reducing the impact of vehicular traffic, encouraging appropriate driver behavior, and reducing the number of vehicles exceeding the posted speed limit if the majority of the neighbors are supportive of this goal and accept the tradeoffs listed above.

Why this is not a “Safety” Program

High Safety is a value we know the community desires to maximize in all of our programs. The Town has other programs that address crash and capacity issues that affect safety. If staff is made aware or identifies a safety issue that can be addressed with physical improvements, a targeted project is created and implemented with other community priorities.

Additionally, other programs directly address these values, such as the capital project planning process, crash facts report, signal warrant studies, traffic count program, pedestrian crossing improvement program, safety project program, and as needed safety and operational engineering evaluations to name a few. When these programs identify a safety concern, based on an engineering evaluation that is guided by the industry’s best practices, we make efficient and responsible investment of resources to address them.

The Program does not address changes to the regulatory speed limit, the use of all-way stop signs, or other changes to traffic control like a traffic signal. Those changes are specific to operations and safety engineering evaluations that are handled in other programs. Drivers tend to drive a reasonable speed they feel comfortable with based on the given roadway environment. The impact of changing posted speed limits on driver speed behavior has been well studied and documented nationally. The outcome is that the population speed does not change. If the posted limit is lowered, it can actually create safety risks due to increased speed differentials created when a few drivers actually comply with the posted limit. To illustrate this, imagine if the posted speed limit on I-25 was reduced to 55mph. Most drivers would recognize that this is not appropriate for the given environment between Castle Rock and Denver.

If drivers were encountered driving this speed, aggressive passing is likely which can increase safety risks.

Similarly, stop signs are used to manage vehicle conflicts at an intersection. If a stop sign is installed in hopes of slowing vehicles, an unsafe condition is created because drivers know there is a low volume of side street traffic that does not necessitate their stop, and they may ignore the stop sign. Additionally, drivers tend to increase speeds to make up delays that are created. This is unfortunate for the location where it's installed, as well as other stop signs that lose their credibility for drivers. This has also been well studied and documented nationally. It is for these reasons that stop signs are not used to manage vehicles speeds along a roadway.

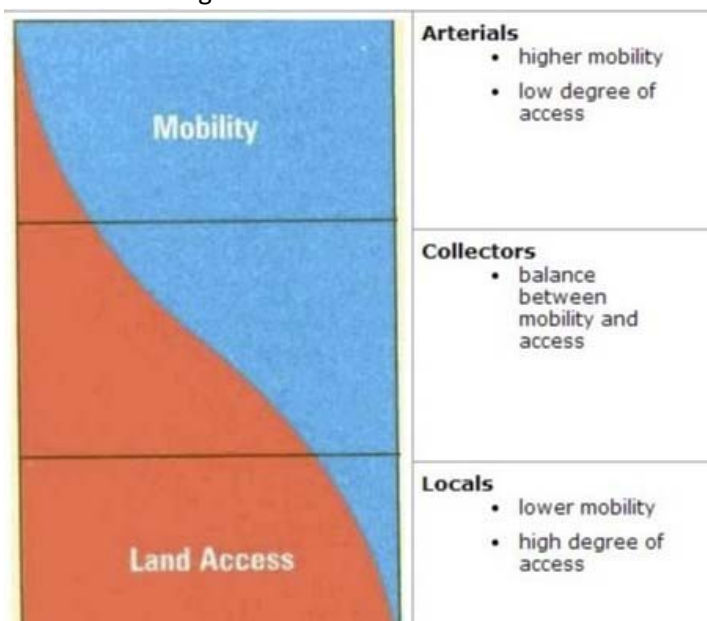
The focus of the current Program is to address concerns that residents have about the cut through volume and speed of traffic on their streets. It is not currently intended to address access, noise, congestion or other street related issues. The Program is also not meant to be used for intersection issues or safety problems. All of these types of concerns are addressed through the Town's normal operational efforts and its capital improvement program. If a safety concern is identified as a part of the Program, the Town would prioritize the issue with other on-going activities and remedy it in another way. Therefore, the Program is not a "safety" driven program.

Features of the Current Program

Town managed streets are grouped into three classifications in the Transportation Master Plan:

- Arterials,
- Collectors, and
- Local streets, which include residential streets.

These classifications help define the primary purpose of the roadway between access and mobility as illustrated in Figure 2.



Roadways that are focused on mobility have higher traffic volumes and higher speeds. The opposite is true for roadways that are geared primarily toward access.

The current Program is primarily targeting local residential streets as this is where people are more active as pedestrians and are more active with parking and unparking maneuvers. Traffic calming projects on collector roadways are only considered when at least 50% of the platted lots fronting the collector street are residential, either a school or public facility that generates high pedestrian traffic is present, and the collector street must have a posted speed limit of 30 mph or less. Arterial streets are not eligible for traffic calming

Figure 2. Mobility verses access and roadway classification

treatments as they serve as critical emergency response and snow removal routes and typically do not have residential frontage. Additionally, most drivers are more concerned with minimizing the amount of delay experienced on roadways geared toward mobility versus access. If the request is about speeding on a local residential roadway, information about the Program is shared including a blank petition form, to be filled out and returned by the point of contact if they are interested after learning more about the program. In several instances, staff does not hear back from the resident regarding the issue. There could be a variety of reasons for this, for example, the need to be neighborhood driven is a detriment to someone pursuing the program, there is not enough support in their neighborhood to obtain signatures for the petition, or they recognize that their concern does not meet the level of pursuing the program. Having this type of balance and neighborhood driven process to this quality of life program is healthy for the program and the community in staff's opinion.

These target roadways included in the Program are an area the current program could be revised in order to include residential collectors, when at least 50% of the platted lots that front, side, or back to the collector street are residential. Lots that back or have side lot lines shared with the public right of way (ROW) of a collector roadway can also be negatively impacted by potential cut through traffic, and speed of vehicles on that roadway. The minimum posted speed limit for eligible streets could also be increased from 30 MPH to 35 MPH or less. These changes would make roadways like Butterfield Crossing Drive, Mikelson Blvd, Lanterns Circle, Enderud Boulevard, Red Hawk Drive, Loop Rd, Foothills Drive, Sapphire Point Boulevard, Montaine Loop, and Plum Creek Boulevard to name a few eligible for the program. By increasing eligible roadways there are increased program budget, staff resources, and maintenance costs that should be considered. As well as impacts to Emergency Services and their response times if traffic calming devices are installed on these roads.

In order to be eligible for the current Program, the traffic studies conducted by the Town must show that the following "thresholds" are met or exceeded:

- The 85th percentile speed must be 30 miles per hour (MPH) or greater, or, in the case of streets with posted speeds higher than 25 MPH, the 85th percentile speed must be at least 5 MPH over the posted speed limit. A residential street must have a traffic volume greater than 500 vehicles per day (VPD), or, at least 20% of the traffic on the street must be determined to be "cut through traffic" by Town Staff.
- A collector street within a residential area must have a traffic volume greater than 1,500 VPD and the 85th percentile speed must also be 5 MPH over the posted speed limit

These thresholds, or similar, are recommended to be continued in order to provide a measure of need to implement a program. A few changes to consider, like removing the 1,500 vehicle a day threshold for residential collectors. By definition a roadway with a volume of 1,500 vehicles per day is considered a collector street, therefore having a Program threshold for a collector street volume greater than 1,500 is redundant if the desire is to include the residential collector roadways mentioned above. There are other thresholds that may be considered with the 85th-percentile threshold. For example, metrics that address cases where very high speed is measured (street racing), the average speed of the roadway is over the speed limit, or other speed or quality of life impact is determined.

One of the most critical issues when developing an effective traffic calming plan is the involvement of residents in the study area. Residents of the area must be able to provide input on the extent of the traffic problem and to help in identifying appropriate solutions. Each neighborhood will have its own set

of concerns, with some being more apparent than others. It becomes much clearer as to how complex many traffic issues are when neighbors meet and share their various perspectives and experiences.

If a given street qualifies for the Program, residents meet in a town hall style format that is facilitated by Town staff, to provide input and determine what devices to implement, if any. The neighborhood developed traffic calming plan, developed to address the traffic issues on the street, or for other streets within the study area, must be approved by at least 50% of the property owners along the streets where the traffic calming features will be installed. If the plan is not approved then the project will be closed, and become eligible for the program in one year.

If there is a desire to include residential collectors without residential frontage in the Program, a different study area and eligible residents voting on implementation should be considered. Collector roadways also provide access for other neighborhoods by connecting them to arterials, and therefore serve more than just the residents that live along a roadway. The impact of devices on these drivers, in addition to Emergency Management Services should be considered when determining the need for devices.

The current program allows for private funds to be used for an approved traffic calming plan (speed and volume thresholds are met, and neighborhood consensus is reached) when Town funding is not available, and even contract the construction project for themselves. Since the program was created in 2012, private funding has not been used to construct traffic calming devices in existing neighborhoods because Town funding has been available. In the case of privately funded projects, the current program states Town staff will assist these projects by preparing a preliminary cost estimate that will include design, permitting, construction and inspection costs, as well as additional maintenance that may be assigned to the private entity. This will be documented in an agreement that is presented to Town Council for approval. In these cases, it is the responsibility of the neighborhood to raise the funds needed to complete the project, and all funding must be received by the Town before construction is scheduled. Once the project has been completed, any unused funds will be returned to the funding entity. If the neighborhood elects to design and construct the project, Town staff will work with the design team on the design, review, permitting and construction process that must be followed. If desired by policy makers, we would recommend that the current program be amended to allow privately funded improvements if thresholds are NOT met, but only if the improvements are supported by the surrounding community as is currently required.

If the thresholds are not met, the Town will not proceed with the traffic calming project, as this means it may not be a responsible use of Town resources, and any additional improvements are seen as overly impactful to the traveling public and likely to have little benefit to slowing speeds. Staff will notify the resident contact and work with them and other residents from the study area on other possible approaches, such as driver awareness and educational programs. The street may be "re-studied" after one year to determine if the thresholds are then met.

In addition, the current Program has an appeal process that allows the point of contact, if they choose, to appeal staff's decision by submitting a written request. This request must be signed by at least 5 of the people who signed the initial petition submitted by the point of contact. The request must be submitted to the Director of Public Works for an evaluation. Public Works will then present the request to the Public Works Commission for its review and recommendation. This meeting is open to the public and time will be allocated to anyone wanting to speak. Staff will then present the appeal to the Town Council. At this meeting, the recommendations of staff and the Commission will be presented. As at the

Commission meeting, time is available for the public to present their information and observations to Council. If Town Council denies the appeal, the process will stop and the street(s) will be eligible for reevaluation after one year. If Council approves the appeal, the project will move forward.

Request and Budget Status

Staff receives a variety of requests about speeds in local neighborhoods, ten inquiries in the last six months. When those requests are received, information about the program and a blank petition is provided to the point of contact. We don't track the number of general inquiry requests that relate specifically to the Program, and we do monitor the number of petitions that are returned to the Town. The table below documents the numbers since the last revision of the program in 2015 through October 2022, the number converted to projects, appeals received, and funds spent each year. The approved Program budget for 2022 and 2023 is \$25,000 which has not changed since 2015.

Based on these metrics the number of requests has been relatively constant over this period, and few petitions have been converted to a project where the residents successfully vote to agree on a particular solution.

YEAR	No. of Petitions	Convert to Projects	# of Appeals	Funds Spent	Notes
2015	7	1	0	\$0.00	Saddleback Dr. qualified
2016	6	0	0	See Notes	Saddleback Dr. project costs over two years = \$49,012 (2016 & 2017)
2017	1	0	0	See Notes	
2018	3	0	0	\$0.00	
2019	5	2	0	\$0.00	Diamond Ridge Pkwy qualified, N Meadows addressed with education
2020	4	0	0	See Notes	Diamond Ridge Pkwy project cost \$55,016 (included \$25,000 rollover from 2019)
2021	7	0	0	\$0.00	
2022	4	0	0	\$0.00	

Current Request Needs

Recently, staff has received more requests for speed management solutions throughout Town that are beyond, and not applicable in the current Neighborhood Traffic Calming Program. There have been more requests regarding speeding on residential collector roadways, like Butterfield Crossing, Plum Creek Boulevard, and Mikelson Boulevard. The current Program does not pertain to these roadways because there are not homes fronting to them. Other tasks beyond the Program are typically undertaken for evaluating collector and arterial roadways that may lead to additional signage, beacons, pedestrian crossing enhancements, access and traffic control review, or a speed limit evaluation.

If the program is revised to include these types of roadways, we expect there to be an increase in the number of active projects. In 2022, the cost for a contractor to install a traffic calming device on a

collector roadway is \$20,000 to \$50,000, and could include a pedestrian refuge, speed cushion, or a raised crosswalk. The Public Works Department's Streets Division has assisted with installing local street speed humps for a lower cost, however on collector roadways the size of devices is large enough that it is not feasible for them to install these devices. Additional devices increase maintenance needs of the roadway and create slowdowns to emergency response and school bus travel times. Increased noise is also a typical complaint associated with speed bumps, and similar raised treatments that vehicles must drive over. Maintenance frequency would not change. The Pavement Maintenance Program (PMP) would address any maintenance per their usual maintenance schedule across Town on a performance metric basis and as budget allows. Snow plow operations are impacted by slowing their maintenance response, as well as increase damage to road and plow when a plow blade inadvertently hits devices buried in snow. Signage and delineator devices help, however darkness, driving snow, and slippery roadways while moving snow all make this a challenge. Snow plow blades ride over the raised crosswalks relatively smoothly versus other devices that create a hard stop if hit. These are all considerations that need to be addressed when evaluating a roadway for traffic calming and applying the right device to address community concerns.

Other Jurisdiction Programs

Staff reviewed neighboring communities for similar programs and alternate programs. A summary table is provided on the next page. Several surrounding communities don't have similar programs. Douglas County specifically rejects the idea of speed humps as standard traffic calming device, and recommends targeted enforcement.

Compared to those that do have a program the Town was an early adopter of this type of program initiative, and the Town remains the most accessible to our residents for these types of improvements. Parker's Neighborhood Traffic Calming program is the most similar. Of note, it evaluates local streets and residential collector roadways in a similar manner. Parker and other communities have more initial phase options prior to installing any devices in an attempt to do more education and enforcement prior to committing to roadway improvements. Points of contact are able to more easily access these earlier phases compared to Castle Rock, however to install physical devices requires a greater percentage of the affected area to support the Project, and approval from Town Council is required with no set aside budget. Parker does not allow speed humps unless Town Council specifically approves on a special basis. By comparison in Golden, the Town's Program is much more accessible initially, with higher thresholds needed to determine the need for devices. In Golden, in order for staff to be able to evaluate the need for a neighborhood speed hump, requires 75% support from the area before consideration, compared to needing only 5 signatures in Castle Rock to perform the threshold study and then 50% of resident's affirmative vote to install. Once general approval to install devices by the neighborhood is met, the speed profile to install devices in Golden is slightly different than Castle Rock. Here we use 85% percent of drivers being over 5 MPH above the speed limit and in Golden it is 30% of motorists being over 5 MPH.

Boulder has been the quickest to transition between different speed management programs for their roadways. They had a robust neighborhood driven traffic calming program, then changed to a quick speed management implementation program based on requests that installed delineators and paint improvements, and now they are pausing all those efforts to focus on their high injury network (collectors and arterials) improvements with their funds at their City Council's direction.

Other programs used by some, including Denver, Boulder, and Golden change their local street speed limits jurisdiction wide from 25 MPH to 20 MPH unless otherwise posted in programs called “20 is Plenty”. Results have shown that this has not had an impact on driver speeds. In Boulder and elsewhere, 6% fewer people drove under 20 miles per hour after new speed limit signs were installed, and roughly 2% more cars travelled over 30 or 35 mph at several locations, according to their data. It was stated that it was not the point of the political decision. Lawmakers argued that lower speed limits is just the first step toward creating a culture of safer driving in their community. However, none of the jurisdictions have a master plan for developing this culture, nor a definition of what a safer driving culture means. Their staff and ours agree, the best way to change driver behavior is to change infrastructure, so additional improvements will follow or should be done in conjunction with lowering the speed limit. This includes, narrower streets, roads without a painted centerline, a mature tree canopy, cars parked parallel along the side of the street — all these elements provide a more focused visual for the driver. The “20 is Plenty” speed limit type of program has a cost, to time and resources to change all of these signs. It cost Boulder \$65,000 to change 450 signs across their community. The evaluation of speed limit postings on actual driver speed behavior has been well studied across the nation with the common outcome being that posted speed limits do not significantly change driver speed behavior. The effect is that more drivers that are actually driving at safe speeds are placed in a scofflaw position. This is not in the overall public’s interest as a result. For these reasons, our staff are not recommending this type of program at this time.

Finally, Northglenn has a new program called, No Need for Speed, that allows points of contact to fill out an online application for a roadway of interest which begins a three step speed awareness process in that area. This includes community engagement, temporary devices installed if a problem is measured, and other signs and markings if determined needed. When the Town first developed our program, the feedback from our consultant that assisted indicated that nationally, jurisdictions that have installed temporary devices have found that residents don’t receive these well. This is due to the poor aesthetic quality of these types of devices. Northglenn also has a traffic calming program to install devices that is similar to Castle Rock’s, however 75% of a neighborhood approval is necessary to install a new calming device. Providing an alternative or more robust engagement and education process for a community, even with additional target enforcement in lieu of devices may be beneficial to our community. This level of engagement from staff with residents would be more frequent than our current program and may require an additional staff member to manage successfully. We have reached out to Northglenn and are looking to get more information about how it is working for them and their community. They have not been able to respond since they are a small staff to begin with, and have had recent turnover of their team.

Project Performance

Since 2015, two Program projects and two other traffic calming projects outside the program have been constructed. In the table below, before and after speed data is shown. Typical roadway speed is represented by the 85th percentile driver speed, the threshold used to determine approval of a project and the industry standard speed most drivers feel comfortable driving along a roadway. Results vary based on the devices used, however in all cases effective speed reduction results have been achieved at or below the roadway speed limit. On Diamond Ridge Parkway the after speed data has not been consistently recorded and staff have scheduled a task to do that on a typical day and will update the table accordingly.

Location	Devices	85 th Percentile Speed Before	85 th Percentile Speed After	+/- MPH (% Diff)	Notes
Saddleback Dr	Speed Cushions	33 MPH	18 MPH	-14 MPH (45% decrease)	
Diamond Ridge Pkwy	Chicane	41 MPH	*34 MPH	-7 MPH (17% decrease)	* After speed data based on demonstration chicane, current after data is being collected
Butterfield Crossing	Raised Crosswalk	42 MPH	29 MPH	-13 MPH (31% decrease)	
Gilbert St	Raised Crosswalk, Ped Refuge	33 MPH	26 MPH	-7 MPH (21% decrease)	

A complete location map (Appendix A) of traffic calming devices around Town is included.

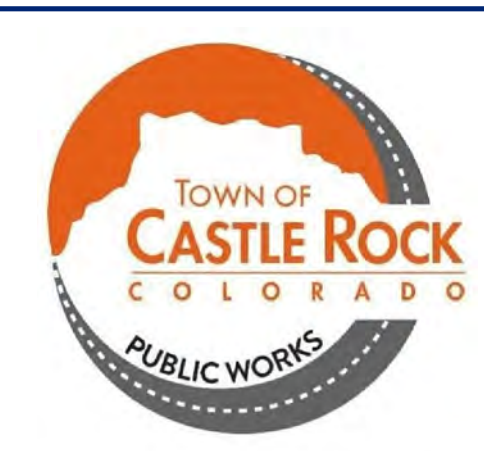
Recommendations

Principle objectives in the current Program that are recommended to remain, include:

- Ensure a consistent approach to the initiation and approval of a traffic calming study and development of a traffic calming project.
- Define the existing traffic conditions on the street or within the neighborhood that warrant the initiation of a traffic calming study and project.
- Integrate aspects of education, enforcement, and engineering in the development of traffic calming projects.
- Encourage citizen involvement in developing solutions to neighborhood traffic concerns.
- Effectively balance the goal of reducing traffic impacts with the needs of the Town's emergency response personnel.
- Efficiently allocate the use of Town funding and resources.

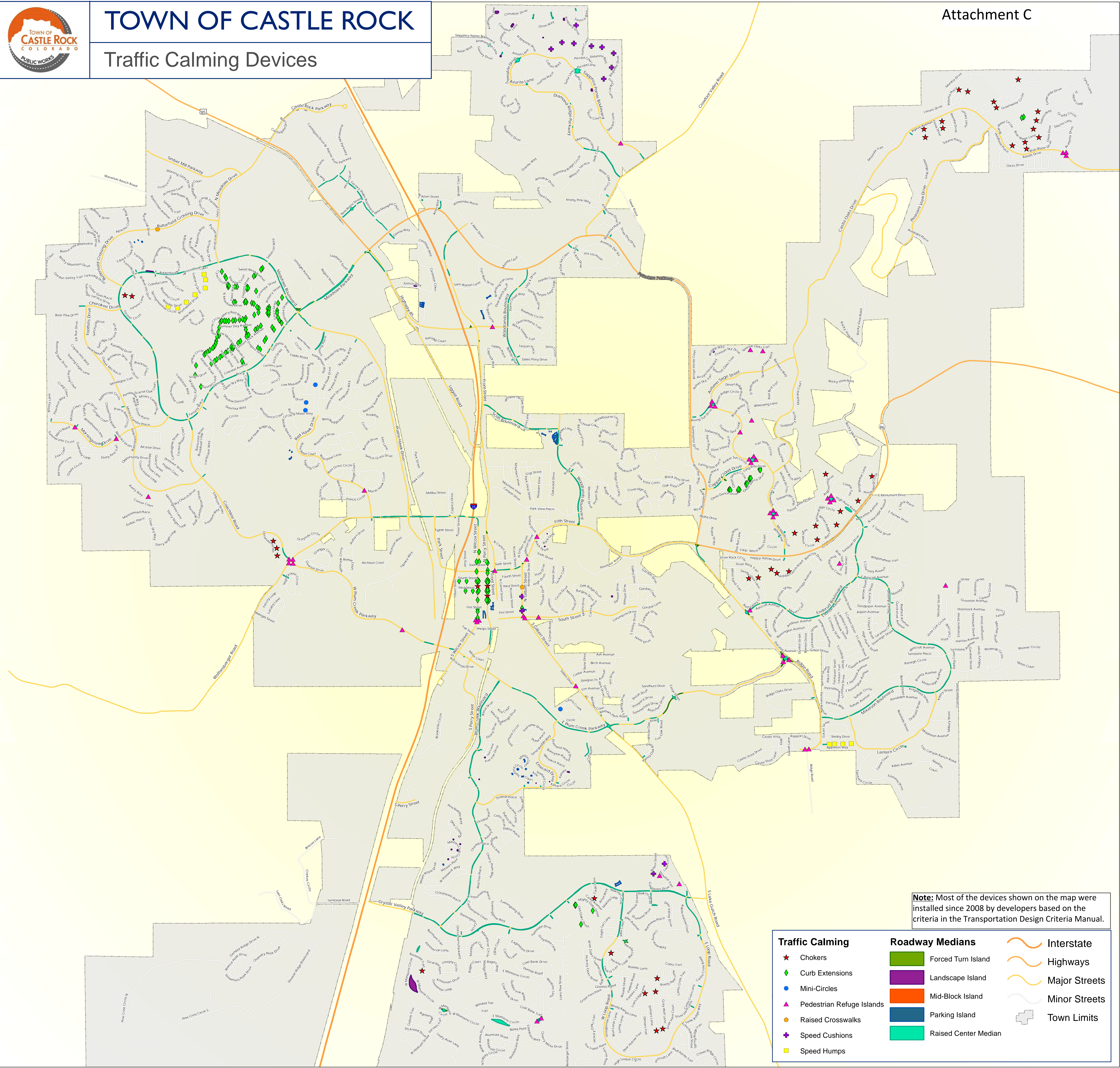
Staff recommends keeping the current Program in place, and expand the program to include:

- Modify the approval process for collectors with no direct driveway access to be determined by Town Council with input from the broader community.
- Allow for neighborhoods that don't meet the program criteria to privately fund improvements only if the surrounding neighborhood supports their installation as defined in the current program. Since staff review would be needed for all privately funded projects, it's recommended that our current private development review fees be considered to apply to each application.



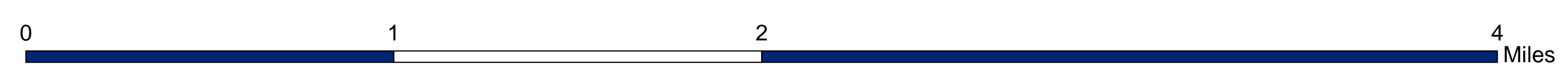
TOWN OF CASTLE ROCK

Traffic Calming Devices



Note: Most of the devices shown on the map were installed since 2008 by developers based on the criteria in the Transportation Design Criteria Manual.

Traffic Calming	Roadway Medians	Interstate
Chokers	Forced Turn Island	Highways
Curb Extensions	Landscape Island	Major Streets
Mini-Circles	Mid-Block Island	Minor Streets
Pedestrian Refuge Islands	Parking Island	Town Limits
Raised Crosswalks	Raised Center Median	
Speed Cushions		
Speed Humps		



Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or inconsistencies. Such discrepancies in data are inherent and in supplying this product to the public the Town of Castle Rock assumes no liability for its use or accuracy. For questions or comments regarding omissions, corrections, or updates please visit CRgov.com/directory for contact information.
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Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 11. **File #:** DIR 2023-005

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Daniel Sailer, Public Works Director

Discussion/Direction: Knobcone Drive Neighborhood Traffic Calming Request

Executive Summary

In early November 2022 a letter (Attachment A) was presented to the Town requesting speed humps on Knobcone Drive. This street has previously been assessed for the same request as part of the Town's Neighborhood Traffic Calming Program and did not meet criteria. Since the Town has a formal program approved by Town Council, and this request is being made outside of this program, this request must be acted on by Town Council. The purpose of this item is to report factual findings for consideration and request Town Council make a formal recommendation on this matter.

The request is made on the perception that the roadway has steep gradients, constricted sight lines, and a blind curve such that constructing speed humps is necessary to keep all vehicles traveling at, or below the speed limit. Town staff has completed an engineering review and has determined that sight lines are adequate for the typical prevailing speeds such that additional safety enhancements are not necessary and would not provide significant benefit for the expenditure of funds (approximately \$12,000 - \$40,000 depending on whether this request is granted using staff labor or contracted labor).

The Town has more than 500 lane-miles of residential roadways. As this street is not uniquely different than other residential streets (sufficient sight distance for speeds) staff is not recommending approval of this request. The Town has an approved program that is geared specifically for utilizing a consistent process to assess these requests. Knobcone Drive has previously been reviewed per this program and found not to meet criteria. The approval of this request to utilize public funds for installing speed humps is likely to set a precedence for other residential streets. Town Council has also recently requested that Town staff provide a review of the existing program and provide some options for Town Council to consider. This item is scheduled to be reviewed by Town Council at the same Council meeting. It would be appropriate for the HOA to apply again through program procedures after Town Council has provided direction for any program adjustments.

History of Past Town Council, Boards & Commissions, or Other Discussions

There will be a presentation on February 6, 2023 to the Public Works Commission to obtain the Commission's recommendation to Town Council on this matter. An update on their recommendation will be provided at the Town Council meeting.

In September 2021, staff received a signed petition from Knobcone Drive residents in the Timber Canyon neighborhood for a neighborhood traffic calming request. A subsequent traffic study was done and based on those results it was communicated to the point of contact that the street did not meet both the speed and volume thresholds required to advance within the Neighborhood Traffic Calming Program (Attachment B).

Further safety concerns were presented to Town staff in early September 2022 with regards to excessive driving speed and for staff to consider additional signage or beacons on Knobcone Drive. Prior to implementing any safety improvements, it was necessary to complete an engineering evaluation. The result of that evaluation found that the existing speed limit signage and supplemental signage (Steep Grade Warnings) are adequate, and no further signage was recommended. It was also pointed out that signage has a limited effective time frame. The Police Department was also notified for additional enforcement and to provide a radar speed feedback sign to help make drivers aware of their speed. The Police found similar speed and volume information when compared to the data collected in 2021. The 85th-percentile speed was 17 to 19 mph with 80 to 120 vehicles a day. They did not report any speeding issues.

Discussion

Location and Existing Roadway Information

The Timber Canyon neighborhood (see Figure 1) is located in the northeastern portion of Castle Rock, Colorado. Knobcone Drive generally has a north/south orientation and is classified as a local, residential roadway, serving about 50 single family residential homes in the neighborhood, about 11 of which take direct access from Knobcone. At its northern terminus, Knobcone intersects with Crowfoot Valley Road, a regional arterial roadway. At its southern terminus, it intersects with another local street, Beechnut Place, which connects with a right in / right out only access to State Highway 86 (Founders Parkway). Based on the measured vehicle traffic volumes, staff does not find this roadway is being utilized as a cut-through between Crowfoot Valley Road and Founders Parkway. The traffic is for local access only. Both access points to major roadways have an “entry street” cross-section, with divided, landscaped, center medians that aid in making drivers aware of the transition from highly mobile arterial and highway roadways, to residential, highly accessible neighborhood streets. There is no space for parking in the entry street areas, and with a 28 - ft nominal flow line to flow line street width, on-street parking is only available on one side. On-street parking has been infrequent and “No Parking” signage is not provided anywhere, due to the long and large driveways, and large garages available for each lot. There is a five-foot attached sidewalk on one side, the eastside, of the street. The speed limit is posted in a couple locations on Knobcone Drive at 15 miles per hour (mph) with steep gradient supplementary plaque signs. Knobcone is circuitous and has an advisory curve warning sign with another steep gradient supplementary plaque sign. The other 900-ft plus length roadway in the neighborhood, Silver Pine Drive, has not been a discussion point with the neighborhood.



Figure 1. Timber Canyon neighborhood

Public Works staff collected traffic data in September 2021, as a part of the neighborhood traffic calming request. Neighborhood traffic observations and a site safety review occurred on September 20, 2022. The Police Department increased enforcement and placed a radar speed feedback sign in the southbound direction for seven days at the end of September 2022 (Attachment C), and for the northbound direction for seven days at the beginning of October 2022 (Attachment D). The data collected from these radar signs did not show a speeding or volume issue on Knobcone.

Engineering Facts Evaluation

Historical crash data reviewed shows no crashes for this roadway.

Based on the traffic calming speed data collected in September 2021, at 5106 Knobcone Drive, the measured 85th percentile speed was 19.5 mph and 19.9 mph on September 14th and 15th respectively.

In order to meet the requirements of the Neighborhood Traffic Calming Program (Attachment E), the measured 85th percentile speed needs to be 20 mph or greater. The 85th percentile speed measured on Knobcone Drive did not meet the 20 mph minimum requirement.

Measured Average Daily Traffic (ADT) volume on the street was 245 and 215 ADT on September 14th and 15th respectively.

The Town's program requires that the ADT volume on the street must be a minimum of 500 vehicles per day. The results of the count indicate that traffic volumes do not meet the 500 vehicles per day minimum ADT requirement.

Based on the site evaluation in September 2022 of the roadway Knobcone Drive, no further signage or

devices are recommended due to the current signs being consistent with the requirements and recommendations of the Manual of Uniform Traffic Control Devices. Additionally, the roadway is curvy and hilly, and acts as natural traffic calming on Knobcone Drive that forces motorists to reduce their speed due to the sharp curves and steep gradients of the road. If there are speeders, they are doing so knowingly and without regard for these physical roadway constraints that will not change with additional signage.

Based on the radar speed feedback signage and data collection by the Police Department:
The 85th-percentile speed was 19.7 MPH with an average volume of 181 vehicles a day in the southbound direction, and
The 85th-percentile speed was 17.8 MPH with an average volume of 81 vehicle a day in the northbound direction.

The speed and volume data collected over a week in each direction by Police is consistent with the data collected by Public Works.

Staff has prepared a speed reduction primer that provides an overview of several options available for a variety of roadways and circumstances (Attachment F). Potential devices to consider on Knobcone, include an HOA owned and maintained radar speed feedback sign or signs, see policy details (Attachment G). Cost to permanently install a pair of devices is \$7,500, or each unit is approximately \$3,500. An eight-foot wide speed hump, requested specifically by HOA, has an initial cost of about \$6,000 each if the Street's Division constructs it and they can prioritize this work around other community needs, and approximately \$20,000 if a contractor performs the work.

Engineering Evaluation Findings

The efficient and responsible investment of resources in addressing safety problems is a difficult task. Since crashes can occur on all roadways in use, it is inappropriate to say of any roadway that it is safe. However, it is correct to say that roadways can be built to be safer or less safe. Road safety is a matter of degree. When making decisions affecting road safety it is critical to understand that expenditure of limited available funds on improvements in places where it prevents few injuries and saves few lives can mean that injuries will occur and lives will be lost by not spending them in places where more crashes could have been prevented. It is the Town staff's objective to maximize crash potential reduction within the limitations of available budgets by making road safety improvements at locations where it does the most good or prevents the most crashes.

The 85th percentile speed on Knobcone Drive is above the posted speed limit, but within the five mph threshold in the Town's Neighborhood Traffic Calming Program such that physical improvements typically would not be a good investment of Town funds. Additionally, the low volume of vehicles measured did not meet the volume threshold of the Town funded program either. It should be pointed out that installing traffic calming devices would likely increase emergency services response times, increase school bus route times, and impede snow plow and pavement maintenance teams.

We determined that signage advising of roadway conditions and speed are more than sufficient to inform drivers and that any additional signage was an additional cost that would not produce the desired effect to slow driving speeds. Lastly, Police have verified that speeds are consistently in a range of 10-20 MPH, and they did not find speeding to be a concern during their enforcement periods.

While Knobcone Drive does not meet any of the Town's program or safety criteria to install additional traffic calming devices, the Town does offer educational material, such as yard signs that remind drivers to slow down and drive the posted speed limit. There are also "traffic treaties" championed by residents, which are pledges by neighbors to drive the speed limit. These treaties bring awareness to the concern and promote problem-solving while neighbors go door-to-door seeking signatures. There is also a neighborhood sponsored radar speed feedback sign program that could be pursued (Attachment G). Staff are

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recommending these courses of action. Driving speeds can be re-evaluated in the future to determine their effectiveness or if additional steps are desired.

Further evaluation at this time is not recommended and Traffic Engineering staff will continue to monitor the safety of the roadway in this area.

Budget Impact

The Homeowners Association letter requests financial support from the Town to provide two speed humps at a cost of about \$6,000 each if the Streets Division does the work between other priorities, or \$20,000 each if a contractor constructs. The Town's annual Neighborhood Traffic Calming budget is \$25,000. There are a couple active NTCP petitions in the evaluation stage, but none that have determined the need for device implementation and required funds. Staff has neighborhood informational signs available and can provide those to the neighborhood within the current operations budget at no additional cost.

Staff Recommendation

Staff recommends Town Council deny the request to install speed humps. If the HOA desires, staff will work with them to provide educational material, such as yard signs that remind drivers to slow down and drive the posted speed limit, as well as encourage the neighborhood to form a "traffic treaty" championed by residents, which are pledges by neighbors to drive the speed limit. Staff are recommending these other courses of action over installing engineered devices due to their lower cost and reduced negative impact to other operations and maintenance, and because the evaluation found that the vehicles causing the issue are neighbors. Driving speeds can be re-evaluated in the future to determine their effectiveness or if additional steps are desired. In addition, the current program is under review as an item in the same meeting, and Town Council will assess options to update the program. The HOA could then consider applying through the formal process again.

Proposed Motion

"I move that Town Council does not approve the installation of the speed humps as requested by the Timber Canyon Homeowners Association. If the HOA agrees, it is recommended instead that educational materials be provided, and encourage the distribution of a neighborhood traffic treaty to encourage neighbors to drive the speed limit."

Alternative motions:

"I move that Town Council approve the installation of the speed humps as requested by the Timber Canyon Homeowners Association."

"I move to approve the installation of speed humps as requested, with the following conditions: (list conditions)"

"I move to continue this item to the Town Council meeting on (date) to allow additional time to (list information needed)"

Attachments

Attachment A - HOA Letter - November 2022

Attachment B - NTCP Letter - September 2021

Attachment C - Police Southbound Speed Data Report - September 2022

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Attachment D - Police Northbound Speed Data Report - October 2022

Attachment E - Town Council Approved Neighborhood Traffic Calming Program Resolution information

Attachment F - Speed Reduction Primer

Attachment G - Private Radar Speed Feedback Sign Policy information

TIMBER CANYON HOMEOWNERS ASSOCIATION

November 3, 2022

Mr. David Corliss, Town Manager

Mr. Dan Sailer, Director, Public Works Department

Gentlemen:

The Board of Directors sincerely appreciates the time you spent with us on October 10th to discuss speed calming on Knobcone Drive. We especially appreciate the cooperative and problem-solving attitude evident during our meeting. Since our meeting, the Board has reached out directly to all homeowners affected by the presence of speed humps on Knobcone Drive to both inform them of our initiative working with the town and getting their consent to the presence of speed humps. The results of our survey resulted in 80% of the homeowners approving the speed humps or giving their conditional approval based on the speed humps locations and height. If required we would be happy to provide individual homeowner responses.

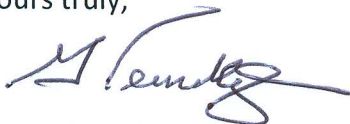
We believe and are convinced that Knobcone Drive uniquely qualifies for consideration of the installation of speed humps. The considerations are:

- the presence of steep gradients
- constricted line of sight combined with a narrow roadway
- a blind curve at the crest of Knobcone Drive

The speed limit on Knobcone Drive is 15 mph to both facilitate a more pleasant quality of life in our small community wedged between two major Town and County thoroughfares, and to better ensure the safety of our residents. The presence of speed humps both before and after the crest of the hill would help ensure that vehicles conform to this speed limit. The Board of Directors is unanimous in our desire to help control vehicle speeds on Knobcone Drive.

We respectfully request your full consideration of our request including engineering and financial support for the construction of these proposed speed humps. We understand that our request needs to go before the Town Council for approval. The Board's preferred date for scheduling discussion with the Town Council is November 15th if the agenda for that meeting has not been finalized. Members of the Board would be more than willing to participate in the Council meeting to add further support to our request.

Yours truly,



Glenn Terwilliger, President, Timber Canyon Board of Directors

Cc: Timber Canyon HOA Board of Directors



"Our mission is to provide outstanding service, safety and support for transportation infrastructure and maintenance."



September 27, 2021

Amanda Benefiel
Advance HOA Management, Inc.
PO Box 370390
Denver, CO 80237

RE: Traffic Calming Request -Traffic Data Results

Thank you for sharing your homeowner concerns regarding traffic conditions on Knobcone Drive. In response, the Town has collected traffic data along the street to better understand the conditions.

A copy of the Neighborhood Traffic Calming Program policies and procedures are also enclosed for your reference. The program was adopted to address neighborhood concerns about speeding vehicles and cut through traffic. The program eligibility thresholds were established to identify and address problems while balancing Town resources against the demands for traffic calming.

In order for a street to qualify for the traffic calming program it must meet or exceed the minimum thresholds for traffic volumes and speed. There must be an average total of at least 500 vehicles per day on the residential street, **and** the minimum 85th percentile speed must be 30 mph or greater, or at least 5 mph above the posted speed limit if the limit is higher than 25 mph. The 85th percentile is the speed at or below which 85 percent of people drive at any given location. The 85th percentile speed is also the speed that has been generally determined by traffic engineers nationwide as the safe "operating speed" for a street under good weather and visibility conditions. Speed limits are often set according to the measured 85th percentile speed.

In order to gather the necessary volume and speed data, Town staff had traffic and speed measuring equipment placed along Knobcone Drive. Data was collected on September 14th and 15th. The following data are the results of the traffic collection:

Measured 85th Percentile Speed:

September 14th = 19.5 mph
September 15th = 19.9 mph

In order to meet the requirements of the program, the measured 85th percentile speed needs to be 30 mph or greater. The 85th percentile speed measured on Knobcone Drive did not meet the 30 mph minimum requirement.

Measured Average Daily Traffic (ADT) Volume on the Street:

September 14th = 245 ADT

September 15th = 215 ADT

The Town's program requires that the ADT volume on the street must be a minimum 500 vehicles/day. The results of the count indicate that traffic volumes did not meet the 500 vehicles per day minimum ADT requirement.

STAFF RECOMMENDATIONS:

Based on the results of the recent traffic study, Town staff has determined that Knobcone Drive does not meet both conditions of the eligibility criteria established in the Town's Neighborhood Traffic Calming Program. Please be aware that while Knobcone Drive does not meet the Program's criteria, the Town does offer educational material, such as yard signs that remind drivers to slow down and drive the posted speed limit. There are also "traffic treaties" championed by residents, which are pledges by neighbors to drive the speed limit. These treaties bring awareness to the concern and promote problem-solving while neighbors go door-to-door seeking signatures.

The Neighborhood Traffic Calming Program policy does provide an appeal process for staff's decisions. It is on page 10 of the enclosed policy document. Also this street will be eligible for re-evaluation in one-year.

I am available to discuss the findings of the study, or answer any questions you may have. I can be reached at 720-733-2483, or treiff@crgov.com.

Sincerely,

Tom Reiff
Transportation Planner

cc: Dan Sailer, P.E., Public Works Director
Ryan Germeroth, P.E., Public Works Assistant Director
Jacob Vargish, P.E., Transportation Planning and Traffic Manager



Start: 2022-09-20

End: 2022-09-27

Times: 0:00-23:59

Extended Speed Summary

Timber Canyon, Knobcone Dr/ Tulip Tree Pl, SB

Violation Threshold: Speed Limit + 10

Speed Range: 1 to 150

Overall Summary

Total Days of Data: 7

Speed Limit: 15

Average Speed: 14.62

50th Percentile Speed: 15.16

85th Percentile Speed: 19.68

Pace Speed Range: 11-21

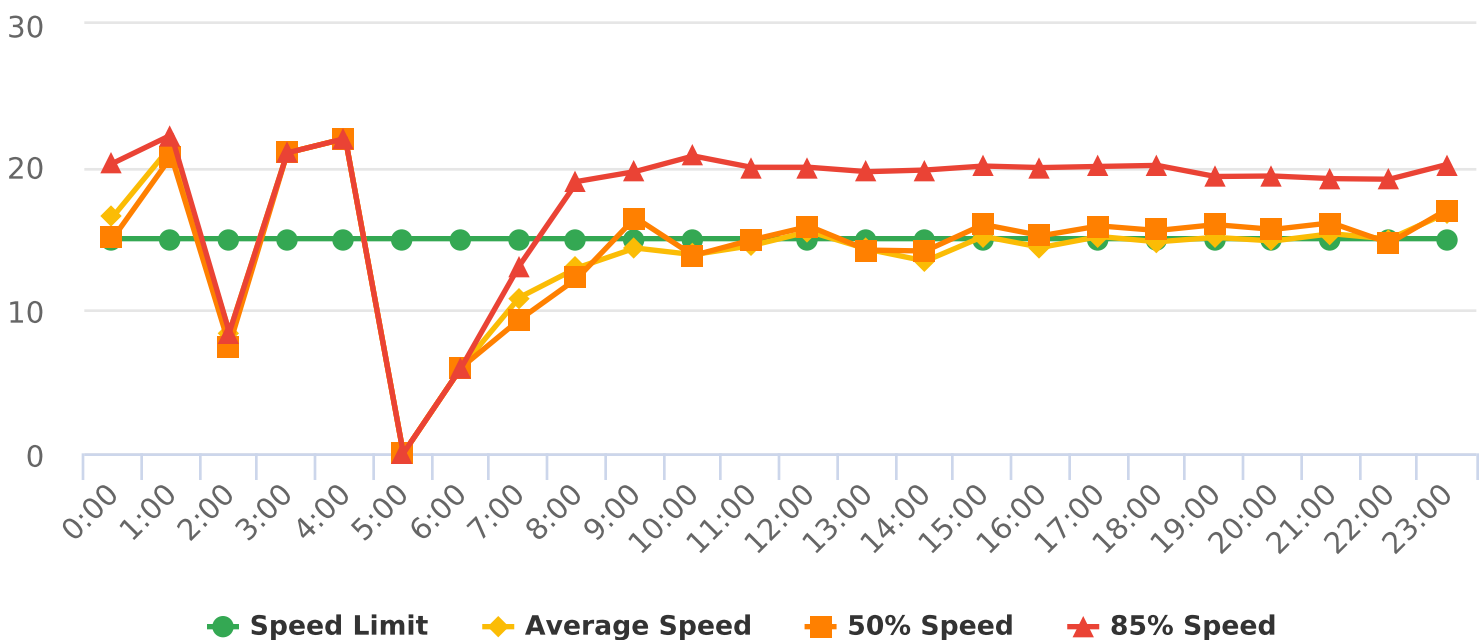
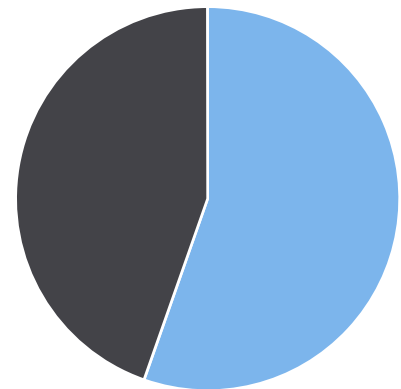
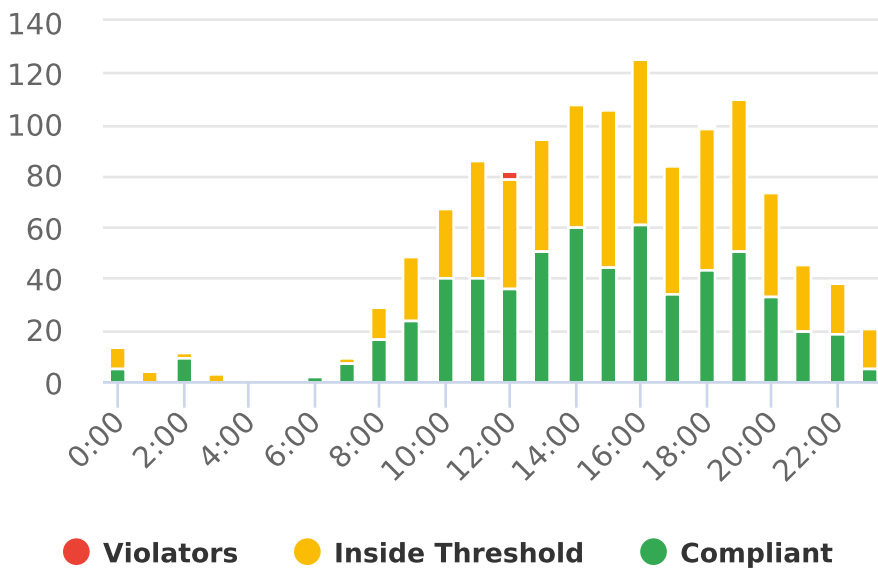
Minimum Speed: 5

Maximum Speed: 29

Display Mode: Display Off

Average Volume per Day: 181.0

Total Volume: 1267





Start: 2022-09-20

End: 2022-09-27

Times: 0:00-23:59

Extended Speed Summary

Timber Canyon, Knobcone Dr/ Tulip Tree Pl, SB

Violation Threshold: Speed Limit + 10

Speed Range: 1 to 150

Time	Sign Mode	Speed Limit	Total # Vehicles	Total # Violator	% Violator	Avg # Vehicles	Avg # Violators	Min Speed	Max Speed	Avg Speed	50% Speed	85% Speed	Sign Effectiveness
0:00	Display Off	15	14	1	7.1%	2.3	0.2	7	26	16.6	15.1	20.3	85.8%
1:00	Display Off	15	4	0	0.0%	0.8	0.0	20	23	21.5	20.8	22.3	24.8%
2:00	Display Off	15	11	0	0.0%	2.2	0.0	5	23	8.5	7.5	8.5	9.1%
3:00	Display Off	15	3	0	0.0%	0.6	0.0	19	23	21.0	21.0	21.0	66.7%
4:00	Display Off	15	1	0	0.0%	0.2	0.0	22	22	22.0	22.0	22.0	0.0%
5:00	Display Off	15	0	0	0.0%	0.0	0.0	n/a	0	n/a	n/a	n/a	n/a
6:00	Display Off	15	2	0	0.0%	0.4	0.0	6	6	6.0	6.0	6.0	50.0%
7:00	Display Off	15	9	0	0.0%	1.8	0.0	5	20	10.9	9.3	13.1	44.3%
8:00	Display Off	15	29	0	0.0%	5.8	0.0	5	25	13.0	12.2	19.0	38.1%
9:00	Display Off	15	49	0	0.0%	9.8	0.0	5	25	14.3	16.5	19.7	51.1%
10:00	Display Off	15	68	1	1.5%	13.6	0.2	5	26	13.9	13.8	20.8	61.8%
11:00	Display Off	15	86	0	0.0%	14.3	0.0	5	24	14.5	14.9	20.0	41.8%
12:00	Display Off	15	82	3	3.7%	13.7	0.5	5	29	15.5	15.9	20.0	55.9%
13:00	Display Off	15	94	0	0.0%	15.7	0.0	5	24	14.3	14.2	19.7	52.0%
14:00	Display Off	15	108	0	0.0%	18.0	0.0	5	24	13.4	14.1	19.8	64.9%
15:00	Display Off	15	106	0	0.0%	17.7	0.0	5	24	15.2	16.0	20.1	58.6%
16:00	Display Off	15	126	0	0.0%	21.0	0.0	5	24	14.4	15.2	20.0	49.9%
17:00	Display Off	15	85	1	1.2%	14.2	0.2	5	29	15.2	15.9	20.0	51.8%
18:00	Display Off	15	100	1	1.0%	16.7	0.2	5	28	14.8	15.6	20.1	62.9%
19:00	Display Off	15	110	0	0.0%	18.3	0.0	6	24	15.1	16.0	19.3	58.1%
20:00	Display Off	15	74	0	0.0%	12.3	0.0	5	25	14.8	15.6	19.4	58.0%
21:00	Display Off	15	46	0	0.0%	7.7	0.0	6	25	15.3	16.1	19.2	54.4%
22:00	Display Off	15	39	1	2.6%	6.5	0.2	5	28	15.0	14.7	19.2	66.8%
23:00	Display Off	15	21	0	0.0%	3.5	0.0	5	23	16.8	17.0	20.2	57.2%
Total Volumes/ Avg			1267	8	0.6%	217.0	1.5	5	29	14.9	15.0	18.7	50.6%
Total/Avg w/o Feedback			1267	8	0.6%	217.0	1.5	5	29	14.9	15.0	18.7	50.6%
Total/Avg w/ Feedback			0	0	0	0.0	0.0	n/a	n/a	n/a	n/a	n/a	n/a



Extended Speed Summary

Timber Canyon: Knobcone Dr / Crowfoot Valley Rd, NB

Start: 2022-09-27

End: 2022-10-04

Times: 0:00-23:59

Violation Threshold: Speed Limit + 10

Speed Range: 1 to 150

Overall Summary

Total Days of Data: 8

Speed Limit: 15

Average Speed: 14.83

50th Percentile Speed: 14.01

85th Percentile Speed: 17.75

Pace Speed Range: 10-20

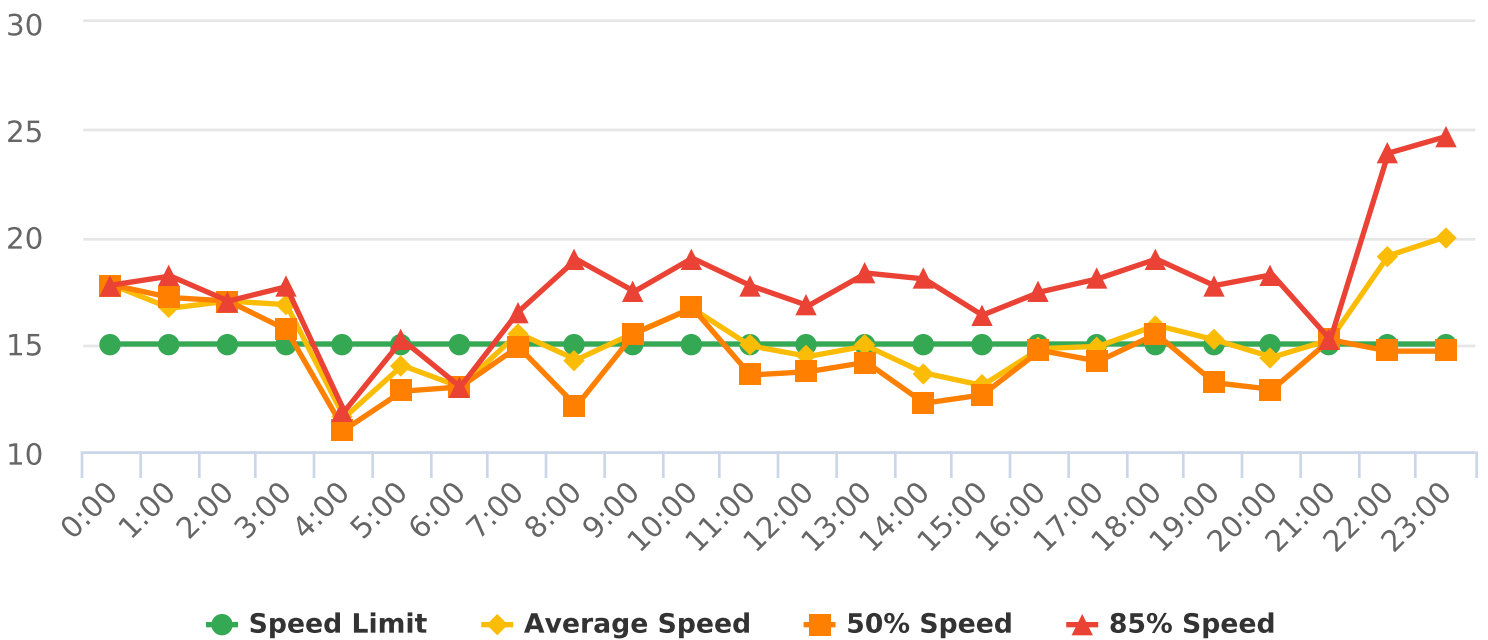
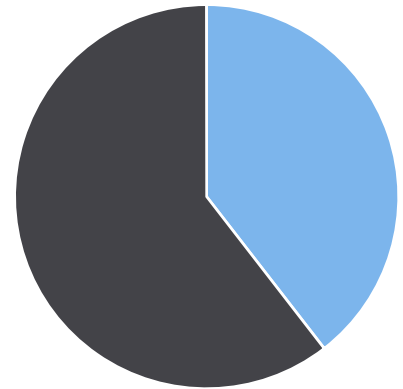
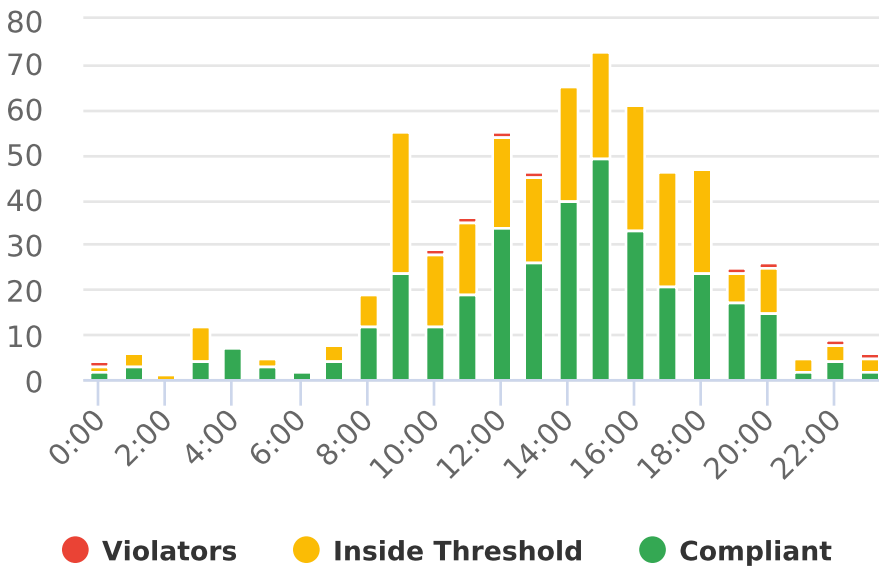
Minimum Speed: 5

Maximum Speed: 52

Display Mode: Display Off

Average Volume per Day: 81.3

Total Volume: 650





Start: 2022-09-27

End: 2022-10-04

Times: 0:00-23:59

Extended Speed Summary

Timber Canyon: Knobcone Dr / Crowfoot Valley Rd, NB

Violation Threshold: Speed Limit + 10

Speed Range: 1 to 150

Time	Sign Mode	Speed Limit	Total # Vehicles	Total # Violator	% Violator	Avg # Vehicles	Avg # Violators	Min Speed	Max Speed	Avg Speed	50% Speed	85% Speed	Sign Effectiveness
0:00	Display Off	15	4	1	25.0%	0.6	0.1	10	29	17.8	17.8	17.8	75.0%
1:00	Display Off	15	6	0	0.0%	1.0	0.0	12	24	16.7	17.2	18.2	33.2%
2:00	Display Off	15	1	0	0.0%	0.2	0.0	17	17	17.0	17.0	17.0	0.0%
3:00	Display Off	15	12	0	0.0%	2.0	0.0	11	20	16.8	15.7	17.7	66.7%
4:00	Display Off	15	7	0	0.0%	1.2	0.0	8	14	11.6	11.0	11.9	57.1%
5:00	Display Off	15	5	0	0.0%	0.8	0.0	10	21	14.0	12.8	15.2	0.0%
6:00	Display Off	15	2	0	0.0%	0.3	0.0	11	15	13.0	13.0	13.0	50.0%
7:00	Display Off	15	8	0	0.0%	1.3	0.0	9	18	15.5	14.9	16.5	12.5%
8:00	Display Off	15	19	0	0.0%	3.2	0.0	6	24	14.3	12.1	18.9	31.6%
9:00	Display Off	15	56	1	1.8%	9.3	0.2	6	27	15.5	15.5	17.4	23.3%
10:00	Display Off	15	29	1	3.4%	4.8	0.2	6	29	16.7	16.7	19.0	38.0%
11:00	Display Off	15	36	1	2.8%	6.0	0.2	6	26	14.9	13.6	17.7	52.9%
12:00	Display Off	15	55	1	1.8%	7.9	0.1	5	32	14.4	13.7	16.8	32.8%
13:00	Display Off	15	46	1	2.2%	6.6	0.1	6	26	14.9	14.2	18.3	56.4%
14:00	Display Off	15	66	1	1.5%	9.4	0.1	5	26	13.7	12.2	18.0	34.7%
15:00	Display Off	15	73	0	0.0%	10.4	0.0	5	25	13.1	12.6	16.3	41.0%
16:00	Display Off	15	61	0	0.0%	8.7	0.0	5	25	14.8	14.7	17.4	32.6%
17:00	Display Off	15	46	0	0.0%	6.6	0.0	6	25	14.9	14.2	18.0	34.8%
18:00	Display Off	15	47	0	0.0%	6.7	0.0	5	25	15.9	15.5	19.0	34.0%
19:00	Display Off	15	25	1	4.0%	3.6	0.1	8	27	15.2	13.2	17.7	44.0%
20:00	Display Off	15	26	1	3.8%	3.7	0.1	5	27	14.4	12.9	18.2	65.5%
21:00	Display Off	15	5	0	0.0%	0.7	0.0	9	19	15.2	15.2	15.2	60.0%
22:00	Display Off	15	9	1	11.1%	1.3	0.1	6	52	19.1	14.7	23.9	66.8%
23:00	Display Off	15	6	1	16.7%	0.9	0.1	9	39	20.0	14.7	24.7	50.0%
Total Volumes/ Avg			650	11	1.7%	97.2	1.4	5	52	15.4	14.4	17.7	41.4%
Total/Avg w/o Feedback			650	11	1.7%	97.2	1.4	5	52	15.4	14.4	17.7	41.4%
Total/Avg w/ Feedback			0	0	0	0.0	0.0	n/a	n/a	n/a	n/a	n/a	n/a



Revised Neighborhood Traffic Calming Program

Adopted by Town Council on: October 20, 2015

Resolution #: 2015- 85

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1.0 INTRODUCTION

In response to concerns about vehicle speeds and cut through traffic on residential streets, the Town of Castle Rock has developed this Neighborhood Traffic Calming Program. This guide outlines the Program, its objectives and goals, and the process that should be followed when working with a neighborhood on the development of a traffic calming plan. Also included are examples of "tools" that may be used on the streets as part of a traffic calming project.

