



**Castle Rock Water Commission
Special Meeting Agenda - Final-Amended**

Todd Warnke
John Wright
Bill Leung
Kathryn Gienger
David Hammelman
Tony Rathbun
Kevin McHugh

Wednesday, August 31, 2022

6:00 PM

Castle Rock Water
175 Kellogg Ct., Bldg. 171
Castle Rock, CO 80109

This meeting is open to the public and will be held in a hybrid format in accordance with Town Council Electronic Participation, Connected, and Hybrid Meeting Policy. The in-person meeting will be held at 175 Kellogg Ct. Bldg. 171 Castle Rock CO 80104 or this meeting can be accessed online at: <https://crgov.webex.com/crgov/j.php?MTID=mc9a8ce2db8eb4aac5d2ba39aafd96727> the Meeting password: zZFfMpJ5U29 (99336755 from video systems) or phone in by calling (720) 650-7664, meeting code #24892484169##. One or more Council members may also attend this meeting, during which the items listed herein will be discussed.

6:00 pm CALL TO ORDER / ROLL CALL

COUNCIL UPDATE

COMMISSION COMMENTS

ADMINISTRATIVE BUSINESS

1. [WC 2022-067](#) Approval of the July Meeting Minutes

Attachments: [Attachment A: CRW7-27-22Meeting Minutes](#)

ACTION ITEMS (HIGH PRIORITY / TIME CRITICAL)

2. [WC 2022-068](#) Ordinance Amending Sections 4.04, 13.12, and 15.48.020 of the Castle Rock Municipal Code Related to Water Dedication, Public Services, and Landscape and Irrigation Criteria Manual [Entire Castle Rock service area]

Attachments: [Exhibit 1: 2022 Landscape and Irrigation Criteria Manual work in progress 8.10.;](#)
[Attachment B: Summary of Changes to the Manual](#)
[Attachment C: ColoradoScape Design Guidelines - DRAFT](#)
[Attachment D: Landscaper Quotes](#)

3. [WC 2022-069](#) Resolution Approving a Spot Water Lease between the Town of Castle Rock and the Chatfield East Property Owners Association, Inc.

Attachments: [Exhibit 1: ChatfieldEast_Spot Lease](#)

4. [WC 2022-078](#) Resolution Approving the First Amendment to the Town of Castle Rock/Turnpike LLC Agricultural Water Lease Agreement [Weld County, CO]

Attachments: [Exhibit 1: Amended Water Lease Agreement](#)
 [Attach B: Location Map Turnpike \(Huwa\)](#)

5. [WC 2022-070](#) Resolution Approving a Services Agreement between the Town of Castle Rock and Burns & McDonnell Engineering Company, Inc. for Chatfield Reservoir Pump Back Project Infrastructure Preliminary Engineering and Design Services [Northwestern Douglas County and Southeastern Jefferson County]

Attachments: [Attachment B: Location Map](#)

DIRECTOR FOLLOW-UP AND INFORMATIONAL / UPDATE ITEMS

6. [WC 2022-071](#) An Ordinance Amending Titles 3, 4 and 13 of the Castle Rock Municipal Code by Changing Stormwater Development Impact Fees, Water Resources System Development Fees, Water System Development Fees, Wastewater System Development Fees, Water Resources, Stormwater and Wastewater Rates, and Making Certain Editorial Updates to Such Titles (1st Reading) [Entire Tow of Castle Rock and extraterritorial service areas]

7. [WC 2022-072](#) Resolution Waiving Formal Written Bidding Requirement On the Basis of Sole Source for Services Performed by Academy Sports Turf, Inc., for the Paintbrush Park Synthetic Turf Conversion Project and Approving an Equipment and Services Agreement [Location: 3492 Meadows Blvd, Castle Rock, CO 80109]

Attachments: [Attachment A: TC Memo Paintbrush Park](#)

8. [WC 2022-073](#) Update on Deer Creek Water Rights Purchase

9. [WC 2022-074](#) Update on the Revised Regional Wastewater Proposal

10. [WC 2022-075](#) Resolution Approving an Amended and Restated Property Lease Agreement between the Town of Castle Rock and Cellco Partnership d/b/a Verizon Wireless

Attachments: [Attachment A TC Memo Lease Extension Agreement](#)

11. [WC 2022-076](#) Grand Re-Opening of the Plum Creek Water Purification Facility

Attachments: [Attachment A: PCWPF Grand Re-Opening Invitation](#)

12. [WC 2022-077](#) Upcoming Town Council Items

COMMISSIONER MEETING COMMENTS



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 1. **File #:** WC 2022-067

To: Members of the Castle Rock Water Commission

From: Mark Marlowe, P.E., Director of Castle Rock Water

**Approval of the July 27, 2022
Town Council Agenda Date:** NA

Executive Summary

Attached are the meeting minutes for the July 27, 2022 Water Commission Board Meeting.

Proposed Motion

"I move to approve the Minutes as presented"

Attachments

Attachment A: July 27, 2022 Meeting Minutes



**Castle Rock Water Commission
Meeting Minutes - Draft**

Todd Warnke
John Wright
Bill Leung
Kathryn Gienger
David Hammelman
Tony Rathbun
Kevin McHugh

Wednesday, July 27, 2022

6:00 PM

**Castle Rock Water
175 Kellogg Ct., Bldg. 171
Castle Rock, CO 80109**

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MTID=ma8e7d940689d2bec89ca8f60fd6271f7 the Meeting password: N3ccMx3WJj5 (63226939 from video systems) or phone in by calling (720) 650-7664, meeting code #24890823833##. Three or more Council members may also attend this meeting, during which the items listed herein will be discussed.

CALL TO ORDER / ROLL CALL

- Present** 6 - Chair Todd Warnke, David Hammelman, Tony Rathbun, Kevin McHugh, Commissioner Bill Leung, and Commissioner Kathryn Gienger
- Not Present** 1 - John Wright
- Attendance** 9 - Mark Marlowe, Tim Friday, Nichol Bussey , Paul Rementer, Roy Gallea, Josh Hansen, Matt Hayes, Shawn Griffith, and MaryJo Woodrick

COUNCIL UPDATE

Time was allowed for Council Member Johnson to share an update on Town Council items.

COMMISSION COMMENTS

Time was allowed for Commissioner Comments.

ADMINISTRATIVE BUSINESS

[WC 2022-057](#)

**Approval of the June 22, 2022 Meeting Minutes
Town Council Agenda Date: NA**

It was moved by Bill Leung and seconded by David Hammelman to approve the meeting minutes for the June 22, 2022 meeting as written. The motion passed 5-0-1. Kevin McHugh Abstained.

- Yes:** 5 - Chair Warnke, Hammelman, Rathbun, Commissioner Leung, and Commissioner Gienger
- Not Present:** 1 - Wright

Abstain: 1 - McHugh

ACTION ITEMS (HIGH PRIORITY / TIME CRITICAL)

[WC 2022-058](#)

Resolution Approving a Services Agreement between the Town of Castle Rock and Techneaux Technology Services LLC for the SCADA Founders Water Treatment Plant and Remote Site Upgrades Project *[Entire Castle Rock Water Service Area]*
Town Council Agenda Date: August 16, 2022

Mr. Bessonett shared that this item is the next phase of the upgrades to the Supervisory Control and Data Acquisition (SCADA) system. During this phase upgrades will be made to the Founders Water Treatment Plant. This will be the first of the water treatment plants to be updated.

As part of this project old equipment will be removed and replaced with new equipment.

Techneaux Technology Services was selected as the vendor. The cost for this project is \$1,846,784 with a 5% contingency for a total budget of \$1,939,086.

Commissioner Hammelman asked why there was such a large gap in the bids? Mr. Bessonett explained that the low bid had missed several items within the bid packet.

Commissioner Leung asked for an explanation of what Mr. Bessonett meant by the “communications backbone”? Mr. Bessonett explained the communications system.

Commissioner Leung asked why a 5% contingency was requested instead of the usual 10%? Mr. Marlowe explained that staff felt that 5% was a good amount as they didn’t expect to see many changes.

Kathryn Gienger moved to recommend Town Council approval of the Resolution as presented. Kevin McHugh seconded the motion. Passed unanimously 6-0.

Yes: 6 - Chair Warnke, Hammelman, Rathbun, McHugh, Commissioner Leung, and Commissioner Gienger

Not Present: 1 - Wright

[WC 2022-059](#)

Ordinance Authorizing the Exercise of the Town’s Powers of Eminent Domain for the Plum Creek to Rueter-Hess Reservoir Pipeline Infrastructure Project *[Northern Castle Rock and Eastern Castle Pines]*

Town Council Agenda Date: August 16, 2022

Commission Chair Warnke explained that the Castle Rock Water (CRW) Commission is a public meeting which allows for the public to attend the meeting but that it is not a public hearing therefore public comment is not allowed. The public is welcome to attend Town Council meetings and share comments at that time.

Mr. Marlowe explained that in 2008 Castle Rock Water (CRW) purchased capacity in Rueter-Hess Reservoir (RHR). This is an extremely important renewable water storage source for the Town and part of the long-term water plan. Mr. Marlowe shared that as part of the long-term plan CRW needs to be able to get renewable water to this water storage source when the renewable water is available. Currently, CRW does not have a way to get the renewable water from Plum Creek (CRW's largest resource for renewable water) to RHR.

Over the past several years CRW has done pipeline alignment studies to find the best way to move water up to RHR. At this time staff have a rough alignment that shows where it makes the most sense to run the pipeline.

The next step in the process will be to sit down with landowners and work through the pipeline alignment and locations. Mr. Marlowe explained that this item is not to request Eminent Domain but to get approval to use Eminent Domain as an option if necessary. Staff realized that this item may have been started a little early in the process and Mr. Marlowe would like to recommend that it be tabled until staff have the chance to work with landowners and see if it is even a necessary action to take.

CRW Staff will make sure to let landowners know if the item will return to a future Water Commission meeting as well as the Town Council schedule if this item is needed.

Commissioner Hammelman asked if CRW would have a public hearing for this item? Mr. Marlowe explained that CRW would offer Open House type meetings and that an actual public hearing, if necessary, would be during a Town Council meeting.

Kathryn Gienger moved to table this item until staff has an opportunity to work with landowners and get a better idea of what will be needed. Tony Rathbun seconded the motion. Passed unanimously 6-0.

Yes: 6 - Chair Warnke, Hammelman, Rathbun, McHugh, Commissioner Leung, and Commissioner Gienger

Not Present: 1 - Wright

**Town of Castle Rock and Reynolds Construction, LLC for
Tank 18 Blue Zone Transmission [*Pleasant View Drive*]
Town Council Agenda Date: August 16, 2022**

Mr. Hayes explained that this is part of the Tank 18 project. The purpose of this project is to construct a direct fill line to put water into Tank 18. This will be a 16-inch pipeline that is 8,200 feet long.

Reynolds Construction was selected as the vendor. The cost for the project is \$4,081,473 plus a 10% contingency for a total budget of \$ 4,489,620.

The project will start in the fall with the goal to have it completed prior to the Tank being completed.

Commissioner Rathbun asked if there were concerns about getting the supplies for the project? Mr. Marlowe replied that yes it is definitely a concern with all projects right now.

Bill Leung moved to recommend Town Council approval of the Resolution as presented. Kevin McHugh seconded the motion. Passed unanimously 6-0.

[WC 2022-061](#)

**Resolution Approving the Intergovernmental Agreement
between the Town of Castle Rock, Dominion Water and
Sanitation District, and Parker Water and Sanitation District
for the Canyons Waterline Metering Vault [*Parker Water and
Sanitation District/Town of Castle Rock Interface*]
Town Council Agenda Date: August 16, 2022**

Mr. Friday explained that this is an Intergovernmental Agreement between the Town of Castle Rock, Dominion Water & Sanitation District (Dominion) and Parker Water & Sanitation District (PWSD) for the design and construction of the Canyons Waterline Metering Vault. The Metering Vault is part of the WISE infrastructure.

The estimated cost for the project is \$658,000. CRW will be responsible for 83.33% of the cost or \$548,311, and CRW will receive up to 21 million gallons per day (MGD) through this meter vault.

Mr. Friday explained that PWSD is responsible for the project. The purpose of this item is for costs only.

David Hammelman moved to recommend Town Council approval of the Resolution as presented. Tony Rathbun seconded the motion. Passed unanimously 6-0.

Yes: 6 - Chair Warnke, Hammelman, Rathbun, McHugh, Commissioner Leung, and Commissioner Gienger

Not Present: 1 - Wright

[WC 2022-062](#)

Resolution Approving a Design Agreement between the Town of Castle Rock and W.W. Wheeler for the Expansion of Castle Rock Reservoir No. 1 (CRR1) [Plum Creek Trust Property in Douglas County near Sedalia, CO]

Town Council Agenda Date: August 16, 2022

Mr. Gallea explained that this item is for design services for the enlargement of Castle Rock Reservoir No. 1 (CRR1). CRR1 is currently 240 acre feet capacity and the goal of the project is to expand it to 500 acre feet capacity.

W.W. Wheeler was selected as the vendor as they are currently working on the design for Castle Rock Reservoir No. 2 (CRR2) which is on the same property. The cost of the project is \$304,800 with a 10% contingency for a total budget of \$335,280.

Commissioner Hammelman wondered since this is a design contract what would the contingency be necessary for? Mr. Gallea explained that in design agreements they aren't used much but sometimes during the design phase additional items are requested.

Tony Rathbun moved to recommend Town Council approval of the Resolution as presented. Kevin McHugh seconded the motion. Passed unanimously 6-0.

Yes: 6 - Chair Warnke, Hammelman, Rathbun, McHugh, Commissioner Leung, and Commissioner Gienger

Not Present: 1 - Wright

DIRECTOR FOLLOW-UP AND INFORMATIONAL / UPDATE ITEMS

[WC 2022-063](#)

Introduction to the 2023 Rates & Fees

Town Council Agenda Date: August 16, 2022

Mr. Marlowe shared that this is more of an update as CRW staff are not ready to introduce the 2023 rates and fees yet. CRW is currently working on changes to the Landscape Criteria Manual as well as an Ordinance to change the regulations for turf. The new guidelines would not allow any turf in front yards and only 500 square feet in the back yards for new houses constructed after January 1, 2023. As staff has been working on the changes they have realized the cascade effect on the rates and fees.

Mr. Marlowe explained that per state law CRW is only allowed to charge developers for the actual costs of improvements that they need to supply their projects. Therefore, staff needs to re-evaluate the system development fees that are being proposed for 2023. This could change the revenue from system development fees by 50% to 60%. These changes would then effect Capital

Improvement Projects (CIP) in the future.

CRW staff are currently working with the rates and fees consultant to look at these changes. It is important to look at how this will also affect the current customer rates.

Mr. Marlowe hopes to have a presentation ready for the next Water Commission meeting.

Commissioner Warnke asked how it would work in the future if a homeowner decides to add turf to the front or additional turf to the back? Mr. Marlowe explained that they will pay significantly more for water as they will exceed their water budget.

Commissioner Gienger asked if the meter or service line size would change? Mr. Marlowe explained that the meter size and service line size will not change.

[WC 2022-064](#)

Update on Drought Conditions

Town Council Agenda Date: NA

Mr. Marlowe gave a presentation on the current drought conditions for Castle Rock, Douglas County and statewide.

[WC 2022-065](#)

Update on Regional Wastewater Proposal

Town Council Agenda Date: NA

Mr. Marlowe shared an update on the Regional Wastewater Proposal.

[WC 2022-066](#)

Upcoming Town Council Items

Town Council Agenda Date: NA

This is a standing item that will be used to share information about projects that are being worked on at the time of the meeting but that staff doesn't have information ready yet.

Mr. Marlowe reported that there are no additional Town Council items at this time but that he did have two additional administrative items to share.

Mr. Marlowe explained that Ms. Woodrick sent out an email requesting availability to change the August Water Commission meeting from August 24, 2022 to August 31, 2022. The replies were favorable to moving the meeting so Mr. Marlowe would like to request that the August Water Commission meeting be moved.

Mr. Marlowe shared that Tim Friday, the Assistant Director of Castle Rock Water, has taken a new position with the Eagle Valley Water & Sanitation District and will be moving to Vail, CO. CRW will miss him terribly but wishes him all the luck in his new position. A going away party is planned for Wednesday, August 10th and staff invited the Commissioners to attend.

Bill Leung moved to cancel the August 24, 2022 Water Commission meeting and request a Special meeting be scheduled for August 31, 2022. Tony Rathbun seconded the motion. Motion passed unanimously 6-0.

Yes: 6 - Chair Warnke, Hammelman, Rathbun, McHugh, Commissioner Leung, and Commissioner Gienger

Not Present: 1 - Wright

COMMISSIONER MEETING COMMENTS



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 2. **File #:** WC 2022-068

To: Members of the Castle Rock Water Commission

From: Mark Marlowe, P.E., Director of Castle Rock Water
Matt Benak, P.E., Water Resources Manager
David Van Dellen, P.E. Stormwater Manager
Rick Schultz, Water Efficiency Supervisor
Linda Gould, Water Efficiency Specialist
Tina Close, Plan Review Supervisor

Ordinance Amending Sections 4.04, 13.12, and 15.48.020 of the Castle Rock Municipal Code Related to Water Dedication, Public Services, and Landscape and Irrigation Criteria Manual [Entire Castle Rock service area]
Town Council Agenda Date: September 20, 2022

Executive Summary

The purpose of this memorandum is to seek Town Council approval of an Ordinance on first and second readings to amend Sections 4.04, 13.12, and 15.48.020 of the Town of Castle Rock Municipal Code related to water dedication, public services, and the Landscape and Irrigation Criteria Manual (see **Attachment A**). A summary of the code changes is provided as **Attachment B**.

One of Castle Rock Water's strategic goals is to achieve a per capita demand of 100 gallons per capita per day (gpcd) by 2050. With the current 5-year average at 118.4 gallons per person per day, this would account for an additional 15.5% decrease in water use and essentially would act as a new source of supply.

The one water conservation measure that likely will have the most impact will be a major limitation of turf grass for lawns. This conservation measure was identified in the 2021 Water Resources Strategic Master Plan adopted by Town Council on April 19, 2022. The Town already prohibits the use of Kentucky bluegrass (*Poa pratensis*) for all new construction turf grass areas. However, with nearly half of the Town's annual water use still going to outdoor demands, major limitations on turf grasses for new development will be an important way to reduce demands going forward. Instead of turf grass for yards, Castle Rock Water recommends a *ColoradoScape* design be installed in the front and back yards of new homes. As defined in the Landscape and Irrigation Criteria Manual, *ColoradoScape* is "[a] natural landscape which uses low to very low water [less than ten (10) inches of water per year] plant material which blends in with the native Castle Rock landscapes. Plant material must be maintained in its natural form, utilizing a combination of hardscape and landscape materials which provide a variety of colors, textures, sizes, shapes and seasonal interest."

Staff has estimated the reduction in outdoor irrigation necessary to meet the Town's water conservation goal. If the Town no longer allows turf grass for any new front yards (it is the intention going forward that residential front yards will only be allowed to have a ColoradoScape design); limits backyards to no more than 500 square feet (sf) of irrigated turf; and the assumption is made that 125,000 people will be the ultimate population served, then the Town could see a reduction of 52% of future outdoor water use (based on what the outdoor water use would be without further turf limitations than today). This kind of reduction will allow the Town to achieve its water conservation goal. When present, swimming pools and water features will reduce the total amount of turf allowed by an equal area.

For non-residential customers, including apartment complexes, condominiums, townhomes, homeowners associations (HOA) common areas, and commercial businesses, the focus will be to eliminate non-functional turf. Non-functional turf is defined as those areas of turf where play or recreational activities cannot or do not take place. Passive use areas still will be necessary to walk dogs, recreate, or simply gather informally. Smaller areas of turf still can be installed for these passive uses although other options certainly will be encouraged and considered. ColoradoScape will be required where passive use areas are not in place. ColoradoScape areas will utilize point-source drip, inline drip tubing, or sub-surface drip irrigation.

If the Town's existing customers (approximately 80,000 people) are able to reduce water consumption from 118 gallons per person per day to 100 gallons per person per day, the water use savings would represent approximately 1,610 acre feet per year (AF/yr). This kind of savings would reduce the need to develop new water supplies, potentially avoiding \$56 million to over \$72 million in future investments.

The new turf limits would go into effect on January 1, 2023 for all new homes issued building permits after that date. Because the new turf limits would take water conservation for new homes to a much higher level than current standards in the Town, the incentive programs currently being offered for water efficient new homes would become irrelevant. This includes Castle Rock Water's 0.67 Single Family Equivalent (SFE) tap program and the Water Efficiency Plan (WEP) program. As part of the change to the new turf limits, Castle Rock Water recommends the discontinuation of these two programs. Instead, new homes after January 1, 2023, would pay reduced system development fees (SDFs) consistent with the fact that these homes will use less water than the current SFE. Staff proposes that all new homes after January 1, 2023 will have the potential to pay SDFs consistent with the 0.6 of an SFE which is the equivalent amount of water that these new homes are expected to use. Final SDFs will still be calculated based on equivalent flow through the meter, and as such, houses with significantly more fixtures may see SDFs above 0.6 of an SFE. SDFs will be calculated on a prorated scale from 0.67 SFE to 1.0 SFE similar to how they are currently calculated for WEPs. This will result in a potential savings of over \$16,000 per new home on SDFs based on proposed 2023 SDFs for the various enterprise funds.

Castle Rock Water also recommends changes to the groundwater bank tracking requirements. Homes built under these new code changes will debit the water bank for a typical development based on the water demand requirement determined at the time of plat or site development plan approval and would be amended if changes are made after approval.

Due to the importance of ensuring the correct landscape is installed for both the front and backyards of new homes, Castle Rock Water will be strongly incentivizing that home builders install both the front and back yards. This is because it will cost Castle Rock Water staff significant labor and time to ensure that backyards, when installed by new residents, meet the new requirements. It is much more cost effective from a Castle Rock Water labor standpoint to have this work done by the home builder instead of the new home owner. In addition, this approach will ensure that landscapers that have the Qualified Water Efficient Landscaper (QWEL) training and registration with the Town do the work. Finally, having the home builders install the backyards will ensure that the water budget for each home actually matches the landscape installed. If home builders choose not to install both the front and backyards, then they will not receive the above described discounted SDF and will instead be required to pay the full fees associated with 1.0 SFE. In addition, these home builders will still be required to provide a backyard landscape design for the house that will set the initial water budget for the house and that the new homeowner can have installed.

Notification and Outreach Efforts

Castle Rock Water staff presented the information to:

- The Economic Development Council (EDC) on May 10, 2022 and June 17, 2022
- The EDC Water Subcommittee on December 17, 2021, January 21, 2022, February 18, 2022, March 18, 2022, April 15, 2022, May 20, 2022, June 17, 2022, July 15, 2022 and August 19, 2022.
- Town of Castle Rock Contractor's Luncheon, introduced on December 15, 2021, re-introduced on March 16, 2022, with a formal presentation on May 18, 2022, and additional outreach on August 17, 2022.
- The Homebuilders Association on May 10, 2022 and May 24, 2022.
- The Developer's Roundtable on August 17, 2022.
- The Economic Development Council Executive Board on August 18, 2022.

The concept also was part of presentations made to different organizations on the 2021 Water Resources Strategic Master Plan, including the Rotary Club of Castle Rock, the Chamber of Commerce's Government Interest Committee, the Republican Breakfast, the Developers Roundtable several times and at an Open House at Castle Rock Water.

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

The concept was presented to the Castle Rock Water (CRW) Commission on February 23, 2022 and March 23, 2022 as part of presentations on the 2021 Water Resources Strategic Master Plan. The CRW Commission was supportive of the concept.

This concept was first introduced to Town Council on April 19, 2022 as part of the discussion and approval of the 2021 Water Resources Strategic Master Plan.

Discussion

The Town of Castle Rock resides in a semi-arid, high desert climate receiving only 15 inches of annual precipitation on average. Much of the turf grass that has been planted around the community may require twice that amount of water to survive. Because of the demand that irrigating turf grass places on our water resources, Castle Rock Water has been offering rebates for turf removal since 2009. Other entities around the front range have similar programs, such as Centennial Water and Sanitation District serving Highlands Ranch, and the City of Aurora. In fact, Aurora has passed an ordinance requiring no turf in front yards and a 500 sf limit of turf in backyards similar to what Castle Rock is proposing. The turf replacement trend has now found state-wide support with the passage of House Bill HB22-1151 in June 2022. This new law provides an estimated four million dollars to be spent over the next two years to help land owners convert their yards from turf to xeriscape (similar to the Town's ColoradoScape) landscapes. Some of the monies will be allocated to local governments (such as Castle Rock), who have existing turf replacement programs.

Reducing the amount of plant material that requires irrigation in Castle Rock's service area also will help with water demand management. The Town has used mandatory water management for landscape irrigation since 1985 by providing an alternating irrigation schedule. Castle Rock's water demands in the summer often spike to 4 to 5 times of what the demands are during the winter months putting strain on the water treatment, pumping, storage, and distribution infrastructure around the community.

For many years, Castle Rock Water has offered what is called the "0.67 SFE program." Under this current program, a home that is not covered under a Water Efficiency Plan (WEP), that has a potential maximum flow rate through a meter of 20 gallons per minute (gpm) or less (which includes fixture counts for in-home and outdoor irrigation) and less than 1,400 square feet (sf) of total irrigated area will currently save \$12,297 in system development fees (SDF). **Homes built under the 0.67 SFE program require the home builder to install both the front yard and the backyard landscaping at the time of construction.** Currently, there are 1,957 homes with a 0.67 SFE designation in Castle Rock.

A WEP home is given a 2 gpm credit for the indoor domestic water, which in many cases, allows them to meet a 0.67 single family equivalent (SFE) category. If the total indoor gpm, with 2 gpm credit plus outdoor irrigation is less than 20 gpm, they are charged for 0.67 SFE. If a home is over 20 gpm, the Town prorates the system development fee (SDF) between the actual SFE and 1 SFE. Those savings could be up to \$12,297. To date, the Town has not had a WEP home go over 0.79 SFE, which equates to a savings of \$7,826. **WEP homes also have to provide front and back yard landscape**, but do not have to meet the 1,400 sf total irrigated area, since they follow the water efficiency plan stipulations. To date, there are 345 homes with a WEP designation. Both the 0.67 SFE and WEP programs no longer will be relevant with the proposed changes to the landscape requirements. As such, the ordinance amendments described in this memorandum recommend discontinuation of the programs and removal of the incentives offered under them.

It is important to note that there will be an incentive under the new landscape criteria that will replace these existing incentives. Most houses under the new landscape criteria will achieve a 0.6 SFE designation by achieving a maximum flow rate through the meter of 18 gpm and will pay SDFs consistent with 0.6 of an SFE. SDFs will still be calculated based on the maximum calculated flow rate through a meter so homes with more fixtures may not achieve 18 gpm. CRW is recommending

that we prorate fees between 0.67 SFEs and 1.0 SFE similar to what is currently done for houses built under a WEP. Potential savings on proposed 2023 SDFs could be as high as \$16,000, higher than the maximum savings offered today under the 0.67 SFE Program and the WEP. **This incentive will only be offered if a home builder installs both the front and backyard landscape consistent with Castle Rock Water's existing incentive programs.**

Castle Rock Water contracted with Norris Design, a local landscape and irrigation design and consulting firm, to prepare a series of lot-specific typical designs and water use analysis for ColoradoScape designs. Their scope includes a comprehensive design guideline (see **Attachment C**). These typical designs were used to estimate actual water use for the new homes. The calculated values are approximately half of a typical home in Castle Rock.

From this design guideline, cost estimates were solicited from several local production installation contractors. The preliminary estimates received have indicated the cost of ColoradoScape to be equal to or less than the cost of a similar traditional turf-centric landscape (see **Attachment D**). An in-depth landscape and irrigation design has been created and currently is being distributed to the same group of contractors for further cost comparison. The reduced SDF will also help cover any additional costs for home builders to install a ColoradoScape.

During the public outreach process for the proposed landscaping changes, some stakeholders expressed concerns regarding potential impacts to foundation design for residential construction. The Town has consulted with Ground Engineering to provide a geotechnical opinion regarding this matter. Based on this consultation, Castle Rock Water believes home builders can develop appropriate designs for foundations based on the new turf limits.

Finally, Castle Rock Water retained Wright Water Engineers, Inc., to perform an engineering analysis of stormwater implications due to the proposed limitations of irrigable turf area. This analysis is necessary to understand the potential impacts to storm drainage infrastructure and water quality on residential development as a result of restricting the maximum allowable turf and implementing ColoradoScape landscape standards. Castle Rock Water should have the results of their study by December 2022.

Budget Impact

There is no significant anticipated additional cost to the Town if Council approves the proposed code amendment. Some minor administrative work may be needed. The major impacts are to revenues from SDFs and savings on future water resources capital project needs. Since homes built under the new code will use significantly less water, a reduced SDF as low as 0.6 of the current SDF is being proposed. This will reduce SDF revenues by millions of dollars. If Castle Rock Water achieves its goal in additional water conservation, however, the savings in future capital investment needs could be \$56 to \$72 million based on present values. The proposed changes will help reduce outdoor water usage and, therefore, reduce the total amount of renewable water needed in the future and reduce the future peak water demands placed on the system to meet the summer irrigation demands of the community. The changes will also push some capital investments further out into the future. All of these impacts will save both existing rate payers and future customers on rates and fees. This is because less infrastructure and smaller infrastructure can be installed which ultimately will be less

costly to operate and maintain and rehabilitate and replace in the long term.

For 2022, the SDFs for 0.67 SFE homes are \$24,771 and for a standard ¾” tap home are \$37,068. Average monthly water use for 0.67 SFE homes has been 5.04 kgal/month and for a standard ¾” tap home is 7.72 kgal/month. Preliminary calculations for the proposed new residential program indicate that estimated outdoor annual water usage will be 12,550 gallons on average. This is about 41% of the current estimated outdoor annual water use of a current 0.67 SFE home and the new program would have an estimated total annual water use of approximately 70% of a current 0.67 SFE home. This means new houses under the program will be approximately 0.47 SFE homes relative to our standard ¾” tap assuming the estimates by Norris Design hold true. In recognition of this, staff is proposing to allow the system development fee for new homes subject to the new requirements after January 1, 2023, to go as low as \$25,231.80 which is 60% the proposed 2023 standard ¾” tap for Water, Wastewater and Renewable Water. Castle Rock Water will continue with our annual rates and fees study and update future SDFs for homes meeting the new standard in accordance with the result of the future studies.

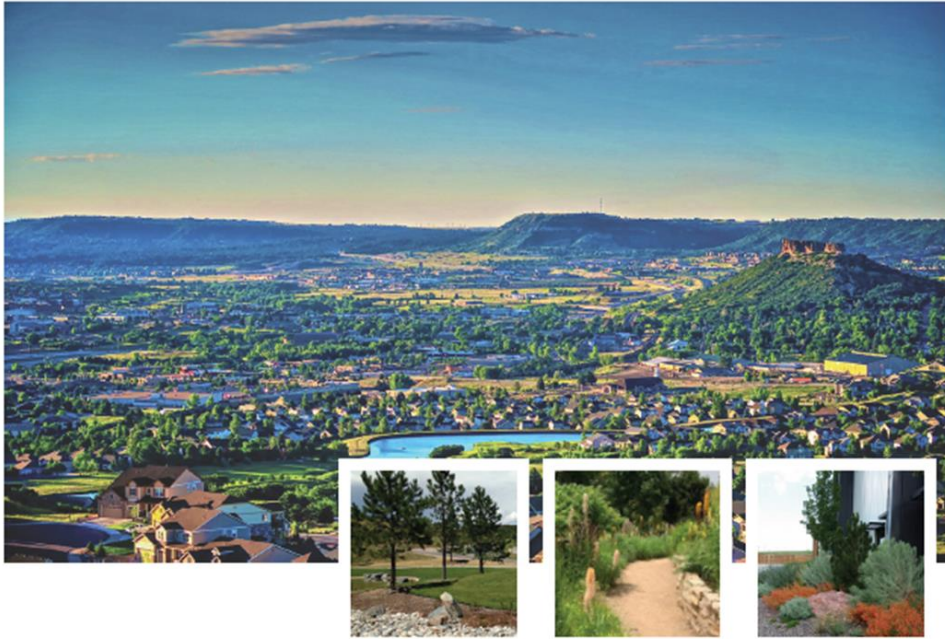
In 2021, there were 404 homes of the total 959 built that were 0.67 and WEP homes. If we assume the same percentage of homes will be 0.67 and WEP homes in 2023, then system development fee revenues will be reduced by an estimated \$7.4 million assuming that SDFs in 2023 are the same as they are in 2022. The good news is future capital costs also will be reduced significantly to serve the new homes as a result of the large reduction in water use. Furthermore, operating revenues will be reduced for new homes constructed after 2023 relative to existing homes due to the reduced outdoor usage and the fact that indoor water rates are lower than outdoor water rates. Revenues for these future houses are estimated to be 60% of current typical homes. These revenues and the required capacities for new capital projects will be incorporated into future rates and fees studies.

Proposed Motion

“I move to recommend Town Council approval of the Ordinance as presented”

Attachments

- Attachment A: Ordinance
- Exhibit 1: Manual
- Attachment B: Summary of Changes to the Manual
- Attachment C: ColoradoScape Design Guidelines
- Attachment D: Cost Evaluations on ColoradoScape verse Turf



TOWN OF CASTLE ROCK

Landscape and Irrigation Criteria Manual

Date, 2022



Acknowledgements

The changes to this Landscape and Irrigation Criteria Manual was a collaborative stakeholder effort led by staff at Castle Rock Water. The following people have made significant contributions of time and input on this document:

- Matt Benak, PE, Water Resources Manager
- Brad Boland, AICP, Planner II
- Tina Close, PE, Plan Review Supervisor
- Tim Friday, PE, Assistant Director of Castle Rock Water
- Linda Gould, Water Conservation Technician
- Pam Hall, Planner I
- Ian Hamilton, Parks/Open Space Supervisor
- Julie Kirkpatrick, PLA, ASLA, Plan Review Project Coordinator
- Mark Marlowe, PE, Director of Castle Rock Water
- Rick Schultz, Water Efficiency Supervisor
- Ruth Stadler, Water Conservation Plan Reviewer
- Sandy Vossler, Senior Planner
- Stacey Weaks, Norris Design



*Published by
Town of Castle Rock
100 N. Wilcox St.
Castle Rock, CO 80104*



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Contents

- Section 1** General Provisions
- Section 2** Professional Registration
- Section 3** Landscape and Irrigation Submittal Requirements
- Section 4** General Requirements
- Section 5** Multi-Family Residential
- Section 6** Single Family and Two-Family Residential
- Section 7** Non-Residential Properties
- Section 8** Urban Areas
- Section 9** Streetscapes, Rights-of-Way, and Tracts along Rights-of-Way
- Section 10** Parks, Sports Fields, and Golf Courses
- Section 11** Appendix A

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Section 1: General Provisions

These performance standards, criteria, and regulations, together with all future amendments, shall be known as the Town of Castle Rock Landscape and Irrigation Criteria Manual (hereafter called "Criteria"). All landscape and irrigation design, installation, and maintenance performed as a requirement of Castle Rock Municipal Code, Town of Castle Rock Development Procedures Manual, Building and Construction Code, and any other regulation, policy, or criteria adopted by the Town of Castle Rock, shall comply with these Criteria.

All new or qualifying renovated landscaping within the Town limits, including remodels requiring an irrigation, building, or plumbing permit which change irrigation demands or water quality control, shall comply with these Criteria. It is the purpose and intent of these Criteria to establish landscape and irrigation performance standards and criteria that will reflect Town identity and the desire of the community, as expressed through the Town's Vision and Comprehensive Master Plan, and that will:

Promote water conservation

- Demonstrate and recognize the need to invest future water and other resources as efficiently as possible
- Assist in reducing the overall per capita use of water within the Town's service area
- Reduce peak summer water usage
- Reduce or eliminate outdoor water waste
- Assist with water budget rate structure compliance
- Promote the conservation of water supplies through the use of landscape and irrigation design and materials that can have a beneficial effect upon water conservation

Encourage appropriate use of materials

- Promote the values and benefits of natural and indigenous landscapes for new landscape projects within the Town's service area
- Provide for the protection of and implementation of native vegetation
- Promote the conservation of energy resources through the use of landscape design and material that can have a beneficial effect upon energy conservation

Increase public safety

- Increase street safety by reducing or eliminating the potential of water and ice on all paved surfaces resulting from irrigation-related water waste
- Reduce damage to publicly owned streets caused by irrigation-related water waste
- Increase awareness of defensible space for fire mitigation

Facilitate successful projects

- Establish a procedure for designing, installing, and maintaining water efficient landscapes in new projects
- Establish a regulatory framework for the administration of landscape and irrigation design, plan review, installation, inspection, and maintenance

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Section 1: General Provisions

1.1 GOVERNING REGULATIONS

Unless the Town expressly approves a specific technical criteria variance or deviation, these Criteria and all applicable Town of Castle Rock secondary codes shall govern in all cases where plans or approvals are required.

The Town of Castle Rock makes every attempt to provide a thorough and accurate landscape and irrigation plan review and inspection. In the event an item or items are missed in plan review or during inspections, it does not relieve the applicant or permit holder from meeting all requirements as identified in the Landscape and Irrigation Criteria Manual, the Water Use Management Plan, or Municipal Code.

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1.2 JURISDICTION

These Criteria shall apply to all public and private lands located within or served by the Town of Castle Rock, including:

1. New development or construction
2. Currently approved development plans which are changed by amendments subsequent to the effective date of this document
3. Any change of land use and conversion of land, whether residential or non-residential, public or private
4. When conditions exist for joint or multiple land uses concurrent on a single site or development property, landscaping that is most consistent with the primary, prescriptive land use shall apply
5. Projects which impact twenty-five (25) percent or greater of landscaped area associated with a single water service connection (one tap)
6. Projects which impact ten-thousand (10,000) square feet or greater of landscaped area associated with one or more service connection (one or more taps)
7. Irrigation maintenance: Through the course of routine maintenance, all replacement irrigation equipment shall meet current Criteria

These Criteria shall govern over privately enforced guidelines or requirements related to landscaping and irrigation (i.e. business association, metropolitan district, homeowner association design guidelines, regulations and requirements, etc.)

1.3 PURPOSE

Presented in these Criteria are the policies, procedures, performance standards, and minimum criteria for the design, installation, and maintenance of landscaping and irrigation within the Town's service area. These Criteria provide comprehensive water efficient design, installation, and maintenance standards for landscaping and irrigation within the Town's service area in a manner that balances quality of life and social awareness with the overall responsibilities of the Town as the water provider.

All landscaping and irrigation plans submitted for approval under the provisions of these Criteria shall include appropriate landscape and irrigation planning, analysis, and design. All landscaping and

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Section 1: General Provisions

irrigation plans shall meet or exceed these Criteria,

Deleted: Such planning, analysis, and design shall conform with or exceed these Criteria.

1.4 AMENDMENT

These Criteria may be amended as new technology or other industry related standards or best management practices are developed, or if experience gained in the use and application of these Criteria indicates a need for revision. Minor revisions will require the approval of the Director of Castle Rock Water.

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All major revisions will require Town Council adoption, by Resolution, following a Public Hearing thereon. The Director of Castle Rock Water, or designee thereof, shall monitor the performance and effectiveness of these Criteria and will recommend amendments and revisions as necessary.

1.5 ENFORCEMENT RESPONSIBILITY

The Town shall review all landscape, irrigation, and maintenance reports, plans, analysis, design, and installations for compliance with these Criteria. The Criteria are enforced by the Town or authorized representative.

1.6 REVIEW AND APPROVAL

The Town shall review all submittals for general compliance with these Criteria. An approval by the Town does not relieve the owner, designer, installer, or maintenance contractor from the responsibility of ensuring the design, plans, specifications, construction, maintenance, and record drawings are in compliance with these Criteria.