This program is only for traffic calming issues within existing neighborhoods and on existing streets. Information regarding traffic calming devices that are being installed as part of a new development is included within the Public Works Department's "Transportation Design Criteria Manual".

2.0 PROGRAM MISSION STATEMENT AND OBJECTIVES

The Mission of the Town of Castle Rock Neighborhood Traffic Calming Program is:

To provide a consistent, feasible, and manageable procedure for addressing neighborhood traffic concerns on residential streets where documented speeding problems or other traffic factors exist that may adversely affect the overall residential quality of life.

The objectives of the Neighborhood Traffic Calming Program (NTCP) are to:

- To provide for a "neighborhood driven" process to address concerns about cut through traffic and speeds on residential streets.
- Improve neighborhood livability by reducing the impact of vehicular traffic on residential streets.
- Encourage appropriate driver behavior and reduce the number of vehicles exceeding the posted speed limit on residential streets.

The objectives of this policy are to:

- Ensure a consistent approach to the initiation and approval of a traffic calming study and development of a traffic calming project.
- Define the existing traffic conditions on the street or within the neighborhood that warrant the initiation of a traffic calming study and project.
- Integrate aspects of education, enforcement and engineering in the development of traffic calming projects.
- Encourage citizen involvement in developing solutions to neighborhood traffic concerns.
- Effectively balance the goal of reducing traffic impacts with the needs of the Town's emergency response personnel.
- Efficiently allocate the use of Town funding and resources.

3.0 POLICIES

The following policies provide detail on different aspects of the Neighborhood Traffic Calming Program.

3.1 Compatibility with Existing Policies

Neighborhood traffic projects should be implemented in a manner that is consistent with current Town plans, policies, and practices. Town staff will follow the warrants and placement guidelines contained in the Manual on Uniform Traffic Control Devices (MUTCD) when considering the installation of any new traffic signs and markings. Implementation of measures will also adhere to the American Association of State Highway and Transportation Officials (AASHTO) policy manuals and Town engineering standards.

3.2 Comprehensive Approach

Depending upon the type of problems being addressed and the street configuration within a neighborhood, the traffic calming study may often need to include adjacent streets to the one that is the object of the neighborhood complaint. This must be done to ensure that the solution to the traffic problems on one street isn't simply shifting the problem to an adjacent one.

When reviewing neighborhood traffic issues and developing mitigation plans, a team of Town staff members (Staff Team) led by the Public Works Department will determine where on the street in question the speed and volume data will be collected. The Staff Team will also define the project study area using logical boundaries, such as the roadway system (collectors, arterials, etc.), drainage-ways, or the neighborhood boundaries.

The Staff Team that defines this area will be made up of members from the Fire, Police, Community Relations, Public Works, and Development Services departments. If needed, members of other departments may be asked to join the team. The Staff Team will also identify the streets that are eligible to receive physical street treatments.

The focus of this program is to address concerns that residents have about the cut through volume and speed of traffic on their streets. It is not intended to address access, noise, congestion or other street related issues. The program is also not meant to be used for intersection issues or safety problems. All of these types of concerns and problems will be addressed through the Town's normal operational efforts and its capital improvement program.

3.3 Emergency Response

It is important that any physical device or treatment installed as part of a traffic calming project not interfere with emergency vehicle access or unreasonably reduce response times. To achieve this goal, example devices in the "traffic calming toolbox" that negatively impact emergency response times have been identified. The Town of Castle Rock's Fire and Police departments will be involved in the design of each project and their input will be considered before any plan is finalized or approved. The local emergency responders (Fire and Police departments) will be invited to each neighborhood meeting when implementation of any physical devices is being considered so that they may explain to the neighborhood their concerns about possible impacts on emergency response times.

3.4 Eligible Streets

Streets are typically grouped into three classifications:

- arterials
- collectors
- residential streets, also referred to as local streets

These classifications relate to the volume and nature of traffic using the streets and to the function that they have been designed to provide. For example, residential streets serve neighborhoods and have the lowest posted speed limits and the highest number of driveways.

Collector streets are generally used to "collect" traffic from residential streets and take it to nearby arterials. Collectors are also used within commercial areas. Collector streets will generally have more lanes, be wider and have a higher posted speed limit than residential streets.

Arterial streets are designed to move large amounts of traffic at higher speeds. They will generally be at least four lanes wide, have only a limited number of driveways to adjacent properties and have a higher posted speed limit than other types of streets. They often form the boundaries of neighborhoods, but rarely have any house frontage. Arterial and collector roadways are often further categorized as being either a "minor or major" facility.

The emergency responders generally refer to this classification system when they select their emergency response routes. Physical traffic calming devices that may cause delay to emergency vehicles ("delay inducing" devices) such as traffic circles and speed humps will not be considered for use on roadways that have been identified as critical emergency response routes without the approval of the Police and Fire departments. These streets would still be eligible for other traffic calming elements, such as "neck-downs", radar feedback signs, and the educational programs. As a clarification, while the roundabouts that have been installed throughout town are similar to traffic circles, they have been installed to control traffic, just as a traffic signal or stop sign does. They have not been installed to control speeding.

This traffic calming program is intended to address excessive speeding and cut through traffic on local residential streets. Traffic calming projects on collector roadways will only be considered when at least 50% of the platted lots fronting the collector street are residential, either a school or public facility that generates high pedestrian traffic is present, and the collector street must have a posted speed limit of 30 mph or less. Arterial streets are not eligible for traffic calming treatments as they serve as critical emergency response and snow removal routes and typically do not have residential frontage. The Staff Team that defines the project area will also identify the streets that are not eligible to receive physical street treatments.

In order to be eligible for the NTCP, the traffic studies conducted by the Town must show that the following "thresholds" are met or exceeded:

- The 85th percentile speed must be 30 miles per hour (mph) or greater, or, in the case of streets with posted speeds higher than 25 mph, the 85th percentile speed must be at least 5 mph over the posted speed limit. And a residential street must have a traffic volume greater than 500 vehicles per day (vpd), or, at least 20% of the traffic on the street must be determined to be "cut through traffic" by the Staff Team.
- A collector street within a residential area must have a traffic volume greater than 1,500 vpd.

3.5 Keeping Traffic on Appropriate Facilities

The traffic calming program is also intended to discourage traffic from "cutting through" a neighborhood on a residential street rather than using the arterial and collector street system. Collector or arterial roadways are the most desirable facilities for through traffic, but traffic will sometimes use residential streets to bypass congested intersections or to take a shorter route. Traffic calming treatments may be used to discourage traffic that, in the opinion of the Town's Traffic Engineer, should be using adjacent arterial and collector streets instead of neighborhood residential streets.

3.6 System of Devices vs. a Single Device

Traffic calming treatments are more effective when they are installed as part of a "system" rather than individually. Spot reductions in speed have been shown to lead to increased speeding at other points on a street. A traffic calming plan should be designed so as to calm traffic along an entire street, and not simply at the location where the study was taken. Generally physical treatments should be spaced approximately 400 to 600 feet apart to keep traffic speeds fairly consistent along the length of the street.

3.7 Landscaping and Aesthetics

Landscaping and other aesthetic treatments are critical components in the effectiveness of certain neighborhood traffic calming tools and in providing neighborhood enhancements.

A number of the devices, such as raised medians, traffic circles, and curb extensions are more effective when landscaping or other elements have been installed so as to change the appearance of the street and break up a driver's "view". By having these vertical, aesthetic treatments, the devices are more effective in changing drivers' perceptions and their

behavior. Landscaping and other treatments will be included in designs whenever possible.

Landscaping materials used in the designs must comply with the current Town policies regarding water demands. Maintenance of landscaping will be performed by either the property owner adjacent to the traffic calming devices, the neighborhood homeowners association (HOA) or by a civic association (CA), under a maintenance and licensing agreement with the Town. If an agreement cannot be reached, only non-irrigated vertical features will be installed. The Town will not be responsible for watering the landscaping elements installed as part of the project.

3.8 Permanent vs. Temporary Installations

Temporary installations are generally not as attractive or effective as permanent installations, making it difficult to test their effectiveness or public acceptance; therefore temporary installations will not be permitted. However, the temporary installation of radar speed feedback signs will be permitted during Phase 1 of the program.

3.9 Drainage Considerations

When designing a traffic calming feature, it is important that storm drainage within the area be carefully considered and accommodated. Physical treatments must not impede storm drainage within the street or create drainage problems for adjacent property owners. In some cases, the potential for drainage problems or changes in drainage patterns may limit or restrict the use of certain physical treatments.

3.10 Neighborhood Involvement

As stated in Section 2.0, "Program Mission Statement and Objectives", the NTCP is a neighborhood "driven" process that allows residents living along the street and in the study area to help identify and solve issues along their street(s). One of the most critical issues when developing an effective traffic calming plan is the involvement of residents in the study area. Residents of the area must be able to provide input on the extent of the traffic problem and to help in identifying appropriate solutions. Each neighborhood will have its own set of concerns, with some being more apparent than others. It becomes much clearer as to how complex many traffic issues are when neighbors meet and share their various perspectives and experiences.

The Town's staff will facilitate a series of meetings that will allow residents to participate in the creation of the traffic calming plan for their neighborhood. The person bringing the issue to the Town will be the "point of contact" (POC) responsible for circulating a petition; this is the initial step that must be taken before the process is started. The POC will also assist Town staff in organizing meetings and notifying the affected homeowners.

3.11 Minimum Threshold Determination

Documented traffic conditions, that either meet, or exceed, defined minimum traffic volume and speed thresholds, must be present in order for a street to be eligible for the traffic calming program. Studies will be conducted by Town staff to measure vehicle speeds and daily traffic volumes to determine if a traffic calming project may be initiated.

The minimum thresholds within this program are not intended to imply the number of vehicles (volume) that a street can handle (capacity). It is not the intention of this program to reduce the volume of traffic on a particular street to the thresholds established.

3.12 Approval of a Neighborhood Traffic Calming Plan

The traffic calming plan, developed to address the traffic issues on the street, or for other streets within the study area, must be approved by at least 50% of the property owners along the streets where the traffic calming features will be installed. If the plan is not approved then the project will be closed, and become eligible for the program in one year.

3.13 Commitment of Funding

Although no commitment can be made, the Town of Castle Rock may include funding in each year's budget for the implementation of traffic calming projects. Traffic calming studies will be initiated once an approved neighborhood petition has been received, and while the projects may move on to the design stage, the commitment of funding for the construction of any physical treatments will be based upon the order in which final designs have been approved by the homeowners along the street(s) where the traffic calming measures will be installed. Projects that have been designed and approved, but for which funding is not available, will have the highest priority for any future Town funding.

3.14 Use of Private Funding

A neighborhood homeowners' association, special district, or other organized entity may elect to provide funding for an approved traffic calming project, or even to contract for the construction of the project themselves.

The following conditions must be met in order for a privately funded project to be implemented, or constructed, by the Town:

- Town staff will prepare a preliminary cost estimate that will include design, permitting, construction and inspection costs.
- An additional 15% will be added to the project cost estimate to cover possible "over-runs".
- The Town and the funding entity will enter into a contract that will specify all of the conditions and responsibilities of each party for completion of the project. The contract will also specify the responsibilities and funding for any necessary maintenance activities.
- All agreements must be approved by Town Council.
- It will be the responsibility of the neighborhood to raise the funds needed to complete the project. All funding must be received by the Town before the Town will schedule construction. Once the project has been completed, any unused funds will be returned to the funding entity.
- If the neighborhood elects to design and construct the project, Town staff will work with the group on the design, review, permitting and construction process that must be followed.

3.15 Device Removal

This section refers only to the removal of traffic calming devices that have been installed through this program and cannot be used to remove traffic calming devices that were installed as part of a new development.

If after a minimum period of one (1) year, the property owners along the street(s) where the traffic calming devices were installed desire that the traffic calming devices be removed; the Town will require that a vote be taken. The area that will be included in the voting process will be the same as that participating in the initial vote approving the installation of the devices.

More than 50% of the properties returning a ballot must vote in favor of the removal. As with the vote to install the devices, the ballots must be signed by property owners. If the vote passes, devices will be scheduled for removal when funding is available.

All of the traffic calming devices that were installed as part of the project must be removed. Devices, installed as part of a system, will not be removed individually. If after at least one year following completion of the removal, the property owners along the street(s) where the traffic calming devices were installed should then decide if they want the Town to re-install the devices, and studies show the minimum thresholds for installation are still met, the entire cost of the design and installation will be paid by the property owners along the street where the devices had been removed per the conditions outlined in Section 3.14.

The Town will always have the authority to revise, remove or maintain a traffic calming device if it believes such actions are needed in the interest of public safety.

3.16 Device Modification

If an individual, neighborhood group, or homeowner association (point of contact) want to modify the existing traffic calming plan then the point of contact needs to reach out to the homeowners who previously voted on the plan, or live on the street with the traffic calming measures to determine if other homeowners share the same concerns. This will be accomplished through a petition. More than 50% of homeowners who live on the street with the traffic calming measures will need to sign the petition seeking a modification to the traffic calming plan. Town staff will provide the petition.

Upon receipt of the petition staff will verify names on the petition and then work with the point of contact and homeowners in the study area to facilitate new meetings to discuss possible modifications of the plan.

A new working group will be selected from homeowners in the study area. A preferred plan will be created and voted upon by the homeowners that live along the street where the modifications are proposed to be made. More than 50% of the homeowners on the street where the traffic calming is to be installed/modified must return the ballot and vote to approve the plan. If less than 50% of the homeowners vote in favor of the plan then the current plan will remain.

Staff will develop costs of modifications and budget based on availability of program funds if modifications are approved.

3.17 Toolbox of Physical Features that May be Used

A "toolbox" of devices that may be used for neighborhood traffic calming projects in the Town of Castle Rock is included as Appendix B of this guide. The toolbox includes a variety of treatments that, depending upon the specific traffic issues (speeding, or cut-through traffic) needing to be addressed, may be considered. Since some of the devices are intended to address very specific types of traffic conditions they may not all be suitable for every project. The toolbox contains a brief discussion of the pros and cons for each device, their possible impacts to emergency response and their estimated costs. Additional traffic calming techniques not included in the "toolbox" may also be added by the Staff Team as part of the plan.

3.18 Physical Features that May Not be Used

Some devices have been intentionally excluded from the Toolbox and shall not be considered for use within the Town of Castle Rock. The devices, as well as reasoning for their exclusion, are as follows:

Speed "Dips"

Speed "dips" are basically drainage cross pans that are being installed for speed control instead of for drainage purposes. "Dips" can cause undue delays and damage to fire department equipment. They can actually lead to new speeding issues since many newer automobiles are more comfortable when crossing the "dips" at higher speeds.

Speed "Bumps"

A speed "bump" is a parking-lot style treatment designed for very slow traffic speeds. Speed bumps are very damaging to fire equipment and don't allow for streets to be plowed following snow falls. They can also be very dangerous to bicyclists. A speed bump shouldn't be confused with a "speed hump", which has been approved for use on town streets. A "speed hump" has a much wider base and doesn't pose any of the safety issues that a "bump" does.

Rumble Strips

Rumble strips are not suitable for residential use due to the noise that they produce.

Stop Signs

Stop signs are traffic control devices, not speed control devices. They are used to assign "right-of-way" at an intersection according to the requirements of the Manual of Uniform Traffic Control Devices, the Federal manual that regulates signing, signalization and markings on a public street. Studies have shown that when stop signs have been installed to control speeds, there is an increase in number of intentional violations at the intersections, creating a very dangerous condition. Drivers tend to know when a stop sign has been installed for speed control, and they become frustrated by the unnecessary stop. They may even speed up when pulling away from the intersection to "make up for lost time". This behavior is just the opposite of that desired. Improper use of stop signs can create pedestrian safety issues, increased vehicular accidents, increased speeds between intersections, increased noise and air pollution, and can breed disrespect for all traffic control devices. Additionally, unwarranted stop signs create an enforcement problem and penalize all motorists, even the ones who travel within the posted speed limit.

4.0 ESTABLISHING A NEIGHBORHOOD TRAFFIC CONTROL PROGRAM

This section explains how a traffic calming project may be requested and the steps that should be followed in its implementation. Generally the process is divided into 3 steps:

- Project initiation, studies, and public outreach
- The implementation of a neighborhood education program, increased police enforcement, and other passive treatments
- The design and construction of physical treatments

These steps will include a number of tasks that will need to be completed and are more fully described as follows:

4.1 Project Initiation and Studies

This section describes how a project is approved for study and the speed and volume thresholds must be met in order for traffic calming techniques to be warranted.

4.1.1 Project Initiation

Traffic calming projects may be requested by individuals, neighborhood groups, homeowners associations, or anyone who feels that a problem exists on a residential street. When a request has been made of the Town to reduce speeding and cut through traffic on a street, staff will begin the process of determining the conditions that exist and the degree of concern that exists among residents along the street.

The first step that staff will take is to discuss the traffic situation and concerns with the person(s) making the request in order to better understand their concerns and the reasons they feel that a problem exists. This person will be the neighborhood "point of contact" (POC) during the process and help Town staff organize meetings and distribute information. At the request of the original POC another resident may be asked to be the POC later in the process. The POC's role is simply to help Town staff in the process. A packet of informational material concerning the Town's traffic calming program will be given to the person. This packet will include a guide to the NTCP, some brochures about the program that can be given to other residents of the neighborhood, and a petition form.

Undertaking a traffic calming project requires a significant expenditure of staff time and, in some cases, town funds. The Town wants to know that at least five (5) other homeowners along the street of concern believe that a traffic problem exists before traffic speed and volume studies are scheduled. A petition will be given to the POC, and it must be returned to the Town with the signatures of at least 5 other homeowners (one signature per property) living along the street in addition to that of the POC. When giving the POC the blank petition, staff will discuss with the POC

the boundary in which the petition is to be circulated.

While circulating the petition, we encourage residents to discuss their observations and concerns with each other to see if there is a desire to undertake a project. As can be seen from this guide, a significant amount of time may be required of the neighborhood during the process.

The POC shall notify the president of the homeowner's association, or the association's management company of their intention to circulate the petition and explain the issues that the POC is hoping to resolve. The POC will be asked to verify on the petition that this has been done. This step is not required if no HOA exists.

Once a petition has been submitted to the Town, staff will discuss with the POC the next steps that will be taken in evaluating the request.

4.1.2 Data Collection

Once a petition has been received and approved, the Town's Traffic Engineering Division will collect traffic volume and speed data to determine the conditions that presently exist on the street. The study data will be collected on weekdays so as to determine the normal traffic loads. If a school is located within the area, and the Staff Team believes that it would have an impact on the traffic conditions present on the street, the study will be conducted when the school is in session. If a commercial center, a recreation center, park or other significant traffic generator creates an impact within the study area, traffic counts on Saturday and Sunday may be conducted as well. Staff will attempt to schedule the study during a time when there are no special events being planned along the street.

4.1.3 Minimum Threshold Determination

In order to qualify for the implementation of the NTCP, the traffic conditions on the street must meet both of the following minimum "thresholds":

- 1) The street must have an 85th percentile speed (see the definition in Appendix A) of 30 miles per hour or greater or at least 5 miles per hour above the posted speed limit if the limit is higher than 25 miles per hour. Most residential streets within the Town limits are posted at 25 miles per hour, and
- 2) The street must have a traffic volume of at least 500 vehicles per day, or at least 20% of the traffic on the street must be found to be "cut through", as determined by Town staff.

For eligible collector streets, the traffic volume must be greater than 1,500 vpd.

For neighborhoods that are not "built out", the Staff Team will consider the specific traffic issues and concerns relative to the rate of development to determine if a project should be immediately pursued or if it should be delayed until the neighborhood is closer to completion.

4.1.4 Determination of the Study Area

If after evaluating the data, Town staff determines that the street is eligible for the traffic calming program. The Staff Team will meet to determine if other streets need to be included within the study area. The Staff Team will also determine the study area limits so that residents within the area can be notified of meetings and given an opportunity to participate.

4.1.5 Presentation of the Results to the POC and Identification of the Next Steps

Town staff will meet with the POC to discuss the information that was collected and if it has met the minimum thresholds. If the street qualifies for the program, the POC will be asked to help organize a meeting of residents within the study area.

If the thresholds are not met, the Town will not proceed with the traffic calming project, but Staff will notify the POC and work with the POC and other residents from the Study area on other possible approaches, such as driver awareness and educational programs. The street may be "re-studied" after one year to determine if the thresholds are then met.

If the POC so chooses, an appeal of staff's decision may be made by submitting a written request. This request must be signed by at least 5 of the people who signed the initial petition submitted by the POC. The request must be submitted to the Director of Public Works for an evaluation. Public Works will then present the request to the Public Works Commission for its review and recommendation. This meeting is open to the public and a time will be offered to anyone wanting to speak. Staff will then present the appeal to the Town Council. At this meeting, the recommendations of staff and the Commission will be presented. As at the Commission meeting, time is available for the public to present their information and observations.

If Town Council denies the appeal, the process will stop and the street(s) will be eligible for reevaluation after one year. If Council approves the appeal, the project will move forward.

4.1.6 Meeting with the Study Area to Discuss Traffic Study

Town staff will meet with POC and residents from the study area, if the minimum threshold criterion is met, to discuss the results of the traffic study. At the meeting staff will also discuss what actions may be taken during the Program, and how the process will proceed. The first steps taken to reduce the traffic impacts on the street will focus on Education, Enforcement and Passive Treatments, as described in Section 4.2, below.

4.2 Phase 1 – Driver Education, Police Enforcement and Passive Treatments

The first action that will be taken is to first initiate driver awareness and educational programs; to work with the Police Department on targeted speed enforcement; and to identify possible changes in street signing and markings (passive treatments). This will be done to see if reductions in vehicle speeds and cut through traffic can be achieved before moving on to the more expensive, physical treatments. These actions will be decided upon by the residents of the study area, in cooperation with the Staff Team and may occur either separately or concurrently.

4.2.1 Educational Efforts

Town staff will provide educational, and driver awareness tools to help reduce traffic speeds and volumes. These tools may include:

- Yard signs
- "Traffic treaties" – *A petition championed by the POC or assistants who gather pledges from neighborhood residents to drive the speed limit.*
- "Traffic" awareness campaign

4.2.2 Passive Treatments Installed

Depending upon the nature of the traffic issues staff may decide to implement passive treatments either on the street, at intersections where the street being

studied connects to another, or both. These treatments may include the following:

- Regulatory signage, such as turn restrictions and other operational changes
- Pavement markings (parking lanes, bicycle lanes, or visual narrowing)
- Changes in parking restrictions

4.2.3 Targeted Police Enforcement and Advisory Signing

At the discretion of Town's Police Department, "targeted" police enforcement may be used to control speeding problems. It should be noted that targeted enforcement may be initiated at any time during this process as part of the Department's enforcement procedures.

The Town may also install temporary radar speed feedback signs that provide feedback to the driver about their speeds.

4.2.4 Re-evaluation

Within four months following the initiation of the efforts described above, Town staff will re-evaluate the neighborhood traffic conditions to determine if the traffic problems still exist. Additional data will be collected to see if speeds and traffic volumes have changed and if the thresholds are still met. If the thresholds are still met, the project is eligible to proceed on to implementation of physical treatments.

If the speed and traffic volume thresholds are no longer met, the project will be considered complete and no additional actions will be taken.

The Staff Team will also meet with the POC and residents from the study area to present the results of the re-evaluation. If the street is eligible for the NTCP, the residents will be asked if they want to proceed with the development of a traffic calming plan. If they do, the Staff Team will begin the steps outlined in Section 4.3 for Phase 2 - Project Development and Implementation.

4.3 Phase 2 - Project Implementation

If the thresholds are still met after the follow-up study, and the neighborhood chooses to proceed, staff will begin to work with them on the development of a traffic calming plan.

4.3.1 Determination of Project Limits, Possible Restrictions, and Conceptual Plan

Town staff will establish the boundaries of the project area in order to identify the streets that will need some type of traffic calming features. This area may be a single street or may involve a wider area, as discussed in Section 3.2. During this meeting, the street classification(s) and the emergency response corridors within the area will be identified. Staff members from the Police Department, the Fire Department, Public Works, Community Relations, and Development Services will be asked to attend this meeting.

Once the project limits have been established, staff will prepare a conceptual plan showing the minimum number and approximate locations of the traffic calming devices that will be needed. This will be done to prevent a problem on one street from simply being shifted to another. This information will provide the basis of the plan that will be developed by the neighborhood working group.

Conditions that exist within the area that may restrict the use of some of the devices in the "toolbox" will also be identified and discussed.

4.3.2 Facilitated Neighborhood Meetings and Plan Development

Staff Team will develop a public outreach plan to facilitate neighborhood meetings

with residents and other stakeholders on the development of a traffic calming plan. It is important that everyone have an opportunity to express their different perspectives of the traffic issues in the study area.

Public meetings will be held to allow residents an opportunity to share their experiences and to learn about the issues facing their neighbors. Each of the properties within the study area will receive either an email, or mailing, about the project meetings. If the study area is included within an HOA, the president of the HOA will be notified of any meetings and invited to attend. The schedule for all public meetings will also be posted on the Town's website and on the street of concern to notify all Town residents and people driving on the street(s).

Although a street may seem to be the "property" of the residents living along it, the street is actually "public property" and available for use by everyone. Because of this, people who must use this street, but don't actually live along it, will be notified about the meeting via the Town's website or signs posted along the street(s) of concern. These additional "stakeholders" may include representatives of nearby schools, users of area park and recreation facilities, public organizations, or simply residents living along adjacent streets. The boundary of the study area that could possibly be impacted by the traffic calming plan will be used to determine who is invited to the meetings. Of course, the meetings will be open to anyone, invited or not.

If at all possible, the meetings should be held within the study area to make it easier for anyone interested to participate. Town staff will work with the POC to find a suitable location and time for the meeting. Town staff will attend and help facilitate the public meetings.

4.3.3 Development and Approval of a Traffic Calming Plan

The steps for development and approval of the plan will generally be as follows:

Step #1 – Meeting to identify the traffic problems and possible actions

Once the Staff Team has completed their conceptual design, the POC will be contacted to help assist the Town in arranging a meeting of residents within the study area. Prior to the meeting, Town staff will distribute information to all of the properties within the study area, which will include details of the issues being discussed, a map showing the limits of the study area, and the results of the traffic study. A copy of the NTCP policy will also be included along with an agenda of items to be discussed at the meeting. This information will be sent to the HOA, and posted on the Town's website announcing the meeting the project.

The first meeting will be held to solicit input from residents and other stakeholders in the study area regarding their observations and concerns with existing traffic patterns on the street(s).

A presentation on the various traffic calming measures contained in the "toolbox" will be made in order to explain the "pros and cons" of each, how they may be used and what changes each are designed to produce. Staff will show the project limits and explain how they were developed.

Town staff will present their conceptual plan with the understanding that it has not been finalized and that it won't be without the input and approval of the residents within the study area. The plan showing the Staff's recommendation of approximate number and locations of the devices will be presented, along with an explanation of how the base plan was developed. It is also important to be aware of the Town's budget limitations and how and when their project could be implemented. Town staff will also discuss any other traffic calming projects presently underway and how this could affect implementation of the neighborhood's project.

At this meeting, the attendees will be asked to select a "working group". This group will meet and prepare a traffic calming plan for the study area's consideration. The Town feels that this group should be made up of residents from the street of concern and the broader study area who:

- Have different opinions about the need for traffic calming
- May have knowledge about traffic calming devices/treatments
- Live in different parts of the study area on streets where traffic calming devices may be installed
- Live within the study area on streets where no devices are being installed

Town staff will also attend and help facilitate these meetings.

Step #2 – Meeting to refine the preferred traffic calming plan

Once the Working Group has been selected, it will meet to prepare a draft traffic calming plan. This meeting may occur during the meeting discussed in Step #1, or later, depending upon the decision of the group. The working group will present their proposed traffic calming plan and solicit input from those attending the meeting(s). Proposed modifications to the plan will be discussed and the measures to be included in the final plan will be identified and approved by those present. While the plan may differ from the Town's conceptual plan, it should be developed using the traffic calming treatments included in the Toolbox shown in Appendix B and within the parameters for device spacing and emergency response requirements incorporated in the Town's conceptual plan. Treatments not listed in the Toolbox may be considered if approved by the Staff Team.

Once the draft plan has been prepared, it will be distributed to residents within the study area and also posted on the Town's website for the general public.

Step #3 – Neighborhood approval

A ballot will be mailed to each property fronting the street where the devices will be installed. The ballot will ask if the proposed plan should be implemented.

More than 50% of the returned ballots must vote to approve the plan before it can be scheduled for implementation. Ballots must be signed by property owners and may not be completed by renters. There will be a 30 day voting period before the ballots are counted.

Should the ballot measure fail to get more than 50%, the project will come to an end without any traffic calming measures being installed. The street will then become eligible for the program again one year from the end of the 30-day voting period.

Step #4 – Study area notification of the voting results and the "next steps" in the program

Once the ballots have been counted, the study area will be notified of the results and the next steps that will be taken. The HOA will also be notified of the results and requested to distribute the information to the remainder of the study area.

4.3.4 Final Design and Implementation

Once the preferred plan has been approved for implementation, final engineering plans, specifications, and cost estimates will be prepared by Town Staff. If sufficient funding exists in the Town's budget, construction will then be scheduled. The study area will be kept informed as to the estimated schedule for completion of the project.

4.3.5 Order of Project Implementation

Although several traffic calming requests may be in the design and approval process at any one time, the commitment of any Town funding for the implementation of any project will not be made until the plan has been approved. Town funding for these projects will be limited to the amount included in the Town's approved budget. It may be possible that only one project per year can be constructed. Any project that has gone through the process and received the required approvals, after the Town has already obligated its available funding, will be given priority for any future Town funding that is made available for the Traffic Calming program. A project may remain on the "waiting for funding list" for a maximum of 3 years before having to be re-evaluated.

Should there not be sufficient Town funding available, the residents will have the option of funding the installation themselves.

4.3.6 Follow-up Study.

In order to gauge the effectiveness of the program, Town staff will conduct a "follow-up" study to determine what traffic changes have occurred since the traffic calming features were installed. The study will not only gather data from the street that was the subject of the program, but other adjacent streets as well to see if any shifts in traffic patterns has occurred. This data will be useful in grading the effectiveness of the project, as well as identifying how best to plan and implement future projects.

The data will be collected within 6-12 months following the completion of the project. If the data shows that the measures have not reduced the 85th percentile speed and/or cut through traffic volumes to a level below the Program's thresholds, the Town will notify the residents of the study area to see if a majority of them want to pursue other measures.

Appendix A: Glossary of Terms

85th Percentile Speed

The 85th percentile speed is the speed at or below which 85 percent of the motorists drive on a given road. This speed indicates the speed that most motorists on the road consider safe and reasonable under ideal conditions. It is often used by traffic engineers as a guideline for the setting speed limit on a roadway.

Arterial Street

Arterial streets are major roadways designed to carry high volumes of traffic at higher speeds. They not only move traffic between the different areas and neighborhoods of Castle Rock, but also connect to the major roadways leading into and out of town. Examples of arterial streets within Castle Rock include Wolfensberger Rd., Meadows Pkwy., Founders Pkwy., and Ridge Rd.

Collector Street

Collector streets are designed to provide a balance between traffic movement and land access within residential, commercial, and industrial areas. Collector streets often do not provide direct residential frontage but do often provide access to schools and parks. Collectors typically link arterial streets with neighborhood (local) streets and fall between the two in the roadway classification hierarchy. They will generally have higher traffic volumes and speeds than local streets but less than arterials. Examples of collector streets are Scott Blvd, Mikelson Blvd, Enderud Blvd. and Gilbert St.

Cut-Through Traffic

Cut-through traffic is defined as traffic using neighborhood streets that has no "origin or destination" on the residential street(s) or in the neighborhood, and is not required to use the street. For example, travel through a neighborhood in order to avoid a congested arterial or intersection. These trips generally are simply passing through the neighborhood and do not have either an origin or a destination within a neighborhood.

Daily Traffic

This is the number of vehicles passing a certain point on a roadway during a 24-hour period. These counts are two-directional and usually obtained from a mechanical traffic counter placed on the roadway for a continuous 48 hour period. The counting period will be conducted between Tuesday and Thursday and may include weekends if the Study Area is near a park, recreation area, or other weekend traffic generator.

Emergency Response Route

Emergency responders, such as Fire, Police, and ambulance, must be able to respond to calls throughout the community. Emergency response routes are those commonly used routes that allow responders to reach residents and businesses in a safe and efficient manner.

Physical Devices

Physical devices refer to traffic calming devices placed within the street. Examples of these are raised medians, traffic circles, curb extensions, speed cushions and speed humps. Nonphysical devices would include such things as signage, roadway striping, etc. that may guide, but not restrict, traffic movement.

Point of Contact (POC)

This refers to the person who made the initial request to the Town that traffic speeds and/or cut through traffic on a residential street are a concern. This person will be asked to circulate a petition along the street in question to determine if other residents have the same concern. The POC will also be asked to assist Town staff in setting up neighborhood meetings and in distributing information. The POC may be changed during the course of the study. The POC has the same rights and influence as other residents within the Study Area.

Residential Streets

Residential streets carry traffic within a neighborhood and provide access to residences along the street. These streets generally are designed for lower volumes and lower speeds. They will usually have on-street parking and direct driveway access.

Study Area

The study area will be defined by the Staff Team for each traffic calming project. It will include the street of concern, but may also include other streets that may be impacted by the installation of traffic calming features, such as traffic diversion that may occur when traffic calming features are installed on another street. It may also include residents that live on other streets but have to use the street(s) that are a concern.

Traffic Treaties

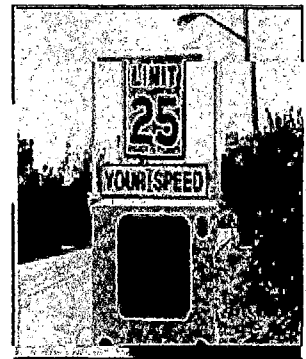
A petition championed by the POC, or assistants who gather pledges from neighborhood residents that pledge to drive the speed limit.

Traffic Calming Toolbox

Toolbox Overview

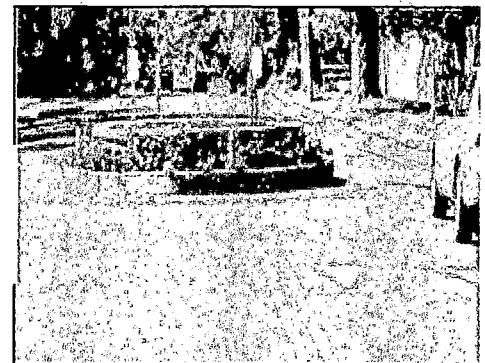
EDUCATION, ENFORCEMENT, & LOW-COST TOOLS:

- *Neighborhood Education Programs*
- *Speed Limit Signing*
- *Striping / Visual Narrowing*
- *Speed Monitoring Display*
- *Traditional Police Enforcement*



ENGINEERING (PHYSICAL) TOOLS:

- *Entry Islands*
- *Speed Cushions*
- *Raised Pedestrian Crossing*
- *Curb Extensions*
- *Partial Medians*
- *Traffic Circles*



Traffic Calming Toolbox Overview



Traffic Mitigation Tool		Relative Effectiveness		Associated Impacts						
		Speed Reduction	Cut-Through Reduction	Emergency Response	Enforcement Needs	Loss of On-Street Parking	Restricts Access	Maintenance	Noise	Relative Cost
Education, Enforcement, and Low-Cost Tools	Neighborhood Education Programs	Minimal	Minimal	No change	None	None	None	None	No change	Low (varies)
	Speed Limit Signing	Minimal	No	No change	Requires Enforcement	None	None	Minimal	No change	Low (\$200 and up)
	Striping / Visual Narrowing	Minimal	No	No change	None	Possible	None	Yes	No change	Low-Med (\$1K-\$5K)
	Speed Monitoring Display	Yes	No	No change	None	None	None	Minimal	No change	Med (\$2500)
	Traditional Police Enforcement	Yes	Minimal	No change	Requires Enforcement	None	None	None	No change	High
Engineering (Physical) Tools	Entry Islands	Yes	Minimal to Moderate	No change	None (Self-Enforcing)	Possible	None	Yes	No change	Med (\$10K-\$20K)
	Speed Cushion	Yes	Moderate (w/system of devices)	Minimal	None (Self-Enforcing)	Possible	None	Yes	Increases noise	Low-Med (\$1K-\$5K)
	Raised Pedestrian Crossing	Yes	Moderate (w/system of devices)	Increases time	None (Self-Enforcing)	Yes	None	Yes	Increases noise	Med (\$10K-\$40K)
	Curb Extensions	Yes	Minimal (w/system of devices)	No change	None (Self-Enforcing)	Possible	None	Yes	No change	Med (\$25K-\$40K)
	Partial Medians	Yes	Minimal (w/system of devices)	Minimal	None (Self-Enforcing)	Yes	Dependent Upon Application	Yes	No change	Med (\$25K-\$40K)
	Traffic Circles	Yes	Moderate (w/system of devices)	Increases time	None (Self-Enforcing)	None	None	Yes	No change	Med-High (\$25K-\$60K)

NEIGHBORHOOD EDUCATION PROGRAMS



DESCRIPTION:

PROGRAMS DESIGNED TO INCREASE DRIVER AWARENESS OF NEIGHBORHOOD TRAFFIC SAFETY ISSUES

APPLICATION:

Neighborhoods where speeding or other traffic safety concerns have been identified. Programs may include educational signing and stickers, speed pledges, and other means of increasing driver awareness and commitment to safety when driving in neighborhoods.



Effectiveness:

- Educational programs have been shown to produce some reduction in traffic speeds among residents of the targeted neighborhood. Results vary widely based on the type of program and neighborhood.

Other Advantages:

- Can be implemented often much sooner than physical treatments
- Relatively low cost
- Can often affect a much larger area (entire neighborhood) than a targeted, physical treatment

Delay to Emergency Vehicles:

- None

Other Disadvantages:

- Results may be minimal and may decrease after initial use
- Not self enforcing
- If signs are used, increased visual pollution from signs in the neighborhood



Special Considerations:

- None

Cost:

- Dependent upon programs used

SPEED LIMIT SIGNING

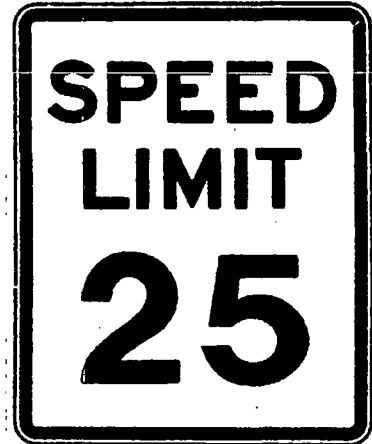


DESCRIPTION:

SIGNS THAT DEFINE THE LEGAL DRIVING SPEED UNDER NORMAL CONDITIONS. SPEED LIMITS ARE SET BASED ON ENGINEERING STUDY AND DETERMINATION OF APPROPRIATE SPEED FOR A GIVEN ROADWAY.

APPLICATION:

Streets where additional notification of the speed limit may assist with awareness.



Effectiveness:

- Motorists will generally drive at the speed at which they feel comfortable given the existing roadway conditions, regardless of posted speed

Other Advantages:

- Provides clear definition of legal speed limit
- Provides context for enforcement efforts
- Provides goal for traffic calming efforts

Delay to Emergency Vehicles:

- None

Other Disadvantages:

- Typically not effective in and of themselves
- Not self enforcing
- Requires on-going police enforcement
- Unrealistically low speed limits are difficult to enforce and tend to be disregarded
- More visual pollution from signs in the neighborhood

Special Considerations:

- Speed limits set by an engineering analysis tend to be higher than limits set by political pressures

Cost:

- \$200 per installation
- Additional cost may be required for study to determine what posted speed should be



STRIPING / VISUAL NARROWING

DESCRIPTION:

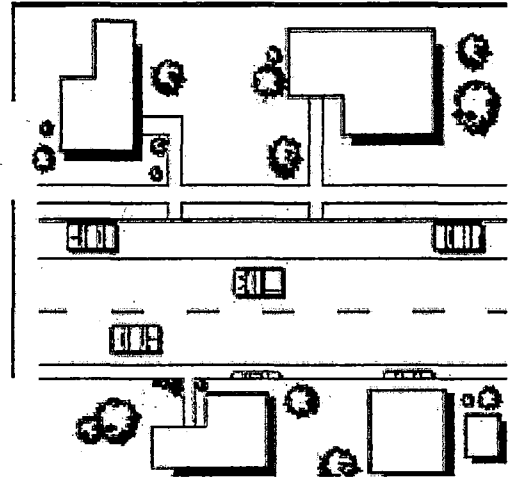
UNIQUE STRIPING ADDED TO STREETS TO VISUALLY NARROW THE LANE.

APPLICATION:

- Wide streets where physical narrowing is either not feasible or cost-prohibitive
- Can be used in conjunction with on-street bicycle lanes and/or parking lane designation

Effectiveness:

- Can result in minor reductions to vehicular speed.



Other Advantages:

- Can be used to alert drivers to pedestrians and bicycles
- Does not require removal of on-street parking
- Can be used with other devices
- Easy to install

Delay to Emergency Vehicles:

- None

Other Disadvantages:

- Generally not as effective in reducing speeds as physical narrowing
- May require frequent maintenance/re-striping if lines are ignored by drivers

Variations:

- On-street bicycle lanes
- Parking lane designation

Special Considerations:

- None

Cost:

- \$1,000-\$5,000 depending upon striping configuration and length of roadway segment

SPEED MONITORING DISPLAY



DESCRIPTION:

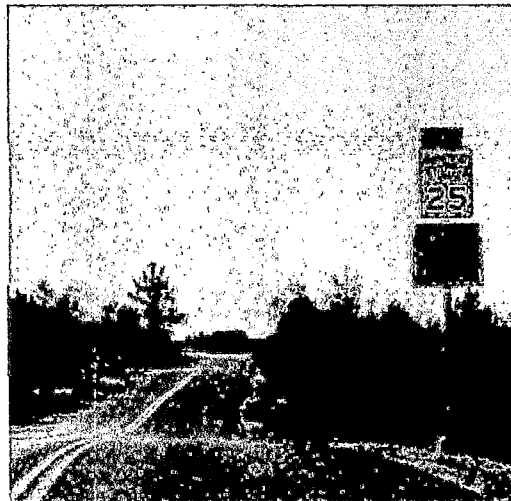
PERMANENTLY MOUNTED RADAR DISPLAY THAT INFORMS DRIVERS OF THEIR SPEED COMPARED TO THE SPEED LIMIT.

APPLICATION:

Any street where speeding is a problem

Effectiveness:

- May cause responsible drivers to slow down in the vicinity
- May cause unfamiliar drivers to slow down in the vicinity



Other Advantages:

- Educational tool
- Some drivers may assume it is linked to photo radar

Delay to Emergency Vehicles:

- None

Other Disadvantages:

- Not self enforcing
- Ongoing maintenance needed
- May lose effectiveness on familiar motorists
- Display may detract from neighborhood character

Special Considerations:

- Vandalism may be an issue

Cost:

- \$2,500 per installation



TRADITIONAL SPEED ENFORCEMENT



DESCRIPTION:

POLICE PRESENCE TO MONITOR SPEEDS AND ISSUE CITATIONS.

APPLICATION:

- Streets with documented speeding problem and need for quick mitigation
- Locations where restrictions are being violated

Effectiveness:

- Motorists generally slow down in the areas of active enforcement

Other Advantages:

- Flexible measure that can be implemented in almost any location at short notice

Delay to Emergency Vehicles:

- None

Other Disadvantages:

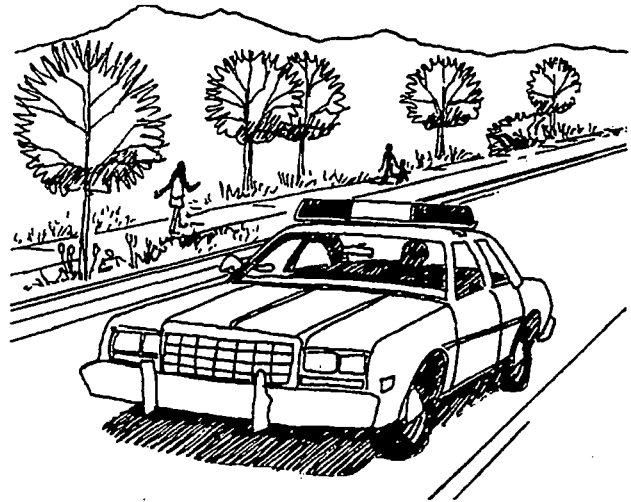
- Not self enforcing; temporary measure
- Fines do not typically cover cost of enforcement
- Disrupts efficient traffic flow on high volume streets
- Short "memory effect" on motorists when enforcement officers no longer present

Special Considerations:

- Often helpful in school zones
- May be used during "learning period" when new devices or restrictions first implemented

Cost:

- High cost primarily due to the staffing requirements



ENTRY ISLAND

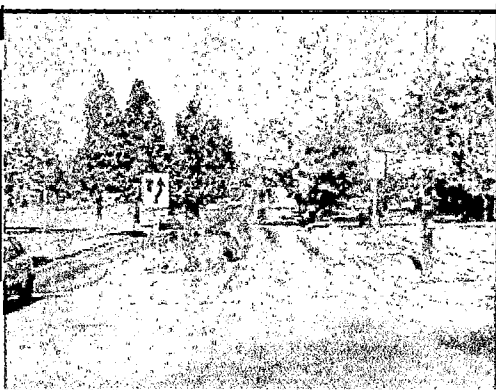
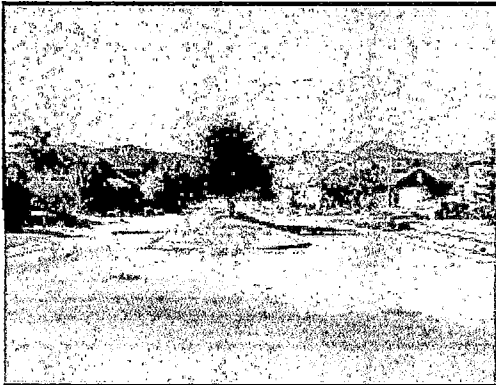
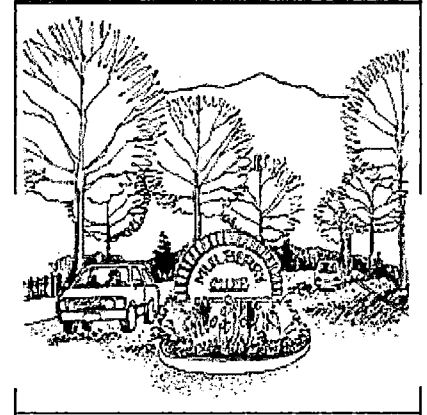
(Also known as: ENTRY MEDIAN or NEIGHBORHOOD IDENTIFICATION ISLAND)

DESCRIPTION:

A RAISED ISLAND IN THE CENTER OF A TWO-WAY STREET ADJACENT TO AN INTERSECTION, TYPICALLY AT THE PERIMETER OF A NEIGHBORHOOD.

APPLICATION:

Placed in a roadway to define the entry to a residential area and/or to narrow each direction of travel and interrupt sight distance along the center of the roadway



Effectiveness:

- Vehicles may slow down as they pass through the narrowed section

Other Advantages:

- Can notify motorists of change in roadway character
- Opportunity for landscaping and/or monumentation for aesthetic improvements
- May discourage cut-through traffic

Delay to Emergency Vehicles:

- 1 to 2 seconds typically

Other Disadvantages:

- Need for maintenance (and irrigation)
- May necessitate removal of on-street parking
- Snow plows must negotiate device

Variations:

- Can incorporate neighborhood identification signing and monumentation

Special Considerations:

- Care should be taken not to restrict pedestrian visibility at adjacent crosswalk

Cost:

- \$10,000 to \$20,000 depending on landscape type, intensity, irrigation needs, etc.

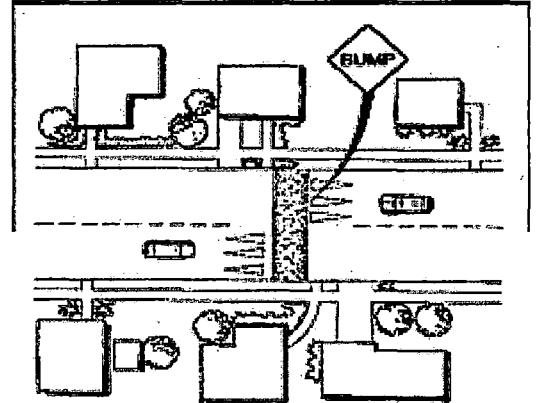
SPEED HUMP

DESCRIPTION:

SPEED HUMPS ARE AREAS OF PAVEMENT RAISED A MAXIMUM OF 4 INCHES IN HEIGHT OVER A LENGTH OF 12 FEET. THEY WORK BY FORCING MOTORISTS TO SLOW DOWN TO COMFORTABLY PASS OVER THEM. THEY ARE MARKED WITH SIGNS AND PAVEMENT MARKINGS.

APPLICATION:

Local or collector streets where speed control is desired

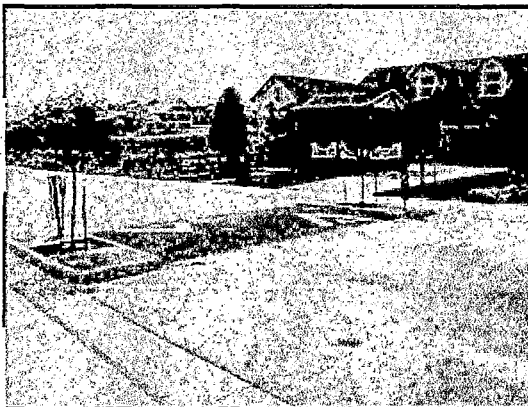


Effectiveness:

- Demonstrated reduction in average speed of 2-8 mph

Other Advantages:

- Self Enforcing
- Requires minimum maintenance; pavement markings must be maintained



Delay to Emergency Vehicles:

- 3 to 6 seconds per hump

Other Disadvantages:

- May damage emergency response vehicles if not carefully designed
- May increase traffic noise in vicinity of hump
- Snow plows must negotiate device

Special Considerations:

- Should not be used on critical emergency response routes
- Longer designs can minimize impact on long wheelbase vehicles

Cost:

\$1,000-\$5,000

RAISED PEDESTRIAN CROSSING

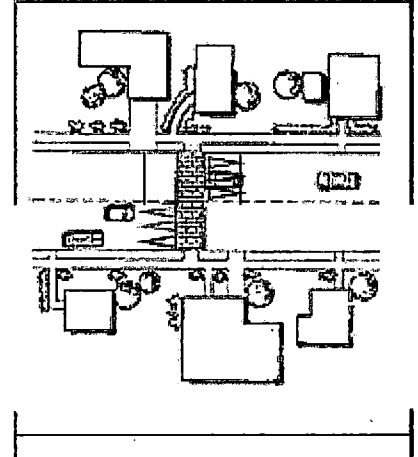
(Also known as: RAISED CROSSWALK)

DESCRIPTION:

FLAT-TOPPED SPEED TABLE BUILT AS A PEDESTRIAN CROSSING. COMMONLY INCLUDES A MEDIAN REFUGE ISLAND, OR CURB EXTENSIONS, OR BOTH TO SHORTEN CROSSING AND IMPROVE SAFETY.

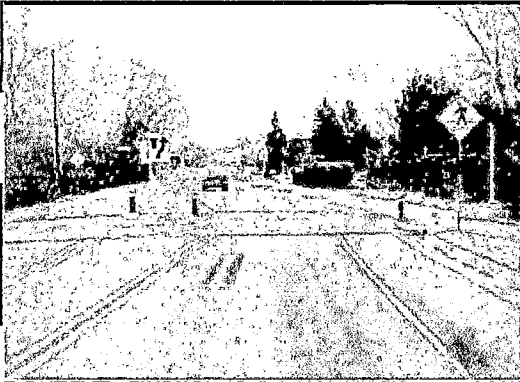
APPLICATION:

- Local or collector streets where speed control and pedestrian crossing designation are desired



Effectiveness:

- Demonstrated reduction in average speed of 2-8 mph



Other Advantages:

- Increases pedestrian visibility in the crosswalk
- Clearly designates the crosswalks
- Opportunity for landscaping in median
- Requires minimum maintenance; pavement markings must be maintained

Delay to Emergency Vehicles:

- 4 to 6 seconds per raised crossing

Other Disadvantages:

- May damage emergency response vehicles if not carefully designed
- May increase traffic noise in vicinity of crosswalk
- May create drainage issues where raised crossing extends from curb to curb
- May necessitate the reduction of on-street parking in certain configurations
- Snow plows must negotiate device

Variations:

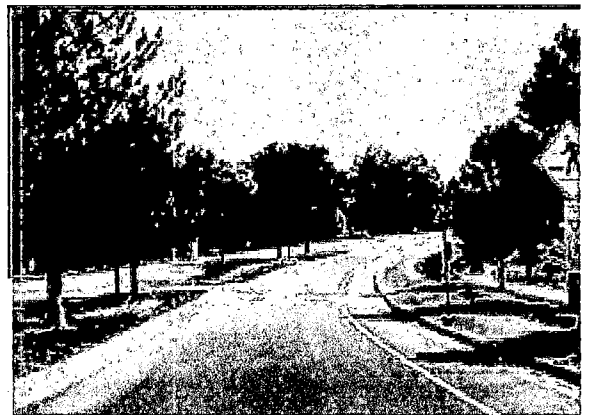
- Specialty pavement treatments
- With median refuge island
- With curb extensions
- With median island and curb extensions

Special Considerations:

- Appropriate near schools and recreation facilities

Cost:

- \$10,000 to \$40,000 depending on median, curb extensions, pavement type, and irrigation needs



CURB EXTENSION

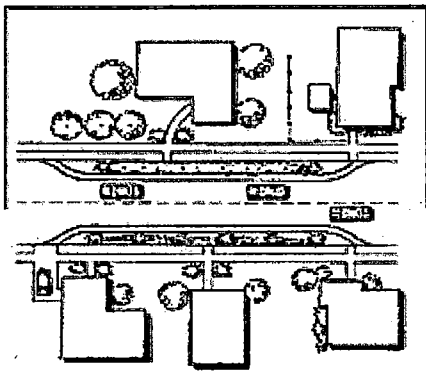
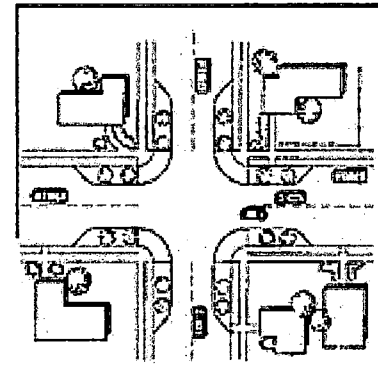
(Also known as: NECKDOWN)

DESCRIPTION:

SEGMENTS OF ROADWAY NARROWING WHERE ROADWAY EDGES OR CURBS ARE EXTENDED TOWARD THE CENTER OF THE ROADWAY. VEHICLES MAY SLOW AS THEY PASS THROUGH THE NARROWED SECTION.

APPLICATION:

- Typically used adjacent to intersections where parking is restricted
- Can be used to narrow roadway and shorten pedestrian crossings
- Can be used mid-block



Effectiveness:

- May slow traffic by changing the character of a wide street to a narrow street

Other Advantages:

- Pedestrian visibility increased and crossing distance reduced
- Can "reclaim" pavement for pedestrian and streetscape amenities or landscaping

Delay to Emergency Vehicles:

- Estimated to be less than 2 seconds

Other Disadvantages:

- Creates drainage issues where curb and gutter exist
- May result in the loss of on-street parking
- Snow plows must negotiate device

Variations:

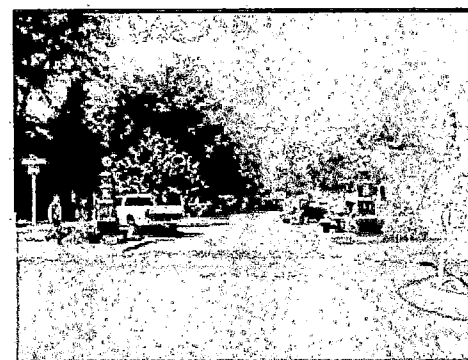
- Mid-block curb extensions often used in conjunction with pedestrian crossing treatments
- Can be designed with a curb chase to maintain existing flowline

Special Considerations:

- Curb extensions should not extend into bicycle lanes where present

Cost:

- \$25,000 and up depending on landscaping, pavement treatments and storm drainage considerations (need for new inlets)



PARTIAL MEDIANS

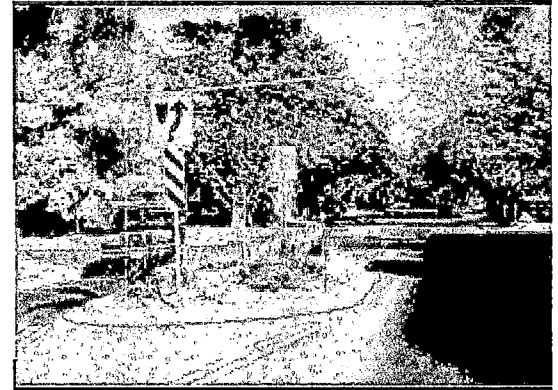


DESCRIPTION:

RAISED ISLAND IN THE CENTER OF THE ROADWAY WITH ONE-WAY TRAFFIC ON EACH SIDE.

APPLICATION:

Used on wide streets to narrow each direction of travel and to interrupt sight distances down the center of the roadway



Effectiveness:

- Narrowed travel lanes provide "friction" and can slow vehicle speeds

Other Advantages:

- Changes the character of the roadway to a place where slower speeds are appropriate
- Significant opportunity for landscaping and visual enhancement of the neighborhood
- Can utilize space which otherwise would be "unused" pavement
- Can be used to control traffic access to adjacent properties if desired

Delay to Emergency Vehicles:

- Estimated 1 to 2 seconds or more depending on length of median, narrowness, parking etc.