1.7 INTERPRETATION

The following shall govern the interpretation and application for the provisions of the Criteria:

1. These provisions shall be regarded as the minimum Criteria for design, installation, and maintenance of landscape and irrigation.
2. Whenever a provision of these Criteria and any other provision of the Town of Castle Rock Municipal Code or any provision in any law, ordinance, resolution, rule or regulation of any kind, contains any requirements covering any of the same subject matter, the requirements that are more restrictive or impose higher standards shall govern. In the event that there is a discrepancy in the interpretation of these Criteria, the Director of Castle Rock Water, or designee thereof, shall make the final determination of the intent of these Criteria.
3. These Criteria shall not abrogate or annul any binding agreements, issued permits, or approved landscape and irrigation construction plans, either recorded or approved by the Town, prior to the effective date of these Criteria.

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1.8 RELATIONSHIP TO OTHER CRITERIA

If the State, Federal government, or other applicable regulatory agency imposes stricter criteria, standards, or requirements than those contained herein, such provisions shall apply, and shall be subsequently incorporated into the Town's requirements after due process and public hearing(s) to

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Section 1: General Provisions

modify the Town's regulations and these Criteria.

1.9 VARIANCE AND DEVIATION

Refer to the Town Development Procedures Manual for information regarding deviations and technical criteria variances [and deviations](#) to these Criteria.

1.10 SUPPLEMENTAL INFORMATION TO THESE CRITERIA

Supplemental information, forms, checklists, notes, etc., listed below, are available on the Town of Castle Rock website (CRgov.com) and shall be referenced or submitted in accordance with the requirements set forth in these Criteria. Contact the Director of Castle Rock Water, or designee thereof, with any questions regarding the downloading of these files. It is the responsibility of the owner / applicant and designer, installer, or maintenance contractor to obtain the latest version of any submitted document, as the Town will periodically update these items.

1. Checklists and Forms
2. Composite Landscape Water Use Rating Chart (CLWUR)
3. [Drawing Submittal Requirements](#)
4. Electronic Data Submittal Layer Requirements
5. General Construction Drawing Cover Sheet Notes
6. Overlay Districts (Municipal Code Chapter 17)
7. Record Drawing Checklists
8. [Registered Landscape Professional list](#)
9. Signature Block
10. Site Development Plan General Notes
11. Standard Construction Notes
12. Standard Details
13. Technical Criteria Variance Request Form
14. Temporary Irrigation Criteria
15. [Town of Castle Rock Approved Plant List](#)
16. [Water Use Management Plan](#)

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1.11 VIOLATIONS AND PENALTIES

Refer to the Castle Rock Municipal Code for information regarding violations and penalties.

1.12 ACRONYMS

As used in the Town's Landscape and Irrigation Criteria Manual, the following acronyms shall apply:

BMP, BMPs Best Management Practice(s)

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Section 1: General Provisions

CD, CDs	Construction Document(s)
CLWUR	Composite Landscape Water Use Rating
CO	Certificate of Occupancy
ET	Evapotranspiration
FPS	Feet per Second, referencing velocity
GPM	Gallons per Minute
IA	Irrigation Association
K	Potassium
LWUR	Landscape Water Use Rating
N	Nitrogen
P	Phosphorus
PD	Planned Development
PDP	Planned Development Plan
PLA	Professional Landscape Architect
PRV	Pressure Regulating Valve
PSI	Pounds per Square Inch
QWEL	Qualified Water Efficient Landscaper
RLP	Registered Landscape Professional
ROW	Right-of-way
RP, RPA	Reduced Pressure Principle Assembly
SDI	Subsurface Drip Irrigation
SDP	Site Development Plan
SDT	Sight Distance Triangle
TCO	Temporary Certificate of Occupancy
TCR, TOCR	Town of Castle Rock
TESC	Temporary Erosion and Sediment Control
WEP	Water Efficiency Plan

1.13 DEFINITIONS OF TERMS

ACTIVE PARK: A public common area with an active/programmable sports field.

ALTERNATIVE TURF: Grasses cultivated in very close proximity, to form a living surface at the ground plane, generally intended to be mowed regularly, forming a dense growth of leaf blades and roots, including grasses other than bluegrass or bluegrass blends. These may include fescue hybrids, blue grama, and buffalo grasses propagated as turf.

ANNUAL: A type of plant material, typically flowers, that require replanting each season.

APPLICANT: The individual or organization applying for land use or permitting action.

APPLICATION RATE: The amount and frequency water is applied to landscaping by the irrigation system, usually measured in inches per hour.

ARTIFICIAL TURF: A non-living material typically used in lieu of a living turf / lawn. The appearance mimics a green, living turf during the growing season.

AS-BUILT DRAWINGS: The approved Town of Castle Rock stamped landscape and irrigation construction plans updated [electronically](#) with any changes or deviations. Final disposition, location, with dimensions of the installed landscape and irrigation equipment shall be shown on as-built drawing [and submitted at project completion](#).

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Section 1: General Provisions

BACKFLOW PREVENTION ASSEMBLY: A mechanical device installed at the beginning of the irrigation system to prevent a reverse water flow and contamination of the potable water supply.

BERM: An earthen mound intended for visual interest or screening of undesirable views. A berm is effective in buffering between differing land uses and reducing noise. The maximum slope of berms shall not exceed 4:1 (twenty-five (25) percent).

BLUEGRASS: Any grass of the genus *Poa*, having dense tufts of bluish-green blades and creeping rhizomes. Examples include, but are not limited to: Kentucky bluegrass, *Poa pratensis* and Canada bluegrass, *Poa compressa*.

CALIPER: The measurement in diameter of a tree trunk measured six (6) inches above the ground.

Deleted: for trees up to four (4) inch size and twelve (12) inches above the ground for larger sizes.

CERTIFIED IRRIGATION AUDITOR: A person who has successfully completed formal training, certification, licensing, or other similar qualifications by the Irrigation Association or Qualified Water Efficient Landscaper (QWEL) to perform irrigation audits.

CHECK VALVE: A device that prevents a reverse water flow in pipes and sprinkler heads, commonly used in sprinkler heads or emitter systems to prevent low head drainage.

COLORADOSCAPE: A natural landscape which uses low to very low water (less than ten (10) inches of water per year) plant material which blends in with the native Castle Rock landscapes. Plant material must be maintained in its natural form, utilizing a combination of hardscape and landscape materials which provide a variety of colors, textures, sizes, shapes and seasonal interest.

COMMON AREA: Land area within a development, intended for joint, private or public, ownership and use, including pocket parks, passive parks, and active parks. These areas are often maintained by a homeowner's association, business association, or in some instances, the Town. Pocket parks, passive use areas, and active parks are considered a common area for the purposes of these standards and Criteria.

COMPOSITE LANDSCAPE WATER USE RATING (CLWUR): The area of weighted average of the landscape water use ratings for all landscape zones within a project or the Town as a whole. It is defined as the sum of the products of the landscape water use rating and the irrigated area (in square feet) for each landscape zone divided by the total area of all zones. The composite landscape water use rating is expressed by the following formula:

$$\text{Formula } CLWUR = \sum_{k=1}^N$$

$$LWUR_k * IA_k / TA$$

Where CLWUR = Composite landscape water use rating $LWUR_k =$

Landscape water use rating for each landscape zone $IA_k =$ Irrigated area (in square feet) for each landscape zone

$TA =$ Total area (in square feet) for all landscape zones included in the composite

The composite landscape water use rating is computed for a project using all landscape zones shown on the landscape design and management plan. The composite rating is computed using all zones for all irrigated public areas within the Town's service area. Non-irrigated native seed areas are not included in CLWUR calculations. See the Town website at CRgov.com for the CLWUR chart for the Town of Castle Rock Municipal Code 13.20.030.

COMPOST: Fully finished, stabilized, and mature product, derived from organic materials such as

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Section 1: General Provisions

leaves, grass clippings, wood chips, and other yard wastes. Finished compost is dark and crumbly, does not resemble the original contents, and has an earthy smell. Acceptable compost will not contain any human or animal waste.

CONIFEROUS: A tree or shrub that bears cones and evergreen foliage.

CONTROLLER: An electric timing device that operates each zone of an irrigation system for a predetermined time and frequency.

CONTROL VALVE: Valves that turn water on and off to the individual zones of sprinklers or drip emitters.

COVERAGE: The extent of area where water is applied by sprinkler heads. This is used in the context of proper head spacing.

CROSS CONNECTION: Any point in a water distribution system where chemical, biological, or radiological contaminants may come into contact with potable water. During a backflow event, these contaminants can be drawn or pushed back into the potable water system. A backflow prevention device installed at every point of cross connection prevents contaminated water from entering the potable water distribution system.

CU-Structural Soil™ (U.S. Patent # 5,849,069): A two-part system comprised of a rigid stone “lattice” to meet engineering requirements for a load-bearing soil, and a quantity of soil, to meet tree requirements for root growth. The lattice of load-bearing stones provides stability as well as interconnected voids for root penetration, air and water movement.

CYCLE: An interval of time during which an irrigation system is operated for one sequence of a regularly recurring succession of watering events.

DECIDUOUS: A plant or tree with foliage that is shed annually.

DEVELOPED AREAS: Any area on which a site improvement or change is made including buildings, landscaping, parking, streets, and/or utilities.

DEVELOPER: Person, persons, or organization that is responsible for the development of land, buildings, and/or related improvements – often for the purpose of sale to a subsequent owner. The developer may be the property owner.

DOWNTOWN STREETSCAPE: A Combination of window boxes, planters, trees, shrubs, perennials, annuals, and groundcovers, as appropriate to enhance building entries and buffer street.

DRAIN VALVE: A valve used to drain an irrigation system for repairs or freeze protection.

DRIP EMITTER: A small irrigation device that emits a drop of water at very low pressure with flows measuring in gallons per hour.

DRIPLINE: An imaginary vertical line extending downward from the tips of the outermost branches of a tree or shrub to the ground.

DROUGHT: Periods or seasons with below average precipitation.

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Section 1: General Provisions

DROUGHT RESISTANT: A plant's ability to endure drought being unstressed and maintaining normal appearance and health, similar to drought avoidance.

DROUGHT TOLERANT: A plant's ability to withstand drought without dying.

DRYLAND SEED MIXTURE: A native seed mixture that does not require ongoing supplemental irrigation, but may benefit from temporary irrigation for establishment.

DWELLING: Any building or portion thereof which provides complete independent living facilities for a family or individual, including permanent provisions for living, sleeping, eating, cooking, and sanitation, but not including hotels, motels, tourist courts, clubs, hospitals, or similar uses.

DWELLING, MULTI-FAMILY: A building, or portion thereof, designed for occupancy by three or more families living independently of each other.

APARTMENT: A building containing three or more suites of rooms, with toilet and culinary accommodations, used or designed for use as a dwelling by a family or individual with shared areas and facilities.

CONDOMINIUM: A building containing three or more suites of rooms, with toilet and culinary accommodations, used or designed for use as a dwelling by a family or individual with shared areas and facilities. Each dwelling is individually owned and shared areas and facilities are commonly owned.

TOWNHOME: A building containing three or more dwellings, which is part of a structure in which each dwelling has a private entrance and each dwelling is attached horizontally, in a linear arrangement, and having a totally exposed front and rear wall to be used for access, light and ventilation.

DWELLING, TWO-FAMILY: A building designed exclusively for occupancy by two families, living independently of each other.

DUPLEX: A building containing two dwellings attached by a wall or floor.

PAIRED HOME: A building containing two dwellings attached by a wall.

SINGLE-FAMILY ATTACHED: A building containing two dwellings attached by a wall.

DWELLING, SINGLE-FAMILY: A building designed exclusively for occupancy by one family.

SINGLE-FAMILY DETACHED: A building containing one dwelling unit.

EASEMENT: The right to use lands owned by other parties for the purposes of maintenance, access, drainage, or other use, as specified in an agreement between parties.

ENTRY STREET: A main access to a subdivision.

ESTABLISHMENT IRRIGATION: Supplemental irrigation required during the establishment period.

ESTABLISHMENT PERIOD: The period of time required for a plant to seed, germinate and establish a healthy root system, which promotes long-term health and growth.

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Section 1: General Provisions

EVAPORATION: The change by which water is converted from a liquid to a vapor.

EVAPOTRANSPIRATION (ET): A calculation of water loss due to evaporation from the soil surface and transpiration through plant foliage.

EVERGREEN: A plant with foliage that persists and remains green year-round.

EVERGREEN TREES: A tree with foliage that persists and remains green year-round.

FABRIC: A porous geotextile material installed underneath mulch that is manufactured specifically to reduce the growth of weeds within planting bed areas. Also known as weed barrier.

FIELD CHANGE ORDER (FCO): Paperwork and justification for a change to landscape and/or irrigation construction documents once a project is under construction.

FINAL GRADE: The finished ground surface or contour after construction, prepared for plants.

FINAL PD SITE PLAN: Final Planned Development (PD) Site Plan and is the detailed development plan of a property which generally indicates the final planned use of the property, building and parking locations, building elevations, service connections, landscape and other site improvements. Now known as Site Development Plan (SDP).

FLOW SENSOR: A device that measures the rate of water flow in an irrigation system quantified in gallons per minute (GPM).

GALLONS PER MINUTE (GPM): The flow rate of water, volume for a period of time.

GOLF COURSE: The ground or course over which golf is played.

GROSS SITE AREA: The total square footage of the property associated with a development plan that includes landscape and/or irrigation installation and/or renovation.

GROUND COVER: Living plant material that grows low to the ground, usually under twelve-inches in height, often of a spreading nature.

GROWING SEASON: The five-month period of May through September.

HARDSCAPE: Non-living site improvements at the ground plane such as a building, pavement, walkways, and parking areas – including those of crushed stone, patios, decks, mulch area (exclusive of mulch area in shrub and perennial beds), and other similar improvements as determined by the Town. Hardscape area does not include artificial turf unless as otherwise approved in this document.

HEAT ISLAND EFFECT: An “island” of higher temperatures caused by changing surfaces from permeable to impermeable as a result of development. See the United States Environmental Protection Agency website at www.epa.gov for more information.

HEIGHT: for the purposes of these Criteria, is determined as typically measured by National Nursery Association Standards.

HIGH WATER USE: A plant material that requires over fifteen (15) inches of supplemental irrigation

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Section 1: General Provisions

during each growing season (May through September).

HYDROZONE: Landscape, containing vegetation requiring similar water needs and exposure. For the purposes of this document, hydrozones are broken into four (4) categories:

VERY LOW HYDROZONE: Plant materials that require five-inches or less of supplemental water applied during the growing season. The plant materials within this zone are typically drought-tolerant natives. This hydrozone is designated by the letter “V” and has a landscape water use (LWU) rating of zero (0) to one and one half (1.5).

LOW HYDROZONE: Plant materials that require over five-inches and up to or equal to ten (10) inches of supplemental water applied during the growing season. This hydrozone shall be designated by the letter “L” and has a landscape water use (LWU) rating of greater than one and one half (1.5) and less than or equal to three (3.0).

MODERATE HYDROZONE: Plant materials that require over ten (10) inches or up to or equal to fifteen (15) inches of supplemental water applied during the growing season. The plant materials within this zone are typically native hydrophilic or exotic species. This hydrozone is designated by the letter “M” and has a landscape water use (LWU) rating greater than three (3) and less than or equal to four and one half (4.5).

HIGH HYDROZONE: Plant materials that require over fifteen (15) inches of supplemental water applied during the growing season. The plant materials within this zone are intended for high-pedestrian traffic areas such as sports fields or community gathering spaces. Plant materials using up to nineteen (19) inches may be used in qualifying passive use common areas, with approval. There are limits to the amount of high water use plant materials that may be used on a single family residential property. The landscape water use (LWU) for high water use plant material is 4.5.

INORGANIC MATTER: A non-naturally occurring and/or manufactured product such as perlite, used to enhance the soil texture and/or water holding capacity of soils.

INTERFACE LANDSCAPING: Landscaping between changing land uses, such as between residential and commercial, residential and industrial, or dissimilar residential properties. Such areas shall require increased landscaping to create buffers between uses.

IRRIGABLE AREA: All pervious surfaces within the lot.

IRRIGATED AREA: The actual area covered by plant material at mature size and permanently installed irrigation.

IRRIGATED PUBLIC AREA: Land area that is not native or natural open space and in which healthy vegetative growth is maintained by the application of water through an irrigation system. Irrigated public areas shall include, but are not limited to, any and all irrigated areas associated with irrigated public lands and easements owned by the Town and/or any metropolitan district or homeowner’s association within the Town. Irrigated public areas include public street entrances, parking lots, rights-of-way, public parks, and recreation areas, and all areas whether owned, maintained, or irrigated at public expense by the Town, metropolitan district, or homeowner’s association.

IRRIGATION: An automatic, permanent or temporary, watering system designed to transport and distribute water to landscape plants.

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Section 1: General Provisions

IRRIGATION ASSOCIATION: A non-profit North American organization formed to improve the products and practices used to manage water resources and to help shape the business environment of the irrigation industry.

IRRIGATION AUDIT: A procedure to collect and present information concerning the uniformity of application, precipitation rate, and general condition of an irrigation system and its components. This procedure, according to the Irrigation Association includes a visual site inspection of the installed irrigation system for performance according to design criteria.

IRRIGATION DESIGN: Creation of a drawing and associated information depicting irrigation system components and details.

IRRIGATION EFFICIENCY: A quantitative measurement of distribution uniformity as determined through an irrigation audit.

IRRIGATION PLAN: A plan drawn to scale that indicates the irrigation components and their specifications as related to a specific landscape plan. This is a two-dimensional plan drawn to scale that shows the layout of irrigation components, specifications, and hydrozones.

IRRIGATION SEASON: The period during which supplemental irrigation is used to maintain plant health, for purposes of these Criteria shall mean May through September.

INVASIVE PLANT: Plant that is non-native and able to establish, growing quickly, and spreading to the point of disruption of plant communities and/or ecosystems.

LANDSCAPE: Any combination of living plants, such as trees, shrubs, vines, groundcovers, flowers and/or grass, natural features such as land and water forms, rock, stone, bark chips or shavings, and structural features including but not limited to fountains, pools, outdoor art work, walls, fences or benches.

LANDSCAPE ARCHITECT: A professional licensed to practice landscape architecture by the State of Colorado. Also referred to as a Professional Landscape Architect (PLA).

LANDSCAPE AREA: The area within a lot or property not comprised of hardscape, measured at the ground plane. Landscape area will not include bare dirt or weeds. Landscape area will consist of living groundcover, including turf or other groundcover, or shrub bed area which is permanently irrigated.

LANDSCAPE BUFFER: A landscape area intended to physically and visually separate one land use from another.

LANDSCAPE DESIGNER: A professional who has successfully completed formal study or training in the field of landscape design, culminating in either certification, licensing, or degree.

LANDSCAPE GRADING PLAN: A plan drawn to scale that shows the designed landscape gradient and elevation using one-foot or two-foot contour lines with numeric notation of elevations.

LANDSCAPE IMPROVEMENTS: All elements typically used or existing in the designed landscape such as, but not limited to, soil, compost, rock, plant material, edging, weed barrier, mulch, and irrigation system.

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Section 1: General Provisions

LANDSCAPE ISLAND: Shall refer to a landscape area in a parking lot typically surrounded on four sides by parking spaces or drives.

LANDSCAPE PLAN: A plan drawn to scale that shows the layout of all landscape components and their specifications for a development site.

LANDSCAPE PROFESSIONAL: A landscape or irrigation designer, installer, or maintenance contractor that possesses the qualifications associated with the specific discipline of landscape or irrigation design, installation, or maintenance of landscape and irrigation systems.

LANDSCAPE SETBACK: An area reserved for the primary use of landscaping measured by the horizontal distance between two points of reference. Oftentimes landscape setback area refers to a distance of landscape area located between the property line and a building, parking area or other hardscape. Sidewalks located within a landscape setback area will necessitate a corresponding increase in the setback.

LANDSCAPE WATER USE RATING: A numeric rating assigned to a landscape zone that represents the irrigation water requirement. The LWU rating is computed by dividing the irrigation water requirement (in inches) for the zone by five (5.0) and is expressed by the following formula:

Formula LWUR = IWR/5.0
Where LWUR = Landscape water use rating
IWR = Irrigation water requirement

The four (4) defined landscape zone types have LWU ratings within the following ranges:

<u>Landscape Zone</u>	<u>LWU Rating Range</u>
Very low water use	0.0 to 1.5
Low water use	+1.5 to 3.0
Moderate water use	+3.0 to 4.5
High water use	+4.5

LAND USE: The designation in these Criteria such as single-family, two-family, multi-family, non-residential, or other type of land use designation, as defined by the Town of Castle Rock in master planning and/or municipal code.

LARGE CANOPY DECIDUOUS SHADE TREE: A deciduous tree that has a mature height equal to or greater than thirty, (30) feet and provides shade.

LATERAL: Piping between the control valve and the sprinkler head.

LOW HEAD DRAINAGE: A situation where water drains partially or completely out of the lateral line through the sprinkler head after each irrigation cycle is complete. This causes water waste, and check valves should be used in heads to mitigate this situation.

LOW WATER USE PLANT MATERIAL: Plants that require more than five-inches and up to ten (10) inches of supplemental irrigation per season, May through September, to maintain optimum health and appearance.

MAINLINE: Piping upstream of the control valve in an irrigation system.

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Section 1: General Provisions

MAINTENANCE: Any activity undertaken to prevent the deterioration, impairment, or need for repair of an area, structure, rights-of-way, or land use, including but not limited to management, repair or replanting of plant materials, landscape materials, and/or irrigation system.

MAJOR MODIFICATION: Changes in live plant material coverage and/or square footage; and/or changes to irrigation service line sizes, drastic relocation of irrigation mainlines, changes in irrigation water application methods between overhead and sub-surface, and irrigation head types.

MAJOR REVISION: A revision to this manual that involves policy changes, technical criteria variances, and / or major construction detail revisions.

MASTER VALVE: The valve that turns water on and off for the entire irrigation system.

MEDIAN: An area that separates lanes of traffic traveling in opposing directions.

MINOR REVISION: A change to this manual that involves grammar, submittal requirement changes, clarifications and construction detail revisions for clarification, and / or minor modifications.

MOBILE HOME: A transportable structure suitable for year-round single-family occupancy and having water, electrical, and sewage connections similar to those of conventional single-family dwellings.

MODERATE WATER USE PLANT MATERIAL: A plant material that requires over ten (10) inches and less than fifteen (15) inches of supplemental irrigation per season, May through September, to maintain optimum health and appearance.

MULCH: Non-living organic or inorganic material such as bark or rock material typically in a loose condition, used in the landscape industry to cover bare ground.

NATIVE AREA: An area of plant materials that are indigenous to Castle Rock. Such area may or may not include permanent irrigation, depending on the use.

NATIVE PLANT: A plant that is part of the balance of nature that has developed over hundreds or thousands of years in a particular region or ecosystem.

NATIVE SEED: Seed of native grasses.

NATIVE SOIL: Soil that is indigenous to Castle Rock that has developed over hundreds or thousands of years.

NATURALIZED PLANT: A non-native plant that does not need human help to reproduce and maintain itself over time in an area where it was not native.

NITROGEN (N): As used in the context of these Criteria, refers to this nutrient as used by plants as part of photosynthesis, promoting green plant growth.

NON-LIVING ORNAMENTAL: Area covered by rock mulch, which does not contain plant material.

NON-NATIVE PLANT: A plant that is introduced with human help (intentionally or accidentally) to a new place or new type of habitat where it was not previously found.

NON-RESIDENTIAL: Commercial development, such as a business, industrial, governmental, school.

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Section 1: General Provisions

religious institution, or mixed uses (see **Section 7**). HOA or common areas are defined as non-residential for watering schedule purposes.

NOXIOUS WEED: An alien plant or parts of an alien plant that have been designated by rule as being noxious or has been declared a noxious weed by a state, county, or local regulatory agency, meeting one or more of the following criteria:

- Aggressively invades or is detrimental to economic crops or native plant communities;
- Is poisonous to livestock;
- Is a carrier of detrimental insects, diseases, or parasites;
- The direct or indirect effect of the presence of this plant is detrimental to the environmentally sound management of natural or agricultural ecosystems.

NOZZLE: A short duct that is used to direct the flow of water from a sprinkler head.

OPERATING PRESSURE: The pressure at any point in the irrigation system when the system is functioning. Operating pressure is measured with flow in the line. Also known as dynamic pressure.

ORGANIC MATTER: Leaves, grass clippings, wood chips, and other yard wastes.

ORNAMENTAL TREE: A small canopy deciduous tree providing variety and interest by flower display, attractive fruit, or fall color.

PARK: An area of land offered for public use and rest and recreation.

PARKING LOT: The paved area used to accommodate vehicles associated with non-residential and multi-family uses. The area of the parking lot used to calculate parking area landscape requirements excludes roadway, aisles leading to and from the parking lot, and landscape area abutting the parking lot. It is measured from back of curb to back of curb, and may include landscape islands between parking spaces or drive areas, and peninsulas (measured from ground plane back of abutting curb).

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PARKING LOT CORNER: A landscape area in a parking lot surrounded on two (2) sides by parking.

PARKING LOT ISLAND: A landscape area in a parking lot surrounded on four (4) sides by parking spaces or drive isles.

PARKING LOT PENINSULA: A landscape area typically surrounded on three (3) sides by parking spaces or drive isles.

PASSIVE PARK: A public common area park used for passive activities such as walking, hiking, biking, picnicking, and wildlife viewing.

PASSIVE RECREATION AREA: A common area used by multi-family complexes, or localized neighborhoods that are used for non-programmed athletic activities, picnic areas, playground equipment or other recreational / play areas.

PERENNIAL: A herbaceous plant that blooms and produces seed for each year, exceeding two years. A short-lived perennial lives for approximately three (3) to five (5) years. Long-lived perennials are likely to live much longer and can remain for over twenty (20) years.

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Section 1: General Provisions

PERFORMANCE STANDARD: Outlines an expectation of results, through identification of a benchmark against which performance is measured.

PERMITTEE: The party making application for permit.

PHOSPHORUS (P) (Used in the context of these Criteria): A nutrient as used by plants as part of photosynthesis, nutrient transport, and energy transfer. Phosphorus assists with stable root system development, growth, and flowering.

PLANT HEIGHT (for the purposes of this document): Is determined as typically measured by the National Nursery Association Standards. See Town of Castle Rock plant list for plant heights.

PLANTING AREA: An area in which plants are to be installed, surrounded by mulch, and separated from other planting areas. Such areas may be irrigated on the same zone but are required to have individual operational indicators.

PLANT MATERIALS: Living plants such as trees, shrubs, groundcovers, and vines, and shall not include weeds or other undesirable plants as determined by the Town.

POTABLE WATER: Water that has been treated and is suitable for drinking.

POTASSIUM (K) (as used in the context of these Criteria): A nutrient as used by plants to assist with water uptake and drought resistance, as well as to promote strong roots, stems, leaves, and fruits.

PRECIPITATION RATE: The quantity of water applied to the ground measured in inches per hour; also used in lieu of “application rate”.

PRESSURE (PSI): The force that moves water through a pipe or piping system and is measured in pounds per square inch (PSI) or feet of head. One foot of water depth equals 0.433 PSI, and one PSI equals 2.31 feet of head.

PRESSURE GAUGE: A device used for indicating water pressure.

PRESSURE REGULATING VALVE (PRV): A valve used to control pressure within a piping system.

PUBLIC IRRIGATION WATER ORDINANCE: Chapter 13.20 in the Municipal Code which references limitation on high water use plant materials by using a formula to calculate the CLWUR or composite landscape water use rating for a landscape project.

QUALIFIED WATER EFFICIENT LANDSCAPER (QWEL): An individual who has successfully completed the Qualified Water Efficient Landscaper training and certification program. The QWEL program is a comprehensive in-depth training and certification program, emphasizing irrigation, landscape, water management and horticultural best management practices.

RAIN SENSOR OR RAIN SHUTOFF DEVICE: A device connected to an irrigation controller that interrupts scheduled irrigation when precipitation has been detected.

RECORD DRAWINGS: Town approved construction plan that depicts the final disposition, location, with dimensions of the installed landscape and irrigation equipment. Contractor shall keep record drawings current as project progresses.

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Section 1: General Provisions

REDEVELOPMENT: Any man-made change to improved or unimproved real estate including any material change in the use or appearance of any structure, physical improvement, grading, landscaping, or in the land itself.

REGISTERED LANDSCAPE COMPANY: Landscape and irrigation design, installation, or maintenance company, working on non-residential / commercial properties within the Town of Castle Rock service area. Company must register with Castle Rock Water, designate one or more Responsible Landscape Professional(s), and indicate current properties under their control.

REGISTERED LANDSCAPE PROFESSIONAL: Landscape and/or irrigation design, installation and maintenance professionals that hold a current registration issued by Castle Rock Water.

RESPONSIBLE LANDSCAPE PROFESSIONAL (RLP): The person or persons designated by a landscape design, installation, or maintenance company to represent and ensure all activities comply with Town of Castle Rock regulations.

RETROFIT: An umbrella term that refers to the modification of something for more efficiency. In the case of water conservation, retrofit refers to modifications to plumbing fixtures, landscaping and/or irrigation to increase water use efficiency.

RIGHT-OF-WAY: A public street, way, alley, sidewalk, easement, tract, and Town-owned lands, or any other public property owned and controlled by the Town, or dedicated to public use.

RISER: An upright piece of pipe used to support nozzles, heads, emitters, backflow preventers, and valves.

ROOT ZONE: The depth of the plant roots in the soil; the area in which plant roots grow.

ROUGH GRADE: The ground surface or contour that is not the final preparation for plants.

ROUND-A-BOUT: A circular junction in which road traffic must travel in one direction around a central island.

SCOPE OF WORK AREA: The gross site area of a parcel, and/or the property to which landscape improvements are being proposed. See definition of "gross site area". If a project involved public or common area that is not referenced by a parcel or lot, scope of work areas may be referenced by the area served by a single dedicated irrigation service, or as identified by right-of-way, and/or public common areas.

SEMI-ARID CLIMATE: A climate characterized by ten (10) to fifteen (15) inches of annual precipitation; very dry with little rainfall and scrubby vegetation. Castle Rock is located in a semi-arid climate.

SERVICE LINE: A privately owned and maintained small diameter pipe used to connect from a water main through a small tap to a water meter at user's location. Also known as "tap".

SETBACK: The required minimum horizontal distance between the location of structures or uses and the front, side, or rear lot line measured perpendicular to such lot line.

SHRUB: A self-supporting woody plant either evergreen or deciduous of low to medium height with multiple stems arising at or near the ground.

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Section 1: General Provisions

SHUT OFF VALVE (isolation valve): A valve within an irrigation system that shuts off the entire system or isolates a portion of the system.

SIGHT DISTANCE TRIANGLE: The minimum visibility clearance provided at all access point locations, intersection of adjoining streets, and entrance drives. Landscape type, height, and opacity are limited in these areas. Also known as visibility distance triangle.

SITE DEVELOPMENT PLAN (SDP): The purpose and intent of the Site Development Plan is to depict the general layout of a residential subdivision or the site layout, site improvements and building configuration of a multi-family residential, commercial, industrial, or mixed-use development.

SLOPE: The degree of change from the horizontal plane. Often slope is calculated as a ratio of "horizontal run" to "vertical rise", or as a fraction ("run" over "rise") in which run is the horizontal distance and rise is the vertical distance.

SMALL CANOPY DECIDUOUS TREE: A tree of smaller size that has a mature height of less than thirty (30) feet. Also known as "ornamental tree".

SMART IRRIGATION CONTROLLER: A controller that automatically adjusts the programmed run time or watering frequency based on changes in weather or soil moisture.

SOIL AMENDMENT: Organic material added to the soil to improve texture, moisture holding capacity, nutrient capacity, water and air infiltration.

SPORTS FIELD: A field on which sports are played.

STREET: Any public or private road.

STREETSCAPE: Pedestrian and landscape improvements parallel to the roadway, which include at minimum the required width sidewalk, and the minimum required planting strip for trees, shrubs, and irrigation. The streetscape is typically located within the ROW but may be located on adjacent private property as appropriate.

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STREET TREE PLANTING STRIP: The area intended for planting to include street trees, between a detached sidewalk and street curb. Also known as "planting strip".

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SUB-SURFACE DRIP IRRIGATION (SDI): Drip tubing with inline emitters, evenly spaced in a grid pattern, usually installed under turf or groundcover.

TECHNICAL CRITERIA VARIANCE: A design or portion of a design, for landscape and/or irrigation that is a diversion from criteria contained in these Criteria. The variance request shall meet the intent of the Criteria. A variance requires formal approval by the Director of Castle Rock Water and/or Director of Development Services.

TEMPORARY EROSION AND SEDIMENT CONTROL (TESC): The TESC Permit Program is mandated by legislation, including the Federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) Stormwater Phase II Regulations, and the Colorado Water Quality Control Act. See Temporary Erosion and Sediment Control manual.

TEMPORARY IRRIGATION: A temporary watering system designed to transport and distribute water

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Section 1: General Provisions

to landscape plants.

TEXAS HYBRID BLUEGRASS: A hybrid turf variety created by combining Kentucky Bluegrass (*Poa pratensis* L.) and Texas Bluegrass (*Poa arachnifera* Torr.). Such hybrids demonstrate lower water use requirements than Kentucky Bluegrass (*Poa pratensis* L.), while being drought and heat tolerant.

TOPSOIL: Native soil, may also refer to imported soil material where native is substandard or non-existent, that is used for soil material in landscaped areas, not considered an organic component for soil amendment or soil preparation.

TOWN (in reference to these Criteria): The Town of Castle Rock.

TRACT: A parcel of land which is created for the purposes of common ownership and use by two (2) or more property owners; ownership and use by an association or government entity; or an impermanent status where property intended for further division can be platted and transferred, but where no building permits can be issued.

TRANSPIRATION: The process of water moving through the leaf surface of a plant and vaporizing, and is utilized by the plant to cool its leaves.

TREE: A woody plant with leaves or needles that grows to achieve height usually above the human form, often providing shade.

TURF: A grouping of grasses that grow in very close proximity to form a living surface at the ground plane, is regularly mowed forming a dense growth of leaf blades and roots.

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URBAN AREA: A focused development that has limited open space, primarily contains a variety of non-residential uses, but may also integrate residential uses, that combines the uses in a way which considers character, local identity, heritage, pedestrians, and traffic. Urban Areas include the Downtown Overlay District, the Wolfensberger North Zoning Overlay District, or other dense mixed use areas as determined by the Town.

USDA Hardiness Zone: A geographically defined area in which a specific category of plant life is capable of growing as defined by climatic conditions, including its ability to withstand the minimum temperatures of the zone. Castle Rock is a USDA Hardiness zone 5b (See **Section 4.6.7**).

VEGETATION: Plants, in general, or the sum total of plant life in an area.

VELOCITY (for the purposes of these Criteria): The rate of water flow calculated in feet per second (FPS).

VERY LOW WATER USE PLANT MATERIAL: Plant materials that require five (5) inches or less of supplemental water applied during the growing season, May through September.

Deleted: WATER EFFICIENCY PLAN (WEP): A document which is part of the Development Agreement (DA) that has landscape and irrigation design requirements that exceed current Town of Castle Rock landscape and irrigation standards that use water more efficiently. The plan also outlines the homeowner education required for maintenance of the landscaping and irrigation systems.¶

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WATERING RESTRICTIONS: Limitations on when irrigation may take place, and may include day and time.

WATER WASTE: The application of water to impervious surfaces, over irrigation resulting in runoff or pooling, and non-beneficial use of water.

Section 1: General Provisions

WEED: Plant materials identified by local or county code, or state statute.

YARD OR YARD AREA: All portions of a lot not covered by impervious area. Yard area is typically broken down to front, rear, and side yard areas.

ZONE (IRRIGATION): A group of heads connected to a control valve.

ZONE (LANDSCAPE OR PLANT HARDINESS): Zones that are broadly defined by the plant communities that occur at approximate elevations. Colorado State University defines five (5) life zones. The United States Department of Agriculture references hardiness zones. Plants used in Castle Rock shall be consistent with the appropriate life or hardiness zone, and shall be on the Town's approved plant list.

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Section 2: Professional Registration

2.0 INTRODUCTION

This Section describes the classifications, associated qualifications, and the Town's registration process for landscape and irrigation design, installation, and maintenance professionals. It outlines the responsibilities and compliance aspects of being a Registered Landscape Professional in the Town.

2.1 GENERAL REQUIREMENTS

State of Colorado Professional Landscape Architect license is required for landscape design (with the exception of single-family and multi-family up to four (4) units – not including common area).

Registration with the Town of Castle Rock, through Castle Rock Water, is required to conduct:

- Landscape design (unless licensed by the State of Colorado)
- Irrigation design
- Supervision of landscape or irrigation installation
- Supervision of landscape or irrigation maintenance of non-residential properties

A landscape company working on non-residential properties in Castle Rock is required to be registered through Castle Rock Water and designate one or more Responsible Landscape Professional(s) (RLP) who represent the company and is directly responsible to ensure compliance with all criteria set forth in the Water Use Management Plan and the Landscape and Irrigation Criteria Manual. The Responsible Landscape Professional must obtain, and keep current, a Qualified Water Efficient Landscaper (QWEL) certification and be registered through Castle Rock Water.

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A Registered Landscape Professional (RLP) designation applies to individuals, not companies or organizations. The registered individual (RLP) is responsible for all work conducted on a project under his/her supervision.

2.1.1 REGISTRATION REQUIRED

1. Registration of Landscape Professionals expedites plan review, permitting, inspection, and approval of qualifying landscapes. Landscape Professionals are required to have a working knowledge of current industry related best management practices and technologies. They are also required to have a working knowledge of these Criteria and other applicable codes and policies and be able to incorporate them into landscape and irrigation design, installation, and maintenance.
2. All land uses, with the exception of installations done by individual residential homeowners (individual residential homeowners do not include developers/home builders), require a State Licensed or Town registered professional for landscape and irrigation design, installation, and maintenance of landscaping and irrigation systems.
3. Any landscape designer, irrigation designer, or installation contractor performing work or service in the design, construction, installation, maintenance, addition, alteration, repair, equipping, moving, removal, conversion, or demolition of any landscape or irrigation governed by these Criteria must possess a current Colorado Professional Landscape Architect license or be registered through Castle Rock Water. The type and size of landscape designs are governed by the State of Colorado.
4. Permits for construction will only be issued to registered professionals.
5. A current professional (Colorado State or Castle Rock Water) registration number and name shall be present on all applications, drawings, and permits.

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Section 2: Professional Registration

2.1.2 REGISTERED PROFESSIONAL CLASSIFICATIONS

Landscape Design Professional

In order to register as a Landscape Professional, an applicant must certify they meet the requirements for plan preparation by providing professional qualifications. Colorado State law governs the sizes and types of projects that unlicensed individuals can design independent of Town requirements. For those projects exempt from State licensure, applicants must successfully complete a Town registration workshop, and obtain the Qualified Water Efficient Landscaper (QWEL) certification.

Irrigation Design, Landscape and Irrigation Installation, and Maintenance Professionals

To be eligible to perform irrigation design, landscape and irrigation installation, or maintenance, an applicant must certify they are qualified to prepare the type of plans they submit by completing the following requirements:

1. Attendance at a registration workshop; and
2. Passing score (seventy-five (75) percent or better) on a test formatted to identify level of knowledge of the Water Use Management Plan and Town of Castle Rock Landscape and Irrigation Criteria Manual.
3. All Town of Castle Rock updates and revisions will be emailed to currently Registered Landscape Professionals and must be acknowledged and accepted.
4. Successful completion of the Qualified Water Efficient Landscaper (QWEL) training and certification program.
5. QWEL certification must remain current and in good standing.