Other Disadvantages:

- Long medians may impact emergency access potential and reduce staging area
- May interrupt driveway access and result in U-turns
- May necessitate removal of on-street parking
- Snow plows must negotiate device

Variations:

- Medians of various lengths can be constructed
- Can be constructed mid-block only to allow all turning movements at intersection
- Can be extended through intersections to preclude left turning access, or side street through movement if desired

Special Considerations:

- Vegetation should be carefully designed not to obscure visibility between motorists, bicyclists and pedestrians at intersection and pedestrian crossing areas
- Maintain 18 foot wide space on each side where parking exists, or 11' wide space without parking

Cost:

- \$25,000 for short (30' +/-) landscaped median
- Cost increases with length, landscaping, etc.



TRAFFIC CIRCLE

DESCRIPTION:

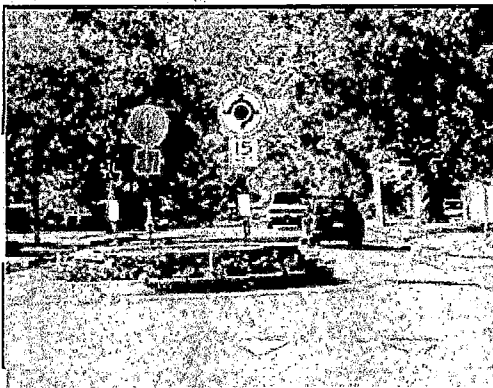
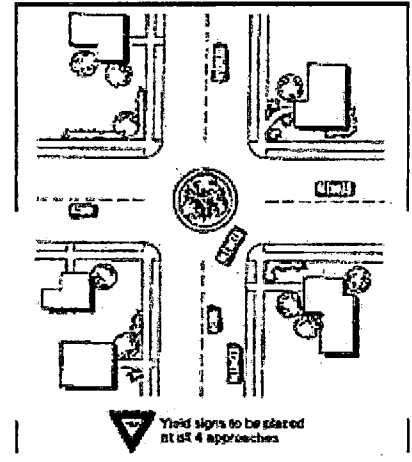
TRAFFIC CIRCLES ARE RAISED CIRCULAR MEDIANS IN AN INTERSECTION WITH COUNTERCLOCKWISE TRAFFIC FLOW. VEHICLES MUST CHANGE THEIR TRAVEL PATH TO MANEUVER AROUND THE CIRCLE AND ARE TYPICALLY CONTROLLED BY "YIELD ON ENTRY" ON ALL APPROACHES.

APPLICATION:

- Streets where speed control is desired
- Intersections where improved side street access is desired

Effectiveness:

- 2 to 13 mph reduction in average automobile speed one block from the circle
- Vehicles slowed to 15 or 20 mph through the circle



Other Advantages:

- Provides increased access to street from side street
- Breaks up sight-lines on straight streets
- Opportunity for landscaping in the intersection

Delay to Emergency Vehicles:

- 2 to 10 seconds per circle depending on the design

Other Disadvantages:

- Definition of right-of-way is contrary to the "yield to the vehicle on the right" rule
- Relatively expensive if curb extensions are required
- May impede left turns by large vehicles
- On streets with bicycle facilities, bikes must merge with traffic around circle
- Snow plows must negotiate device

Variations:

- With or without curb extensions on the corners
- With or without diverter islands
- Different sizes and dimensions affect magnitude of speed reduction
- Island with barrier curb and gutter face or tapered/mountable face

Special Considerations:

- Requires extensive signing
- Maintenance concerns associated with plowing, sweeping and asphalt maintenance around circle
- Minimum 20' clearance is required around circle
- May require educational campaign and learning period

Cost:

- \$10,000 to \$40,000



Town of Castle Rock

100 North Wilcox Street
Castle Rock, CO 80104

Agenda Memorandum

Agenda Date: 10/20/2015

Item #: 6. File #: RES 2015-85

To: Honorable Mayor and Members of Town Council

From: Thomas Reiff, Transportation Planner

Resolution: Repealing and Reenacting the Neighborhood Traffic Calming Program

Executive Summary

The purpose of this item is to review and gain approval from Town Council on proposed revisions to the Town's Neighborhood Traffic Calming Program (NTCP). This is a follow up to the April 28, 2015 meeting when Council directed Staff to amend the current NTCP based on feedback and experience gained from previous projects.

This program was originally established to uniformly assist residents of a local residential Town street where vehicle speeds or cut through traffic is perceived by them to negatively impact their quality of life. The program is resident driven meaning they decide whether to proceed if a concern is verified by a formal study as well as which traffic calming measures to implement. The proposed Program revisions are based on experiences of Staff while managing and implementing the Program since it was last revised in 2012.

The following bullet points reflect the main subject matter of the proposed changes.

- Amend the public outreach and involvement approach in the program, including Home Owners Associations
- Establishment of the study area and impacted residents
- Revision of the data collection methods
- Clarification of what happens to a traffic calming project that does not get approved by residents
- Process for how to modify an existing traffic calming plan
- More clearly define the term Point of Contact and role in the process
- Clarification of program terms and definitions

To better review the proposed changes, a redlined copy of all the proposed changes is attached for your review (**Attachment B**).

Budget Impact

Item #: 6. File #: RES 2015-85

No budgetary impacts are expected.

Staff Recommendation

Staff recommends that Town Council approve the proposed resolution repealing and reenacting the NTCP. This item was reviewed with the Public Works Commission at their August meeting. The Commission unanimously voted to recommend approval of the proposed program amendments.

Proposed Motion

"I move to approve a Resolution Repealing and Reenacting the Neighborhood Traffic Calming Program as presented by staff. "

Attachments

Staff Report

Attachment A Resolution

Attachment B Redline Version of the Proposed Revisions to the NTCP



STAFF REPORT

To: Honorable Mayor and Members of Town Council
From: Thomas Reiff, Transportation Planner
Title: A Resolution Repealing and Reenacting the Neighborhood Traffic Calming Program

History of Past Town Council, Boards & Commissions, or Other Discussions

On April 28, 2015, the program was discussed with Town Council seeking direction on the future of the program. Staff asked Council if the program should be amended, left unchanged, or eliminated. After deliberating the issue Council directed staff to amend the existing program.

The proposed revisions were presented to the Public Works Commission on August 3, 2015. At the meeting Staff discussed the revisions and provided the Commissioners with a redlined version of the document with all the proposed changes. The Commissioners agreed with the changes and provided additional modifications that are discussed below. The Commissioners ultimately decided to recommend that Town Council adopt the proposed changes which includes the modifications provided by the Commissioners.

Discussion

Following the Town Council's direction from April 28, 2015, Staff has amended the existing NTCP based on lessons learned from recent traffic calming projects, in addition to the proposed changes from the Public Works Commissioners. The last time the program was revised was in 2012. The revisions are primarily based on experiences that staff has encountered while managing and implementing the NTCP. More recently, during the Appleton Way traffic calming project, staff learned several lessons and identified a number of potential adjustments to the current program. These potential areas for revisions include:

- Process related issues such as public outreach and involvement, which was a primary concern recognized during the Appleton Way project
- Ascertaining the study area and impacted residents, which is key to the success of the program
- Working with the appropriate Home Owner's Association (HOA) was also identified as an issue with the program. Currently, there is no requirement to contact the HOA and include it in the process
- Data collection methods also need to be better defined, such as length of time and location of traffic counters based on adjacent land uses

- Another shortcoming of the program is the lack of direction in how to address a situation where the working group's proposed traffic calming plan is not approved by the residents along the street of concern. Currently the program does not address this issue.

These were the primary concerns identified with the current program during the Appleton Way project and should be accounted for in future project requests by residents.

Some of the proposed changes include the following;

1. The public outreach and involvement will include not only homeowners living along the street of concern, but also include people who need to drive on the street to get in and out of the neighborhood, as well as homeowners along other streets that may be impacted due to traffic calming installed on the street of concern. Residents in the study area will receive either email, or mailings, about project meetings. Notice will also be presented on the Town's website and on the street of concern.
2. The Point of Contact (POC) will also need to notify the President of the governing Homeowners Association (HOA), or the management company, if an HOA exists. The POC is the resident who initiates the contact and brings the concern to Town staff's attention. The term is more clearly defined in the amended Glossary of Terms.
3. Data collection is proposed to occur during an average weekday, but may include weekend counts if staff believes nearby commercial, parks, or other traffic generators create an impact in the study area.
4. It is proposed that should a traffic calming plan not receive the required 50 percent or more approval of property owners on the street of concern then the project comes to an end with no treatments being installed. The street becomes eligible for the program again in one year.
5. Additional clarification is proposed to be added that better explains the public meeting process should a project qualify and also how the public meetings will be noticed (e.g. Town's web site, and street signs)
6. Language will be added stating that additional traffic calming treatments not identified in the Toolbox of Appendix B may be used upon staff approval.
7. A section to modify an existing traffic calming plan is also proposed should a homeowner want the traffic calming treatments on the roadway modified.

Revisions proposed by the Public Works Commission include the following;

1. The term "Traffic Treaty" needs to be defined within the document. Staff added the term and definition to the Program's Glossary of Terms.
2. Regarding the work by the "Staff Team", the Commission requested that the document to identify what department leads the team. The document was revised to show that Public Works would lead the staff team.
3. In Section 3.4 of the document a question was raised if the 50% threshold for the number of properties fronting the collector refers to individually platted lots or the total street frontage. Staff amended the document to read 50% of the platted lots.

4. Under Device Modifications section, the text should read that current homeowners along the street sign the petition. The text was revised and no longer refers to previous homeowners who voted on the plan.

The last issue from the Commission was asking what happens to a current on-going traffic calming project should this document get amended prior to the project being complete. What policies would apply? All current projects in process will follow the guidelines that were in place when the application was made.

To better review the proposed changes, a redlined copy of all the proposed changes is attached for your review (**Attachment B**). The proposed changes from the Commission are also included and highlighted yellow in the attachment.

RESOLUTION NO. 2015-85

**A RESOLUTION REPEALING AND REENACTING THE NEIGHBORHOOD
TRAFFIC CALMING PROGRAM**

WHEREAS, Town Council adopted the existing Neighborhood Traffic Calming Program on May 15, 2012 by Resolution No. 2012-31 ("2012 Program"); and

WHEREAS, it has been determined that it is appropriate and necessary to make certain revisions and updates to the 2012 Program as presented in the 2015 Neighborhood Traffic Calming Program,

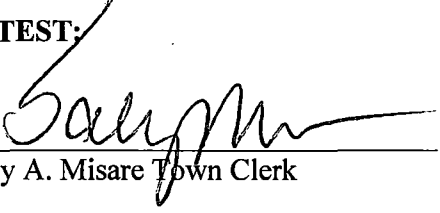
WHEREAS, the proposed revisions to the policy have been discussed and approved by the Town Council.

**NOW, THEREFORE BE IT RESOLVED BY THE TOWN COUNCIL OF
THE TOWN OF CASTLE ROCK AS FOLLOWS:**


Section 1. Repeal and Reenactment. The 2012 Program is hereby repealed and reenacted as the 2015 Neighborhood Traffic Calming Program in the form attached as *Exhibit 1*, is hereby adopted by Town Council as a policy for use by the Public Works Department.

PASSED, APPROVED AND ADOPTED this 20th day of October 2015, by the Town Council of the Town of Castle Rock, Colorado, on first and final reading by a vote of 7 for and 0 against.

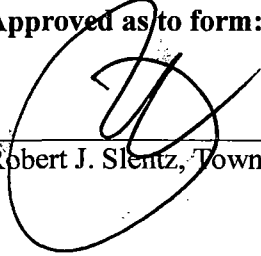
ATTEST:


Sally A. Misare Town Clerk

TOWN OF CASTLE ROCK


Paul Donahue, Mayor

Approved as to form:


Robert J. Slentz, Town Attorney

Approved as to content:


Bob Goebel, Public Works Director

Speed Reduction Primer

Speeding on roadways is a driver behavioral issue. When trying to influence/change driver behavior there are three primary strategies that are utilized. All have limitations.

Education: Education is a passive form of behavior modification. Compliance is voluntary, and often times requires frequent messaging, or a negative experience for a behavior change to occur.

Examples	Description	Typical Costs	Pros	Cons
Public Service Campaigns	These are radio, television, podcast, or social media posts designed to target speed reduction messages	Variable depending on medium, but fairly inexpensive.	<ul style="list-style-type: none">Fairly inexpensiveMessage and frequency can be controlled	<ul style="list-style-type: none">Behavior change is typically short livedAudience can be limited based on mediums
Radar Feedback Signs	These are portable, or permanent installations that provide drivers with direct feedback on how fast they are traveling.	A portable trailer is approximately \$10,000 A permanent installation is approximately \$7,500	<ul style="list-style-type: none">Fairly inexpensiveDirect and consistent feedback message to all drivers on roadway	<ul style="list-style-type: none">Behavior change is short lived as documented in national studiesDeployment of portable signs is labor intensive

Enforcement: Enforcement is a direct form of modification. It utilizes a negative consequence (tickets/fines) to try an influence behavioral modification.

Examples	Description	Typical Costs	Pros	Cons
Patrol Officers	This is officers on the street that utilize radar to document travel speeds and requires active traffic stops to write tickets.	Costs are fairly negligible with the use of existing police resources	<ul style="list-style-type: none">Longer lasting than educationMonetary fines are good at behavioral changes	<ul style="list-style-type: none">Takes away from other policing needsResources are limited to be effective on all roadways
Automated Radar & Photo Enforcement	This utilizes radar to capture speed violations and photo evidence to capture license plate information.	Typical installations of equipment are handled by a third party at no initial cost. Cost are typically covered by a portion of each fine.	<ul style="list-style-type: none">Consistent presenceHigher rate of violation captureDevices are mobile and can move around to problem areas	<ul style="list-style-type: none">Requires police verification of violation (time)Public perceptions problems: most drivers view these as a means to generate revenue with the guise of trying to improve safety

Engineering: This involves physical modifications to the roadway environment to force driver behavior. It is the most active form of speed reduction. Stop signs, and traffic signals are not forms of engineering treatments implemented to control speeds. These can have negative secondary consequences, which is why engineering evaluations are required to support their installations.

Examples	Description	Typical Costs	Pros	Cons
Speed Humps or Cushions	These are physical humps placed in the vehicle travel path that slow vehicle speeds. Speed cushions have cut outs in the center that match the width of the wheel base on fire apparatus so they don't have to slow as much.	A typical speed cushion / speed hump is about \$6,000 per location installed	<ul style="list-style-type: none">Have been effective in Castle Rock at slowing vehicle speeds on local neighborhood streetsGenerally a lower cost solution	<ul style="list-style-type: none">Impacts emergency response timeImpacts snow plow operations
Road diet (road width narrowing / lane narrowing / curb bump outs / delineators and markings)	This is a physical narrowing of the travel lane or roadway with the use of medians, curb bump outs, and / or the reduction in the number or width of travel lanes	Lane / road narrowing costs about \$100,000 per mile. Curb bump outs cost about \$20,000 per location installed.	<ul style="list-style-type: none">Have been effective at slowing vehicle speeds in some casesRoad diets & narrowing lanes can occur with the PMPBump outs can slow speeds and improve pedestrian safety/visibility	<ul style="list-style-type: none">Can have impacts on snow plow and other roadway maintenance

Roundabouts	Intersection traffic control option that uses a circulating road around a center island	Costs can vary depending on the constraints of a given location but a typical two lane roundabout in Castle Rock currently costs about \$2.5 million to design, purchase right-of-way and construct.	<ul style="list-style-type: none"> • Help to control speeds by slowing vehicles • Improved safety by eliminating higher speed t-bone type collisions • Conserves gas and improves air quality by reducing idling and amount of acceleration 	<ul style="list-style-type: none"> • Costlier to construct than other options • Usually requires more space / right-of-way than standard intersection
Chicanes / Lateral shift	Shifting of travel lanes from left to right or right to left over a distance	These type of improvement usually cost \$45,000 - \$60,000	<ul style="list-style-type: none"> • Have been moderately effective in urban areas with moderate to lower volume traffic 	<ul style="list-style-type: none"> • Can increase risk of crash for distracted, unfamiliar, or inexperienced drivers
Speed table	Long speed hump, typically length of intersection or crosswalk area, flat in mid-portion with ramps on ends designed for target speed	A typical raised crosswalk / speed table is about \$40,000 - \$150,000	<ul style="list-style-type: none"> • Have been very effective in rural and urban areas with moderate to higher volume traffic • Ramps are designed for target speed • Less costly than a roundabout using available ROW 	<ul style="list-style-type: none"> • Impacts emergency response time • If designed or built poorly, the impact will be more or less severe than intended • Drainage impacts need to be considered



Town Policy: Use of Privately Owned Radar Speed Feedback Signs Within Town Rights-of-Ways

PURPOSE:

To establish policy associated with the use of privately owned radar speed feedback signs within Town rights-of-ways (ROW) to assist with driver education of posted speed limits.

BACKGROUND DISCUSSION:

Radar Speed Feedback (RSF) signs can be a useful tool in helping reduce vehicle speeds along Town roadways for relatively short periods of time. The signs are used to increase driver awareness of their speed in relation to the posted speed limit. The Town utilizes a set of procedures to locate these same feedback signs on a temporary basis for the same purpose. Some homeowners associations have requested to utilize their own feedback signs along public roads within their boundaries on a more frequent basis than the Town can provide. This policy provides guidelines for the use of privately owned radar speed feedback signs

POLICY STATEMENT:

The use of privately owned radar speed feedback signs is permitted within Town-owned ROW for temporary time periods. The following conditions must be met:

1. The requesting private party must complete the needed application (**Attachment A**) enter into an agreement (**Attachment B**) with the Town of Castle Rock signed by the appropriate authorized signatory for the private party prior to deploying a privately owned RSF.
2. The requesting party must also complete and sign the required waiver and indemnification form (**Attachment C**)
3. Prior to deploying privately owned RSF signs, the designated private party representative identified in the agreement will make a request to the Castle Rock Police Community Partnership Unit, to ensure guideline compliance. Castle Rock Police will coordinate the approval of the request with the Public Works Department.
4. The initial request and all follow-up communication shall include:
 - An acknowledgement form from the Castle Rock Police Community Partnership Unit indicating support of the installation,
 - The exact location of the RSF sign installation,
 - The dates for which the RSF will be deployed,
 - Follow-up confirmation correspondence of RSF removal at end of temporary deployment period, and
 - Name and contact information of the party who will be responsible for installing and moving the HOA's RSF sign from one location to another

5. The RSF signs shall be installed on a temporary basis, generally for a period of 4-6 weeks at a given location.
6. Once the RSF has been removed upon completion of the time period, the private party must wait a minimum of 30 calendar days prior to deploying the RSF at the same location for a new period.
7. All work to move a RSF from one location to another must be performed during daylight hours.
8. Sign installation and placement shall conform to the standards included in the Manual on Uniform Traffic Control Devices and all other applicable Town regulations that will be provided by the Town.
9. The Town will approve the location and consider roadside vegetation, roadway geometry, sight lines, and spacing. (The sign should be visible by a driver at least 300 feet upstream of the location.)
10. Any privately owned RSF shall be solar powered.
11. Placement shall be such to minimize light intrusion on nearby homes.
12. Additional usage, scheduling, and placement requirements for privately owned signs:
 - A small placard shall be mounted under the RSF that provides ownership and contact information for the HOA.
 - RSFs shall only be co-located with pre-existing speed limit signs.
 - The RSF shall be setup to only display the speed of the passing motorist and shall not strobe or display a flashing light.
13. The RSF shall not collect data, nor should the signs be used as a basis for the HOA to contact and or fine a resident or visitor.

Because public safety is of primary importance, failure to meet all of these requirements may result in the Town withdrawing approval to use RSF signs, and may result in the Town deactivating any signs in use at the time. If the same HOA, or private party, has any of their RSF signs deactivated by the Town more than two times, the HOA, or private party, may not be permitted to utilize their RSF signs for a period of one year. After this one-year period, the HOA, or private party, may submit a new request in accordance with the above procedures.

**USE OF PRIVATELY OWNED RADAR SPEED FEEDBACK SIGNS WITHIN TOWN
RIGHTS-OF-WAY**

APPLICATION

TODAY'S DATE: _____

HOA OR PRIVATE PARTY NAME: _____

**REPRESENTATIVE FROM HOA OR
PRIVATE PARTY: (Please print).** _____

PHONE NUMBER: _____

MAILING ADDRESS: _____

E-MAIL: _____

PROPOSED LOCATIONS: 1) _____
(No more than seven (7))

However, if additional locations
are desired, please bring the matter
to the attention of Public Works. 2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

- Name and contact information of the person(s) who will be responsible for deploying and moving the RSF sign from one location to another. (All persons identified below, must sign a waiver and indemnification form).

- Confirmation that the RSF is solar powered.
- Confirmation of a small placard mounted under the RSF that provides ownership and contact information (for the HOA, or private party).
- Confirmation that the RSF is co-located with pre-existing speed limit signs.
- Confirmation that the RSF sign is setup to only display the speed of passing motorists and not to collect data or to be used to contact or fine a resident or visitor.

I understand this Application is good for a period of two (2) years, from the date below, that a new Application must be submitted on or before two (2) years from the date below, and that no RSFs shall be permitted in the event the Application has expired.

I have read and agree to abide by the policies, regulations and safety recommendations as set forth by the Town of Castle Rock (for myself or as the representative of the above HOA , or private party) in regard to the **USE OF PRIVATELY OWNED RADAR SPEED FEEDBACK SIGNS WITHIN TOWN RIGHTS-OF-WAY** program. I understand that this is an application for the program and that a Town of Castle Rock Public Works representative will contact me to finalize an agreement. In addition, I understand that the Public Works Director will make the final determination as to whether the HOA, or private party, can participate in the program.

SIGNATURE: _____

DATE: _____

NAME OF SIGNATOR (PLEASE PRINT): _____

AUTHORIZATION AND AGREEMENT REGARDING THE USE OF PRIVATELY OWNED RADAR SPEED FEEDBACK SIGNS WITHIN TOWN RIGHTS-OF-WAYS

The use of privately owned Radar Speed Feedback (RSF) signs within Town rights-of-ways (ROW) is a cooperative effort between the Town of Castle Rock Public Works Department, the Castle Rock Police Department, Castle Rock Home Owner Associations (HOA), or a private party, to assist with driver education of posted speed limits. The signatories to this Agreement, commit to each other to perform certain activities related to using RSF signs, for relatively short periods of time, as an additional tool in helping reduce vehicle speeds along Town roadways. It is understood that the RSF signs will be used to increase a driver's awareness of his or her speed in relationship to the posted speed limit. It is further understood that the Town utilizes a set of procedures to locate feedback signs on a temporary basis, but some home owner associations and others have requested to utilize their own RSF signs along public roads within their boundaries which will provide more flexibility and a greater opportunity to utilize such signs to assist with reducing motorist's speed. Pursuant to Chapter 14.06 of the Castle Rock Municipal Code, the Town is willing to grant a revocable use to encroach into Town ROW, upon the terms and conditions set forth herein. The use of privately owned RSF signs within the Town-owned ROW, for temporary time periods, will be permitted as long as the **Home Owner Association, or private party, agrees to the following:**

- The requesting representative from the HOA, or private party, must complete an Application and execute this Agreement with the Town, before deploying a privately owned RSF.
- The requesting party must also complete and sign the required waiver and indemnification form attached with regard to all persons who will be responsible for deploying and moving the RSF sign from one approved location to another. **(Exhibit A).**
- Before deploying privately owned RSF signs, the designated representative from the HOA, or a private party, identified as the signatory to this Agreement, or on the Application, must make a request to the Public Works Department who will engage the Castle Rock Police Community Partnership Unit, to ensure guideline compliance.
- Upon receipt of an Application, the Public Works Department and the Castle Rock Police Community Partnership Unit, will meet with a representative from the HOA, or private party, to identify general locations where there is a desire to reduce vehicle speeds, through the placement of RSF signs. (As part of the review process, consideration will be given to roadside vegetation, roadway geometry, sight lines, spacing, light intrusion, and any such signs should be visible by a driver at least 300 feet upstream of the location.)
- Once the assessment has been completed, with regard to identifying the feasibility of the specific locations, identified by the HOA, or private party, and approval by the Town has been completed, the Town will provide the representative from the HOA, or private party, with addresses and a map of the approved locations for the deployment of RSFs.
- RSFs shall only be deployed in the approved locations, as depicted on the attached. **(Exhibit B).**

- RSFs shall be placed in a manner to ensure there is no damage to the surrounding landscape in the ROW.
- No RSF will be allowed to stay in any single location for more than six (6) weeks, before it must be relocated to another approved location, or taken out of service.
- All work to move any RSF from one approved location to another approved location must be performed during daylight hours.
- Once the RSF has been removed from an approved location, the HOA, or private party, must wait a minimum of thirty (30) calendar days before redeploying the RSF in the same approved location.
- The HOA, or private party, is responsible for maintaining records regarding the placement of all privately owned RSFs including the date the RSF sign was placed at one of the approved locations, and the date the RSF sign was either moved to a new approved location, or taken out of service.
- Within fourteen (14) days of a request by the Town, the HOA or private party, must provide documentation to the Town's Public Works Department showing the placement of any RSFs in use, and the length of time any RSF was placed at each approved location.
- The HOA, or private party, shall provide the name and contact information of the person(s) who will be responsible for placing and moving any RSFs from one approved location to another approved location, or for taking any RSF out of service.
- Any privately owned RSFs shall:
 - Be solar powered;
 - Have a small placard mounted under the RSF that provides ownership and contact information for the HOA, or private party;
 - Be co-located with pre-existing speed limit signs;
 - Be setup to only display the speed of the passing motorist and shall not strobe or display a flashing light;
 - Not collect data;
 - Not be used as a basis for the HOA, or private party, to contact and fine a resident or visitor.
- The HOA, or private party, assumes full responsibility for any and all damages incurred to public facilities, including, but not limited to, damage to the street surface and damage to existing landscaping within the ROW, due to activities authorized by this use. Any and all replacement or repair to public facilities owned or operated by the Town, attributed to the encroachment, shall be made by the Town at the sole expense of the HOA, or private party.
- The HOA, or private party, expressly agrees to indemnify and hold harmless the Town or any of

its officers or employees from any and all claims, damages, liability, or court costs including attorney's fees that are or may be awarded as a result of any loss, injury or damage sustained or claimed to have been sustained by anyone, including, but not limited to, any person, firm, partnership, or corporation, in connection with the placement or maintenance of the RSF. In the event any such suit or action is brought against the Town, it will give notice thereof to the HOA, or private party, and the HOA, or private party, agrees to defend Town against such action.

- During the existence of the encroachment in the ROW, the HOA, or private party, its successors and assigns, at its or their own expense, and without cost to the Town, shall procure and maintain a single limit comprehensive general liability insurance policy with a limit not less than \$1,000,000. The required insurance coverage shall be written in a form and by a company or companies approved by the Town, and authorized to do business in the State of Colorado. A certified copy of the insurance policies shall be filed with a statement of endorsement that it will not be canceled or materially changed or altered without at least 30-days prior written notice, by certified mail, to the Town. The certified copy of the insurance policies shall also be endorsed specifically to include all liability assumed by the HOA, or private party, and shall name the Town of Castle Rock as an additional insured.
- In the event the Town deactivates any RSF sign, for failure to comply with the terms and conditions herein (more than three (3) times in any two (2) year period), the HOA, or private party, may not be permitted to utilize their RSF signs for a period of one year. After this one-year period, the HOA, or private party, may submit a new Application.
- The Town reserves the right to make inspections to assure compliance with the terms of this use and that no public health or safety hazard is maintained within the ROW. The Town reserves the right (upon notice by the Town), to require the immediate removal of any RSF, that it determines is inappropriate or not in conformance with these conditions, or which negatively impacts traffic and public safety.

I have read and understand this Statement of Commitment for the use of privately owned Radar Speed Feedback signs within Town rights-of-ways, and I agree to the terms of participation.

HOME OWNER ASSOCIATION: _____

Representative of the

Home Owner Association: _____

Date: _____

PRIVATE PARTY: _____

Date: _____

TOWN OF CASTLE ROCK

Director of Public Works:

Date:



PRIVATELY OWNED RADAR SPEED FEEDBACK SIGNS WITHIN THE TOWN RIGHTS-OF-WAYS

RELEASE OF LIABILITY AND INDEMNIFICATION AGREEMENT

In consideration for being permitted to perform the below-described activities, I hereby acknowledge, represent, and agree as follows:

A. I understand that said activities are or may be dangerous and do or may involve risks of injury, loss, or damage. I further acknowledge that such risks may include, but are not be limited to, bodily injury, personal injury, sickness, disease, death, and property loss or damage. I acknowledge that such risks may arise from a variety of foreseeable and unforeseeable circumstances connected with deploying and moving the Radar Speed Feedback Signs, including but not limited to, hazards associated with traffic, landscaping, maneuvering the weight and height of any RSF sign, and dangers associated with electric currents.

B. By signing this **RELEASE AND INDEMNIFICATION AGREEMENT**, I hereby expressly assume all such risks of injury, loss, or damage to me or to any third party, arising out of, or in any way related to, the above-described activities, whether or not caused by the act, omission, negligence, or other fault of the Town, its officers, its employees, or by any other cause.

C. By signing this **RELEASE AND INDEMNIFICATION AGREEMENT**, I further hereby waive, exempt, release and discharge the Town, its officers, and its employees, from any and all claims, demands and actions for such injury, loss, or damage, arising out of, or in any way related to, the above-described activities, whether or not caused by the act, omission, negligence, or other fault of the Town, its officers, its employees, or by any other cause, excepting only the willful and wanton conduct of the Town's officers or employees.

D. I further agree to defend, indemnify and hold harmless the Town, its officers, employees, insurers and self-insurance pool, from and against all liability, claims, and demands, including any third party claim asserted against the Town, its officers, employees, insurers, or self-insurance pool, on account of injury, loss, or damage, including without limitation, claims arising from bodily injury, personal injury, sickness, disease, death, property loss or damage, or any other loss of any kind whatsoever, which may arise out of, or is in any way related to, the above-described activities, whether or not caused by my act, omission, negligence, or other fault, or by the act, omission, negligence, or other fault of the Town, its officers, its employees, or by any other cause, excepting only the willful and wanton conduct of the Town's officers or employees.

E. By signing this **RELEASE AND INDEMNIFICATION AGREEMENT**, I hereby acknowledge and agree that said **AGREEMENT** extends to all acts, omissions, negligence, or other fault of the Town, its officers, and/or its employees, and that said **AGREEMENT** is intended to be as broad and inclusive as is permitted by the laws of the State of Colorado. If any portion hereof is held invalid, it is further agreed that the balance shall, notwithstanding, continue in full legal force and effect.

F. I understand and acknowledge that the Town, its officers, and its employees are relying on, and do not waive or intend to waive any provision of this **RELEASE AND INDEMNIFICATION AGREEMENT**, the monetary limitations, or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, C.R.S. §24-10-101, *et seq.*, as amended, or otherwise available to the Town, its officers, or its employees.

G. I understand and agree that the laws of the State of Colorado shall govern this **RELEASE AND INDEMNIFICATION AGREEMENT**, and that jurisdiction and venue for any suit or cause of action under this Agreement shall lie in the courts of Douglas County, Colorado.



PRIVATELY OWNED RADAR SPEED FEEDBACK SIGNS WITHIN THE TOWN RIGHTS-OF-WAYS

I HAVE READ and UNDERSTAND EACH SECTION ABOVE: _____(Participant initials here)

RELEASE AND INDEMNIFICATION AGREEMENT shall be effective as of the date set forth below and shall be binding upon me, my successors, representatives, heirs, executors, assigns, and transferees.

PARTICIPANT SIGNATURE AND DATE:

Participant - Print Name: _____

Participant - Signature: _____

Date of Signature: _____

Address: _____

E-mail Address: _____

Phone: _____



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 12. File #: DIR 2023-006

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Daniel Sailer, Public Works Director

Discussion/Direction: Parking Permit Program

Executive Summary

In early November 2022 Town Council directed staff to review options for a Parking Permit Program and report back on our findings and options for developing a new program. Staff reviewed twenty-two jurisdictions along the Front Range for information regarding parking permit programs (Attachment A). Since the Town has no formal permit parking program approved at this time, any new program or change to municipal code would need to be acted on by Town Council. The purpose of this item is for staff to share information regarding other jurisdiction's programs for the Town's consideration and request direction from Town Council on this matter.

Staff's review found that thirteen communities have no program at all, including all surrounding Douglas County jurisdictions. Four larger sized communities like Denver, Golden, and Boulder had city staff determine permit areas. Five communities: Centennial, Aurora, Englewood, Arvada, and Ft. Collins have resident initiated permit parking programs. Since this is a quality of life issue, staff feels that a resident initiated program would be the most appropriate to consider. These five community's programs are the focus of the options staff have presented for consideration. All five of these jurisdictions administer their programs in-house to include administration and enforcement. If a program is developed it's estimated that the annual cost to run this program would be in the range of \$25,000 - \$50,000, and may require additional staff depending on the model selected. If Town Council is interested in a specific model, staff can refine this further.

Notification and Outreach Efforts

There will be a presentation on February 6, 2023 to the Public Works Commission to obtain the Commission's recommendation to Town Council on this matter. An update on their recommendation will be provided at the Town Council meeting.

In 2015, Town staff did a similar review of other jurisdictions permitted parking programs. A permit parking program was not pursued at that time. A Resolution was recommended and approved by Public Works Commission and Town Council in 2018 to Approve the Town of Castle Rock On-Street Parking Policy (Attachment B). There were parking problems around schools which led to the formation of the policy. It outlines a process Public Works and Development Services staff, Police, and neighborhood residents can follow to limit parking, i.e. have no on-street parking at specific times for any vehicles on their local

neighborhood roadways. Similar parking issues have been found around other schools in surrounding local neighborhoods and has not led to limiting any parking. If Town Council directs staff to implement a parking permit program, this existing policy would be eliminated.

Discussion

How to determine a permit parking area

Similar to the On-Street Parking Policy, and Neighborhood Traffic Calming Program it is recommended to determine thresholds for parking or community problems that need to be addressed by such a program. This could include support of a certain percentage of residents along with a minimum area size. See the column “how an area is developed” in **Attachment A**. This information speaks about permitted parking in areas with high trip generations, around schools, downtown areas, public transit facilities, event venues, parks, or determined by a quantified parking problem. The Town has a few areas that fall in this category, including around secondary and elementary schools, near the Miller Activity Complex (MAC), near high density residential units with limited parking, and in the downtown area to name a few. The extent of a parking problem has not been quantified in these areas, however a “quality of life” type program that is initiated by a neighborhood petition could be used to begin a program. This petition would need significant support by local residents in the affected area.

Our review of other jurisdictions resident driven parking permit programs found minimum resident support of a program was as low as a simple majority, and more commonly 67% to 75% of residents supporting an implementation. The size of permitted areas ranged between one block of 3 to 10 homes, to just 10 homes, or only a few streets around a school area. We need to be aware of parking problems on one street or area, being shifted to a neighboring street or area, when parking is limited due to a permit program. To address this, a comprehensive review by staff to identify when parking problems may shift to create different problems in a nearby area would need to be addressed with each project.

How to issue and manage a permit

In the resident driven parking permit programs we reviewed, the issuing of permits is provided by Town staff. In most cases this is handled by one or two staff members from a team of folks for varying amounts of time based on the size of the jurisdiction and the complexity of the communities permit parking program. If Town Council is interested in pursuing a particular model, staff will refine these details further.

Generally, four permits were issued per household, this is by one to two permits per permittee, with two to three guest passes provided, and up to three to five per household depending on density of available parking in the area. Some guest passes are limited to a 24 hour period. Some apartments are limited to only one permit.

The most common cost is \$0 for the first one or two permits, up to \$10 and \$25. For the free initial permit programs, more than two to three permits costs \$5 to \$10 for additional permits. Ft. Collins had a stepped permit cost, the first is \$0, second \$15, third \$40, fourth \$100, and fifth \$200.

Most permits are valid for the calendar year, also two years, and up to while a resident lives in the area. Permit areas are reviewed periodically by staff to determine effectiveness and necessity. This is done every year, to every three years, or based on as-needed or a complaint based system.

Most fees for illegal parking are \$25, with second offense \$25 up to \$50. One jurisdiction tows vehicles away to an impound area they own. The Town does not currently have an impound area. One jurisdiction gives a first offense warning, second and subsequent offenses are \$30.

Item #: 12. File #: DIR 2023-006

Based on the information we collected, an option for an initial permitted parking program could be based on something like Centennial, Englewood, and Aurora's programs:

- 75 to 80% of residents need to support the resident driven program in their neighborhood or the staff determined area of impact,
- Limit smallest areas to one block with around 10 houses, however consideration for permitted parking shifting a problem to a neighboring street must be determined by staff,
- Areas of consideration focused around highest trip generation areas, like around schools, parks, public transit, and event venues,
- One permit for each registered vehicles, or two permits per household issued; two to three additional visitor passes per registration with a maximum of four permits per permittee,
- Cost is about \$25 per permit, free visitor passes are provided with permit,
- Permit is valid for either one to three years, or held until the resident moves out of the area; guest passes are renewed at the end of the calendar year.
- Staff should review the permit area for continuation and effectiveness, including gathering feedback from residents on an annual to three year basis,
- Fines should include, first offense is a warning, second \$30, subsequent offense \$50.

Budget Impact

Staff would need to determine the budget impact based on the type of program Town Council directs staff to pursue. The one jurisdiction cost received was about \$35,000 per year to administer their program. Another jurisdiction stated for two months a year, one staff member was dedicated solely to issuing parking permits. When considering additional costs for sign installation and maintenance, enforcement, and miscellaneous administration items a ballpark range to establish and operate a new parking permit program is estimated to be between \$25,000 to \$50,000 per year. There is also a possibility of needing additional staff to administer and enforce the program depending on which option is selected. The cost of the additional staff and other additional costs would be determined once the direction is given by Council on which type of program to pursue.

Staff Recommendation

Staff recommends that if Town Council desires to pursue a program, that staff refine the details and projected costs and follow up with a formal program policy, similar to our Neighborhood Traffic Calming Program that is formally adopted by Town Council.

Proposed Motion

If a new parking permit program is recommended:

"I move that Town Council direct staff to develop a formal Parking Permit program for future Town Council adoption."

If a parking permit program is not recommended:

"I move that Town Council not direct staff to develop a Parking Permit program"

"I move to continue this item to the Town Council meeting on (date) to allow additional time to (list information needed)"

Attachments

Item #: 12. File #: DIR 2023-006

Attachment A: Summary of Other Jurisdiction Parking Permit Programs
Attachment B: Current Town Policy

Attachment A - Summary of Other Jurisdiction Parking Permit Programs

City with Parking Permit Program	Citizen Initiated?	% Residence Support Needed	Smallest Area Allowed	How Area is Developed	Who Gets Permits?	Permit Fee	Permit Expiration	How area is Enforced	Annual Cost to Administer	Size of Staff	Additional Comments
City Name	Yes	> 49%	4 blocks*	Town staff defines	3 per residence, temporary guests	\$10/permit	1-year	\$50/offense	\$100,000	1	*Area should not push problem to adjacent area
Parker							No Program				
Lone Tree							No Program				
City of Castle Pines							No Program				
Douglas County							No Program				
Thornton							No Program				
Highlands Ranch							No Program				
Centennial	Can be Citizen initiated or Picked by City	>74%	No Limit, smallest they have is a few streets by a high school	Area around the high schools, state parks, and concert venues	1 per each registered vehicle; 3 visitor passes	\$25, free for visitor permits	Until a resident moves out of the area; guest passes must be renewed at the end of each calender year	N/A... Arapahoe County Sheriff enforces	Unknown	They do not have staff dedicated solely to parking permits. Those requests go through ROW permit and occasionally will require some attention from traffic engineering. The ROW permit tech spends about two to four hours per year with two parking districts.	There is a gap on how knowledge is transferred to new residents. They have heard that real estate agents will inform the buyer. Other times it seems to be word of mouth from neighbors. That would be something for them to improve. The needs of parking keep changing, so like anything else the policy needs to be kept up to date.
Greenwood Village							No Program				
Cherry Hills Village							No Program				
Englewood	Most selected by the city; rarely is it citizen initiated	>74%	1 Block	Area around the high school, medical center, neighborhood park, and RTD rail station	2 per residence, 2 for guests	No Fee	Two years	Towed away if caught without a pass	Unknown number - costs go into materials for hangtags and labor hours for enforcement	1 GIS team member who creates the maps of boundaries of the area and 1 part-time staff member who is fully dedicated to issuing tags	They do not have interest in changing or improving their program - they believe it runs smoothly
Sheridan							No Program				
Lakewood							No Program				
Glendale							No Program				
Aurora	Yes	> 79%	1 Block; 10 houses	Areas with high trip generation, i.e. schools, RTD stations	2 per residence, 2 visitor hangtags	2 for residence and 2 visitor are free, if more are needed then its \$10 per each additional	1 year renewal for individual tags. 3 year review for whole areas.	LPR. \$0 fine for a first offense "warning". \$30 for each subsequent offense.	\$35,000	1 staff member devotes November and December entirely to approving hangtags, every other staff member takes on as-needed duties	Traffic flow is the primary variable that gets looked at when an area applies for permitted parking. Areas that produce high trip generation such as schools get permitted parking. Online self-serve applications make the process very easy for staff members.
Denver	No - Preselected by the City	-	-	Areas with high trip generation, i.e. schools, universities, RTD stations, parks, event venues etc.			No Response				https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Parking-Division/Permits/Residential-Parking-Permits
Golden	No - Preselected by the City	-	-	Currently, there are seven (7) permitted parking areas in Golden. Tourist area, College areas, downtown zone, high school, and recreational access area.	Parking permits are issued by the City to residents/businesses of these neighborhoods, within the permit area and are required for parking. Times and enfocement period varies, ie M-F 7am to 5pm, or daily 7am - 11pm.				No Response		
Arvada	Yes	> 2/3	1 Block; 3 houses	Area must be within 1/2 of a high school, or must be located adjacent to a park or other high trip generation area - this is per town ordinances	5 vehicles per residence, 24 hour visitor passes	First 2 are free, \$5 after that. 24 hour visitor passes are free.	1 Year. They are supposed to review the areas after a few years but they haven't because they haven't received any complaints.	\$25 fine with \$3 admin fee	Unknown for just the neighborhood parking programs	A parking coordinator is part of the traffic engineering staff; they are in charge of all parking in Arvada, the rest is contracted out	Would like to do in house, they currently contract the program out (this NPP is just part of their whole system. They also do employee permits and downtown parking enforcement activities.)
Commerce City							No Program				
Westminster							Program Exists, but No Response				
Northglenn							No Program				
Ft. Collins	Yes	50% plus 1	10 houses	Parking problem must exist, a occupancy study is performed	Depends on how much parking is available (they don't want to overload the capacity), 3-5 per household depending on the density, apartments 1 per unit	First \$0, second \$15, third \$40, fourth \$100, fifth \$200	1 Year, zone is reviewed on an add-needed basis	\$25 first offense, \$50 for second. \$100 for game day/high vehicle traffic	Unknown	1 part time worker, 20 hours per week	Program is only eligible in areas where at least 70% of the total spaces are occupied. Use of LPR and automated systems is highly recommended. Limited amount of guest permits given, dependent on demand - guests must register their vehicle online so it becomes part of the database.
Boulder	No - Preselected by the City						Program Exists, but No Response				

RESOLUTION NO. 2018-049

A RESOLUTION APPROVING THE TOWN OF CASTLE ROCK
ON-STREET PARKING POLICY

WHEREAS, as the population of the Town grows, there is a projected increase in the public demand for on-street parking along Town-owned public streets, and

WHEREAS, there are growing requests for the Town to restrict on-street parking, or create parking permit programs, and

WHEREAS, currently a policy does not exist to provide a preferred position on whether to allow public parking where traffic operations and safety is not a reason to restrict parking, and

WHEREAS, allowing public on-street parking to exist when conditions are available provides an amenity for a majority of stakeholders, and value from the public roadway asset, and

NOW, THEREFORE BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF CASTLE ROCK, COLORADO AS FOLLOWS:

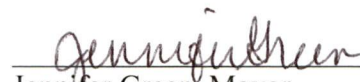
Section 1. Approval. The Town of Castle Rock On-Street Parking Policy in the form attached is hereby approved.

PASSED, APPROVED AND ADOPTED this 15th day of May, 2018 by the Town Council of the Town of Castle Rock, Colorado, on first and final reading by a vote of 6 for and 0 against.

ATTEST:

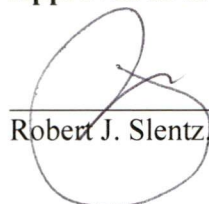
TOWN OF CASTLE ROCK


Lisa Anderson, Town Clerk


Jennifer Green, Mayor

Approved as to form:

Approved as to content:


Robert J. Slentz, Town Attorney


Robert Goebel, P.E., Director of Public Works





Town Policy: On-Street Parking
Along Town Owned Public Streets

PURPOSE:

To establish policy associated with on-street parking on public streets owned by the Town.

BACKGROUND DISCUSSION:

On-street parking is generally allowed within the Town limits on local residential streets, on some existing collector roads and in business/commercial areas where adequate space for maintaining safe traffic operations exists. As the population of the Town has grown, there have been some opposing views from stakeholders associated with various aspects such as the general look and feel of an area where on-street parking is allowed, and which users should have priority for parking.

It is the Town's general position to accommodate on-street parking, in a non-preferential manner as allowed by law, along Town-owned public streets where demand for such on-street parking establishes itself. In these cases, the addition of new vehicle or bike lanes necessary to accommodate new development should be the primary reason to prohibit on-street parking. The elements associated with this policy statement are an attempt to define this reasonableness.

The Town also recognizes that secondary legal and code infractions, such as private property trespassing, may occur with the allowance of public parking. Procedural elements to assist with minimizing these infractions are provided for in this policy. Further, the Town recognizes that parking simply may not be desired based on "look and feel" and perceived loss of property value. The purpose of this policy is to address infractions of municipal code. Certain areas of Town, such as near downtown or near parks and schools that are inherent in municipal planning generally attract more on-street parking. Unless specific municipal codes are consistently violated, these areas are specifically planned to provide on-street parking as a function of the vitality of the community.

POLICY STATEMENT:

On existing Town-owned public streets, on-street parallel parking will be allowed where existing parking spaces that are delineated with markings don't exist. This includes parking on streets in which there are no markings already established to delineate a parking space, and on those streets where parking is not otherwise prohibited by Municipal Code, or where a specific street is not restricted or prohibited in association with special events. Parallel parking will be permitted pending the following conditions exist:

1. A parallel parked vehicle does not encroach into an adjacent lane of traffic, meaning that the adjacent travel lane remains at least 10 feet in width.
2. If a multi-use shoulder or bike lane is marked, a parallel parked vehicle may not encroach into this lane.
3. Adequate width required by the Town approved Fire Code is maintained.
An adjacent public school may request Town assistance with routine traffic operations around the school. The assistance may result in additional parking restrictions near the school. If potential prohibitions or restriction options will impact streets where residential driveways directly access the street, the property owner at the time when the prohibition or restriction is established must support the prohibition or restriction.

The Town may prohibit parking on any roadway segment in order to maintain adequate sight lines and provide for safe traffic operations. These will be established on a case by case basis, and determined by an engineering evaluation.

In residential areas where covenants restrict or prohibit parking on Town-owned public streets, the Town will not install regulatory signage along affected streets, or enforce these covenants.

Existing restrictions established prior to the adoption of this policy will not be impacted unless necessary for safety or operations as deemed needed by Town staff.

Procedures for Addressing Concerns with Legal or Municipal Code Infractions Resulting from On-Street Public Parking:

The Town will utilize a three phased approach to address concerns about legal and Municipal Code infractions.

PHASE ONE: Town staff will assess physical roadway conditions to determine if any traffic operations or safety concerns warrant parking restrictions. If parking restrictions are deemed necessary to assist with traffic operations or safety, these restrictions will be installed. Please note that improper driver or pedestrian behavior, such as not yielding to vehicles when outside of a legal crosswalk, or speeding, are not variables for restricting parking.

PHASE TWO: If parking restrictions are not established as a result of phase one, and secondary legal or Municipal Code infractions are still a concern, a period of enforcement of these impacts will be completed. This enforcement period will typically depend on the issue, but will last generally between two to six months.

PHASE THREE: If secondary legal or Municipal Code infractions still persist after the phase two enforcement period, parking restrictions of limiting hours, and side to side variation may be established once the following steps are completed:

- A resident, or property owner, along the street being requested to have parking restrictions installed must obtain support of more than 65% of the property owners adjacent to the side of the street where the restriction is requested. The minimum length of street that will be considered for parking restrictions is from street intersection to street intersection.
- Once greater than 65% support of property owners is obtained, Town staff will assess the potential stakeholders that may be impacted as a result of establishing parking restrictions understanding that highly concentrated parking will likely be disbursed to nearby areas that are currently not experiencing problems requiring further reaching restrictions than those initially requested.
- A working group consisting of residents, or property owners, from the staff identified stakeholders will be established to develop various options for establishing parking restriction limits. This working group will consist of between two to 10 members, with each member representing one property within the identified stakeholder limits.
- The working group preferred plan will then be voted on by property owners who have property lines adjacent to the public right-of-way (ROW) where proposed parking restriction limits are recommended. The full plan must have greater than 50% of those property owner votes in favor of the option for the plan to be implemented. Portions of plan implementation will not be considered.

Once a restriction plan is voted approved, Town staff will then implement parking restrictions by placing restriction signs along the respective streets. Painting of curbs will not be utilized to establish restriction zones. Restriction signs will be installed in accordance with priorities of existing workload, but will generally not exceed more than 30 calendar days in time.



Town of Castle Rock

Agenda Memorandum

Agenda Date: 5/15/2018

Item #: 22. File #: RES 2018-049

To: Honorable Mayor and Members of Town Council

From: Public Works and Police Departments

Resolution Approving the Town of Castle Rock On-Street Parking Policy

Executive Summary

A proposed Town policy (**Attachment A**) is provided to assist with clarifying the Town's official position toward on-street parking along public streets owned by the Town. This policy is an update based on Town Council's direction to staff to allow for residents in areas where significant parking density exists to have more say on establishing potential parking restrictions.

The policy position still strives to allow for on-street parking to be accommodated, while a new three phased approach to address concerns related to secondary impacts that are of a legal, or Municipal Code, nature has been added. Secondary issues such as concerns about the "look and feel", or perceived impacts to property values are not considered for establishing parking restrictions within the attached policy draft. Should Town Council want to allow for these considerations, the policy draft should be amended to eliminate phase two. A summary of the three phases are:

1. Phase One: Conduct a formal traffic engineering assessment to determine if restrictions are needed based on operations or safety concerns. If none, then
2. Phase Two: Complete a two to six month enforcement period to deal with legal, or Municipal Code, infractions that are occurring. If these secondary issues persist, then
3. Phase Three: Complete a stakeholder driven process to determine if parking restrictions should be implemented.

It is anticipated that these requests will increase as the Town population grows. An official Town position on this subject will assist with providing a consistent approach to addressing future requests to prohibit or restrict on-street parking along public streets.

Budget Impact

None. Implementation of this policy will determine if adequate staffing resources exist to sufficiently meet demand. Staff will need to assess this aspect and make appropriate resource requests with future budgeting processes.

Staff Recommendation

Staff's opinion is that accommodating on-street parking serves the larger diverse stakeholder interest, while still striving to respond to negative impacts that may result from parking. If enforcement of legal and/or Municipal Code issues is unsuccessful, a process for establishing parking restrictions that is led by affected stakeholders is available as a final step. As such, the attached policy is recommended to be implemented. The approval of a policy provides for a formal position, while allowing for any future changes to be easily adopted.

This draft policy will be discussed with the Public Works Commission at their May meeting. Their formal recommendation to Town Council will be presented at the meeting.

Proposed Motion

"I move to approve the Resolution as introduced by title."

Attachments

Attachment A: Resolution

Attachment B: Photos of Typical Street Classifications

Attachment C: Comparison of Off-Street Parking Requirements



STAFF REPORT

To: Honorable Mayor and Members of Town Council
From: Public Works and Police Departments
Title: A Resolution Approving the Town of Castle Rock On-Street Parking Policy

Notification and Outreach Efforts

The first policy drafted in 2017 was open to public review and formal comment for a period of 45 days. The policy was posted on the Town's website along with a formal comment form. Public notification was provided on the Town's social media outlets along with a formal press release.

The news release was sent to HOA representatives, local media outlets, Town staff, and more than 2,000 online subscribers on April 25. It was also posted to the Town's Facebook and Twitter accounts. The Town did a second Facebook post on May 30, 2017 to advertise the close of the public comment period. The Town has 13,113 "followers" on Facebook and 7,099 "followers" on Twitter.

A total of 24 formal on-line feedback forms were provided back to the Town. While not a statistically valid response to represent the overall general public of the Town, the relatively equal distribution of responses across the three positions; 1) supports the policy, 2) neutral on the policy, and 3) does not support the policy, provides an indication that the policy was fairly well balanced.

Feedback on the various Town social media sites was also provided. The Town posted twice on Facebook. The first post was the news release on April 25. The second reminder was on May 30. In all, the posts reached 7,588 people. There were a total 42 "likes, comments and shares" between the two posts.

While not considered formal feedback, the prevailing feedback was around growth and HOA rules. Two folks commented about the lack of parking Downtown. One suggested that HOA regulations should not supersede Town Code. One other liked the free parking Downtown at Town Hall and in the County parking garage. Others simply "tag" friends to make sure they know about the opportunity to provide feedback.

History of Past Town Council, Boards & Commissions, or Other Discussions

This item was discussed with the Public Works Commission at their August 2017 meeting. The Commission reviewed the various options that were considered by Town Staff and concurred that allowing parking as an amenity along streets where demand

exists is a value received by the majority of the public. The Commission unanimously recommended to Town Council to approve the original policy as drafted.

This item was discussed with Town Council at their August 2017 meeting. Town Council voted unanimously to not approve the policy as drafted. The direction provided to staff was to update the policy draft to include provisions that will allow residents that live adjacent to public streets more control on being able to establish parking restrictions.

Discussion

On street parking is generally allowed within the Town limits on local residential streets, on some existing collector roads and in business/commercial areas where adequate space for maintaining safe traffic operations exists. As the Town has continued to grow in population, there has been an increase in requests from various stakeholders to prohibit or restrict on-street parking along public streets based on the opinion that the “look” and “feel” is diminished by allowing on-street parking, or the general quality of life of nearby residents is diminished, or concerns about property values, safety, or a combination of these. These requests generally occur from:

- Single family residential areas adjacent to a park or public school
- Single family residential areas adjacent to a multi-family residential area
- Businesses that are concerned with the impact on-street parking may have on the clientele they are targeting

While specific numbers of requests have not been tracked for prohibiting parking, some of the examples where stakeholders have requested prohibitions or restrictions include:

- Red Hawk Drive near the intersection with Wolfensberger Road adjacent to a townhome development
- Auburn Drive near the intersection with Wolfensberger Road adjacent to an apartment complex
- Multiple residential streets near South Elementary School
- Multiple residential streets near Douglas County High School
- Multiple residential streets near Castle View High School
- A residential street adjacent to Butterfield Park
- A residential street adjacent to Soaring Hawk Elementary School
- South Perry Street, south of Safeway

In addition, requests have been made to the Town to implement a residential parking permit program which would give on-street parking preferences to residents adjacent to a public street where on-street parking is permitted. The Craig and Gould area is where this request has originated as a result of increased on-street parking occurring on streets in this neighborhood.

It is anticipated that these requests will increase as the Town population grows. An official Town position on this subject will assist with future requests to prohibit or restrict on-street parking along public streets, or for providing parking preferences to specific users.

Quantifying impacts that on-street parking has on the concerns raised is extremely difficult. As a customer service oriented Town, competing service requests like this can make it difficult to choose. Staff's opinion is that accommodating on-street parking serves the larger diverse stakeholder interest, while still striving to respond to negative impacts that may result from parking. Procedural elements have been built into the policy to minimize these secondary impacts. The approval of a policy provides for a formal position, while allowing for any future changes to be easily adopted.

The Municipal Code (Code) deals with on-street parking in various sections, but the primary Code elements related to this aspect are the following:

17.54.130 On-street parking

All persons shall comply at all times with all parking regulations promulgated by the Town. In addition, no person shall keep, maintain, store or park any trailer of any type, boat or detached pickup camper in violation of Chapter 10.20, CRMC. (Ord. 2012-18 §1). Chapter 10.20 is titled **Abandoned, Junked or Wrecked Vehicles** and limits vehicle parking to 72-hours without being moved before they are defined as abandoned and can be fined or towed.

10.08 Restricted Parking

This Code section designates certain restrictions along streets within the downtown area. It also deals with aspects of restricting parking during special events. The titles of this section are:

- 10.08.010 Area designated
- 10.08.020 Authority to set parking restrictions and parking restrictions
- 10.08.030 Repealed
- 10.08.040 Repealed
- 10.08.050 Special event parking restrictions
- 10.08.060 Applicability
- 10.08.070 Enforcement
- 10.08.080 Violation; penalty

Section 10.08.020 Authority to set parking restrictions and parking restrictions is listed in full as follows:

A. The Town Manager or his or her designee shall determine and set the time limits, charges and days and hours of operation for parking meters, not to exceed five (5) consecutive hours, and this determination shall be based upon study and investigation as a public convenience and safety requirement.

B. The Town Manager or his or her designee shall issue permits for parking in the public rights-of-way outside of the roadway.

C. The Town Manager or his or her designee has the authority to establish, regulate and enforce on-street parking, specifically:

1. Establish parking restrictions, limitations, regulations or prohibitions;
2. Keep records of all streets and places with parking restrictions and posted signs;
3. Establish construction zones for special parking;
4. Designate special parking zones for taxicabs, television, press and radio cars or other special parking zones;
5. Designate location of angle parking; and

6. Issue permit placement of parking restriction signs.
- D. Special rules for access and time limits may be established for:
 1. Handicapped parking;
 2. Emergency access lanes;
 3. Permits for parking in truck loading zones;
 4. Prohibited parking during street cleaning, etc.
 5. Restricted press or radio parking zones;
 6. Street closures by contractors; and
 7. Special event parking restrictions and permits pursuant to Section 10.08.050 below. (Ord. 2007-16 §1, 2007)

There is not a section of the Code that generally prohibits or restricts on-street parking along local residential or collector classification streets where sufficient width is available to accommodate parking.

The Town of Castle Rock Transportation Design Criteria Manual (Manual) is the engineering criteria document that guides new street development. Within this document, public streets are classified based on use generally by access as follows:

- Local (Residential): These are low volume roads with lower speeds where the number of accesses to properties is prevalent. This classification of street is meant to allow for on-street parking along both sides when the width can accommodate a 20-foot clear width for a Fire lane. Restrictions to one-side or both sides may be necessary to maintain this 20-foot clear width.
- Collector (Minor and Major): This classification is the next step up from a Local. These roads are “collecting” higher volumes of traffic from Locals. The speeds are typically higher, and the number of access points to properties is less than on Local classification roads. The Manual prohibits on-street parking along this classification due to lack of width between the travel lanes and required on-street multi-use/bike lane or turn lanes. Some older Collector roads do not have designated on-street multi-use/bike lanes. These older streets such as Red Hawk Drive can typically accommodate on-street parking.
- Arterial (Minor and Major): This classification is provided to roadways such as Plum Creek Parkway where the function is to process the highest volume of traffic at higher speeds. As such, the number of access points to these roadways is the lowest in number to minimize delays and accident potential. These roadways are not typically wide enough to accommodate on-street parking without vehicles encroaching into an adjacent dedicated travel lane. Because speeds are much higher and the volume of traffic is also much greater, on-street parking is typically prohibited to maximize safety.

Photos of typical examples of each of these three classifications are provided for reference (**Attachment B**).

Neighboring Jurisdictional Review

The Public Works Department reached out to Lone Tree, Parker, and the City of Castle Pines to inquire as to any formal code or policy that they have taken regarding the restriction or prohibition of parking on their public streets. The following is a summary of each jurisdiction's positions:

- Lone Tree: They do not have a formal code or policy that prohibits on-street parking along residential or collector classification streets. Where the width of the street is not wide enough to allow for on-street parking and a designated travel lane parking is prohibited. They have received some complaints next to one of their busier parks where parking is allowed. These complaints are usually that people do not want the parking adjacent to the park because they are concerned about kids coming out from between the cars. Lone Tree has not prohibited parking based on this concern.
- City of Castle Pines: If a street has adequate width to accommodate on-street parking and an adjacent through lane then they don't prohibit parking as long as vehicles move within 72-hours. They do not have a formal code or policy that prohibits or restricts on-street parking.
- Town of Parker: Similar to Lone Tree and the City of Castle Pines the Town of Parker does not have a formal code or policy that prohibits or restricts on-street parking. They allow for on-street parking if adequate width exists and an adjacent lane is not encroached into. Parking prohibitions are typically associated with sight distance issues to improve traffic operations in case specific situations.

Typical Requests to Prohibit On-Street Parking

While the frequency of requests to prohibit on-street parking is not available, these types of requests seem to center around a few themes:

- "The public is not respectful of my private property." This type of comment typically occurs along local residential streets adjacent to parks or schools. In these cases residents have complained that people have left trash that finds its way onto their property, or that people trespass on their private property. Through discussions with stakeholders where restrictions have been considered, they typically have a counter position in that people that utilize the public street to park are respectful of the public space and feel it's a beneficial amenity.
- "I'm concerned about the safety of children "darting" out between vehicles." This type of comment typically comes from single family residential property owners regardless of the adjacent use of the on-street parking. While this is a concern along any public street, defining this risk in a quantified way is difficult. As the density of pedestrians and adjacent traffic volumes increase, the probability of an accident to occur also increases due to exposure. However, an accident trend has not been identified on any particular street that supports an overall general prohibition of parking.

Some stakeholders have also mentioned that they are concerned about the negative image of a surrounding area that on-street parking creates. In addition some comments have been received related to the concern that on-street parking has on property values. While these items are worth considering in the context of this issue, quantifying these two variables to prove that these concerns are true would be extremely difficult to

do. The reverse is also a concern for some buyers/sellers related to property value in that not enough parking is viewed as a negative.

While perceptions are not inherently right or wrong, they can compete with the general demand to use the public space within the Right-of-Way for parking. On-street parking has been shown in various studies to have benefits associated with “traffic calming” in that speeds are typically lower along streets where a higher density of on-street parking exists.

Residential Permit Parking Program

A residential permit parking program is an alternative that provides residents adjacent to public streets a parking preference over all other stakeholders. These are typically utilized in areas where demand for on-street parking is great. Residents in these cases typically feel that their quality of life is negatively impacted. In some cases where residences don’t have a driveway or garage, on-street parking is their only option. The Craig and Gould area near downtown is the only area in Town where zoning does not require off-street parking accommodations.

The following table provides a summary review of Colorado municipalities with residential parking permit programs.

City	Managing Department	Permit Fee	General Concept
Denver	Parking Division	No	Restricted hours along streets. Permit allows residents on block to park and not be subject to these hours.
Boulder	Parking Services	\$17/permit	Restricted hours along streets. Permit allows residents on block to park and not be subject to these hours. Permits available to residents, visitors, employees and commuters. Businesses have \$75 fee for 3 permits
Colorado Springs	Unknown	Unknown	Residents allow property holders to park a specified number of vehicles on the street in "No Parking" zones. Options also exist for permits along streets with restricted hours.
Fort Collins	Parking Services	Unknown	Restricted hours along streets. Permit allows residents to park and not be subjected to these hours.
Aspen	Parking Department	No*	Restricted hours along streets. Permit allows residents to park and not be subjected to these hours. Permits available to residents, business and commuters. Free for first two permits. Cost unknown after two. Day passes are \$8/day.
Durango			Under development
Littleton	Police Department	No	Restricted hours along streets. Permit allows residents on block to park and not be subject to these hours. Guest permits available.

Telluride	Marshall's Office	Unknown	Restricted hours along streets. Permit allows residents on block to park and not be subject to these hours.
General Note: While most concepts are similar in nature, nuances seem to exist with each jurisdiction.			

A residential parking permit program would require active administration. It could be developed for specific areas of Town or apply town wide. In either case this would be an increased service level that will require further program development should this option be desired. Overall program costs would need to be developed along with public outreach to assist with program policy elements like permitting fees and enforcement.

Code vs. Policy

A formal Town position could be taken either as a formal amendment to the Code, or as a formal Town policy approved by resolution by the Town Council. A change to the Municipal Code would be required by Ordinance with two Town Council readings. A policy provides the most flexibility for Town Council to adjust in the future should changes be desired.

Townhome and Multifamily Parking Requirements of Colorado Municipalities

Development Services staff conducted a comparison of off-street parking requirements by some Colorado Municipalities associated with townhome and multi-family developments. The attached summary tables (**Attachment C**) provide this summary comparison for both traditional townhome and multi-family developments and independent living facility requirements. Castle Rock has very similar parking requirements in both instances. This indicates that current Town off-street parking requirements appear to be competitive with surrounding communities. If there is a desire to increase the Town's on-site parking requirements, it's recommended that this follow a separate individual public process.

Options Considered

A couple additional options were considered:

- Prohibit on-street parking adjacent to parks, schools, etc.: This is the opposite side of the recommended policy. While this may satisfy those that feel parking diminishes the look and feel of an adjacent area, we believe that this is likely the minority opinion and that public streets are a public amenity that should accommodate parking as a use if demand for it exists.
- Take prohibitions/restriction requests on a case by case project and require a quantified number of stakeholders to agree to the change: This option is the most democratic approach. The challenges with this option are identifying the stakeholders that are other than adjacent property owners to allow for their discussion and vote. For example if a local residential street adjacent to a park is being requested to have parking prohibited, does the Park's Department represent the users of the park that generate the parking demand? If not, how

are the respective stakeholders that park on the street identified and brought into the project for voting?

- Establish a new residential parking permit program: This provides preferences to adjacent residences where on-street parking demand is high. Because this would be a new service level, program costs and development would need to occur if this alternative is desired. This alternative could be tailored to certain areas of Town such as neighborhoods where zoning does not require off-street parking accommodations, or town wide. Since this provides preferential treatment to limited users, we believe that a fairness issue could exist.

Local Residential Classification



Collector Classification



Arterial Classification



Townhome and Multifamily Parking Requirements of Colorado Municipalities

	Townhomes	Studios	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	4+ Bedroom	Guest Parking	Notes
Castle Rock	2.00	1.00	1.50	2.00	2.00	2.00	2.00	0.25	
Longmont	Requires Plan	1.50	1.50	1.75	2.00			0.25	Townhomes parking falls under Mixed Use Zoning and requires a parking plan
Loveland	2.00	2.00	2.00	2.00	2.00	2.00	2.00		
Parker		1.00	1.00	1.50	2.00	2.00	2.00	0.25	Guest Parking can be on public street
Englewood	2.00	1.50	1.50	1.50	2.00	2.00	2.00	0.20	Guest Parking applies to structures with 5 or more units
Littleton			1.50	1.50	1.50	1.50	1.50		Multifamily is considered 4 or more dwelling units
Aurora	2.00	1.00	1.50	2.00	2.00	2.50	2.50	.5/.15	.5 Applies to Townhomes
Westminster	2/3		1.50	2.00	2.00	2.00	2.00	0.33	3 Spaces required for Townhomes with 4 or more bedrooms
Broomfield			1.5	2	2.5	3	+0.5		
Arvada	2.00	1.00	2/2.2	2/2.2	2/2.2	2/2.2	2/2.2	0.50	2.2 if Central Parking Used/2 if not used
Thornton	2.00	1 space per 500 sq ft, maximum 3						1/0.2	Townhomes require one enclosed space
Centennial	2.00	1.50	1.50	2.00	2.00	2.50	2.50	0.25	
Commerce City	2.00		1.50	1.75	2.00	2.00	2.00	0.15	Guest Parking Applies to MF
Greenwood Village	2.00	1.00	1.00	1.50	2.00	2.00	2.00	0.25	

Note: Spaces Required are per Dwelling Unit Unless Otherwise Noted

Independent Living Facility Requirements of Colorado Municipalities

	Studios	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	4+ Bedroom	Guest Parking	Employee Parking	Notes
Castle Rock	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	
Longmont	0.50	0.50	0.50	0.50	0.50	0.50	0.25	-	Must have 35% Age Restricted Units in Structure
Loveland	1.00	1.00	1.00	1.00	1.00	1.00	-	1.00	
Parker	Administrative determination								
Englewood	0.50	0.50	0.50	0.50	0.50	0.50	0.20	-	Must have 35% Age Restricted Units in Structure
Littleton	-	0.66	1.00	1.00	1.00	1.00	-	-	
Aurora	1.00	1.50	2.00	2.00	2.50	2.50	0.15	-	
Westminster	1.00	1.00	1.50	1.50	1.50	1.50	0.20	-	
Broomfield	-	-	-	-	-	-	-	-	
Arvada	0.50	0.50	0.50	0.50	0.50	0.50	-	-	Must have 35% Age Restricted Units in Structure
Thornton	0.70	0.70	0.70	0.70	0.70	0.70	1 per 300 sqft	-	Square Feet is of non living space
Centennial	1.00	1.00	1.00	1.00	1.00	1.00	0.33	-	
Commerce City	-	-	-	-	-	-	-	-	
Greenwood Village	-	-	-	-	-	-	-	-	

Note: Spaces required are per dwelling unit unless otherwise noted

Note: Employee spaces required are per maximum shift employee



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 13. **File #:** DIR 2023-007

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Kristin Read, Assistant Town Manager

Discussion/Direction: Draft 2023 Community Survey

Executive Summary

As previously discussed with Council, staff has been working with third-party vendor ComEngage to prepare to administer the Town's 2023 community survey. Following are links to the draft resident and business surveys for 2023:

- Resident: <https://CRgov.com/Survey>
- Business: <https://CRgov.com/BusinessSurvey>

These are not the live links that will be used to administer the study but rather draft links for review and feedback purposes. (Council has been emailed a surveyID to allow access to the drafts.) Those reviewing the drafts will need to enter a value for each question in order to advance each survey forward and review the full drafts.

The purpose of this item is for Council to review the draft surveys and discuss any desired adjustments ahead of staff and the consultant moving forward to administer the surveys. The planned project schedule is as follows:

ASAP-April 7:	Surveys administered
April 18:	Discuss survey results with Council

Proposed Motion:

"I move to direct staff to proceed with the 2023 community survey as discussed."



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 14. File #: DIR 2023-008

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Lisa Anderson, Town Clerk

Discussion/Direction: Tasting Licenses for new Fermented Malt Beverage and Wine Retailer Licenses

Executive Summary

Proposition 125 passed at the November 2022 election allowing Fermented Malt Beverage (FMB) licensed stores (convenience and grocery stores) to:

- (1) Sell wine
- (2) Conduct Tastings

This current FMB licenses will automatically be converted to Fermented Malt Beverage and Wine Retailer licenses on **March 1, 2023**.

Staff would like to have Council direction if they wish to amend our code to allow FMB and Wine Retailer licenses to hold tastings.

Additionally, if Council wants to make any amendments to our current regulations or adopt State regulations.

Discussion

Tastings are currently regulated under CRS 44-3-301 authorizing Tastings at Retail Liquor Stores and Liquor Licensed Drug Stores (*and now FMB and Wine Retailer licenses*) if the municipality adopts an ordinance authorizing tastings, and can be stricter on the number of tastings and the days or hours for tastings.

Current Statute on Tastings:

- Are applied for and approved by the Local Authority
- Conducted by a representative of the store or the wholesaler, brew or distillery pub or winery

that is TIPS trained.

- Samples must be:
 - free of charge
 - limited to four samples to a patron
 - cannot exceed 1 ounce of malt of vinous liquor or ½ ounce of spirituous liquor per sample in an open container.

Castle Rock adopted an ordinance allowing Tastings for Retail Liquor Stores and Liquor Licensed Drug Stores with three stricter regulations.

Castle Rock Stricter Regulations:

	<u>Castle Rock</u>	<u>Statute allows</u>
Tastings	104 per year	156 per year
Days	4/wk - Mon-Sat	7 days a week
Five Hours	11am-7pm	11am - 9pm
Opened Bottles	Destroyed	Save for future Tastings

Below is a breakdown of license types within Castle Rock depicted on ***Attached Map***:

License Type	Licensed to Sell	Number of Stores
Retail Liquor Store (RLS)	All types of alcohol	12
Liquor-Licensed Drugstore (LLD)	All types of alcohol	2
Fermented Malt Beverage and Wine Retailer (FMB)	Full strength beer, other fermented malt beverages such as hard seltzers and Wine (as of 3/1/23)	21

Town Council has the ability to:

1. *Update our Code to allow FMB and Wine Retailer licenses to conduct Tastings.*
2. *Retain or Amend our stricter regulations **OR** adopt the state regulations as noted.*

Budget Impact

This potentially could increase revenue if the FMB and Wine Retailer licensees applied for Tastings licenses.

Staff Recommendation

Staff does not see any issue giving the ability for FMB and Wine licenses to hold Tastings if they

choose.

Staff has no objection to deferring to statute on regulations which would increase the number of Tastings per year, allow more flexibility for the times to conduct Tastings; and to allow opened containers to be saved for future Tastings as many of these beverages are expensive.

Tasting licenses must be applied for each year to run concurrently with their liquor license and are reviewed for any issues with their liquor license or their Tasting license.

Staff has issued Tasting licenses to liquor stores with no issues occurring.

Proposed Motion

Add FMB and Wine Retailer licenses (and Adopt State regulations)

I move to Direct Staff to propose an Ordinance amending our Code to allow Fermented Malt Beverage and Wine Retailer licenses to conduct Tastings and to defer to State Statute on regulations concerning Tastings.

OR

Add FMB and Wine Retailer licenses (and retain current Town restrictions)

I move to Direct Staff to propose an Ordinance amending our Code to allow Fermented Malt Beverage and Wine Retailer licenses to conduct Tastings.

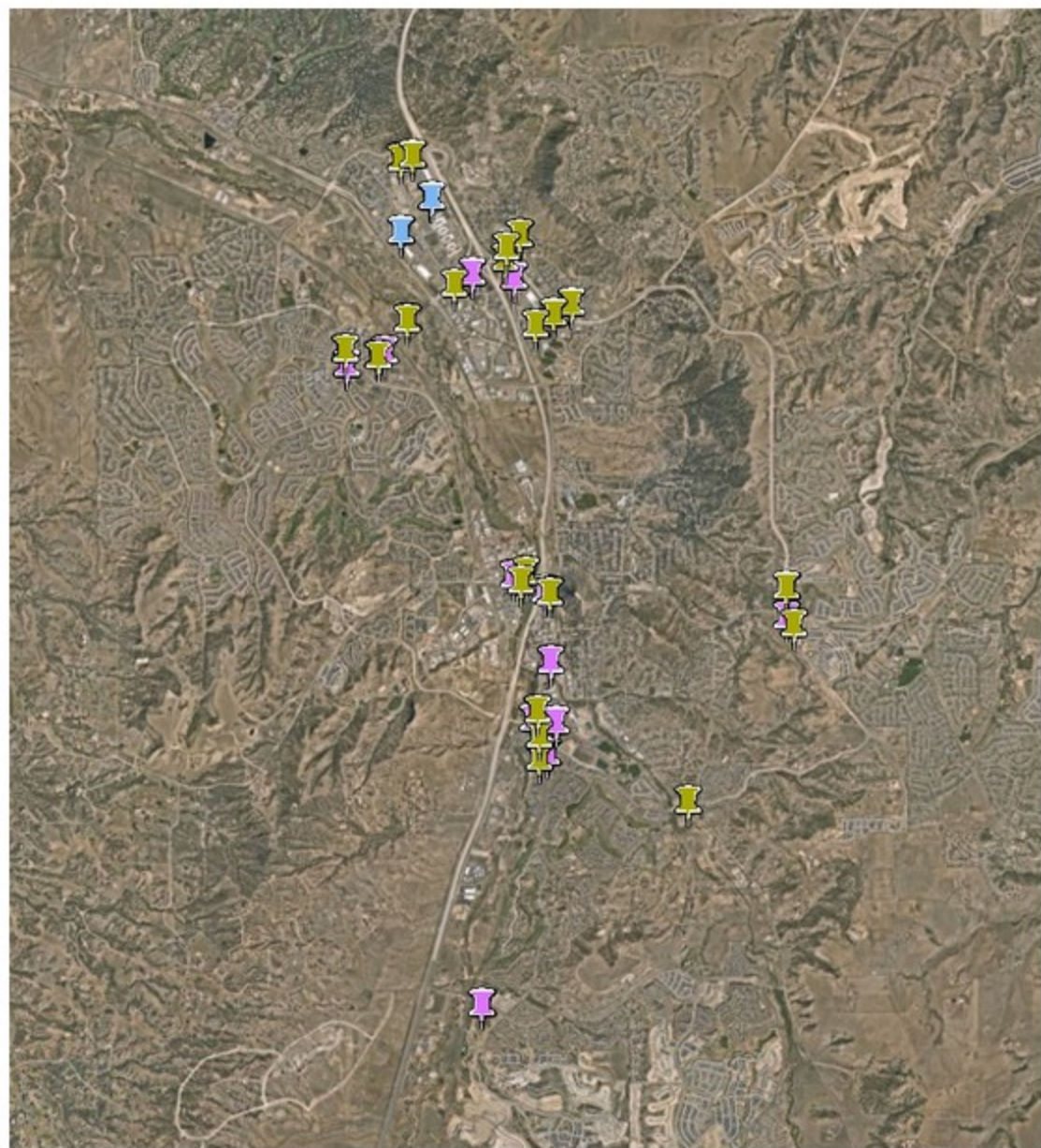
OR

Add FMB and Wine licenses (and amend Town restrictions)

I move to Direct Staff to propose an Ordinance amending our Code to allow Fermented Malt Beverage and Wine Retailer licenses to conduct Tastings and to amend Town restrictions as follows:

Attachments

Map of Licenses





Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 15. **File #:** RES 2023-011

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Mark Marlowe, P.E., Director of Castle Rock Water
Roy Gallea, P.E., Engineering Manager
Jeanne Stevens, P.E., CIP Project Manager

Resolution Approving Updates to the 2022 Wastewater Master Plan *[Entire Castle Rock Water Service Area]*

Executive Summary

This memorandum has been prepared to request Town Council approval of a Resolution adopting the 2022 Wastewater Master Plan (see **Attachment A**).

The Town is a growing community. As of early 2022, the Town of Castle Rock wastewater collection system, which serves a population of more than 80,000, has more than 10,300 sanitary sewer manholes, is over 314 miles in total length and transports on average about 4.5 million gallons of wastewater each day to either the Plum Creek Water Reclamation Authority (PCWRA) or the Pinery Wastewater Treatment Facility. At an estimated build out population, the collection system could serve as many as 155,000 residents. At peak times, wastewater flow to be conveyed to the PCWRA or the Pinery for treatment via interceptors could more than double at future build-out conditions to a projected 10.6 million gallons per day (MGD). The 2022 Wastewater Master Plan (WWMP) highlights critical findings and recommendations resulting from a reassessment of wastewater program needs for the Town of Castle Rock.

This 2022 plan builds on the previous master planning efforts and was completed with the following goals in mind:

- Identify collection system deficiencies and/or future facility requirements.
- Develop tools to update the plan as growth conditions change or new development occurs.
- Develop a capital plan for recommended and required projects that balances infrastructure requirements with fiscal responsibility.
- Develop preliminary cost estimates as a basis for input into the annual rates and fee analysis, which analyzes future requirements out to the year 2065
- Identify projects to be included in the 5-year capital plan budget

- Identify infrastructure that may be needed to be built or upsized by developers as growth occurs in currently undeveloped or underdeveloped areas.

The following principles serve as the base for the Town's wastewater programs:

- Principle 1: Protect People, Property and the Environment
- Principle 2: Plan for the Future
- Principle 3: Encourage Coordination of Infrastructure Needs
- Principle 4: Operate the Wastewater Enterprise Fund as a Business, Balancing Revenue and Expenses
- Principle 5: Provide for Effective Long-term Operation and Maintenance of Collection System Facilities
- Principle 6: Ensure Wastewater Planning is Consistent with, and Considered Part of, a Fully Integrated Total Water Management Approach
- Principle 7: Identify and Implement Changes to the Wastewater System which will improve long term sustainability through resource recovery and net zero energy use

Castle Rock Water employs a cost of service (COS) methodology to ensure the Wastewater program is a self-sustaining enterprise, adequately financed with rates that are based on sound engineering and economic principles. Moreover, rates should be equitable and proportionate to the costs of providing service to a given type of customer. Further, there is an expectation that growth pays for growth and that system development fees and developer infrastructure requirements should reflect and support this development model.

History of Past Town Council, Boards & Commissions, or Other Discussions

CRW staff presented the 2022 WWMP to the Castle Rock Water Commission (CRW Commission) on January 25, 2023, and the CRW Commission recommended Council approve and adopt the plan.

Discussion

Key efforts CRW will be doing going forward as part of the plan include:

- CRW collection staff will expand on the use of acoustic surveying to inspect and monitor the collection system for blockages that can cause sanitary sewer overflows which will improve overall operational efficiency
- CRW staff will inspect all sewer main interceptors greater than 15-inch in size, over 107,000 linear feet of sewer mains on a five-year schedule
- CRW will complete projects as identified in the 2022-2027 planning horizon for capital projects
- CRW staff will begin implementing the sewer rehabilitation projects as identified in the 2023-2032 Rehab Capital Plan (Draft)
- CRW will consider supporting legislation at the statewide level to restrict the sale of flushable wipes which are detrimental to the operation of the collection system, particularly the lift stations
- CRW will continue upgrades at wastewater facilities as identified in the SCADA Master Plan

- CRW will improve security at several lift stations by adding perimeter fencing and other security measures
- CRW staff will continue to look for and implement opportunities to reduce energy use at its facilities
- CRW staff will continue efforts to reduce odors from the lift stations and collection systems
- CRW will support local efforts to reduce phosphorus in the local watersheds through its participation with the Chatfield Watershed Authority (CWA) and the Cherry Creek Basin Water Quality Authority (CBWQA)
- CRW will implement changes to the landscape regulations that will reduce irrigation demand in the future and potentially will reduce phosphorus loading in the watershed from reduced fertilizer use
- CRW will continue to explore expanding the use of graywater systems which could reduce long term hydraulic loading on the PCWRA and Pinery facilities
- CRW will partner with Plum Creek Water Reclamation Authority (PCWRA) on the feasibility of a thermal recovery project at the PCWRA facility that may reduce heating and cooling costs
- CRW will work with Douglas County and PCWRA to implement the SH-85 Regional Wastewater project helping to keep reusable water supplies in Castle Rock as well as improving water quality in Chatfield Reservoir
- CRW will participate with PCWRA on the update to the PCWRA Utility Plan
- CRW will identify and implement projects to improve long term sustainability through resource recovery and reducing net energy use
- CRW will investigate whether the shift to direct potable reuse (DPR) from indirect potable reuse (IPR) is in the best interest of the Town based on the Colorado Department of Public Health (CDPHE) finalized regulations for DPR
- CRW will work with partnering utilities to expand our capabilities to store and/or bring reusable water supplies back to the Town

Budget Impact

Part of the 2022 Plan update was to revisit the capital plan and the cost estimates used. Annually, Castle Rock Water does a rate study and revises the COS model in order to recommend changes, if any, to the fee schedule. In the 2010 Wastewater Master Plan, the overall, long-term capital plan totaled just under \$80 Million; for the 2016 update, that total was just over \$80 Million. In this 2022 update, the overall long-term capital plan total is estimated at \$200.2 Million through the year 2065. The significant increase in the future long term capital budget has been primarily influenced by two factors: the potential for a future expansion of the Plum Creek Water Reclamation facility if future population served exceeds 105,000 and a future focused effort on sewer rehabilitation to ensure collection system integrity. Further, the capital plan is devised to try to spread out capital costs in order to minimize any unexpected jump in rates or fees in any one year. Increases in system development fees primarily affect new development, and support the policy that growth pays for growth. Increases in wastewater user charges reflect operations and maintenance costs and the costs of capital rehabilitation and replacement, while increases in volumetric rate fees affect those who may not use water wisely or do not practice conservation within the household.

Staff Recommendation

Item #: 15. File #: RES 2023-011

Staff recommends Town Council approve and adopt the 2022 Wastewater Master Plan.

Proposed Motion

"I move to approve the Resolution as introduced by title."

Alternative Motions

"I move to approve the resolution as introduced by title, with the following conditions: (list conditions)."

"I move to continue this item to the Town Council meeting on _____ date to allow additional time to (list information needed)."

Attachments

Attachment A: Resolution
Exhibit 1: 2022 Wastewater Master Plan

RESOLUTION NO. 2023-011

A RESOLUTION APPROVING UPDATES TO THE TOWN OF CASTLE ROCK 2022 WASTEWATER MASTER PLAN

WHEREAS, the Town of Castle Rock, Colorado (the “Town”), adopted the Wastewater Master Plan (the “Plan”) in 2010, which was subsequently updated in 2016; and

WHEREAS, Castle Rock Water has updated the Plan to address critical findings and recommendations resulting from a reassessment of wastewater program needs for the Town as well as revisit the capital improvement plan and the cost estimates used; and

WHEREAS, the updates to the Plan incorporates the previous wastewater program principals while also incorporating new goals to include the following:

- (i) Identify collection system deficiencies and/or future facility requirements;
- (ii) Develop tools to update the plan as growth conditions change or new development occurs;
- (iii) Develop a capital plan for recommended and required projects that balances infrastructure requirements with fiscal responsibility;
- (iv) Develop preliminary cost estimates as a basis for input into the annual rates and fee analysis, which analyzes future requirements through the year 2065;
- (v) Identify projects to be included in the 5-year capital plan budget;
- (vi) Identify infrastructure that may need to be built or upsized by development as growth occurs in currently undeveloped or underdeveloped areas; and
- (vii) Identify and implement projects to ensure that all reusable wastewater resources are captured and/or treated and otherwise are beneficially reused;

and

WHEREAS, Castle Rock Water recommends that Town Council approve the Plan; and

WHEREAS, Town Council finds that the Plan constitutes a sound and appropriate guide to address the Town’s goals as they relate to wastewater.

NOW, THEREFORE BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF CASTLE ROCK AS FOLLOWS:

Section 1. Adoption. The 2022 Wastewater Master Plan, attached as *Exhibit 1* is hereby approved and adopted.

PASSED, APPROVED, AND ADOPTED this 7th day of February, 2023, by the Town Council of the Town of Castle Rock, Colorado, on first and final reading by a vote of _____ for and _____ against.

ATTEST:

TOWN OF CASTLE ROCK

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Wastewater Master Plan 2022



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Definitions and Acronyms

Btu	British Thermal Unit
CCBWQA	Cherry Creek Basin Water Quality Authority
CCTV	Closed Circuit Televising
CDPHE	Colorado Department of Public Health and Environment
CECs	Contaminants of Emerging Concern
CIRSA	Colorado Insurance Risk Sharing Agency
CIP	Capital Improvement Project
CMOM	Capacity, Management, Operations, and Maintenance
COS	Cost of Service
COF	Consequence of Failure
CRW	Castle Rock Water
DOC	Dissolved Organic Carbon
DoIT	Division of Innovation and Technology
DWSD	Dominion Water and Sanitation District
EPA	Environmental Protection Agency
FOG	Fats, oils and grease
FTE	Full-time Equivalent
GASB34	Governmental Accounting Standards Board Statement 34
GIS	Geographic Information System
GPD	Gallons per Day
GPM	Gallons per Minute
I/I	Infiltration and Inflow
in	Inch
IGA	Intergovernmental Agreement
Kgal	Kilo (1,000) gallons
KBtu	Kilo (1,000) Btus
KPI	Key Performance Indicator
Lf, LF	Linear Feet
LOF	Likelihood of Failure
LS	Lift Station
mg	milligram
mg/L	milligrams/liter
MG	Million Gallons
Mgd	Million gallons per Day
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NASSCO	North American Society of Sewer Service Companies
O&M	Operation and Maintenance
OWTS	Onsite Wastewater Treatment Systems (septic systems)
PACP	Pipeline Assessment Certification Program
PCWRA	Plum Creek Water Reclamation Authority
PFAS	polyfluoroalkyl substances
PMP	Pavement Maintenance Program
PS	Pump Station
PWSD	Parker Water and Sanitation District
PWWD	Pinery Water and Wastewater District
PVC	Polyvinyl Chloride, a common pipe Material

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QMRA	Quantitative Microbial Risk Assessment
RCNLD	Replacement Cost New Less Depreciation
SCADA	Supervisory Control and Data Acquisition
SDFs	System Development Fees
SewerCad	Sanitary Sewer System Model Software
SF	Square Foot
SFE	Single Family Equivalent
SSO	Sanitary Sewer Overflows
SWPP	Source Water Protection Plan
TDS	Total Dissolved Solids
TM	Technical Memorandum
TOC	Total Organic Carbon
Town	Town of Castle Rock
UP	Utility Plan
USEPA	United States Environmental Protection Agency
WW	Wastewater
WWMP	Wastewater Master Plan
WWTP	Wastewater Treatment Plant

Executive Summary

The Town is a growing community. As of early 2022, the Town of Castle Rock wastewater collection system, which serves a population of nearly 80,000, has more than 10,300 sanitary sewer manholes, is over 314 miles in total length and transports on average about 4.5 million gallons of wastewater each day to either the Plum Creek Water Reclamation Authority (PCWRA) or the Pinery Wastewater Treatment Facility. At an estimated build out population, the collection system could serve as many as 155,000 residents. At peak times, wastewater flow to be conveyed to the PCWRA or the Pinery for treatment via interceptors could more than double at future build-out conditions to a projected 10.6 million gallons per day (Mgd). The 2022 Wastewater Master Plan (WWMP) update highlights critical findings and recommendations resulting from a reassessment of wastewater program needs for the Town of Castle Rock.

This 2022 update builds on the previous master planning efforts and was completed with the following goals in mind:

- Identify collection system deficiencies and/or future facility requirements.
- Develop tools to update the plan as growth conditions change or new development occurs.
- Develop a capital plan for recommended and required projects that balances infrastructure requirements with fiscal responsibility.
- Develop preliminary cost estimates as a basis for input into the annual rates and fee analysis, which analyzes future requirements out to the year 2065
- Identify projects to be included in the 5-year capital plan budget
- Identify infrastructure that may be needed to be built or upsized by developers as growth occurs in currently undeveloped or underdeveloped areas.
- Identify and implement projects to ensure that all reusable wastewater resources are captured and/or treated and otherwise are beneficially reused.

The following principles serve as the base for the Town's wastewater programs:

- **Principle 1: Protect People, Property and the Environment**
- **Principle 2: Plan for the Future**
- **Principle 3: Encourage Coordination of Infrastructure Needs**
- **Principle 4: Operate the Wastewater Enterprise Fund as a Business, Balancing Revenue and Expenses**
- **Principle 5: Provide for Effective Long-term Operation and Maintenance of Collection System Facilities**
- **Principle 6: Ensure Wastewater Planning is Consistent with, and Considered Part of, a Fully Integrated Total Water Management Approach**

➤ **Principle 7: Identify and Implement Changes to the Wastewater System Which Will Improve Long Term Sustainability Through Resource Recovery and Net-Zero Energy Use**

Castle Rock Water (CRW) employs a cost of service (COS) methodology to ensure the Wastewater program is a self-sustaining enterprise, adequately financed with rates that are based on sound engineering and economic principles. Moreover, rates should be equitable and proportionate to the costs of providing service to a given type of customer. Further, there is an expectation that growth pays for growth and that system development fees and developer infrastructure requirements should reflect and support this development model.

Part of the 2022 Plan update was to revisit the capital plan and the cost estimates used. Annually, CRW does a rate study and revises the COS model in order to recommend changes, if any, to the fee schedule. In the 2010 Wastewater Master Plan, the overall, long-term capital plan totaled just under \$80 Million; for the 2016 update, that total was just over \$80 Million. In this 2022 update, the overall long-term capital plan total is estimated at \$200.2 Million through the year 2065. The significant increase in the future long term capital budget has been primarily influenced by two factors: the potential for a future expansion of the Plum Creek Water Reclamation facility if the population served exceeds 105,000; and an updated future focused effort on sewer rehabilitation to ensure long term collection system integrity. Further, the capital plan is devised to try to spread out capital costs in order to minimize any unexpected jump in rates or fees in any one year. Increases in system development fees primarily affect new development, and support the policy that growth pays for growth. Increases in wastewater user charges reflect operations and maintenance costs and the costs of capital rehabilitation and replacement, while increases in volumetric rate fees affect those who may not use water wisely or do not practice conservation within the household.

Key efforts CRW will be doing going forward as part of the plan include:

- CRW collection staff will expand on the use of acoustic surveying to inspect and monitor the collection system for blockages that can cause sanitary sewer overflows which will improve overall operational efficiency
- CRW staff will inspect all sewer main interceptors greater than 15-inch in size, over 107,000 linear feet of sewer mains on a five-year schedule
- CRW will complete projects as identified in the 2022-2027 planning horizon for capital projects
- CRW staff will begin implementing the sewer rehabilitation projects as identified in the 2023-2032 Rehab Capital Plan (Draft)
- CRW will consider supporting legislation at the statewide level to restrict the sale of flushable wipes which are detrimental to the operation of the collection system, particularly the lift stations
- CRW will continue upgrades at wastewater facilities as identified in the SCADA Master Plan

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- CRW will improve security at several lift stations by adding perimeter fencing and other security measures
- CRW staff will continue to look for and implement opportunities to reduce energy use at its facilities
- CRW staff will continue efforts to reduce odors from the lift stations and collection systems
- CRW will support state and local efforts to reduce phosphorus in the local watersheds through its participation with the Chatfield Watershed Authority (CWA) and the Cherry Creek Basin Water Quality Authority (CBWQA)
- CRW will implement changes to the landscape regulations that will reduce irrigation demand in the future and potentially will reduce phosphorus loading in the watershed from reduced fertilizer use
- CRW will continue to explore expanding the use of graywater systems which could reduce long term hydraulic loading on the PCWRA and Pinery facilities
- CRW will partner with Plum Creek Water Reclamation Authority (PCWRA) on the feasibility of a thermal recovery project or solar project at the PCWRA facility that may reduce heating and cooling costs
- CRW will work with Douglas County and PCWRA to implement the SH-85 Regional Wastewater project helping to keep reusable water supplies in Castle Rock as well as improving water quality in Chatfield Reservoir
- CRW will participate with PCWRA on the update to the PCWRA Utility Plan
- CRW will identify and implement projects to improve long term sustainability through resource recovery and reducing net energy use
- CRW will investigate whether the shift to direct potable reuse (DPR) from indirect potable reuse (IPR) is in the best interest of the Town based on the Colorado Department of Public Health (CDPHE) finalized regulations for DPR
- CRW will work with partnering utilities to expand our capabilities to store and/or bring reusable water supplies back to the Town

1. Introduction

This 2022 Wastewater Master Plan (WWMP) update highlights critical findings and recommendations resulting from a reassessment of wastewater program needs for the Town of Castle Rock. In 2003, the Town prepared a Wastewater Master Plan that examined the existing wastewater system infrastructure and identified new wastewater program requirements, as well as capital improvement projects required to provide service to existing residents and to address future development through expected build out of the Town. In 2010, the Wastewater Master Plan was updated; the hydraulic modeling was updated to reflect changes in infrastructure and revisions to growth projections. That update was designed to be used as a companion document to the original 2003 WWMP. Similarly, the 2016 revision built on the previous master planning efforts but was also a standalone document.

This 2022 Wastewater Master Plan follows a similar approach as the 2016 update. The capital master plan was reevaluated out to the year 2065 and reflects changes in expected ultimate buildout population and attempts to plan for appropriate timelines for certain projects. Modeling results in support of this master planning effort for the most part have reconfirmed the capital improvement projects needed and most were identified in previous master plans. Key Performance Indicators (KPIs) for the wastewater function that are tracked include the Sanitary Sewer Overflow (SSO) rate, the Operational Cost per average daily wastewater flow, and the Millions Gallons Per Day (Mgd) processed per employee. These KPIs are evaluated quarterly and are benchmarked against other utilities using American Water Works Association (AWWA) utility criteria. Each KPI is discussed in more detail in later sections. The KPIs are used internally to gauge how well Castle Rock Water is continuing to meet or exceed its goals of being in the top quartile nationally when compared to our peers. In addition, CRW participates in the annual AWWA Benchmarking Survey which evaluates our performance relative to some of the best utilities in the country in over 150 plus statistics. Some of these parameters have also informed our planning in this update, e.g., system renewal/replacement funding.

The 2010 wastewater master plan update was developed with the following goals in mind:

- Analyze the Town's existing wastewater collection system for existing and future growth conditions in order to identify collection system deficiencies and/or future facility requirements.
- Develop tools and a hydraulic model that staff could use to update the plan as growth conditions changed or new development occurred.
- Develop a plan for phased implementation of recommended projects that balanced infrastructure requirements with fiscal responsibility and requirements.
- Develop cost estimates for both capital improvement projects and operation and maintenance programs as a basis for input into the annual rates and fee analyses.

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The 2010 plan built on several previous planning efforts including the 1998 Sanitary Sewer Facility Plan by HDR Engineering, the 2003 Wastewater and Reclaimed Water Master Plan by CH2M Hill, and sanitary sewer system modeling performed by URS and CH2M Hill, to provide guidance for the wastewater program into the future. The 2010 plan update considered changes to the wastewater program as a result of substantial reductions in the Town's growth rate. Similarly, due to rapid growth that occurred from 2011 to 2015, for the 2016 update it was important to revisit the growth plan, the hydraulic model, the capital plan, including cost estimates, and also the impacts to rates and fees. Each year, Castle Rock Water revisits the capital plan, reviews and revises cost estimates, and completes a rates and fees study to fully plan for future financial obligations and to ensure that growth pays for growth. The 2022 update will reflect that the long term buildout population of Castle Rock is anticipated to be higher than the 2010 and 2016 plans accounted for. The most significant outcome is that a future expansion of the wastewater treatment facilities most likely will be needed, and there is a significant future cost associated with that need. That future cost is reflected in the significant increase in the overall capital plan funding estimate, and captured in increases to the wastewater system development fees that future homebuilders will pay for municipal wastewater service.

The Town is a growing community, and this continued growth creates increased wastewater flows that must be accommodated. Additionally, system components are deteriorating from age and use which results in the need for infrastructure rehabilitation or replacement. In fact, many collection system components, particularly in the Downtown area, predate the 1940's. Wastewater improvements are required to replace undersized pipes, rehabilitate aging infrastructure, provide collection for new developments, respond to regulatory requirements, and accommodate additional treatment capacity. At an estimated build out population, the collection system could serve as many as 155,000 residents. At peak times, Wastewater flow to be conveyed to the Plum Creek Water Reclamation Authority (PCWRA) for treatment via interceptors could more than double current flows at future build-out conditions. Infrastructure must be sized to accommodate local and/or system wide peak conditions, which can be influenced by infiltration and inflow (I/I). Minimizing I/I throughout the collection system by collection system rehabilitation can potentially reduce the need for future capital investment.

Currently the Town of Castle Rock wastewater collection system, which serves a population of nearly 80,000, has more than 10,300 sanitary sewer manholes, is over 314 miles in total length and transports on average in excess of 4.5 million gallons of wastewater each day to the PCWRA and the Pinery wastewater treatment facilities. Over the course of the last twenty years, much emphasis was placed on building infrastructure and expanding facilities to meet population growth and future demands. However, with an aging infrastructure, future priorities will most likely shift more towards rehabilitation and/or replacement of aged or undersized wastewater collection system components. Additionally, expansions and upgrades at the PCWRA may have to be undertaken to provide for additional treatment capacity, to potentially meet changing

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regulatory requirements, ensure best quality effluent for current and future reusable and renewable water supplies, recover and reuse resources in the wastewater and move towards net zero energy use for the system as a whole.

The 2016 Wastewater Master Plan update was completed with the following principles in mind, which still hold true for this 2022 update, but include one addition:

➤ **Principle 1 – Protect People, Property and the Environment**

Community wastewater systems have been around for a long time, primarily developing from recognition by public health officials that many infectious diseases were caused by drinking water supplies contaminated by wastewater that was not adequately managed and treated. Similarly, as community water treatment systems developed, responsible parties came to better understand the need for protecting their source water, both for domestic and recreational uses. Along the way, the federal Clean Water Act created discharge standards for wastewater treatment facilities. Municipalities further recognized the benefit of keeping wastewater separate from stormwater, and created separate collections systems. Now, as it becomes clear that wastewater is and will be an important source for future drinking water supplies and contains other valuable resources (energy and phosphorus, for example), collection, treatment and resource recovery have become even more critical. In line with the principle of protecting people, property and the environment, Castle Rock Water has implemented projects and programs to ensure we are good stewards.

- ***Sewer Rehabilitation Program*** - A sanitary sewer overflow (SSO) occurs when wastewater escapes the collection system; generally, either by a system failure (break/leak) or a line blockage. To minimize system failures and blockages, Castle Rock Water operations crews operate year round to clean and video inspect sewer mains. The Engineering group addresses system deficiencies by contracting for repair/replacement or lining of deteriorated sewer mains as part of the Sewer Rehabilitation Program. Castle Rock Water tracks SSOs over the course of the year to calculate an annual SSO rate that is compared to national rates as a key benchmark. The goal is to minimize or eliminate overflows at a level that keeps us in the top quartile nationally each year. In 2013 Castle Rock Water invested in a CCTV inspection truck and software program, and an additional crew person, with the goal of increasing the percentage of the system that can be inspected yearly, with a target goal of 20-33 percent each year. Previously, about 5 percent per year was being inspected. Targeted inspection of older areas of town, and areas that are on the planning horizon for pavement rehabilitation, is a key component of the sewer rehabilitation program. In 2022, operations staff incorporated a new cutting edge technology, completing a system-wide acoustic survey of the collection system intended to find potential blockages,

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whether the blockages were from roots, grease, or sewer plugs unintentionally left behind, all which can lead to sewer overflows.

- **Manage Infiltration/Inflow** - Another key programmatic goal of Castle Rock Water is to keep inflow and infiltration (I/I) at levels that ensure the sewers do not become surcharged during wet weather events. Surcharged sewer mains can back up into houses, causing property damage, mental distress, and legal claims. Surcharged sewers can also overtop manholes, creating an SSO, where the wastewater then has the potential to reach and contaminate water bearing creeks and streams that are themselves a water source for Castle Rock and downstream entities. In this respect, managing I/I and SSOs are also source water protection measures. An essential component of minimizing I/I is good construction methods when new sewer systems are being constructed. Public Works inspectors ensure new mains are properly constructed and tested prior to use, and that builders are using best management practices to keep stormwater out of incomplete sewers under construction. Aging sewer mains, often more susceptible to I/I, can be relined to reduce I/I that can enter sewer mains at old or defective pipe joints, again highlighting the importance of the sewer inspection and repair programs. Since 2010 CRW has lined over 31,000 linear feet of sewer mains. Extreme precipitation events can significantly increase I/I. Proper design of sewer system collection and treatment facilities allocates some reserve capacity to I/I as a safety factor, but good design ensures manholes are out of stormwater flow paths; good construction ensures pipes and manholes are water-tight and above grade. A particularly detrimental effect of I/I is that it can hydraulically overload the wastewater treatment facility, contributing to inefficient treatment, and potentially requiring costly capital expansion to handle peak loads. Another effort to reduce I/I is the CRW policy of replacing sewer laterals to the edge of the right of way during major waterline or sewer line rehab projects. Examples include the Glovers Waterline Replacement projects in 2021 and 2022. Old sewer laterals, particularly old clay laterals, are suspected as causal to significant infiltration sources during prolonged wet periods. Additionally, the utility hopes to avoid major street cuts to newly paved roads by homeowners who need to replace failing sewer lines.
- **Capacity Modeling** – Fundamental to good planning and system operation is maintaining a complete and calibrated hydraulic model of the collection system. The model was fully developed for the 2010 master planning effort, and has been updated to incorporate new infrastructure and increased wastewater demands. By keeping the model up to date, Castle Rock Water can proactively plan for capital replacement and upsizing projects. Predictive modeling, coupled with in-the-field flow monitoring, helps ensure that adequately sized sewer mains are constructed in time to avoid capacity issues and surcharged mains and manholes. Staff utilize the hydraulic model to ensure new development is not exceeding the capacity of existing or planned downstream collection components; if such is the case, new

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development must then plan and construct sufficient capacity. From a fiscal standpoint, this helps ensure growth pays for growth. Examples of developer driven capacity expansion would be the previously completed upsize of about 1,900 linear feet (lf) of 12-inch sewer to 15-inch along the Crystal Valley Loop Road, the future upsize of the Oman Street Interceptor, and the future expansion of the Dawson Trails interceptor.

- **Planning and Coordination** – Castle Rock Water coordinates sewer rehab projects with the Public Works Department and the Parks and Recreation Department and/or developer projects to avoid unnecessary pavement street cuts and to demonstrate fiscal responsibility. Developers are often required to construct upsized infrastructure to support their planned development, or contribute their calculated cost share of recent or future upgrades to the wastewater fund.
- **Source Water Protection** – Castle Rock Water considers and plans for the most cost effective way to handle water treatment plant solids from discharging into the collection system, giving due consideration to the PCWRA discharge permit, best available technologies at a reasonable cost, and being protective of wastewater as a renewable resource. Currently, water treatment plant solids, excepting the Plum Creek Water Purification Facility (PCWPF), are discharged to the sanitary sewer for treatment at the PCWRA. Due to changing discharge regulations in the future, Castle Rock Water may have to plan for residuals management at the other water treatment plants instead of discharge. Other Castle Rock Water programs that contribute to source water protection include the MS4 (Municipal Separate Storm Sewer System) program managed by the Stormwater Division, which includes erosion control management, an annual creek clean-up day, and other best management practices. Similarly, the industrial pretreatment program and fats, oil and grease (FOG) program managed by the PCWRA help eliminate potentially harmful or detrimental discharges to the collections system that could interfere with future reclamation and reuse of the effluent.
- **Odor Control** - While odor issues may not have health implications for the public, they can contribute to quality-of-life issues. Also, lack of control of hydrogen sulfide (H₂S, the principle component of wastewater gas emissions; very odorous and offensive) can lead to corrosion and premature deterioration of collection system infrastructure, resulting in costly repairs. Hydrogen sulfide is also a hazardous gas, lethal at certain exposure limits, particularly in confined spaces, so it is a safety hazard for operations staff. Castle Rock Water employs chemical addition and aeration at most of the Town's lift stations to reduce the odor producing potential of the wastewater, and also has several facilities dedicated to odor control using active and/or passive treatment methods. Improving odor control and making it more efficient are key focuses in this plan going forward.

- **Wastewater Treatment** – While Castle Rock Water performs the day-to-day functions of wastewater collection and conveyance, wastewater treatment is performed by two plants, Plum Creek Water Reclamation Authority (PCWRA) and the Pinery, that serve the Town. The Pinery treats flows that generate in the Cobblestone Ranch neighborhood, and also serves the Macanta (previously known as Canyons South) development. All other wastewater flows in Town are conveyed to the PCWRA. Over 100 years ago, wastewater treatment was promoted as a way to protect public health. Beginning in the early 1970s, treatment goals evolved to focus not just on public health, but on the aesthetics and environmental concerns in order to achieve more effective and widespread treatment in an effort to improve the quality of surface waters. In the 1980s, additional treatment focus was placed on removing compounds with the potential for long-term health effects. Increasingly, treatment is moving towards more advanced treatment to meet ever more stringent regulatory requirements that protect public health, preserve water quality and recognize that wastewater is a valuable, renewable resource. In 2021 an expansion of the PCWRA was completed that increased the plant capacity from 6.44 to 9.44 Mgd, of which 7.14 Mgd (more than 75%) is allocated to the Town. With sustained growth expected in Castle Rock, staff anticipates that a second expansion will be required in the 2038 - 2043 time frame when/if the population approaches 105,000. Future costs have been incorporated into the capital plan and the rates and fees analysis. At the Pinery, CRW currently conveys about 0.12 Mgd for treatment. Future capacity needs at the Pinery are as much as 0.51 Mgd. Any needed expansions at the Pinery are paid through SDFs, and none are currently anticipated.

➤ **Principle 2 – Plan for the Future**

Central to any master plan is that it has to be a plan for the future, and fundamental to good planning is having the right people and tools to develop, analyze and understand the model results. In 2010 Castle Rock Water purchased modeling software and trained staff to develop a wastewater hydraulic model that could be used and updated as growth conditions change. Key components of the Castle Rock Water planning process include:

- Update the hydraulic model at least annually as assets in the system change.
- Analyze the Town's existing wastewater collection system at least annually for existing and future growth conditions, in order to identify collection system deficiencies and/or future facility requirements. Adjustments to the capital plan, the master plan, and budgets should be made accordingly yearly as part of the rates and fees study and the budgeting process.

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- Maintain the tools and resources necessary to identify sewer infrastructure that has reached the end of its useful life and have a plan for replacement. Tools and resources include the hydraulic model, collection system video inspection equipment, the Granite sewer video/defect database and pipe scoring system, the database of SSOs, and the Cartegraph OMS asset management program. The video inspection program is most useful in identifying pipe defects so that proactive repair and replacement can be planned. The asset management program can be used to track SSOs and areas that might be requiring more maintenance, and eventually will be used to incorporate pipe condition scoring and costs in order to develop a predictive model for sewer pipe rehabilitation. A new tool being utilized by CRW in 2022 is the use of acoustic inspection technology to identify sewer lines that may be blocked, either by a mechanical plug (often installed during construction) or by a grease or root blockage. With this new tool, cleaning and video inspection work can be better targeted, improving efficiency, saving water and diesel fuel and reducing the risk of sewer overflows.
- Plan to fully utilize the asset management program to maximize the life of assets and minimize life-cycle costs.
- Explore expanding the service area to eliminate septic tanks and/or serve outside the Town service area where it makes sense, and with regards to the impact to the PCWRA service area and capacity. Expansion also needs to consider the potable water demands required to support new service areas.
- Measure and maximize recovery of wastewater flows in Cherry Creek and Plum Creek in order to be proactive with respect to reclaimed waste water as a renewable resource. Wastewater flows to the PCWRA are measured at the PCWRA, and treated effluent is currently discharged into the East Plum Creek. In the five years since the last update, CRW has constructed a pump station and pipeline from the Castle Rock Reservoir No.1 near Sedalia to bring the Town's renewable effluent water rights back for advanced treatment at the PCWPF to realize full beneficial capture and reuse of those flows. The Town has storage capacity in the CRR1 Reservoir and also in Chatfield Reservoir for the Plum Creek treated effluent flows, and has plans to expand the Sedalia Reservoir system capacity to capture potential free river flows. Wastewater flows contributory to the Cherry Creek Basin are captured and treated by the Pinery Water and Wastewater District, and then released back into Cherry Creek. The Town has an existing agreement with Parker Water and Sanitation District to pick up these reusable return flows at the Newlin Gulch Diversion, however, this is dictated by when Parker is able to operate this diversion from a priority standpoint. Thus, the majority of Castle Rock's reusable effluent on the

Cherry Creek side flow downstream without being recaptured. This will be an area of focus to fix in the next five years.

- Develop a plan for phased implementation of recommended projects. Key to accomplishing this is to revisit the hydraulic model regularly to identify capacity issues, and regular inspection and condition assessment of critical infrastructure, such as interceptors and force mains. Staff shall review sewer inspection information to identify pipe defects to be corrected under the Sewer Rehab Program. Staff shall particularly target the older areas of town where clay pipe predominates, but shall also tailor the phasing of the Sewer Rehab Program to be in advance of major road or pavement rehabilitation projects. Planning efforts shall also take into consideration the timing of projects to spread the costs and normalize impacts to rates and fees. Generally, 5-year capital plans are used for budgeting purposes and the annual rates and fees analysis, but are revisited annually to include any cost estimates used for budgeting purposes. CRW has completed a 10-year sewer rehab project plan that focuses on pre-1976 sewer pipes, with an emphasis on old clay sewer pipe; see Figure 5.0 in Section 5.

➤ **Principle 3 – Encourage Coordination of Infrastructure Needs**

Castle Rock Water works closely with other departments (Parks and Recreation, Public Works) and divisions (Stormwater, Meter Services, Operations) to ensure that major and minor capital projects are not planned or executed in a vacuum. This helps ensure that all Town monies are spent wisely. Water and wastewater rehabilitation projects are scheduled in advance of major roadway maintenance or trail projects. For example, in 2021 the Alley Improvement Project in the historic downtown area was under construction by the Public Works Department. The sewer line in the alley was original clay pipe that had been installed in about 1935. The decision was made to replace all of the clay pipe in the project area with modern PVC sewer pipe. Old, unused sewer laterals (installed on the original sewer main but never connected to a house or business), which can be a source of I/I, were not reinstated. The project was challenging due to many other utilities that had been installed over the sewer pipe over the years, but with modern redevelopment occurring in the downtown area it is imperative to not rely on infrastructure beyond its service life. Other multidisciplinary projects that Castle Rock Water is planning and implementing in cooperation with Public Works and Stormwater are the North Craig and Gould Infrastructure Improvements Project, underway in late 2021 for completion in 2022-2023. In 2021 CRW was able to partner on the Oakwood senior housing redevelopment project to proactively complete replacement of some old clay sewer pipe. The project was a win-win for all parties. The developer was able to plan for and design a relocation of the sewer that better accommodated their new building footprint, and CRW was able to incorporate the sewer replacement into the onsite infrastructure improvements, taking advantage of the

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developer's contract and incurring reduced costs, and securing a larger easement for the replaced sewer pipe. Key components to coordinated project planning include:

- Evaluate capital improvement and capital replacement projects based on minimizing life cycle costs;
- Ensure the most cost effective approach to expansion of PCWRA is undertaken and that the timing of the expansion meets the needs of the Town's growth and coordinate Pinery's treatment capacity to ensure adequate capacity for growth on that portion of Castle Rock's system;
- Develop projects which minimize the operational costs of facilities in accordance with identified Key Performance Indicators (KPIs), or achieve payback in less than five years;
 - Key Performance Indicators for the wastewater program include:
 - Sewer Overflow Rate (total number of sewer overflows per miles of total collections system piping)
 - Operational Cost (total O&M costs) per average daily wastewater flow)
 - Mgd processed per employee
- Fully utilize asset management planning to maximize the life of assets and minimize the life-cycle costs;
- Continue to coordinate sewer rehab projects with the Public Works Pavement Maintenance Program (PMP), Development Services, and other Town projects; and
- Coordinate system operations and upgrades with PCWRA and Pinery to minimize operational costs of PCWRA and Pinery, and ensure best water quality effluent in order to fully utilize the Town's reusable and renewable water sources.
- Ensure changing wastewater regulatory requirements do not hamper potential reuse opportunities.

➤ **Principle 4 – Operate the Wastewater Enterprise Fund as a Business, Balancing Revenue and Expenses**

The Town of Castle Rock has over \$850 million dollars' worth of water, wastewater and stormwater infrastructure to operate, maintain and plan for future rehabilitation or replacement. Of that, roughly \$112 million is wastewater infrastructure. Overall, the Town is a fairly young municipality and new development is typically responsible for constructing the infrastructure required to support their development. However, the Town's wastewater infrastructure does date back to the early 1930's, and some of that original sewer works is still in service. Nevertheless, the Town must plan for growth, from a capacity standpoint, and replacement, from an age and condition standpoint. Annually the utility conducts a comprehensive rates and fees study for all four enterprise funds – water, wastewater, water resources, and stormwater. The purpose of the rates and fees study is to provide the Town with a thorough review of annual revenue requirements and determine cost-of-service (COS) based rates for each fund. The projection period developed for each utility financial plan is driven by the length of the

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Capital Improvement Program (CIP) and currently ends in 2065. Strategies for balancing revenue and expenses include:

- Develop realistic cost estimates for both capital improvement projects and operation and maintenance programs as a basis for input into the rates and fee analyses. Revisit costs and timing each year as part of the budget process;
- Regularly revisit the hydraulic model to reassess system capacity;
- Develop a plan for phased implementation of recommended projects based on factors such as condition, capacity, risk, and coordination with other projects;
- Develop the capital plan with emphasis on avoiding large capital increases in any one year that may artificially impact rates and/or fees;
- Evaluate capital improvement and capital replacement projects based on minimizing life cycle costs understanding that the KPI for wastewater replacement for CRW was 0.7% in 2021 (placing CRW in the bottom 25th percentile) with the national median being 1.1%;
- Ensure the most cost effective approach to a future expansion of wastewater treatment capacity and that the timing of the expansion meets the needs of the Town's growth;

➤ **Principle 5 – Provide for Effective Long-Term Operation and Maintenance of Collection System Facilities**

The expected lifetime of many collection system assets is on the order of fifty years or more, provided that proper operation and maintenance has occurred. Pumps and motors have a shorter lifespan, but will quickly fail without routine operation and maintenance. Providing for adequate operations and maintenance dollars in the annual budget is not just the cost of doing business, it can be considered insurance for the future. Additionally, and perhaps more importantly, the utility must plan for and maintain adequate personnel to get work done. Effective long-term operation requires Castle Rock Water to:

- Institute a Sewer Rehab Program that addresses critical assets, uses tools to identify infrastructure at risk, and utilizes best available technologies at reasonable cost;
- Plan and coordinate projects with other Town departments and projects to achieve the best value;
- Proactively maintain the collection system so that sanitary sewer overflows are minimized and occur at a rate that keeps us in the top quartile nationally each year;
- Maintain the collection system with the goal of minimizing I/I to levels that ensure the sewers do not become surcharged during wet weather events, leading to SSOs, and that the peak hydraulic loading to the PCWRA or Pinery is not excessive;

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- Ensure appropriate staffing levels are maintained to promote expected levels of service and achieve KPIs; and
- Ensure capacity is considered for future development, and that projects are completed in advance of capacity need.