2.2 EXPIRATION

All registrations in good standing shall be valid through April 30th of the following year.

In order to keep registration in good standing, qualifying Landscape Professionals shall comply with all requirements identified in these Criteria.

2.2.1 RENEWAL

A fee may be charged for registration renewal, and shall be set forth in the applicable fee schedule.

For Registered Landscape Professionals in good standing, renewal may be issued upon receipt of acknowledgment of revisions to policies, criteria, or other applicable codes, in lieu of seminar attendance and testing.

Non-compliance with these Criteria may deem a Registered Landscape Professional ineligible for renewal. In such cases, seminar attendance and testing will be required prior to registration renewal.

2.3 COMPLIANCE

The Registered Landscape Professional is responsible for performing the activity authorized in a proficient manner consistent with industry standards, these Criteria, and related Town policies and codes. Failure to comply with this requirement shall be cause for the denial, suspension, revocation, or restriction of registration.

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Section 2: Professional Registration

2.3.1 WORK WITHOUT CURRENT REGISTRATION

When design, installation, or maintenance work is commenced without first obtaining a Landscape Professionals registration through Castle Rock Water, or when the registration is expired, a special investigation may be conducted. An investigation fee equal to the amount of the registration fee may be assessed.

Landscape or irrigation plans submitted by individuals without a current Colorado Professional Landscape Architect license or Landscape Professionals registration through Castle Rock Water will not be accepted for review. Landscape or irrigation construction or maintenance performed by individuals without a current registration shall not be eligible for inspection or additional permit issuance.

2.3.2 DENIAL, SUSPENSION, REVOCATION OR RESTRICTION OF REGISTRATION

The Director of Castle Rock Water, or designee thereof, shall have the authority to deny, suspend, revoke, or place restrictions on a Landscape Professional's registration under any of the following circumstances:

1. False or misleading information was provided on the registration application.
2. Fails to provide reasonable information or documentation of knowledge and experience required by the registration classification applied for.
3. Provides false or misleading information on permit applications.
4. Fails to comply with any of these Criteria.
5. Knowingly allows the registration to be used by another person, firm, or corporation.
6. Commits any conduct constituting fraud in or connected with any activity relating to construction, which is governed by these Criteria or other Town policies, regulations and/or code.
7. The Responsible Landscape Professional and the Registered Landscape Professional will be notified of any instance of non-compliance and given the opportunity to correct all inconsistencies.
8. Non-residential areas shall complete necessary repairs within twenty-four (24) hours of notification or at a minimum before the system is used again.
9. Failure to correct inconsistencies, or more than one notice of non-compliance, will result in suspension of the Landscape Professionals Registration.
10. Providing false or misleading permit fee charges to a customer or to the Town.

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When the Director of Castle Rock Water, or designee thereof, deems that such registration shall be denied, suspended, revoked, or restricted, the procedures shall be as follows:

1. The applicant or registrant shall be notified in writing, at least seven (7) calendar days prior to the denial, suspension, revocation or restriction. Notice shall include the reason for the action and shall be delivered to the address of record.
2. The applicant or registrant may appeal the suspension or revocation. Such request shall be in writing and delivered to the Director of Castle Rock Water, or designee thereof, within ten (10) calendar days of the receipt of the notice. The appeal letter shall include a thorough explanation of why the Registered Landscape Professional believes it was issued in error. Any appeal received after this time will not be considered.
3. The Director of Castle Rock Water, or designee thereof, shall provide the applicant or registrant with written findings and a ruling within fifteen (15) business days after review of the appeal.

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Section 2: Professional Registration

4. Any decision rendered by the Director of Castle Rock Water, or designee thereof, shall take effect upon expiration of the ten (10) day appeal period.

Emergency suspension

If the Director of Castle Rock Water, or designee thereof, finds an emergency cause exists for suspension or revocation of a registration, he/she may enter an order for immediate suspension of such registration, pending further investigation.

Period of suspension

If a registration is revoked, the applicant shall not be eligible to register with the Town for a period of six (6) months after the revocation or any final decision from an appeal thereof.

Effect of revocation

Registration reinstatement can be accomplished by successfully completing the landscape professionals test and paying the associated registration fee.

Provisions concerning work in progress

The suspension or revocation of a registration may include reasonable orders or conditions with which the Landscape Professional must comply in order to protect the work in progress as well as the intent of these Criteria.

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Section 3: Landscape and Irrigation Submittal Requirements

3.0 INTRODUCTION

The requirements presented in this Section shall be used to aid the applicant, designer, installer, and maintenance contractor in the analysis, design, installation, and maintenance of landscape and irrigation. The requirements presented herein are the minimum necessary for landscape and irrigation plan submittals, and should be considered in conjunction with the requirements set forth by the Town's Development Services Department.

3.1 REVIEW PROCESS

3.1.1 PRE-APPLICATION MEETING

A pre-application meeting with the Town's Development Services Department is required for any type of development, redevelopment, or renovation. The purpose of this meeting is to discuss general information about the project, pertinent aspects of the Criteria, the required scope, and any special procedures, analyses, and submittal requirements that may be applicable.

3.1.2 LANDSCAPE AND IRRIGATION SUBMITTAL REQUIREMENTS

Landscaping shall be designed as an important part of the overall site design. Landscaped area shall enhance the building design and public views, provide buffers and transitions between adjacent land uses, and provide screening. A general landscape plan shall be included with the Site Development Plan (SDP) submittal and a more detailed landscape and irrigation plan shall be submitted with the Construction Document (CD) submittal. All plans shall include the designer's name, contact information, State license number, and Landscape Professionals registration number, where applicable. Plans must be scaled, electronically reviewable, and printable at a twenty-four (24) inch x thirty-six (36) inch size with a scale of one (1) inch = twenty (20) feet and no greater than one (1) inch = forty (40) feet.

All forms, checklists, and plant list can be found online at the Town's website (CRgov.com/landscapeforms),

3.1.2.1 SITE DEVELOPMENT PLAN (SDP)

1. Landscape plan. A general landscape plan is to be provided with the SDP submittal and is considered along with the overall development goals for the project, sets forth design parameters, and recognizes special conditions that may exist within the proposed project. The general landscape plan shall establish tree and shrub quantities, tree and shrub locations, tree and shrub types, and hydrozones. The following site and use analysis should be considered:

- a. Site Analysis

Site analysis consists of inventory and analysis of all existing features that may influence landscape design. This includes direction of prevailing winds, exposures, topography (slopes and swales), drainage areas, existing features (utilities, trees, shrubs, walkways, and structures), and views. The site analysis must consider local zoning and codes related to utility easements, site distance requirements, and interface buffering. Hatch keys, north arrow, and scale are required.

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Section 3: Landscape and Irrigation Submittal Requirements

b. Use Analysis

Use analysis consists of identifying the typical functions and activities that occur on the site and assists with landscape material selection and irrigation design. This includes the overall theme of the site and neighborhood, identifying future building projects, onsite traffic patterns, activity areas, service areas, and any other use that will affect the landscape design. Interface landscaping, when necessary, shall be shown on the SDP.

2. Irrigation Plan. A complete irrigation plan is not required with the SDP submittal. A complete irrigation design is necessary in order to determine water service connection and meter size.

3. Required forms, charts, and notes to be included on the general landscape plan:

a. Landscape Site Inventory form

- i. Non-residential shall complete and include the Commercial Landscape Site Inventory Form.
- ii. Multi-family residential shall complete the Multi-family Landscape Site Inventory form.

b. Streetscape landscape chart

c. Tract landscape chart

d. Composite Landscape Water Use Rating (CLWUR) chart

e. Town of Castle Rock standard landscape notes for site development plans

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3.1.2.2 CONSTRUCTION DOCUMENTS (CD)

1. Landscape Plan. A detailed landscape plan is to be provided with the CD submittal. The detailed landscape plan shall conform to the tree and shrub quantities, tree and shrub locations, and hydrozones established in the landscape plan in the approved SDP. The landscape plan will also include tree and shrub species as well as other plant species and landscape material.

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a. Design elements shall include (as applicable):

- i. Plant materials (trees, shrubs, living groundcovers, grasses, vines, annuals, and perennial flowers) - locate, identify, and draw at mature size
- ii. Structures (buildings, fences, retaining walls, gazebos/patios, pavements, decks, sidewalks, parking structures, and other visual features) – locate and identify
- iii. Grading and contours (all slopes equal to 3:1 are to be called out on landscape sheets. Slopes greater than 3:1 are not permitted)
- iv. Minimum soil amendments as required by the Town
- v. Special features
- vi. Mulch types (inorganic or organic) and depth in inches

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Section 3: Landscape and Irrigation Submittal Requirements

- b. Include Town of Castle Rock standard landscape notes for construction documents and planting details.
 - c. Within the plant schedule, list quantities, types, and sizes at planting of plant material to be used, including specific species in seed mixes. Plant material shall be listed by both common and scientific name. Complete Town of Castle Rock Plant Schedule. Plants are to be called out by legend abbreviation and quantities in parenthesis on the landscape plan.
 - d. Include summary table identifying square footage of each area by type of landscape cover (e.g., non-irrigated native, turf, groundcover, shrubs, trees, and mulches). Non-residential properties shall complete the Town of Castle Rock Commercial Landscape Site Inventory form and multi-family residential projects shall complete the multi-family Landscape Site Inventory form.
 - e. Town of Castle Rock planting details are required and can be found online at the Town's website (CRgov.com/1711/Landscape-Forms), including methods of soil preparation, soil and vegetation removal, and stockpiling and reuse.
 - f. Locate and identify all significant areas of existing natural vegetation, specimen trees, wildlife habitat, and landscape features to be preserved and/or improved. See CD checklist for additional requirements.
 - g. Where a site abuts a natural amenity such as a floodplain, trail corridor, park, or other open space, the landscape plan shall complement the natural character and integrity of the amenity.
 - h. Show and label all property lines and right-of-way areas.
 - i. Show and label all existing and proposed easements and utility lines. Wet utilities such as water, sanitary sewer, and stormwater lines shall be labeled. Wet utility or drainage easements shall be called out with dimensions.
 - j. Show sight distance triangles - these areas must be kept free of visually obstructing landscape features (thirty (30) inches or taller) at mature size. All plant material within sight distance triangles shall be labeled with common and scientific name and mature height as shown on the Town of Castle Rock plant list.
 - k. Label all existing plant material to be removed or to remain then delineate on Construction Documents.
2. Irrigation Plan to include:
- a. Plan elements
 - Irrigation diagram showing:
 - i. Head layout
 - ii. Drip layout
 - iii. Hydrozones

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Section 3: Landscape and Irrigation Submittal Requirements

- iv. Scaled appropriately to match the landscape plan
 - v. Irrigation legend
 - vi. Service line location and size
 - vii. Irrigation meter location and size
 - viii. Backflow location and size
 - ix. Existing and proposed utility easement location and information
- b. TCR standard construction document irrigation notes and details.
 - c. TCR Hydraulic Worksheet.
 - d. TCR Irrigation Chart.
3. Record Drawings. Landscape and irrigation improvements shall be approved by the Town. Drawings reflecting final installation of landscape and irrigation components shall be submitted in accordance with the Town's Regulations and "Drawing and Digital Submittal Requirements" prior to final approval. Such record drawings shall contain all required information as set forth in the latest version of the applicable checklist. The digital submittal shall include the geospatial layer reflecting the irrigated area(s).

3.1.3 CHECKLISTS AND FORMS

Required checklists and forms are available on the Town of Castle Rock website (CRgov.com), and must be included with each plan submittal. Appropriate notations shall be provided with the checklist to assist the reviewer in determining whether the submittal is complete. For example, if a specific item is not addressed or not applicable, an explanation must be provided.

3.1.4 SUBMITTAL ADEQUACY

Any submittal with incomplete or missing information may result in the plan being returned without review. The Town reserves the right to request additional information pertaining to specific landscape and irrigation plans beyond the general requirements in these Criteria.

3.2 APPROVAL

3.2.1 FINAL LANDSCAPE AND IRRIGATION PLAN REQUIRED FOR CONSTRUCTION

The final landscape and irrigation plan shall be included in the CDs, and shall be approved by Castle Rock Water prior to the construction of any landscape and irrigation improvements.

3.2.2 ONE YEAR APPROVAL LIMITATION FOR FINAL LANDSCAPE AND IRRIGATION PLAN

The final landscape and irrigation plan shall be valid for one year from the date of Town approval of the final approved construction documents. If the improvements have not been constructed and accepted by the Town within one year, or extended in conformance with the Town requirements, the plan shall be deemed invalid and resubmittal required. In order to be re-approved, it must be demonstrated that the concepts, designs, analyses, and calculations presented in the plan are consistent with current Town's Criteria.

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Section 4: General Requirements

4.0 INTRODUCTION

This Section describes minimum necessary general performance standards and Criteria of landscape and irrigation for all land uses. State licensed and Town Registered Landscape Professionals, homebuilders, and homeowners shall use this information for design, construction, installation, and maintenance of all land uses. All forms, checklists, and plant list can be found online at the Town's website (CRgov.com),

4.1 APPLICATION

This Section applies to all properties within the Town's service area.

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4.1.1 APPLICABLE USES

1. Multi-family properties as outlined in **Section 5**
2. Single-family and two-family residential properties as outlined in **Section 6**
3. Non-residential properties / business / industrial / governmental / schools / religious institutions / mixed-use properties as outlined in **Section 7**
4. Urban Areas as outlined in **Section 8**
5. Streetscape, rights-of-way, and tracts along rights-of-way, as outlined in **Section 9**
6. Parks, Sports Fields, and Golf Courses as outlined in **Section 10**

4.1.2 APPLICABLE LANDSCAPE AND IRRIGATION

1. Gross site area
2. Front, back, and side yard, including setbacks and utility easements.
3. Parking lot
4. Common areas
5. Streetscape

These Criteria shall apply when there is a renovation of any non-residential landscaped property in existence prior to the adoption of these Criteria.

1. Projects which impact twenty-five (25) percent or greater of landscaped area associated with a single water service connection (one tap)
2. Projects which impact ten thousand (10,000) square feet or greater of landscaped area associated with one or more water service connections (taps).

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Section 4: General Requirements

The area that shall be considered toward development of the percentage of impacted area shall include:

1. By lot – All landscape improvements on one (1) lot.
2. By metered service – All landscape improvements irrigated by a single meter.
3. By approved site plan - The percentage shall not be calculated on the entire approved site plan, unless the entire project is served by a single irrigation meter.

Town reserves the right to require renovations meet current Criteria, regardless of impacted area. Current Criteria must also be met where additional interface is required, or there is a change to existing final approved construction documents or plans for the lot, project, or site plan.

4.1.3 NOT APPLICABLE. This Section shall not apply to:

1. Homeowner repair of an existing irrigation system.
2. Renovation of existing irrigation systems that does not include addition of an irrigation zone.
3. Renovated areas less than twenty-five (25) percent of the existing landscaped area. Existing landscaped area shall mean the landscaped area on a single lot, or serviced by a single irrigation meter. Existing landscaped area shall not mean the entire approved site plan area, unless the project is served by a single irrigation meter.

4.2 GENERAL DESIGN REQUIREMENTS

This Section identifies the minimum general performance standards and criteria for landscape design, irrigation design, and maintenance.

4.3 GENERAL PERFORMANCE STANDARDS AND DESIGN CRITERIA

All landscape and irrigation design, installation, and maintenance shall be evaluated against these performance standards and Criteria. Project approval is based on meeting the intent, performance thresholds, requirements, expectations, and level of quality defined within the performance standards, and the specific Criteria.

4.3.1 PERFORMANCE STANDARD #1: Efficient Water Use

1. Conserve water through application of water-wise, ColoradoScape design principles, and current industry-related best management practices.
2. Water allocation for irrigation shall be consistent with plant material requirements.
 - a. No individual plant may have water demand greater than fifteen (15) inches per growing season.

Section 4: General Requirements

- b. Water allocation for the irrigation of parks, sports fields, and golf courses shall vary by use of the area. Parks and passive recreation areas may be allocated up to nineteen (19) inches, such allocations are by approval only. No individual plant may have a higher water demand than fifteen (15) inches. Uses in this category shall be subject to the Composite Landscape Water Use Rating (CLWUR) analysis, and shall have a value for all irrigated public areas of no greater than two and one half (2.5). All allocations refer to inches of irrigation allocation per growing season. See Town Municipal Code Chapter 13.20 Irrigated Public Area Water Conservation for more information on CLWUR calculations.
 - c. Schools may be allowed additional seasonal irrigation of up to nineteen (19) inches for approved passive use common areas that facilitate high public use. These areas shall meet specific criteria in order to qualify for this additional seasonal irrigation (See **Section 10**).
3. Allocated water shall be used as efficiently as possible. When an overhead irrigation system is installed, system efficiency shall achieve a distribution uniformity of seventy-five (75) percent or greater. This level of efficiency shall be demonstrated through an independent audit performed after installation by a Certified Irrigation Auditor or as certified by the Irrigation Designer and accepted via the Town's Irrigation Design Affidavit.
 4. The irrigation system shall be designed, installed, and maintained to eliminate run-off from landscaped areas and shall not damage street, sidewalk, or utility infrastructure.
 5. Water waste is not allowed. Water shall not be applied to impervious surfaces.

4.3.2 PERFORMANCE STANDARD #2: Environmental Sustainability

1. The project shall conserve water, and use the water that is applied efficiently.
2. The project shall seek to apply Low Impact Development (LID) stormwater mitigation techniques. Refer to the Town's Stormwater requirements.
3. The project shall alleviate the urban heat island effect by shading paved surfaces and rooftops where possible, as well as embracing and promoting other techniques and technologies to achieve this goal, as approved by the Town.

4.3.3 PERFORMANCE STANDARD #3: Aesthetics and Quality of Life

1. The design, installation, and maintenance of the project shall enhance the visual aesthetics of the landscape.
2. The project shall provide for an enriched quality of life by promoting an enhanced level of design, installation, and maintenance that fits the unique natural character and beauty of the Town, coupled with high quality land development.
3. The project shall preserve Castle Rock's natural resources, such as, but not limited to: views, nature, wildlife, habitat, flora, and fauna.

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Section 4: General Requirements

4. The project shall provide year round diversity of color and texture in plant material.

4.4 LANDSCAPE DESIGN

Unless otherwise specified within a particular land use, the Criteria within this Section shall apply to all land uses.

4.4.1 SOIL EVALUATION

Soil testing determines the condition of the soil related to texture, acidity, salts, and plant nutrient availability.

1. A soil analysis shall be conducted by a professional soil scientist at a certified soils laboratory.
2. Soil sample(s) shall be taken after over-lot grading, if applicable, and prior to landscaping.
3. The soil sample must represent a uniform area. Differences in texture (sand, silt, or clay), color, slope, degree of erosion, drainage, past management practices, types of plant material designed for each area should be taken into account when collecting the sample. The soil scientist shall determine the sample sites, depth, and frequency necessary to reflect a representative sample of the site and to coincide with the plant material intended for the area in the design. Recommended sampling frequency is no less than one sample per five thousand (5,000) square feet. Any sampling less than this frequency shall be justified by the soil scientist.
4. The soil analysis shall determine the organic and inorganic composition of native / indigenous soil in landscaped areas, and shall include:
 - a. Soil texture
 - b. Total exchange capacity
 - c. Conductivity
 - d. Organic matter
 - e. Acidity
 - f. Content of Nitrogen, Phosphorus, Potassium, Zinc, Iron, Copper, Manganese, and Lime

4.4.2 STOCKPILING

When stripping of topsoil occurs, stockpiling shall be required during construction (except as waived by Town staff). The replacement of this soil, plus additional soil amendments are critical to successful plant material establishment, ongoing health, and efficient use of water through the life of the project.

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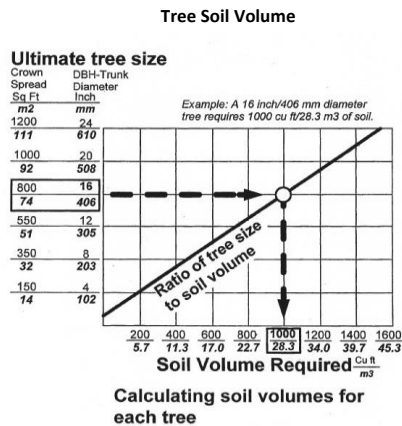
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Section 4: General Requirements

4.4.3 SOIL AMENDMENT

1. The soil analysis shall include specific recommendations based on the soil test results for the type of plant material to be grown in each landscaped area. The type and volume of soil amendment shall be determined by the soil scientist and be consistent with the indigenous soil and the needs of the plant material in each area of the landscape.
2. A minimum of four cubic yards of organic matter soil amendment per one thousand (1,000) square feet of landscaped area shall be required for turf grass, trees, shrubs, perennials, and annuals. See **Table 4-1** for soil volumes for trees. Soil amendments for native seed areas must be consistent with TESC detail #17.
3. Soil amendment organic matter shall consist of compost, as defined in **Section 1**.
4. Source water, such as non-potable water should be considered.

TABLE 4-1



4.4.4 SOIL PREPARATION

1. Amendment shall be tilled to a minimum depth of six (6) inches.
2. Site shall be graded to within two-tenths (2/10th) of a foot.
3. Slopes greater than 3:1 are not permitted.
4. Site shall be free of rocks, dirt clods, and debris over three-quarter inch (3/4-inch) diameter in size.
5. Dry-land seed areas may contain dirt clods up to two (2) inch diameter in size.

Section 4: General Requirements

4.4.5 STRUCTURAL SOIL

1. Cornell University (CU) Structural Soil™ is required for all approved narrow tree planting strips less than eight (8) feet in width (measured back of curb to edge of walk), as well as in tree grates. Minimum tree planting area is six (6) feet in width. See standard Details for structural soil requirements.
2. All applicable soil Criteria and standards shall be noted on drawings.

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4.4.6 INSPECTIONS

1. Inspections are required prior to installation of plant material, and shall include review of adherence to all Criteria. Written documentation reflecting approved volume and type of soil amendment is required upon request. See CRgov.com/landscapeforms for current inspection requirements.
 - a. Residential inspections include, but are not limited to the following:
 - i. Compost and finish grade inspection, to include soil till depth
 - ii. WI-FI enabled smart controller
 - iii. Rain sensor
 - iv. No overhead irrigation in any area less than ten (10) feet
 - v. Curb stop box must be installed no more than one and one half (1 ½) inches above finish grade.
 - b. Non-residential inspections include, but are not limited to the following:
 - i. Pre-construction meeting
 - ii. Point of connection (IR-9 detail)
 - iii. Compost
 - iv. Finish grade inspection, to include soil till depth
 - v. No slopes greater than 3:1
 - vi. No overhead irrigation in any area less than ten (10) feet
 - vii. Sub-surface irrigation, as necessary
 - viii. Final landscape
 - ix. Final irrigation
2. All landscape and irrigation inspections are weather dependent. Due to the extreme variability and unpredictability in temperatures, precipitation, and reduced daylight hours inspections will not be performed between November 1st and March 1st.

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Section 4: General Requirements

- a. Certificate of Occupancy (CO) will not be issued until all inspections have been completed, punch list items have been addressed, final letter of acceptance has been issued, and irrigation permit has been closed.
- b. In order to receive the CO, prior to completion of all permit requirements, the applicant may post a surety.
 - i. Surety amount will be determined as a percentage of the owner's landscape and irrigation construction contract for items incomplete as determined by the approved plans unless a lower surety amount is outlined in the Subdivision Improvement Agreement (SIA) or Property Improvement Agreement (PIA).
 1. Bond: 100% of owner's landscape and irrigation construction contract
 2. Letter of credit: 75% of owner's landscape and irrigation construction contract
 3. Cash / Escrow: 65% of owner's landscape and irrigation construction contract

4.4.7 PLANT MATERIAL SPECIFICATIONS AND PLANTING STANDARDS

1. Minimum plant material quality
 - a. Plant material shall be selected from the Town of Castle Rock approved plant list. Any plant material not on the approved plant list must be submitted for review and approval. Submissions must be consistent with Development Services procedures and shall include water requirements and USDA hardiness zone information. Plant material shall be adaptable to the local environment and capable of naturalizing.
 - b. A minimum coverage of seventy-five (75) percent living plant material, at maturity, is required. No more than twenty-five (25) percent may be non-living material, to include organic mulch and rock. Plant material shall meet or exceed the plant quality and species standards of the current American Standard for Nursery Stock and be consistent with the Colorado Nursery Act.
 - c. Selected plant material shall be nursery-grown in accordance with proper horticultural practice. Plants shall be healthy, well-branched vigorous stock with a growth habit normal to the species and variety, free of disease, insects, and injuries.
 - d. Plant material that is banned for use by the Town of Castle Rock, Douglas County, and / or the State of Colorado shall not be used. This applies to all builders, installers, owners, and, individual homeowners. Please see the Colorado Department of Agriculture website (<https://www.colorado.gov/pacific/agconservation/noxiousweeds>) for a detailed list of restrictions.
 - e. Plants are to be hydrozoned with plants that have a similar water requirement. Plants of a very low hydrozone are not to be planted in a moderate to high hydrozone.

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Section 4: General Requirements

2. Minimum plant material size - All plant material shall meet the following requirements:

a. Large canopy deciduous shade trees shall be a minimum of two (2) inch in caliper, measured six (6) inches above the ground. Large canopy deciduous shade trees shall be three (3) inch caliper when in a grate, or planted in areas less than eight (8) feet in width.

b. Ornamental and flowering trees shall be a minimum of one and one half (1½) inch in caliper measured six (6) inches above the ground.

c. Evergreen trees shall be a minimum of six (6) feet tall, measured to the mid-point of the most recent year's growth.

d. Shrubs shall be fully rooted, a minimum of five (5) gallon container in size, and spaced to provide seventy-five (75) percent ground cover within five (5) growing seasons. See Town of Castle Rock Plant List for specific growth characteristics.

e. Ornamental grasses may be used to meet the shrub requirement; all plant material must meet the minimum size requirements for shrubs listed above.

f. Perennials, ground covers, and vines shall be a minimum of one (1) gallon container in size. Such shall be spaced to provide seventy-five (75) percent ground cover within three (3) growing seasons.

g. Annuals shall be sized shall be appropriate to application, whether flats, four (4) inch pots or larger and spaced to provide seventy-five (75) percent ground cover.

h. Grass seed planting quality and quantity in irrigated areas shall be in compliance with nursery standards and shall provide a minimum ground cover of eighty (80) percent within the first growing season. For non-irrigated native areas, see Temporary Erosion and Sediment Control Requirements.

3. Minimum planting standards

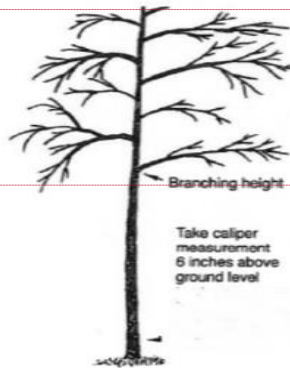
a. Landscaping shall comply with the Town of Castle Rock planting details.

b. Plant materials shall be spaced appropriately to allow adequate room for root zone and vegetation at maturity.

c. A minimum distance of ten (10) feet shall be provided between trees and buildings or trees and fences. Space provided must allow adequate room for mature tree.

d. Tree rings shall be provided for all trees within turf areas subject to mowing operations. Tree rings for evergreen trees shall extend to the dripline of the tree to

FIGURE 4-2



Measuring deciduous tree caliper

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Section 4: General Requirements

avoid limbing up of evergreen trees.

- e. Standard planting areas for large canopy deciduous shade trees shall be no less than eight (8) feet in width.
 - f. When an eight (8) foot width planting area is not possible, such as in urban areas or overlay districts, large canopy deciduous shade trees may be planted in areas less than eight (8) feet wide and shall require CU-Structural Soil™.
 - g. Small canopy trees shall be planted in a landscape strip no less than six (6) feet in width (not including curb and gutter).
4. Minimum amount of plant material.
- a. Tree requirements cannot be exchanged for other types of plant material. Fifty (50) percent of the gross site area tree requirement must include large canopy deciduous shade trees.
 - b. Diversity requirements for trees and shrubs are contained in **Table 4-3**.

TABLE 4-3

Diversity Requirement,

Deciduous and Evergreen Tree or Shrub Plant Diversity Scale

<u># of Plants</u>	<u>Maximum % of Single Species</u>
<u>1-3</u>	<u>Can have 100% of one species</u>
<u>4-7</u>	<u>Maximum of 50% of any one species</u>
<u>8-12</u>	<u>Maximum of 33% of any one species</u>
<u>12+</u>	<u>Maximum of 25% of any one species</u>

Deciduous Tree or Shrub Plant Diversity Scale

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 6-10 . Maximum of 50% of any one species¶
 11-15 Maximum of 33% of any one species¶
 16-20+ . Maximum of 25% of any one species¶

¶ Evergreen Tree or Shrub Plant Diversity Scale¶

<u># of Plants</u>	<u>Maximum % of Single Species</u> ¶
<u>1-2</u>	<u>Can have 100% of one species</u> ¶
<u>3-6</u>	<u>Maximum of 50% of any one species</u> ¶
<u>7-12</u>	<u>Maximum of 33% of any one species</u> ¶
<u>13-40</u>	<u>Maximum of 20% of any one species</u>

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Section 4: General Requirements

4.4.8 NON-LIVING LANDSCAPE MATERIAL

1. Organic mulch, includes bark and wood chips
 - a. Shall be applied at one (1) cubic yard per eighty (80) square feet at a depth of four (4) inches, and as appropriate to each species.
 - b. Shall be applied to the soil surface, not against the plant stem or base of tree trunks, to minimize disease.
2. Inorganic mulch includes rock, gravel, or cobble.
 - a. Rock mulch shall have a minimum depth of two (2) inches.
 - b. Recycled rubber for landscape use is discouraged, however, may be considered for playground use.
3. Landscape fabric may be used underneath mulch to reduce weeds. Plastic is not allowed.
4. Artificial plant material is permitted. Materials such as artificial turf may be used. Homeowners Associations and other private restrictions may apply.
 - a. Artificial turf must be installed and maintained per manufacturers specifications.
5. Edging shall be consistent with industry standards. Metal edging shall be rolled or capped to eliminate sharp edges.
6. Water features shall recirculate water and be designed to reduce evaporation. Water features shall be on a separate service connection from the domestic water service. Water demand for the feature shall be defined and included in service connection sizing requirements. Wind shut off devices are required.

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4.5 IRRIGATION DESIGN

This Section identifies Criteria for irrigation service connections, control, methods, equipment, and system efficiency.

4.5.1 GENERAL DESIGN

Unless otherwise specified within a particular land use, the Criteria within this Section shall apply to all land uses.

1. Landscaped areas five hundred (500) square feet or less, including pots and planters, do not require permanent irrigation. These areas may be watered by bulk water service or from the building through a combined service line and must be well-maintained.

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Section 4: General Requirements

2. ~~Landscaped areas greater than five hundred (500) square feet require permanent irrigation systems.~~
 - a. Irrigated areas between five hundred (500) and five thousand (5,000) square feet shall be served from the building through a combined service line.
 - b. Irrigated areas greater than five thousand (5,000) square feet shall require a dedicated irrigation service line. This requirement does not apply to single family lots.
 - c. Irrigation shall be hydrozoned, grouping similar water demands by irrigation zone.
3. ~~Irrigation is not allowed in areas less than four (4) feet in width.~~
4. Only drip and subsurface irrigation systems are allowed in areas between four (4) feet and ten (10) feet in width.
5. ~~Generally, trees, shrubs, perennials, and groundcover shall be irrigated with drip irrigation. See Irrigation System Design for additional specific criteria. Native grass may be permanently irrigated on slopes not to exceed 3:1 (Slopes steeper than 3:1 are not permitted).~~
6. Native grass may be temporarily irrigated for establishment purposes. See the Town of Castle Rock Temporary Irrigation for non-irrigated native areas criteria (Appendix A). This Criteria is required to be shown on the landscape or irrigation sheets submitted for construction document review.

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Irrigation is not allowed in areas less than four (4) feet in width, unless approved in an Urban Area.¶
¶

4.5.2 WATER SERVICE CONNECTION

Water service connections for irrigated areas greater than five thousand (5,000) square feet shall be completed consistent with all Town regulations.

1. Irrigation shall be served from a dedicated irrigation service connection to the Town's water distribution system, separate from the domestic water service.
2. All irrigation water shall be metered and have appropriate backflow prevention as identified by Town regulations. Backflow prevention assemblies must be installed no further than five (5) feet from the irrigation meter.
3. The irrigation water service connection shall be sized appropriately to accommodate irrigation during the hours and days outlined in the Town's Water Use Management Plan.
4. The mainline or lateral line from a single irrigation service connection shall not cross lot lines.
5. Maximum velocity shall not exceed seven and one half (7.5) feet per second through the service line and meter.
6. Mainline pressure
 - a. System design shall consider minimum and maximum allowable mainline pressure

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Section 4: General Requirements

as provided by the Town.

- b. Minimum pressure provided shall be forty-three (43) psi, maximum pressure shall be one hundred and twenty-five (125) psi.
 - c. Site water pressure shall be identified by Castle Rock Water prior to irrigation system design and shall be noted on irrigation plans. Actual on-site pressure may vary based on water system demand at the time of the pressure test, subsequent development placing additional demand on the water system, etc.
7. Irrigation service connections (taps) shall not interconnect downstream of the meter. Irrigation mains cannot intersect with other irrigation mains serviced off another service connection.
 8. The irrigation service line shall be the same size as the tap from the Town water main through the point of connection, as outlined in the IR-9 detail,

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4.5.3 IRRIGATION SYSTEM CONTROL

1. Smart irrigation controllers are required and shall be installed according to manufacturer recommendations. They shall apply the appropriate amount of water to maintain healthy growing conditions.
2. Due to common power outages, battery back-up or non-volatile memory is required on all controllers.
3. Central Control Systems are recommended for larger irrigated areas, ten thousand (10,000) square feet or larger.

4.5.4 IRRIGATION SYSTEM DESIGN

1. Resilient shut off valve with manual drain, or stop and waste valve, is required downstream of the meter.
2. All irrigation systems shall be contained by the appropriate backflow prevention assembly. See the Town's Cross-Connection Control requirements in Town code and associated policy manual(s). A passing backflow prevention test is required for issuance of certificate of occupancy.
3. Master valves are required on non-residential service connections.
4. Flow sensors are required on non-residential service connections.
5. Rain sensors are required.
6. Overhead irrigation.
 - a. Overhead irrigation is not allowed in areas less than ten (10) feet in width/length.
 - b. Temporary irrigation is allowed on slopes not to exceed 3:1. Refer to Temporary Irrigation Criteria in Appendix A.

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Section 4: General Requirements

- c. There shall be no overhead irrigation in parking lot peninsulas, ~~islands~~ or entryways.
 - d. Pop-up height shall be consistent with the mature height of the plant material being irrigated. Pop-up height of six (6) inches is required for turf areas. Pop up height of twelve (12) inches is required for native, wildflower, or perennial areas.
 - e. Pop-up spray heads shall be equipped with internal check valves, internal pressure regulation (Pressure regulation must be consistent with manufacturer's recommendations for the selected nozzle), and matched precipitation rate spray or rotary nozzles. Variable arc spray nozzles are not allowed.
 - f. Rotors shall be equipped with internal check valves and pressure regulation.
7. Drip irrigation
- a. Drip irrigation is required in areas greater than four (4) feet, and less than ten (10) feet.
 - b. Drip irrigation shall be point-source drip or sub-surface drip irrigation for all trees, shrubs, perennials, and annual beds.
 - c. Drip emitters and sub-surface drip shall be equipped with internal check valves at each emitter.
 - d. All (Residential and non-residential) point-source drip, sub-surface drip, dripper line, and bubblers must be installed with an operational indicator in each planting area and a flush valve, with operational indicator at every dead end.
 - e. All drip emitters shall be installed on stakes and placed above the mulch, around the perimeter of the plant.
8. Bubblers may be substituted for drip emitters where necessary to provide adequate supplemental irrigation to plant material in certain locations (i.e., trees in native grass areas).
9. There shall be no irrigation within street medians or round-a-bouts.
- a. All material proposed within street medians or round-a-bouts shall be designed to minimize dislodging and obstructing travel lanes, and be compatible with Town maintenance operations. Proposed material must be shown on plan submittals. Final selected material must be approved by the Town.
10. Irrigation charts and hydraulic worksheets are required for irrigation plan submittal on construction documents.

4.5.5 IRRIGATION SYSTEM INSTALLATION

Installation of irrigation system shall be consistent with approved plans, and meet Town performance standards and Criteria prior to issuance of certificate of occupancy or other Town approval. Release of bonding or surety (if applicable) shall be withheld until approval is given.

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Section 4: General Requirements

1. Irrigation system installation shall be consistent with approved system design.
2. Irrigation system efficiency
 - a. The irrigation system shall achieve a seventy-five (75) percent distribution uniformity efficiency rating as demonstrated through an independent audit performed after installation by a Certified Irrigation Auditor, or as certified by the Irrigation Designer and accepted via the Town's Irrigation Design Affidavit.
 - b. The irrigation audit shall result in a representative sample of the irrigation zones, and at a minimum shall include evaluation of a random sampling of no less than twenty-five (25) percent of overhead irrigation zones, to include a minimum of two (2) spray zones and two (2) rotor zones. At the discretion of Castle Rock Water, the minimum number of zones may be increased depending on the size and complexity of the irrigation system.
 - c. The Town reserves the right to conduct follow up audits as deemed necessary at the expense of the customer.
 - d. The irrigation system shall consist of high efficiency nozzles, with an application rate not to exceed one and one quarter (1.25) inches / hour.
 - e. When nozzles are installed on spray head bodies (either fixed spray nozzles or rotary nozzles), the spray head body must be equipped with internal pressure regulation consistent with the manufacturer's recommended design pressure.
 - f. The irrigation system design and installation must include head to head coverage, ~~without overspray onto impervious surfaces,~~ at final inspection.
3. Backflow prevention assembly testing
 - a. A passing backflow prevention assembly test is required prior to issuance of a certificate of occupancy. This shall include a mechanical test of the assembly, validation of protection for the degree of hazard present, and proper installation according to manufacturer's recommendations and Town of Castle Rock requirements.

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4.5.6 IRRIGATION SYSTEM OPERATION

All irrigation shall occur according to the specifications of the Town's Water Use Management Plan, including hours, days, and application rates. Irrigation systems shall be operated and maintained in a manner that meets efficient irrigation performance standards. Temporary establishment and permanent irrigation methods, as well as timing and application rates, shall be included on irrigation plans.

1. Establishment Irrigation – To be defined for each plant material type (including turf types, naturalized grasses, trees, shrubs, perennials, annuals, ground covers, etc.)
 - a. Identify temporary, establishment irrigation method.

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Section 4: General Requirements

- b. Identify application rates, monthly, and annual water demand totals for establishment period.
2. Permanent irrigation – To be defined for and by each plant material type (including turf types, naturalized grasses, trees, shrubs, perennials, annuals, ground covers, etc.).
 - a. Dedicated water service connections have designated watering days determined by address or location.
 - b. Permissible hours of irrigation will be consistent with those outlined in the Water Use Management Plan.
 - c. Seasonal application rates shall be consistent with plant water requirements identified in the Town of Castle Rock Plant List.

4.6 WATER EFFICIENCY PLAN

A Water Efficiency Plan (WEP) is a component of the codes, covenants and restrictions of the development.