➤ **Principle 6 - Ensure Wastewater Planning is Consistent with, and Considered Part of, a Fully Integrated Total Water Management Approach**

Castle Rock Water's goal is to provide a sustainable, reliable and renewable water supply, now and into the future, for all of Castle Rock's citizens and businesses, when and where they want it, and at prices that remain reasonable, viable and competitive with surrounding communities. Securing adequate water supplies for the Town's current population base and our projected future demands is critical for our residents. Water is the life-blood of any community, and it is incumbent upon Castle Rock Water to meet the mission of having affordable water available when customers turn on the tap. The 2022 Water Resources Strategic Master Plan lays out how Castle Rock Water is going to meet that goal over the next 20-30 years.

Key components of the Town's water supply strategy include:

- Continue to develop a water supply portfolio that consists of 75% renewable water sources and 25% non-renewable sources by 2050. After 2050, continue development of renewable sources working towards a 100% renewable supply to complement the existing non-renewable supply.
- Implement the ideas that were delineated in the 2015 Water Efficiency Master Plan (WEMP), and as updated per the 2022 WEMP: If this plan is embraced by our customers, the Town may eventually see a per capita demand of approximately 100 gallons per person per day by 2050. This would account for an additional 18% savings in water use and would essentially act as a new source of supply.
- Fully develop and utilize the Town's current renewable water rights which include senior and junior native surface water rights, lawn irrigation return flows (LIRF), and water reuse in both the Cherry Creek basin and Plum Creek basin.
- Fully utilize our reusable water: Water that the Town pumps and uses from the Denver Basin aquifer, WISE supplies and future imported supplies can be reused to extinction. The Town retains the rights to the return flows from wastewater treated for the Town by The Pinery. Those return flows currently are captured in the Rueter-Hess Reservoir for future reclaim by the Town. The Town operates a surface diversion on Plum Creek and partnered with Parker on a Cherry Creek project that gives us the ability to re-capture much of these supplies for indirect potable reuse. Usage of these supplies represents about one-third of our future projected water supply. Castle Rock is also evaluating the possibility of direct potable reuse to reduce losses during drought times. Direct potable reuse regulations have been developed in Colorado as of 2022. Castle Rock Water

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also created a non-potable reuse system in 2019 to provide irrigation service to the local Red Hawk golf course owned by the Town.

- Work in partnership with other entities to import additional supplies and to reduce the cost impact to our customers.
- Manage our reservoir storage program to optimize the placement of supplies during periods when they are not needed by our customers.
- Continue to maintain, develop and protect the Town's Denver Basin groundwater supply. This supply will help meet the demands of our customers in the short term and provide reliability and drought protection in the long term. This could include being stakeholder on projects outside the town's boundary that have the potential to impact overall aquifer groundwater supplies that are part of the Town's water portfolio. Continue to maintain, develop and protect the Town's surface water supplies. The Town's Source Water Protection Plan (SWPP) is a key component of this strategy, as is the Stormwater Municipal Separate Storm Sewer System (MS4) program.
- Work within a sustainable financial plan that generates the capital funds required for the transition to a sustainable, renewable supply and maintains our existing supplies and supply infrastructure.

The potential water resources available to the Town fall within four primary categories: existing Town-owned groundwater, Town-owned local surface water, imported surface water, and reusable supplies in both the Plum Creek and Cherry Creek basins. Some of the water used by the Town that is collected and conveyed to the Plum Creek Water Reclamation Authority (PCWRA) treatment plant for treatment and discharge to East Plum Creek can, by law, be treated and reused by the Town. Similarly, a portion of the water used for lawn, park, and golf course irrigation that returns to East Plum Creek [Lawn Irrigation Return Flows, (LIRFs)] can also be reused by following the proper procedures. For more details, refer to the 2022 Water Resources Strategic Master Plan (WRSMP).

One of the primary goals outlined in the WRSMP is to achieve a water supply portfolio consisting of 75% renewable water sources and 25% non-renewable sources by 2050. While both IPR and DPR can potentially be used to provide renewable water sources for the Town, there are inherent benefits (pros) and drawbacks (cons) to each source water alternative. Reusable water supplies for CRW include the treated effluent generated at both Plum Creek Water Reclamation Authority and the Pinery wastewater treatment plant.

A small portion of the Town's reusable effluent is treated by the Pinery Wastewater Treatment Plant and discharged into Cherry Creek. The Town has full rights to reuse this water. The Town captures some of these water rights at Parker Water and Sanitation's (PWSD's) Cherry Creek Diversion Structure for storage in RHR. At the end of 2021, the Town had approximately 118 acre-feet of water in storage in RHR with about 10 AF per month available for diversion. In the future, CRW anticipates the reusable flows will increase to approximately 600 acre-feet from additional growth of already zoned properties and future annexations/development of land. However, water

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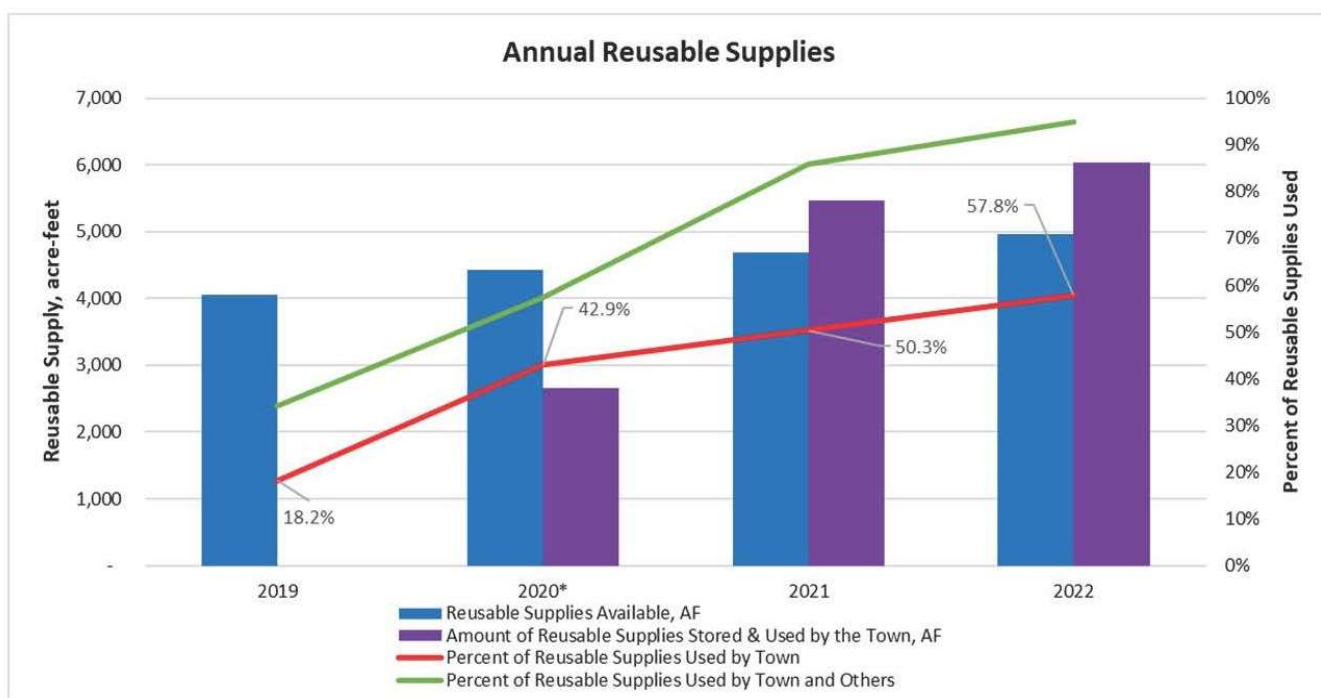
deliveries to the reservoir are dependent on the operation of the Cherry Creek Pump Station, which turns off during river calls or for maintenance, so the Town may not always be able to divert all water that is available. A goal of this plan is to find ways to ensure full capture of all reuse water. Ultimately, CRW plans to treat its water that is in storage in RHR and return it to the Town through the Water Infrastructure and Supplies Efficiency (WISE) infrastructure. This will entail an additional partnership with PWSD to expand its Rueter-Hess Water Purification Facility (RHWPF) with 12 Mgd of reserved capacity for Castle Rock.

In 2019, CRW completed a 3.5 mile, 8-inch diameter reclaimed water pipeline from the Plum Creek Water Reclamation Authority's treatment facility to the Town's Red Hawk Ridge Golf Course for irrigation use. The golf course had been using a dedicated deep groundwater well to pump untreated raw water to the golf course pond for use in turf irrigation. Peak summer irrigation demand at the golf course can exceed 600,000 gallons per day and this demand exceeded the golf course's available supply by approximately 200,000 gallons per day. Frequently, in high demand season, CRW staff would supplement the golf course with raw water from the municipal supply system to meet the additional irrigation demand. With the implementation of this project, CRW is able to provide reuse water to Red Hawk Ridge for irrigation and free up Denver Basin groundwater and treated potable water for higher beneficial use.

In 2022, 238.7 acre-feet (AF) of reusable water was sent to the golf course; that is enough water to cover 238.7 acres of land with water one foot deep! The Castle Rock Parks and Recreation Department pays a reuse rate for the water, and also is repaying CRW for the capital costs involved with the pipeline and pump station improvements. The golf course is a valued amenity to the community. The reuse supply water ensures that sufficient water is available to maintain the golf course, especially in times of drought. Reuse supplies generated at the Pinery were sent to the Rueter Hess Reservoir, in which Castle Rock owns 8,000 AF of storage, for future use by the Town. Figure 1.1 shows the Annual Reusable Supplies and amounts used and/or stored for 2019 through 2022.

In late 2020, Castle Rock Water completed the Advanced Treatment and Expansion of the Plum Creek Water Purification Facility (PCWPF), the Plum Creek Diversion Pump Station near the Plum Creek Diversion facility and reservoir in Sedalia, and the Castle Rock Water Raw Water Return Pipeline from the pump station back to PCWPF. The pump station and pipeline allow CRW to capture our eligible PCWRA treated effluent return flows, our Plum Creek LIRFs, and any free-river flows and store them in the Castle Rock Reservoir No. 1 (CRR1) or return them via the raw water pipeline to the advanced treatment facility, PCWPF, for treatment in an Indirect Potable Reuse (IPR) scheme.

Figure 1.1



Since early 2021 Castle Rock Water (CRW) has practiced, as planned, IPR utilizing water captured from Plum Creek which contains treated wastewater from the Plum Creek Water Reclamation Authority (PCWRA) effluent outfall. The IPR source water is captured through the Plum Creek Diversion via CRR1 and pumped back to the PCWPF for advanced treatment. When designing the advanced treatment train at PCWPF, CRW had intended to eventually transition from IPR to direct potable reuse (DPR). As the Colorado Department of Public Health and Environment (CDPHE) works towards finalizing the Direct Potable Reuse Rule (11.14) and associated Division policies within Regulation 11 Colorado Primary Drinking Water Regulations 5 CCR 1002-11, the Town is investigating whether the shift to DPR is in the best interest of the Town and its customers, or if continuing with existing IPR practices is preferable. As such, CDM Smith, an engineering firm, has been tasked by CRW to assess the costs and benefits of implementing DPR. Two primary objectives were defined to achieve this goal: 1) performing a qualitative and quantitative alternatives analysis comparing IPR to DPR and 2) conducting a cost-benefit and risk assessment study for DPR.

Next steps for CRW in support of moving towards a DPR strategy will involve a year's worth of effluent sampling at PCWRA according to the final rule which is expected to be issued from CDPHE in early 2023. Some samples will be every 15 minutes, others weekly or monthly depending on the constituent, pathogen or parameter of concern.

➤ **Principle 7: Identify and Implement Changes to the Wastewater System which will improve long term sustainability through resource recovery and net zero energy use**

Wastewater collection emerged in the middle of the 19th century in response to public health concerns that emerged when outbreaks of cholera were traced to wells contaminated by nearby releases of sewage from privies and cesspools. The response was combined collection systems that conveyed the sewage, along with stormwater flows, to local drainage ways and surface waters. This created the problem of surface water pollution, and in larger communities, the disposal soon overwhelmed the capacity of the stream or river to self-purify by biological processes. It was necessary to treat the wastewater to some degree before disposal.

The construction of centralized sewage treatment plants began in the late 19th and early 20th centuries. Instead of discharging the sewage directly to a receiving water, it was first passed through a combination of physical, biological and chemical processes (generally, conventional activated sludge (CAS) processes). Collection systems also evolved to separate the storm water from the domestic sewage to that treatment plants did not become hydraulically overloaded during wet weather events. Around the middle of the 20th century, awareness of and concern for environmental quality led to more regulation and higher levels of treatment, and industrial pretreatment programs evolved. Wastewater treatment advanced; it became possible to remove almost all pollutants. Wastewater treatment plants (WWTPs) became large, complex, energy intensive facilities.

With the rise of oil prices in the 1970s, energy conservation took on more importance in the design of new facilities. The 21st century is bringing new challenges. The global climate crisis, greenhouse gas (GHG) emissions, ever-increasing demands for energy, concerns with carbon footprint, and sustainable development goals are challenging all industries to take a harder look at how they do business, and the wastewater treatment community is not immune.

The traditional goal of wastewater treatment was to protect the public health of downstream users. Secondly, and much later, the goal expanded to protect nature in the receiving environments. The widely used CAS technologies, while meeting legal effluent quality standards, are high energy demand processes with large environmental footprints, low resource recovery potential and low cost-effectiveness. The time has come to focus forward efforts on integrating resource oriented management and

recovery into the wastewater management and treatment processes.

Resource Recovery:

Water: The most precious resource in wastewater is water. Around 99% by weight of the matter in wastewater is water, a renewable/reusable resource. Wastewater, albeit 99% water, is not just water. Significant quantities of phosphorus (P) and nitrogen (N) are also present. Wastewater has significant energy potential due to its temperature and chemical oxygen demand (COD). Large scale centralized WWTPs also represent potential collection points for the resources contained in wastewater, namely water, energy, nutrients and other products. PCWRA is not just a wastewater treatment plant; it is a water reclamation facility (WRF) as the name intends. Water reuse from WRFs, either thru IPR or DPR to the water treatment plant, or irrigation reuse, can significantly reduce a municipality's freshwater demand. It can also be much less energy intensive than relying on deep groundwater extraction wells with high energy demand pumping.

Phosphorus: Globally, about 17% of all mined phosphorus ends up in human waste; almost 100% of the phosphorus eaten in food is excreted. Cities are "P" hotspots, and urine is the largest single source of phosphorus coming from them. Other sources of P in wastewater are household detergents, lawn fertilizers, and industrial effluents. The typical concentration is about 6 mg/l. Phosphorus is a finite resource with project scarcity. Mining for P has a huge environmental impact. Recovery from a central collection/treatment location such as a WWRF both reduces mining for new P, reuses a resource, reduces the environmental concentration of a pollutant that is known to promote algal blooms in surface waters, exerts an oxygen demand on receiving waters, and can cause ecological destruction.

There is a statewide phosphorus-free lawn fertilizer initiative to restrict the use of phosphorus lawn fertilizers on urban turf. Urban turf includes residential lawns, curb-side lawns and public turf areas like parkways, parks, open space and general turf areas. The proposed legislation would exclude golf courses and sport turf. CRW, either directly or through its partnerships with CWA and CCBWQA, would support the legislation. Since 2002, twelve other states have adopted phosphorus fertilizer laws. Phosphorus is a finite resource. It is projected that the global supply of phosphorus will run out in 80-100 years. Nearly 90% of phosphorus is used in the global food supply chain. Phosphorus lawn fertilizer laws encourage smarter, "reduced" use of fertilizer, where the WWTP efforts promote recovery and reuse.

Nitrogen: Estimates are that 30% of global nitrogen (N) fertilizer demand could be met through N recovery efforts at WWRFs. Another estimate suggests that more than 1% of manmade global greenhouse gas emissions and energy demand is due to fertilizer production, generally by the high energy demand electro-chemical Haber-Bosch process. It is not efficient to produce more of it, then to destroy it again in the biological nitrification and denitrification processes in the WWTPs, which also consume large amounts of energy. Local and/or statewide initiatives to reduce fertilizer use, such as CRW's recently adopted landscape regulations reducing allowable turf have the

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potential to significantly reduce non-point source nitrogen loading in the watershed, and also at the WWTPs by reducing nutrients in infiltration and inflow. Reducing N and P in detergents and other cleaning products would also reduce nutrient levels in the wastewater influent.

Energy: In 2020, the treatment of municipal wastewater accounted for approximately 4% of the electrical demand in the United States. There are two types of energy inherent in wastewater: chemical energy and thermal energy.

The chemical energy in typical wastewater is about 18 kJ/g, which is about 5 times the electrical energy needed to operate the CAS process, although much of the chemical energy content is lost as heat during microbial metabolism of the activated sludge process. Theoretically, chemical energy may be recovered by means of bioelectrochemical systems (BES) by which the COD is oxidized by microorganism and the electrical potential generated is used to produce energy or other products, such as biofuels, high value chemicals, inorganics and fertilizers.

In the near term, the thermal energy potential of wastewater may be the more likely candidate for recovery. Municipal wastewater contains 2.5 times more thermal energy than the theoretical maximum chemical energy stored in the COD. The thermal energy in wastewater stems mostly from household and industrial water heating, and from heat gained during microbial processes. Since the wastewater shows relatively small seasonal variations by comparison with atmospheric temperatures, it can serve as a stable source of heat that is recoverable using heat pumps. For example, at PCWRA, 2022 effluent temperatures varied from a low of 60.6 F in February to a high of 75 F in August. Thermal recovery via heat exchange has much potential to reduce energy consumption as part of reducing the facility's carbon footprint. Heat pumps use electricity to extract low-temperature thermal energy from the wastewater and usually provide 3–4 units of heat energy per unit of electrical energy consumed. Potential uses of thermal energy recovery in the WWRF environment could be heating or cooling of buildings, or potentially to offset energy in the sludge drying processes. In 2023, PCWRA is investigating the potential to run a heat exchange loop through the ATAD heat exchanger for building heat, which will decrease the need for natural gas in some of the facility.

CRW may partner with PCWRA on using available land to install a solar array to gather the power of the sun as a way to reduce the overall energy demand at the facility. CRW will also partner with PCWRA on future initiatives to reduce and/or offset energy demand. As part of the next utility plan update in 2023, energy efficiency and resource recovery will be key topics to be explored.

Hydropower: Potential and kinetic energy recovery from moving water is possible with hydropower technologies. Moving water (raw, treated, or wastewater) has the potential to run a turbine and generate electricity. However, generally a way to use the

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generated electricity nearby is required. Net metering may be possible to return generated electricity to the supplier's grid. CRW has a demonstration project for downhole electrical generation at its aquifer storage and recovery wells (ASR) at the Ray Waterman Water Treatment Center.

2. Master Plan Elements

Collection System

The Town has over 314 miles of wastewater collection pipes, ranging in size from 4 inches to 54 inches, and over 10,300 manholes, some dating back to the 1930's. More than 40 miles of 8" sanitary sewer main has been installed since 2017, a clear reflection of the growth in Castle Rock since the last master plan update. Table 2.1 provides a summary of the sizes and types of collection system pipes in the Town's wastewater system. In older parts of the Town where the pipes, mostly VCP (clay) may have reached the end of their useful life (typically 40-50 years depending on pipe material), aggressive rehabilitation and replacement efforts may be required to ensure continuity of service and the desired level of service. The Town has a program to video inspect the collection pipes to identify pipe deficiencies that may warrant rehab or replacement. Staff consider the age of pipe, the pipe material, a pipe condition score based on visual inspection by CCTV, and whether there are planned street and pavement improvements that warrant sewer pipe replacement and/or rehabilitation. Development upstream of existing pipes can contribute flows that exceed the capacity of collection pipes, necessitating replacement to a larger size. The Town uses a criterion of 75% of capacity at peak wet event to determine if a pipe is a candidate for upsizing.

**Table 2-1
Collection System Pipe Summary**

Gravity Mains Pipe Material	Size, Inches	Length, Miles
DI (Ductile Iron)	6 to 12	0.57
	24	0.58
PVC (Poly vinyl chloride)	4 to 6	1.66
	8	266.7
	10	10.9
	12 to 18	27.71
	21 to 27	4.01
	>27	0.67
VCP (clay)	6, 8	6.83
	10 to 12	1.86
	15 to 21	1.04
CIPP (cured in place liner)		5.87
Total Miles		314+

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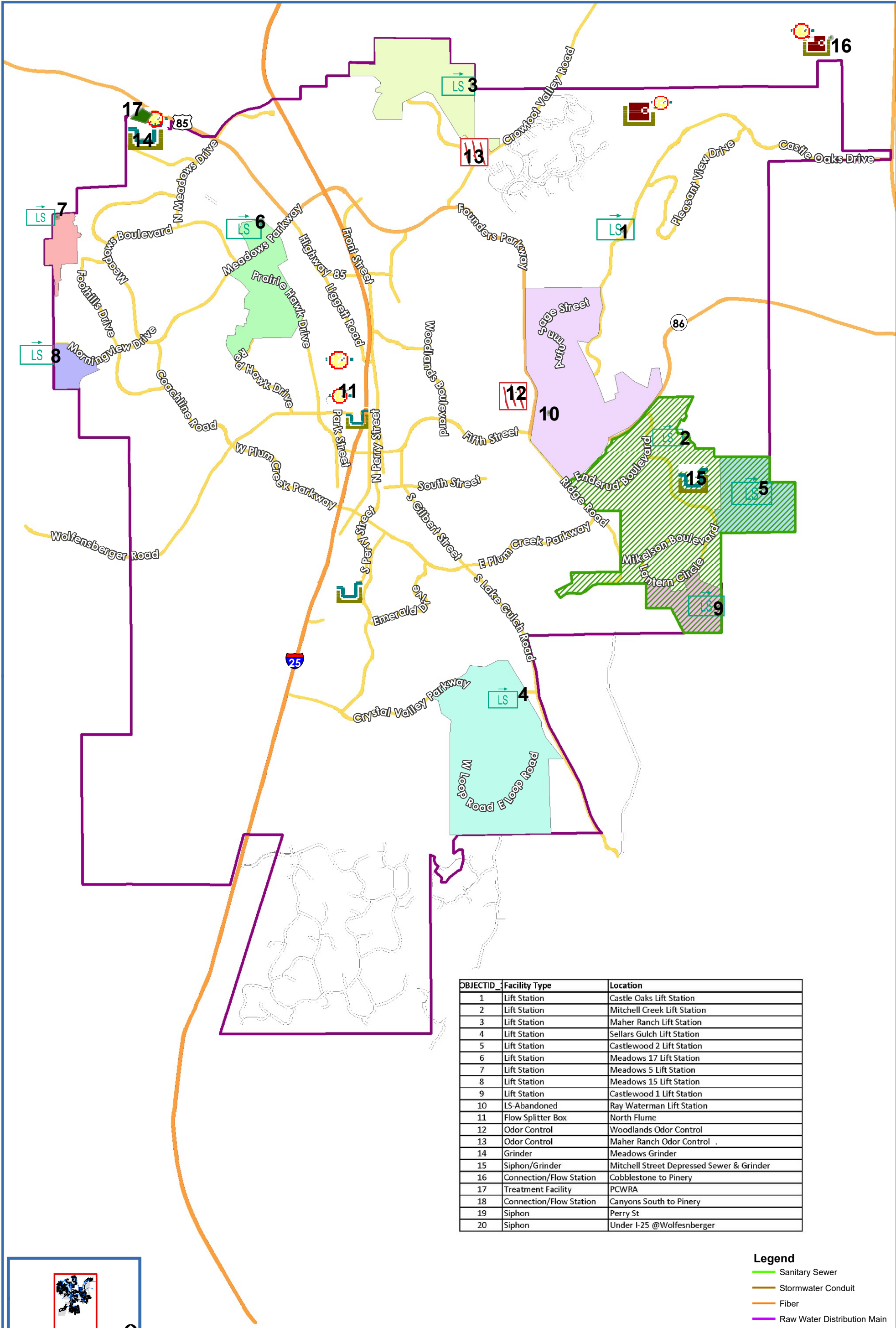
Force Mains, linear feet, by size, inches	4"	6"	8"	10"	12"-15	16" - 21"
Ductile Iron (DI)					2,680	
PVC	7,948	5,919	9,645	11,147	12,674	12,162
					Total	62,175 feet (11.78 Miles)

* Note: there have been no changes in force mains since the 2016 Master Plan.

Wastewater Facilities

Lift Stations

Lift Stations are wastewater pumping facilities. If wastewater flow from a service basin cannot flow by gravity to the downstream treatment facility, then it must be collected and pumped to a gravity point that flows to the wastewater treatment plant. Lift stations are generally discouraged because of the high initial costs to build and the ongoing operating and maintenance costs associated with building facilities and pumping wastewater to a higher point in the collection system. As development in the Town's service area extends to the more challenging areas to serve, more lift stations are likely due to topographical constraints, unless other options can be developed. For example, the Plum Creek Ridge development (at Gilbert St.) installed an elevated hanging sewer main over Sellars Creek. This was preferable to a lift station for a small service area or an inverted siphon with insufficient flushing flows. Castle Rock Water levies a cost of service payment from areas served by lift stations to compensate for the additional operations and maintenance costs incurred over a 20-year period. There are currently 9 lift stations, with several more anticipated in future undeveloped areas of Town, such as Bella Mesa (Founders Village F24), Macanta (formerly known as Canyons South; two to three lift stations proposed, with flows to the Pinery) and Dawson Trails (1 to 3 lift stations potentially). If the Town partners with Douglas County on the SH-85 Sewer Collection System, another 1 to 3 lift stations might be required to support that project. See Figure 2.1 for the Town's current lift station basins, lift stations, grinders, flumes and odor control facilities. Table 2.2 summarizes the Town's existing wastewater facilities. See Figure 5.2 in Section 5 for general locations of proposed developer lift stations and other improvements.



**Town of Castle Rock
Utilities Department
Wastewater Facilities Inventory**

Table 2.2

Lift Stations

Design Report

ID	Year Built	Capacity (mgd)	Wet Well (gallons)	Wet Wells	Pumps	HP	GPM	Total Dynamic Head (ft)	Ultimate Capacity (mgd)	Total Dynamic Head (ft)	Force Main Size	Force Main Length (ft)	Flume	Discharge Flow Meter	Standby Power	Standby Power Type	Standby Power LS Capacity (kW)	Overflow Basin (gal)	Comments	SFE Capacity (gpm)	2016 SFE Used	2022 SFE Used	Build Out Capacity	Peak Flow (gpm)	Average Flow (gpm)	Overflow Time Peak (min)	Overflow Time Avg (min)	
Maier Ranch Lift Station	2003	0.85	2,800	8' dia x 23.2'	2	60	590	174	0.85	174	8" PVC	11,296	No	Yes	Yes	Diesel	1.40	Full Flow	None	Trimmed impellers may need to be replaced to pump build out flows.	870	844	848	870	590.00	132.00	NA	NA
Mitchell Creek Lift Station	2004	4.30	75,500	(1) 16.8"x24.8"x16.1' (1) 12.2"x16.8"x16.1'	3	125	2986	152	4.30	152	10" PVC 16"	11,296	No	Yes	Yes	Diesel	400	Full Flow	128,000		2054	3843	5700	1,298.61	381.90	99	335	
Seller's Gulch Lift Station	2005	2.56	3,100	(1) 6"x16"x18" (1) 24"x37.5"x11.3"	3	30	1800	54	2.56	54	12" DIP	2,480	Yes	Yes	Yes	Natural Gas	Full Flow	55,000			3021	419	1485	3021	1,777.78	461.50	31	119
Meadows Filing 5 Lift Station	1989	0.24	424	6' dia x 23.1'	2	10	167	81	0.24	81	6"	1,150	No	No	Yes	Diesel	45	Full Flow	12,351	The head is estimated from 35 feet of elevation head and an additional 15% for the dynamic head.	111	143.5	142	111	105.00	23.00	118	537
Meadows Filing 15 Lift Station	2005	0.31	1,672	(1) 7' dia x 14.9' (2) 8' dia x 17.8'	2.00	15	215	81	0.31	81	4" PVC	670	No	Yes	Yes	Natural Gas	Full Flow	7,520			223	225	223	218.00	43.70	34	172	
Meadows Filing 17 Lift Station	2005	1.18	21,127	(2) 11.5"x21"x14'	2	50	820	95	1.18	95	8" PVC	1,526	No	Yes	Yes	Natural Gas	Full Flow	83,000			688	609	1346	821.20	187.10	101	444	
Castle Oaks Lift Station	2005	1.18	16,400	4 - 2 pair in series (2) 8"x14"x19.25'	55	820	331	386	2.28	386	12" DIP	11,719	Yes	Yes	Yes	Diesel	350	Full Flow	380,000	Initial SFE capacity of the pumps is 1250. The pumps will need to be replaced with larger pumps beyond 1250 SFEs.	1250	921	1659	2760	1,583.00	382.00	240	995
Castlewood Ranch Lift Station #1	2004	0.15	885	5' dia x 14.7'		15.00	105	177	0.15	177	4" PVC	2,875	No	Yes	Yes	Natural Gas	Full Flow	None			110	94	115	110	100.80	27.50	NA	NA
Castlewood Ranch Lift Station #2	2004	0.54	1,400	8' dia x 15.2'	2	26	315	95	0.54	95	8" PVC	1,237	No	Yes	Yes	Natural Gas	Full Flow	None			505	477	491	505	373.00	75.00	NA	NA
Total Capacity		11.30							12.40												9931	5864	9417	14646				

Flow Measuring Stations

The Town has three flow measuring stations that measure and monitor flows from three main areas of the Town, as summarized in the table below. There are also flow meters in many of the lift stations. The Pinery Water and Wastewater District (Pinery) also has flow measuring stations to monitor flow from the Cobblestone Ranch area and the Macanta development. The flow measuring stations and meters are essential elements of the Town's data collection efforts. The data collected from the stations is invaluable in the calibration of the wastewater hydraulic model and understanding the influence that infiltration/inflow (I/I) has on the capacity of the collection system and the PCWRA and Pinery wastewater treatment plants. Monitoring of the data can also indicate changes in the collection system that may warrant further investigation. Meter volumes are reported daily through the supervisory control and data acquisition (SCADA) equipment installed in Town facilities, and monitored for changes or issues. CRW will work with the Pinery to incorporate their SCADA into our system.

Table 2-3
Flow Measuring Stations

Name	Local Measured	Type	Install Date	SCADA
Town North	Founders, Woodlands	Parshall	1987	Yes
Town Main	Downtown, Plum Creek, Crystal Valley, Citadel	Parshall	1990	Yes
Meadows	Meadows	Parshall	1987	Yes
PCWRA	All of Castle Rock except Cobblestone Ranch, Silver Heights*, Castleton District*, and Macanta (aka Canyons South)	Parshall	1989	at PCWRA in 2017
Pinery WWD	Cobblestone Ranch	Parshall	2007	at Pinery
Pinery WWD	Macanta (aka Canyons South)	Parshall	2022	at Pinery
	*No flow measuring device; wastewater flows are assumed based on water use			

Grinder Facilities

Typically, the Town has grinder facilities upstream of lift stations and siphons. The grinders comminute solids in the wastewater that could potentially clog wastewater pumps or settle out in siphons, potentially blocking flow. They also eliminate the need for bar screens, which require manual cleaning, upstream of the lift station or wastewater plant. The Town has two grinder facilities upstream of wastewater siphons. Siphons are collection pipes that use accumulated pressure head in the pipe to force the wastewater through a pipe against gravity. Siphons are discouraged because of the tendency of solids to collect in the low

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point of the siphon and the increased maintenance that results if an adequate flushing velocity can't be achieved.

Table 2-4
Grinder Facilities

Facility	Location	Year Installed
Mitchell Creek LS	Lift Station	2003
Mitchell Street	Siphon	2009
Meadows	Siphon	2005
Castlewood LS #1	Lift Station	2009
Sellers Gulch LS	Lift Station	2005
Meadows 17 LS	Lift Station	2005
Castle Oaks LS	Lift Station	2005

Odor Control Facilities

The Town has several facilities dedicated to mitigating the odors from sewer mains and lift stations. All of the Town's lift stations have facilities for chemical addition to control odors and mitigate corrosion potential in the collection system. In 2006, the Town constructed the Woodlands Odor Control Facility with a proprietary granular media and carbon adsorption to neutralize and reduce odors from a gravity sewer main situated along a popular walking trail near homes. In this case, the gravity sewer predated the trail and the homes, and could not be relocated. Castle Rock Water staff routinely monitor the facility for maintenance purposes, and samples are collected in order to gauge treatment efficacy and determine when the media is no longer neutralizing odors and should be replaced. Despite this odor control facility, Castle Rock Water is still seeing odor issues along the trail and behind the homes. Additional odor control options will be evaluated during the next planning period.

There is also the Maher Ranch biofilter for odor control in the Sapphire Point neighborhood, installed downstream of the force main outfall to gravity sewer. That facility relies on a natural bioremediation process to treat hydrogen sulfide in off-gases from the wastewater and reduce the odor potential.

Table 2-5
Odor Control Facilities

Location	Type	Process	Year Installed
Woodlands Odor Control	Forced Air Media Treated	Sulfa Treat Media and GAC	2007
Maher Ranch Biofilter	Biofilter, Forced Air	Biologically Treated Wood Chips	2002

Treatment - Plum Creek Water Reclamation Authority (PCWRA)

The PCWRA is a regional water reclamation facility that serves the Town of Castle Rock, Silver Heights, Castleton Metro District, Castle Pines and Castle Pines North. The Town is a board member of the Plum Creek Water Reclamation Authority. Based on October 2022 measurements, the Town currently contributes approximately 83% of the total wastewater load to the facility, and therefore is responsible for its proportionate share of expenses for expansion, operations, maintenance and upgrades. The Town is growing much faster than the other members so this share is expected to increase over time. The existing wastewater treatment plant (WWTP) was expanded in 2005 and again in 2021 to accommodate growth, and the Town contributed to the expansion projects. Presently the PCWRA has total treatment capacity for 9.44 Mgd (Town's share is approximately 7.14 Mgd), compared to the 2022 Town average daily flow of 4.47 Mgd. PCWRA is required to prepare a Utility Plan (UP) which functions as a master plan for the authority. The PCWRA UP was last updated in 2015 (Plum Creek Water Reclamation Authority, Utility Plan Update and Preliminary Engineering Services, Technical Memorandum No. 1, Treatment Analysis, February 2015; Technical Memorandum No. 2, Energy Recovery Feasibility Analysis, February 2015). More detailed information concerning wastewater treatment, capacity analysis and future capital investment can be found in the plan. The PCWRA plans to update the Utility Plan again in 2023.

A project was completed in 2017 to outfit a third oxidation ditch at the PCWRA. This did not increase overall treatment capacity, but improved firm treatment capacity from 4.2 Mgd to 6.44 Mgd. Due to rapid growth in the PCWRA service area, anticipated changes in regulatory limits, and peak loading levels, a design project to revise treatment processes and expand overall treatment capacity expansion was begun in 2017. Construction was started in late 2018 and included significant improvements to the plant headworks, tertiary filtration, ultra violet disinfection, and solids handling systems. Construction was completed in 2021 and expanded firm treatment capacity from 6.44 Mgd to 9.44 Mgd. The Town is allocated 7.14 Mgd of the total plant treatment capacity. Additional future expansions will be required as the Town continues to grow and if the Town proceeds with plans to provide extraterritorial service to areas of Douglas County along the Highway 85 corridor, but timing is based on the pace of growth.

The cost for treatment is included in the annual rates and fees analysis and shows up for the customer in the monthly service fee and the volumetric unit cost for treatment. Currently, Castle Rock Water doesn't plan to increase either monthly service fee or volumetric fees in the 2023-2027 timeframe; refer to Table 7-1 in Section 7 for more details. See Table 2-6 below for the estimated annual PCWRA treatment budget estimates for Castle Rock. Annual O&M fees for Castle Rock (\$830,000) added to the annual treatment fees (\$4.47M), divided by the annual average gallons treated (4.47 Mgd x 365), results in a KPI for Total

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O&M Cost per MG of \$3,248, which places Castle Rock between the 25th quartile and the median for the 2022 AWWA benchmarking.

Table 2-6
5-Year PCWRA Treatment Fee Estimates for Castle Rock

	2023	2024	2025	2026	2027
Cost per Thousand Gallons Treated	\$ 2.90	\$ 2.84	\$ 2.89	\$ 3.01	\$ 3.06
Monthly Fee	\$ 395,840	\$ 406,609	\$ 432,685	\$ 469,459	\$ 495,595
Annual Fee	\$4,750,080	\$4,879,308	\$5,192,220	\$5,633,508	\$5,947,140
% Increase in Annual Fee	6.3%	2.7%	6.4%	8.5%	5.6%

Plum Creek Watershed

The Plum Creek Basin watershed is managed by the Chatfield Watershed Authority (CWA). The Authority is charged with protecting beneficial uses through the control of phosphorus and chlorophyll-a in Chatfield Reservoir. Phosphorus is a nutrient found naturally in sediment and also in manmade products such as fertilizers and detergents, and has the potential to contribute to algae blooms in the reservoir. Chlorophyll-a is the measurable substance in algae and is an indicator of water quality in the reservoirs. CWA's regulatory authority is established through the Water Quality Control Regulation No. 73 through the State.

Prior to 2016, the CWA was governed by a board made up of 22 paying membership entities, counties, municipalities, water and sanitation districts, and other public and private entities that have material impact on the watershed or a vested interest in the Authority. A governing agreement was adopted in 2016 that establishes a five-member board of local elected officials including Douglas County, Jefferson County, Castle Rock, and two at-large board seats for water and wastewater districts and other paying members. The CWA developed a Chatfield Watershed Plan in 2015 that is a living document to guide watershed efforts and decision-making to promote water quality protection in the Chatfield Watershed. This document will be revised from time-to-time as the watershed develops and new management techniques become necessary.

The mission of the CWA is to promote protection of water quality in the Chatfield Watershed for recreation, fisheries, drinking water supplies and other beneficial uses. To protect these beneficial uses, the CDPHE, Water Quality Control

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Commission, adopted Control Regulation No. 73 which includes water quality standards for phosphorus and chlorophyll-a (CWA Website). The Town has been involved with the Authority for over 25 years and plans to continue participation as a means to help protect the Town's drinking water supply.

Treatment - Pinery Water and Wastewater District

Although the Town provides water service to the Cobblestone Ranch neighborhoods, the wastewater flows are treated by the Pinery Water and Wastewater District (Pinery). The Cobblestone Ranch developer invested in infrastructure improvements and treatment capacity with Pinery to cover their requirements through build-out. Cobblestone Ranch reserved capacity is 0.29 Mgd, annual average, and 0.32 Mgd, max monthly average. The Town of Castle Rock and The Pinery have an Intergovernmental Agreement (IGA) that covers system development fees, rates, return flows and reimbursement for treatment. There is also an agreement for the operation of a water interconnect between the two entities, to be used in times of emergency water crisis by either party. This interconnect is planned to become a regular location for CRW to get its Cherry Creek Project Water Authority water supplies from the Pinery. Castle Rock provides extraterritorial service to the Macanta (Canyons South) development. This development also sends all wastewater flows to The Pinery for treatment under similar IGAs. Macanta has reserved capacity of 0.24 Mgd, annual average flows, and 0.27 Mgd, max monthly average flows. The Pinery began accepting flows from Macanta in 2021.

A small portion of the Town's reusable effluent is treated by the Pinery Wastewater Treatment Plant and discharged into Cherry Creek. The Town has full rights to reuse this water. The Town captures some of these water rights at PWSD's Cherry Creek Diversion Structure for storage in RHR. At the end of 2021, the Town had approximately 118 acre-feet of water in storage in RHR with about 10 AF per month available for diversion. In the future, CRW anticipates the reusable flows will increase to approximately 600 acre-feet on an annual basis from additional growth of already zoned properties and future annexations/development of land. However, water deliveries to the reservoir are dependent on the operation of the Cherry Creek Pump Station, which turns off during river calls or for maintenance, so the Town may not always be able to divert all water that is available. A goal of this five-year plan is to identify a solution to ensure capture of all of CRW's reusable effluent. Ultimately, CRW plans to treat its water that is in storage in RHR and return it to the Town through the WISE infrastructure. This will entail an additional partnership with PWSD to expand its Rueter-Hess Water Purification Facility (RHWPF) with 12 Mgd of reserved capacity for Castle Rock.

Cherry Creek Watershed

The Cherry Creek Basin is managed by the Cherry Creek Basin Water Quality Authority (CCBWQA). The Authority is charged with protecting beneficial uses through the control of phosphorus and chlorophyll-a in Cherry Creek Reservoir.

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Their regulatory authority is established through the Water Quality Control Regulation No. 72 through the State.

The CCBWQA's focus is protecting, preserving, and enhancing beneficial uses and water quality needed to support the beneficial uses in Cherry Creek Reservoir and Cherry Creek watershed (CCBWQA Annual Report, 2015, pg. ES-1). Currently there are fifteen members of the CCBWQA. Castle Rock is one of the members and is represented on the Board and Technical Advisory Committee. The CCBWQA "develops water quality strategies to (1) minimize point, nonpoint, and regulated stormwater pollutant source nutrient contributions; (2) implement pollutant reduction programs; and (3) monitor water quality to evaluate progress. Together, these strategies create an effective water quality management approach" (CCBWQA Annual Report, pg. 1-1).

CRW is supporting these strategies in several ways. From a wastewater standpoint, CCBWQA ensures compliance with the 0.05mg/l discharge limit for wastewater within the cherry creek basin and/or remove wastewater discharges to the Plum Creek basin. Through the planning process, CRW requires wastewater customers to connect to the wastewater collection system, only allowing OWTS in rare occasions. CRW implements emergency storage volume at all wastewater lift stations to reduce the risk of stream contamination during a lift station power outage. CRW may implement differential flow metering on future force mains/lift stations to identify major leaks in the system promptly to reduce potential contamination of the watershed.

CRW has a robust sanitary sewer video inspection and maintenance program to reduce the number of SSOs within the basin.

From a Stormwater standpoint, CRW partners with CCBWQA on stream channel improvements on McMurdo Gulch to reduce phosphorus transport in the watershed. Water quality samples are collected up and downstream of the McMurdo Gulch improvements to measure nutrient reductions which average approximately 30% reduction from year to year. The Town has implemented several detention pond retrofits to incorporate full-spectrum detention on existing regional Stormwater detention ponds to incorporate water quality capture volume and reduce development impacts to downstream receiving waters.

Moving forward, the Town has implemented a no-turf ordinance for all new development which will drastically reduce the need for fertilizer application within the basin. Additionally, CRW may support any local or statewide initiatives to eliminate phosphorus in lawn fertilizers, thereby reducing phosphorus loading in the watershed.

Waste Water Effluent Quality

Being a conjunctive use water system, CRW's water supplies naturally have variable raw water chemistries. It is important to evaluate the quality of each

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source, whether it is already treated (i.e. WISE water) or whether it is a raw water source that CRW will treat. It also is critical for CRW to review and understand the blended water quality and how each source interacts in our system. Since treated wastewater effluent will ultimately make up 1/3rd of our water supply, it is critical to understand the water quality coming from our wastewater effluent.

Total Organic Carbon and Disinfection By-Products

Currently, the Town samples for dissolved organic carbons (DOC), total organic carbons (TOC), and light transmittance (at a wavelength of 254 nanometers) to determine if any disinfection by-product precursors exist in the water supply. These values likely will increase as the water sources transition to include more surface water supplies such as WISE and reusable water. The Town will need to monitor these values in the future to determine if additional treatment processes are necessary.

Total Dissolved Solids (TDS)

CRW staff monitors the concentration of TDS in the various water sources that are blended at PCWPF with the goal of having a finished water quality that does not exceed 450 mg/L TDS. At times, raw water within East Plum Creek (at the CR-1 Diversion) and at the Plum Creek Diversion can far exceed 500 mg/L. At those times, CRW operations staff will cease diversions until TDS concentrations have decreased. Elevated TDS in East Plum Creek is attributed to the application of road salt within the watershed during the snow season. Efforts are being made to optimize the use of road salt to decrease the impact to water quality.

Phosphorus and chlorophyll-a

Phosphorus is a nutrient found naturally in sediment and also in manmade products such as fertilizers and detergents, and has the potential to contribute to algae blooms in the reservoirs. Chlorophyll-a is the measurable substance in algae and is an indicator of water quality in the reservoir. CWA is the regulatory authority for the Chatfield Reservoir, in which CRW has storage rights, while CCBWQA is the authority for the Cherry Creek Reservoir and the overall Cherry Creek Watershed, which includes reservoirs that CRW has storage in. Managing nutrient levels in the watersheds is key to minimizing the potential for algal blooms in the reservoirs which can directly impact the amount of water that can be returned for reuse. CRW would support statewide or local initiatives to reduce/eliminate phosphorus in fertilizers for urban use, with a goal of reducing phosphorus loading at the sources. Also, the wastewater treatment plants have effluent discharge limits for phosphorus and nitrogen so reducing those nutrients at the sources (fertilizers/detergents) can reduce the required treatment at the plants and help ensure compliance with discharge permit limits.

Indirect Potable Reuse and Direct Potable Reuse

To date, the current IPR practice at PCWPF has met all primary maximum contaminant levels (MCLs) in the finished water. Raw water quality to PCWPF is

generally improved via blending with surface water in the natural stream environment, and the distance involved promotes additional time for natural microbial and chemical attenuation processes in the Plum Creek and CRR1. However, there are water quality considerations for either the IPR or the DPR strategy. The environmental buffers (Plum Creek and CRR1) are susceptible to deterioration of water quality due to natural processes such as harmful algal blooms, TDS spikes, and wildfire impacts. PCWPF does not have treatment technology for TDS removal, therefore strategies for TDS management will need to be established regardless of IPR or DPR source alternatives. Diurnal fluctuations in ammonia and nitrates in PCWRA treated wastewater will warrant increased operator attention at PCWPF compared to current planned IPR practice. Contaminants of Emerging Concern (CECs), such as polyfluoroalkyl substances (PFAS), could be higher in concentration in a DPR scenario due to absence of the environmental buffer that the Plum Creek natural flows afford. PCWPF is designed to handle the removal and destruction of these contaminants to minimize risk, but there may be increased O&M requirements and/or treatment modifications and optimization necessary.

The DPR scenario requires purchase of multiple online analyzers for treated wastewater and advanced treated water monitoring. With DPR, there is a potential necessity for additional treatment requirements for pathogen reduction dependent upon the results of a site-specific Quantitative Microbial Risk Assessment (QMRA) that CDPHE will require. Disinfection byproduct (DBPs) precursor concentrations such as bromide will increase in the PCWPF influent due to higher percentages of PCWRA treated wastewater, necessitating adjustments to existing DBP management strategies (e.g., bromate control as related to ozone dose). In the event of an upset condition at the PCWRA, or a spill or discharge that adversely impacts the Plum Creek, the current IPR scenario affords more time to respond than the DPR scenario. Future use of DPR will require strategies for managing any upsets.

3. Hydraulic Modeling

Modeling Update Effort

During the course of updating the 2010 Wastewater Master Plan, Castle Rock Water invested a substantial amount of effort into developing the comprehensive wastewater model for the Town. By creating and updating the model with in-house staff, Castle Rock Water is now much less reliant on outside consultants for its models and is now much more self-sufficient. This allows Castle Rock Water to be better situated to respond to changing growth and demand scenarios. For instance, successful water conservation efforts drive down the average daily winter use rates on which demand curves are based, yet more sensitive flow metering devices better capture low flow and very high flow water usage that may drive up average winter demand readings. Castle Rock Water can now more quickly identify system deficiencies that may result from growth, and can perform multiple “what if scenario” analyses when presented with new planned developments. As a result, Castle Rock Water can better plan for future capital improvement projects with the goal of providing adequate and reliable service to the Town’s residents without investment in unnecessary infrastructure.

The Town’s sanitary sewer hydraulic model was created in 2009 using Innovyze InfoSewer software. The model is designed to estimate the flow rates of wastewater using diurnal curves and wastewater loading estimates based on actual winter use, with loading applied to nodes in the model that represent sub-basins. The curves show the estimated high and low flow rates in the system in a 24-hour period. Future loading estimates are determined using Single Family Equivalent (SFE) projections for building in the sub-basins. Since the pace of growth varies, growth projections are generally updated annually. Refer to Figure 3.0 for anticipated growth rates in planning areas and anticipated time frames for development; these planning numbers were used in the hydraulic modeling estimates for future flows.

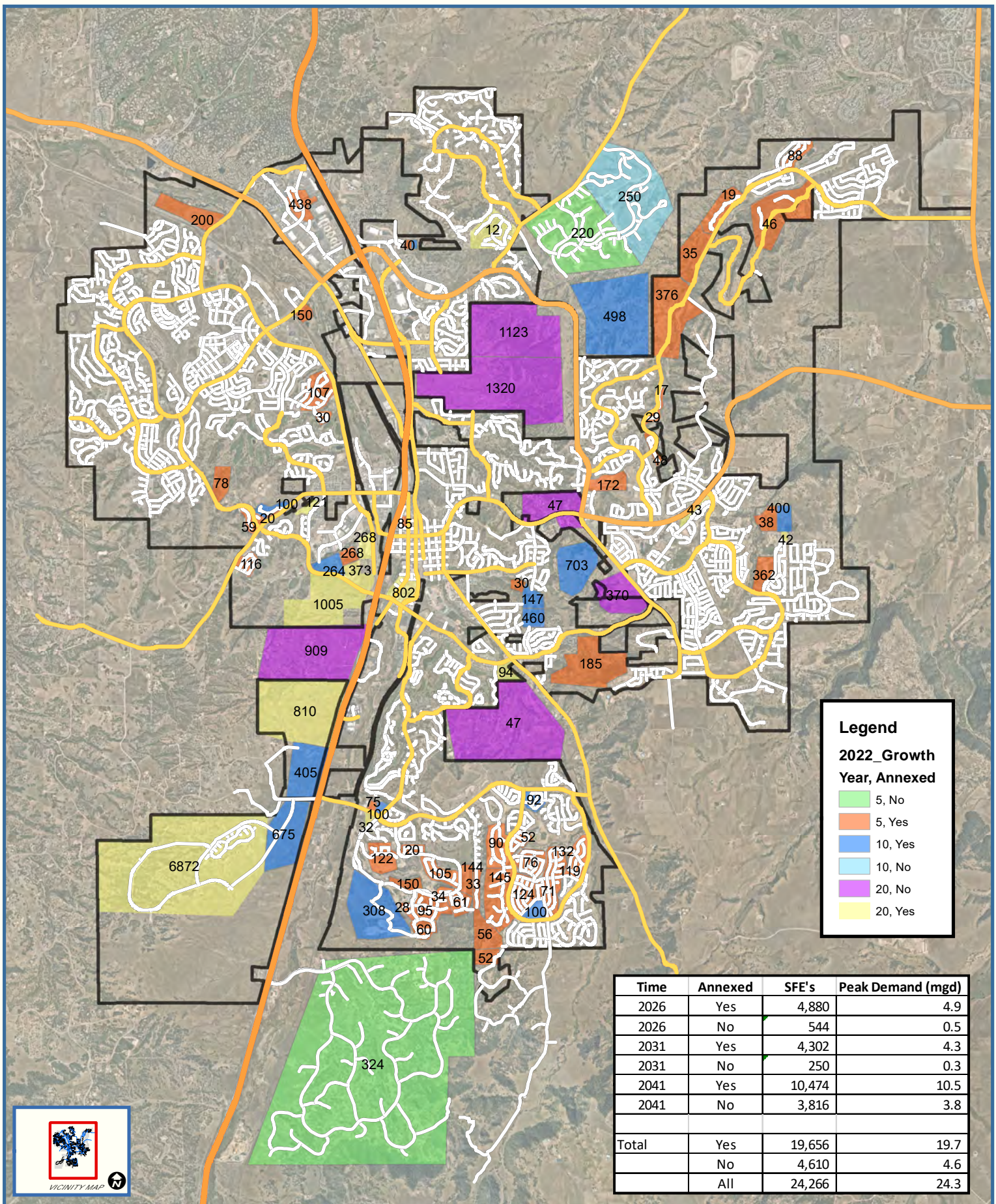
Wastewater Demand Rates

Demand per SFE is based on actual average winter use for developed parcels, and is based on 200 gallons per day per SFE for undeveloped parcels. The graph below shows the historic average daily wastewater demand per account for 2007 through 2021. The average is 196 gallons per day per SFE, which provides good support for the planning criterion of 200 gallons per day per SFE. For future residential development, the planning number is expected to decrease. Review of the average per account winter usage for homes built since 2017 (122.6 gal/day/account) versus homes built prior to 2017 (144.5 gal/day/account) shows a decrease of 15%. For future industrial or commercial parcels, the Town’s land use planning criteria and parcel size were used, or an estimate of 200 GPD/SFE for the number of SFEs expected is calculated based on land use expected and square footage of facilities. All demands within a sub basin are totaled and the demand applied to a logical manhole (node) in the model. As land development occurs and better data becomes available (demand based on

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actual use), revisiting the hydraulic model on a regular basis helps determine the needed capital improvement projects, their timing, and their criticality. As water conservation goals are met, particularly with respect to indoor water saving fixtures and consumption patterns, decreasing average wastewater flows per capita are realized. The use of graywater systems starting in some homes in 2022 could have an impact on wastewater flows if more systems are installed over time. CRW will continue to explore expanding the use of graywater systems which could reduce long term hydraulic loading on the PCWRA and Pinery facilities. Similarly, improvements in reducing the amount of inflow and infiltration into the collections system from groundwater and storm runoff reduce the hydraulic loading on the system. The result is that collection system mains that, in past modeling efforts, were predicted to reach capacity and need upsizing, no longer show up in the model as having capacity issues, require smaller upsized diameter, or are pushed farther out in the planning period. The planned capital projects go away. However, additional future unplanned developments, or changes in density or consumption, that would place additional loading on these sewer mains would prompt revisiting these projects.

The shape of the curve does indicate that infiltration/inflow (I/I) is contributory to flows to the PCWRA during wet years. The 2009 high (wet) year wastewater demand of 206 gal/day-SFE is 110% of the low (dry) year 2013 demand of 187 gal/day-SFE. This, too, provides support for the planning criterion of accounting for an additional 10% of wastewater flow due to I/I. See Figure 3.1 for historical average day wastewater demands. Figure 3.1 does indicate that rainfall has an impact on infiltration, as expected. Scrutiny of the data indicates that intensity (for example, a weeklong wet period) has more impact than an increase in annual average. The data also seems to support that sewer line rehab and lining since 2010 has had a measureable impact on infiltration.



Legend

2022_Growth

Year, Annexed

- 5, No
- 5, Yes
- 10, Yes
- 10, No
- 20, No
- 20, Yes

Time	Annexed	SFE's	Peak Demand (mgd)
2026	Yes	4,880	4.9
2026	No	544	0.5
2031	Yes	4,302	4.3
2031	No	250	0.3
2041	Yes	10,474	10.5
2041	No	3,816	3.8
Total	Yes	19,656	19.7
	No	4,610	4.6
	All	24,266	24.3



Date: 3/10/2022

1 inch = 6,160 feet

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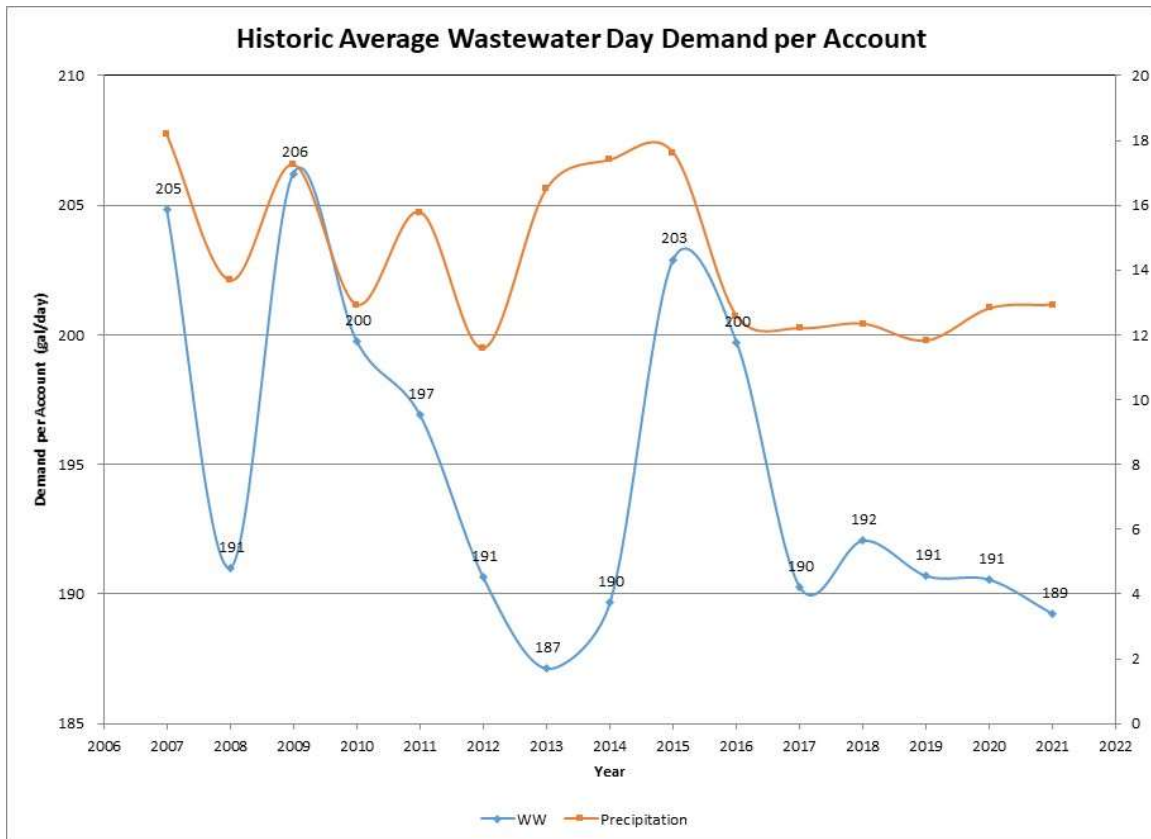


Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or inconsistencies. Such discrepancies in data are inherent and in supplying this product the Town of Castle Rock assumes no liability for its use or accuracy. Questions or comments regarding the cartographic composition of this map including, but not limited to, errors, omissions, corrections, and/or updates, should be directed to the Utilities Department, Town of Castle Rock, (720) 733-6056. Copyright 2020, Town of Castle Rock Utilities Mapping.