1. Developments with an approved Water Efficiency Plan (WEP) shall have landscape and irrigation designs exceeding current Town of Castle Rock landscape and irrigation standards.
2. Landscape Section of Water Efficiency Plans shall contain:
 - a. Model landscape plans for single-family homes.
 - b. Landscape typical for streetscapes.
 - c. Plantings along public streets, common areas, and open space frontages, visible to the public, must be limited to native species originally found in the existing landscape. Landscape may include non-native plants specifically approved in the Town of Castle Rock Plant list and designated approved for Water Efficiency Plans.
 - d. Landscape typical for development entries.
 - e. Landscape typical for both public and private parks.
 - f. Landscape typical for open space.
3. Irrigation Section of Water Efficiency Plans shall contain:
 - a. **Conceptual** irrigation plans, matching corresponding landscape plans in “a” through “f” above.
4. All landscape and irrigation plans, as part of a Water Efficiency Plan, must be approved by Castle Rock Water, Conservation Plan Review.

4.7 GENERAL MAINTENANCE

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Section 4: General Requirements

4.7.1 IRRIGATION

1. Regular maintenance of the irrigation system includes backflow prevention assembly testing, leak repair, damaged part replacement, head adjustment, filter & strainer cleaning / replacement, and application rate adjustment.
2. A completed, passing backflow prevention assembly test, consistent with the parameters outlined in the Town's cross-connection control standards is required within ten (10) days of irrigation system start-up each season. Proper assembly operation shall also be verified through a passing backflow prevention assembly test when the assembly is taken out of service for maintenance or repair.

4.7.2 LANDSCAPE

1. All landscape improvements, indigenous plant material, and irrigation system components shall meet performance standards and supporting criteria. Violation of these standards or Criteria shall be considered a Code violation.
2. Maintenance requirements shall be noted on landscape and irrigation plans.
3. Regular maintenance shall be consistent with the needs of the plant material and may include pruning, mowing, fertilization, and weeding.

4.7.3 TURF, WOODY PLANTS, AND FERTILIZATION

1. Turf
 - a. Turf shall be maintained in a manner consistent with its growth characteristics and intended use. It shall optimize sustainability through maintenance practices that encourage root development and overall plant health.
 - b. Preferred mowing height is three and one-half (3-1/2) inches, in order to promote root growth and reduce water requirements.
 - c. Adjust mowing frequency throughout the growing season to remove between one quarter (1/4) and one third (1/3) of the grass height per mowing, improving turf condition and reducing mowing equipment emissions.
 - d. Maintain mowing equipment by sharpening mower blades, or checking reel-type mowers for proper blade to bed knife adjustment
 - e. Thatch build-up shall be addressed for plant health purposes and to reduce run-off.
 - f. Spring and fall aeration is recommended.

2. Woody plant material

The mature size of woody plant material shall be considered during the design process so that pruning should only be necessary due to damage or health conditions, and to encourage a natural growth habit for hedges and topiaries.

Section 4: General Requirements

- a. Pruning practices consistent with type of tree or shrub. It is recommended to not remove more than one-third 1/3 of the branch growth.
 - b. Eliminate dead and diseased plant material. If this causes significant disfigurement, replacement is necessary.
 - c. Encourage naturalistic habit and reduce crowding, while controlling scale related to landscape and size relative to safety parameters (site distances, etc.).
3. Fertilization
- a. Fertilizer composition is consistent with soil test recommendations, amended soil condition, and plant material requirements.
 - b. Fertilizer is applied on an as-needed basis, and excess application is avoided. Low phosphorus fertilizers are recommended.
 - c. The fertilization program shall be submitted with construction document landscape plans.

4.7.4 WEED, PEST, AND DISEASE CONTROL

Shall be consistent with the approved maintenance plan for the property, and shall be in compliance with all Town, County, and State regulations.

1. All landscape areas shall be installed and maintained free of invasive species and noxious weeds.
2. Pest and disease control measures shall be taken when needed.

4.7.5 DEAD PLANT MATERIAL

Dead plant material shall be removed and replaced with healthy plant material of comparable size and species that meet the original intent of the approved landscape design within forty-five (45) days of Town being notified of a problem, or sooner in the event of a contagious disease or invasive insect species. If seasonal conditions prohibit removal and replacement, property owner may request deferral of installation.

Deferral request shall be in written form with estimated date of installation, and must be approved by the Town.

Nonliving landscape material such as rock, stone, bark chips, and shavings which no longer cover the area in which they were originally installed, shall be regularly replenished to maintain the full coverage to a minimum depth of two (2) inches for rock mulch and four (4) inches for wood mulch.

Town is not responsible for plant damage due to insects, disease, winter injury, irrigation malfunctions, or other environmental factors.

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Section 5: Multi-Family Residential

5.0 INTRODUCTION

This Section describes minimum necessary performance standards and Criteria for multi-family residential land uses. Unless specifically called out in this Section, the general performance standards and criteria in **Section 4** shall apply.

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5.1 APPLICATION

5.1.1 APPLICABLE DWELLINGS

This Section applies to multi-family residential properties within the Town limits, or served by Castle Rock Water, and includes the following:

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1. Apartment complexes
2. Townhomes and condominiums
3. Mobile home dwelling complexes or parks
4. Residential properties found in the R-3 Multi-Family Residence District or as similarly zoned by a Planned Development. See Town of Castle Rock Municipal Code Title 17 for zoning information.

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Deleted: following zoning districts:

5.1.2 APPLICABLE LANDSCAPE AND IRRIGATION

1. Gross site area
2. Front, back, and side yard, including setbacks and utility easements
3. Parking lot
4. Common area
5. Associated facilities

Deleted: Passive recreation areas

Streetscapes, rights-of-way (ROW), included with the project shall adhere to the performance standards and Criteria in **Section 9**.

5.2 DESIGN REQUIREMENTS

This Section identifies the minimum performance standards and Criteria for landscape design for this land use.

5.2.1 LANDSCAPE DESIGN

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Section 5: Multi-Family Residential

5.2.1.1 SITE REQUIREMENTS

1. Gross Site Requirements

A minimum of twenty (20) percent of the gross site area shall receive landscape improvements. Gross site area shall exclude the right-of-way. ROW landscaping is required for adjacent streets, but is not included in the required calculation for the site. See **Section 9** for associated ROW and streetscape requirements. Gross site area may include the area required for parking lot landscaping improvements. The area required for parking lot landscaping improvements must be provided independent of other required improvements.

5.2.1.2 PARKING LOT REQUIREMENTS

1. Performance Standards

- a. Trees shall reduce urban heat-island effect.
- b. Trees shall not cause snow build-up or ice problems.
- c. Plant material shall accommodate environmental conditions associated with parking lots, including heat-island effect and snow storage.
- d. Trees shall not interfere with driver visibility of pedestrians or drive-aisle traffic.
- e. Design, plant materials, and hardscape material shall consider levels of foot traffic and shall not create pedestrian safety hazards.

2. Criteria

- a. A minimum of ten (10) percent of the parking lot area shall be landscaped. (This requirement is included within and counts toward the minimum gross site area requirements).
- b. A minimum of two (2) large canopy deciduous shade trees and four (4) shrubs for each one thousand (1,000) square feet of required landscaped area shall be provided. See Table 5-1.

TABLE 5-1

Required trees/shrubs

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Section 5: Multi-Family Residential

AREA	TOTAL AREA IN Square Feet (sf)	REQUIRED LANDSCAPE AREA	REQUIRED TREES *	PROPOSED TREES	REQUIRED SHRUBS **	PROPOSED SHRUBS
Gross Site	50,000 sf	20% = 10,000 sf	$(10,000 \text{ sf} / 1,000 \text{ sf}) \times 2 = 20$	20	$(10,000 \text{ sf} / 1,000 \text{ sf}) \times 4 = 40$	40
Parking	5,000 sf	10% = 500 sf	$(500 \text{ sf} / 1,000) \times 2 = 1$	1	$(500 \text{ sf} / 1,000 \text{ sf}) \times 4 = 2$	2

Required trees/shrubs calculation example

* Required Trees = ~~one~~ (1) tree per one thousand (1,000) sf of landscaped area

** Required Shrubs = four (4) shrubs per one thousand (1,000) sf of landscaped area

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c. Parking lots containing more than forty (40) spaces shall provide parking lot islands and/or peninsulas. When required, there shall be no more than fifteen (15) adjacent parking stalls between parking lot islands and peninsulas.

i. A minimum of one (1) large canopy deciduous shade tree and four (4) shrubs shall be provided for each parking lot island and peninsula.

1. One (1) additional large canopy deciduous shade tree may be substituted in lieu of each of the four (4) required shrubs.

2. Large canopy deciduous shade tree requirements cannot be exchanged for small canopy trees.

ii. A minimum width of eight (8) feet is required for parking lot islands and peninsulas.

3. Measuring the parking lot area and parking lot landscape area

a. The measured parking lot area includes the paved area and parking lot curb. It does not include right-of-way and aisles leading to and from the parking lot. See Figure 5-1

b. The measured parking lot landscaped area includes parking lot islands, peninsulas, and corners (not including curbs) and may include a three (3) foot wide landscaped area abutting the parking lot. It does not include right-of-way or detention areas.

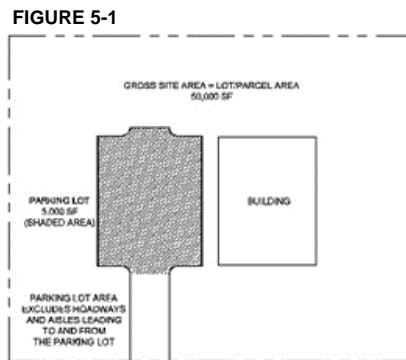
i. Islands may only be considered part of the parking lot landscaped area when surrounded on four (4) sides by parking spaces or drive aisles.

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Section 5: Multi-Family Residential

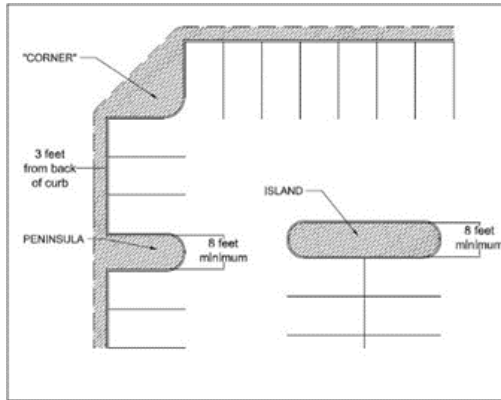
- ii. Peninsulas may only be considered part of the parking lot landscaped area when surrounded on three (3) sides by parking spaces or drive aisles.
- iii. Corners may only be considered part of the parking lot landscaped area when surrounded on two (2) sides by parking. Landscaped corners are calculated creating a triangle using the two sides adjacent to the parking lot spaces or drive aisle and making the third triangle leg by connecting the curb corners.
- iv. A three (3) foot wide landscaped area may only be considered when abutting the parking lot as measured from the back of the parking lot curb. See Figure 5-2



Calculation area example

Section 5: Multi-Family Residential

FIGURE 5-2



Shaded areas may be counted towards parking lot landscape requirement

4. Other

- a. Evergreen trees shall not be located in parking lot islands, peninsulas or any area that would cause snow or ice buildup on the parking lot.
- b. Evergreen trees shall not be located in parking lot islands, peninsulas or any area that would block sight lines.
- c. Landscape plantings at mature size and landscape features over thirty (30) inches high above the flow line are not permitted in sight distance triangles adjacent to parking space access aisles.
- d. Plant material located within snow storage areas shall be chosen for tolerance to snow storage.

5.2.1.3 PASSIVE RECREATION AREA

Passive Recreation Areas: Multi-family land uses may have Passive Recreation Areas, a type of Common Area, for their residents. Such areas may be used for non-programmed athletic activities, and may include picnic areas, small pavilions, benches, playgrounds, recreation, or play areas. These areas shall be designed to support such intended activities of the area, including pedestrian access and layout. See Section 10.

Deleted: <#>The measured parking lot area includes the paved area and curb. Measured area excludes roadways and aisles leading to and from the parking lot. Areas to be incorporated in the calculation include landscaped islands, peninsulas, and corners internal to the parking lot (not including curb). Measured parking lot area shall not be comprised of right-of-way or detention areas. See Figure 5-1.¶

<#>¶
<#>A minimum of ten (10) percent of the parking lot area shall be landscaped. (This requirement is included in and counts towards the landscape requirements for the gross site).¶

<#>¶
<#>Minimum planting requirements are two (2) large canopy trees and four (4) shrubs for each one thousand (1,000) square feet of landscaped area. One (1) additional large canopy tree may be substituted in lieu of each four (4) shrubs. See Table 5-2.¶

<#>The parking lot area landscape plan shall include large canopy deciduous shade trees to reduce urban heat island effect. The landscape plan shall include a selection of large canopy deciduous shade trees that result in shade covering at least fifty (50) percent of the parking lot area at seven (7) years growth.¶

<#>Multi-family residential projects shall use the Town of Castle Rock Multi-family Landscape Site Inventory form for landscape submittal.¶

<#>¶
<#>Interior parking lot area landscaping (islands and peninsulas).¶

<#>Shall be a minimum of eight (8) feet in width. Width does not include the curb.¶

<#>Parking areas containing more than forty (40) spaces shall provide interior landscape islands.¶

<#>When parking islands or peninsulas are required, there shall be no more than fifteen (15) adjacent parking spaces between landscaped islands or peninsulas.¶

<#>Each landscaped island or peninsula shall provide shade through a minimum of one (1) large canopy deciduous shade tree.¶

<#>Tree requirements cannot be exchanged for...

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¶
Passive recreation areas shall be a minimum of three thousand (3,000) square feet. The square footage configuration shall be such to support non-programmed athletic activities, such as volleyball, softball, or other recreational activities.¶

¶
The following uses do not qualify as passive recreation areas: streetscapes, is-lands, or medians, landscape buffers, setbacks, parking areas, or other areas not intended or designed for recreational use.¶

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Section 6: Single-Family and Two-Family Residential

6.0 INTRODUCTION

This Section describes minimum necessary performance standards and criteria for single and two-family residential land uses and recommendations for existing dwellings owned by individual homeowners. Unless specifically called out in this Section, the general performance standards and criteria in **Section 4** shall apply.

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6.1 APPLICATION

6.1.1 APPLICABLE DWELLINGS

Applicable dwellings are new homes constructed by a developer, residential homebuilder, organization, custom homebuilder, semi-custom homebuilder, and homeowners.

This Section applies to single-family and two-family residential properties within the Town limits, or served by Castle Rock Water, and includes the following:

1. Single-family dwelling, ~~detached,~~
2. Single-family dwelling, ~~attached,~~
3. Paired home
4. This includes the types of residential properties found in the R-1 and R-2 Single-family Residence District or as similarly zoned by a Planned Development. (See Town of Castle Rock Municipal Code Title 17 for zoning information).

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Deleted: following zoning districts:

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6.1.2 APPLICABLE LANDSCAPE AND IRRIGATION

1. Front, back, and side yards where landscape or irrigation are provided in new home construction, renovation, or maintenance.
2. All setbacks and utility easements where provided in new home construction, renovation, or maintenance.

6.2 DESIGN REQUIREMENTS

This Section identifies the minimum performance standards and Criteria for landscape design, irrigation design, and maintenance for this land use.

Landscaping or landscape materials shall be no more than thirty (30) inches above the flow line when located in a sight distance triangle.

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Front, back, and side yard landscape and irrigation must be designed and installed through the homebuilder as part of the construction process. All landscape and irrigation installation must be completed by a Registered Landscape Professional.

6.2.1 LANDSCAPE DESIGN

1. Site Requirements
 - a. Trees

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Section 6: Single-Family and Two-Family Residential

i. All pervious areas equal to or greater than four hundred (400) square feet shall have a minimum of one (1) large canopy deciduous shade tree provided in the setback. All pervious areas less than four hundred (400) square feet shall have a minimum of one (1) small canopy deciduous shade tree. Tree requirements cannot be exchanged for other types of plant material. Small canopy trees cannot be exchanged for required large canopy deciduous shade trees. NOTE: Sizing requirements for single-family residential front yard tree shall be adhered to by all builder installations.

b. Front yard

i. No turf allowed in front yards. Front yard landscape shall utilize a ColoradoScape design. Minimum 75% plant coverage at maturity (3 years).

c. Traditional front yard:

i. Less than 400 square feet: A minimum of four (4) shrubs and sixteen (16) perennials are required.

ii. 400 square feet or more: A minimum of nine (9) shrubs and twenty-four (24) perennials are required.

d. Corner lot:

i. Less than 400 square feet: A minimum of five (5) shrubs and fifteen (15) perennials are required.

ii. 400 square feet or more: A minimum of ten (10) shrubs and thirty (30) perennials are required.

e. Alley loaded:

i. Less than 400 square feet: A minimum of four (4) shrubs and Sixteen (16) perennials are required.

ii. 400 square feet or more: A minimum of nine (9) shrubs and twenty-four (24) perennials are required.

iii. Diversity requirements for trees and shrubs are contained in **Section 4**, and are applicable to installation of tract home landscaping.

f. Back yard:

i. Turf (live or artificial): 500 Square feet maximum

1. A minimum of one (1) tree

2. A minimum of ten (10) shrubs

3. A minimum of four (4) ornamental grasses or perennials

ii. Reduced Turf (live or artificial): Two hundred and fifty square feet maximum

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Shrubs - A minimum of four (4) shrubs are required for each large canopy deciduous shade tree.¶

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Section 6: Single-Family and Two-Family Residential

1. A minimum of one (1) tree
 2. A minimum of fourteen (14) shrubs
 3. A minimum of eight (8) ornamental grasses or perennials
- iii. ColoradoScape: No turf
1. A minimum of one (1) tree
 2. A minimum of fourteen (14) shrubs
 3. A minimum of sixteen (16) ornamental grasses or perennials
 4. Irrigated Turf Areas are only allowed in back yards and cannot exceed 500 square feet. Approved moderate and low water use turf or alternative turf are required. 100% Kentucky Bluegrass, and turf varieties that use more than nineteen (19) inches of water per growing season are not allowed.

Areas devoted to the cultivation of native or naturalized grasses shall be exempt from square footage limitations. These areas can be temporarily irrigated for establishment only. Establishment period not to exceed one full growing season.

6.2.2 IRRIGATION DESIGN

This Section identifies performance standards and Criteria for single-family and two-family residential irrigation systems including control, methods, equipment, and system efficiency.

1. General Design

Unless otherwise specified within a particular land use, the Criteria within this Section shall apply to design and installations by developers, home builders, and homeowners.

- a. Landscaped areas shall have a permanent water efficient irrigation system providing full coverage to all plant material. Unless otherwise approved, this irrigation shall be an automatic irrigation system.
- b. The water service connection that provides water for irrigation shall be sized appropriately to accommodate irrigation during the hours and days outlined in the Town's Water Use Management Plan.
- c. All water used for irrigation shall be metered and have appropriate backflow prevention as identified by Town regulations. Cross-connection control requirements shall be adhered to by all installations within this category, including homeowner installations.
- d. Maximum velocity should be determined by American Water Works Association standards, Town water Criteria, Town adopted plumbing code, and meter manufacturer operating standards. Flow rates should average no more than five (5) feet per second and shall not exceed seven and one half (7½) feet per second for

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Moved up [1]: Landscaping or landscape materials shall be no more than thirty (30) inches above the flow line when located in a sight distance triangle.¶

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Section 6: Single-Family and Two-Family Residential

intermittent flow.

- e. Irrigation mains cannot intersect with other irrigation mains serviced off another service connection.
 - f. Irrigation shall be hydrozoned, grouping similar water demands and exposure by irrigation zone.
 - g. Irrigation methods:
 - i. Only drip or sub-surface irrigation systems will be allowed in areas less than ten (10) feet in width.
 - ii. Irrigation is not allowed in areas less than four (4) feet in width.
2. Irrigation System Control
- a. WI-FI enabled smart irrigation controllers, capable of interval watering, are required. This requirement shall be adhered to by all installations within this category, including homeowner installations.
 - b. Due to common power outages, battery back-up or non-volatile memory is required on all controllers. This requirement shall be adhered to by all installations within this category, including homeowner installations.
 - c. Upon installation the landscape / irrigation installer shall program the controller to meet Water Use Management Plan requirements.
 - d. Irrigation exemptions for establishment of plant material may be granted. Should the installer set the controller in accordance with an irrigation exemption for plant material establishment, the installer shall return to re-program the controller upon expiration of exemption, or instruct the homeowner to do so.
 - e. The builder or landscaper should assist in educating the customer about watering restrictions in Castle Rock. The homeowner shall be responsible for compliance with water restriction regulations.
3. Irrigation System Design
- a. Resilient shut off valve with manual drain, or stop and waste, is required to isolate the irrigation system from the domestic plumbing system.
 - b. All irrigation systems shall be contained by the appropriate backflow prevention assembly. See the Town's Cross-Connection Control requirements in the Town Municipal Code Chapter 13.06.
 - c. Backflow prevention assemblies shall not exceed sixty (60) inches above the ground.
 - d. A Pressure Vacuum Breaker (PVB) shall be installed a minimum of twelve (12) inches higher than the highest possible outlet.
 - e. Master valves are required.

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Section 6: Single-Family and Two-Family Residential

- f. Rain sensors are required.
- g. Flow sensors are recommended.
- h. Overhead irrigation.
 - i. Overhead irrigation is not allowed in areas less than ten (10) feet.
 - ii. Pop-up height shall be consistent with the mature height of the plant material being irrigated. Minimum pop-up height of six (6) inches or higher is required for plant material unless the plant material is natively maintained native grass or wildflowers, where a minimum pop-up height of twelve (12) inches is required.
 - iii. Pop-up spray heads shall be equipped with internal check valves, internal pressure regulation and matched precipitation rate spray or rotary nozzles. Pressure regulation must be consistent with manufacturer's recommendations for the selected nozzle.
 - iv. Rotors shall be equipped with internal check valves and pressure regulation.
- i. Drip irrigation
 - i. Drip irrigation shall be point source drip or sub-surface drip irrigation for all trees, shrubs, perennial, and annual beds.
 - ii. Drip emitters and sub-surface drip shall be equipped with internal check valves at each emitter.
 - iii. Sub-surface drip irrigation may be used for turf or grass areas, and is required in areas less than ten (10) feet in width.
 - iv. All point-source drip, sub-surface drip, dripper line, and bubblers must be installed with an operational indicator in each planting area and a flush valve, with operational indicator at every dead end.
- j. Bubblers may be substituted for drip emitters where necessary to provide adequate irrigation to plant material in certain locations (i.e. trees in native grass areas).
- k. Irrigation charts and hydraulic worksheets may be required for plan submittal.

4. Irrigation system installation

Irrigation system shall meet Town performance standards and Criteria prior to issuance of certificate of occupancy or other Town approval. Release of bonding or surety shall be withheld until approval is given.

- a. Irrigation system installation shall be consistent with approved system design.
- b. A passing backflow prevention assembly test is required prior to issuance of a Certificate of Occupancy or other Town approval. The results shall include a mechanical test of the assembly, validation of protection for the degree of hazard present, and proper installation according to manufacturer's recommendations and

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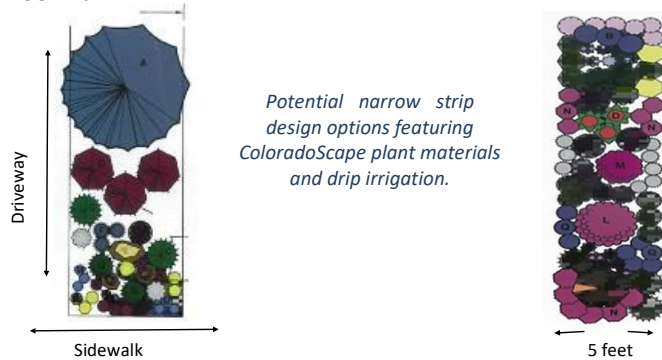
Section 6: Single-Family and Two-Family Residential

Town of Castle Rock requirements. Homeowner installations shall adhere to Cross-Connection Control requirements.

5. Irrigation system operation

All irrigation shall occur according to the specifications of the Town's Water Use Management Plan including hours, days, and application rates. Irrigation systems shall be operated and maintained in a manner that meets efficient irrigation performance standards. Temporary establishment, and permanent irrigation methods, timing, and application rates shall be included on irrigation plans.

FIGURE 6-1



- a. Temporary irrigation (establishment) is defined for each plant material type (including turf types, naturalized grasses, trees, shrubs, perennials, annuals, ground covers, etc.).
 - i. Identify temporary establishment irrigation method.
 - ii. Duration of establishment period to be determined by the temporary irrigation criteria.
 - iii. Identify application rates, monthly and annual water demand totals for establishment period.
- b. Permanent irrigation is to be defined for and by each plant material type (including turf types, naturalized grasses, trees, shrubs, perennials, annuals, ground covers, etc.).
 - i. Watering days and times to be outlined in the Town of Castle Rock Water Use Management Plan.
 - ii. Seasonal application rates shall be consistent with the Town of Castle Rock Plant List.

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Section 7: Non-Residential Properties

7.0 INTRODUCTION

This Section describes minimum necessary standards and criteria for non-residential properties such as business / commercial development, such as a business, industrial, governmental, school, religious institution, or mixed uses. Unless specifically called out in this Section, the general performance standards and criteria in **Section 4** shall apply.

7.1 APPLICATION

7.1.1 APPLICABLE USES

This Section applies to non-residential properties and zoning districts within the Town limits, and / or served by Castle Rock Water, such as, but not limited to the following:

1. Business/commercial district uses
2. Industrial
3. Governmental
4. Schools
5. Religious institutions
6. Mixed use containing one or more of the above uses
7. This includes the types of Non-residential properties found in the following zoning districts: B Business Commercial District, I-1 Light Industrial District, I-2 General Industrial District, similarly zoned by a Planned Development or an Overlay District. (See Town of Castle Rock Municipal Code Title 17 for zoning information).

7.1.2 APPLICABLE LANDSCAPE

1. Gross site area
2. Areas, including setbacks and utility easements
3. Parking lot
4. Common areas.

Streetscapes included with the project shall adhere to the performance standards and criteria in **Section 9**.

Dependent on design, schools with passive parks or passive recreation areas and / or active sports fields, may require adherence to the performance standards and criteria in **Section 10**.

7.2 DESIGN REQUIREMENTS

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Section 7: Non-Residential Properties

7.2.1 LANDSCAPE DESIGN

Unless otherwise specified within a particular land use, the performance standards and Criteria shall apply to all non-residential land uses within this Section.

7.2.1.1 SITE REQUIREMENTS

1. Performance Standards

- a. Plant material diversity creates visual appeal and limits disease and other environmental problems.
- b. Plant material diversity creates a seasonal appearance of greenery throughout the year.

2. Criteria

- a. A minimum of ten (10) percent of the gross site area shall receive landscape improvements.
 - i. Gross site area does not include adjacent streetscapes or rights-of-way. Plantings in these areas must follow the standards in **Section 9**.
 - ii. Plantings in adjacent streetscapes, rights-of-way, or tracts along rights-of-way do not count toward the site requirements herein.
 - iii. Landscaping in the parking lot may be counted toward the minimum gross site area requirement.
- b. A minimum of two (2) trees and four (4) shrubs for each one thousand (1,000) square feet of required landscaped area shall be provided. See example in **Table 7-1**.
 - i. Fifty (50) percent of the tree requirement must include large canopy deciduous shade trees.
 - ii. One (1) additional large canopy deciduous shade tree may be substituted in lieu of each four (4) required shrubs.
 - iii. Tree requirements cannot be exchanged for other types of plant material.

c. Plant material requiring more than ten (10) inches of water is not allowed.

i. Native grasses can be temporarily irrigated for establishment.

ii. Permanently installed overhead irrigation is not allowed.

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7.2.1.2 PARKING LOT REQUIREMENTS

1. Performance Standards

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Section 7: Non-Residential Properties

- a. Trees shall reduce urban heat-island effect.
- b. Trees shall not cause snow build-up or ice problems.
- c. Plant material shall accommodate environmental conditions associated with parking lots, including heat-island effect and snow storage.
- d. Trees shall not interfere with driver visibility of pedestrians or drive-aisle traffic.
- e. Design, plant materials, and hardscape material shall consider levels of foot traffic and shall not create pedestrian safety hazards.

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2. Criteria

- a. A minimum of ten (10) percent of the parking lot area shall be landscaped. (This requirement is included within and counts toward the minimum gross site area requirements).
- b. A minimum of two (2) large canopy deciduous shade trees and four (4) shrubs for each one thousand (1,000) square feet of required landscaped area shall be provided. See Table 7-1.

Table 7-1 Required trees/shrubs

AREA	TOTAL AREA IN SQUARE FEET (sf)	REQUIRED AREA (10%)	REQUIRED TREES *	PROPOSED TREES	REQUIRED SHRUBS **	PROPOSED SHRUBS
Gross Site	50,000 sf	5,000 sf	$(5,000 \text{ sf} / 1,000 \text{ sf}) \times 2 = 10$	10	$(5,000 \text{ sf} / 1,000 \text{ sf}) \times 4 = 20$	20
Parking	5,000 sf	500 sf	$(500 \text{ sf} / 1,000) \times 2 = 1$	1	$(500 \text{ sf} / 1,000 \text{ sf}) \times 4 = 2$	2

Required trees/shrubs calculation example

* Required Trees = 2 trees per 1,000 sf of required area

** Required Shrubs = 4 shrubs per 1,000 sf of required area

- c. Parking lots containing more than forty (40) spaces shall provide parking lot islands and/or peninsulas. When required, there shall be no more than fifteen (15) adjacent parking stalls between parking lot islands and peninsulas.
 - i. A minimum of one (1) large canopy deciduous shade tree and four (4) shrubs shall be provided for each parking lot island and peninsula.
 1. One (1) additional large canopy deciduous shade tree may be substituted in lieu of each of the four (4) required shrubs.
 2. Large canopy deciduous shade tree requirements cannot be exchanged for small canopy trees.
 - ii. A minimum width of eight (8) feet is required for parking lot islands and peninsulas.

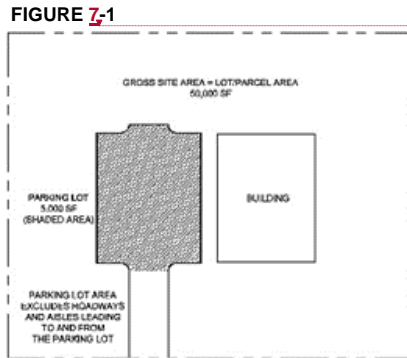
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Section 7: Non-Residential Properties

3. Measuring the parking lot area and parking lot landscape area

- a. The measured parking lot area includes the paved area and parking lot curb. It does not include right-of-way and aisles leading to and from the parking lot. See Figure 7-1



- b. The measured parking lot landscape area includes parking lot islands, peninsulas, and corners (not including curbs) and may include a three (3) foot wide landscaped area abutting the parking lot. It does not include right-of-way or detention areas.
- Islands may only be considered part of the parking lot landscaped area when surrounded on four (4) sides by parking spaces or drive aisles.
 - Peninsulas may only be considered part of the parking lot landscaped area when surrounded on three (3) sides by parking spaces or drive aisles.
 - Corners may only be considered part of the parking lot landscaped area when surrounded on two (2) sides by parking. Landscaped corners are calculated creating a triangle using the two sides adjacent to the parking lot spaces or drive aisle and making the third triangle leg by connecting the curb corners.
 - A three (3) foot wide landscaped area may only be considered when abutting the parking lot as measured from the back of the parking lot curb. See Figure 7-2.

c. Other

- Evergreen trees shall not be located in parking lot islands, peninsulas, or any area that would cause snow or ice buildup on the parking lot.
- Evergreen trees shall not be located in parking lot islands, peninsulas, or any area that would block sight lines.
- Landscape plantings at mature size and landscape features over thirty (30) inches high above the flow line are not permitted in sight distance triangles adjacent to parking space access aisles.

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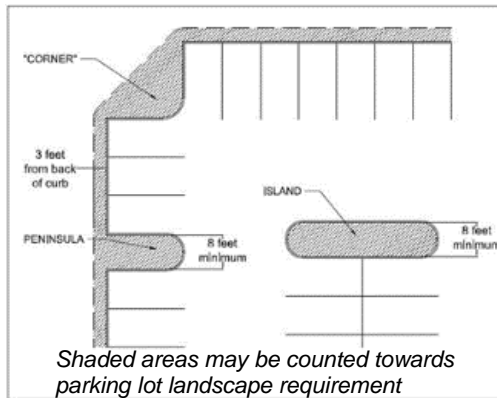
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Section 7: Non-Residential Properties

- iv. Plant material located within snow storage areas shall be chosen for tolerance to snow storage.
- v. The parking lot area landscape plan shall include large canopy deciduous shade trees to reduce urban heat island effect.
- vi. Water features are not allowed.

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FIGURE 7-2



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Section 8: Urban Areas

8.0 INTRODUCTION

An Urban Area is a focused development that has limited open space, primarily contains a mix of non-residential uses, but may integrate residential uses, that combines the uses in a way which considers character, local identity, heritage, pedestrians, and traffic. Urban Areas include the Downtown Overlay district, the Wolfensberger North Zoning Overlay district, or other dense mixed-use areas as determined by the Town.

This Section describes minimum necessary performance standards and Criteria for site and streetscape landscaping for Urban area uses not specifically addressed within the Castle Rock Municipal Code. Unless specifically called out in this Section, the general performance standards and Criteria in **Section 4**, **Section 5**, **Section 7**, and **Section 9** shall apply.

8.1 APPLICATION

8.1.1 APPLICABLE USES

This Section applies to Urban Areas as determined by the Town, or served by Castle Rock Water. Urban and vertical uses with approved Overlay District Criteria shall adhere to all standards and Criteria herein unless otherwise called out in approved Overlay District Criteria. Refer to Municipal Code for specific Overlay District requirements.

8.2 DESIGN REQUIREMENTS

8.2.1 LANDSCAPE DESIGN

Unless otherwise specified within a particular land use, the Criteria within this Section shall apply to all land uses within this Section.

1. Performance Standards

- a. Landscaping shall create an aesthetically pleasing, pedestrian friendly, urban environment for people to ~~live, work,~~ and shop.
- b. Landscape plantings shall focus on building frontage and pedestrian corridors.
- c. Streets shall be lined with trees, focusing on large canopy deciduous shade trees.
- d. A tree canopy between on-street parking and store fronts creates a separation between cars and sidewalks and provides shade.
- e. Shrubs provide for screening.
- f. Perennials provide color and texture.
- g. Groundcovers provide texture, depth and soil cooling.
- h. Adequate growing space and soil amendment support the establishment and mature growth of plant material.

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Section 8: Urban Areas

2. Criteria

a. Minimum Planting Requirements

- i. For minimum plant material and quantity requirements for the Downtown Overlay District, see Municipal Code 17.46.
- ii. For minimum plant material and quantity requirements for the Wolfensberger North Zoning District, see Municipal Code 17.42.
- iii. For other Urban Areas, as determined by the Town, see **Section 7** for minimum tree and shrub requirements for the site, and **Section 9** for minimum tree and shrub requirements for the streetscape.

b. Trees

- i. Large canopy deciduous shade trees shall be spaced no more than forty (40) feet apart in the streetscape.
- ii. Tree planting strips less than eight (8) feet wide shall have CU™ Structural Soil.
- iii. Minimum tree planting width is six (6) feet.

c. Street Trees

- i. There shall be four (4) shrubs for every tree.

d. Tree Grates

- i. Tree grates or similar planting sections are allowed in Urban Area streetscapes only and shall accommodate mature tree canopy.
- ii. Tree grates shall be a minimum of six (6) feet by six (6) feet.
- iii. All trees in grates shall be a minimum of three (3) inch caliper, measured six (6) inches above the ground.
- iv. Tree species is limited to trees identified in the approved Town of Castle Rock plant list (hydrozone 1 or 2), as appropriate for urban environments and narrow street tree planting strips.

e. Overlay District potted plant requirement:

- i. One percent of the total landscaped area is required to be planted in a summer flowering xeric perennial or annual plant.
- ii. Flowering plants should be planted in window boxes, clay pots, or raised beds.

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<#>One percent of the total landscaped area is required to be planted in a summer flowering xeric perennial or annual plant.¶
<#>Flowering plants should be planted in window boxes, clay pots, or raised beds.¶
<#>Containers shall be able to drain water and contain the necessary amount of soil to grow healthy plants, however should not create water waste.¶
<#>Flowers should face the street or sidewalk adjacent to the property or the business entrance.¶

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Section 8: Urban Areas

iii. Containers shall be able to drain water and contain the necessary amount of soil to grow healthy plants, however should not create water waste.

iv. Flowers should face the street or sidewalk adjacent to the property or the business entrance.

f. Other

i. Plant material, other than trees, may be installed in areas less than four feet in width. Mature plant sizes shall be utilized to design urban planting areas. See Town of Castle Rock Plant list for mature plant sizes.

ii. Provide adequate plant material for eighty (80) percent coverage within five (5) years.

iii. Provide a mechanism for the specific needs for long-term maintenance of landscaping within the urban environment.

iv. Provide regularity of watering, especially in planting vault situations with CU™ Structural Soil, as CU™ Structural Soil does not hold water as well as standard soil.

v. Areas less than four (4) feet in width along collector or arterial streets shall be hardscaped with stamped concrete, unit pavers, grouted cobble, or flagstone.

vi. Permanently irrigated planters shall not be less than three (3) feet in width.

8.2.2 IRRIGATION DESIGN

i. See **Section 4**.

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Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

9.0 INTRODUCTION

This Section describes minimum necessary performance standards and Criteria for streetscapes, rights-of-way, and tracts along rights-of-way. Unless specifically called out in this Section, the general performance standards and Criteria in **Section 4** shall apply. For minimum necessary performance standards and Criteria for Urban Area streetscapes see **Section 8**. This Section shall not apply to Town of Castle Rock Capital Improvement Program projects.

9.1 APPLICATION

9.1.1 APPLICABLE USES

This Section applies to all Streetscapes, Rights-of-way, and Tracts along Rights-of-Way within the Town limits or served by Castle Rock Water.

1. Streetscapes
2. Rights-of-way
3. Tracts along rights-of-way within the Town limits and / or areas served by Castle Rock Water

9.1.2 APPLICABLE LANDSCAPE AND IRRIGATION

1. Street Tree Planting Strips
2. Right-of-way area between sidewalk and private property
3. Tracts along rights-of-way
4. Planting strips on private property, along rights-of-way
5. Entry streets

9.2 DESIGN REQUIREMENTS

This Section identifies the minimum performance standards and Criteria for landscape design and irrigation design for streetscapes, rights-of-way, and tracts along rights-of-way.

9.2.1 LANDSCAPE DESIGN

Unless otherwise specified within a particular land use, the Criteria within this Section shall apply to all land uses within this Section. In addition, Overlay Districts shall adhere to these performance standards and Criteria unless specifically called out otherwise in the Overlay District.

1. Overall
 - a. Performance Standards
 - i. Plant material diversity creates visual appeal and limits disease and other environmental problems.

Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

- ii. Plant material shall create a seasonal appearance of greenery throughout the year.
- iii. Plant material shall accommodate environmental conditions associated with streetscapes and rights-of-way, including heat, salts, chemicals, pollution, and snow removal.
- iv. Sight distance triangles are free from visual obstructions and provide a safe view of traffic and pedestrians.
- v. Town water, sanitary sewer, and drainage infrastructure are protected and able to be maintained or replaced.
- vi. Design shall accommodate efficient irrigation and eliminate run-off.
- vii. Medians and round-a-bouts in rights-of-way provide visual appeal, using inorganic material.
- viii. Plant material for entry streets enhance neighborhood character.
- ix. Promote ColoradoScape design elements.
- x. Water features are not allowed.

b. Criteria

- i. Living plant material, which requires irrigation, is not permitted within medians and round-a-bouts in rights-of-way.
- xi. Traditional turf grass is prohibited. Native grasses must be maintained in their natural form.
- xii. Plant material within the streetscape must be hydrozone one (1) or two (2) from the Town of Castle Rock plant list.
- ii. Maximum number of species per deciduous and evergreen plantings shall follow diversity requirements in **Section 4**.
- iii. Slopes steeper than 3:1 are not permitted.
- iv. Landscaping or landscape features over thirty (30) inches high above the flow line are not permitted in sight distance triangles. Length of sight distance triangles are dependent upon street classification. For length calculation information see Intersection Safety Triangles in the Transportation Design Criteria Manual.
- v. Trees, large shrubs, or permanent objects are not permitted within wet utility easements.