**CASTLE ROCK 2022
WASTEWATER
MASTER PLAN
FIGURE 3.0**

Wastewater Master Plan 2022 Update

Figure 3.1



The Diurnal Curve

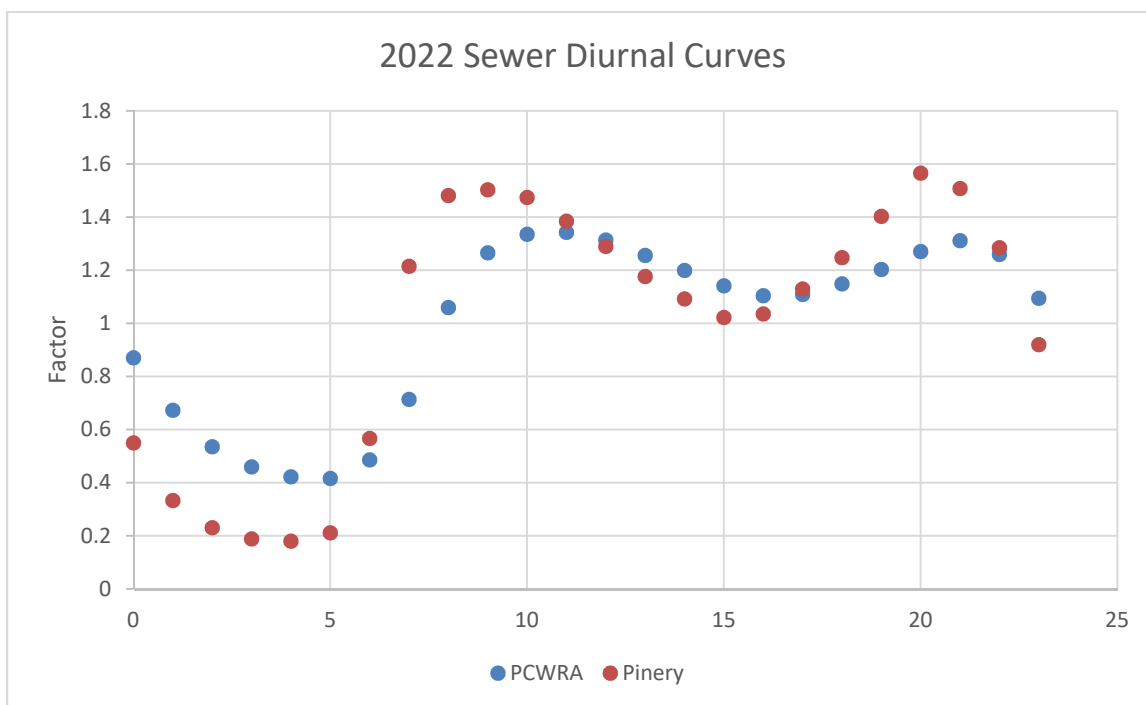
The diurnal curve was developed using data from the winter of 2009 to develop a typical maximum day demand. Typical demands in the Town were developed using winter 2009 customer billing information. This data represents a realistic distribution of demands throughout Town. Next, the December 2008, January 2009, and February 2009 SCADA data was used to generate a dry weather diurnal curve. Diurnal curves for each of the Town's three flumes (Meadows, Town Main and Town North) were generated using the data collected from the SCADA system.

A wet weather intensity curve was generated using operational SCADA data from June 2009, which was a wet month, and a 2009 maximum day flow rate of 4.14 Mgd. This operational data was combined with the estimated dry diurnal curve to generate the wet weather intensity curve.

The estimated inflow loading was evenly distributed throughout the Town's collection system. Calibration was completed by matching the model output with the operational data collected. This method accounts for the effect of inflow/infiltration (I/I) on the collection system. The hydraulic model used for this master planning effort was based upon the calibrated maximum day-peak wet hour demand model. The model is an extended period model using the diurnal curve shown above and simulating a maximum day demand over 37 consecutive days. The diurnal was reevaluated for the 2022 modeling effort but did not significantly change, so changes to the diurnal pattern in the hydraulic model were not required. The resulting curves, calculated for both PCWRA and the Pinery are shown in Figure 3.2.

For the 2022 update, the diurnal curve was revisited. Castle Rock Water staff did observe that during the 2020 COVID pandemic, with many people working from home and students remote, the diurnal curve flattened out and had much less pronounced mid-morning and evening peaks, indicating that people were using water more consistently throughout the day, not really using less water. If the trend continued well into the future and became more of a normal pattern, it could have implications on sizing of collection system infrastructure because the peak flows could be smaller, requiring smaller pipes. However, the 2022 diurnal curve is very similar to the 2016 curve and Castle Rock Water will not be changing its model criteria or design criteria based on this unusual condition.

Figure 3.2 Diurnal Curve



Historical Wastewater Flow

In 2009 the winter average flow rate was 2.8 Mgd and the 2009 overall average was 3.0 Mgd. The 2009 minimum and maximum flow rates were 2.6 Mgd, and 4.1 Mgd respectively. In 2016, the winter average flow rate was 3.51 Mgd and the overall average was 3.73 Mgd. The 2016 minimum and maximum flow rates were 3.23 Mgd and 5.37 Mgd, respectively. In 2022 the minimum flow day to the PCWRA occurred on January 11 with a total daily flow of 3.89 MG. In 2022, the peak hour, average day and peak day wastewater flow rates to the PCWRA were 8.26 Mgd, 4.47 Mgd and 6.42 Mgd, respectively, and occurred on May 6th after almost a week of daily precipitation. The increase in wastewater flow on May 6th, and on other days when there was significant precipitation, indicates that infiltration and inflow (I/I) are significant contributors.

Based on February 2021 billing data for 22,313 accounts, the calculated wastewater demand is 154 gallons per day per SFE and the calculated infiltration/inflow (I/I) rate is 11%. The changes in total wastewater flows reflect growth in the Town, newer infrastructure, sewer rehabilitation to reduce I/I, and changes in water use and conservation efforts. The 2022 ratio of maximum to minimum is 1.65 while the 2016 ratio of maximum to minimum was 1.66, and the 2009 ratio was 1.58. The 2022/2016 ratios of minimum to minimum and average to average were both equal to 1.20. The ratio of 2016 max to 2009 max was 1.31 and the ratio of 2022 max to 2016 max is 1.19. This would seem to indicate that hydraulic loading is increasing proportional to population, as would be expected. Castle Rock Water has been able to trace significant I/I events back to new development where uncapped collection system points allow rainwater runoff to drain to the collection system. New development in Town was very high in 2016, compared to the weak growth that was the case in 2009. Growth in 2021 was still very high, but late 2022 saw a weakening in demand for new permits.

Pipe Sizes

In the new model, all gravity sewer mains greater or equal to 10 inches in diameter were included. Additionally, select 8-inch diameter sewer mains were included if they served a fairly large sub basin or if there was a reason to suspect that future development upstream could create capacity issues. The criterion for determining if a pipe segment needs upsizing remains at greater than 75 percent capacity during a peak wet event.

System Diurnal Curve and Peak Wet Day

Based on flow data collected from the Town's SCADA system, a single diurnal curve for the Town and a wet weather intensity curve were developed; these curves were applied to average day demands and then extended period simulations were run in the model for both existing conditions and future conditions for the different planning horizons.

Reconciling Record Drawings/Model Data and Filling in the Gaps

To update the model, new mains are added; all 10-inch diameter and larger pipes are included in the model. Typically, smaller pipes only serve cul-de-sacs or older, smaller sub basins. However, an 8-inch pipe could be susceptible to surcharging during a peak wet event, so the model includes smaller 8-inch pipes where it makes sense (serves a larger sub basin or could have significant upstream development). Smaller pipes are often excluded from the modeling effort because they significantly increase the number of pipes in the model. In the 2010 model development, data was manipulated so that data discrepancies were eliminated and information was converted to a new uniform vertical datum. Additionally, survey data from the 2002 Glosso-Murray Sanitary Sewer Survey effort was used to verify invert and pipe slope data. GIS specialists keep the utilities mapping up-to-date as new development occurs, and new development information is included in the hydraulic model for regular updates. Castle Rock Water revisits the hydraulic model each year in support of developing the Capital Improvement Plan, and for annual updates to the rates and fees model. Castle Rock Water may revisit the model throughout the year as utility plans and/or development agreements for newly planned developments are being reviewed. This allows Castle Rock Water to determine if a development is responsible for the upsizing of existing infrastructure to serve their project, in line with the principle that growth pays for growth.

4. Capital Improvement Program

The hydraulic model of the collection system is used to identify capital improvements based on the projected growth. These improvements generally consist of sanitary sewer replacements/upsizing to accommodate future growth. Other improvements consist of replacing aging infrastructure, repairing failed components of the system, and addressing problems associated with inflow and infiltration. The CCTV Inspection Program and Asset Management Program are both useful for identifying areas for rehab based on condition and not capacity. Using the updated model, revised growth estimates, and criteria for upsize and/or replacement, the extended period simulation hydraulic model was run for three planning horizons. Within each planning horizon, capital improvement projects were identified for sections of the system where the capacity criterion of 75 percent was violated. Table 4-1 compiles CIP projects that have been completed since the 2003 Wastewater Master Plan.

As new development occurs in the Town, the development community routinely constructs new wastewater facilities required to serve the proposed development. These improvements are accounted for in the Town's wastewater model and categorized as developer contribution projects. Upon completion, these improvements are then conveyed to the Town. Based on planning numbers, utility reports and hydraulic modeling, several projects have been identified as necessary to support future development. See Figure 4.1 for the general location of the proposed or anticipated developer CIP projects.

This section contains a summary of work that has been completed by the Town since the adoption of the 2003 WWMP. This includes a review of program development, capital project construction, and maintenance. Table 5-1 provides the status of Town projects completed since the 2003 Master Plan.

**Table 4-1
2004-2022 CIP Completed Projects**

CIP Name	Construction Description	Year	Actual Cost
Kellogg Ct. Expansion	946 LF of 8"; 1,176 LF of 12"	2004	\$343,700
North Front St. Bottleneck	1,500LF of 12"	2004	\$469,000
Sellers Gulch Lift Station/Force Main/S. Gilbert St. Relief Gravity Main	5,596 LF 15" PVC; 2,686 LF 12" FM; 2.65Mgd LS; 1,430 LF of 18" gravity main	2004	\$3,900,000
East Plum Creek Interceptor	8,120 LF of 18" PVC	2005	\$2,300,000
Craig & Gould Infrastructure Improvements	Craig & Gould from South to Fifth, Gilbert to Front; replace/rehab sewers	2005	\$2,086,710
Woodlands Interceptor Phase I and Phase II	4,459 LF of 24"; 1466 LF of 24" with I-25 Bore; Liggett Rd Bore	2007	\$2,500,000
Gilbert St. South Relief Main Phase I and Phase II	3875 LF of 18" PVC	2007	\$1,010,406

Wastewater Master Plan 2022 Update

CIP Name	Construction Description	Year	Actual Cost
Founders Parallel Force Main Phase I and Phase II	11000 LF of 16" Force Main	2008	\$2,016,300
Plum Creek Interceptor Upsize	1739 LF of 54"	2008	\$800,000
Kinner St. Phase I Upsize	83 LF of 21" PVC	2008	\$25,000
N. Gilbert St. Sewer Replacement	Replace 1,020 LF of old clay pipe with new 8" PVC pipe, 6 manholes and 10 service connections	2009	\$205,600
Turnstone Sewer Upsize	Upsize 80 LF of 8in sewer to 12"	2010	\$45,510
Manhole Rehab Sapphire Point	Rehab 6 manholes to reduce I/I	2010	\$19,100
Craig and Gould Ph1	Replace 1,000 LF of old clay pipe with new 8" PVC	2010	\$256,320
Sewer Rehab	2,450 LF of CIPP in Young American and Downtown, replace drop structures; Hillside Sewer	2010	\$95,000
Sewer Rehab	Various point repairs around Town	2011	\$257,000
Sewer Rehab	Fifth St. Sewer Replacement	2012	\$72,000
Front St. Railroad/7 th St Sewer Replacement	Install 120 LF of casing pipe and new 8" sewer main under railroad from Front St. to 7 th Street	2012	\$78,000
Meadows 5 LS Overflow	Construct emergency overflow	2012	\$149,000
Sewer Rehab	Emergency Point Repairs and 10,000 Linear feet of CIPP Glovers area	2013	\$326,690
Sewer Rehab	Point Repairs, Castle North	2014	\$172,000
Plum Creek Interceptor Upsize at NM Extension	Replace 2,913 LF of 27" with new 36" Pipe, 10 new manholes as part of North Meadows Extension Road Project	2014	\$700,000
Meadows 5 LS Panel Upgrades	Replace old electrical and control panels	2015	\$43,000
MCLS Mixing System	Install mixing system in wetwell	2015	\$45,000
Meadows 5 LS Pump Replacement	Replace worn pumps and corroded header pipes	2016	\$41,947
Sewer Rehab	9,200 Linear feet of CIPP in the Castle North neighborhood; Barbi Ct. point repair	2016	\$225,990
Maher Ranch Lift Station	Bioxide Addition	2017	\$20,000
Castle Oaks Lift Station	Mixer System Addition	2017	\$39,000
Old Caprice Dr WWTP	Demolition of old WWTP	2017	\$147,748
East Plum Creek Exposed Sanitary	Sanitary Sewer Repaired	2017	\$61,000
Meadows 17 Lift Station	Addition of Mixing System	2018	\$10,000
Terrain Founders Gravity Sewer	Eliminated temp lift station; cost shared with developer	2018	\$333,882

Wastewater Master Plan 2022 Update

CIP Name	Construction Description	Year	Actual Cost
Castle Oaks Lift Station Pump Improvements, Phase 1	New impellers, shaft seals and wear rings	2018	\$37,029
Sewer Rehab	Gordon Drive sewer improvements	2019-2020	\$501,330
Castle Oaks Lift Station Pump Improvements, Phase 1	Rehabilitate pump impellers, shaft seals and wear rings	2019	\$71,924
Sewer Rehab	Over two miles of sewer pipe CIPP Oman Sewer and Wolfensberger 15" Sewer Repair	2020	\$300,963
Mitchell Creek Lift Station Pump Replacement, Phase 1	Replaced pump #3	2019	\$55,000
Mitchell Creek Lift Station Pump Replacements, Phase 2	Replaced pumps #1 and #2	2020	\$99,499
Jerry Street Downtown Alley Sewer Replacement	Replaced 380 Linear feet of 90-year old clay sewer pipe in downtown; replaced 2 manholes and 11 service connections	2021	\$203,213
Sewer Rehab	Woodlands Manhole Rehabilitation, Phase 1	2020	\$403,370
Mitchell Creek Lift Station	Replaced obsolete pumps	2019, 2020	\$99,449
Mitchell Creek Lift Station	Added VFDs, reducing peak flows and reducing odors/chemical costs	2020, 2021	\$3,982
Mitchell Creek Lift Station	Replaced aeration system with Wet Well Wizards	2020	\$43,904
Sewer Rehab	Glovers Sewer Rehab and laterals replacement, Phase 1	2021	\$588,000
Castle Oaks Lift Station Mixing System	Installed Wet Well Wizards	2021	\$22,295
PCWRA Plant Expansion	Increased plant treatment capacity from 6.44 to 9.44 Mgd, with Town's share of capacity at 7.14 Mgd	2021	\$36,166,532 (Town's share:\$30.8M)
Village North-Malibu Sewer Upsize	Replaced 1,172 linear feet of old, undersized clay pipe; joint project with Stormwater Division	2021-2022	\$398,487
Oakwood Apartments	Replaced and upsized 440 LF of old clay sewer pipe and two manholes; collaborated with developer	2021	\$178,000
Craig and Gould North Infrastructure Improvements, Phase II	Replace 1,480 LF of old clay pipe and sewer laterals; joint project with Stormwater and Public Works	2021-2023	\$507,000
Sewer Rehab	Glovers Sewer Rehab and laterals replacement, Phase 2	2022	\$478,050
Sewer Rehab	Woodlands Interceptor Manhole Rehabilitation, Phase 2	2022	\$960,095
		TOTAL	\$54,546,493

In some instances, projects were not completed as identified in the original 2003 WWMP because a cost saving alternative was constructed instead, or updated

Wastewater Master Plan 2022 Update

hydraulic modeling indicated the project was no longer needed, or the scope had changed. Table 4-2 provides a list of Town projects that were not completed since the 2003 Master Plan. A description of the project alternative follows.

**Table 4-2
2004-2021 CIP Not Completed**

CIP Name	Construction Description	Estimated Cost from 2003 MP
South Castleton Drive Upsize	2170 LF of 15"	\$606,000
Kinner St. Bottleneck	2394 LF of 30"; 58LF of 36"	\$982,000
Lanterns Heckendorf Ranch LS	2000 LF of 8" FM, 1.43 Mgd Lift Station	\$804,000
Plum Creek Interceptor Emergency Upsize	848 LF of 36" PVC; 250 LF of 30" PVC	\$461,000
Mikelson Boulevard Upsize	2000 LF of 8" and 10" sewer to 12"	\$493,000

The South Castleton Drive Upsize was a project to replace 2,170 linear feet of 12-inch sewer pipe with larger 15-inch diameter pipe. This project would have started near the Douglas County Justice Center and terminated at State Highway 85. Based on the Town's 2015 modeling effort, this project dropped completely out of the CIP list due to changes in the wastewater flow rate from the Justice Center used in the 2010 modeling effort. Previous estimates of the Justice Center flow rates were based on water use meter calculations that were too high due to incorrect meter size in billing records. Once water use for the Justice Center was corrected in the hydraulic model, the sewer capacity was no longer an issue. The project is no longer needed and has been eliminated from the capital plan.

The Kinner Street Bottleneck project, with almost 2,500 linear feet of 30 and 36-inch pipe, was not completed. A 95 percent design was completed for the project and then growth substantially slowed. Castle Rock Water staff reassessed the project and identified a cost saving alternative to alleviate the near-term capacity issue. A short 84 linear foot (Kinner Street Phase 1) project was constructed to alleviate the immediate bottleneck situation in the Kinner Street sewer segment. This fix was completed for \$25,000 instead of \$982,000. However, due to the age of this sewer line, its location, and its criticality in the interceptor system, risk and consequence of failure is considered high and it has been identified as a future CIP for evaluation in year 2026, and for rehabilitation in 2027-28, if needed, at a budgetary cost of \$2.245 Million. Timing of the project will be reevaluated each year as part of the budgeting process and/or based on new condition assessment information.

Wastewater Master Plan 2022 Update

The Lanterns-Heckendorf Ranch Lift Station project was replaced by the ***East Plum Creek Interceptor Project*** that was completed in 2005 at a cost of \$2.3 million. The Gravity Interceptor Project was much more desirable than a lift station from a long term operations and maintenance costs perspective, and is much more reliable.

The Plum Creek Interceptor Emergency Upsize project was only partially completed, but has evolved into the scope of other projects. A portion was constructed in coordination with the construction of the Lowe's Home Improvement Center complex to minimize future disruption from the sewer project construction. Another segment, the Plum Creek Interceptor Upsize at North Meadows Extension (Castle Rock Parkway) roadway project at a cost of \$700,000. The Plum Creek Interceptor at PCWRA project is north of this completed section and is planned in the future beyond 2037. This segment will be coordinated with PCWRA and any future plant expansion, or even roadway improvements. The portion of the interceptor north of the Lowe's section and south of the North Meadows Section (Plum Creek Interceptor North Upsize) is planned for buildout beyond 2037. Accelerated development or major roadway projects could affect timing of either of these remaining projects.

Mikelson Boulevard Upsize – In the 2003 Master Plan, this project was identified to upsize almost 2,000 linear feet of 8 and 10-inch sewer to 12-inch. The revised 2010 modeling effort indicated that less than 100 feet of 8-inch gravity sewer pipe, at the force main outfall, needed to be upsized to 10-inch. The modeling indicated that a short stretch of sewer was only surcharging when pumps at the Castlewood Ranch Lift Station #2 ran. This project was ultimately renamed the Turnstone Sewer Upsize Project and was completed in July 2010. The total actual project costs were \$45,359 instead of \$493,000. This project particularly emphasizes the value that a calibrated hydraulic model and professional staff add to the capital planning effort.

As new development occurs in the Town, the development community routinely constructs new wastewater facilities required to serve the proposed development. These improvements are accounted for in the Town's wastewater model and categorized as developer contribution projects. Upon completion, these improvements are then conveyed to the Town. Many developer contribution projects have been completed since the 2003 WWMP. Table 4-3 provides a list of developer contribution projects completed since the 2003 Master Plan. Based on planning numbers, utility reports and hydraulic modeling, several projects have been identified as necessary to support future development. Table 4-4 provides a list of anticipated developer projects to be completed in the future in support of future development. See Figure 4.1 for completed and future developer wastewater CIP projects.

Wastewater Master Plan 2022 Update

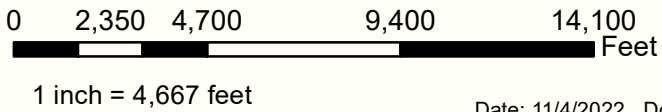
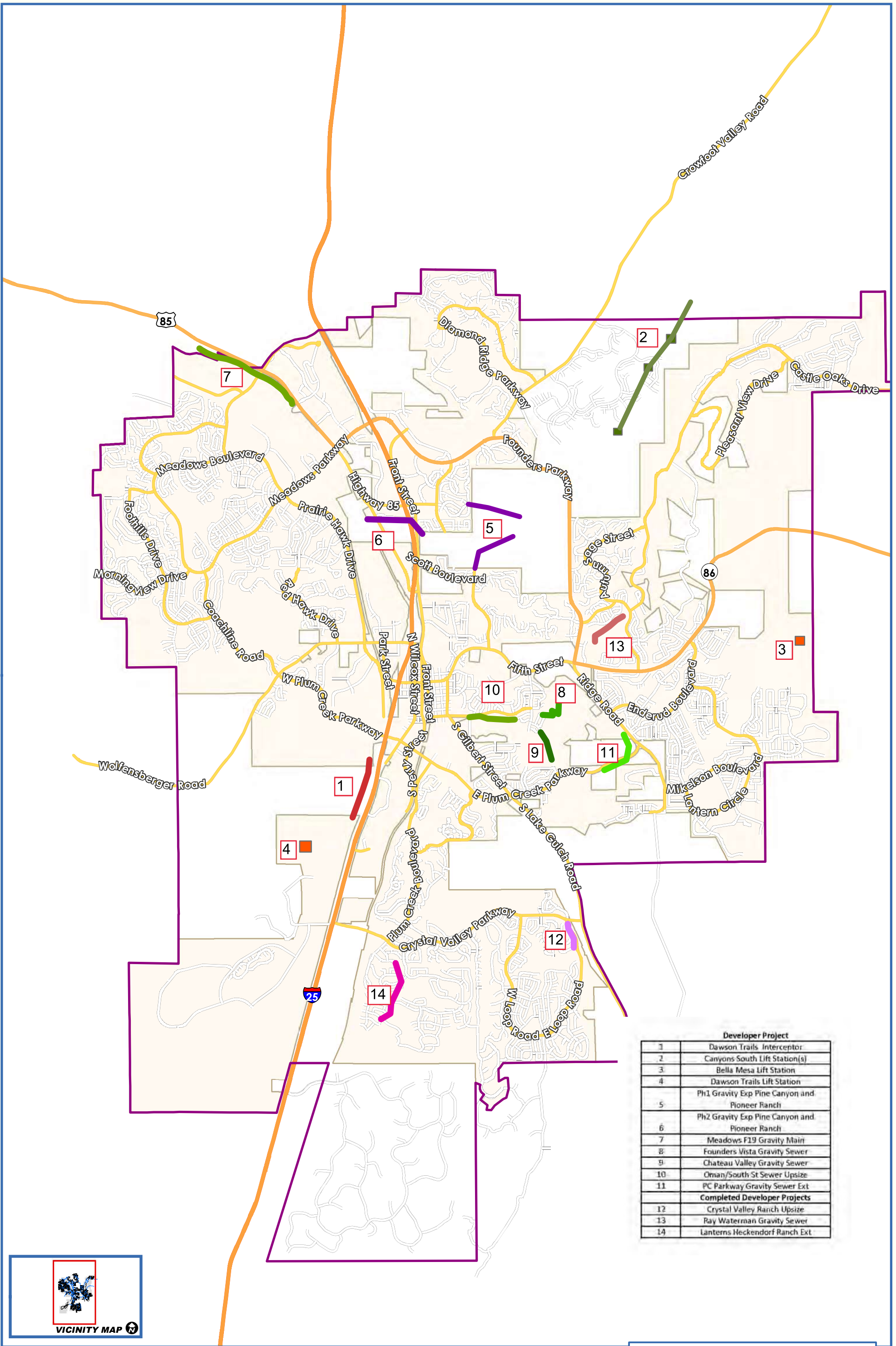
**Table 4-3
Completed Developer Wastewater Projects 2004-2022**

CIP Name	Construction Description	Year Completed
Castle Oaks Expansion – Phase I	2.3 Mgd Lift Station	2005
	13,500 LF of 12-inch DIP Force Main	2005
	1,890 LF of 8"; 2,900 LF of 15"; 7,165 LF of 18" gravity pipeline	2005
Lanterns-Heckendorf Ranch Expansion	4,530 LF of 10"; 1,980 LF of 12"; 4,530 LF of 8" gravity pipeline; 50 LF of 21"	2005-2006
Crystal Valley Ranch Expansion – Phase I	4,430 LF of 10"; 5,620 LF of 12" gravity pipeline	2006
Meadows Expansion – Phase I	3,063 LF of 12"; 6,560 LF of 21"; 1,990 LF of 24" gravity pipeline	2005
Meadows Expansion – Phase II	0.5 Mgd Liftstation	2005
	200 LF of 10" Force Main	2005
	1,900 LF of 8" Gravity Pipeline	2005
Meadows Expansion – Phase III	2,270 LF of 12" gravity pipeline	2005
Castle Oaks Expansion – Phase II	2,870 LF of 8" gravity pipeline	2007
Crystal Valley Ranch Expansion – Phase II	1,510 LF of 8" gravity pipeline	2007
Crystal Valley Loop Road sewer expansion	1,900 LF of 12" upsized to 15"	2019
Ray Waterman Treatment Plant (RWTP) Gravity Sewer Main	1,680 LF of 10" sewer to replace old temp lift station; developer cost shared. Upon completion, the temporary lift station serving the RWTP and the King Soopers/Founders Marketplace was abandoned.	2018
Macanta (aka Canyons South)	Interceptor to the Pinery and Collection System Pipes, as phases develop	2020
Lanterns Heckendorf Ranch Expansion	Collection system pipes complete and ongoing as phases develop	Ongoing in 2022

Wastewater Master Plan 2022 Update

Table 4-4
Future Developer Wastewater Projects: 2022-Future

CIP Name	Project Description
Meadows Filing 19 - Highway 85 Sewer Main	8" and larger gravity pipelines to PCWRA; originally identified in previous master plans as a lift station, force main and gravity mains to serve the area
Pine Canyon/Pioneer Ranch: Gravity Expansion at SMH261 – Phase I	4,270 LF of 8" gravity pipeline; dependent on approval of Pine Canyon and Pioneer Ranch
Pine Canyon/Pioneer Ranch: Gravity Expansion at SMH261 – Phase II	1,700 LF of 10" gravity pipeline; dependent on approval of Pine Canyon and Pioneer Ranch
Founders Filing No. 24: Bella Mesa Lift Station and Force Main	Proposed lift station and associated force mains/gravity mains are anticipated
Macanta (formerly known as Canyons South)	Two to three proposed lift stations and associated force and gravity mains
Lanterns Heckendorf Ranch Expansion	Additional gravity pipelines to serve the area as development progresses (underway).
Dawson Trails: Interceptor Upsize (formerly known as Dawson Ridge)	Modeling indicates that should Dawson Trails eventually develop to its fully anticipated density, 2,921 linear feet of 12-inch sewer will need to be upsized to 15-inch, and 3,133 linear feet of 15-inch will need to be upsized to 24-inch.
Dawson Trails: Lift Station and Force Main	Preliminary Utility Reports indicate that a future lift station(s) may be required to serve portions of the development.
Brisco/Fair St. Alley: sewer upsize	Redevelopment in the downtown central Castle Rock may warrant upsize of the sewer main in the alley; the condition of the sewer main is very poor and may be addressed with a sewer rehabilitation project despite the potential for future redevelopment.
Founders Vista: Gravity Sewer	Gravity sewer to connect to existing sewer mains in the Valley Drive/Oman Street area
Chateau Valley: Gravity Sewer	Gravity sewer to connect to existing sewer mains in the Valley Drive/Oman Street area
Founders Vista/Chateau Valley: Oman/South St. Sewer Upsize	Oman Street interceptor may require upsizing to support the Founders Vista and Chateau Valley projects
Villages at CR/Memmen parcels: PC Parkway Gravity Sewer Ext	Gravity sewer extension expected to be required to support future Memmen Parcels and Villages at Castle Rock development along Ridge Road; portions may need to be completed in advance of development due to the Plum Creek Parkway Roadway Widening Project



**CASTLE ROCK
2022 WASTEWATER MASTER PLAN
DEVELOPER WASTEWATER PROJECTS
FIGURE 4.1**

Wastewater Master Plan 2022 Update

A major factor that impacts the wastewater program is the growth rate for new housing. When the 2003 plan was developed the Town was experiencing explosive growth in single family residential housing. At its peak, the Town issued 1,500 single family building permits in 2005. This resulted in the need for an aggressive Capital Improvement Program that could respond to the increase in homes and subsequent wastewater flows. From 2004 – 2010 the wastewater program generally budgeted approximately 2.1 Million dollars per year for CIP projects. However, beginning in about 2006 there was a decline in growth in the Town and in 2009 the Town only issued 275 single family building permits. That decline necessitated the reduction of the annual CIP budget to approximately less than \$860,000 per year for the 2011 – 2015 planning horizon. The last five years have been high-growth years, exceeding 800 new single family attached and detached homes per year, and also a significant increase in multi-family permits. Nevertheless, for planning and budgeting purposes, Castle Rock Water tries to be conservative in estimating future growth, especially with respect to input in the annual cost of service rates and fees study. However, the rate of growth has implications for the timing of capital projects. Planning data was collected from the Town's Development Services Department, and the past 5-year growth scenario is shown below in Table 4-5.

Table 4-5
Town's 5-Year Growth Projections/Actuals in SFEs

Year	2017	2018	2019	2020	2021	2022
Projected SFEs	800	800	800	800	800	800
Actual SFA and SFD units	862	1,029	901	1,086	1,167	638
Actual MF units	402	372	23	293	538	320
Total New SFEs	1,131	1,278	916	1,282	1,527	845

Note: multifamily units count as a 0.67 SFE for modeling and demand projections.

The projected 2022-2027 growth projections are shown in Table 4-6 below. Note, budget SFEs are only used for budget purposes and are generally conservative so that the Town doesn't overestimate projected revenue from system development fees (SDFs). The projected actual SFEs are projected by Development Services; the higher SFE for actual expected is used for hydraulic modeling and CIP planning.

Wastewater Master Plan 2022 Update

Table 4-6
SFE Projections 2022-2027

Year	2022	2023	2024	2025	2026	2027
Budget SFEs	800	800	800	800	800	Not Provided Yet
Projected Actual SFEs	942	940	716	873	866	721

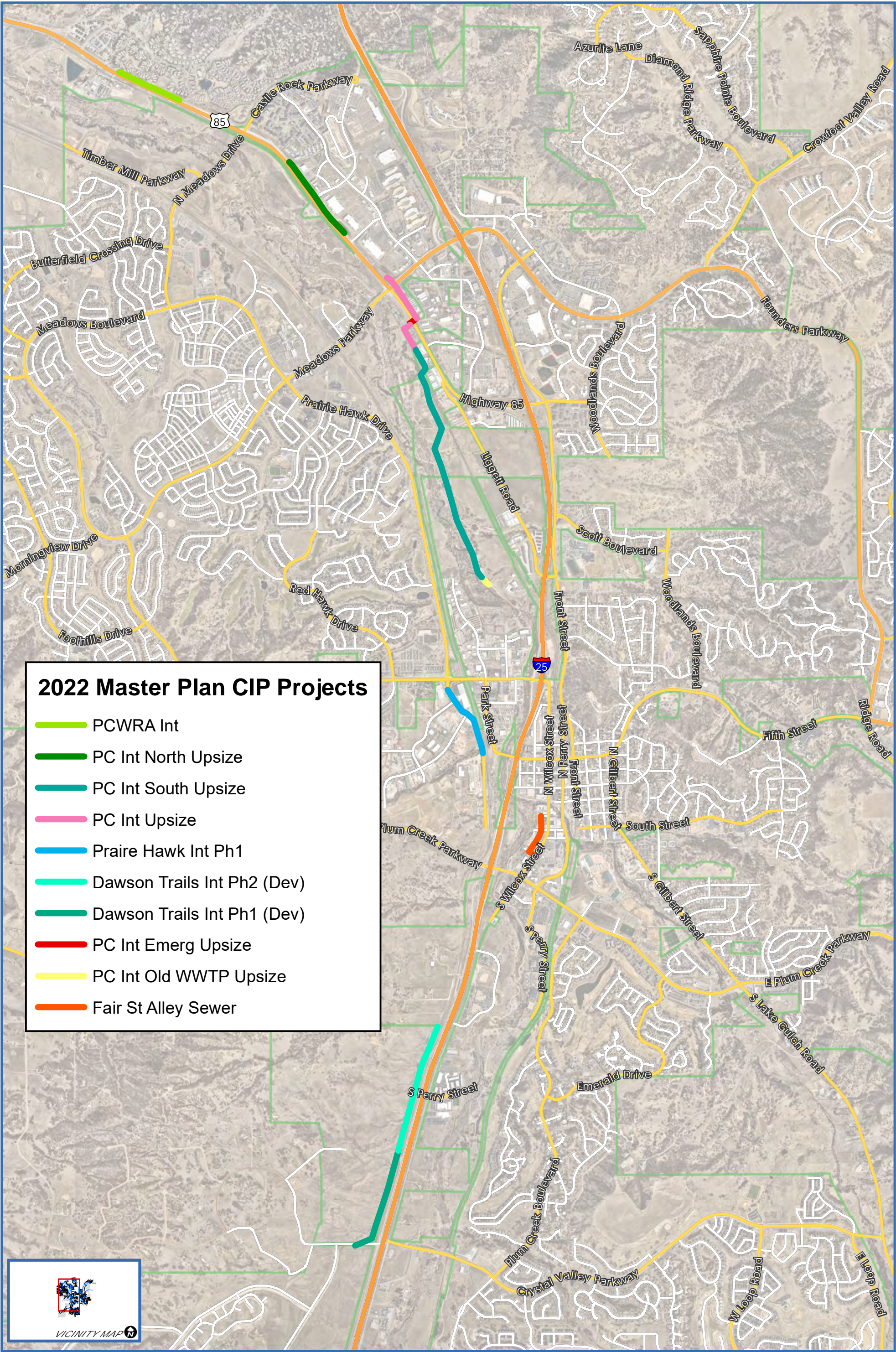
Since the 2003 Master Plan, several Town projects that were previously identified in the 2010 - 2015 planning horizon were either modified in scope or dropped out of the CIP altogether. This is primarily due to the incorporation of revised growth estimates, and an extensive effort to resolve inconsistencies and errors in the wastewater system model through field verification and calibration to SCADA data. As a result, in 2016 the updated model supported a scaled-back Capital Improvement Program that eliminated almost \$8 Million in expenditures over the planning period of 2011 to 2025, with almost \$5 Million saved in the 5-year planning period of 2011-2015. Similarly, the latest capital plan update indicates that several projects previously identified for the 2021-2025 Planning Horizon may be shifted to beyond the 2028 timeline to a future build-out timeline.

In most cases the remaining capital improvement projects are very similar to those identified in the 2003 Master Plan, with revisions to the overall length of the project and/or the ultimate size of the pipe required to meet build-out projections. Typically, the most significant change to a CIP was in the timing of the project due to changes in growth rates, but also due to successful water conservation efforts that have reduced the daily per capita consumption (see figure 3.1). Because of the slower growth rate many projects have now been delayed well into the future, with many projects occurring in the 2028 – build-out planning horizon. Successful water conservation efforts to minimize and reduce indoor consumption result in reduced sizes for future projects, and delay the timing of upsizing. Additional indoor water consumption conservation could impact future projects, underscoring the importance of revisiting the hydraulic model and the capital plan on a regular basis.

In addition to project specific capital improvements to the system, the Town also has several recurring programs that are funded annually, as well as continuing obligations for PCWRA improvements. Table 4-7 shows the recurring programs, capital improvement projects and PCWRA obligations for the next 5-year planning period. Note that costs shown are just estimates for budgeting purposes and are likely to change as projects develop from concept to construction. See Figure 4.2 for a map of Castle Rock Water CIP project locations.

Town of Castle Rock
CIP Project List
CIP Projections thru 2065

	F	O	P	Q	R	S	T	W	AB	AC	AD	AE	AF
1													
2	Wastewater Fund Capital Improvement Program						2023-2027		2028-2055	2056-2060	2061-2065	Total CIP Budget 2023 - 2065	
3		2023	2024	2025	2026	2027	Subtotal		Subtotal	subtotal	subtotal	Total	Planned Year?
4													
4	Collection Lines												
5	Lift Station Rehab/Replacement	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 250,000		\$ 1,400,000	\$ 250,000	\$ 250,000	\$ 2,150,000	
6	Lift Station Pump and Motor Replacements	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 500,000		\$ 2,800,000	\$ 500,000	\$ 500,000	\$ 4,300,000	
7	Castle Oaks Lift Station Upgrade	\$ 500,000					\$ 500,000					\$ 500,000	
8	Lift Station Mixing Improvements				\$ 50,000		\$ 50,000		\$ 300,000	\$ 50,000	\$ 50,000	\$ 450,000	
9	WW Facility VFD replacement	\$ 220,000	\$ 220,000	\$ 220,000	\$ 220,000	\$ 220,000	\$ 1,100,000		\$ 6,160,000	\$ 1,100,000	\$ 1,100,000	\$ 9,460,000	
10	Brisco Fair Alley sewer replace								\$ 755,764			\$ 755,764	2037+ buildout
11	Malibu Street Upsize (Village N), Ph 2						\$ -		\$ 812,010			\$ 812,010	2028+
12	AMI projects	\$ 902,689	\$ 848,477	\$ 849,927	\$ 50,494		\$ 2,651,587					\$ 2,651,587	
13	Security Improvements	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 125,000		\$ 700,000	\$ 125,000	\$ 125,000	\$ 1,075,000	
14	SCADA System Improvements (Existing Improvements in SCADA Div)	\$ 347,000	\$ 204,000	\$ 285,000	\$ -	\$ -	\$ 836,000		\$ 2,800,000	\$ 500,000	\$ 500,000	\$ 4,636,000	
15	Sewer Line Rehab/Replacement	\$ -	\$ 2,400,000	\$ 2,400,000	\$ 2,400,000	\$ 2,400,000	\$ 9,600,000		\$ 67,200,000	\$ 12,000,000	\$ 12,000,000	\$ 100,800,000	
16	Prestwick Sewer Laterals	\$ 450,000					\$ 450,000					\$ 450,000	
17	Kinner Street Sewer				\$ 200,000		\$ 200,000		\$ 2,245,000			\$ 2,445,000	2027+
18	INTERCEPTORS												
19	Plum Creek Interceptor Upsize (additional funding for revised scope)	\$ 4,000,000					\$ 4,000,000		\$ -			\$ 4,000,000	
20	Plum Creek Int PCWRA Upsize						\$ -		\$ 940,722			\$ 940,722	2037+ buildout
21	Plum Creek Interceptor North Upsize						\$ -		\$ 1,276,391			\$ 1,276,391	2037+ buildout
22	Plum Creek Int South Upsize - Phase I						\$ -		\$ 1,411,024			\$ 1,411,024	2031
23	Plum Creek Int South Upsize - Phase II						\$ -		\$ 2,054,850			\$ 2,054,850	2031
24	Plum Creek Int Old WWTP Upsize						\$ -		\$ 269,226			\$ 269,226	2031
25	Prairie Hawk Interceptor						\$ -		\$ 907,074			\$ 907,074	2037+ buildout
26													
27	TREATMENT												
28	Rehab/Replacement at PCWRA	\$ 480,000	\$ 480,000	\$ 480,000	\$ 480,000	\$ 480,000	\$ 2,400,000		\$ 13,440,000	\$ 2,400,000	\$ 2,400,000	\$ 20,640,000	
29	PCWRA Capital Buy-in (Debt Service + Capital Exp/Replacement)	\$ 73,465	\$ 73,106	\$ 75,845	\$ 75,845	\$ 76,000	\$ 374,262		\$ 2,100,000	\$ 375,000	\$ 375,000	\$ 3,224,262	
30	PCWRA Capacity Expansion						\$ -		\$ 35,000,000			\$ 35,000,000	2035-2041
31	OTHER PROJECTS												
32	Lift Station Paving projects	\$ 50,000					\$ 50,000		\$ 225,000	\$ 75,000	\$ 75,000	\$ 425,000	
33	Meadows 17 Lift Station Access Road paving (1060x15x4)						\$ -		\$ 225,000		\$ 75,000	\$ 300,000	
34	Castlewood Lift Station #1 Access Road Paving (200x15x4)						\$ -		\$ 54,000		\$ 18,000	\$ 72,000	
35	Castlewood Lift Station #2 Access Road Paving (450x15x4)						\$ -		\$ 96,000		\$ 32,000	\$ 128,000	
36	Mitchell Creek Lift Station paving						\$ -		\$ 90,000		\$ 30,000	\$ 120,000	
37	Sellars Gulch Lift Station paving						\$ -		\$ 90,000		\$ 30,000	\$ 120,000	
38	Maher Lift Station Access Road Paving (500x15x4)						\$ -		\$ 120,000		\$ 40,000	\$ 160,000	
39		2023	2024	2025	2026	2027	2023-2027						
40	Total Sewer Fund	\$ 7,198,154	\$ 4,400,583	\$ 4,485,772	\$ 3,651,339	\$ 3,351,000	\$ 23,086,849	\$ -	\$ 142,572,060	\$ 17,300,000	\$ 17,300,000	\$ 200,208,909	



2022 Master Plan CIP Projects

- PCWRA Int
- PC Int North Upsize
- PC Int South Upsize
- PC Int Upsize
- Praire Hawk Int Ph1
- Dawson Trails Int Ph2 (Dev)
- Dawson Trails Int Ph1 (Dev)
- PC Int Emerg Upsize
- PC Int Old WWTP Upsize
- Fair St Alley Sewer



0 1,150 2,300 4,600 6,900 Feet

1 inch = 2,337 feet



Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or inconsistencies. Such discrepancies in data are inherent and in supplying this product the Town of Castle Rock assumes no liability for it's use or accuracy. Questions or comments regarding the cartographic composition of this map including, but not limited to, errors, omissions, corrections, and/or updates, should be directed to the Utilities Department, Town of Castle Rock, (720) 733-6056. Copyright 2022, Town of Castle Rock Utilities Mapping.

**CASTLE ROCK
2022 WWMP
FIGURE 4.2**

2016 - 2021 Planning Horizon – Status of Capital Improvement Projects from the 2016 Wastewater Master Plan:

- ***Craig and Gould North Infrastructure Improvements*** – This project is to rehab and replace the aging infrastructure in the Craig and Gould North neighborhood, north of Fifth Street, in conjunction with storm and topside public street improvements. This project was under construction in 2021 for completion in early 2023; Cost: \$507,000.
- ***Plum Creek Interceptor Upsize*** – see 2028-Buildout Planning Horizon
- ***Gordon Drive Sewer Improvements*** – This project rehabbed or replaced 1,450 linear feet of old clay pipe in conjunction with a major stormwater and street improvement project. Construction was completed in 2020. Project costs: \$501,330.
- ***PCWRA Projects*** – see previous section under Treatment
 - Ditch Three – completed in 2017
 - Manganese Control – incorporated into Treatment Plant Expansion completed in 2021
 - Rehab and Replacement – projects completed as needed
 - Capital Expansion – completed in 2021 at a cost of \$36,166,532; Town's share of costs: \$30.8M.
- ***Glovers Sewer Rehab and Sewer Lateral Replacement, Phase I***: In coordination with a major waterline replacement project that required complete road reconstruction, 90 sewer laterals and two manholes in the affected project area were replaced to the edge of the right of way. Project was completed in 2021. Projects costs: \$588,000.
- ***Malibu Street Upsize Phase 1*** – This project replaced 1,172 linear feet of existing 15-inch old clay sewer pipe to 21-inch diameter new PVC sewer main. This project was originally in the 2021-2025 Planning Horizon but was completed in 2022 in coordination with a major stormwater upgrade in the project area. Project costs: \$398,487.

2022 – 2027 Planning Horizon - Capital Improvement Projects:

Five projects have been tentatively identified as required in this timeframe to meet build-out conditions, or due to area-wide infrastructure projects, or as shown on the rehab plan. Growth rates in the next decade will largely determine the timing for these projects, and several could be driven by road improvement projects and/or commercial development. Other capital projects are often identified for major rehabilitation or replacement of existing facilities.

Wastewater Master Plan 2022 Update

- **Glovers Sewer Rehab and Sewer Lateral Replacement, Phase II**, under way in 2022; Scope: replace all sewer laterals, estimated at 131, within project area; Cost: \$554,900.
- **Prestwick Sewer Rehab and Sewer Lateral Replacement**: Scope: replace all sewer laterals within the project area; No cost estimate but expected to be similar to Glovers Sewer Lateral Replacement, Phase II; to be funded under Sewer Rehab program; \$450,000 has been budgeted.
- **Plum Creek Interceptor Upsize** – This project incorporates the State Highway 85 crossing at Castleton (see Section 2) into a larger capital replacement project. The project was designed and taken to bid in January 2019 but bid proposals far exceeded the budget reflecting the difficulty with completing the project per the design in the current alignment, due to existing utilities, topography, and private facilities. Alternative alignments and other options are being reevaluated, timing has shifted to 2023, and the budget adjusted to reflect the complexities of the project. A total of 2,400 LF of 27" sewer to be installed; estimated costs: \$4,000,000.
- **Kinner St. Sewer** – This project is to upsize nearly 3,000 linear feet of existing 18 and 21-inch sanitary sewer main to 21 and 24 inches, respectively. This project involves a crossing of Interstate-25, East Plum Creek, and Wolfensberger Road. Hydraulic modeling does not indicate that the existing Kinner St. sewer needs to be upsized to accommodate buildout flows. However, given the age, location (under I-25 and the East Plum Creek) and critical nature of the interceptor, condition assessment should be performed to determine if rehabilitation is warranted in the near term. Development in and around Kinner Street and Wolfensberger Road could dictate that any rehabilitations be completed sooner than anticipated. Estimated costs: \$200,000 for evaluation to be completed in 2026, with rehab or replacement deferred to the buildout planning horizon beyond 2028.
- **Brisco/Fair St. Alley Sewer** – move from buildout and complete sooner with water rehab project. This has also been identified as a potential developer CIP should a commercial project be planned for the project area, but given the age and condition of both the water and sewer pipes, has been identified as a CRW capital project. Scope: replace 950 linear feet of old 6" clay pipe with new 12" PVC pipe; estimated costs \$714,175.

2028 – Build-out Planning Horizon - Capital Improvement Projects:

- **Plum Creek Interceptor PCWRA Upsize** – This project upsizes 2,270 linear feet of the existing 27-inch interceptor to 36 inches in the area east of State Highway 85, beginning north of Castlegate Parkway and continuing to the PCWRA influent manhole. Estimated Costs: \$940,722.
- **Plum Creek Interceptor North Upsize** – This project upsizes over 2,415 linear feet of existing 27-inch diameter gravity main to the ultimate size of 36 inches. The project begins near the Atrium Drive entrance to the Factory Shops and ends north of Castlegate Drive. This project was investigated in 2015 for fast track completion due to the Promenade development; however, a lack of information surrounding CDOT plans for the corridor led to the decision to delay, since hydraulic capacity is not an issue. Modeling indicates the project could be delayed to beyond 2026; however, State Highway 85 improvements could force the project to be completed sooner, although it is in the build-out phase for planning purposes. Estimated costs: \$1,276,391.
- **Plum Creek Interceptor South Upsize Phase 1** – This project upsizes over 1,500 linear feet of existing 24-inch gravity main to 27 inches. A parallel gravity main to complement the existing interceptor may be an option. Estimated costs: \$1,411,024.
- **Plum Creek Interceptor South Upsize Phase II** – This project upsizes over 4,300 linear feet of existing 24-inch gravity main to the ultimate diameter of 36 inches. The project includes a probable bored crossing of the railroad. Estimated costs: \$2.055 Million.
- **Prairie Hawk Interceptor** – This project is to upsize over 1,600 linear feet of 12-inch sewer to 18 or 21 inches. The project begins at manhole SMH1362 and ends at manhole SMH1249, near Atkinson Way. Modeling indicates this project could be delayed to the future; however, development in the area could drive completing sooner. Estimated costs: \$907,074; timing in buildout phase beyond 2028.
- **Plum Creek Old WWTP Upsize** – This is a project to upsize almost 300 linear feet of sewer main from 18 inches to 27 inches, which runs through the old WWTP, and replace/rehab four manholes. The project is required to gain extra capacity in sections of gravity main that are at minimum slope. Estimated costs: \$269,226.
- **Future PCWRA Plant Expansion** – \$35 Million is included in the long-term capital plan budget for a future expansion of the wastewater treatment plant. Should the town wastewater service area population

exceed roughly 105,000 people, expansion of wastewater treatment capacity will be required. Timing of the expansion is heavily growth dependent, but planning and design should begin 2-3 years before the need materializes.

SH-85 Regional Wastewater Project-This is a project to implement a regional wastewater system in Northwest Douglas County along the SH-85 corridor. The Town is potentially partnering with Dominion Water and Sanitation District, the Plum Creek Water Reclamation Authority and Douglas County to provide a viable and sustainable wastewater collection system solution for existing and future customers along the Highway 85 corridor. Long term benefits include improving the environmental and water quality challenges along Plum Creek and ultimately the Chatfield Reservoir by reducing the number of Onsite Wastewater Treatment Systems (OWTS) along the corridor. Other benefits include keeping valuable reusable water supplies in Douglas County for use by Douglas County residents. The project could help improve the economic viability of the corridor for existing and future residences, businesses and property owners.

The possibility of expanding the service area to include the SH-85 corridor would most likely necessitate that the treatment plant capacity expansion proceeds sooner. See Figure 4.3 for an exhibit of the potential SH-85 Sewer Collections project. CRW would own and operate this infrastructure, providing extraterritorial service.

Regional Water/Wastewater Planning

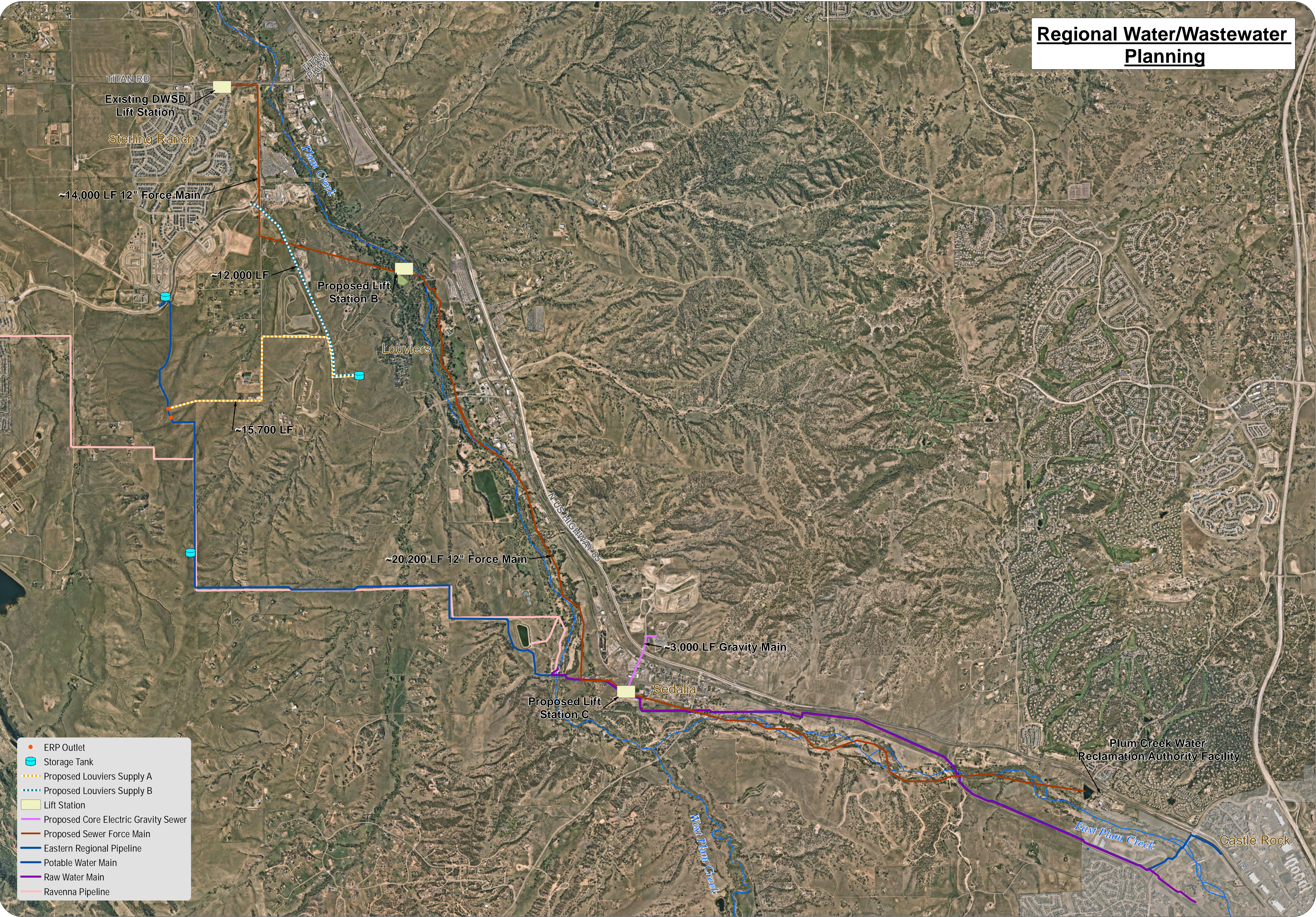


Figure 4.3
SH-85 Sewer Collection System Project

5. Recurring Capital Improvement Projects

Several programs are funded yearly. A description of each follows:

- **Plum Creek Water Reclamation Authority (PCWRA) Projects** – The PCWRA is a regional reclamation facility that serves the Town of Castle Rock, Silver Heights, Castleton District, Castle Pines, and Castle Pines North. The Town's share of the capacity is currently 7.14 Mgd. The Town currently contributes approximately 83 percent of the total wastewater load to the PCWRA facility, and therefore is responsible for its proportionate share of expenses for expansion, operations, maintenance and upgrades. For 2023 thru 2027, approximately \$550,000 per year is budgeted for Rehab/Replacement and debt service obligations. Planning and budgeting for PCWRA projects are performed by the authority.
- **Lift Station Upgrades** – This is a program to cover improvements to existing lift stations, and lift station pumps, motors, mixers, and variable frequency drives (VFD) replacements, as well as lift station access drive paving and maintenance. This program is funded at almost \$500,000 in 2023 thru 2027; larger capital improvements may be funded as CIP projects.



Old pumps at the Mitchell Creek Lift Station were replaced with new Gorman Rupp pumps.



Example of a Wet Well Wizard in action. Similar system was installed at the Mitchell Creek Lift Station.



Wet Well Wizard and the blower/motor system that runs it.



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- **Sewer Line Rehab and Replacement** – A program to cover the repair, rehabilitation and replacement of aging infrastructure, this program is funded at \$2.4 million per year starting in 2024 in recognition that all pipes in the collection system eventually need rehabilitation or replacement. The 2021 System Renewal/Replacement rate for CRW was reported as 0.7%, placing CRW at the 25th percentile of utilities reporting on the AWWA benchmarking survey. The reported value for the top percentile is 2.6%, indicating that CRW needs to increase its investments in rehab and replacement. A priority of the Rehab and Replacement Plan is to identify and prioritize pipes by project area, in order to coordinate projects with water rehab or street rehab projects.

There are active sewer collection system pipes that date to the 1930's in Town. Typical rehab projects include point repairs; cured-in-place pipe (CIPP) lining of old or damaged sewer mains; manhole lining, repairs and replacement; and complete replacement of sewer mains that can't be rehabilitated. Pipes that are anticipated to need upsizing are generally deferred to the CIP plan but are otherwise repaired if needed. A draft rehab and replacement criteria manual has been developed with criteria for consequence of failure (COF) and likelihood of failure (LOF) for both water and wastewater infrastructure. This manual has been used to develop the rehab plan for sewer lines going forward.

The wastewater plan was developed around all pre-1976 sewer pipes since most clay pipe still in service is from this period and this older pipe is approaching or has already exceeded 50 years of service life. Criteria for scoring were based on age of pipe, material of pipe, size of pipe and a structural score based on North American Society of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) CCTV standard scoring. Based on the scoring of the pipes, and the proximity of pipes to each other, projects and associated priorities have been developed into a 10-year rehab and replacement plan to guide the expenditure of the rehab funds.