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Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

- vi. Landscape design shall meet the requirements of the Composite Landscape Water Use Rating (CLWUR) per Town of Castle Rock Municipal Code Chapter 13.20.
- vii. When implementing ColoradoScape design, soil amendment shall be four (4) cubic yards of organic material per one thousand (1,000) square feet, rototilled to a minimum depth of six (6) inches.
- viii. A minimum coverage of 75 percent live plant material (at maturity) is required; no more than 25 percent may be non-living materials, including organic mulch and rock.

2. Street Trees

a. Performance Standards

- i. Tree type and spacing provides a continuous tree canopy over the streetscape.
- ii. Trees do not interfere with driver visibility of pedestrians, oncoming traffic, traffic control devices, or regulatory signs.
- iii. Trees are planted within adequate space and soil to provide for healthy mature spread.
- iv. A clear and safe walking zone between trees and pedestrians, and trees and structures, including buildings and fences, is provided.
- v. Trees provide shade, but do not cause snow build-up or icing on the street, sidewalk, or right-of-way, particularly for north facing areas.

b. Criteria

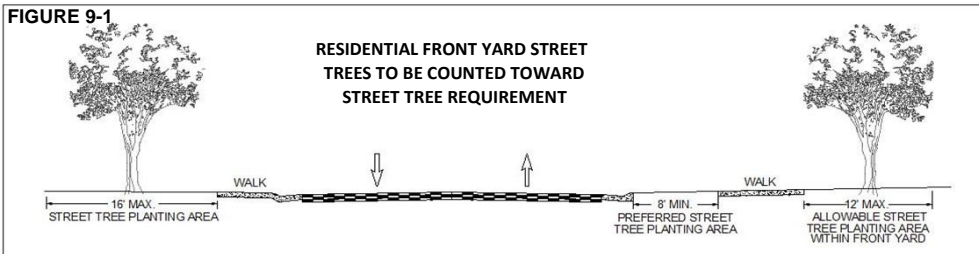
i. Required Street Trees.

- 1. A minimum of one (1) deciduous tree for every forty (40) linear feet of landscaped area within ROW is required.
- 2. A tree planted within the front yard of a private property may be counted toward the minimum tree requirement.
 - a. For streets with attached sidewalks, a tree planted within sixteen (16) feet from back of street curb.
 - b. For streets with detached sidewalks, a tree planted within twelve (12) feet from back of sidewalk. See **Figure 9-1**.
- 3. 75% of street trees shall be large canopy deciduous shade trees.
- 4. Alternative plant material cannot be substituted for any tree requirement.
- 5. All deciduous large and small canopy trees must be permanently irrigated.

ii. Street Tree Spacing.

Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

1. Trees, when possible, shall be regularly spaced no more than forty (40) feet apart.
2. Deciduous ornamental (small canopy) trees shall be spaced no more than twenty-five (25) feet apart.
3. Spacing may be adjusted for driveways and streetlights.



4. Grouping of trees may be permitted where regular spacing cannot be accomplished or to achieve a desired design aesthetic.
 5. There shall be no gap between trees greater than one hundred and twenty (120) feet.
- iii. Street Tree Planting Location
1. Trees shall be planted on both sides of a detached sidewalk, where feasible.
 2. Trees shall be planted a minimum of forty-two (42) inches from the face of a street curb, whenever possible.
 3. Trees shall not be planted closer than thirty (30) feet from the face of a street curb at intersections and street corners.
 4. Under no circumstance shall trees be planted within sight distance triangles. Evergreen trees shall be planted away from sight distance triangles to not cause encroachment of branches into sight distance triangles.
 5. For non-residential properties, trees shall not be planted closer than ten (10) feet from streetlights.
 6. Evergreen trees shall be planted away from the street and sidewalk edge and should be positioned north of sidewalks to not cause snow build-up or icing problems.
 7. A minimum distance of ten (10) feet shall be provided between trees and buildings or trees and fences.
 8. Trees and large shrubs shall not be planted in wet utility easements, or within ten (10) feet of water, wastewater, or stormwater infrastructure.

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Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

9. Trees planted near sidewalks shall be fruitless.

iv. Street Tree Branching Height

1. On the traffic side of the sidewalk, the branching height of mature trees shall be no less than thirteen and one half (13 ½) feet above the street.
2. On the non-traffic side of the sidewalk, the branching height of mature trees shall be no less than eight (8) feet above the sidewalk. See **Figure 9-2**.

v. Street Tree Planting Strips

1. Large Canopy Deciduous Shade Trees

- a. For local streets the minimum width of planting strips, to include large canopy deciduous shade trees, shall be eight (8) feet. See **Figure 9-3**.
- b. For collector and arterial streets, the minimum width of planting strips, to include large canopy deciduous shade trees, shall be ten (10) feet. See **Figure 9-4**.

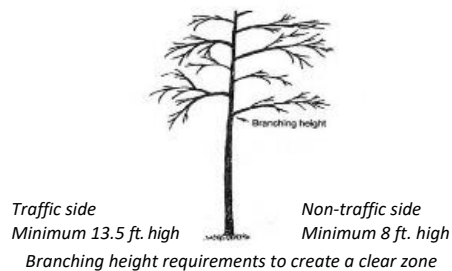
c. If and when permitted, large canopy deciduous shade trees planted in areas less than eight (8) feet are required to use CU™ Structural Soil. For Urban Areas, see **Section 8**.

d. Minimum tree planting width is six (6) feet.

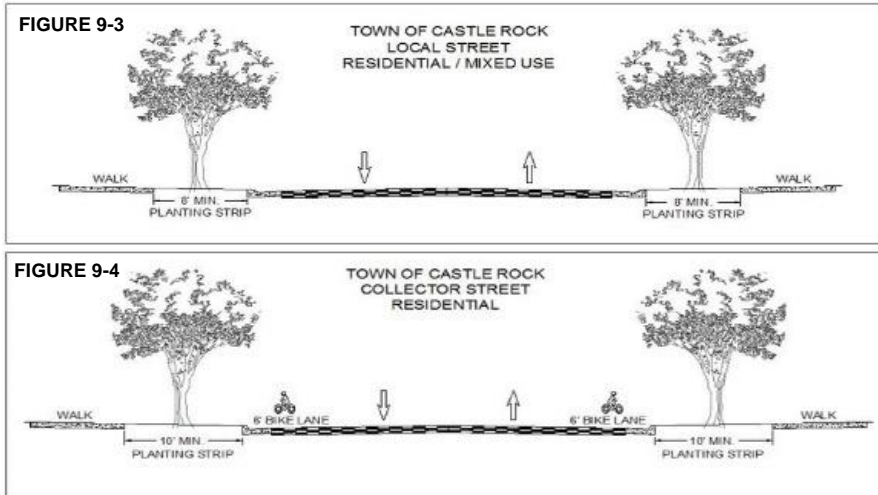
2. Ornamental Trees

- a. For local, collector, and arterial streets the minimum width of planting strips for ornamental trees shall be six (6) feet

FIGURE 9-2



Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way



3. Streetscape Shrubs

a. Performance Standards

- i. Shrubs shall not interfere with driver visibility of pedestrians, oncoming traffic, traffic control devices, or regulatory signs.
- ii. Shrubs shall provide a variety of height and color variations to create visual appeal, limit disease, and other environmental problems.
- iii. Shrubs shall be planted within adequate space and soil to provide for healthy mature spread.

b. Criteria

i. Required Shrubs

1. A minimum of four (4) shrubs per one (1) tree is required.
2. One (1) ornamental grass of equal size at planting may be substituted for one (1) shrub.
3. One (1) additional tree may be substituted for four (4) shrubs.
4. Large shrubs shall not be planted in vehicular access easements or wet utility easements.
5. Where an easement does not exist, large shrubs must not be within ten (10) feet of water, wastewater, or stormwater infrastructure.

Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

4. Groundcover

a. Performance Standards

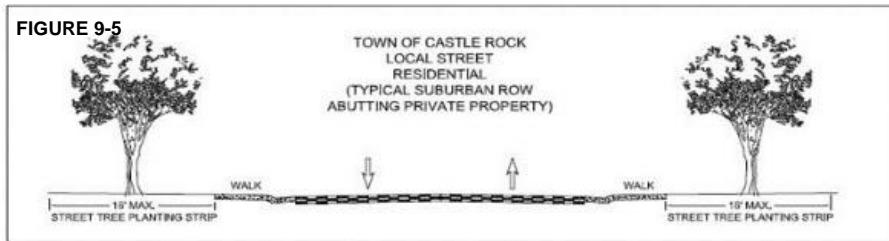
- i. Groundcover design and materials shall consider levels of foot traffic and shall not create pedestrian safety hazards.
- ii. Ground cover shall create a consistent coverage of material.

b. Criteria

- i. Traditional turf grass is prohibited. A native hydrozone one (1) or two (2) plant material is required.
- ii. Areas less than four (4) feet in width along local streets shall contain inorganic mulch, (rock, gravel, or cobble).
- iii. Cobble is discouraged in areas of pedestrian ingress and egress.
- iv. Cobble shall be grouted for safety as determined by the Town.

9.2.2 IRRIGATION DESIGN

This Section describes minimum necessary performance standards and Criteria for streetscapes, rights-of-way, and tracts along rights-of-way land uses. Unless specifically called out in this Section, the general irrigation design requirements in **Section 4** shall apply.



1. Overall

a. Performance Standards

- i. All plant material shall be irrigated per hydrozone as listed in the Town of Castle Rock Plant List.
- ii. Irrigation provides appropriate amount of water based on water demands of groups of plantings. These groups of plantings shall maintain optimal health and appearance.
- iii. The irrigation design accommodates efficient irrigation and eliminates run-off onto streets or sidewalks.

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Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

- b. Criteria
 - i. A permanent water efficient irrigation system, providing full coverage to all plant material is required.
 - ii. Drip or sub-surface irrigation is required in areas greater than four (4) feet and less than ten (10) feet in width. Overhead irrigation is not permitted in these areas.
 - iii. Permanent irrigation is not permitted in areas less than four (4) feet in width.
 - iv. Permanent irrigation is not permitted in medians or round-a-bouts.
 - v. Irrigation shall be hydrozoned, grouping similar water demands by irrigation zone.
 - vi. Irrigation design shall meet the requirements of the Composite Landscape Water Use Rating (CLWUR) per Town of Castle Rock Municipal Code Chapter 13.20.

9.3 RESPONSIBLE PARTY

This Section describes who is responsible for the design, installation, and maintenance of landscape and irrigation of streetscape, rights-of-way and tracts along rights-of-way land uses by street type.

9.3.1 DESIGN AND INSTALLATION OF LANDSCAPE AND IRRIGATION RESPONSIBILITY

Design and installation of utility and irrigation sleeving is the responsibility of the initial Developer and must be completed prior to the construction of streets, curb and gutter, and sidewalk.

- 1. Local streets
 - a. Residential
 - i. With attached sidewalk – the Builder or adjacent homeowner
 - ii. With detached sidewalk – the Developer or Builder
 - b. Non-residential including Mixed use / residential – the Developer or Builder
- 2. Arterial and Collector streets – the vertical Developer of the individual parcel adjacent to the right-of-way.
- 3. Entry streets, Medians and Round-a-bouts – the vertical Developer of the individual parcel adjacent to the right-of-way.

Section 9: Streetscapes, Rights-of-Way, and Tracts along the Rights-of-Way

9.3.2 MAINTENANCE OF LANDSCAPE AND IRRIGATION

Maintenance of Landscape and Irrigation shall comply with approved plans and adhere to all standards and Criteria herein.

1. Local streets
 - a. Residential
 - i. With attached sidewalk – the adjacent homeowner shall be responsible for maintenance of the streetscape in the right-of-way area, between sidewalk and private property and / or planting strips on private property along the right-of-way (see **Figure 9-5**).
 - ii. With detached sidewalk – an HOA, Metro District or other similar entity.
 - b. Non-residential, including Mixed use / residential – the adjacent property owner or a property maintenance association, Metro District, or other similar entity.
2. Arterial and Collector streets – an HOA, Metro District, or other similar entity.
 - a. Entry Streets, Medians, and Round-a-bouts – an HOA, Metro District, or other similar entity.

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Section 10: Parks, Sports Fields, and Golf

10.0 INTRODUCTION

This Section describes minimum necessary performance standards and Criteria for design, and maintenance responsibility for park, sport field, and golf course land uses. Unless specifically called out in this Section, the general performance standards and Criteria in **Section 4** shall apply.

10.1 APPLICATION

10.1.1 APPLICABLE USES

This Section applies to public or private parks, sports fields, and golf courses within the Town limits or served by Castle Rock Water, and includes the following:

1. Passive Parks
2. Passive Recreation Areas
3. Active Parks
4. Sports Fields
5. Golf courses

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10.1.2 APPLICABLE LANDSCAPING AND IRRIGATION

1. Passive Parks
2. Passive Recreation Areas
3. Active Parks
4. Sports Fields
5. Golf Courses
6. Trails within these areas

10.2 DESIGN REQUIREMENTS

This Section identifies the minimum performance standards and Criteria for landscape and irrigation design for parks, sports fields, and golf courses.

10.2.1 LANDSCAPE DESIGN

Unless otherwise specified within a particular land use, this Criteria shall apply to all land uses within this Section. Urban and vertical uses with approved overlay district criteria shall adhere to all standards and criteria unless called out in approved overlay district criteria.

1. Passive Parks and Passive Recreation Areas.
 - a. Performance Standards
 - i. These areas shall be designed to support such intended activities of the area, including layout and pedestrian access.

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Section 10: Parks, Sports Fields, and Golf

- ii. Tree type and placement is intended to provide shade.
- iii. A seasonal appearance of greenery throughout the year shall be provided.
- b. Criteria
 - i. Publicly owned and managed passive use areas shall meet the minimum site requirement of no less than three thousand (3,000) square feet. The following uses may not be counted toward the square foot requirement: streetscapes, islands, buffers, building setbacks, parking areas, detention ponds, or other areas not intended and designed for these uses.
 - ii. Privately owned and managed passive use areas shall meet the minimum site requirement of no less than one thousand (1,000) square feet and no more than three thousand (3,000) square feet. The following uses may not be counted toward the square foot requirement: streetscapes, islands, buffers, building setbacks, parking areas, detention ponds, or other areas not intended and designed for these uses.
 - iii. The square footage configuration shall be such to support non-programmed athletic activities, such as volleyball, softball, or other recreational activities.
 - iv. The following uses do not qualify as passive recreation areas: streetscapes, medians, landscape buffers, setbacks, parking areas, or other areas not intended or designed for recreational use.
 - v. Plant material used in passive recreation areas shall be consistent with the level of use by the residents.
 - vi. Water requirements for turf used for passive recreation areas shall not exceed nineteen (19) inches of irrigation per growing season. Other plant material water demands shall not exceed fifteen (15) inches of irrigation per growing season.
 - vii. A minimum of one (1) large canopy deciduous shade tree per one thousand (1,000) square feet of permanently irrigated area shall be provided.
 - viii. Where native grasses are permitted, trees and shrubs must have the same Hydrozone as the native grasses.
- 2. Active Parks and Sports Fields public or private. Such areas are used for programmed athletic activities, and may include baseball, softball, football, soccer, or other programmed sports activities.
 - a. Performance Standards
 - i. These areas shall be designed to support such intended activities of the area, including layout and pedestrian access.
 - ii. Tree type and placement is intended to provide shade.

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Section 10: Parks, Sports Fields, and Golf

- iii. A seasonal appearance of greenery throughout the year shall be provided.
 - iv. The use of artificial turf on sports fields is encouraged.
 - v. Plant material shall tolerate high traffic and active use.
 - vi. Surrounding areas may be used for more passive recreation activities and site access.
- b. Criteria
- i. For Active Parks, a minimum of one (1) large canopy deciduous shade tree per one thousand (1,000) square feet of ~~permanently~~ irrigated area is required.
 - ii. Where native grasses are permitted, trees and shrubs must have the same Hydro-zone as the native grasses.
3. Golf Courses. The Performance Standards and Criteria for Golf Courses are approved on a case by case basis, usually through a development agreement.

10.2.2 IRRIGATION DESIGN

1. Passive Parks and Passive Recreation Areas.
- a. Criteria
- i. All plant material in these areas shall be permanently irrigated by a dedicated irrigation service connection with an automatic irrigation system.
 - ii. All water requirements for turf shall not exceed nineteen (19) inches of irrigation per growing season.
 - iii. Aesthetic and ornamental plant material water demands shall not exceed fifteen (15) inches of irrigation per growing season. Note: Area shall be included in the Composite Landscape Water Use Rating (CLWUR) development.
2. Active Parks and Sports Fields.
- a. Criteria
- i. All plant material in these areas shall be permanently irrigated by a dedicated irrigation service connection with an automatic irrigation system.
 - ii. Water allocation for Active Parks and Sports Fields shall provide for plant materials that tolerate high traffic and active use. Note: Area shall be included in CLWUR development.
3. Golf Courses.
- a. Criteria
- i. ~~All plant materials in golf courses shall be permanently irrigated by a dedicated~~

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Section 10: Parks, Sports Fields, and Golf

irrigation service connection with an automatic irrigation system.

- ii. Irrigation of golf courses shall be accomplished by a non-potable water source, as approved by the Town.

10.3 MAINTENANCE

10.3.1 PASSIVE PARKS AND PASSIVE RECREATION AREAS

1. Areas owned by a homeowner's association (HOA), a metro district, or other similar entity shall maintain landscape and irrigation to standards and Criteria contained herein.
2. Areas owned and maintained by the Town shall maintain landscape and irrigation to the standards and Criteria defined by the Town Parks and Recreation Department.

10.3.2 ACTIVE PARKS AND SPORTS FIELDS

1. Areas owned and maintained by a homeowner's association (HOA), a metro district, or other similar entity shall maintain landscape and irrigation to standards and Criteria contained herein.
2. Areas owned and maintained by the Town shall maintain landscape and irrigation to standards and Criteria defined by the Town Parks and Recreation Department.
3. Areas owned and maintained by a school district shall maintain landscape and irrigation to the standards and Criteria contained herein.

10.3.3 GOLF COURSES

1. Areas owned and maintained by a homeowner's association (HOA), a metro district, or other similar entity shall maintain landscape and irrigation to standards and Criteria contained herein.
2. Areas owned and maintained by the Town shall maintain landscape and irrigation to the standards and Criteria defined by the Town Parks and Recreation Department.

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Appendix

Appendix A: Temporary Irrigation Criteria

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Appendix A



TEMPORARY IRRIGATION

1. Criteria

The purpose of temporary irrigation is to germinate native seed and establish native vegetation, it is not intended for continuous use during establishment period (assumed to be two (2) years). This means that the temporary system will not be operated on a three (3) day per week watering schedule after the initial thirty (30) day irrigation exemption period.

- a. The native soil must be amended with three (3) cu yds. of organic compost per one thousand (1,000) sq. ft.
- b. This amendment must be incorporated into the soil via tractor ripping.

2. Seeding

Seeding shall take place as recommended by Town. Seasonal weather conditions shall be taken into consideration when scheduling seed and mulch installation. Seeding shall not occur between June 15th and September 1st. Coordinate with Castle Rock Water's Conservation Division for guidance. Generally, if a Red Flag Warning and/or local fire restriction has been issued, no seeding shall commence until such time that the warnings/restrictions have been released.

- a. Drill seeding is required.
- b. Slopes steeper than 3:1 are not permitted.
- c. Temporary irrigation systems and irrigation exemptions will meet the following specifications:
 - i. The irrigation system must be above ground and removed at the end of the approved establishment period.
 - ii. Sprinkler heads used for temporary irrigation must have an application rate not to exceed .75"/hour. Traditional spray heads/nozzles are not allowed.
 - iii. The irrigation exemption shall not exceed thirty (30) days.
 - iv. Seed ticket(s) for areas temporarily irrigated are to be provided to Castle Rock Water.
 - v. Town of Castle Rock hydraulic worksheet (required on construction documents) will show both permanent and temporary irrigated areas. These should be listed separately and not combined.
 - vi. Tap sizing will be determined by the permanent irrigated plant material.

3. Irrigation

Watering shall occur between the hours of 12 a.m. and 8 a.m. No watering will be permitted outside of these times.

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Appendix A

- a. A hydrant meter issued by the Town may be used to meter temporary irrigation water. Hydrant meter assembly shall be secured with anti-theft cage and protected from freezing. Hydrant meter shall be connected to 2" fitting on hydrant. The 4" fitting shall be reserved for the fire department to use in fighting fires. Hydrant meter assembly will be removed at end of growing season and returned to the Town. Applicant will follow hydrant meter permit requirements.
- b. Water will be billed at the applicable tier two (2) irrigation rate (see current year rates and fees). An establishment water budget will be implemented as follows:
 - i. For the first four weeks:
 - Two 9 minute cycles per zone @ .4"/hour = .12" of water per day
 - .12"/day x 7 days/week = .84"/week
 - .84"/week x 4 weeks = 3.36" for the first 4 weeks
 - 3.36" x .62 = 2.0832 gallons / square foot
 - 2.0832 gallons/square foot x 43,560 square feet in an acre = 90,744 gallons/acre
 - ii. For the second four weeks (transition to fixed three days per week as indicated on the standard non-residential schedule):
 - One 15 minute cycle per zone @ .4"/hour = .1" of water per day
 - .1"/day x 3 days/week = .3"/week
 - .3"/week x 4 weeks = 1.2" for the second 4 weeks
 - 1.2" x .62 = .744 gallons / square foot
 - .744 gallons/square foot x 43,560 square feet in an acre = 32,409 gallons/acre
 - iii. Moving forward continue to transition to as-needed only, not to exceed 1" per month:
 - 1" per month x .62 = .62 gallons per square foot
 - .62 gallons per square foot x 43,560 square feet in an acre = 27,007 gallons per acre

All water used in excess of the budget will be billed at the applicable tier three (3) excess rate. These rates are subject to change annually based on an annual rates and fees study by the Town.

- c. A waterproof sign measuring a minimum of 2 feet by 2 feet shall be visible from each adjacent road. The sign shall contain:
 - **TEMPORARY IRRIGATION.**
 - Dates of the temporary irrigation.
 - Contractor's contact information.(See example on next page)

4. Conclusion

- a. The contractor must contact Castle Rock Water, Stormwater hotline at 720-733-2235, a minimum of one week prior to the expiration of the temporary irrigation exemption to evaluate the level of establishment.
- b. Upon expiration of the approved establishment period, all components of the temporary irrigation system must be removed. Equipment to be removed includes: irrigation controller, control valves, manual ball valves, all fittings used to connect valves to mainline, valve boxes, above ground lateral piping, sprinkler heads, and all associated staking materials. Below ground irrigation mainline and wiring can be abandoned in place.

TEMPORARY IRRIGATION

05/01/2023 - 05/21/2023

ABC BUILDER, 303-555-5555

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Appendix B

Deleted: Turf Grass Varieties Recommended for Single Family Homes

Type

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2022 Landscape and Irrigation Criteria Manual Summary of Changes

These changes are pending Water Commission and Town Council approval

The manual was reformatted and “cleaned up” to correct clarification, typos, etc. Some additional formatting changes may be completed to this manual.

All tracking changes are shown in red in the revised manual. Anything that may affect the current Criteria is listed below.

Section 1 General Provisions

Updated names/titles of people involved with document revision.

Definitions of Terms

- Several definitions were added, deleted, or updated for clarification
- We’re choosing to use the term “planting strip” instead of “tree lawn” as we feel referring to the strip between a sidewalk and street as a “tree lawn” suggests that it should be grass.

Section 4 General Requirements

- Added:
 - A minimum distance of ten (10) feet shall be provided between trees and buildings or trees and fences. Space provided must allow adequate room for mature tree.
 - Artificial turf must be installed and maintained per manufacturers specifications.
- Changed:
 - Plant diversity requirements
- Deleted:
 - Water Efficiency Plan. If landscape revisions are approved, the water efficiency plan would no longer be required.

Section 5 Multi-Family Residential

- Parking lot requirements were revised for clarification purposes and formatting.
- Removed passive recreation area information and refer to Section 10.

Section 6 Single Family and Two-Family Residential

- Added:
 - Landscape design criteria changes for residential front, side, and back yards. These changes will be incentivized through a reduction in system development fees as proposed in the 2023 rates and fees.

- Front, back, and side yard landscape and irrigation must be designed and installed through the homebuilder as part of the construction process. All landscape and irrigation installation must be completed by a Registered Landscape Professional.
- No turf allowed in front yards. Front yard landscape shall utilize a ColoradoScape design. Minimum 75% plant coverage at maturity (3 years).
- Backflow prevention assembly criteria.
- Master valves are required.
- All point-source drip, sub-surface drip, dripper line, and bubblers must be installed with an operational indicator in each planting area and a flush valve, with operational indicator at every dead end.

Section 7 Non-Residential Properties

- **Added:**
 - Plant material requiring more than ten (10) inches of water is not allowed.
 - Native grasses can be temporarily irrigated for establishment.
 - Permanently installed overhead irrigation is not allowed.
 - Water features are not allowed.
- Parking lot requirements were revised for clarification purposes and formatting.

Section 8 Urban Areas

- **Added:**
 - Permanently irrigated planters shall not be less than three (3) feet in width.

Section 9 Streetscapes, Rights-of-Way, and Tracts along Rights-of-Way

- **Added:**
 - Minimum tree planting width is six (6) feet.
 - Water features are not allowed.

Section 10 Parks, Sports Fields, and Golf Courses

- Revised the square feet for passive use areas

Appendix A

- Removed Appendix B: Turf Grasses. This will be located on www.CRgov.com to allow for revisions as deemed necessary.



Town of Castle Rock | ColoradoScape Guidelines

June 17, 2022

NORRIS DESIGN

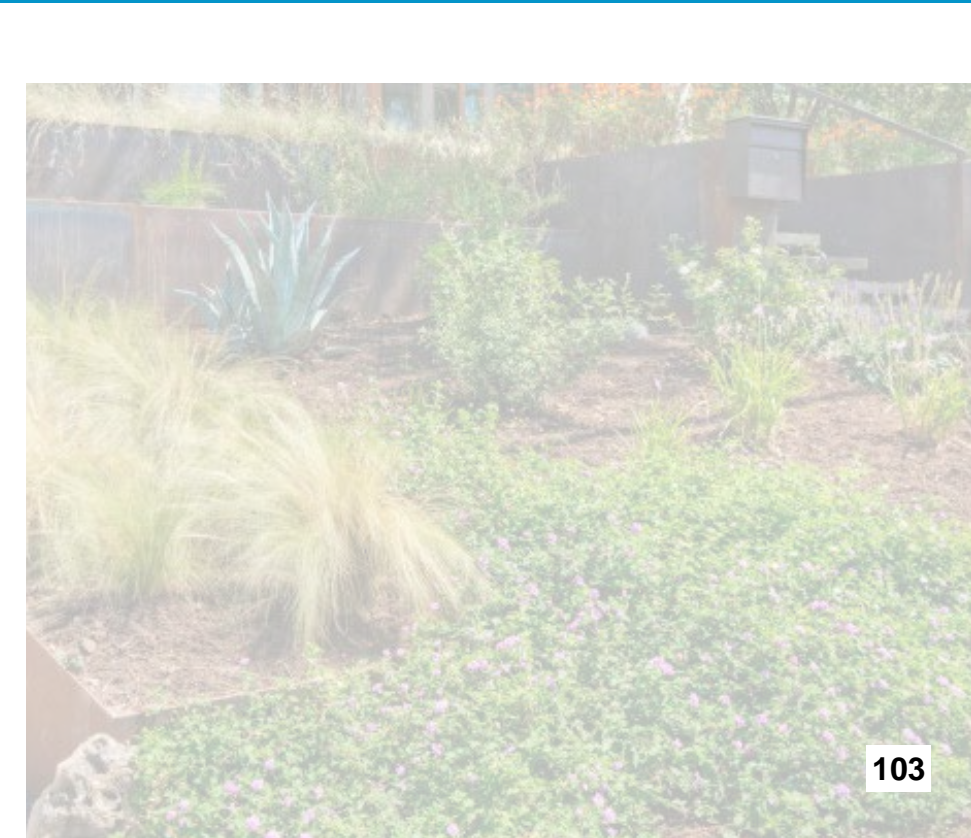


Table of Contents

01 Introduction

- 04 Water Conservation Vision
- 05 Design Review

02 Lot Typicals

- 07 General Landscape and Irrigation Notes
- 08 Lot Definitions
- 09 Front Landscape Lot Typicals
- 13 Rear Landscape Lot Typicals
- 16 Landscape Plan Example
- 17 Irrigation Plan Example

03 Landscape and Irrigation Materials

- 19 Landscape and Irrigation Materials
- 20 Plant Palette
- 32 Estimated Water Use Calculations





01 Introduction

The Town of Castle Rock is striving to reduce irrigation demands for each homeowner. These designs propose solutions to help achieve that goal by reducing lawn areas.

Water Conservation Vision

The Town of Castle Rock is proposing to transform the front and rear landscapes of homes to make significant strides in reducing water usage throughout the town. The transformation happens by removing sod from the front yards, and reducing or removing sod in the rear yards. The sod reduction will be implemented at the homebuilding stage as well as renovations to existing landscapes. This will reduce irrigation demands per homeowner, therefore reducing the Town's water demand.

The goal is to reduce daily water consumption while using plantings that will liven the streetscapes and create a unique character to each home. Currently, a majority of Castle Rock homes have sod as their primary front and rear landscaping, creating high water demands for each homeowner and the town.



Design Review

Homes within a Home Owners Association (HOA), or a community with a Design Review Board (DRB), require owners to submit landscape and irrigation plans for approval through the appropriate party, prior to submitting plans to the Town of Castle Rock. Once approved by HOA or DRB, the homeowner shall proceed with the Town's approval process.

All planting and irrigation plans must be submitted through the Town of Castle Rock Water Department and be approved prior to installation. All necessary forms can be found on the Town of Castle Rock's Water Department website.

Planting and irrigation plans shall include the following:

- » Scale, 1"=10'0" recommended
- » Planting Plan Layout
- » List of all plant species and quantities
- » Irrigation methods and locations
- » Edging and mulch type





02 Lot Typicals

Typical lot designs have been created to demonstrate common lot layouts. These examples can be implemented for water-wise design solutions.

General Landscape Notes

Proposed landscaping is intended to be a waterwise solution while fostering visual interest and biodiversity within each neighborhood. Removing sod and replacing it with low to medium water use plants shall significantly reduce the irrigation demands of each lot.

By utilizing the typical lot designs with the planting layout, plant quantities, and plant palette provided in this document, homeowners and builders can implement cost effective and water-wise landscapes for front and rear landscapes. Lot sizes will vary, so designs may need to be adapted to fit each condition. These concepts can be implemented across existing or proposed lots.

General Irrigation Notes

Irrigated turf is among the largest water users of all plant species common to Front Range landscapes. During peak season, its demand is roughly 1.75" of water per week (1.10 gallons/sf/week) in this climate. Low and very low water use shrubs and perennials use less than half of this amount of water while artificial turf uses zero water. Artificial turf may require some water for cleaning and cooling.

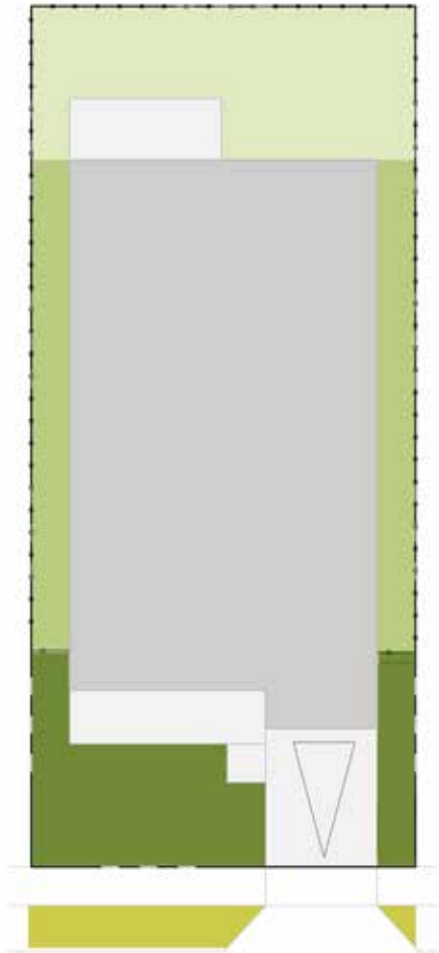
The water use portion of this study is intended to estimate the annual water use of current residential landscape scenarios and compare their water use to proposed lot typicals that utilize sustainable native plant species in lieu of turf.



Lot Definitions

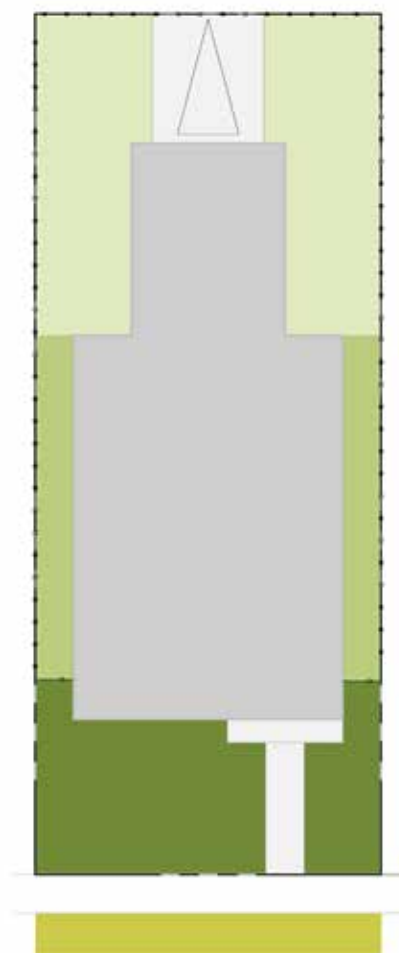
Lot 1

- Single-family
- Front-loaded garage



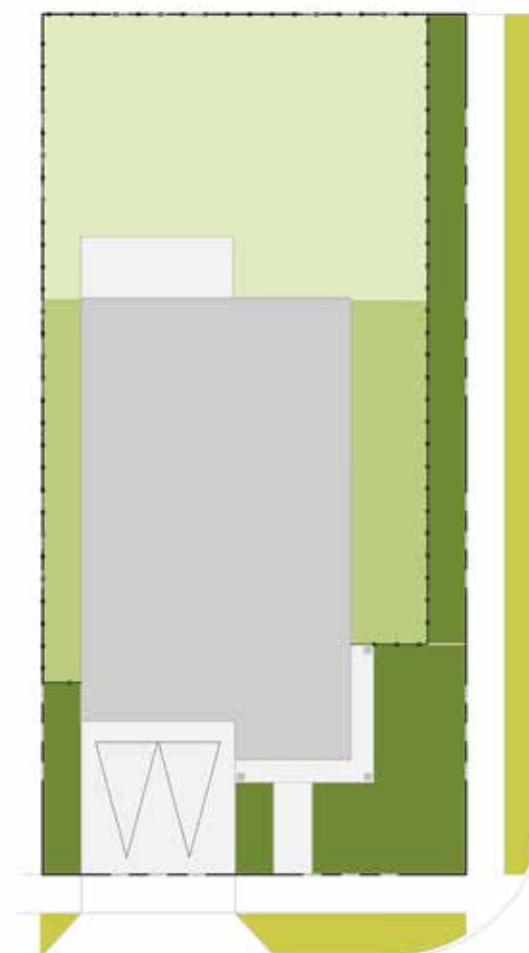
Lot 2

- Single-family or Townhome
- Alley-loaded garage



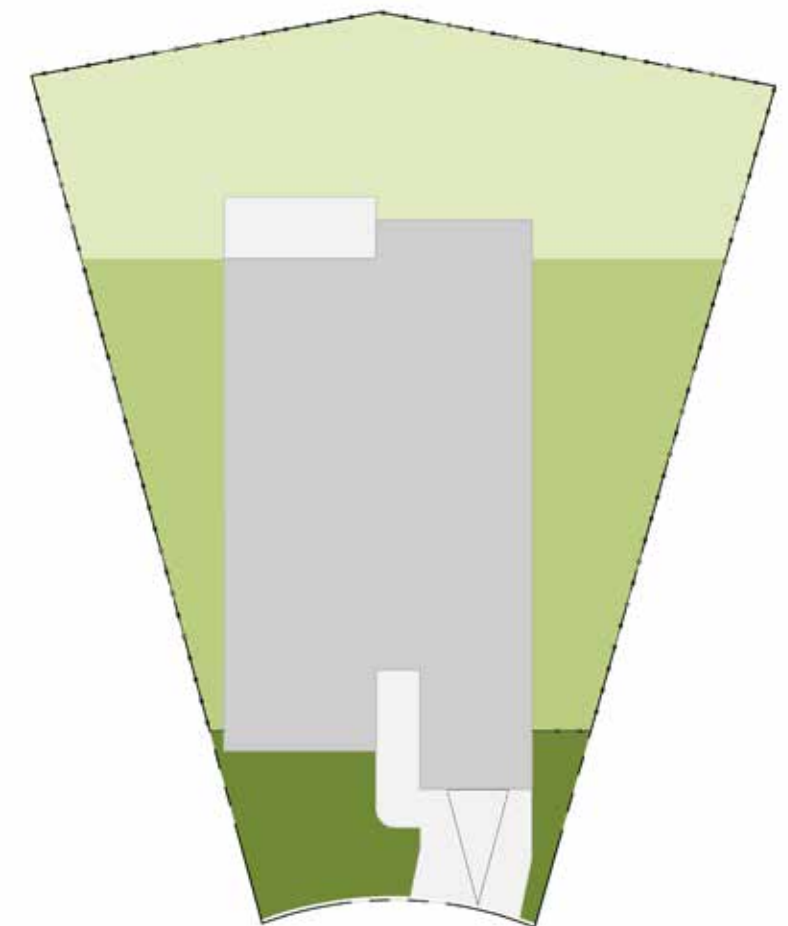
Lot 3

- Single-family
- Corner lot
- Front-loaded garage



Lot 4

- Cul-de-sac
- Front-loaded garage

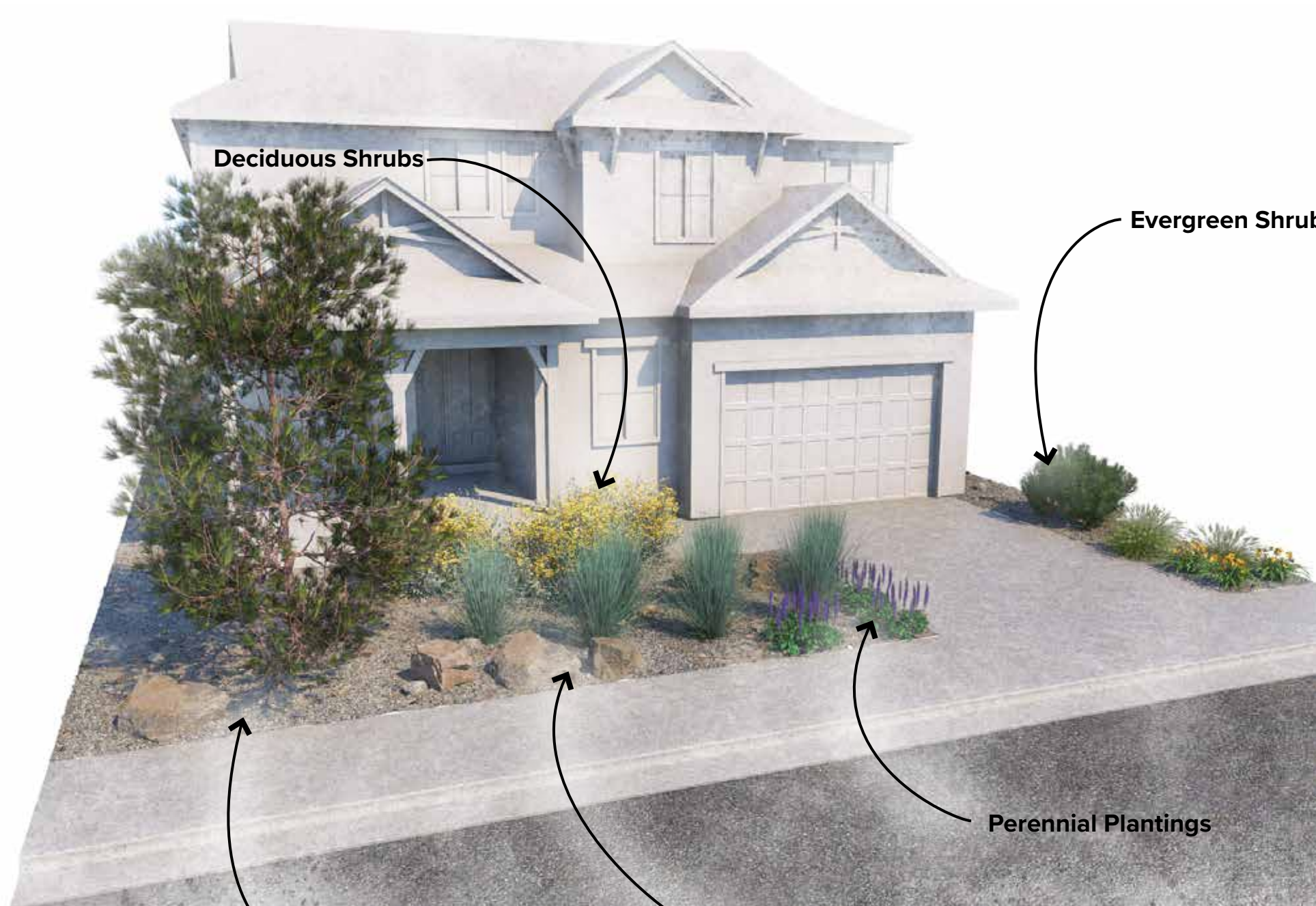


Legend

- Front Landscape
- Side Landscape
- Rear Landscape
- Tree Lawn

Maintenance Note: Landscape areas are to be installed by homeowner or builder and maintained by the homeowner.