The 2023-2032 Rehab Capital Plan (DRAFT) proposes expenditure of \$12,269,451 in water, and \$25,997,100 in wastewater during the ten-year period. The 2023-2032 capital plan's projected expenditures in water replacement are reduced to about \$600,000 until 2029 due to the need to fund the SCADA Master Plan projects; after 2029, annual expenditures for waterline rehab and replacement are slated to increase to \$2,000,000 per year. Water infrastructure replacement projects account for 33 percent of the total proposed expenditures for the ten-year period while wastewater rehabilitation expenses account for roughly 67 percent. The wastewater fund was less affected by the SCADA master plan costs, so the target budget for wastewater rehab is almost \$2.4 million per year, which represents 2.0% of the wastewater collection system valuation of

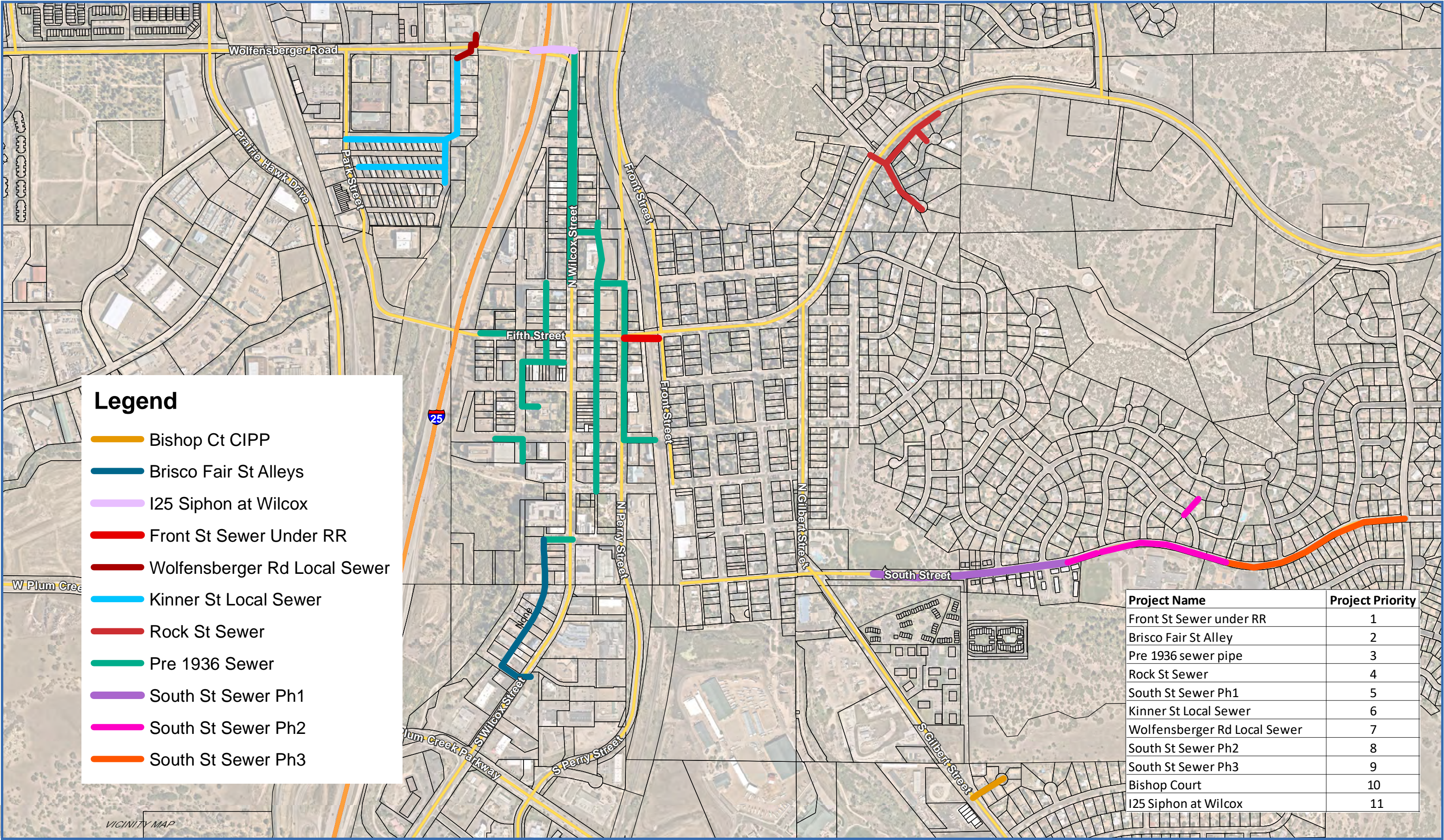
Wastewater Master Plan 2022 Update

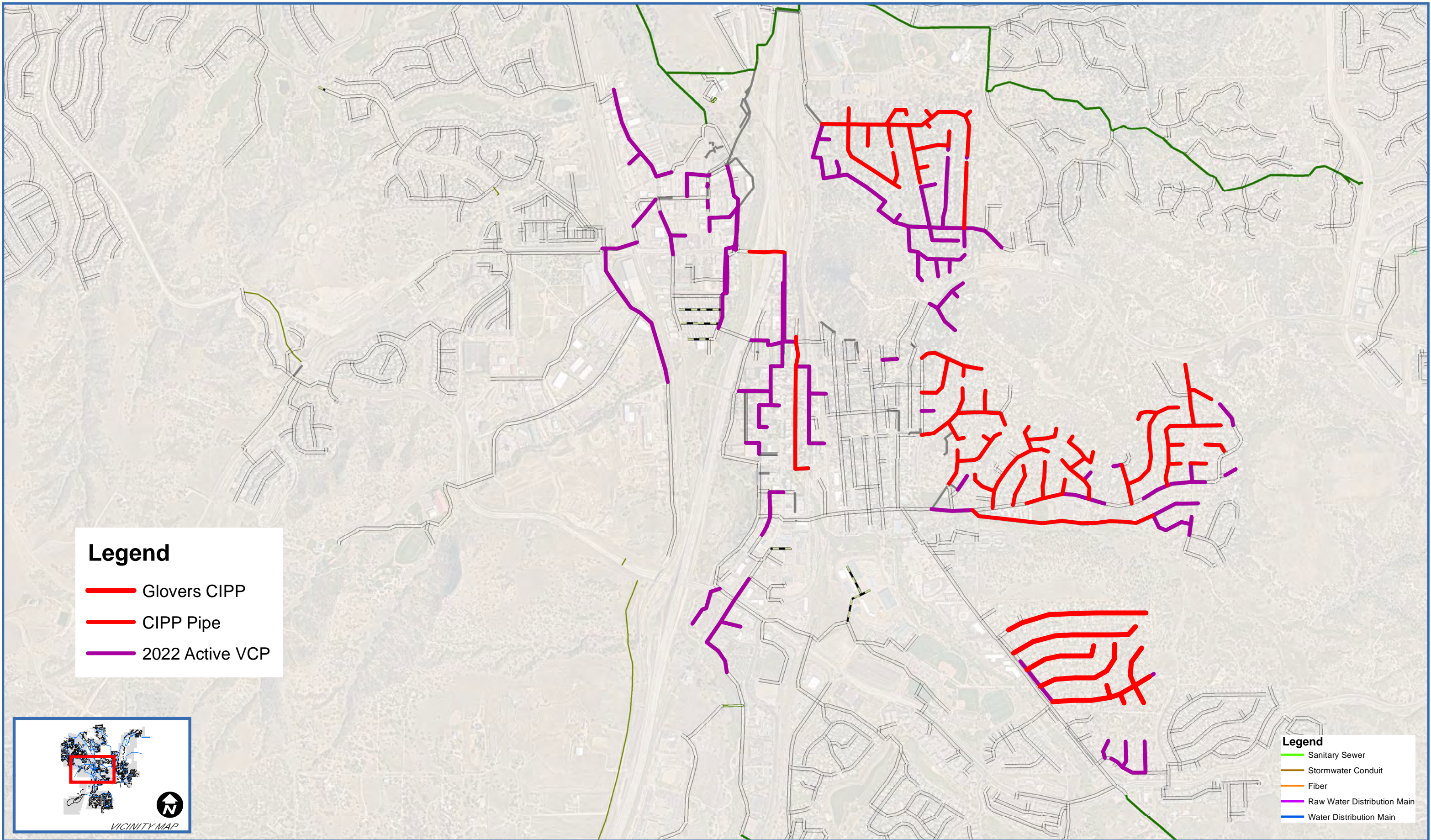
\$112 Million. A replacement/renewal rate of 2% would place CRW in the top percentile for replacement among reporting utilities to the AWWA survey. Refer to Table 5-1 for proposed capital rehab expenditures for the 10-year time-frame of 2023 to 2032. Refer to Figure 5.0 for the identified projects and recommended priority.

Table 5-1

PROPOSED CAPITAL REHAB EXPENDITURES 2023-2032			
Year	Water	Sewer	Totals
2023	\$1,269,451	\$4,450,000	\$5,719,451
2024	\$600,000	\$2,400,000	\$3,000,000
2025	\$600,000	\$2,400,000	\$3,200,000
2026	\$600,000	\$2,600,000	\$3,000,000
2027	\$600,000	\$2,400,000	\$3,000,000
2028	\$600,000	\$3,212,000	\$3,812,000
2029	\$2,000,000	\$2,400,000	\$4,400,000
2030	\$2,000,000	\$2,400,000	\$4,400,000
2031	\$2,000,000	\$1,680,250	\$3,680,250
2032	\$2,000,000	\$2,054,850	\$4,054,850
TOTALS	\$12,269,451	\$25,997,100	\$38,266,551

The service life of clay pipe can be extended many years by the in-situ method of CIPP lining, which has a minimum expected life of 50-75 years. The lining effectively seals joints and is a very effective deterrent to root intrusion. Rehabilitation now by the installation of a CIPP liner, before the pipe deteriorates to a failed condition that might require a street-cut to repair, is more cost effective, can be completed with minimal disruption to service and results in less future maintenance. Since 2010, over 31,000 linear feet of old clay pipe have been rehabilitated with CIPP lining. Over 11,000 linear feet was lined in the Young American neighborhood under the 2019 Sewer Rehab Program. The remaining CIPP work in out years will be in the Downtown area (east and west of I-25) and the Young American and Castle Heights area. Any clay pipe that is to be upsized, such as the Prairie Hawk Sewer, will be replaced instead of rehabilitated. See Figure 5.1 for a location map of existing clay pipe and pipe that has been rehabilitated with CIPP.





Legend

- Glovers CIPP
- CIPP Pipe
- 2022 Active VCP

VICINITY MAP

Legend

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



0 650 1,300 2,600 3,900 Feet
Date: 11/30/2022
1 inch = 1,333 feet



**CASTLE ROCK
2022 WASTEWATER MASTER PLAN
FIGURE 5.1**



Glovers Sewer
Lateral Replacement
using saddle tap on
existing CIPP lined
sewer pipe.

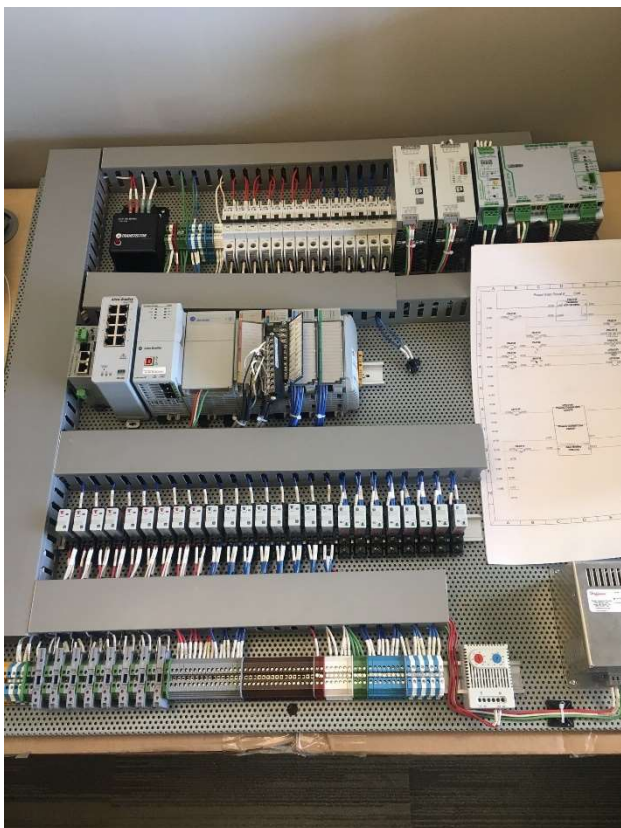


Post CIPP: Pipe
after rehab with
cured in place pipe;
the liner seals
cracks and joints
and eliminates I/I
and future root
intrusion.

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- **Security and SCADA Improvements** – A program to cover security and Supervisory Control and Data Acquisition (SCADA) installations/improvements, such as fences, gates, alarms, and communications, at wastewater facilities. This program is generally funded at \$50,000 per year, except for projects as identified in the SCADA Master Plan and included in the CIP budget as separate projects.
 - Proposed SCADA over the next five years include upgrading/replacing all old, obsolete Human Machine Interface (HMI) controllers at wastewater facilities with new Programmable Logic Controllers (PLCs). Older HMIs were often proprietary software inclined and not easy to upgrade; new PLCs better support programming changes and integration with other communications equipment.
 - Fiber Optic (FO) cable improvements to wastewater facilities would enhance reliability of data transfer and communications between water/wastewater facilities. Many facilities still rely on telephone infrastructure for communications and data transfer and are slow, old and obsolete.
 - Security improvements at facilities include:
 - Add chain link perimeter fencing around every lift station.
 - Add slide gates instead of two -bar swing gates.
 - Install a block wall around the transformers to hide and protect them.
 - Add hatch intrusion alarms to the outside grinder and wetwell basins.
 - Add cameras with analytics to every lift station.

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A photo of what the new designed and installed wastewater flume panels will look like after SCADA upgrades per the approved SCADA Master Plan.

6. Operations and Maintenance

Operations and Maintenance Costs

Total operations and maintenance (O&M) costs for wastewater collections and treatment activities for 2017 thru 2021 are shown in Table 6.1. Also shown is the average daily wastewater treatment flow for PCWRA over the same period. These annual costs and flows result in an average key performance indicator (KPI) of \$2,681 per Mgd of wastewater collected and treated, which puts the Town near the national median. O&M costs are heavily influenced by energy costs at both the PCWRA and at the nine lift stations.

Table 6.1
Annual Operations and Maintenance Costs

	2017	2018	2019	2020	2021
Ave Daily WW Mgd	3.70	3.74	3.94	4.10	4.30
Total O&M Costs	\$3,358,004	\$3,709,482	\$3,984,346	\$4,206,754	\$4,111,998
\$\$/Mgd	\$2,486	\$2,717	\$2,771	\$2,811	\$2,620

Manpower/Staffing

The wastewater fund has 5.0 full-time equivalents (FTEs) in the Field Services Division of Castle Rock Water. These positions are responsible for the day-to-day operation and maintenance of nine lift stations, and over 314 miles of sewer pipe that serve more than 22,300 wastewater service accounts. One additional collection system operator is planned to be added in 2023, for a total of 6 dedicated collections system operators. The Facilities Maintenance (plant mechanics) division of Castle Rock Water has 2.16 FTEs dedicated to the wastewater fund. Plant mechanics are responsible for most preventive maintenance and repair of electrical/mechanical equipment at lift stations and other wastewater facilities. The wastewater fund also funds 3.2 FTEs in the Engineering/GIS Division. Engineering provides support to operations and manages the capital programs and projects. GIS provides mapping, asset management support and utility locates. Customer Relations, Billing, SCADA and Administration are also partially funded from the wastewater fund and total 5.67 FTEs. Overall, there are 16.03 FTEs funded from the wastewater fund. In 2022, based on average daily wastewater flows (4.47 Mgd) and total wastewater funded employees (16.03), and the 18 FTEs at the PCWRA, the Town scores a KPI of 0.13 for Mgd processed per employee, placing the Town in the bottom quartile nationally based on AWWA performance tracking programs.

Should CRW and PCWRA participate in the SH-85 Collection System Project, additional staffing would be warranted, equivalent to a new collections crew (4 to 5 FTEs). The possibility of 7-10 new lift stations (Macanta, Bella Mesa, Dawson

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Trails, SH-85) in the future would also warrant a dedicated Lift Station Crew (also possible 3-4 FTEs) to ensure adequate coverage for the increased O&M effort involved with lift stations. The focus on rehab and replacement projects could also require an additional dedicated project manager. CRW updates our long term staffing plan every year. Options to improve efficiencies for manpower will be addressed over the next planning periods.

Energy

In 2021 wastewater energy costs averaged just over \$11,128 per month, compared to \$8,097 per month in 2017 (over 7% increase per year in costs), and do not include any energy costs incurred at the wastewater treatment plants. Energy demand has actually outpaced costs, with electricity demand up 53% from 2017 to 2021, and gas demand up 35% over the same period, but has actually slightly decreased the last two years. Flows to PCWRA have increased overall 14% in the same time period.

The pace of rising energy demand may reflect that much growth is occurring in areas served by lift stations, such as Castle Oaks, Crystal Valley Ranch and Founders. Wastewater energy costs are due mostly to the pumping costs and heating/cooling costs incurred at the nine lift stations. The lift stations are heated in the winter to ensure pipes don't freeze. Heating is either natural gas or electric heating. The pumps and other electrical components generate heat that must be offset in the summer months by air conditioning and cooling. Several lift stations have backup generators that are supplied by natural gas; other lift stations have diesel backup generators. Figure 6.1 shows the energy demand (electrical in KWh and gas in MBTU) and costs by month for 2021. CRW is looking for ways to reduce energy demand at the lift stations, such as: installing variable frequency drives to reduce peak energy demands; subscribing to time of use (TOA) rates where feasible; using natural lighting, motion sensors, and replacing light fixtures with more energy efficient LEDs; adjusting thermostats; and ensuring pumps/motors and other appurtenances are sized correctly.

CRW will also partner with PCWRA on future initiatives to reduce and/or offset energy demand. There is the potential to install solar arrays on land owned by PCWRA. As part of the next utility plan update in 2023, energy efficiency and resource recovery will be key topics to be explored.

Wastewater Master Plan 2022 Update

Figure 6-1
Energy Demands and Costs for 2021

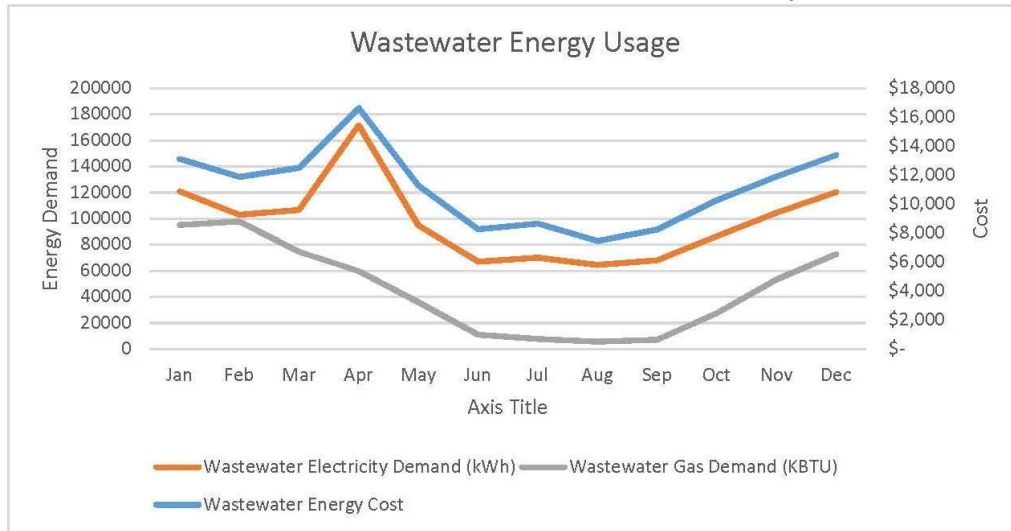
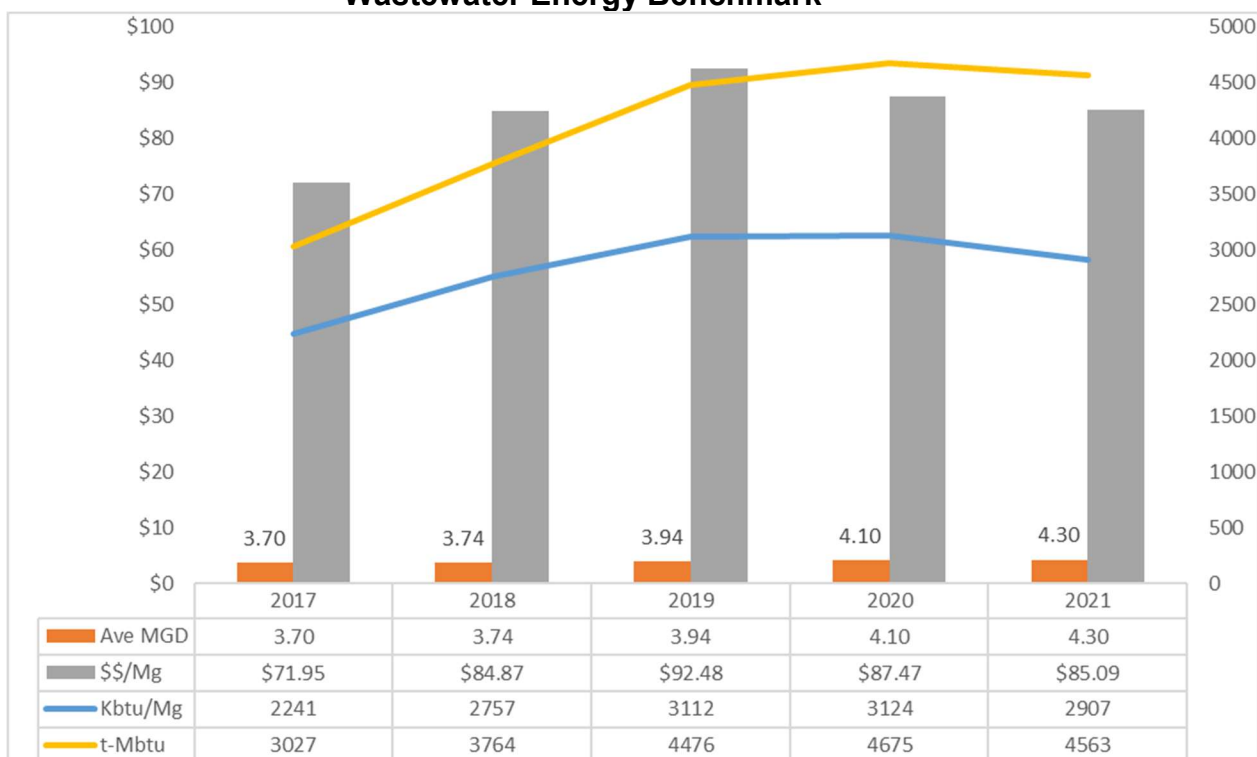


Figure 6-2 shows the average energy expenditure in KBtus (Kilo-British Thermal Units), average million gallons per day (Mgd) treated, and average energy cost per million gallons (Mgal) treated, and total energy demand in equivalent Million British Thermal Units (MBtus) for the time period of 2017 thru 2021. The resultant annual KPI for energy costs per million gallons (\$\$/Mg) is also shown.

**Figure 6-2
Wastewater Energy Benchmark**



Equipment

In the 2010 master plan, Castle Rock Water identified a need for CCTV equipment to allow for increased capability to clean and inspect the wastewater infrastructure. In 2012 the business case was developed and funding approved for the purchase of a new van, CCTV equipment and software, at a cost of \$185,000, to do all CCTV inspections in-house. An additional full-time staff member was also approved and hired to complement that staffing level. The goal in funding the CCTV truck is to meet the target of fully inspecting the collection system every five years. In 2015, a tracked wheel easement machine was purchased to improve the ability of staff to reach manholes located in open space and off road areas. The easement machine can safely traverse slopes that trucks can't safely or easily maneuver along. This allowed staff to perform maintenance and inspections on out of the way sewer mains without taking the large vacuor truck out. In 2018 a second vacuor truck was purchased at a capital expense of \$450,000, with the funding split three ways among Water, Wastewater and Stormwater Funds. Wastewater and Stormwater departments use the large vacuor trucks to keep sewer mains and storm pipe clear of blockages. The Water fund uses the large vacuor truck when responding to main breaks and to perform soft digging. The two vacuor trucks are scheduled for capital replacement in 2024 and 2033. The CCTV truck is not scheduled for capital replacement until 2032. A second CCTV truck unit is not currently in the capital equipment plan but needs are reassessed each year as part of the budget

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process. Castle Rock continues to add more sewer mains each year and either more equipment/staff will be needed to meet service level expectations for cleaning and inspection, or more contractor assistance may be needed to meet the gap. Future equipment needs for the possibility of the SH-85 Sewer Collection Project have not been identified yet.



Vactor truck, purchased in 2018, used for pipeline maintenance and line break repairs.

Asset Management

GIS and asset management play an important role at Castle Rock Water (CRW) by supporting day-to-day operations, as well as providing data analysis and metrics. While GIS has been used by CRW for over fifteen years, a Computerized Maintenance Management System (CMMS) was implemented in 2014 and is still very much in active development. Cartegraph's Operations Management Software (OMS), an asset management specific software used to track asset condition, cost and work history, was selected as the CMMS for CRW. Additionally, the software is ideal as a permanent repository for the vast amounts of data collected from the yearly cleaning and CCTV effort and assists in prioritizing the allocation of rehabilitation funds for the collection system.

Cartegraph OMS, CUES GraniteNet CCTV inspection software and Innovyze InfoAsset Planner inspection analysis software used by CRW staff, work in concert to generate sewer pipe scores based on classification of defects as well as other attributes such as pipe age and material. This integration is currently being implemented by CRW staff and will assist in identifying and prioritizing sewer rehabilitation projects. The asset management program is also being used to track lift station operations and maintenance, physical assets (installation cost, service life and replacement costs) and work-order histories.

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Capacity Management Operation and Maintenance, otherwise known as CMOM, is a highly structured program of best management principles, tools, and goals to manage the collection system to best prevent sanitary sewer overflows (SSOs). At this time, the program has not been formally promulgated by the EPA as a federally mandated requirement, but guidance has been available for several years. An asset management system is a critical component of a successful CMOM program.

Operations and Maintenance Policy and Programs

Several policy and programs drive the Operations and Maintenance costs. Foremost, levels of service drive day-to-day operations. Expected levels of service are that less than one percent of customers will experience a sewer service backup or failure on a monthly basis. The expectation that one fifth of the collection system is adequately cleaned and inspected each year is the target goal for the CCTV inspection program. Table 6-2 shows the sewer jetting (cleaning) and closed circuit televising (CCTV) linear feet (LF) statistics for the years 2017 to 2021. Generally, the jetting operations are succeeding at meeting the one-fifth to one-third target each year. The CCTV operations, which actually provide the best information on pipe condition and from which pipe scores can be generated to target maintenance and/or rehabilitation, are averaging about 12% of the system annually. The KPI for the system inspection rate of 8% in 2021 placed CRW just below the national median as reported on the AWWA survey.

The collections staff has been particularly challenged the last five years with staff retention, and by extension, with adequate training on the CCTV tasks. Staff performing CCTV tasks undergo a rigorous certification class. Continued growth has also resulted in, on average, an additional 13 miles of gravity pipe (about 5%) added to the system each year. Targeted cleaning and inspection of the system to the older areas of Castle Rock and those areas known to have recurring maintenance issues (such as root intrusion), is the current best use of the collection staff's time.

Table 6-2
Sewer Jetting and CCTV Statistics for 2017-2021

Year	Length of Main Jetted, LF	Length of Main CCTV'ed, LF	Total Length of System, LF	% of System Jetted	% of System CCTV'ed
2017	454,961	265,775	1,401,508	32%	19%
2018	309,151	117,552	1,477,254	21%	8%
2019	553,189	181,605	1,530,857	36%	12%
2020	355,697	180,175	1,599,999	22%	11%
2021	362,497	129,687	1,676,630	22%	8%

An additional full-time collections staff person is to be added in 2023. In 2021 the employee turnover rate for the wastewater collections crew was 25%, placing

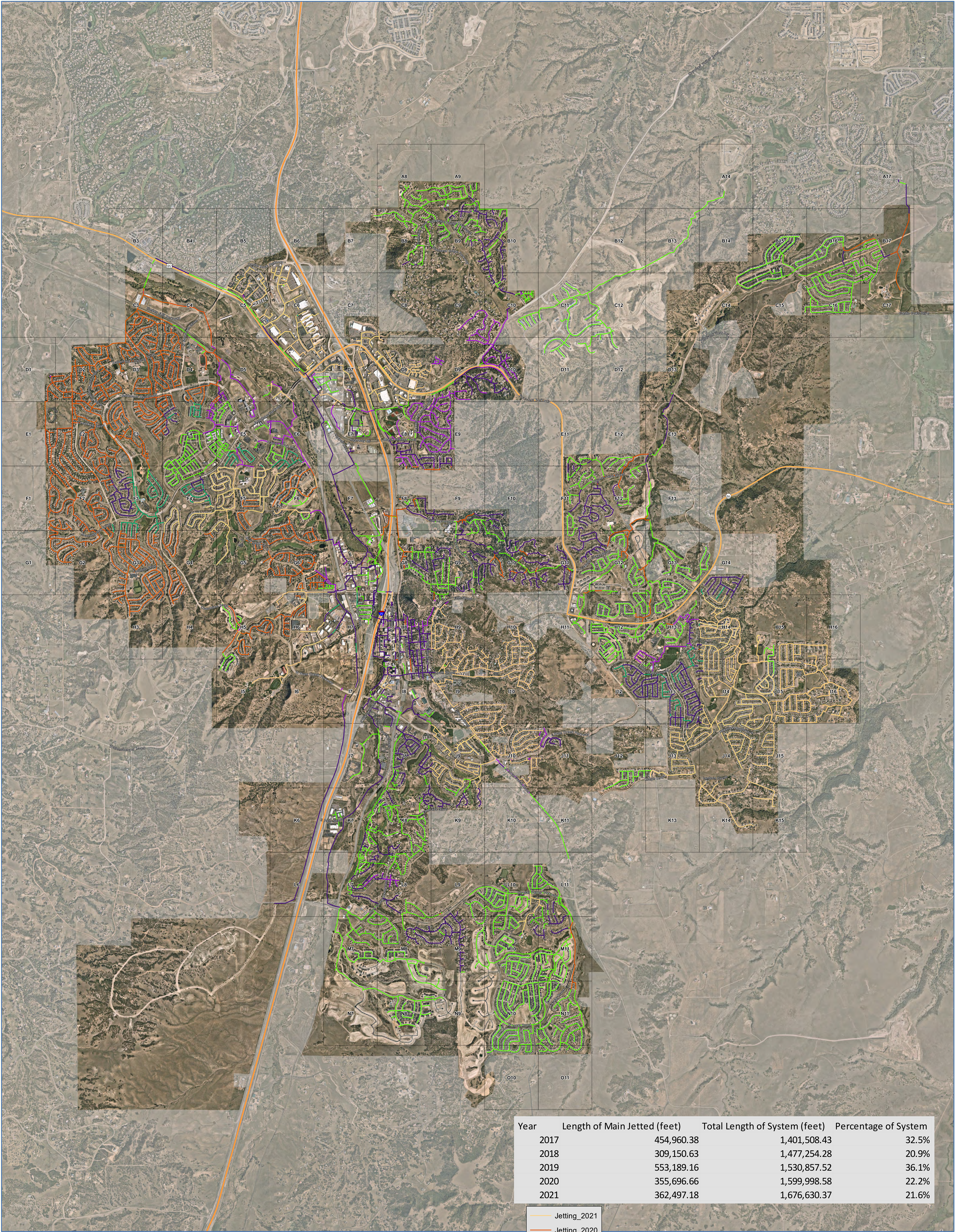
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CRW near the bottom of staff retention on the AWWA survey. Better retention of staff, perhaps additional staff, or more contracting for cleaning and inspection services may all be required to reach a target of one-fourth to one-third of the collection system each year. Fortunately, much of the collection system is fairly new (almost 60% installed since 2002) and system problem areas are being addressed with the Sewer Rehab Program.

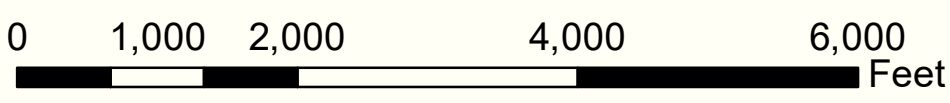
PCWRA has requirements to minimize slug-loading at the treatment plant, which has implications for the manner in which the lift stations, water treatment plants residuals, and collection system are operated and maintained. CRW has a policy of replacing old sewer laterals within the right of way (ROW) when major water main or sewer main replacement projects are undertaken. In 2021, CRW also instituted a Grease Interceptor Assistance Program to provide loans and/or grants to commercial businesses, primarily established restaurants and bakeries, to assist with the installation of grease interceptors to bring them into compliance with PCWRA discharge regulations and to reduce the potential for fats/oils/grease (FOG) in the collection system. The program is a combination loan and grant. Customers can receive up to a total of \$15,000 in assistance (\$7,500 grant and \$7,500 loan). CRW will pay 50% or \$15,000, whichever is less, of their project. To date a total of 3 customers have taken advantage of the program. One customer had a project small enough that they only received grant money and the other two have active loans in place. The fourth customer has been approved, but has not yet finished the project and not submitted receipts for reimbursement. FOG in the collection system creates maintenance issues by clogging sewer mains, often downstream from the actual source, and can be a primal causal factor for an SSO.

In 2022 CRW utilized the services of a contractor to acoustically survey all 12" and smaller sewer pipe in the system to look for blockages that could cause a sanitary sewer overflow (SSO). Over 1,216,496 linear feet of gravity sewer mains were inspected. Inspections revealed 34 sewer mains that had blockages of a severity factor of 3 or less ("poor", on a 1 to 10 scale with 10 being the best) were found and addressed for maintenance by collections staff. This accounted for 0.43% of the gravity collection system that was inspected. Over 95% of the mains inspected were rated "good" (score of 8-10). 265 sewer mains were rated "fair" (score of 4-7) and will be addresses systematically by the collections staff. Average cost for linear foot was \$0.18/LF. CRW is considering future acoustic surveys of 33 to 50% of the collection system each year as an option to replace the goal of 20 to 33% video inspection every year.

In 2023 Castle Rock Water plans to inspect all gravity mains 15" and larger. There is a total of 107,381 linear feet of larger sewer mains (6.3% of all active mains). These larger interceptor mains are not amenable to inspection using the Town's CCTV equipment, and may require inspection at night when flow volumes are lower. Figures 6.3 and 6.4, respectively, show the areas of town that were jetted and inspected (CCTV'ed) each of the last five years.



**Sewer Main Jetting Tasks Completed
between 1/1/2017 &12/31/2021**



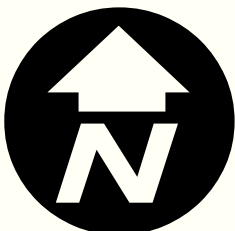
1 inch = 1,369 feet

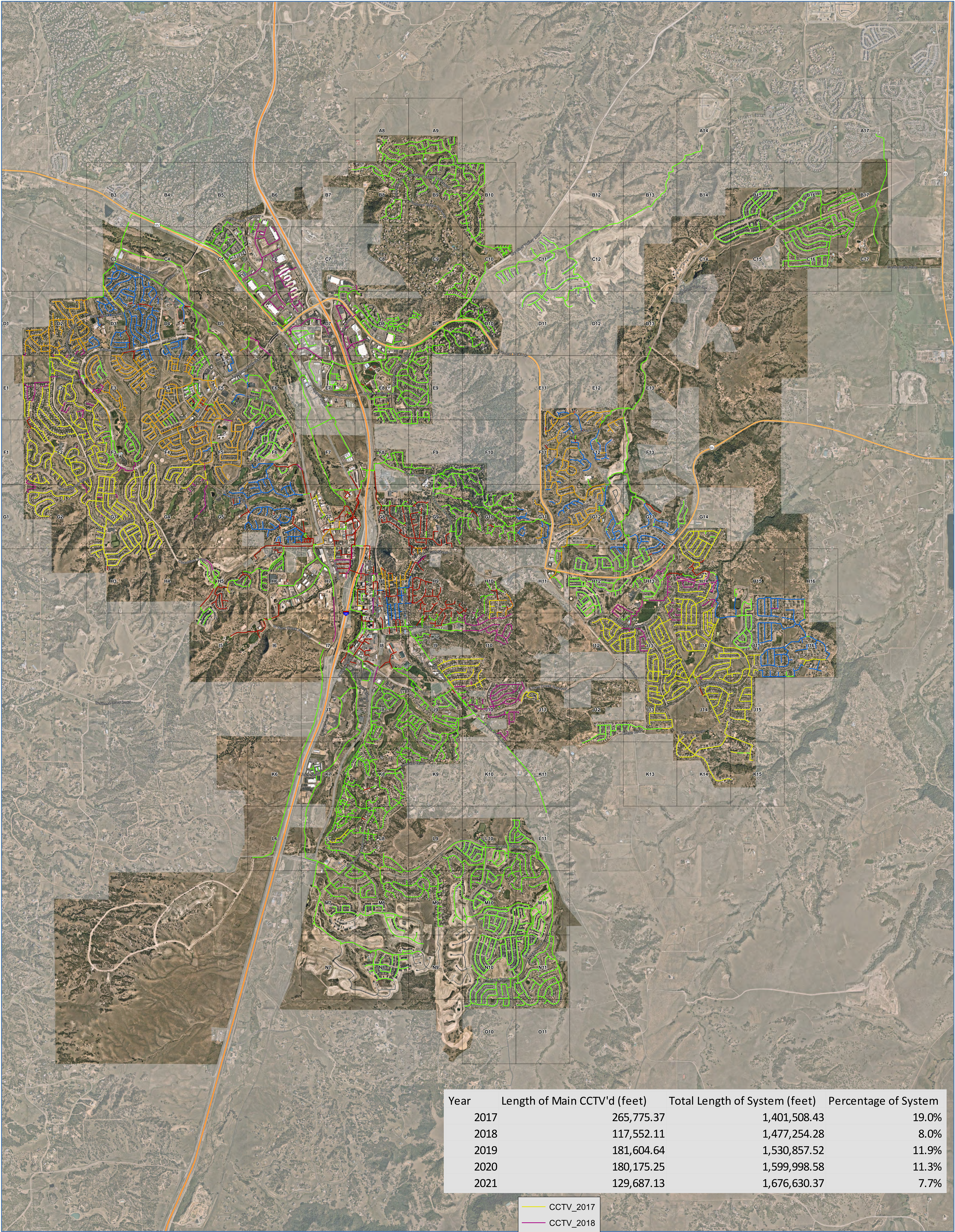
Year	Length of Main Jetted (feet)	Total Length of System (feet)	Percentage of System
2017	454,960.38	1,401,508.43	32.5%
2018	309,150.63	1,477,254.28	20.9%
2019	553,189.16	1,530,857.52	36.1%
2020	355,696.66	1,599,998.58	22.2%
2021	362,497.18	1,676,630.37	21.6%

- Jetting_2021
- Jetting_2020
- Jetting_2019
- Jetting_2018
- Jetting_2017
- Gravity Main

**Figure 6.3
Sewer Jetting
Statistics**

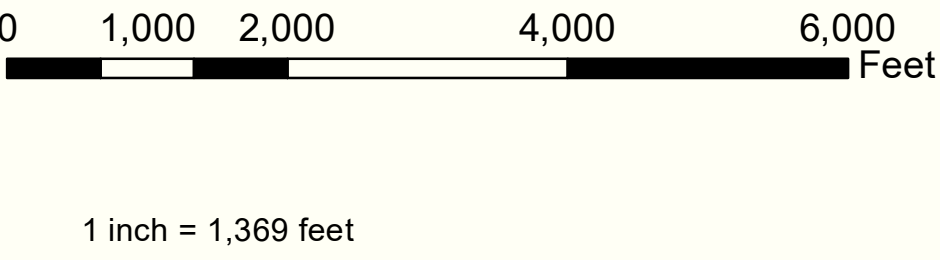
Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or inconsistencies. Such discrepancies in data are inherent and in supplying the product the Town of Castle Rock assumes no liability for its use or accuracy. Questions or comments regarding the cartographic representation of the map including, but not limited to, errors, omissions, corrections, and/or updates, should be directed to the Castle Rock Planning, Town of Castle Rock, (781) 753-6667. Copyright 2022, Town of Castle Rock, Utah Water Supply.





Year	Length of Main CCTV'd (feet)	Total Length of System (feet)	Percentage of System
2017	265,775.37	1,401,508.43	19.0%
2018	117,552.11	1,477,254.28	8.0%
2019	181,604.64	1,530,857.52	11.9%
2020	180,175.25	1,599,998.58	11.3%
2021	129,687.13	1,676,630.37	7.7%

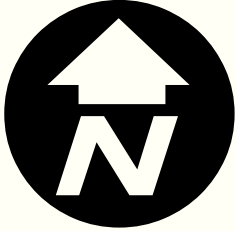
Sewer Main CCTV Tasks Completed
between 1/1/2017 &12/31/2021



- CCTV_2017
- CCTV_2018
- CCTV_2019
- CCTV_2020
- CCTV_2021
- Gravity Main

Figure 6.4
Sewer CCTV
Statistics

Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or incompleteness. Such discrepancies in data are inherent and in supplying the product the Town of Castle Rock assumes no liability for its use or accuracy. Questions or comments regarding the cartographic composition of this map including, but not limited to, errors, omissions, corrections, and/or updates, should be directed to the Castle Rock Planning, Town of Castle Rock, (703) 793-6600. Copyright 2022, Town of Castle Rock, All Rights Reserved.



Wastewater Master Plan 2022 Update

Castle Rock Water has scheduled Operations and Maintenance (O&M) for all nine of the force mains. Each of these force mains are cleaned (pigged) once a year, with the exception of Castlewood Lift Station #1, which is pigged quarterly or when flow decreases to an unacceptable level. Associated with each force main is a lift station, two of which have odor control facilities downstream. The odor control facilities are inspected three times weekly. There are injection points for Bioxide (a chemical odor neutralizer) at five of the nine lift stations: Castle Oaks, Mitchell Creek, Meadows 17, Maher Ranch and Castlewood LS#1. Castle Rock Water has three siphons, two with grinders, that receive scheduled cleaning, maintenance and inspection.

In recent years the use of flushable wipes has created maintenance issues at the lift station facilities because the wipes are very resistant to the shredding action of the grinder mechanical teeth; the wipes pass through (or bind) the grinders and can clog lift station pumps and piping. This is a problem almost all collections systems are dealing with. Persuading customers to refrain from using the flushable wipes is a challenge. CRW is considering supporting legislation that will help address this issue on a statewide basis. Grinder manufacturers are redesigning the teeth to better shred the flushable wipes; CRW will be testing the new teeth mechanisms at one of its facilities in 2023; if successful, routine replacement of the grinding teeth at all of the grinder stations would occur. Additionally, the Town has identified 61 stream crossings by sewer mains or force mains; these stream crossings are inspected annually for integrity.

The Collections O & M budget for 2023 to 2027 is approximately \$830,000 per year, distributed as shown in Table 6-3, and excludes personnel costs, energy costs, and treatment costs.

Table 6-3
Collections O&M Budget 2023-2027

	2023	2024	2025	2026	2027
Operating Supplies	\$37,500	\$37,500	\$37,500	\$37,500	\$37,500
Parts	\$58,000	\$58,000	\$58,000	\$58,000	\$58,000
Machinery and Equipment	\$55,000	\$55,000	\$55,000	\$55,000	\$55,000
Facility Repair and Maintenance	\$140,500	\$140,500	\$140,500	\$140,500	\$140,500
Purchased Equipment Repair Services	\$115,000	\$115,000	\$115,000	\$115,000	\$115,000
Purchased Line Repair Services	\$435,000	\$435,000	\$435,000	\$435,000	\$435,000

These expenditures, along with the resources of the vector-truck, the CCTV van, and collections staff full-time personnel, combine to keep the O & M Collections

Wastewater Master Plan 2022 Update

Program effective and productive. The Town's 2021 sanitary sewer overflow rate of 1.3 SSOs per 100 miles of pipe puts the Town in the top quartile nationally based on AWWA key performance indicators.

7. Financial Management Plan

Starting in 2015, CRW prepared a Financial Management Plan (FMP) which has since been updated on an annual basis as part of the budget process. The FMP was completed to assist CRW in achieving the following goals:

1. To minimize future rates at or below the 2013 Hybrid Model levels
2. To minimize debt carrying costs at or below industry standards
3. To minimize risk by balancing fixed and variable revenues with expenses as appropriate
4. To keep costs at or under budget for capital and operational budgets each year by fund and to continuously strive towards more efficient operations
5. To keep our rates and fees competitive with surrounding communities
6. To keep adequate reserves and maintain fund balances between minimums and maximums
7. To keep our rates and fees affordable within various national affordability indices
8. To develop regional partnerships to provide economies of scale to reduce total costs of infrastructure to our customers
9. To be an industry leader in the application of financial management benchmarking ourselves against others locally and nationally

Revenue Requirements

A long term financial plan is prepared to project the revenues required for each of CRW's four enterprise funds. The long-term financial plan allows the integration of debt, accumulation/use of reserves, and other assumptions to forecast funding of CRW's water system operations and maintenance (O&M) expenses and capital improvements for each respective enterprise. For each enterprise fund, the financial plan calculates the annual service charge revenue requirements. The projection period developed for each enterprise financial plan was driven by the length of the capital improvement program (CIP) and ends in 2065. Although the projection period extends to 2065, revenue requirements and capital improvement programs are presented in this report for the 5-year planning period 2023 through 2027 for all four enterprise funds. The estimated 2023 total revenue requirements from rates are shown below in Table 7-1.

Table 7-1

Wastewater Revenue Requirements From Rates for 2023	
Water	\$18.8 Million
Water Resources	\$14.5 Million
Wastewater	\$12.1 Million
Stormwater	\$3.8 Million

Rate Analysis Results

Cost-of-Service Methodology

The basic philosophy behind a cost of service (COS) methodology is that utilities should be self-sustaining enterprises that are adequately financed with rates that are based on sound engineering and economic principles. In addition, rates should be equitable and proportionate to the costs of providing service to a given type of customer. The guidelines for wastewater ratemaking are established by the Water Environment Federation (WEF) in the Manual of Practice No. 27. Refer to the 2022 Rate and Fee Study for more detail.

The steps for completing this year's study, as in previous studies, are grounded in industry standards for cost-of-service ratemaking as summarized in the American Water Works Association's AWWA Manual M1. As in prior years, work products include the following tasks:

- Growth Forecast
- Customer Characteristics Analysis
- Capital Improvement Projects (CIP) Forecast Updates
- Revenue and Expenditures Forecast Updates (in conjunction with budgeting)
- Rates & Fees Modeling
- Cost of Service Modeling
- Community Engagement

Once the first four steps are completed, the capital plan is put into the system development fee models along with the projected new single family equivalents that this capital will support. Proposed system development fees from these models are then put into time based financial models otherwise known as the rates and fees models, one for each enterprise fund. These models look at financial data through 2065. For purposes of this year's models, additional debt of approximately \$40M was included towards the end of the decade. Castle Rock Water then works to ensure that over the modeling period (out to 2065):

- there are no large rate increases forecasted (greater than 7.5%) to be needed
- fund balances are maintained within reasonable limits according to upcoming capital needs through 2065
- Minimum reserves are maintained for all enterprises throughout the study period
- Debt needed is reasonable with respect to Castle Rock Water's borrowing capacity

If these conditions are not met, adjustments are made to the capital plan and operating expenses where changes can be made without impacting levels of service to balance these items. Revenue requirements for each enterprise are

Wastewater Master Plan 2022 Update

then determined from the models based on the change in revenue needs for each enterprise according to the forecast capital and operational expenses. Once the total revenue requirements are identified in each enterprise, cost of service models are used to spread those revenue requirements over the different customer classes. The end results are the rates and fees recommendations.

Moreover, is the expectation that growth pays for growth and that system development fees should reflect and support this development model. New customers provide revenues through SDFs to fund growth-related capital projects and the monthly revenues to fund the remaining costs as an existing rate customer. Actual growth in 2021 was strong, however growth has slowed in 2022. So far this year, 544 single family home permits have been issued through July, down from the 752 issued through July in 2021. Budgets have been adjusted to reflect a lower growth figure, however, if growth falls short of this forecast, revenues are at risk with the severity and service delivery impacts dependent upon the depth of the shortfall. Growth in 2023 and beyond is difficult to predict. As a result, Castle Rock Water uses a conservative approach to estimating future growth. If growth falls short of current forecasts, revenues in 2023 and beyond could fall short of requirements for the current capital plans requiring a delay on some of these projects. Similarly, if growth significantly exceeds current forecasts, capital projects will need to be moved forward. Castle Rock Water uses our water supply and demand model to evaluate the pace of growth as it relates to our capital improvement plans to ensure that we have the ability to react to changes in actual growth relative to the projected growth.

This is reflected in the significant increase in SDFs for 2023 to 2027, and into the future, that are needed to fund a future wastewater treatment expansion when the PCWRA service area population in Town reaches 105,000.

Revenue Requirements

Wastewater rates are based on the Town's projected revenue requirements to operate and maintain the Town's wastewater system, along with the wastewater CIP. The CRW 2022 Rates and Fees Report projects that Castle Rock Water's 2023 total wastewater revenue required from rates is estimated to be \$12.1 Million. The wastewater fund financial plan projects the fund's sources and uses of funds. The wastewater utility financial model includes three sub-funds:

- Operating Reserve
- Capital Reserve
- Catastrophic Failure Reserve

Fund Balances

The wastewater fund was projected to have a reserve of approximately \$4.2 million at the beginning of 2022, not including capital reserve funds. Each of the sub-funds in the financial plan have a minimum balance requirement to help mitigate financial risk, which is in line with the FMP goal to keep adequate

Wastewater Master Plan 2022 Update

reserves and maintain fund balances between minimums and maximums. The requirements by sub-fund are:

- Operating Reserve – 60 days of O&M; averaging \$1.2 million in the study period.
- Capital Reserve – Obligated reserves vary from year to year; depending on the CIP. The fund maintains a minimum unobligated reserve of \$1.0 million throughout the study period.
- Catastrophic Failure Reserve – Approximately 2% of original fixed asset value averaging about \$2.5 million in the study period.

The financial plan calls for maintaining these balances above and using net available capital reserve fund balance to offset short-term capital needs. Fund balances need to be built up with capital reserves ahead of large capital projects to ensure the money is available to proceed on the projects when the projects are needed to meet growth and other service goals. Fund balances are then drawn down significantly as capital reserves are spent on these projects. Keeping close tabs on the fund balances ensures that there are no negative impacts on the long term financial plan when large projects must be funded. The Wastewater Fund balance increased to around \$22M at year-end 2021. The balance will continue to grow in the near-term ahead of large capital requirements in the 2030's.

Uses of Funds

The major assumptions for uses of funds are shown below. For detailed definitions see Appendix B of the Rates and Fees Study.

- Operating Costs – For the wastewater fund most operating costs are fixed.
- Personnel Services – CRW reviews FTE needs each year to determine how many new FTEs are projected over the budget period and includes these into the expense projections. The total projected new FTEs for all CRW enterprise funds for the 5-year period is 13 new FTEs, with only one in the Wastewater Fund.
- Energy Costs – Over the five-year study period these are expected to increase at an average rate of approximately 3%. This may need to be reevaluated as an analysis of the last five years indicates that energy demand and costs are rising much faster than 3% each year.
- Capital Improvements – Total wastewater system capital improvement costs from 2023-2027 are expected to be \$22.7M in today's dollars. The long-term capital plan is estimated at \$200M through 2065. Only improvements or replacements that provide benefits to existing customers are included in revenue requirements. Improvements to serve growth are funded from SDFs.
- Transfers Out – These include the costs for the vehicle replacement fund which is transferred to the fleet department and is about \$1.1 million over the 5-year study period.
- Fund Balances – For the study, it is assumed that the fund balances will not drop below the requirements presented in the above section.

Wastewater Master Plan 2022 Update

- Debt Service – The fund currently has the 2012 revenue bond, which is a refinancing of a 2004 revenue bond series with final payments in 2023. The principal and interest payments equal approximately \$331,000 in 2023.
- Debt Service Coverage – The debt service coverage ratio in the model is set to 1.2 times the total annual debt service amount, which is about \$398,400. This is a bond requirement.

The financial plans allow the integration of debt, accumulation/use of reserves, and other assumptions to finance the Town's utility system operations and maintenance (O&M) expenses and capital improvements for each respective utility. Using ratemaking terms, the financial plan calculates for each utility fund the annual user charge revenue requirements. These are based on the cost of providing utility service. The projection period developed for each utility financial plan was driven by the length of the Capital Improvement Program (CIP). The projection period for the wastewater fund is 53 years, from fiscal year 2022 through fiscal year 2065. In the CRW 2022 report, revenue requirements and capital improvement programs are presented only for the 2023 through 2027 study period.

Wastewater Monthly Service Charge

An important rate design feature that directly affects the rate results is the policy decision to include 20 percent of annual capital costs in the monthly service charge. By doing this, revenue stability is increased and all customers are required to pay a portion of debt service and other capital expenses strictly on an equivalent water meter basis rather than on a wastewater volume basis. This also reduces the volumetric rate and recovers a portion of the PCWRA debt service costs from users who require more capacity in the wastewater system. The demand charge component on the monthly service charge recovers the 20 percent of annual wastewater system capital costs not including the capital costs needed to serve new growth.

Water meter size is closely related to the amount of water a customer can potentially use and therefore discharge into the wastewater system. Accounts with larger meter sizes potentially use more capacity in the system (potential demand). With this rate design feature, accounts with larger meters pay a higher proportionate share of the capital costs as part of the monthly service charge.

CRW currently charges wastewater customers a fixed monthly service charge that consists of a customer charge and a demand charge, plus a uniform volumetric rate for wastewater flow. An account's flow is estimated using its Average Winter Monthly Consumption (AWMC). The proposed 2023 wastewater rates consist of a monthly charge that includes the demand charge by meter size, plus a uniform volumetric rate for all customers. The Town's proposed wastewater fixed charges and wastewater volumetric rates for 2023 through 2027 are shown in Table 7-2.

Wastewater Master Plan 2022 Update

Table 7-2
Proposed 2023 – 2027 Wastewater Monthly Service Charges and Rates

<i>Water Meter Size</i>	<i>Existing 2022</i>	<i>2023</i>	<i>2024</i>	<i>2025</i>	<i>2026</i>	<i>2027</i>
5/8"	\$8.57	\$8.57	\$8.57	\$8.57	\$8.57	\$8.57
3/4"	\$8.57	\$8.57	\$8.57	\$8.57	\$8.57	\$8.57
1"	\$13.64	\$13.64	\$13.64	\$13.64	\$13.64	\$13.64
1½"	\$19.78	\$19.78	\$19.78	\$19.78	\$19.78	\$19.78
2"	\$28.53	\$28.53	\$28.53	\$28.53	\$28.53	\$28.53
3"	\$47.66	\$47.66	\$47.66	\$47.66	\$47.66	\$47.66
4"	\$111.11	\$111.11	\$111.11	\$111.11	\$111.11	\$111.11
6"	\$173.53	\$173.53	\$173.53	\$173.53	\$173.53	\$173.53
<i>Wastewater Volumetric Rate (\$/1,000 gallons)</i>						
	<i>Existing 2022</i>	<i>2023</i>	<i>2024</i>	<i>2025</i>	<i>2026</i>	<i>2027</i>
<i>All Customers per Kgal</i>	\$6.079	\$6.07	\$6.07	\$6.07	\$6.07	\$6.07

Wastewater System Development Fees

CRW applied a combined approach for calculating the Town's System Development Fees (SDFs) for its wastewater system. The equity buy-in component; however, is divided into buy-in for the Town's existing wastewater system and a buy-in for treatment-related assets by the Plum Creek Water Reclamation Authority (PCWRA). PCWRA is the primary treatment entity for the Town's flows and has invested significant capital in plant expansions. The Town owns 71 percent of the capacity at PCWRA but currently contributes 83% of the total flow demand and fees, and actively participates in its management through the Board of Directors. The Pinery Water and Wastewater District provides for wastewater treatment of flows from the existing Cobblestone Ranch and Canyons South areas of town, and may provide service for future annexations. The Town collects wastewater treatment fees from residents in The Pinery service areas of Town and reimburses The Pinery for treatment. For a more detailed description of the full rates and fees analysis, please see the 2022 Utilities Rates and Fees Study.

Table 7-3 shows proposed system development fees (SDFs) based on meter size for 2023-2027. The proposed increase in 2023 for both the Plum Creek Basin (served by PCWRA) and the Cherry Creek Basin (served by the Pinery) is \$491 per SFE, a 10% increase over 2022 approved SDFs.

Wastewater Master Plan 2022 Update

**Table 7-3
Existing and Proposed Wastewater SDFs**

Meter Size	SFE	Meter Capacity (GPM**)	Existing 2022	Proposed 2023	2024	2025	2026	2027
7/16x3/4"	0.60	20	NA	\$3,240	\$3,337	\$3,437	\$3,540	\$3,647
5/8" X 3/4"	.67	20	\$3,279	\$3,607	\$3,715	\$3,827	\$3,941	\$4,060
3/4" X 3/4"	1.00	30	\$4,909	\$5,400	\$5,562	\$5,729	\$5,901	\$6,078
1"	1.67	50	\$8,173	\$8,990	\$9,260	\$9,538	\$9,824	\$10,119
1.5"	3.33	100	\$16,299	\$17,929	\$18,467	\$19,021	\$19,591	\$20,179
2" C2	6.67	200	\$32,646	\$35,911	\$36,988	\$38,098	\$39,240	\$40,418
2" T2	8.33	250	\$40,772	\$44,849	\$46,195	\$47,581	\$49,008	\$50,478
3" C2	16.67	500	\$81,592	\$89,751	\$92,444	\$95,217	\$98,074	\$101,016
3" T2	21.67	650	\$106,065	\$116,672	\$120,172	\$123,777	\$127,590	\$131,315
4" C2	33.33	1,000	\$163,137	\$179,451	\$184,834	\$190,379	\$196,091	\$201,973
4" T2	41.67	1,250	\$203,957	\$224,353	\$231,083	\$238,016	\$245,156	\$252,511
6" C2	66.67	2,000	\$326,322	\$358,954	\$369,723	\$380,815	\$392,239	\$404,006
6" T2	83.33	2,500	\$407,867	\$448,654	\$462,113	\$475,977	\$490,256	\$504,964

References

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- DRCOG, 2008. DRCOG Annual Report
- Glosso-Murray 2002. Sanitary Survey
- Arcadis Design and Consultancy. 2016. Castle Rock Water Rates and Fees Study Update – Vol. 1 of 2 2016-2020 Rates.
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- Carollo Engineers. Plum Creek Water Reclamation Authority, Preliminary Engineering Services, Technical Memorandum No. 2, Energy Recovery Feasibility Analysis, February 2015
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- <https://lovecoloradowater.org/wp-content/uploads/P-Free-FAQ.pdf>
- Kehrein, Philipp, et al., “A critical review of resource recovery from municipal wastewater treatment plants – market supply potentials, technologies and bottlenecks.” *Environmental Science: Water Resources Technologies*, 2020, 6, 877-910. DOI: 10.1039/C9EW00905A
- Town of Castle Rock Source Water Protection Plan, November 2017, Revised March 2022

Wastewater Master Plan 2022 Update

2015 Annual Report on Activities Cherry Basin Water Quality Authority. Prepared by Cherry Creek Basin Water Quality Authority, 2015.

2022 Water Resources Strategic Master Plan

2022 Water Efficiency Master Plan

2022 Rates and Fees Study

2023-2032 Rehab Capital Plan (Draft)



Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 16. **File #:** RES 2023-012

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Mark Marlowe, P.E., Director of Castle Rock Water
J. David Van Dellen, P.E., Stormwater Manager
Laura Kindt, P.E., Project Manager - Stormwater

Resolution Approving the First Amendment to the Town of Castle Rock Service Agreement with AECOM Technical Services, Inc., for the Craig & Gould North Infrastructure Improvements [Located in Historic Downtown Castle Rock]

Executive Summary

Castle Rock Water is seeking Town Council approval of a Resolution (**Attachment A**) to extend the Services Agreement with AECOM Technical Services, Inc. for the Craig and Gould North Infrastructure Improvements Project through September 30, 2023. A purchase order was authorized for these services on December 15, 2020 in the amount of \$501,459 and the balance of funds will be carried over into 2023 to cover the remaining cost under this agreement. Construction is currently underway and approximately 75% complete with an anticipated completion date of June 1, 2023.

Proposed Motion

"I move to approve the Resolution as introduced by title."

Alternative Motions

"I move to approve the resolution as introduced by title, with the following conditions: (list conditions)."

"I move to continue this item to the Town Council meeting on _____ date to allow additional time to (list information needed)."

Attachments

Attachment A: Resolution
Exhibit 1: Services Agreement
Attachment B: Site Map



STAFF REPORT

To: Honorable Mayor and Members of Town Council

Thru: David L. Corliss, Town Manager

From: Mark Marlowe, P.E., Director of Castle Rock Water
J. David Van Dellen, P.E., Stormwater Manager
Laura Kindt, P.E., Project Manager-Stormwater

Date: February 7, 2023

Title: **Resolution Approving the Second Amendment to the Services Agreement with AECOM Technical Services, Inc. for the Craig and Gould North Infrastructure Improvements Project** *[Located in Historic Downtown Castle Rock]*

Executive Summary

Castle Rock Water is seeking Town Council approval of a Resolution (***Attachment A***) to extend the Services Agreement with AECOM Technical Services, Inc. for the Craig and Gould North Infrastructure Improvements Project through September 30, 2023. A purchase order was authorized for these services on December 15, 2020 in the amount of \$501,459 and the balance of funds will be carried over into 2023 to cover the remaining cost under this agreement. Construction is currently underway and approximately 75% complete with an anticipated completion date of June 1, 2023.