Lot 1



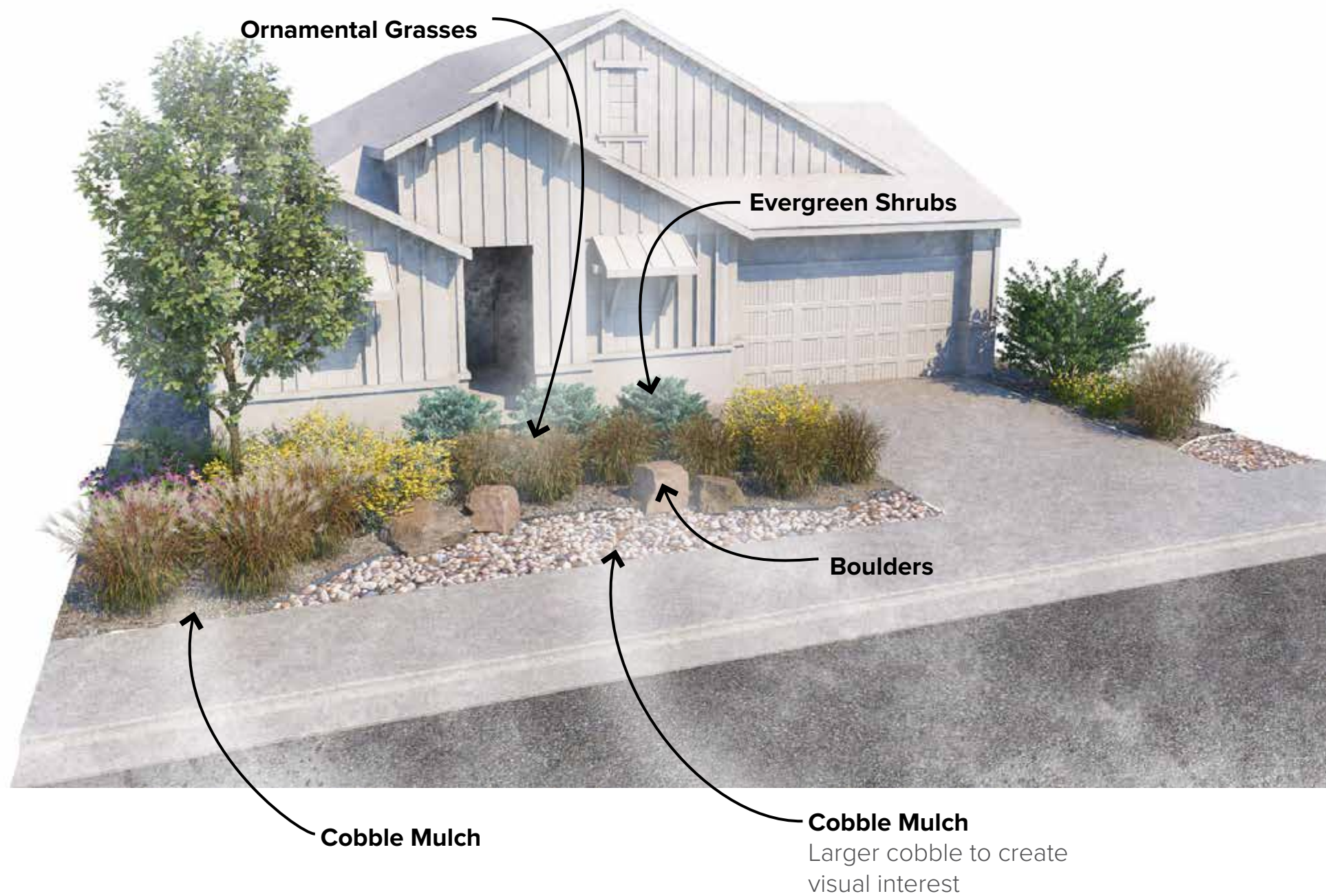
Cobble Mulch
Replace traditional bluegrass/sod

Boulders
Use for visual interest



Item	Quantity
Deciduous Tree	0
Evergreen Tree	1
Evergreen Shrubs	1
Deciduous Shrubs	3
Ornamental Grasses	10
Perennials	6
Boulders	4

Lot 2



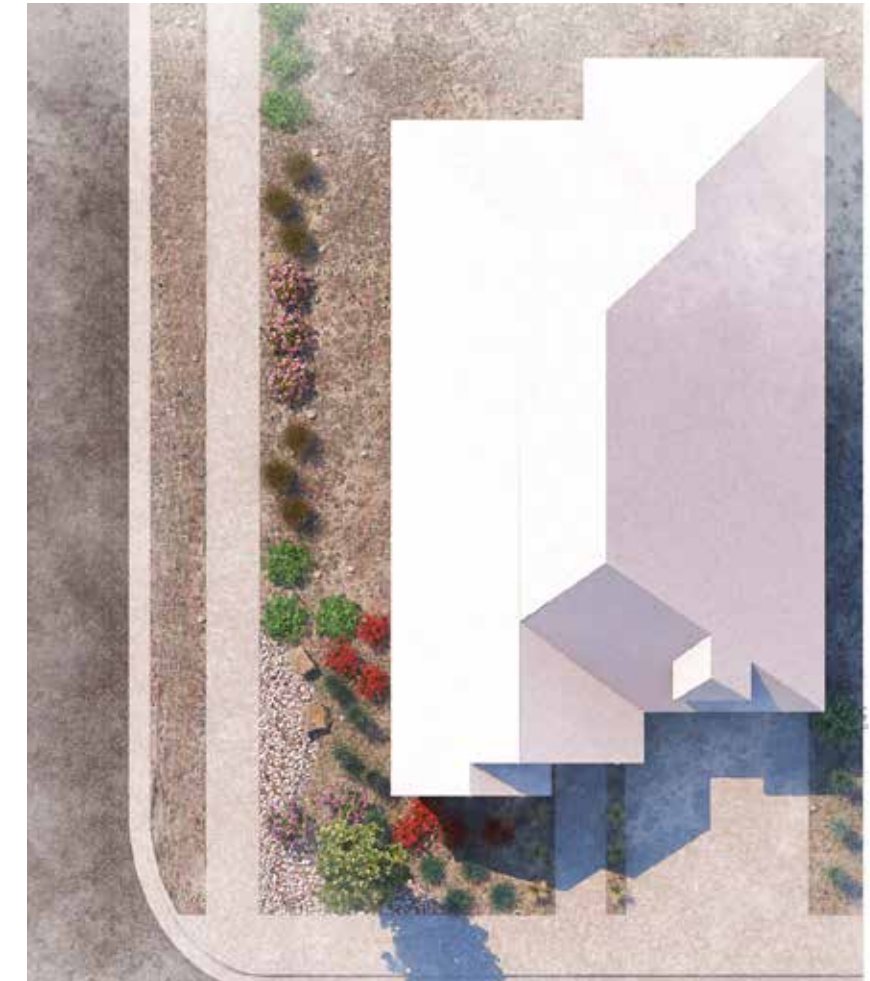
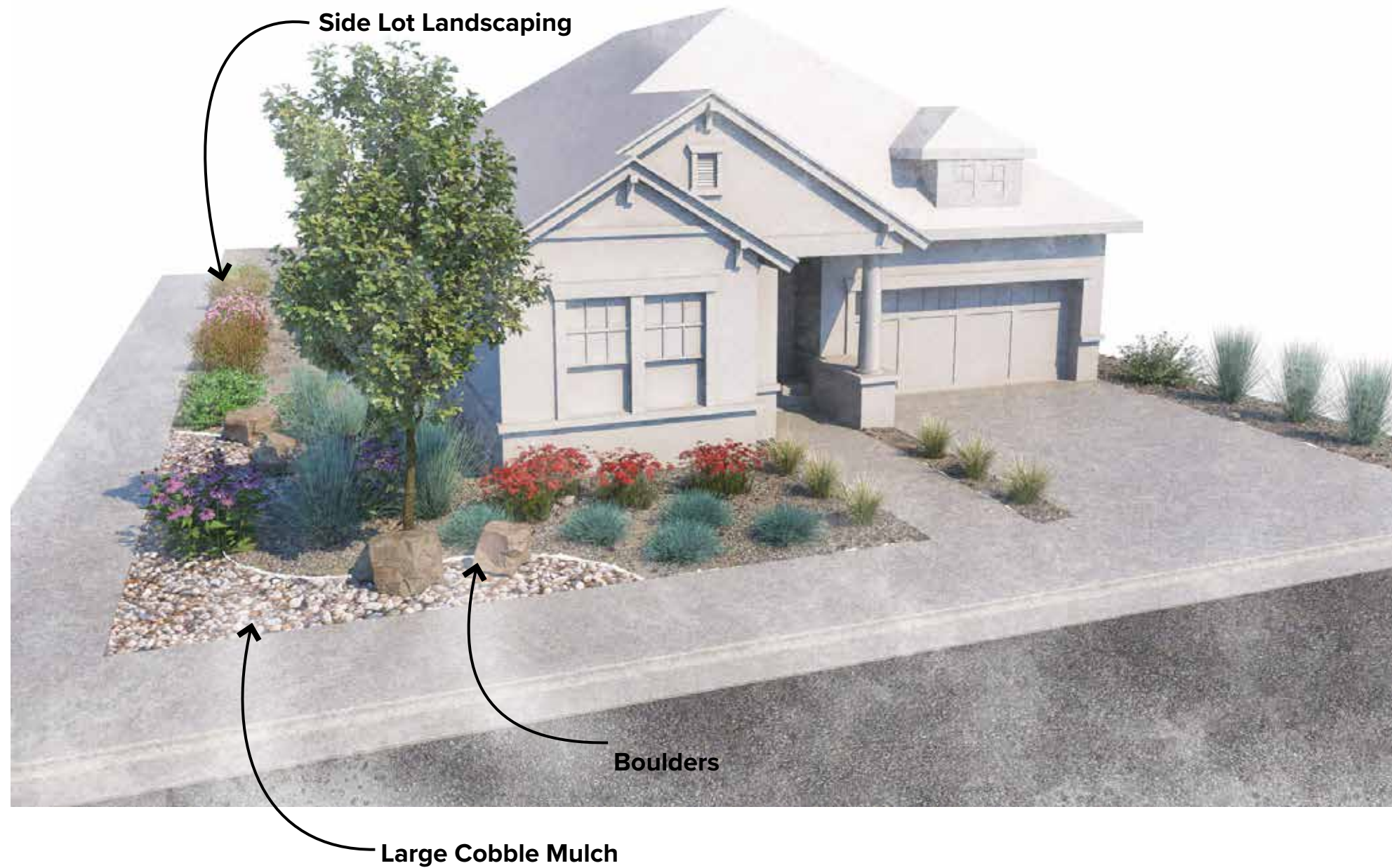
Item	Quantity
Deciduous Tree	1
Evergreen Tree	0
Evergreen Shrubs	4
Deciduous Shrubs	5
Ornamental Grasses	14
Perennials	6
Boulders	6

Lot 3



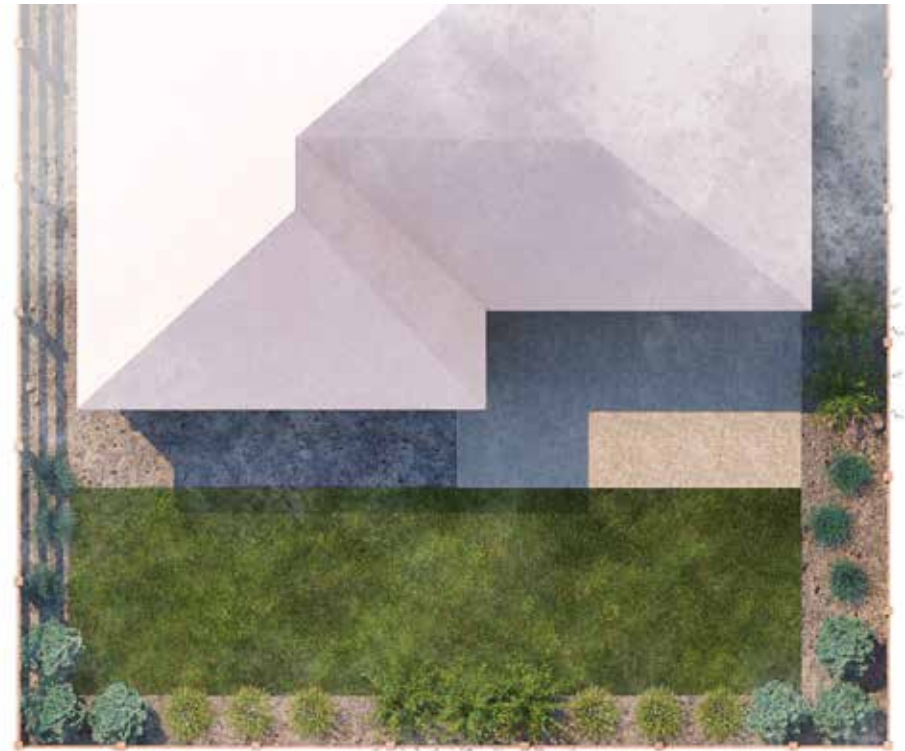
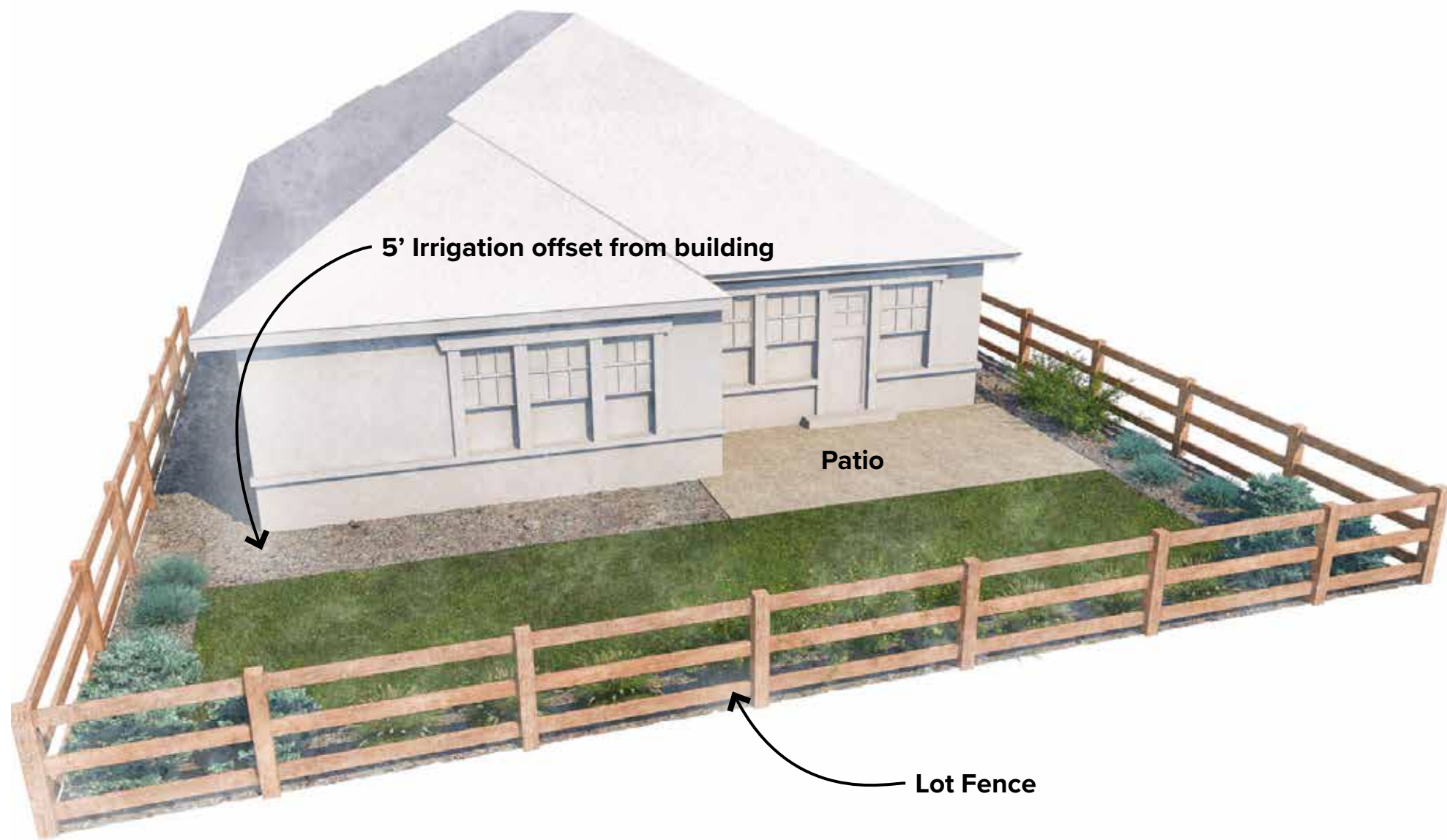
Item	Quantity
Deciduous Tree	1
Evergreen Tree	0
Evergreen Shrubs	0
Deciduous Shrubs	9
Ornamental Grasses	16
Perennials	8
Boulders	0

Lot 4 - Corner Lot



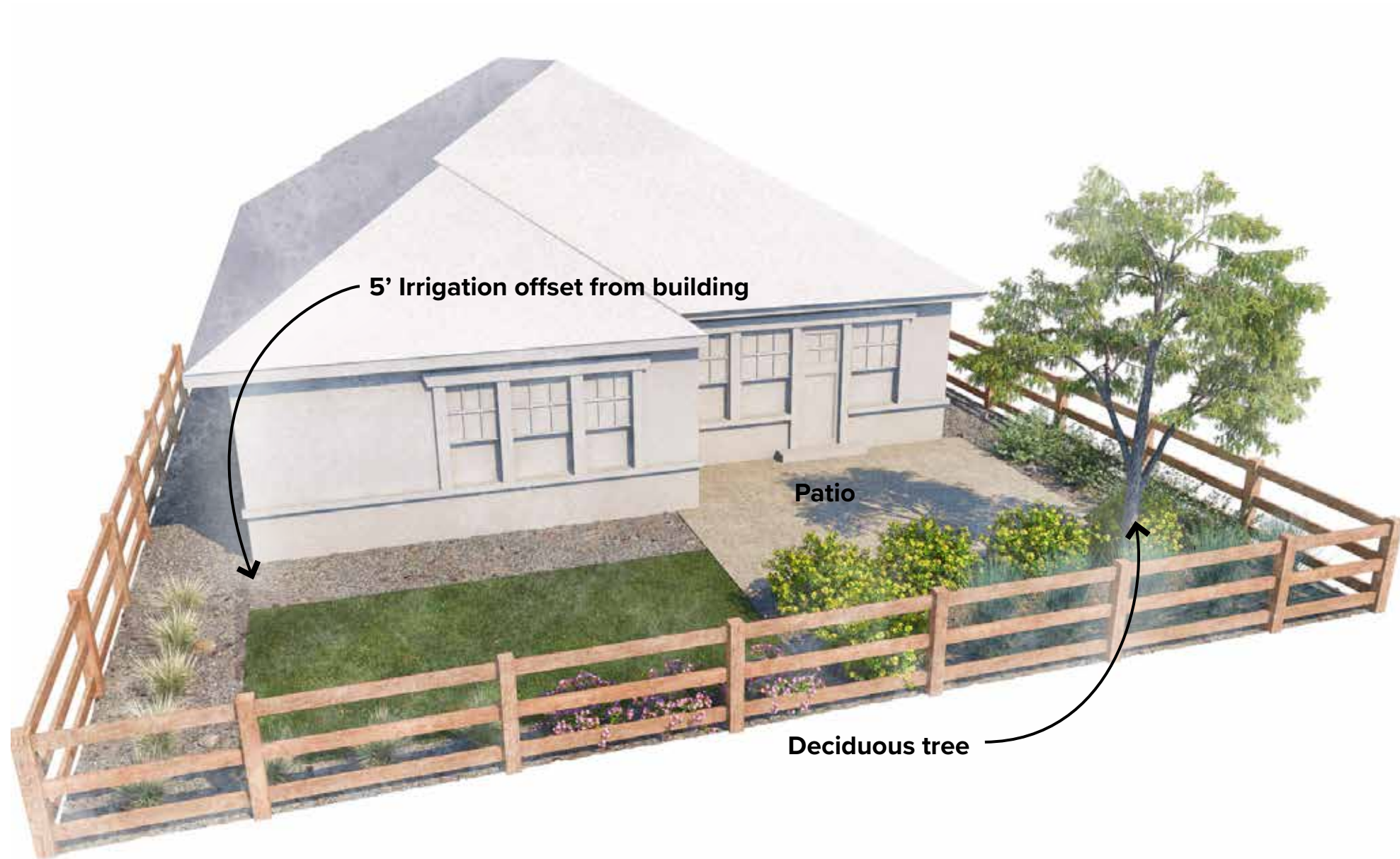
Item	Quantity
Deciduous Tree	1
Evergreen Tree	0
Evergreen Shrubs	6
Deciduous Shrubs	4
Ornamental Grasses	21
Perennials	9
Boulders	4

Rear Yards - 500 SF Lawn



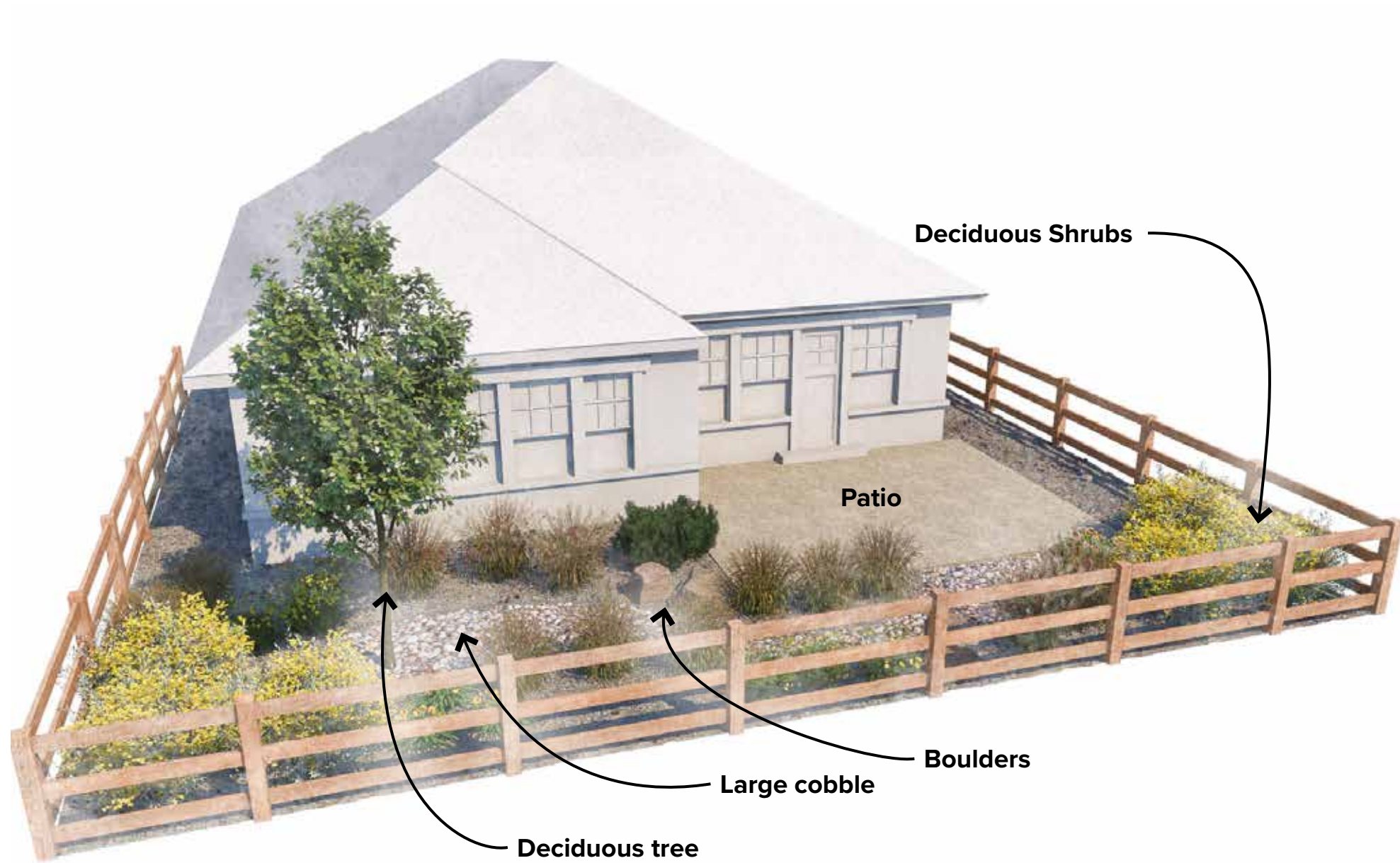
Item	Quantity
Deciduous Tree	0
Evergreen Tree	0
Evergreen Shrubs	6
Deciduous Shrubs	5
Ornamental Grasses	12
Perennials	0
Boulders	0

Rear Yards - 250 SF Lawn or 250 SF Artificial Turf



Item	Quantity
Deciduous Tree	1
Evergreen Tree	0
Evergreen Shrubs	4
Deciduous Shrubs	8
Ornamental Grasses	13
Perennials	0
Boulders	0

Rear Yards - ColoradoScape



Item	Quantity
Deciduous Tree	1
Evergreen Tree	0
Evergreen Shrubs	1
Deciduous Shrubs	6
Ornamental Grasses	13
Perennials	12
Boulders	0

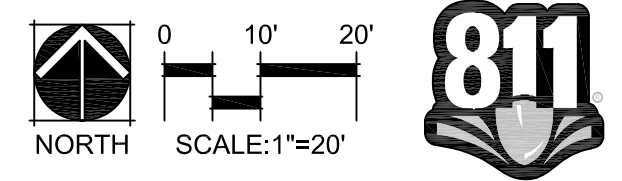
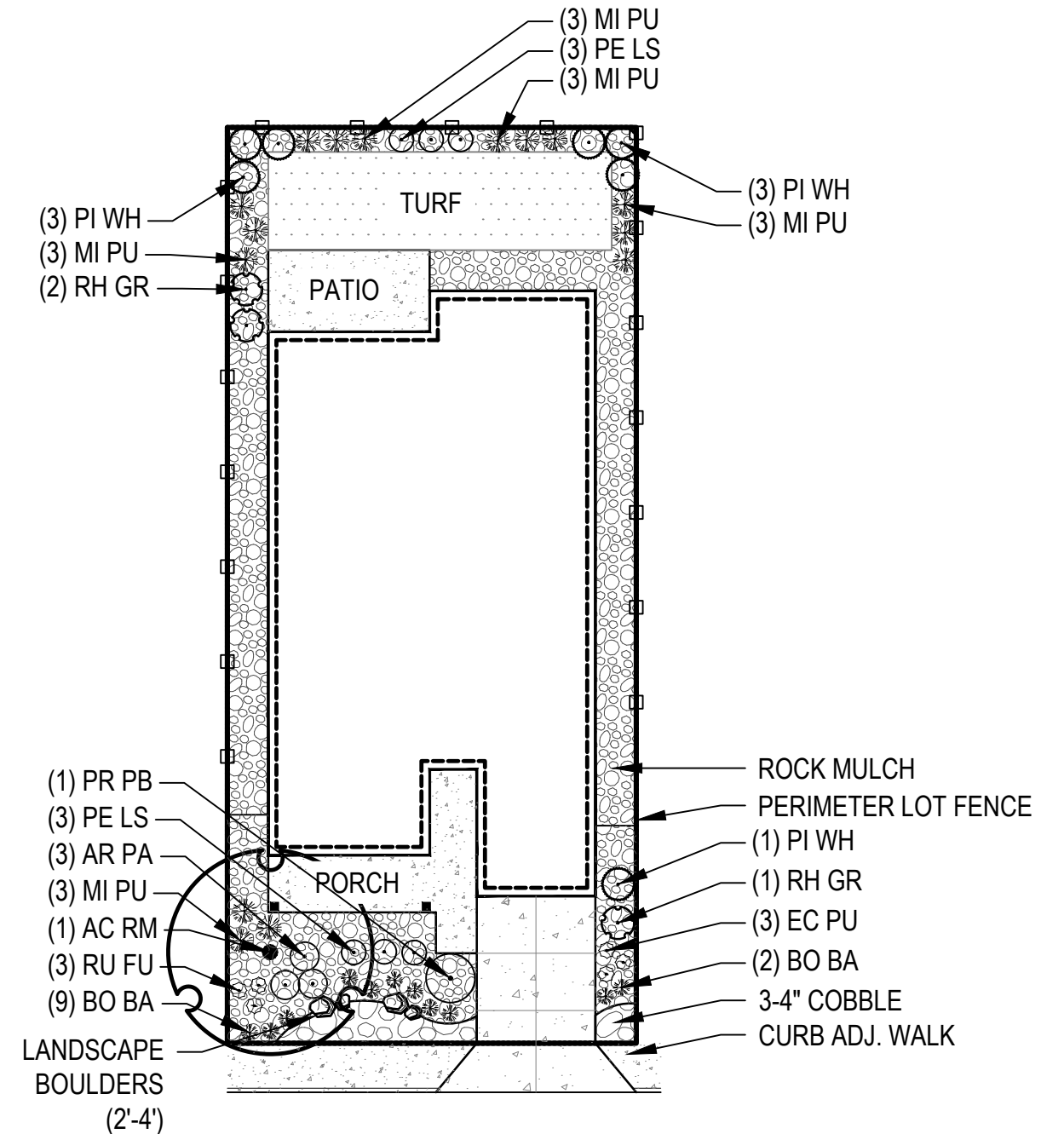
Landscape Plan Example

LANDSCAPE GENERAL NOTES

1. MAINTAIN FIVE (5) FOOT NO IRRIGATION ZONE AROUND PRINCIPAL STRUCTURE PER GEOTECHNICAL RECOMMENDATIONS. WHERE FRONT AND SIDE YARD SLOPES ARE 12% OR GREATER, EVERGREEN PLANT MATERIAL WITH A MINIMUM HEIGHT OF THREE (3) FEET, IS ENCOURAGED AT THE EDGE OF THE FIVE (5) FOOT NO IRRIGATION SETBACK.
2. ALL IRRIGATED AREAS ARE TO BE MIN. 18" FROM ALL HOUSE FLATWORK AND FOUNDATION COMPONENTS.
3. ALL BEDS TO BE MULCHED WITH MIN 4" OF COBBLE OR SHREDDED WOOD MULCH.
4. ALL LANDSCAPE AREAS TO BE TILLED TO A MIN DEPTH OF 6" AND AMENDED WITH ORGANIC MATTER WITH A MIN OF 4 CUBIC YARDS PER 1000 SF. ORGANIC MATTER TO BE COMPRISED OF PLANT MATERIAL ONLY AND CANNOT CONTAIN ANY ANIMAL OR HUMAN WASTE.
5. ALL LAWN AND BED AREAS TO BE SEPARATED WITH 4" ROLLED TOP STEEL EDGER.
6. LANDSCAPE INSPECTION IS REQUIRED AND THE GRADE WILL BE WITHIN +/- 1/10TH OF ONE INCH FINISHED GRADE AND FREE OF ROCKS AND DEBRIS LARGER THAN 3/4 OF AN INCH.
7. TEXAS HYBRID BLUEGRASS OR OTHER APPROVED LOW WATER TURF ARE ALLOWED. NO BLUEGRASS TURF ALLOWED.
8. A TOWN OF CASTLE ROCK REGISTERED LANDSCAPE PROFESSIONAL SHALL ACCOMPLISH INSTALLATION.
9. ALL INSTALLED PLANT MATERIAL SHALL BE APPROVED BY THE TOWN OF CASTLE ROCK, HYDROZONE 1 AND 2 ONLY.
10. MAX ALLOWED IRRIGATED TURF SHALL NOT EXCEED: 500 SF

PLANT SCHEDULE TYPICAL LANDSCAPE PLAN

DECIDUOUS TREES	CODE	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	QTY
	AC RM	ACER GRANDIDENTATUM ROCKY MOUNTAIN GLOW	ROCKY MOUNTAIN GLOW MAPLE	B & B	2" CAL	1
DECIDUOUS SHRUBS	CODE	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	QTY
	PE LS	PEROVSKIA ATRIPLICIFOLIA 'LITTLE SPIRE' TM	LITTLE SPIRE RUSSIAN SAGE	CONT	5 GAL	6
	PR PB	PRUNUS BESSEYI PAWNEE BUTTES	CREEPING WESTERN SAND CHERRY	CONT	5 GAL	1
	RH GR	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	CONT.	5 GAL.	3
EVERGREEN SHRUBS	CODE	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	QTY
	AR PA	ARCTOSTAPHYLOS X COLORADOENSIS 'PANCHITO'	PANCHITO MANZANITA	CONT	5 GAL	3
	PI WH	PINUS MUGO 'WHITE BUD'	WHITE BUD MUGO PINE	CONT.	5 GAL.	7
ORNAMENTAL GRASSES	CODE	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	QTY
	BO BA	BOUPELOUA GRACILIS 'BLONDE AMBITION'	BLOND AMBITION BLUE GRAMA GRASS	CONT	1 GAL	11
	MI PU	MISCANTHUS SINENSIS 'PURPURASCENS'	FLAME GRASS	CONT	1 GAL	15
PERENNIALS	CODE	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	QTY
	EC PU	ECHINACEA PURPUREA	PURPLE CONEFLOWER	CONT	1 GAL	3
	RU FU	RUDBECKIA FULGIDA 'GOLDSTURM'	BLACK-EYED SUSAN	CONT	1 GAL	3

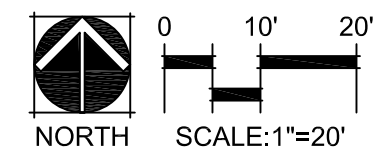
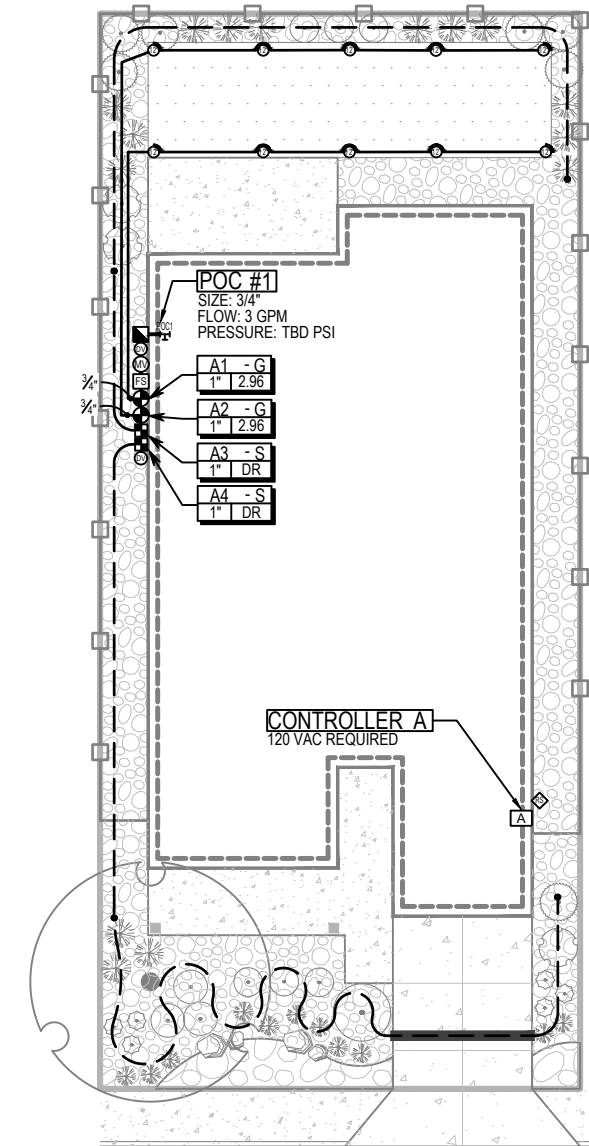


Irrigation Plan Example

IRRIGATION GENERAL NOTES

- THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO INSTALL THE IMPROVEMENTS SHOWN ON THE PLANS.
- THE CONTRACTOR SHALL COORDINATE AS NECESSARY WITH THE GENERAL CONTRACTOR AND OWNER'S REPRESENTATIVE FOR SUCCESSFUL COMPLETION OF THIS WORK.
- ALL IRRIGATION EQUIPMENT IS TO BE AS SPECIFIED OR APPROVED EQUAL PER THE DISCRETION OF THE OWNER'S REPRESENTATIVE. THE CONTRACTOR ASSUMES ALL LIABILITY ASSOCIATED WITH THE MODIFICATION OF THE IRRIGATION SYSTEM DESIGN WITHOUT NOTIFYING THE OWNER'S REPRESENTATIVE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT A THOROUGH SITE INSPECTION AND REVIEW OF THE PROJECT CONSTRUCTION DOCUMENTS INCLUDING BUT NOT LIMITED TO THE FOLLOWING: LANDSCAPE PLAN, UTILITY PLAN, CIVIL UTILITY PLAN, ARCHITECTURE PLAN, GRADING AND DRAINAGE PLAN AND ALL OTHER ASSOCIATED PLANS AND SPECIFICATIONS THAT AFFECT THIS WORK PRIOR TO START OF WORK. IF THE AND CONTRACTOR OBSERVES ANY DISCREPANCIES AMONG THE CONSTRUCTION DOCUMENTS AND THE EXISTING CONDITIONS ON SITE, IT IS THEIR RESPONSIBILITY TO CONTACT THE OWNER'S REPRESENTATIVE IMMEDIATELY.
- THE CONTRACTOR MUST VERIFY THE LOCATION OF ALL PUBLIC AND PRIVATE UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. IF THE CONTRACTOR FAILS TO DO SO AND DAMAGES ANY UNDERGROUND UTILITIES. THE CONTRACTOR SHALL PAY FOR ANY REPAIR WORK ASSOCIATED WITH SAID DAMAGES.
- THE CONTRACTOR SHALL CONFORM TO ALL LOCAL AND STATE REGULATIONS AND INSTALL THE IRRIGATION SYSTEM AND ITS COMPONENTS PER MANUFACTURER'S SPECIFICATIONS. THE CONTRACTOR SHALL OBTAIN AND PROVIDE PAYMENT FOR ALL PERMITS REQUIRED BY ANY LOCAL AND STATE AGENCIES AND UTILITY COMPANIES HAVING JURISDICTION OVER THIS SITE.
- THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND PAYING FOR CERTIFICATION OF THE BACKFLOW PREVENTER BY A STATE CERTIFIED INSPECTOR. THE CONTRACTOR SHALL PROVIDE CERTIFICATES TO OWNER'S REPRESENTATIVE PRIOR TO PROJECT ACCEPTANCE.
- IT IS THE INTENT OF THIS DESIGN THAT ALL IRRIGATION EQUIPMENT BE INSTALLED WITHIN LANDSCAPE AREAS AND WITHIN THE PROJECT LIMITS. EQUIPMENT SHOWN OUTSIDE OF THESE LIMITS IS SHOWN FOR GRAPHIC CLARITY ONLY. IF THERE IS A QUESTION REGARDING THE LOCATION OF ANY COMPONENT OF THE IRRIGATION SYSTEM, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNER'S REPRESENTATIVE. IF THE CONTRACTOR NEGLECTS TO NOTIFY THE NECESSARY PARTIES, THE CONTRACTOR SHALL PAY FOR ANY REPLACEMENT OR MODIFICATION TO ENSURE PROPER LOCATION AND OPERATION OF THE IRRIGATION SYSTEM AND ITS COMPONENTS.
- ALL IRRIGATION DISTRIBUTION LINES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO, MAINLINE, LATERALS, SPRAY HEADS, DRIP EMITTERS SHALL BE KEPT A MINIMUM DISTANCE OF 6' AWAY FROM ALL BUILDING AND WALL FOUNDATIONS, OR AS STIPULATED IN THE GEOTECHNICAL REPORT, WHICHEVER IS GREATER. EQUIPMENT MAY BE SHOWN IN THIS AREA FOR GRAPHIC CLARITY. COORDINATE ALL REQUIRED SETBACKS WITH OWNER'S REPRESENTATIVE PRIOR TO START OF WORK.
- PLANT MATERIAL LOCATIONS TAKE PRECEDENCE OVER ROUTING OF IRRIGATION PIPING. COORDINATE INSTALLATION OF IRRIGATION EQUIPMENT SO THAT IT DOES NOT INTERFERE WITH THE PLANTING OF TREES OR OTHER LANDSCAPE MATERIAL.
- CONTRACTOR SHALL FINE TUNE AND ADJUST NOZZLE DIRECTION AND RADIUS TO REDUCE OVERSPRAY ONTO PAVING OR HARD SURFACES.
- THIS IRRIGATION SYSTEM HAS BEEN DESIGNED TO OPERATE DURING A THREE (3) NIGHT PER WEEK, EIGHT (8) HOUR PER NIGHT WATERING WINDOW. DRIP IRRIGATION ZONES MAY BE ALLOWED TO RUN ON A SEPARATE SCHEDULE FROM THIS WATER WINDOW DEPENDING JURISDICTION. LANDSCAPE ESTABLISHMENT WILL REQUIRE INCREASED IRRIGATION WATER FOR DURATION OF THE ESTABLISHMENT PERIOD AND MAY REQUIRE TWICE THE AMOUNT OF WATER AS ESTABLISHED PLANT MATERIAL. THE CONTRACTOR SHALL COORDINATE WATERING SCHEDULES AND APPLICATION RATES WITH THE OWNER'S REPRESENTATIVE PRIOR TO FINAL ACCEPTANCE.
- THE DESIGN IS BASED ON THE FOLLOWING PROJECTED PEAK SEASON WEEKLY APPLICATION RATES AFTER ESTABLISHMENT. THESE FIGURES WILL NEED TO BE ADJUSTED DUE TO SEASONAL CHANGES AND VARIABLE WEATHER CONDITIONS.
 - FESCUE/BUEGRASS BLEND TURF 1.75" PER WEEK PEAK SEASON
 - TREE, SHRUB, AND PERENNIAL PLANT MATERIAL 1.00" PER WEEK PEAK SEASON
 - NATIVE DROUGHT TOLERANT SEED MIX 0.75" PER WEEK PEAK SEASON
- THE CONTRACTOR SHALL PROVIDE A SEASONAL MAINTENANCE SCHEDULE WHICH SHALL BEGIN ON APRIL 15TH AND END ON OCTOBER 15TH TO ENSURE THE EFFICIENCY AND LONGEVITY OF THE IRRIGATION SYSTEM. THE MAINTENANCE SCHEDULE SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING LIST OF BEST MANAGEMENT PRACTICES:
 - CHECK HEADS FOR COVERAGE AND LEAKAGE.
 - CHECK CONTROLLER PROGRAMMING AND ADJUST FOR SEASONAL CHANGES AS NECESSARY.
 - VERIFY THAT THE WATER SUPPLY AND PRESSURE ARE AS STATED IN THE DESIGN.
 - CERTIFY THE BACKFLOW PREVENTION DEVICE AND SUBMIT TEST RESULTS TO THE PROPERTY MANAGER.
 - PERIODICALLY VERIFY THE THE SENSORS IN THE IRRIGATION SYSTEM ARE OPERATING CORRECTLY.
 - WINTERIZATION AND SPRING START UP PROCEDURES.

IRRIGATION SCHEDULE																										
SYMBOL	DESCRIPTION	MODEL NO. DESCRIPTION																								
	POINT OF CONNECTION	3/4" IRRIGATION STUB-OUT																								
	IRRIGATION CONTROLLER	RAIN BIRD ESP-ME3 W/ LNKWIFI MODULE 120VAC POWER REQUIRED - SEE PLANS FOR LOCATION(S)																								
	RAIN SENSOR	RAIN BIRD WR2-48 REFER TO CONTROLLER NOTES																								
	BACKFLOW PREVENTER	FEBCO 3/4" 765 OR 825YA (DEPENDING ON BACKFLOW ASSY. ELEVATION) SEE ENCLOSURE SPECIFICATIONS BELOW																								
	MANUAL DRAIN VALVE	MATCO-NORCA 1/2" 201X INSTALLED IN AEP 910L-1G2G VALVE BOX																								
	MASTER VALVE	HUNTER ICV-101-G INSTALLED IN AEP 1015-1G2G VALVE BOX																								
	FLOW SENSOR	FLOMEC QS100 INSTALLED IN AEP 1015-1G2G VALVE BOX																								
	TURF VALVE ASSEMBLY	RAIN BIRD 100-DV INSTALLED IN AEP 1015-1G2G VALVE BOX, SIZED PER PLAN																								
	DRIP VALVE ASSEMBLY	RAIN BIRD XCZ-100-FLOW INSTALLED IN AEP 1015-1G2G VALVE BOX, SIZED PER PLAN																								
	TURF SPRAY (FIXED)	HUNTER PROS-06-PRS30-CV WITH TORO PRECISION NOZZLE NOZZLE PER PLAN																								
	SLEEVING	CLASS 200 PVC REFER TO SLEEVING NOTES																								
	SERVICE LINE	TYPE K COPPER SIZE: MATCH POC UNLESS OTHERWISE NOTED																								
	PVC MAINLINE	CLASS 200 PVC BE SIZE: 1" UNLESS OTHERWISE NOTED																								
	TURF LATERAL	80# NSF POLYETHYLENE SIZE: 3/4" MINIMUM UNLESS OTHERWISE NOTED																								
	DRIP LATERAL	UV RESISTANT POLYETHYLENE SIZE: 3/4" MINIMUM UNLESS OTHERWISE NOTED																								
	FLUSH VALVE/OPERATIONAL INDICATOR	SCH 40 BALL VALVE & HUNTER ECO INDICATOR INSTALLED IN AEP 910L-1G2G VALVE BOX																								
VALVE CALLOUT		EMITTER SCHEDULE																								
	VALVE/STATION NUMBER ZONE DESIGNATION: S (SHRUBS), G (TURF)	<table border="1"> <thead> <tr> <th>PLANT TYPE</th> <th>EMITTER</th> <th>QTY.</th> <th>TOTAL GPH</th> </tr> </thead> <tbody> <tr> <td>PERENNIAL / GRASSES</td> <td>0.5 GPH</td> <td>TWO EACH</td> <td>1.0 GPH</td> </tr> <tr> <td>DECIDUOUS SHRUBS</td> <td>1.0 GPH</td> <td>TWO EACH</td> <td>2.0 GPH</td> </tr> <tr> <td>EVERGREEN SHRUBS</td> <td>1.0 GPH</td> <td>TWO EACH</td> <td>2.0 GPH</td> </tr> <tr> <td>DECIDUOUS TREE</td> <td>1.0 GPH</td> <td>EIGHT EACH</td> <td>8.0 GPH</td> </tr> <tr> <td>EVERGREEN TREE</td> <td>1.0 GPH</td> <td>EIGHT EACH</td> <td>8.0 GPH</td> </tr> </tbody> </table>	PLANT TYPE	EMITTER	QTY.	TOTAL GPH	PERENNIAL / GRASSES	0.5 GPH	TWO EACH	1.0 GPH	DECIDUOUS SHRUBS	1.0 GPH	TWO EACH	2.0 GPH	EVERGREEN SHRUBS	1.0 GPH	TWO EACH	2.0 GPH	DECIDUOUS TREE	1.0 GPH	EIGHT EACH	8.0 GPH	EVERGREEN TREE	1.0 GPH	EIGHT EACH	8.0 GPH
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<ol style="list-style-type: none"> ALL PLANT MATERIAL SHALL BE IRRIGATED WITH RAIN BIRD XB SERIES PRESSURE COMPENSATING EMITTERS. EMITTER SCHEDULE IS FOR REFERENCE ONLY. THE CONTRACTOR SHALL ADJUST EMITTER AND NUMBER OF EMITTERS BASED ON THE NEEDS OF INDIVIDUAL PLANTS OR PLANT HYDROZONES. 1/4" DISTRIBUTION TUBING NOT TO EXCEED 8' IN LENGTH. RAIN BIRD DBC-025 DIFFUSER BUG CAP AND TS-025 STAKE ON ALL 1/4" DISTRIBUTION TUBING EMISSION POINTS. 																										





03 Landscape + Irrigation Materials

Plant species, mulch types, and irrigation methods have been selected to decrease water usage within landscapes. These selections will increase the efficiency of each landscape and bring the Town closer to their water saving goals.

Irrigation

All residential landscapes within the Town of Castle Rock shall be irrigated with an automatic underground irrigation system providing full coverage to all plant material. All irrigation systems shall be connected to a Wi-Fi enabled smart controller with a non-volatile memory and rain sensor. Flow sensors and master valves are recommended to be installed on the irrigation mainline piping. Plants shall be zoned (grouped) in areas with similar water requirements and aspects. Turf areas shall be irrigated separately from all plants. Turf areas can be irrigated via overhead spray with a 6" minimum height pop-up. Subsurface in-line drip irrigation shall be utilized in turf areas below ten (10) feet in width. All trees, shrubs and perennials shall utilize point source drip or in-line drip irrigation. It is recommended that trees be zoned separately from shrubs and perennials to ensure long term viability of larger plant types. No irrigation will be permitted in areas smaller than four (4) feet in width. Contractors and property owners shall comply with the Town of Castle Rock Landscape and Irrigation Criteria Manual.

Planting Beds and Mulches

Planting beds are essential to good design and shall be densely and purposefully planted. Use plants to create visual depth, interest and to screen foundations and outside utilities. All planting is recommended to be set back at minimum five (5) feet from the building foundation. Piping downspouts by extending them underground to designated drainage areas in the yard is recommended. Mulching planting beds is necessary in Colorado to conserve moisture and to discourage weeds.

All planting areas should have a minimum of four (4) inches of rock mulch or shredded cedar mulch meeting the following standards:

- » Shredded, fibrous material capable of "knitting" together to form a mat that is wind and erosion resistant. Generally the shredded mulch or peelings are three (3) inches in length on average. Bark and wood chip mulches are not allowed.
- » With the exception of drainage areas, only ¾" river rock or crusher fines mulch will be acceptable. Mulches with artificial coloring will not be allowed.
- » Weed barrier is not required. If used, plastic weed barrier is not permitted.
- » Turf is limited to 500 SF maximum in the rear yards. High water use turf and Kentucky Bluegrass is not allowed.

Soil Preparation

For proper plant growth, Colorado soils shall be amended with organic material. A minimum of four cubic yards of organic material shall be added to topsoil per 1000 square feet of planting area. Organic material shall be aged compost; wood humus from soft, non-toxic trees. Proper amendments as specified will improve drainage and, as a result, conserve water. Plants will flourish and live longer, healthier lives. A soil analysis should be performed prior to planting for proper micro-nutrient recommendations.



Plant Palette



Common Hackberry
Celtis occidentalis



Japanese Pagoda Tree
Styphnolobium japonicum



Sunburst Honeylocust
Gleditsia t.i. 'Sunburst'



Chinkapin Oak
Quercus muehlenbergii



Northern Red Oak
Quercus rubra

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Deciduous Canopy Trees																					
<i>Catalpa speciosa</i>	Catalpa	40-60'	30-50'	Low	X			White			X	X									
<i>Celtis occidentalis</i>	Common Hackberry	50-60'	40-50'	Low	X																
<i>Gleditsia t.i. 'Imperial'</i>	Imperial Honeylocust	30-40'	30-40'	Low	X																
<i>Gleditsia t.i. 'Shademaster'</i>	Shademaster Honeylocust	40-50'	30-40'	Low	X																
<i>Gleditsia t.i. 'Skyline'</i>	Skyline Honeylocust	40-50'	30-40'	Low	X																
<i>Gleditsia t.i. 'Sunburst' *</i>	Sunburst Honeylocust *	30-35'	30-35'	Low	X			Bright yellow-green leaves													
<i>Gymnocladus dioica 'Espresso'</i>	Espresso Kentucky Coffee-tree	50-60'	40-50'	Low	X																
<i>Quercus bicolor</i>	Swamp White Oak	40-60'	40-60'	Low	X	X															
<i>Quercus 'Crimson Spire' *</i>	Crimson Spire Oak *	40-60'	15-20'	Med	X																
<i>Quercus macrocarpa</i>	Bur Oak	50-80'	50-80'	Med	X																
<i>Quercus muehlenbergii *</i>	Chinkapin Oak *	35-50'	35-50'	Low	X																
<i>Quercus rubra</i>	Northern red oak	40-60'	40-60'	Med	X																
<i>Quercus 'Streetspire' *</i>	Streetspire Oak *	35-45'	12-14'	Med	X																
<i>Styphnolobium japonicum</i>	Japanese Pagoda Tree	35-50'	35-50'	Med	X	X		Creamy white					X	X							



Bakeri Spruce
Picea pungens 'Bakeri'

Bristlecone Pine
Pinus aristata

Pinyon Pine
Pinus edulis

Ponderosa Pine
Pinus ponderosa

Vanderwolf's Pyramid Pine
Pinus flexilis 'Vanderwolf's Pyramid'

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Evergreen Trees																					
<i>Picea pungens</i>	Colorado Spruce	40-60'	20-30'	Med	X	X		Green to silvery blue													
<i>Picea pungens</i> 'Bakeri' *	Bakeri Spruce *	35-40'	15-20'	Med	X	X		Silvery blue													
<i>Picea pungens</i> 'Fastigiata' *	Fastigate Spruce *	25-40'	10-15'	Med	X	X		Steel blue													
<i>Pinus aristata</i>	Bristlecone Pine	20-40'	10-20'	Low	X			Deep green													
<i>Pinus edulis</i>	Pinyon Pine	20-30'	10-20'	Very low	X	X		Deep green													
<i>Pinus flexilis</i> 'Vanderwolf's Pyramid'	Vanderwolf's Pyramid' Limber Pine	30-50'	15-30'	Low	X	X		Bluish-green													
<i>Pinus nigra</i>	Austrian Pine	40-60'	30-40'	Low	X			Dark green													
<i>Pinus ponderosa</i>	Ponderosa Pine	60-80'	30-40'	Low	X			Light green													
<i>Pinus strobiformis</i>	Southwestern White Pine	40-50'	20-30'	Low	X			Bluish-green													



Ginnala Maple
Acer ginnala 'Flame'

Rocky Mountain Glow Maple
Acer grand. 'Rocky Mtn. Glow'

Russian Hawthorn
Crataegus ambigua

Gambel Oak
Quercus gambelii

Japanese Tree Lilac
Syringa reticulata 'Ivory Silk'

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Ornamental Trees																					
<i>Acer ginnala 'Flame'</i>	Ginnala Maple	15-20'	15-20'	Low	X			Greenish-yellow		X											
<i>Acer grand. 'Rocky Mtn. Glow'</i>	Bigtooth Maple	20-30'	20-30'	Low	X			Greenish-yellow	X	X	X										
<i>Amelanchier laevis 'Autumn Brilliance'</i>	Autumn Brilliance Service-berry	15-25'	15-20'	Low	X			White	X	X	X										
<i>Crataegus ambigua</i>	Russian Hawthorn	15-25'	15-20'	Low	X	X		White	X	X	X										
<i>Crataegus crus-galli inermis</i>	Thornless Cockspur Hawthorn	15-25'	15-20'	Low	X			White	X	X	X										
<i>Crataegus phaenopyrum</i>	Washington Hawthorn	20-25'	15-25'	Low	X	X		White	X	X	X										
<i>Koelreuteria paniculata</i>	Goldenrain Tree	20-30'	20-30'	Low	X			Yellow				X	X	X							
<i>Malus</i>	Crabapple	varies	varies	Med	X			Pink, white, deep pink, deep red	X	X	X										
<i>Prunus Sucker Punch</i>	Sucker Punch Canada Red Chokecherry	20-30'	15-25'	Low	X			White	X	X	X										
<i>Prunus virginiana 'Shubert'</i>	Shubert Chokecherry	20-30'	15-25'	Low	X			White	X	X	X										
<i>Pyrus calleryana 'Chanticleer'</i>	Chanticleer Pear	20-30'	15-20'	Med	X			White	X	X	X										
<i>Quercus gambelii</i>	Gambel Oak	8-20'	6-12'	Low	X	X															
<i>Syringa reticulata 'Ivory Silk'</i>	Japanese Tree Lilac	15-25'	15-20'	Low	X	X		White			X										



Nanking Cherry
Prunus tomentosa

Pawnee Buttes Sand Cherry
Prunus b. 'Pawnee Buttes'

Staghorn Sumac
Rhus typhina

Green Mound Currant
Ribes alpinum 'Green Mound'

Woods Rose
Rosa woodsii

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Deciduous Shrubs																					
<i>Amelanchier alnifolia</i>	Saskatoon Serviceberry	6-20'	6-8'	Low	X	X		White		X											
<i>Amelanchier alnifolia 'Regent'</i>	Regent Serviceberry	6-8'	6-8'	Low	X			White	X	X	X										
<i>Amorpha canescens</i>	Leadplant	2-4'	2-4'	Very Low	X			Violet-purple					X	X							
<i>Amorpha fruticosa</i>	False Indigo	6-15'	5-15'	Low	X			Purple				X	X	X							
<i>Aronia melanocarpa 'Iroquois Beauty'</i>	Iroquois Beauty Dwarf Black Chokeberry	4-5'	2-3'	Low	X	X	X	White			X										
<i>Artemisia tridentata *</i>	Big Sagebrush *	3-12'	3-6'	Very low	X			Dull yellow					X	X							
<i>Atriplex canescens</i>	Fourwing Saltbush	3-6'	2-4'	Very low	X			Light yellow						X							X
<i>Berberis thunbergii (various)</i>	Japanese Barberry	Varies	Varies	Low	X	X															
<i>Caragana arborescens</i>	Siberian Peashrub	10-15'	8-12'	Low	X			Yellow			X										
<i>Caryopteris x clandonensis (varies)</i>	Blue Mist Spirea	2-4'	18-36"	Low	X			Blue					X	X							
<i>Cercocarpus intricatus *</i>	Littleleaf Mountain Mahogany *	3-6'	3-5'	Very low	X	X		Yellow- ish-white		X											
<i>Cercocarpus montanus</i>	Common Mountain Mahogany	6-8'	4-6'	Very low	X			Creamy white		X											

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Deciduous Shrubs Cont.																					
Chaenomeles speciosa 'Cameo' *	Cameo Quince *	3-4'	4-6'	Low	X	X		Apricot	X	X	X										
Chamaebatiaria millefolium	Fernbush	3-5'	3-6'	Very low	X			White		X	X										
Cotoneaster lucidus	Peking Cotoneaster	6-12'	6-10'	Low	X	X		Pinkish-white	X	X	X										
Ericameria nauseosa ssp. nauseosa v. speciosa	Tall Blue or Green Rabbitbrush	2-6'	2-6'	Very low	X			Golden yellow					X	X							
Ericameria nauseosus ssp. Nauseosa v. nauseosus	Baby Blue Rabbitbrush	1-4'	1-4'	Very low	X			Golden yellow					X	X							
Forestiera pubescens (neomexicana)	New Mexico Privet	8-12'	6-8'	Low	X	X		Yellow	X	X	X										
Frangula alnus 'Columnaris' *	Tall Hedge Buckthorn *	8-15'	3-4'	Low	X			Greenish-white			X										
Hypericum f. 'Sunburst'	Sunburst St. John's Wort	3-4'	3-4'	Med	X	X		Yellow			X	X									
Kolkwitzia amabilis 'Pink Cloud'	Pink Cloud Beauty Bush	6-10'	6-10'	Low	X	X		Pink	X	X	X										
Ligustrum vulgare 'Cheyenne'	Cheyenne Privet	6-8'	4-6'	Low	X	X		White				X									X
Lonicera tatarica 'Arnold's Red'	Arnold's Red Honeysuckle	6-12'	6-12'	Low	X	X		Reddish-pink			X										
Lonicera xylosteum 'Emerald Mound'	Emerald Mound Honeysuckle	2-3'	3-4'	Low	X	X		Yellowish-white			X										
Philadelphus lewisii	Lewis Mockorange	6-8'	6-8'	Low	X			White				X	X	X							
Physocarpus (varies)	Ninebark	Varies	Varies	Low	X			White, Pinkish-white	X	X	X										
Prunus b. 'Pawnee Buttes'	Pawnee Buttes Sandcherry	15-30"	4-6'	Low	X			White	X	X	X										
Prunus pumila besseyi	Western Sand Cherry	4-7'	4-6'	Low	X			White			X										
Prunus x cistena	Purple Leaf Sand Cherry	6-8'	4-6'	Med	X			Pale pink		X											
Prunus tenella	Dwarf Russian Almond	2-5'	2-4'	Low	X			Pink	X	X											
Prunus tomentosa	Nanking Cherry	6-10'	6-12'	Low	X			White	X	X											
Rhus aromatica 'Gro-low'	Gro-low Fragrant Sumac	2-3'	6-8'	Low	X			Yellow	X												
Rhus glabra	Smooth Sumac	8-15'	8-10'	Low	X			Greenish-yellow				X									
Rhus glabra cicmontana	Rocky Mountain Sumac	2-3'	2-3'	Low	X	X		Creamy yellow				X									
Rhus trilobata	Three-leaf Sumac	3-8'	3-6'	Very low	X			Yellow	X												

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Deciduous Shrubs Cont.																					
Rhus trilobata 'Autumn Amber'	Autumn Amber Sumac	12-18"	6-10'	Very low	X			Yellow	X												
Rhus typhina	Staghorn Sumac	10-25'	10-15'	Low	X			Greenish-yellow				X									
Ribes alpinum 'Green Mound'	Green Mound Currant	3-4'	2-3'	Low	X	X		Yellow		X											
Ribes aureum	Golden Currant	4-6'	4-6'	Low	X	X		Yellow			X										
Ribes cereum	Wax Currant	2-4'	2-4'	Low	X			Greenish-white			X										
Ribes uva-crispa 'Pixwell'	Pixwell Gooseberry	3-4'	3-4'	Low	X	X		Pale green		X											
Rosa Knock Out 'Radrazz' *	Knock Out Rose *	2-3'	2-3'	Med	X			Cherry red				X	X	X							
Rosa woodsii	Woods Rose	3-6'	3-6'	Low	X			Pink				X									
Rubus deliciosus	Boulder Raspberry	3-6'	3-6'	Low	X	X	X	White			X										
Sheperdia argentia	Silver Buffaloberry	8-15'	6-12'	Very low	X			Yellowish-white			X										
Symphoricarpos albus	Common Snowberry	3-5'	3-5'	Low - Med	X	X		Whitish-pink				X									X
Symphoricarpos x chenaultii 'Hancock'	Hancock Snowberry	2-3'	3-6'	Low	X	X		Pinkish-white				X									
Syringa m. 'Palibin'	Dwarf Korean Lilac	4-6'	4-6'	Low	X	X		Lavender-pink			X										
Syringa p. 'Miss Kim' *	Miss Kim Dwarf Lilac *	3-5'	3-5'	Low	X	X		Pale lavender			X										
Syringa vulgaris	Common Purple Lilac	10-15'	8-12'	Low	X	X		Purple		X											
Syringa v. 'Alba'	Common White Lilac	10-20'	8-12'	Low	X	X		White		X											
Syringa v. 'Charles Joly'	Double Red French Lilac	8-12'	6-8'	Low	X	X		Purplish-red		X	X										
Syringa v. 'Sensation' *	Sensation French Lilac *	8-10'	8-12'	Low	X	X		Purple w/ white margins			X										
Quercus gambelii	Gambel Oak	8-20'	6-12'	Very low	X	X															
Viburnum lantana 'Mohican'	Mohican Viburnum	6-8'	6-8'	Low	X	X		White			X										



Moonglow Juniper
Juniperus s. 'Moonglow'

Panchito Manzanita
Arctostaphylos panchito

Creeping Oregon Grape Holly
Mahonia repens

Slowmound Juniper
Pinus m. 'Slowmound'

Bright Edge Yucca
Yucca f. 'Bright Edge'

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Large Evergreen Shrubs (up to 20' height)																					
<i>Juniperus c. 'Spartan'</i>	Spartan Juniper	15-20'	4-6'	Low	X			Rich green													
<i>Juniperus s. 'Medora' *</i>	Medora Juniper *	15-18'	3-5'	Very Low	X			Blue-green													
<i>Juniperus s. 'Moonglow'</i>	Moonglow Juniper	12-15'	6-8'	Very Low	X			Silvery blue													
<i>Juniperus s. 'Skyrocket'</i>	Skyrocket Juniper	15-20'	2-4'	Low	X			Silvery blue-green													
<i>Juniperus s. 'Wichita Blue'</i>	Wichita Blue' Juniper	15-20'	4-6'	Very Low	X			Silvery blue													
<i>Picea glauca 'Conica'</i>	Dwarf Alberta Spruce *	10-14'	4-5'	Med	X	X		Muted green													
<i>Picea p. 'Iseli Fastigiata'</i>	Fastigiata Blue Spruce *	12-15'	5-6'	Med	X			Steel blue													
<i>Picea p. 'Montgomery'</i>	Montgomery Blue Spruce *	8-12'	8-12'	Med	X			Silvery-blue													
Evergreen Shrubs																					
<i>Arctostaphylos c. 'Panchito'</i>	Panchito Manzanita	15-24"	3-5'	Low	X	X		Evergreen	X											X	
<i>Juniperus h. Blue Chip</i>	Blue Chip Juniper	8-12"	6-8'	Low	X	X		Slate blue													
<i>Juniperus horizontalis 'Hughes'</i>	Hughes Juniper	1-2'	5-8'	Low	X			Silvery-blue													

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Evergreen Shrubs Cont.																					
Juniperus horizontalis 'Wiltonii'	Wilton Carpet Juniper	4-6"	6-8'	Low	X			Silvery-blue													
Juniperus sabina 'Buffalo'	Buffalo Juniper	12-18"	6-8'	Low	X	X		Bright, olive-green													
Juniperus squamata 'Blue Star'	Blue Star Juniper	15-18"	2-3'	Low	X	X		Blue													
Juniperus v. 'Grey Owl'	Grey Owl Juniper	2-3'	4-6'	Low	X			Silvery-grey													
Mahonia aquifolium 'Compacta'	Compact Oregon Grape Holly	2-3'	2-3'	Low	X	X		Yellow		X											
Mahonia repens	Creeping Oregon Grape Holly	12-18"	12-18"	Low	X	X	X	Yellow		X											
Picea abies 'Little Gem'	Little Gem Norway Spruce	18-24"	2-3'	Med	X																
Pinus m. 'Mops'	Mops Mugo Pine	2-3'	2-3'	Low	X	X		Dark green													
Pinus m. 'Slowmound'	Slowmound' mugo pine	3-5'	5-7'	Low	X	X		Dark green													
Pinus m. 'Whitebud'	Whitebud Mugo Pine	2-3'	3-4'	Low	X			Dark green with white tips													
Yucca baccata	Banana Yucca	3-4'	3-5'	Very low	X			Creamy white					X	X							
Yucca filamentosa	Adam's Needle Yucca	3-4'	3-5'	Low	X			White				X	X	X							
Yucca f. 'Bright Edge' *	Bright Edge Yucca *	2-3'	2-4'	Low	X	X		White				X	X	X							
Yucca f. 'Color Guard' *	Color Guard Yucca *	2-3'	2-4'	Low	X	X		White					X								
Yucca flaccida 'Golden Sword' *	Golden Sword Yucca *	2-3'	2-4'	Low	X			White	X	X	X										
Yucca flaccida 'Ivory Tower' *	Ivory Tower Yucca *	3-6'	3-4'	Low	X			White				X	X	X							
Yucca glauca	Soapweed	2-4'	2-4'	Very low	X			White					X	X							



Big Bluestem
Andropogon gerardii

Little Bluestem
Schizachyrium scoparium

Indiangrass
Sorghastrum nutans

Prairie Dropseed
Sporobolus heterolepis

Blonde Ambition Blue Grama Grass
Bouteloua g. 'Blonde Ambition'

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Ornamental Grass																					
<i>Andropogon gerardii</i>	Big Bluestem	4-6'	2-3'	Low	X			Purple				X	X	X							X
<i>Bouteloua curtipendula</i>	Sideoats Grama	8-24"	8-12"	Low	X									X							X
<i>Bouteloua gracilis</i>	Blue Grama Grass	1-2'	1-2'	Very Low	X							X	X	X	X	X	X				X
<i>Bouteloua g. 'Blonde Ambition'</i>	Blonde Ambition Grama Grass	2-3'	1-2'	Very Low	X			Light tan				X	X	X	X	X	X				X
<i>Chasmanthium latifolium</i> *	Northern Sea Oats *	2-3'	18-24"	Med	X	X	X	Green-tan					X								X
<i>Miscanthus sinensis purpurascens</i>	Purple Flame Grass	3-4'	2-3'	Med	X	X		Bronze-silvery white					X	X							X
<i>Miscanthus sinensis zebrinus</i>	Zebra Grass	6-8'	4-6'	Med	X	X		Silvery-white					X	X							X
<i>Schizachyrium scoparium</i>	Little Bluestem	varies	varies	Low	X			varies						X	X	X	X				X
<i>Sorghastrum nutans</i>	Indiangrass	3-5'	3-4'	Sun	X			Tan						X	X	X	X				X
<i>Sorghastrum nutans</i> 'Indian Steel'	Indian Steel Indiangrass	5-7'	2-3'	Low	X			Tan				X	X	X							X
<i>Sorghastrum nutans</i> 'Thin Man'	Thin Man Indiangrass	5-7'	2-3'	Low	X			Yellow				X	X	X							
<i>Sporobolus heterolepis</i>	Prairie Dropseed	24-30"	18-24"	Low	X			Gray-green				X	X	X	X	X	X				X
<i>Sporobolus wrightii</i> *	Giant Sacaton *	3-6'	2-3'	Low	X			Tan				X	X	X							X



Yarrow
Achillea

Hyssop
Agastache

Blue Harebells
Campanula rotundifolia

Gazania 'Colorado Gold'
Gazania I. 'Colorado Gold'


Sedum Voodoo
Sedum

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Perennials																					
Achillea	Yarrow	18-30"	18-36"	Low	X			Yellow, white, pastel, brick red, peach				X	X	X							
Agastache	Hyssop	varies	varies	Low	X	X		Orange, yellow, rose pink, violet blue, blue, rich pink, pink, red					X	X	X	X	X				
Alyssum saxatilis 'Goldkugel'	Basket of Gold	6-12"	12-18"	Low	X			Mustard yellow		X											
Antennaria dioica	Pussytoes	1-4"	8-12"	Low	X			Pink				X									
Aquilegia chrysantha	Yellow Columbine	23'	18-24'	Low	X	X		Yellow, white, pastel, brick red, peach			X	X									
Aquilegia coerulea	Rocky Mountain Columbine	18-24"	12-18"	Med		X	X	Blue with white			X	X									
Armeria maritima 'Splendens'	Sea Thrift	6-12"	6-12"	Med	X			Deep pink			X	X									
Armeria 'Vicor Reiter'	Victor Reiter Sea Thrift	2-4"	4-6"	Med	X			Soft pink				X									
Artemisia 'Powis Castle'	Powis Castle Artemisia	2-3'	2-3'	Low	X			Silvery foliage													
Asclepias tuberosa	Milkweed	18-36"	18-24"	Low	X			Orange, yellow					X	X							

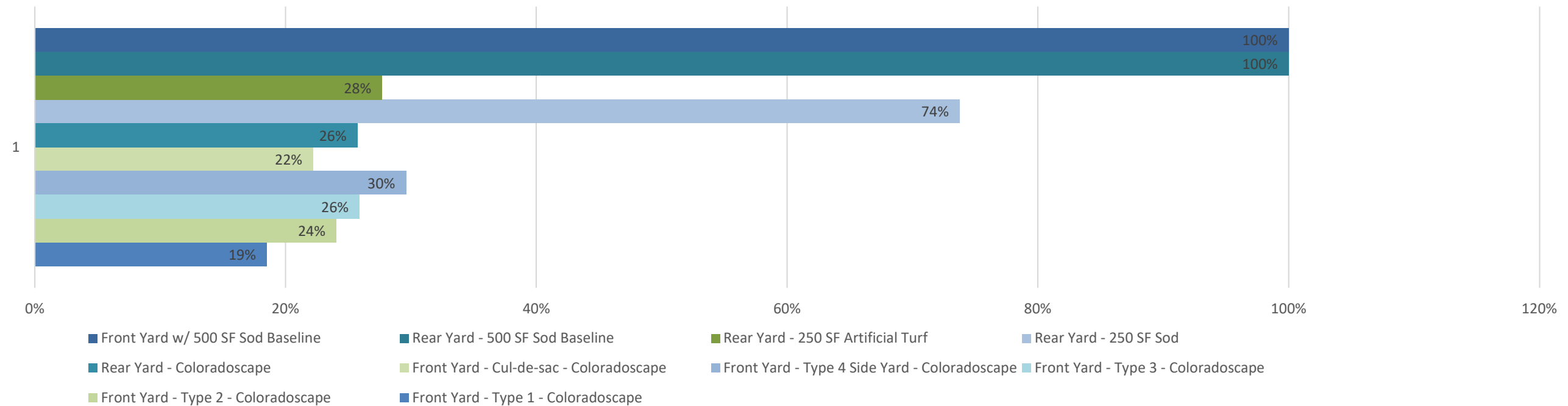
Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Perennials Cont.																					
Aster	Aster	12-24"	12-24"	Med	X	X		Purple, light blue, red, pink, white						X	X	X	X				
Aster alpinus 'Goliath'	Alpine Aster	6-12"	15-18"	Low	X	X		Lavender			X	X									
Baptisia australis	Blue False Indigo	3-4'	2-3'	Low	X	X		Indigo				X									
Berlandiera lyrata	Chocolate Flower	1-2'	12-18"	Low	X			Yellow				X	X	X	X	X	X				
Calamintha nepeta ssp. Nepeta	Lesser Calamint	12-18"	12-18"	Low	X			White				X	X	X	X	X	X				
Callirhoe involucrata	Prairie Wine Cups	6-12"	2-3'	Low	X			Magenta				X	X	X	X	X	X				
Campanula rotundifolia	Blue Native Harebell	6-18"	12-18"	Low	X	X	X	Light blue	X	X	X	X	X	X							
Centranthus ruber	Red Valerian	2-3'	18-24"	Low	X			Reddish-pink				X	X	X							
Cerastium tomentosum	Snow-in-Summer	6-12"	12-18"	Low	X			White			X	X									
Ceratostigma plumbaginoides	Plumbago	8-12"	18-24"	Low	X	X	X	Blue					X	X							
Coreopsis	Tickseed	6-24"	12-24"	Low	X			Yellow, gold, red,			X	X	X	X	X	X	X				
Delosperma	Hardy Ice Plant	1-4"	10-18"	Low	X			Rose, white, lavender, pink, yellow, red, purple				X	X	X							
Echinacea	Coneflower	varies	varies	Low	X			Varies				X	X	X							
Epilobium garrettii 'Orange Carpet'	Orange Carpet Hummingbird Trumpet	4-6"	15-20"	Low	X			Orange						X	X	X	X				
Erigeron speciosus *	Showy Daisy *	18-24"	18-24"	Low	X			Lavender				X	X	X							
Gaillardia aristata	Native Blanketflower	18-24"	18-24"	Low	X			Yellow w/ red center					X								
Gallium odoratum	Sweet Woodruff	6-8"	8-12"	Med		X	X	White			X										
Gazania l. 'Colorado Gold'	Colorado Gold Gazania	2-4"	8-10"	Low	X	X		Yellowish-orange				X	X	X	X	X	X				
Geranium	Cranesbill	12-18"	1-2'	Med	X	X	X	Violet-blue			X	X	X								
Geum triflorum	Prairie Smoke	6-12"	6-12"	Low	X	X		Creamy white			X										
Hemerocallis	Daylily	varies	varies	Low	X	X		Varies			X	X	X	X							
Knautia macedonia	Knautia	18-24"	18-24"	Low	X			Burgundy				X	X	X							
Kniphofia uvaria	Torch Lily	varies	varies	Low	X			Yellow, red, orange					X	X							

Botanic Name	Common Name	Mature Height	Mature Width	Water Usage	Sun	Filtered Shade	Full Shade	Flower Color/ Feature	Early Spring	Mid Spring	Late Spring	Early Summer	Mid Summer	Late Summer	Early Fall	Mid Fall	Late Fall	Early Winter	Mid Winter	Late Winter	Winter Interest
Perennials Cont.																					
Lavandula angustifolia	English Lavender	12-20"	15-20"	Low	X			Lavender		X	X	X	X	X							
Liatris	Gayfeather	varies	varies	Low	X			Purple, white					X	X							
Marrubium rotundifolium	Silvery Horehound	6-8"	12-18"	Very low	X																
Mirabilis multiflora	Desert Four O'Clock	15-18"	2-4'	Very low	X			Purplish-red					X	X							
Monarda fistulosa menthifolia	Wild Bergamot	2-3'	18-24"	Low	X			Lavender					X								
Nepeta	Catmint	varies	varies	Low	X			Lavender-blue			X	X	X	X							
Oenothera berlandieri	Mexican Evening Primrose	12"	18-24"	Low	X			Pale pink				X	X	X							
Penstemon	Penstemon	varies	varies	Low	X			Varies		X	X	X	X	X							
Perovskia a. 'Little Spire'	Little Spire Russian Sage	2-3'	2-3'	Low	X			Blue					X	X							
Phlox subulata	Creeping Phlox	3-6"	12-24"	Low	X	X		Varies	X	X											
Potentilla neumanniana	Apline Cinquefoil	2-4"	12-18"	Low	X			Yellow			X	X									
Ratibida columnifera	Prairie Coneflower	18-24"	18-24"	Very low	X			Yellow, red				X	X	X							
Rudbeckia	Black-eyed Susan	varies	varies	Low	X			Golden yellow					X								
Salvia May Night	May Night' Sage	18-24"	12-18"	Low	X			Purple-blue				X	X	X							
Sedum 'Autumn Joy'	Autumn Joy Stonecrop	18-24"	12-18"	Low	X			Dusty pink						X	X	X					X
Sedum (groundcover)	Stonecrop	4-6"	12-18"	Low	X			Varies				X	X	X	X	X	X				X
Solidago 'Goldenkind'	Golden Baby Goldenrod	1-3'	18-24"	Low	X	X		Golden yellow				X	X	X							
Tanacetum densum amani	Partridge Feather	6-8"	8-12"	Very low	X			Yellow				X									
Tanacetum niveum	Silver Tansy	18-24"	18-24"	Low	X			White				X	X	X							
Veronica pectinata	Woolly Speedwell	1-2"	12-18"	Low	X			Blue				X									X

Estimated Water Use Calculations

Project Name - #: Town of Castle Rock Lot Typicals Landscape and Irrigation Study							 <p>NORRIS DESIGN Planning Landscape Architecture Branding</p>	
Project Location: Castle Rock, CO								
Client Name: Town of Castle Rock								
Date Updated: 5/17/2022								
Area Name	Spray	Drip / Low Flow	Rotor / Rotary	Spray	Drip / Low Flow	Estimated Annual Water Use (Gal)	% of Water Use of Bold Baseline	
	Manicured Turf (SF)	Trees & Shrubs (SF)	Native Seed (SF)	Hybrid Turf (SF)	Annuals / Color (SF)			
Front Yard - Type 1 - Coloradoscape	0.00	435.60	0.00	0.00	0.00	2,484	19%	
Front Yard - Type 2 - Coloradoscape	0.00	566.28	0.00	0.00	0.00	3,229	24%	
Front Yard - Type 3 - Coloradoscape	0.00	609.84	0.00	0.00	0.00	3,477	26%	
Front Yard - Type 4 Side Yard - Coloradoscape	0.00	696.96	0.00	0.00	0.00	3,974	30%	
Front Yard - Cul-de-sac - Coloradoscape	0.00	522.72	0.00	0.00	0.00	2,981	22%	
Rear Yard - Coloradoscape	0.00	566.28	0.00	0.00	0.00	3,229	26%	
Rear Yard - 250 SF Sod	0.00	609.84	0.00	250.00	0.00	9,256	74%	
Rear Yard - 250 SF Artificial Turf	0.00	609.84	0.00	0.00	0.00	3,477	28%	
Rear Yard - 500 SF Sod Baseline	0.00	174.24	0.00	500.00	0.00	12,550	100%	
Front Yard w/ 500 SF Sod Baseline	0.00	206.00	0.00	530.00	0.00	13,425	100%	

% of Water Use



B&M Turf Quote:

The Coloradoscape plan on this lot would cost \$11,950.00

A standard front and back would have 1 tree and 5 shrubs and a moderately sized sod patch in front and none of the plants in the rear yard. This would cost \$8,500 on the same lot.