Notification and Outreach Efforts

Town staff will continue with community outreach efforts to keep impacted property owners informed of progress and disruptions through the duration of construction. Project details and updates are also provided on the Town website, CRgov.com. A community celebration is tentatively planned for May 2023 to express appreciation to those residents and businesses impacted by this work. More information on this event will be communicated to the community and Council once it becomes available.

History of Past Town Council, Boards & Commissions, or Other Discussions

The Craig and Gould North project was last presented to Town Council on December 20, 2020 at which the time Council awarded the original agreement to AECOM.

Castle Rock Water staff presented this item to the Castle Rock Water Commission at their meeting held on January 25, 2023, and the Castle Rock Water Commission voted unanimously (6 to 0) to recommend Town Council approval of the Resolution as presented.

Discussion

This neighborhood has had a history of concerns including flooding of private property, water main breaks and sanitary sewer backups. This project will reduce flooding hazards, unnecessary utility disruptions and improve traffic and pedestrian use of the right-of-way. This project will implement infrastructure upgrades similar to those previously completed in the Craig and Gould South neighborhood in 2005 (see **Attachment B**). Specifically, the proposed improvements include:

- **Streets** – Existing streets will be reconstructed to current residential design criteria, with the addition of curb and gutter, new asphalt pavement, dedicated on-street parking, signing and striping, and profile grade improvements where feasible. Also, paved sidewalks, crosswalks and ADA compliant ramps will be installed to facilitate pedestrian movement in the neighborhood.
- **Storm Drainage** – The neighborhood currently lacks a modern storm drainage collection system, and is susceptible to localized flooding during storm events. A new storm sewer system will be designed and constructed in conjunction with the street improvements to safely and efficiently capture storm flows in the area. An outfall system will then convey these flows under Union Pacific Railroad and Interstate 25, ultimately discharging to East Plum Creek. Additionally, opportunities for installing detention and water quality features will be explored to the extent feasible.
- **Water and Sanitary Sewer** – Partial improvements to the existing water mains and sanitary sewer mains in the neighborhood have been implemented in the past as necessary. This project will complete upgrades to the remaining portions of these systems before they become critical, taking advantage of the street and storm sewer construction to minimize inconvenience and disruption to residents.

The original agreement with AECOM Technical Services, Inc. terminated on December 31, 2022. An extension is needed through September 2023 to complete the scope of work.

Budget Impact

No impact to budget.

Staff Recommendation

Staff recommends Town Council approval of a Resolution for approval of Amendment 2 to extend the Services Agreement with AECOM Technical Services, Inc. for the Craig and Gould North Infrastructure Improvements Project through September 30, 2023.

Proposed Motion

“I move to approve the Resolution as introduced by title.”

Alternative Motions

“I move to approve the resolution as introduced by title, with the following conditions: (list conditions).”

“I move to continue this item to the Town Council meeting on _____ date to allow additional time to (list information needed).”

Attachments

Attachment A:	Resolution
Exhibit 1:	Services Agreement
Attachment B:	Site Maps

RESOLUTION NO. 2023-012

**A RESOLUTION APPROVING THE FIRST AMENDMENT TO THE
TOWN OF CASTLE ROCK SERVICE AGREEMENT WITH AECOM
TECHNICAL SERVICES, INC., FOR THE CRAIG & GOULD NORTH
INFRASTRUCTURE IMPROVEMENTS**

WHEREAS, the Town of Castle Rock, Colorado (the “Town”) and AECOM Technical Services, Inc., (“Consultant”) are parties to the Town of Castle Rock Services Agreement (Craig & Gould North Infrastructure Improvements), dated December 15, 2020 (the “Agreement”); and

WHEREAS, the Town and Consultant seek to extend the duration of the Agreement; and

WHEREAS, the Town and the Consultant have agreed to the terms and conditions by which the Consultant will continue providing services in accordance with the Agreement.

**NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE
TOWN OF CASTLE ROCK, COLORADO AS FOLLOWS:**

Section 1. Approval. The First Amendment to the Agreement between the Town and Consultant is hereby approved in substantially the same form attached as ***Exhibit 1***, with such technical changes, additions, modifications, or deletions as the Town Manager may approve upon consultation with the Town Attorney. The Mayor and other proper Town officials are hereby authorized to execute the Agreement by and on behalf of the Town.

PASSED, APPROVED AND ADOPTED this 7th day of February, 2023 by the Town Council of the Town of Castle Rock, Colorado, on first and final reading, by a vote of ____ for and ____ against.

ATTEST:

TOWN OF CASTLE ROCK

Lisa Anderson, Town Clerk

Jason Gray, Mayor

Approved as to form:

Approved as to content:

Michael J. Hyman, Town Attorney

Mark Marlowe, Director of Castle Rock Water



**FIRST AMENDMENT TO THE
TOWN OF CASTLE ROCK
SERVICE AGREEMENT
(Craig & Gould North Infrastructure Improvements)**

DATE: _____

PARTIES: **TOWN OF CASTLE ROCK**, a Colorado municipal corporation, 100 N. Wilcox Street, Castle Rock, Colorado 80104 ("Town").

AECOM TECHNICAL SERVICES, INC., a California corporation, 6200 South Quebec Street, Greenwood Village, Colorado 80111 ("Consultant").

RECITALS:

- A. The Town and Consultant are parties to the Town of Castle Rock Services Agreement (Craig & Gould North Infrastructure Improvements), dated December 15, 2020 (the "Agreement"), and attached as *Exhibit A*.
- B. The Town and the Consultant wish to extend the completion date of the Services to December 31, 2023.
- C. The Town and Consultant wish to memorialize this change in this First Amendment to the Agreement ("First Amendment Agreement").

TERMS:

Section 1. Amendment. Section 3 of the Agreement is amended to read as follows:

Section 3. Completion. Consultant shall commence the Services on the execution of this Agreement and complete the Services on December 31, 2023. Consultant shall devote adequate resources to ensure timely completion of the Services. Consultant shall perform the Services under this Agreement using a standard of care, skill and diligence ordinarily used by reputable professionals performing under circumstances similar to those required by this Agreement.

Town shall have the right to terminate this Agreement at any time with 30 days written notice to Consultant. In addition, this Agreement shall terminate December 31, 2022 in the event funds to support payment under this Agreement are not appropriated for calendar year 2023. The Town's only obligation in the event of termination shall be payment of fees and expenses incurred up to and including the effective date of termination. Consultant shall turn over all work product produced up to the date of termination.

Section 2. Certificate of Insurance. Consultant's updated Certification of Insurance is attached as *Exhibit B*.



Section 3. Ratification. In all other respects, the Agreement shall remain in full force and effect.

[SIGNATURE BLOCK TO FOLLOW]

ATTEST:

TOWN OF CASTLE ROCK

Lisa Anderson, Town Clerk

Jason Gray, Mayor

Approved as to form:

Approved as to content:

Michael J. Hyman, Town Attorney

David L. Corliss, Town Manager

CONSULTANT:

AECOM TECHNICAL SERVICES, INC.

By: Timothy J. White, Associate Vice President

Its: _____

A handwritten signature in blue ink, appearing to read "Timothy J. White", written over a horizontal line.

**TOWN OF CASTLE ROCK
SERVICES AGREEMENT**

(Craig & Gould North Infrastructure Improvements)

DATE: December 15, 2020.

PARTIES: **TOWN OF CASTLE ROCK**, a Colorado municipal corporation, 100 N. Wilcox Street, Castle Rock, Colorado 80104 ("Town").

AECOM TECHNICAL SERVICES, INC., 6200 South Quebec Street, Greenwood Village, CO 80111, ("Consultant").

RECITALS:

- A. Town wishes to engage Consultant to provide the services more fully described in the following Agreement and Exhibits.

TERMS:

Section 1. Scope of Services. Consultant shall provide design Engineering, bid and construction support services related the Craig & Gould North Infrastructure Improvements, in accordance with the scope of work attached as ***Exhibit 1*** ("Services").

Section 2. Payment. Consultant shall invoice Town on a monthly basis for the Services rendered in accordance with the rate and fee scheduled identified in ***Exhibit 1***. Town shall pay such invoices within 30 days of receipt of such invoice. In no event shall the cumulative payment to Consultant exceed \$455,872.00, unless authorized in writing by Town.

Section 3. Completion. Consultant shall commence the Services on the execution of this Agreement and complete the Services December 31, 2022. Consultant shall devote adequate resources to assure timely completion of the Services. Consultant shall perform the Services under this Agreement using a standard of care, skill and diligence ordinarily used by reputable professionals performing under circumstances similar to those required by this Agreement.

Town shall have the right to terminate this Agreement at any time with 30 days written notice to Consultant. In addition, this Agreement shall terminate December 31, 2020 in the event funds to support payment under this Agreement are not appropriated for calendar year 2021. The Town's only obligation in the event of termination shall be payment of fees and expenses incurred up to and including the effective date of termination. Consultant shall turn over all work product produced up to the date of termination.

Section 4. Subcontractors. Consultant may utilize subcontractors to assist with specialized works as necessary to complete the Services. Consultant will submit any proposed subcontractor and the description of their services to the Town for approval.

Section 5. Assignment. This Agreement shall not be assigned by Consultant without the written consent of the Town.

Section 6. Notice. Any notice required or permitted by this Agreement shall be in writing and shall be deemed to have been sufficiently given for all purposes if sent by certified mail or registered mail, postage and fees prepaid, addressed to the party to whom such notice is to be given at the address set forth on the first page of this Agreement, or at such other address as has been previously furnished in writing to the other party or parties. Such notice shall be deemed given when deposited in the United States mail.

Section 7. Prohibition Against Employing Illegal Aliens. Consultant shall not knowingly employ or contract with an illegal alien to perform work under this contract. Consultant shall not enter into a contract with a subcontractor that fails to certify to the Consultant that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this contract.

Consultant has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under the public contract for services through participation in either the E-verify program or the Department program, as defined in C.R.S. §§ 8-17.5-101(3.3) and 8-17.5-101(3.7), respectively. Consultant is prohibited from using the E-verify program or Department program procedures to undertake pre-employment screening of job applicants while this contract is being performed.

If Consultant obtains actual knowledge that a subcontractor performing work under this Agreement for services knowingly employs or contracts with an illegal alien, Consultant shall:

A. Notify the subcontractor and the Town within three days that the Consultant has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and

B. Terminate the subcontract with the subcontractor if within three days of receiving notice required pursuant to this paragraph the subcontractor does not stop employee or contracting with the illegal alien; except that the Consultant shall not terminate the contract with the subcontractor if during such three days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien.

Consultant shall comply with any reasonable request by the Department of Labor and Employment made in the course of an investigation that the Department is undertaking pursuant to the authority established in C.R.S. §8-17.5-102(5).

If Consultant violates a provision of this Agreement required pursuant to C.R.S. §8-17.5-102, Town may terminate the Agreement for breach of contract. If the Agreement is so terminated, the Consultant shall be liable for actual and consequential damages to the Town.

Section 8. Insurance. Consultant agrees to procure and maintain, at his own cost, the following policy or policies of insurance. Consultant shall not be relieved of any liability, claims, demands or other obligations assumed pursuant to this Agreement by reason

of its failure to procure or maintain insurance, or by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

A. Consultant shall procure and maintain, and shall cause each subcontractor of the Consultant to procure and maintain a policy with the minimum insurance coverage listed below. Such coverage shall be procured and maintained with forms and insurers acceptable to the Town. All coverage shall be continuously maintained from the date of commencement of services hereunder. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage.

1. Workers Compensation insurance to cover obligations imposed by the Workers Compensation Act of Colorado and any other applicable laws for any employee engaged in the performance of Work under this contract, and Employer's Liability insurance with minimum limits of FIVE HUNDRED THOUSAND DOLLARS (\$500,000) each accident, FIVE HUNDRED THOUSAND DOLLARS (\$500,000) disease-policy limit, and FIVE HUNDRED THOUSAND DOLLARS (\$500,000) disease-each employee.

2. Comprehensive General Liability insurance with minimum combined single limits of ONE MILLION DOLLARS (\$1,000,000) each occurrence and ONE MILLION DOLLARS (\$1,000,000) aggregate. The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including for contractual and employee acts), blanket contractual, independent contractors, products, and completed operations. The policy shall contain a severability of interests provision.

3. Comprehensive Automobile Liability Insurance with minimum combined single limits for bodily injury and property damage of not less than ONE MILLION DOLLARS (\$1,000,000) each occurrence and ONE MILLION DOLLARS (\$1,000,000) aggregate with respect to each of Consultant's owned, hired and/or non-owned vehicles assigned to or used in performance of the services. The policy shall contain a severability of interests provision.

4. Professional Liability insurance with minimum limits of ONE MILLION DOLLARS (\$1,000,000) per claim and ONE MILLION DOLLARS (\$1,000,000) aggregate.

B. The policies required above, except Workers' Compensation insurance, Employers' Liability insurance and Professional Liability insurance shall be endorsed to include the Town, its officers and employees, as an additional insured. Every policy required above, except Workers' Compensation and Professional Liability insurance, if applicable, shall be primary insurance, and any insurance carried by the Town, its officers, or its employees, shall be excess and not contributory insurance to that provided by Consultant. The additional insured endorsement for the Comprehensive General Liability insurance required above shall not contain any exclusion for bodily injury or property damage arising from completed operations. The Consultant shall be solely responsible for any deductible losses under each of the policies required above.

C. Certificates of insurance shall be completed by Consultant's insurance agent as evidence that policies providing the required coverage, conditions and minimum limits are in full force and effect, and shall be subject to review and approval by the Town. Each certificate shall identify the Project and shall provide that coverage afforded under the policies shall not be cancelled, terminated or materially changed until at least 30 days' prior written notice has been given to the Town. If the words "endeavor to" appear in the portion of the certificate addressing cancellation, those words shall be stricken from the certificate by the agent(s) completing the certificate. The Town reserves the right to request and receive a certified copy of any policy and any endorsement thereto.

D. Failure on the part of Consultant to procure or maintain policies providing the required coverage, conditions, and minimum limits shall constitute a material breach of contract upon which at the Town's discretion may procure or renew any such policy or any extended connection therewith, and all monies so paid by the Town shall be repaid by Consultant to the Town upon demand, or the Town may offset the cost of the premiums against any monies due to Consultant from the Town.

E. The parties understand and agree that the Town is relying on, and does not waive or intend to waive by any provision of this contract, the monetary limitations (presently \$387,000 per person, \$1,093,000 for two or more persons, per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, §24-10-101, *et seq.*, C.R.S., as from time to time amended, or otherwise available to Town, its officers, or its employees.

Section 9. Indemnification. Consultant expressly agrees to indemnify and hold harmless Town or any of its officers or employees from any and all claims, damages, liability, or court awards including attorney's fees that are or may be awarded as a result of any loss, injury or damage sustained or claimed to have been sustained by anyone, including, but not limited to, any person, firm, partnership, or corporation, to the extent caused by the negligent acts, errors or omissions of Consultant or any of their employees or agents in performing work pursuant to this Agreement. In the event that any such suit or action is brought against Town, Town will give notice within ten (10) days thereof to Consultant.

Section 10. Delays. Any delays in or failure of performance by any party of his or its obligations under this Agreement shall be excused if such delays or failure are a result of acts of God, fires, floods, strikes, labor disputes, accidents, regulations or orders of civil or military authorities, shortages of labor or materials, or other causes, similar or dissimilar, which are beyond the control of such party.

Section 11. Additional Documents. The parties agree to execute any additional documents or take any additional action that is necessary to carry out this Agreement.

Section 12. Entire Agreement. This Agreement represents the entire agreement between the parties and there are no oral or collateral agreements or understandings. This Agreement may be amended only by an instrument in writing signed by the parties. If any other provision of this Agreement is held invalid or unenforceable, no other provision shall be

affected by such holding, and all of the remaining provisions of this Agreement shall continue in full force and effect.

Section 13. Time of the Essence. Time is of the essence. If any payment or any other condition, obligation, or duty is not timely made, tendered or performed by either party, then this Agreement, at the option of the party who is not in default, may be terminated by the non-defaulting party, in which case, the non-defaulting party may recover such damages as may be proper.

Section 14. Default and Remedies. In the event either party should default in performance of its obligations under this agreement, and such default shall remain uncured for more than 10 days after notice of default is given to the defaulting party, the non-defaulting party shall be entitled to pursue any and all legal remedies and recover its reasonable attorney's fees and costs in such legal action. In addition, no Party will be entitled to lost profits, economic damages, or actual, direct, incidental, consequential, punitive or exemplary damages in the event of a default.

Section 15. Waiver. A waiver by any party to this Agreement of the breach of any term or provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach by either party.

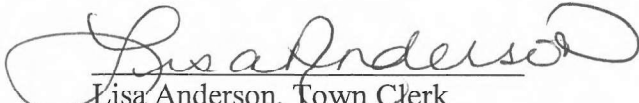
Section 16. Governing Law. This Agreement shall be governed by the laws of the State of Colorado.

Section 17. Independent Contractor. Consultant and Town hereby represent that Consultant is an independent contractor for all purposes hereunder. As such, Consultant is not covered by any worker's compensation insurance or any other insurance maintained by Town except as would apply to members of the general public. Consultant shall not create any indebtedness on behalf of the Town.

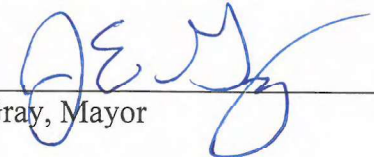
Section 18. No Third Party Beneficiaries. It is expressly understood and agreed that enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to Town and Consultant, and nothing contained in this Agreement shall give or allow any such claim or right of action by any other third party on such Agreement. It is the express intention of the parties that any person other than Town or Consultant receiving services or benefits under this Agreement shall be deemed to be an incidental beneficiary only.

ATTEST:

TOWN OF CASTLE ROCK



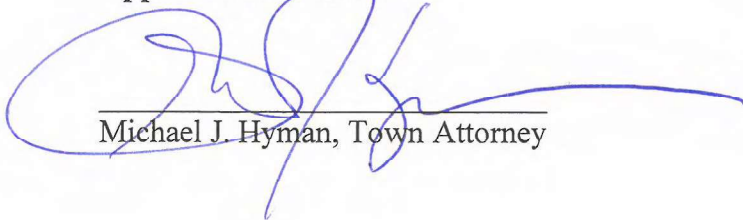
Lisa Anderson, Town Clerk



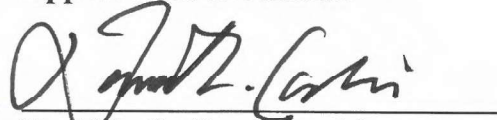
Jason Gray, Mayor

Approved as to form:

Approved as to content:



Michael J. Hyman, Town Attorney



David L. Corliss, Town Manager

CONSULTANT:

AECOM TECHNICAL SERVICES, INC.

By: _____

Its: _____



ATTEST:

TOWN OF CASTLE ROCK

Lisa Anderson, Town Clerk

Jason Gray, Mayor

Approved as to form:

Approved as to content:

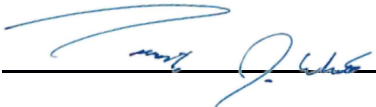
Michael J. Hyman, Town Attorney

David L. Corliss, Town Manager

CONSULTANT:

AECOM TECHNICAL SERVICES, INC.

By: Timothy J. White, Associate Vice President

Its: 





Town of Castle Rock

Agenda Memorandum

Agenda Date: 2/7/2023

Item #: 17. **File #:** RES 2023-013

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Mark Marlowe, P.E., Director of Castle Rock Water
Matt Benak, P.E., Water Resources Manager

Resolution Approving a Purchase and Sale Agreement between TDK Holdings, LLC and the Town of Castle Rock for Tributary Water Rights along Deer Creek [Jefferson and Douglas County near Chatfield Reservoir]

Executive Summary

The purpose of this memorandum is to seek Town Council approval of a resolution approving a purchase and sale agreement between TDK Holdings, LLC (TDK) and the Town of Castle Rock (Town) (see **Attachment A**). The Town desires to purchase senior water rights and enter into an option for junior water rights owned by TDK that exist on Deer Creek in Jefferson County. These water rights have historically been used to irrigate the Deer Creek Golf Course generally located north of State Highway C-470 between Wadsworth and Kipling Boulevards.

The senior water rights include priorities number 2 and 3 on Deer Creek and water rights with this type of seniority very rarely come up for sale in locations usable to the Town's portfolio. The rights have been in use for what appears to be a long time so a change of these water rights from irrigation to municipal use should yield approximately sixty (60) acre feet every year, even in drought years. Because Deer Creek flows into Chatfield Reservoir, the Town could take delivery of the rights directly into our Chatfield Reservoir storage account. Because Castle Rock only has a very junior surface water right in Chatfield Reservoir (1989), these water rights have significant value to Castle Rock Water. For these reasons, Castle Rock Water is proposing to offer the seller \$45,000 per acre foot or \$2,700,000 and an earnest money deposit of \$100,000 which would be included as part of the final purchase. Additionally, the Town would enter into an Option Agreement to potentially purchase the retained junior water rights from TDK if the Town deems these water rights to be a benefit to the Town's portfolio.

History of Past Town Council, Boards & Commissions, or Other Discussions

Staff discussed this item with Castle Rock Water Commission on January 25, 2023, and the Commission was generally supportive of the purchase.

Discussion

Castle Rock Water staff is aware of several transactions that have occurred over the past five years for other senior blocks of water rights:

- Nevada Ditch (on the South Platte near Chatfield) - Castle Rock Water offered \$25,000/AF but the rights were purchased by Denver Water for a confidential amount, likely a better deal than our offer.
- London Mine (flows on Middle Fork of South Platte River into the main stem) - Purchased by Aurora Water: \$22,000/AF.
- Red Hill Water Rights (flows on Middle Fork of South Platte River into the main stem) - Deal between Aurora Water and Dominion Water and Sanitation District: \$22,500/AF
- Senior Ditch Rights on South Platte River in Weld County - Aurora submitted bid pricing to Castle Pines North Metro District for approximately \$30,000/AF.

Senior water rights with reliable yields in locations that work for Castle Rock rarely come up for sale on the market. These water rights on Deer Creek that flow directly into Chatfield Reservoir are reliable and would accrue directly into the Town's Chatfield storage account with little if any new infrastructure that would need to be built. While sixty (60) acre-feet of water may not seem like much, it is renewable water that would be available every year and is water that would meet the needs of 130 or more Castle Rock residential customers. Furthermore, Castle Rock Water may be able to recoup all or a large portion of the sale price of this water with existing developers who are water short.

The junior water rights associated with this Purchase and Sale Agreement are much less reliable and would likely not be available in a drought year. Additionally, the junior water rights would likely need to be diverted from Deer Creek, pumped into Mann Reservoir located on Jefferson County Open Space and then either released back into Deer Creek or floated down Massey Draw to get into Chatfield. By entering into an Option Agreement for the junior water rights, the Town will have more time to study the value and infrastructure costs of how these water rights could be captured.

Budget Impact

The Town currently has \$5,188,655 in the Water Rights Acquisition project budget (Account Number 211-4375-443.75-47, Project Code WR OWR) for 2023. The total purchase price for this agreement with TDK is \$2,700,000.

Staff Recommendation

Castle Rock Water Commission was generally supportive of this purchase. Staff recommends that Town Council approve the purchase and sale agreement with TDK.

Proposed Motion

"I move to approve the Resolution as introduced by title."

Item #: 17. File #: RES 2023-013

Attachments

Attachment A: Resolution
Exhibit 1: Agreement
Attachment B: Location Map

RESOLUTION PENDING FURTHER STAFF REVIEW

PURCHASE AND SALE AGREEMENT

THIS PURCHASE AND SALE AGREEMENT (this “Agreement”) dated as of February 1, 2023 (the “Agreement Date”) is between TDK HOLDINGS, LLC, a Colorado limited liability company (the “Seller”), and the TOWN OF CASTLE ROCK, a Colorado home rule municipality, acting by and through the CASTLE ROCK WATER ENTERPRISE (the “Buyer”).

RECITALS

WHEREAS, Seller owns water rights and contractual rights associated with the former Deer Creek Golf Course in Jefferson County, Colorado, a portion of which are more fully described and defined in this Agreement.

WHEREAS, Buyer desires to acquire additional water and water rights and, to that end, Buyer seeks to acquire the Water Rights.

WHEREAS, Seller is willing to sell the Water Rights to Buyer and Buyer is willing to purchase the Water Rights on and subject to the terms and conditions in this Agreement.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows.

AGREEMENT

1. **Water Rights Defined.** As used in this Agreement, the term “Water Rights” means the water rights described in **EXHIBIT A**, attached hereto and incorporated herein by this reference, which are located in Jefferson County, Colorado.

2. **Agreement to Purchase.** Buyer agrees to purchase from Seller and Seller agrees to sell to Buyer the Water Rights on and subject to the terms and conditions provided herein.

3. **Purchase Price.** The purchase price for the Water Rights will be Forty-Five Thousand Dollars (\$45,000) per Acre Foot (“AF”) of historical consumptive use water quantified in Case No. W-7390, District Court for Water Division 1, for a total purchase price of Two Million Seven Hundred Thousand Dollars (\$2,700,000.00) for the sixty (60) AF quantified in Case No. W-7390 (the “Purchase Price”).

4. **Payment of Purchase Price; Earnest Money Deposit.** The Purchase Price will be paid by Buyer to Seller in full, adjusted for the Closing Adjustments as set forth in this Agreement, in cash or by wire transfer or other immediately available funds at Closing (defined below). Within ten (10) business days after the Agreement Date, Buyer shall tender the sum of One Hundred Thousand Dollars (\$100,000.00) to Land Title Guarantee Company (the “Title Company”) as escrow holder, for deposit into an interest-bearing account. This deposit, once made, together with any interest earned thereon, is collectively referred to as the “Earnest Money.” Title Company’s receipt of the Earnest Money shall be acknowledged by its execution of this

Agreement or a separate escrow Agreement with Seller and Buyer. At Closing, the Earnest Money will be paid to Seller as a part of the Purchase Price.

5. Water Rights Opinion.

(a) Issuance of Opinion. Within thirty (30) calendar days after the Agreement Date, Seller shall furnish to Buyer, at Seller's sole expense, a water rights title opinion from Hamre Rodriguez Ostrander & Prescott, P.C., on which the Town may expressly rely ("Water Rights Opinion"). The Water Rights Opinion shall state that Seller has good and marketable title to the Water Rights free of all liens and encumbrances, or identify those liens and encumbrances or other title matters that must be cleared at or prior to Closing. As part of the Water Rights Opinion, Seller shall provide electronic copies of all information reviewed by the attorney.

(b) Changes to Opinion. Buyer shall have seven (7) calendar days after Buyer's receipt of the Water Rights Opinion or any amendment thereto to notify Seller of any objections to any items impacting marketable title to the Water Rights ("Water Title Objection Notice"). Any items impacting marketable title to the Water Rights that are not objected to within the seven (7) calendar day period will be deemed approved by Buyer.

(c) Seller's Rights. Seller shall have until seven (7) calendar days after receipt of Buyer's Water Title Objection Notice ("Seller's Water Title Cure Period") to elect, at its sole option and discretion, to (i) cure any or all items to which Buyer has objected, (ii) cause such items to be modified in a manner which is satisfactory to Buyer, or (iii) not to cure any or all such items.

(d) Buyer's Rights. Within seven (7) calendar days of the expiration of Seller's Water Title Cure Period, if Seller fails to cure to the satisfaction of Buyer any objection in the Water Title Objection Notice, or elects not to cure, then Buyer may elect, as its exclusive remedy with respect to the objections in the Water Title Objection Notice, either to: (i) waive the objections by written notice to Seller and proceed to Closing, or (ii) terminate this Agreement by giving written notice to Seller. If Buyer terminates the Agreement, the Earnest Money will be returned to Buyer, and thereafter the parties will have no further rights and will be released from all obligations hereunder other than those rights and obligations that expressly survive termination of this Agreement. If Buyer fails to give timely notice of termination or if Buyer proceeds to Closing, Buyer will be deemed to have elected to waive all objections to and accepted all of the items in the Water Rights Opinion. The Closing Date established in Section 6 below shall be extended on a day-for-day basis to accommodate the notice and cure time periods outlined in this Section 5.

6. Water Rights Inspection Period.

(a) Inspection Period. Buyer shall have a period of fifty (50) calendar days from the Agreement Date in which Buyer shall verify and ascertain the suitability of the Water Rights for Buyer's intended uses, in Buyer's sole and absolute discretion ("Inspection Period").

(b) Property Documents. To the extent it has not already done so, within ten (10) calendar days after the Agreement Date, Seller shall make available to Buyer copies of its files and records related to the Water Rights the possession or control of the Seller including but not limited to the following documents to the extent not privileged or otherwise protected: documents related

to title to and liens or encumbrances on the Water Rights; previous title opinions; agreements associated with the Water Rights; water rights decrees; water rights engineering reports, technical reports and correspondence, including those related to the use and historical consumptive use of the Water Rights for irrigation on the golf course; diversion records and accounting; maps and aerial photos; and any correspondence with federal, local or state agencies, including the Division of Water Resources and Colorado Department of Health and the Environment, concerning water rights, water supply or water quality issues (collectively, the “Water Documents”). Except for the Water Rights Opinion described in Section 5, Buyer acknowledges and agrees that all Water Documents delivered or made available by Seller to Buyer are for Buyer’s information and use only, and Seller makes no representation or warranty as to the accuracy or completeness of any such Water Documents or Buyer’s ability to use any of such Water Documents. Except for the Water Rights Opinion described in Section 5, Buyer acknowledges that it shall be solely responsible for verifying all information contained in the Water Documents, including the completeness, accuracy and applicability of the Water Documents.

(c) **Termination.** If Buyer fails to provide Seller with written notice that it will terminate this Agreement (the “Termination Notice”) on or before the expiration of the Inspection Period in the manner set forth in the Notice provision in Section 13.d, Buyer shall be deemed to have elected to accept the conditions of the Water Rights discovered in the Inspection Period. In the event Buyer provides Seller with the Termination Notice on or before the expiration of the Inspection Period, the Earnest Money shall be refunded to the Buyer, none of the Parties shall be further bound hereby, and this Agreement shall be of no further force or effect (subject to the provisions of this Agreement which expressly survive such termination). Seller shall have no right to cure if Buyer elects to terminate the Agreement pursuant to this Section 6.

7. **Closing.** The closing of the purchase and sale (“Closing”) of the Water Rights shall occur on such date as mutually agreed upon by Buyer and Seller, but in no event later than sixty (60) days after the Agreement Date (the “Closing Date”), subject to Section 5. The Closing will be held at the offices of the Title Company, or at such other location as mutually agreed upon by Buyer and Seller or, if the parties so agree, through an escrow-type closing with the Title Company acting as the closing agent.

8. **Actions at Closing.** The following will occur at Closing in a sequence prescribed in mutually agreeable Closing instructions all of which shall be mutually and concurrently dependent:

(a) Seller shall execute and deliver to Buyer a special warranty deeds for the Water Rights in the form attached hereto as **EXHIBIT B** free and clear of all liens and encumbrances.

(b) Seller and Buyer shall execute an agreement, in a form acceptable to Buyer, acknowledging that Seller retains all of Seller’s obligations owed to the Ken-Caryl West Ranch Water District as detailed in: i) the special warranty deed dated September 6, 1973 recorded at Reception No. 592841 on September 6, 1973; ii) the special warranty deed dated December 8, 1978 recorded at Reception 79018795 on March 2, 1979; and iii) the decree entered in W-7390, District Court, Water Division No. 1. Seller shall remain responsible for meeting such obligations using Seller’s interest in the Shaffer Ditch and the Tinker & Shaffer Reservoir water rights. Seller shall indemnify and hold harmless Buyer for any failure of Seller to perform such obligations.

(c) Seller or Seller's designated individual with personal knowledge shall fill out, execute and deliver to Buyer an Historical Use Affidavit in the form attached hereto as **EXHIBIT C** detailing the use of the Water Rights for irrigation on the golf course.

(d) Seller and In Play Membership Golf, Inc. ("In Play") shall execute and deliver to Buyer a Dry Up Covenant, in a form acceptable to Buyer.

(e) Seller and In Play shall execute and deliver to Buyer a termination of the Amended and Restated Water Lease dated June 1, 2011 between Maya Water, Inc. and In Play in a form acceptable to Buyer.

(f) Seller, Stacey Hart, In Play and Buyer shall execute the No Statement of Opposition Agreement in the form of agreement attached hereto as **EXHIBIT D**.

(g) Seller and any person(s) or entity(ies) owning or holding a lien or encumbrance on the Water Rights shall execute and deliver document(s), in a form acceptable to Buyer, necessary to clear such lien or encumbrance.

(h) Buyer shall deliver to the Title Company, as the closing agent, the Purchase Price, less the Earnest Money, in cash or by wire transfer or other immediately available funds.

(i) The Purchase Price funds delivered by Buyer to the Title Company, as adjusted pursuant to this Agreement, shall be delivered to Seller.

(j) Seller and Buyer will execute and deliver to the Title Company the appropriate parties' Settlement Statements.

(k) Each party will deliver to the other party and the Title Company such agreements, assignments, conveyances, instruments, documents, typical affidavits required by the Title Company, certificates and the like as may be reasonably required by either party or the Title Company to consummate the purchase and sale of the Water Rights in accordance with the terms of this Agreement.

(l) The following adjustment ("Closing Adjustments") will be made as of the Closing to the Purchase Price. Buyer will pay the recording fee for the deeds conveying the Water Rights and any other recorded documents. The parties will share closing fees of the Title Company equally. Each party will be responsible for payment of its own attorneys' fees. All other costs of Closing will be prorated between the parties as is customary in commercial closings in this State.

9. **Post-Closing Assistance.** Following Closing, Seller will provide Buyer with reasonable assistance in the transition of the administration and the operation of the Water Rights, provided Seller does not incur any expenses for which Seller will not be reimbursed by Buyer.

10. **Representations and Warranties of Seller.** Seller represents and warrants to Buyer that each of the following statements is true and correct as of the Agreement Date and will be true and correct as of the Closing Date:

(a) Seller is a limited liability company duly formed, validly existing, and in good standing in the State of Colorado.

(b) To the best of Seller's knowledge, there is no litigation, condemnation or eminent domain action, or administrative, governmental or other proceeding, pending or threatened, against Seller and/or affecting the ownership or use of the Water Rights which, if decided or determined adversely, would have a material adverse effect on the ability of Seller to sell the Water Rights pursuant to this Agreement.

(c) Seller has full right, power and authority to enter into this Agreement and to perform the obligations hereunder, and this Agreement and all other documentation required by Buyer hereunder, when duly executed and delivered, shall constitute the valid and binding obligation of Seller, enforceable in accordance with such terms. The individual executing this Agreement on behalf of Seller is authorized to do so.

(d) Seller has retained a broker, agent or finder in connection with this Agreement and the transfer of the Water Rights. Seller shall pay all fees and commissions owing pursuant to the transaction. Seller shall indemnify and hold harmless Buyer from liability for any fees or commissions owing pursuant to such retention related to this transaction.

(e) To the best of Seller's knowledge, no other person has any legal or equitable right to the Water Rights as of Closing.

(f) Seller, to the best of its knowledge, is unaware of any material Water Document in its possession that Seller has not produced or made available to Buyer.

(g) To the best of Seller's knowledge, all of the Water Rights and any decrees therefor are in full force and effect and no portion of the Water Rights have been abandoned.

11. **Buyer's Representations and Warranties.** Buyer represents and warrants to Seller that each of the following statements is true and correct as of the Agreement Date and will be true and correct as of the Closing Date:

(a) Buyer is a governmental entity duly formed and validly existing in the State of Colorado.

(b) Buyer has all requisite power, corporate and otherwise, to execute, deliver and perform its obligations pursuant to this Agreement, that the execution, delivery and performance of this Agreement and the documents to be executed and delivered pursuant to this Agreement have been duly authorized by it, and that upon execution and delivery, this Agreement and all documents to be executed and delivered pursuant to this Agreement will constitute its legal, valid and binding obligation, enforceable against it in accordance with their terms.

(c) The individual executing this Agreement on behalf of Buyer is authorized to do so.

(d) Buyer has not retained any broker, agent or finder or agreed to pay any commissions or finders' fees in connection with this Agreement or the transfer of the Water Rights. To the extent permitted and provided by law, Buyer shall indemnify and hold harmless Seller from liability for any fees or commissions owing pursuant to this transaction caused by Buyer's breach of this representation.

(e) If prior to Closing, Buyer obtains knowledge that any of the covenants, representations or warranties of Seller in this Agreement are not true or correct, and Buyer deems such inaccuracy to be material to Buyer, then Buyer shall promptly notify Seller in writing of the same in order to afford the Seller a reasonable opportunity to cure the same prior to Closing.

12. **No Other Warranties.** Buyer has made, and will make, its own independent inspection and investigation of the Water Rights and the Water Documents, and, in entering into this Agreement and purchasing the Water Rights, Buyer is relying upon and will rely solely on such inspection and investigation of the Water Rights and the Water Documents. Except for the representations and warranties expressly set forth in (i) this Agreement, (ii) the documents executed by Seller at Closing, and (iii) the Water Right Opinion, Buyer acknowledges and agrees that neither Seller nor anyone acting on behalf of Seller has not made, does not make and specifically negates and disclaims any representations or warranties whatsoever, whether expressed or implied, oral or written, past, present or future concerning the Water Rights. Except as otherwise provided herein, **BUYER ACKNOWLEDGES THAT TO THE MAXIMUM EXTENT ALLOWED BY LAW, THE SALE OF THE WATER RIGHTS WILL BE MADE IN AN "AS IS" CONDITION, WITH ALL FAULTS.** Buyer acknowledges that the Purchase Price is based in part on the fact that there are no other representations and warranties and that if Seller were required to give any additional representations and warranties the Purchase Price would be materially higher.

13. **Default, Remedy and Termination.**

(a) **Buyer Default.** It is hereby agreed that Seller's damages may be difficult to ascertain. The Earnest Money constitutes a reasonable liquidation of Seller's damages and is intended not as a penalty, but as liquidated damages. If the transaction contemplated herein is not consummated on or before the Closing Date solely as a result of the default by Buyer of its obligations hereunder, as Seller's sole and exclusive remedy, the Title Company shall pay the Earnest Money to Seller as liquidated damages and in full settlement of any claims for damages. Whereupon, Buyer shall have no further liability or obligation hereunder to Seller and no other remedy shall be available for Buyer's breach of this Agreement; provided, however, that Seller shall also be entitled to enforce Buyer's obligations that expressly survive the termination of this Agreement.

(b) **Seller's Default.** If the transaction contemplated herein is not consummated on or before the Closing Date solely as a result of a default by Seller of its obligations hereunder, Buyer shall be entitled to one of the following remedies as its sole and exclusive remedy: (i) the right to cancel this Agreement, in which event this Agreement shall terminate and be of no further force or effect and the Title Company will refund to Buyer the Earnest Money; or (ii) seek specific performance of this Agreement; provided however, that unless Buyer has provided written notice to Seller and the Title Company no later than ninety (90) days from the Closing Date that Buyer

has elected to commence an action for specific performance, Buyer shall be deemed to have irrevocably chosen the foregoing option (i). In the event of any such termination, Seller shall be entitled to enforce Buyer's obligations that expressly survive the termination of this Agreement.

14. **Miscellaneous Provisions.**

(a) **Governing Law.** This Agreement shall be governed by and construed in accordance with the laws of the State of Colorado and applicable federal law.

(b) **Counterparts.** This Agreement may be executed in one or more counterparts, all of which together shall constitute one and the same instrument.

(c) **Further Assurance.** Each of the parties hereto, at any time and from time to time, will execute and deliver such further instruments and take such further action as may reasonably be requested by the other party hereto, in order to cure any defects in the execution and delivery of, or to comply with or accomplish the covenants and agreements contained in this Agreement and/or any other agreements or documents related thereto.

(d) **Notices.** If under the terms of this Agreement, notice is to be provided to any party, said notice shall be deemed provided upon (i) personal delivery, (ii) three (3) business days after the mailing of the same by registered or certified mail, return receipt requested, (iii) when delivered (and signed for) by an overnight delivery service, or (iv) when delivered by email transmission for which automatic confirmation or written acknowledgement has been received, addressed in each case as follows:

If to Seller: TDK Holdings, LLC
Attn: Antonio L. Converse, Manager
PO Box 101585
Denver, CO 80250

With a copy to: Converse Law Group, P.C.
600 17th Street, Suite 2800 South
Denver, CO 80202

If to Buyer: Town of Castle Rock
Attn: Director of Castle Rock Water
175 Kellogg Court
Castle Rock, CO 80109
mmarlowe@crgov.com

with a copy to: Town of Castle Rock
Attn: Town Attorney
100 N. Wilcox Street
Castle Rock, CO 80104
mhyman@crgov.com

with a copy to: Lyons Gaddis. PC
Attn: Madoline Wallace-Gross
515 Kimbark Street, 2nd Floor
Longmont, CO 80501
mwg@lyonsgaddis.com

Any party may change the address to which notices should be sent by giving the other parties written notice of the new address in the manner set forth in this paragraph. A party may give any notice, instruction or communication in connection with this Agreement using any other means (including facsimile or first-class mail), but no such notice, instruction or communication shall be deemed to have been delivered unless and until it is actually received by the party to whom it was sent and such party acknowledges such receipt.

(e) No Consideration of Drafter. This Agreement has been negotiated by all parties hereto and their counsel. It shall be given a fair and reasonable interpretation in accordance with its terms, without consideration or weight being given to its having been drafted by any party hereto or its counsel.

(f) Attorneys' Fees. In the event of any litigation or arbitration proceedings between the parties hereto concerning the subject matter of this Agreement, the prevailing party in such litigation or proceeding shall be awarded, in addition to the amount of any judgment or other award entered therein, the costs and expenses, including reasonable attorneys' fees, incurred by the prevailing party in the litigation or proceeding.

(g) Amendment. This Agreement may be amended, altered or revoked only by written instrument executed by all of the parties to this Agreement.

(h) Survival. All representations and warranties of title to the Water Rights in this Agreement shall merge into the representations and warranties of title in the deeds and other instruments of conveyance of the Water Rights made in connection with the Closing. All other representations and warranties in this Agreement of Seller and Buyer shall survive the Closing for a period of two (2) years following Closing, provided any claim asserted by a party for breach of such warranties or representations within such two-year period may proceed to resolution, irrespective of the expiration of such two-year period.

(i) Assignment. This Agreement may not be assigned by either party without the prior written consent of the other.

(j) Expenses. Each party shall pay its own costs and expenses in connection with the operation under and administration of this Agreement.

(k) Waivers and Consents. All waivers and consents given hereunder shall be in writing. No waiver by any party hereto of any breach or anticipated breach of any provision hereof by any other party shall be deemed a waiver of any other contemporaneous, preceding or succeeding breach or anticipated breach, whether or not similar, on the part of the same or any other party.

(l) Entire Agreement. This Agreement represents the entire agreement between the parties and there are no oral or collateral agreements or understandings. If any other provision of this Agreement is held invalid or unenforceable, no other provision shall be affected by such holding and all of the remaining provisions of this Agreement shall continue in full force and effect.

(m) Rights of Third Parties. All conditions of the obligations of the parties hereto, warranties and representations, and all undertakings herein, except as otherwise provided by a written consent, are solely and exclusively for the benefit of the parties hereto, their successors and assigns and their successors-in-interest. No other person or entity shall have standing to require satisfaction of such conditions or to enforce such undertakings in accordance with their terms or be entitled to assume that any party hereto will refuse to complete the transaction contemplated hereby in the absence of strict compliance with such conditions and undertakings. No other person or entity shall, under any circumstances, be deemed a beneficiary of such conditions or undertakings, any or all of which may be freely waived in whole or in part, by mutual consent of the parties hereto at any time, if in their sole discretion they deem it desirable to do so.

(n) Construction. Throughout this Agreement, the headings for paragraphs, section and articles used in this Agreement are included for purposes of convenience of reference only, and shall not affect the construction or interpretation of any of its terms; the singular shall include the plural and the plural shall include the singular; all genders shall be deemed to include other genders, wherever the context so requires; and the terms “including,” “include” or derivatives thereof, unless otherwise specified, shall be interpreted in as broad a sense as possible to mean “including, but not limited to,” or “including, by way of example and not limitation.”

(o) Exhibits. All schedules, exhibits and addenda attached to this Agreement and referred to herein, if any, shall for all purposes be deemed to be incorporated in this Agreement by this reference and made a part of this Agreement.

(p) Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns.

(q) Recordation. Neither this Agreement or any memorandum or extract hereof shall be recorded. Any recording by or on behalf of Buyer without the written consent of Seller will be a breach by Buyer for which there is no right to cure and for which Seller may terminate this Agreement.

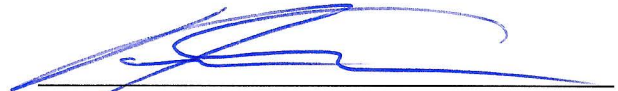
[Signature pages to follow]

IN WITNESS WHEREOF, the parties have executed this Agreement to be effective as of the Agreement Date.

SELLER:

TDK HOLDINGS, LLC
a Colorado limited liability company

By:

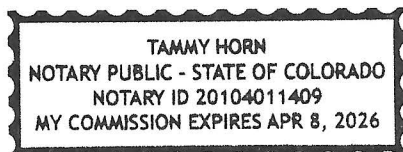

Antonio L. Converse, Manager

STATE OF COLORADO)
) ss.
COUNTY OF Denver)

The foregoing instrument was acknowledged before me this 6th day of February, 2023, by Antonio L. Converse, as Manager, for TDK Holdings, LLC.

Witness my hand and official seal.

My commission expires: 04/08/2026




Notary Public

TOWN:

ATTEST:

TOWN OF CASTLE ROCK,
acting by and through the Town of Castle Rock
Water Enterprise

Lisa Anderson, Town Clerk

Jason Gray, Mayor

Approved as to form:

Approved as to content:

Michael J. Hyman, Town Attorney

Mark Marlowe, Director of Castle Rock Water

EXHIBIT A
TO PURCHASE AND SALE AGREEMENT
WATER RIGHTS

The following water rights described in the Special Warranty Deed (Water Rights) from Maya Water, Inc. to TDK Holdings, LLC dated October 30, 2017 and recorded on November 2, 2017 at Reception No. 2017113592 of the real property records of Jefferson County, Colorado.

The Glen Plym No. 1 Ditch, Priority No. 36 in former Water District No. 8, for 1.95 c.f.s out of Deer Creek, with an appropriation date of December 1, 1867, as the right was changed and quantified by the decree in Case No. W-7390.

The Deer Creek Canon Ditch and Mann Reservoir, Priority No. 99 in former Water District No. 8, for 3.33 c.f.s. out of Deer Creek, with an appropriation date of December 8, 1877, as the right was changed and quantified by the decree in Case No. W-7390.

TOGETHER with all and singular the hereditaments and appurtenances thereto belonging, or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents issues and profits thereof; and all the estate, right, title, interest, claim and demand whatsoever of the Seller, either in law or equity, of, in and to the above bargained water rights with the hereditaments and appurtenances thereto.

**EXHIBIT B
TO PURCHASE AND SALE AGREEMENT**

**SPECIAL WARRANTY DEED
WATER RIGHTS**

THIS DEED is made to be effective as of this _____ day of _____, by TDK HOLDINGS, LLC (“Grantor”), for the benefit of TOWN OF CASTLE ROCK, a Colorado home rule municipality (“Grantee”).

WITNESSETH, that the Grantor, in consideration of Ten Dollars and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, has granted, bargained, sold and conveyed and by the presents does grant, bargain, sell, convey and confirm unto the Grantee, its successors and assigns forever, all of Grantor’s in and to the following water, water rights, and rights to water in the County of Jefferson, State of Colorado:

The Glen Plym No. 1 Ditch, Priority No. 36 in former Water District No. 8, for 1.95 c.f.s out of Deer Creek, with an appropriation date of December 1, 1867, as the right was changed and quantified by the decree in Case No. W-7390, District Court, Water Division No. 1.

The Deer Creek Canon Ditch and Mann Reservoir, Priority No. 99 in former Water District No. 8, for 3.33 c.f.s. out of Deer Creek, with an appropriation date of December 8, 1877, as the right was changed and quantified by the decree in Case No. W-7390, District Court, Water Division No. 1.

The above-described decreed water, water rights, and rights to water are conveyed together with all and singular the hereditaments and appurtenances thereto belonging, or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof, and all the estate, right, title, interest, claim and demand whatsoever of the Grantor, either in law or equity, of, in and to the above bargained water, water rights, and rights to water with the hereditaments and appurtenances thereto.

Reserving unto Grantor, however, the headgate, ditches and pipelines used for diversion and carriage of the water rights described above, including but not limited to the Deer Creek Pumping Plant and Mann Reservoir, and also reserving to Grantor all easements for such structures.

TO HAVE AND TO HOLD the said water, water rights, and rights to water with the hereditaments and appurtenances thereto, unto the Grantee, its successors and assigns forever. The Grantor, for itself, its successors and assigns, does covenant and agree that it shall and will WARRANT AND FOREVER DEFEND the above-bargained and described water, water rights, and rights to water, with the hereditaments and appurtenances thereto (subject to the reservation set forth above), the reversion and reversions, remainder and remainders, rents issues and profits thereof; and all the estate, right, title, interest, claim and demand whatsoever of the Grantor, either in law or equity, of, in and to the above bargained water rights, in the quiet and peaceable possession of the Grantee, its successors and assigns, including, if it subsequently comes into the chain of title, the Town of

Castle Rock, a home rule municipality of the County of Douglas, State of Colorado, including the Castle Rock Water Enterprise, against all and every person and persons claiming the whole or any part thereof, by, through or under the Grantor.

IN WITNESS WHEREOF, Grantor has executed this Deed to be effective on the date set forth above.

GRANTOR:

TDK HOLDINGS, LLC
a Colorado limited liability company

By: _____
Antonio L. Converse, Manager

STATE OF COLORADO)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ____ day of _____, 2023, by Antonio L. Converse, as Manager, for TDK Holdings, LLC.

Witness my hand and official seal.

My commission expires: _____

Notary Public

EXHIBIT C
TO PURCHASE AND SALE AGREEMENT

HISTORICAL USE AFFIDAVIT

USE ONE AFFIDAVIT FOR EACH WATER RIGHT

I. WATER RIGHTS

A. Water Right Name: _____

B. Case Number of Decree: _____

II. IRRIGATED LAND

A. Description of land irrigated by Water Rights listed above.

B. Status of water supply.

1. Was there a full water supply on the property? (State years supply was not full and percentage of crop demand supplied by the water rights)

2. Was there a supplemental water supply used on the property? (Please specify supplemental water used and the percentage of irrigation demand supplied by supplemental water.)

C. Method of Irrigation (e.g. flood, sprinkler, drip)

III. SUMMARY

A. Type of Irrigated Acreage

B. Number of Acres

C. Name(s) and address(s) of all people who operated the water system:

D. Years irrigated by Water Rights:

The undersigned, _____, whose address is _____, being 18 years of age and having personal knowledge of the irrigation of the previously described lands by virtue of being the owner(s) and/or person(s) who have irrigated those, being first duly sworn, hereby states that to the extent of my/our knowledge, the listed Water Rights and historical use of said Water Rights as set forth on the Statement attached hereto, constitute the beneficial use of the aforementioned Water Rights and there has been no intent to abandon such Water Rights.

Further affiant sayeth naught.

(signature)

(print)

STATE OF COLORADO)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ____ day of _____, 2023, by _____.

Witness my hand and official seal.

My commission expires: _____

Notary Public

**EXHIBIT D
TO PURCHASE AND SALE AGREEMENT**

**NO STATEMENTS OF OPPOSITION
AGREEMENT**

THIS NO STATEMENTS OF OPPOSITION AGREEMENT (this "Agreement") is made and entered into on _____ (the "Agreement Date"), by and among TDK HOLDINGS, LLC, a Colorado limited liability company (the "Seller") and the TOWN OF CASTLE ROCK, a Colorado home rule municipality ("Buyer"), and the other persons and entities defined in this Agreement as the "Non-Opposers."

RECITALS

A. Seller and Buyer are parties to the Purchase and Sale Agreement dated _____ (the "Purchase Agreement"), pursuant to which Seller agreed to sell to Buyer certain water rights located in Jefferson County, Colorado (as more particularly described and defined in the Purchase Agreement, the "Property").

B. Pursuant to the Purchase Agreement, Seller agreed not to file a statement of opposition or otherwise participate as a party in certain water court applications that Buyer may file.

C. Such parties agree to confirm such agreement on the terms of this Agreement.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows.

1. Non-Opposers Defined. The "Non-Opposers" means the following entities or individuals: Seller, Stacey Hart, and In Play Membership Golf, Inc.

2. No Statements of Opposition. Each Non-Opposer covenants and agrees that he or it shall not file a statement of opposition or otherwise participate as a party in any water court application that Buyer may file which water court application associated with nontributary and not nontributary groundwater rights and tributary water rights diverting, storing, or being exchanged on or tributary to Plum Creek, Massey Gulch or Deer Creek and Chatfield Reservoir.

3. Default and Remedies. In the event either party should default in performance of its obligations under this agreement, and such default shall remain uncured for more than 10 days after notice of default is given to the defaulting party, the non-defaulting party shall be entitled to pursue any and all legal remedies and recover its reasonable attorney's fees and costs in such legal action.

NON-OPPOSERS:

Stacey Hart

STATE OF COLORADO)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ____ day of _____, 2023,
by Stacey Hart.

Witness my hand and official seal.

My commission expires: _____

Notary Public

IN PLAY MEMBERSHIP GOLF, INC.
a Colorado for-profit corporation

By: _____
Stacey Hart, President

STATE OF COLORADO)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ____ day of _____, 2023,
by Stacey Hart, as President, for In Play Membership Golf, Inc.

Witness my hand and official seal.

My commission expires: _____

Notary Public

BUYER:

ATTEST:

TOWN OF CASTLE ROCK,
acting by and through the Town of Castle Rock
Water Enterprise

Lisa Anderson, Town Clerk

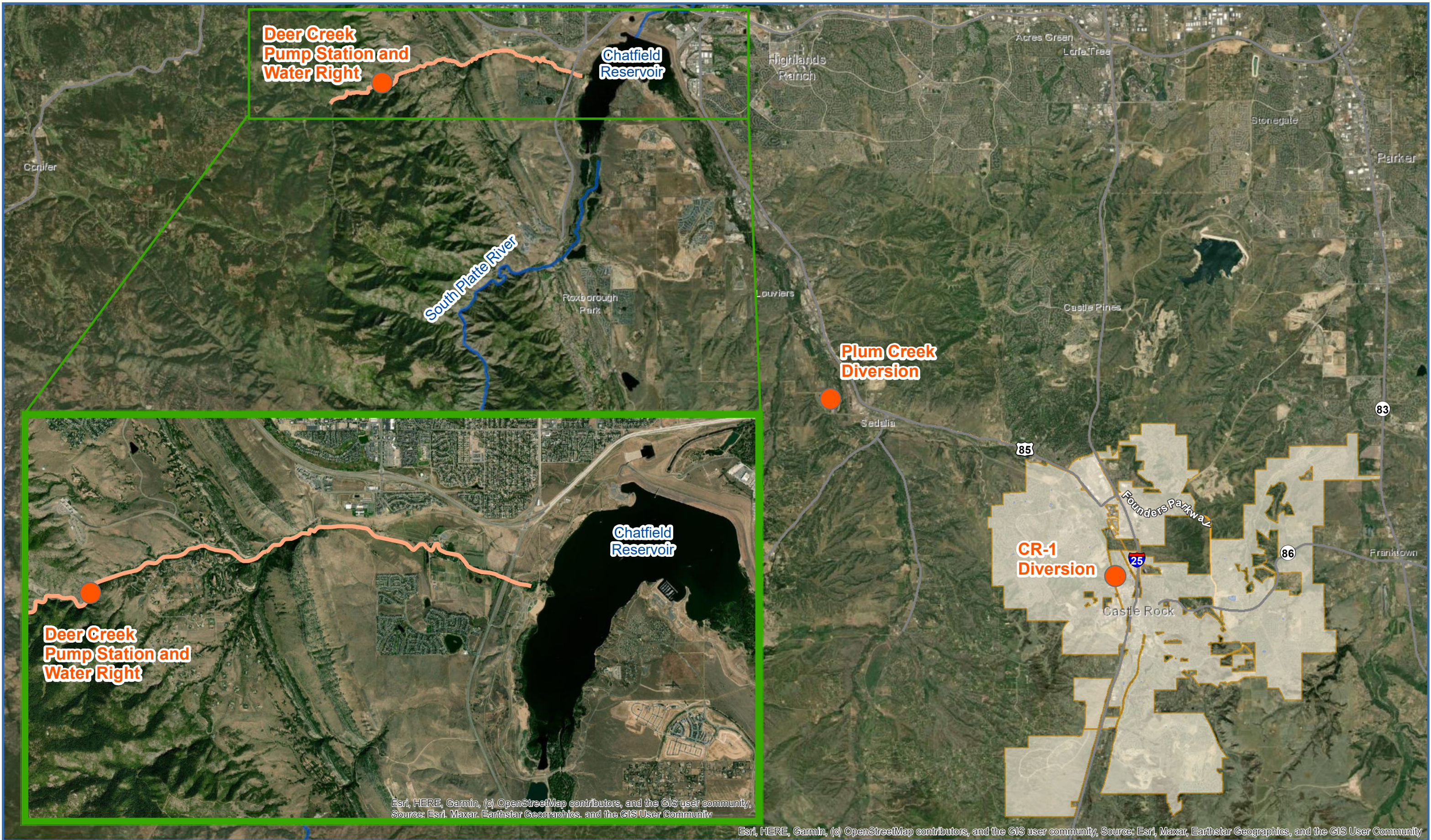
Jason Gray, Mayor

Approved as to form:

Approved as to content:

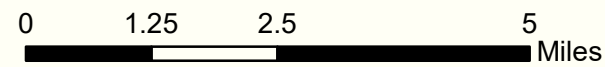
Michael J. Hyman, Town Attorney

Mark Marlowe



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Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Date: 1/31/2023

Document Path: J:\GIS\Map Requests\2023\Internal_Requests\1_30_2023_Deer_Creek_Pump_Station_Water_Right\chatfield deercreek.mxd



Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or inconsistencies. Such discrepancies in data are inherent and in supplying this product the Town of Castle Rock assumes no liability for its use or accuracy. Questions or comments regarding the cartographic composition of this map including, but not limited to, errors, omissions, corrections, and/or updates, should be directed to the Utilities Department, Town of Castle Rock, (720) 733-6056. Copyright 2022, Town of Castle Rock Utilities Mapping.

Attachment B

**Deer Creek
Location Map**