I know I would rather have the Coloradoscape if I were buying a new house, hopefully this will get some traction.

Please let us know if you need anything additional.



Date: August 18, 2022

To: City of Castle Rock

Attn: Linda Gould

Re: **Castle Rock – Xeric vs Standard Landscape**

Xeric Landscape Example Front and Rear Yard:

\$9,325.00

Standard Landscape with City Standard Front Yard Install and Rear Yard per Xeric plan with Sod:

\$8,265 .00

- Budgets provided are based on a Xeric landscape typical provided by City of Castle Rock for the comparison versus Standard front yard install. For budget purposes only and does not reflect an actual landscape install.

Submitted By: Brightview Date: August 18, 2022



Office 303.688.3267
www.dcmadr.com

P.O. Box 1087
Castle Rock, CO 80104

August 26, 2022

Town of Castle Rock Water Department
Linda Gould

Price Comparison

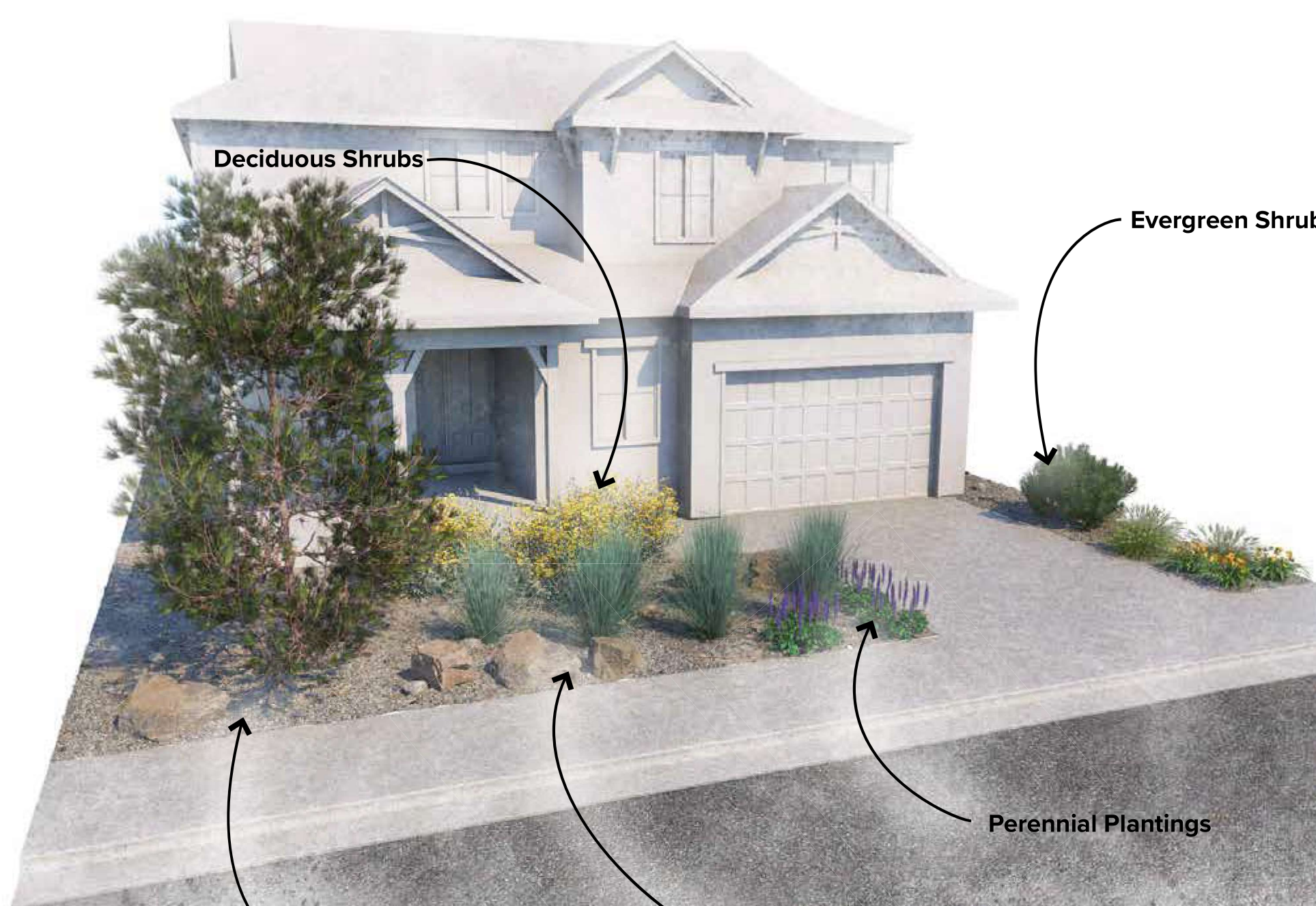
Standard Landscape Design with Front Yard Turf –

Irrigation - \$3400.00
Rock/mulch/cobble - \$4000.00
Sod - \$675.00
Plants - \$2240.00
Soil prep - \$1000.00
TOTAL - \$11,315.00

Colorado Scape Design –

Irrigation - \$3400.00
Rock/mulch/cobble - \$3625.00
Sod - \$1050.00
Plants - \$2075.00
Soil prep - \$1000.00
TOTAL - \$11,480.00

Lot 1



Cobble Mulch
Replace traditional bluegrass/sod

Boulders
Use for visual interest



Item	Quantity
Deciduous Tree	0
Evergreen Tree	1
Evergreen Shrubs	1
Deciduous Shrubs	3
Ornamental Grasses	10
Perennials	6
Boulders	4



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 3. **File #:** WC 2022-069

To: Members of the Castle Rock Water Commission

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 a Spot Water Lease between the Town of Castle Rock and the Chatfield East Property Owners Association, Inc. [Chatfield Reservoir, Douglas and Jefferson Counties]

Town Council Agenda Date: September 6, 2022

Executive Summary

Castle Rock Water is seeking Town Council approval of a resolution (**Attachment A**) for a spot water lease with Chatfield East Property Owners Association (Chatfield East POA). As the Town is not currently able to fully utilize excess storage supplies in Chatfield, Chatfield East POA 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 Chatfield East POA to replace any Denver Aquifer well depletions that they have from Plum Creek in 2022 and 2023.

If Council approves this lease, up to 21.045 acre feet (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 November 1, 2022 and October 31, 2023. The Town will assess a \$355 per acre-foot (AF) price for the water. The initial payment of the 21.045 AF lease will be required upon approval of this lease, with any remaining unused quantity refunded at the end of each year. The potential revenue for this lease is up to \$7,470.98. The agreement will terminate at the end of 2023.

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

On October 27, 2021, Castle Rock Water Commission recommended Town Council approval of the 2021 Spot Water Lease with Chatfield East POA.

On November 16, 2021, Town Council approved the 2021 Spot Water Lease with Chatfield East POA.

Discussion

Castle Rock Water has a strategic goal to strive to maintain sustainable rates and fees, and

Item #: 3. File #: WC 2022-069

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 four years, the Town has generated over \$630,000 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 four years.

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

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 the Colorado Water Conservation Board (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 the current annual lease rate for 1,281 AF (2,000 AF minus 719 AF), the Town will pay the State \$64,050 in 2022. The spot lease with Chatfield East POA 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 up to \$7,470.98 of additional revenue in 2022. The revenue will be deposited into the Water Resources Fund Capital Leases account 211-4375-393.70-00.

Staff Recommendation

Staff recommends approval of the resolution as presented.

Proposed Motion

"I move to recommend Town Council approval of the Resolution as presented"

Attachments

- Attachment A: Resolution (Not Attached)
- Attachment B: Agreement

**TOWN OF CASTLE ROCK/ CHATFIELD EAST PROPERTY OWNERS ASSOC.
SPOT WATER LEASE AGREEMENT**

THIS SPOT WATER LEASE AGREEMENT (“Agreement”) is entered into _____, 2022 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 N. Wilcox Street, Castle Rock, Colorado 80104 and the Chatfield East Property Owners Association, Inc. (“Association”) as Lessee, whose address is: P.O. Box 192, Littleton, Colorado 80160, 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 2022 and 2023; and

WHEREAS, the Association 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 Plum Creek from pumping and use of water from Denver aquifer wells on individual lots in the Chatfield East Subdivision pursuant to the Decrees in case Nos. W-8568-77 and 89CW068.

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 Association agree as follows:

1. Water Rights Lease. The Town hereby leases to the Association a total of 21.045 acre-feet (AF) annually of the Surplus Water (“Leased Spot Water”), which will be made available from November 1, 2022 through October 31, 2023, with deliveries not to exceed 2 AF per day.

2. Deliveries.

A. Amount. The Town shall provide the Association 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 the Association on the following monthly schedule: 1.765 AF in November 2022, and 1.75 AF each month in December 2022 through October 2023. Actual day-to-day deliveries of Leased Spot Water to the Association 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. The Association 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.

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

If to Lessee: Chatfield East Property Owners Association
Attn: Nina McVicker
P.O. Box 192
Littleton, Colorado 80160

9. Assignment. Lessee 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 Lessee's rights hereunder, the assignee shall execute an assumption agreement pursuant to which it shall assume Lessee's 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 the Association as lessee 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)



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 4. **File #:** WC 2022-078

To: Members of the Castle Rock Water Commission

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 first Amendment to the Town of Castle Rock/Turnpike LLC Agricultural Water Lease Agreement [Weld County, CO]
Town Council Agenda Date: September 6, 2022

Executive Summary

Castle Rock Water is seeking ratification by Town Council of a resolution (**Attachment A**) for the First Amendment to the 2022 Agricultural Water Rights Lease with Turnpike LLC (Turnpike). Turnpike is a farmer located in Weld County adjacent to the Lost Creek Basin wells we purchased in 2017 as part of our Alternate Source of Supply Project. As part of the 2022 lease, the farmer has used 277.08 acre feet (AF) to date of water from these wells in 2022 for irrigation (their current lease expires November 15, 2022), for total revenues year to date of \$10,113. Turnpike LLC is interested in an additional 100 AF lease of our Lost Creek Basin water rights this season as one of the three wells leased has failed and there is a delay in being able to repair the well in a timely manner. Turnpike plans to supplement their irrigation with one of the adjacent wells. The Town's Lost Creek Wells have a three-year water banking provision, and those wells currently have enough water banked that would allow for Turnpike's additional request, despite the annual maximum for each well. The amendment would increase the available water from 485 AF to 585 AF. The lease rate of \$36.50 per acre-foot would remain the same. The reason for the request for Town Council ratification is due to the fact that Turnpike's crops are nearing the end of their growing cycle and additional water is needed to finish them prior to harvest.

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

February 28, 2018, Castle Rock Water Commission unanimously recommended that Town Council approve the 2018 water lease agreement.

March 6, 2018, Town Council unanimously approved the 2018 water lease agreement.

January 23, 2019, Castle Rock Water Commission recommended that Town Council approve the 2019 water lease agreement.

Item #: 4. File #: WC 2022-078

February 5, 2019, Town Council unanimously approved the 2019 water lease agreement.

October 23, 2019, Castle Rock Water Commission recommended that Town Council approve the 2020 water lease agreement.

November 5, 2019, Town Council unanimously approved the 2020 water lease agreement.

July 21, 2020, Town Council approved the First Amendment to the 2020 water lease agreement, increasing the water lease by 30 AF.

February 24, 2021, Castle Rock Water Commission recommended that Town Council approve the 2021 water lease agreement.

March 2, 2021, Town Council unanimously approved the 2021 water lease agreement.

January 26, 2022, Castle Rock Water Commission recommended that Town Council approve the 2022 water lease agreement.

February 15, 2022, Town Council unanimously approved the 2022 water lease agreement.

Discussion

As part of the Town's hybrid renewable water solution, the Town purchased several Lost Creek Basin wells in 2017 and 2021. These wells came with approximately 1,492 AF (annually) of fully exportable water rights which could be used for municipal and other purposes. Eventually, the Town intends to use these water rights directly or as an augmentation source in conjunction with the Box Elder project. However, until infrastructure is built to transport this water to a treatment plant or place of augmentation, leasing this water for other purposes helps to generate some revenue for Castle Rock Water. In 2022, Turnpike LLC has used 277.08 AF of water to date from these wells for irrigation for total year to date revenues of \$10,113. The farmers have requested an additional 100 AF from well 31527-FP in 2022.

The key terms of the First Amendment to the 2022 Water Rights Lease agreement are summarized below:

- Agreement will terminate on November 15, 2022.
- Turnpike LLC will lease up to 585 AF (addition of 100 AF to the original 485 AF permitted in 2022) of water at a rate of \$36.50 per AF.

The following table outlines the wells that will be used and the amount of water we will be leasing to Turnpike LLC.

Well	Maximum Water to be Leased**, AF	Annual Water Rights, AF
31526	190	144.4
31527	180 + 100*** = 280	139.1

Item #: 4. File #: WC 2022-078

31643	115	111.3
14860	0*	74.3
Total	585	738.6

*Well not operational

**Maximum water to be leased may exceed annual water rights of an individual well if banked water is available

***First Amendment to the 2022 Water Rights Lease

Budget Impact

If Council approves the agreement, Castle Rock Water could receive up to \$3,650.00 in additional revenue in 2022 beyond the original potential lease revenue of \$17,702.50. The revenue will be deposited into Water Resources Fund Capital Leases account 211-4375-393.70-00 <WRAWL>.

Proposed Motion

"I move to recommend to Town Council approval of the Resolution as presented"

Attachments

Attachment A: Resolution
Exhibit 1: Agreement
Attachment B: Location Map

**FIRST AMENDMENT TO THE
WATER RIGHTS LEASE**

DATE: _____

PARTIES: **TOWN OF CASTLE ROCK**, a Colorado municipal corporation, acting by and through its Town of Castle Rock Water Enterprise, 100 N. Wilcox Street, Castle Rock, Colorado 80104 (“Lessor”).

TURNPIKE, LLC, a Colorado limited liability company, 4202 Weld County Road 65, Keenesburg, Colorado 80643 (“Lessee”).

RECITALS:

- A. Lessor and Lessee are parties to the Water Rights Lease, dated February 15, 2022 (the “Lease”), a copy of which is attached as *Exhibit 1*.
- B. Due to a lack of water from Well No. 31526, Lessor and Lessee wish to amend the Lease to allow Lessee to supplement its irrigation by using 100 AF of water from Well 31527.
- C. Lessor and Lessee wish to memorialize these changes in this First Amendment to the Water Rights Lease (“First Amendment”).

TERMS:

Section 1. Amendment. Section 1 of the Lease is amended to read as follows:

Section 1. Water Rights and Equipment Lease. Subject to the terms and conditions set forth herein, Lessor hereby leases to Lessee the water rights associated with the following well permits:

<u>Well Permit No.</u>	Power Consumption Coeff. [kWh/AF]	<u>Acre Feet Leased</u> (“Permitted Maximum”)
31526-FP	182.312	190
31527-FP	184.305	280
31643-FP	285.362	115
14860-FP	Not Operational	0

The water rights associated with the above-referenced well permits shall be referred to collectively as the “Water Rights.” The Water Rights together with the wells, pumping equipment, electrical equipment and other equipment and facilities associated with the Water Rights (collectively referred to as the “Equipment”) are described on the attached *Exhibit A*. Except as otherwise limited herein, Lessee shall use the wells in accordance



with each well permit and prevent degradation of the quality of the ground water. While the wells are commingled as follows 31526-FP/31527-FP, and 31643-FP/14860-FP, said commingling applies only to the area on which the water may be used. Lessee is required to use each well and neither well is to be used in excess of its Permitted Maximum (as listed above), however, in no event shall the commingled wells be permitted to act as alternate points of diversion to one another. Lessee is prohibited by this Lease from pumping more than the Permitted Maximum from the wells associated with the above-referenced permit numbers. Lessee also agrees that use of the Water Rights in excess of the Permitted Maximum shall be a default under Section 10 of this Lease, and (i) Lessee shall be liable for any and all damages caused to Lessor as a result of Lessee exceeding the Permitted Maximum; and (ii) Lessor, in its sole and absolute discretion, shall be entitled to immediately terminate this Lease. In the event that Lessee's use of the Water Rights associated with the Well Permit exceeds those quantities listed above, then Lessee shall pay to Lessor a \$60 per acre foot penalty.

Section 2. Ratification. In all other respects, the Lease shall remain in full force and effect.

LESSOR:

ATTEST:

TOWN OF CASTLE ROCK, acting by
and through the Town of Castle Rock
Water Enterprise

Lisa Anderson, Town Clerk

Approved as to form:

Jason Gray, Mayor

Michael J. Hyman, Town Attorney

Approved as to content:

Mark Marlowe, Director of Castle Rock Water

LESSEE:

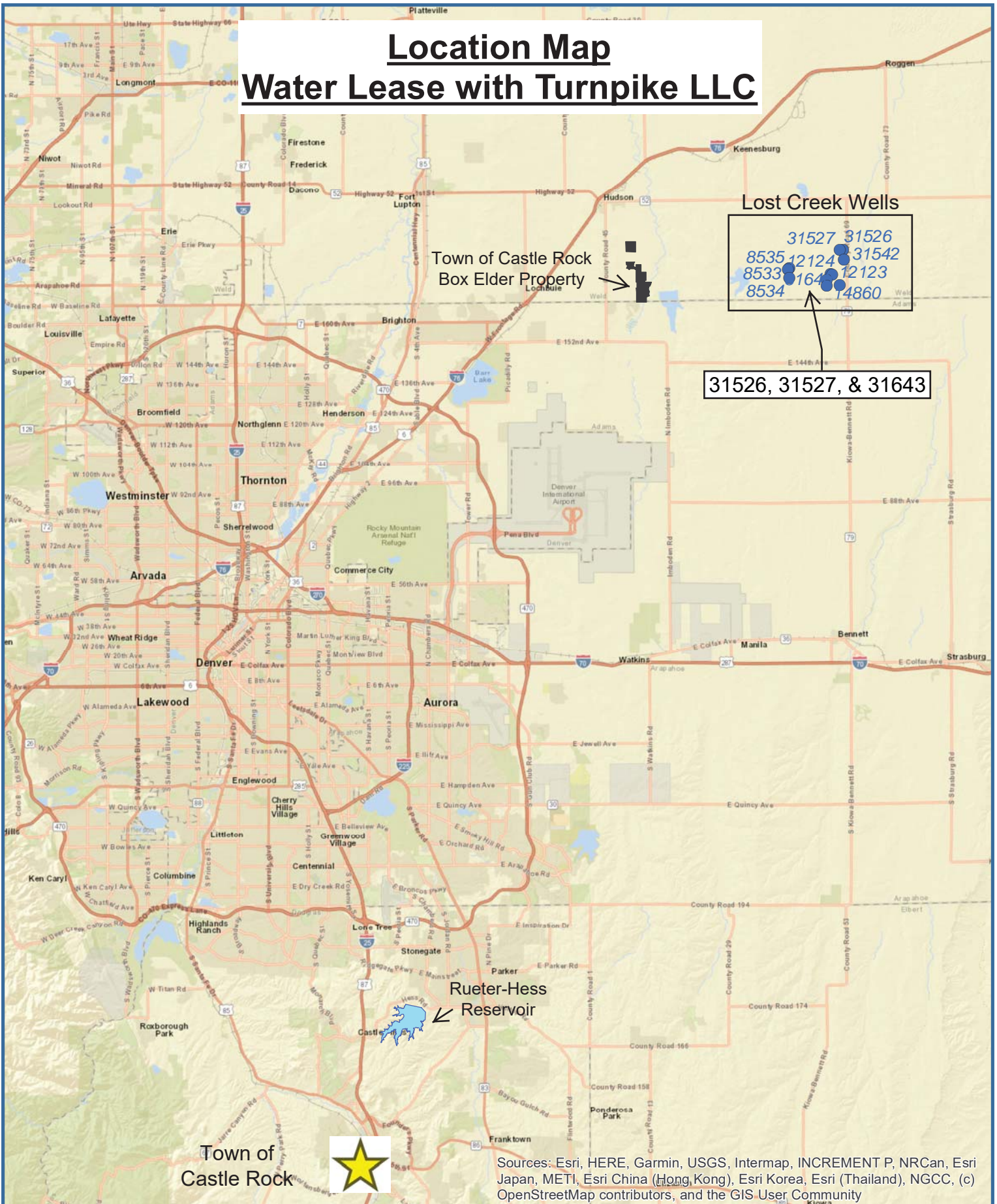
TURNPIKE, LLC, a Colorado limited liability company

By: Richard F. Huma

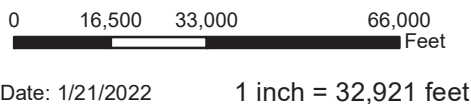
Its: Richard F. Huma
Authorized Member

Location Map

Water Lease with Turnpike LLC



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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CASTLE ROCK UTILITIES MAP
(INTERNAL USE ONLY)



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 5. **File #:** WC 2022-070

To: Members of the Castle Rock Water Commission

From: Mark Marlowe, P.E., Director of Castle Rock Water
Matt Benak, P.E., Water Resources Manager
Scott Tait, Project Manager

Resolution Approving a Services Agreement between the Town of Castle Rock and Burns & McDonnell Engineering Company, Inc. for Chatfield Reservoir Pump Back Project Infrastructure Preliminary Engineering and Design Services [Northwestern Douglas County and Southeastern Jefferson County]
Town Council Agenda Date: September 20, 2022

Executive Summary

Castle Rock Water (CRW) is seeking Town Council approval of a resolution (**Attachment A**) approving a services agreement (**Exhibit 1**) in the amount of \$349,149.00 with Burns & McDonnell Engineering Company, Inc. (B&McD) along with a \$34,914.90 (10%) staff-managed contingency, for a total authorization of \$384,063.90 to begin preliminary engineering and design services for the proposed Chatfield Reservoir Pump Back Infrastructure.

CRW's Water Resources Strategic Master Plan identifies the Chatfield Reservoir Pump Back infrastructure as a key project to convey our renewable water that is captured and stored in Chatfield Reservoir. Presently, CRW has approximately 775 AF of water stored in Chatfield.

CRW staff used a competitive Request for Proposal (RFP) process and reached out to six professional engineering firms. Two of those firms responded with qualified proposals. After review of the proposals, staff recommends awarding the project to B&McD.

Notification and Outreach Efforts

CRW staff will meet with the largest property owners along the proposed 12-mile pipeline corridor to discuss the reservoir intake, pumping station and pipeline easement details. As the preliminary engineering and design is developed, a land acquisition firm will be engaged to assist with property access for surveying and easement acquisitions along the corridor when the selected alternative is known.

Discussion

The need for a sustainable long-term water supply was identified in CRW's Water Resources Strategic Master Plan and one of the major goals of that plan is establishment of a renewable, sustainable water supply that accounts for 75% of the annual demand for water in Castle Rock. Renewable water sources for Castle Rock include a combination of existing surface water rights along East and West Plum Creek, reusable lawn irrigation return flows, reclaimed water flows, imported surface water from outside of the Plum Creek Basin, and surface water rights on the South Platte River.

Being able to fully capture CRW's renewable water rights is a key element in the plan for a long term sustainable water supply. Water that cannot be captured at the Plum Creek Diversion flows down to Chatfield Reservoir for storage. Year around operation of the Chatfield Pump Back Infrastructure is necessary to optimize the use of our renewable and reusable water rights.

The major source of inflows to Chatfield Reservoir are Plum Creek and the South Platte River. The lower concentration of Total Dissolved Solids (TDS) in the South Platte River blends with the more highly concentrated TDS in Plum Creek within Chatfield Reservoir. The resultant blended water exhibits a TDS concentration that is lower than the EPA's Secondary Drinking Water Standard (500 mg/l). The Chatfield Pump Back Project water will be used to take advantage of this blending particularly during the winter months as roadway salting events tend to increase TDS loading within Plum Creek.

The Chatfield Reservoir Reallocation Project is a water storage project that began in 2004 to reallocate flood storage space in the existing Chatfield Reservoir located in northwest Douglas County to space that can be used for storing renewable water supplies. The Town of Castle Rock is currently, and has been since 2004, a participant in this Project. On June 7, 2014, Town Council approved a resolution to reduce the Town's participation in the Chatfield Storage Reallocation Project from 1,500.3 AF to 200 AF based on staff's recommendations of the then current need for storage in Chatfield by the Town and for the need to allocate funding to other renewable water projects.

However, as the Town continued to develop and firm its renewable water rights on Plum Creek and the South Platte River, in addition to its fully reusable return flows, additional storage in Chatfield became extremely beneficial. In July 2015, the Town entered into a multi-year agreement with the Colorado Water Conservation Board (CWCB) to purchase shares in the Chatfield Reservoir Reallocation Project. This agreement has allowed the Town to spread out the project costs over time while the Project had been undergoing design and construction activities.

Construction activities for the Chatfield Reservoir Reallocation Project were substantially completed in December 2019. The final Project construction costs were approximately \$167,016,960, which was \$3.97 million less than the last official Project estimate. The Chatfield Reservoir Management Company (CRMC) had been directed to utilize the remaining funds to pay for the first five years of post-construction Project obligations, such as vegetation and habitat monitoring, erosion monitoring, weed management and new vegetation irrigation.

In early 2020, CRMC staff worked diligently to finalize the remaining USACE submittals that were a

Item #: 5. File #: WC 2022-070

requirement prior to first storage. These final submittals were officially approved by USACE on May 13, 2020 who indicated that all recreation modifications, compensatory mitigation features, real estate interests, and other modifications to the Project had been satisfactorily completed. Payment for first storage was made by CRMC on May 14, 2020 to USACE. First storage of water into the reallocated storage space occurred on May 15, 2020, with Castle Rock Water being the first entity to store water.

On May 17, 2022 Town Council approved the purchase of an additional 129 AF of storage (the Town now owns 719 AF of storage) with the option to store water up to 2,000 AF in our optioned pool owned by CWCB.

In 2019, the South Metro Water Authority contracted with Jacobs Engineering to conduct a detailed evaluation of pipeline alternatives for the stakeholders in the Chatfield Reservoir Reallocation Project. As a major stakeholder, Castle Rock Water participated in the study in which the generated economics and engineering results pointed to a Chatfield Western Shore intake as being the most beneficial for Castle Rock Water for direct pumping back to Castle Rock, for water exchanges partnerships and utilizing a permitted temporary intake currently leased to Denver Water. A second alternative of a Chatfield Southern Shore intake is also beneficial from a cost perspective, however, it limits partnerships and its potential cost sharing benefits along with a considerably longer permitting timeline for a new US Army Corps of Engineers permitted intake structure on the southern shore of the reservoir. Jacobs Engineering completed their work in June of 2020.

The anticipated Western Shore intake, pipeline, pump station and pipeline corridor is roughly 12 miles in total length and runs south from the west of Chatfield Reservoir along S. Wadsworth Rd., east along W. Waterton Rd., south along N. Rampart Rd. and then connecting to CRW's existing, roughly 7-mile-long, southeast Ravenna easement for discharge to Castle Rock Reservoir #1 and future Castle Rock Reservoir #2 (see **Attachment B**).

In July 2022, Staff issued a RFP (**Exhibit 1**) to 6 engineering firms for preliminary engineering and design services of the reservoir intake, pipeline, pump station and pipeline infrastructure based on Jacobs Engineering's detailed evaluation. Two proposals were received, from Burns & McDonnell and HDR.

Staff has reviewed the proposals and is of the opinion that the proposed effort and scope is appropriate for the project and that the rates and fees are fair and competitive when reviewed with engineering costs for projects similar in nature. CRW is recommending entering a professional services agreement with B&McD.

B&McD estimates 8 months of duration for preliminary engineering and design services. Subsequent final design bidding is anticipated in the summer of 2023.

Budget Impact

Funding for this project will come from the 2022 budget as shown below.

Item #: 5. File #: WC 2022-070

Project	Account Number	Budget	Available Balance	This Authorization
Chatfield West Alt Proj	211-4375-443.78-03	\$400,000.00	\$400,000.00	\$384,063.90

Staff Recommendation

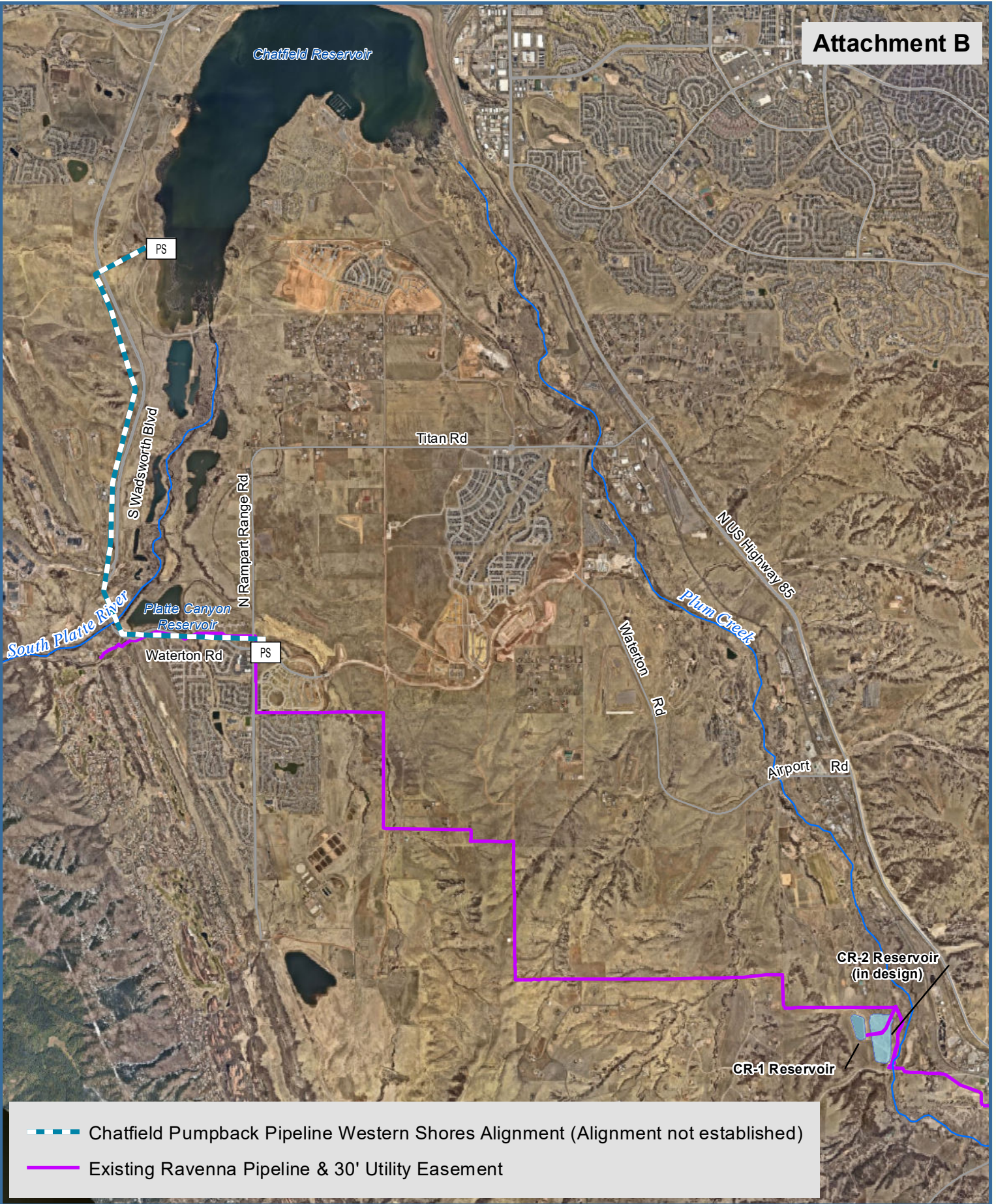
Staff and Castle Rock Water Commission recommend Town Council approval of a services contract in the amount of \$349,149.00 with B&McD, along with contingency of \$34,914.90 resulting in a total project authorization of \$384,063.90 for Chatfield Reservoir Pump Back Infrastructure preliminary engineering and design.



Proposed Motion

“I move to recommend to Town Council approval of the Resolution as presented”

Attachments

- Attachment A: Resolution (Not Attached)
- Exhibit 1: Agreement (Not Attached)
- Attachment B: Location Map



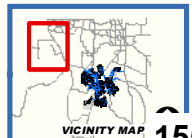
-  Chatfield Pumpback Pipeline Western Shores Alignment (Alignment not established)
-  Existing Ravenna Pipeline & 30' Utility Easement



Date: 8/15/2022 1 inch = 5,000 feet



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Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 6. **File #:** WC 2022-071

To: Members of the Castle Rock Water Commission

From: <Name of CR Water Staff Member>, <Title>
Mark Marlowe, P.E., Director of Castle Rock Water

An Ordinance Amending Titles 3, 4 and 13 of the Castle Rock Municipal Code by Changing Stormwater Development Impact Fees, Water Resources System Development Fees, Water System Development Fees, Wastewater System Development Fees, Water Resources, Stormwater and Wastewater Rates, and Making Certain Editorial Updates to Such Titles (1st Reading) [Entire Tow of Castle Rock and extraterritorial service areas]
Town Council Agenda Date: September 20, 2022

Executive Summary

This will be a presentation only item.



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 7. **File #:** WC 2022-072

To: Members of the Castle Rock Water Commission

From: Mark Marlowe, P.E., Director of Castle Rock Water
Jeff Brauer, Director of Parks and Recreation

Resolution Waiving Formal Written Bidding Requirement On the Basis of Sole Source for Services Performed by Academy Sports Turf, Inc., for the Paintbrush Park Synthetic Turf Conversion Project and Approving an Equipment and Services Agreement [3492 Meadows Blvd, Castle Rock, CO 80109]
Town Council Agenda Date: July 16, 2022

Executive Summary

Attached is a copy of the Council Memo for the above referenced project for your information.

Attachments

Attachment A: Copy of Council Memo



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/16/2022

Item #: 10. **File #:** RES 2022-083

To: Honorable Mayor and Members of Town Council

Through: David L. Corliss, Town Manager

From: Mark Marlowe, Director of Castle Rock Water
Jeff Brauer, Director of Parks and Recreation

Resolution Waiving Formal Written Bidding Requirement On the Basis of Sole Source for Services Performed by Academy Sports Turf, Inc., for the Paintbrush Park Synthetic Turf Conversion Project and Approving an Equipment and Services Agreement [*Location: 3492 Meadows Blvd, Castle Rock, CO 80109*]

Executive Summary

The purpose of the Resolution (**Attachment A**) is to request Town Council approval of an Equipment and Services Acquisition Agreement (**Exhibit 2**) with Academy Sports Turf, Inc. (Academy) for the Paintbrush Park Synthetic Turf Conversion Project. This cooperative partnership between Castle Rock Water and the Parks and Recreation Department will convert two of the existing softball fields and the soccer field at Paintbrush Park from natural grass to synthetic turf. The project will save over 4 million gallons of water annually and improve the athletic programming capability at one of the Town's most popular parks.

Academy is a leading supplier of synthetic turf systems and is a TenCate Grass Company. Academy has long-standing experience in the development, manufacturing, construction, installation and maintenance of synthetic turf systems with over 400 field installations. Their ability to provide high-quality product innovation and turnkey, sustainable sports solutions is unrivaled in the industry.

Academy is a certified vendor through The Interlocal Purchasing System (TIPS) and meets the requirements outlined for a Sole Source purchase under the established criteria of the Town's Purchasing Policy as a Cooperative Purchasing Group.

Site work will include the removal of Kentucky Bluegrass Sod and approximately 4 to 6 inches of underlying soil; laser grading of the drainage media subgrade; installation of a subsurface drainage system; installation of 4 inches of fractured stone base and drainage media; 2 inches of crusher fine gravel; and a nailer edge surrounding the perimeter of the field. The turf has an 8-year manufacturer's warranty, 8-year installation warranty and 1-year warranty on base construction.

Academy is well qualified to perform the work. All staff members involved in the project have over 15

years of experience in the installation of synthetic turf. Academy has completed hundreds of installations in Colorado and throughout the mountain west.

Staff recommends approving a construction contract with Academy in the amount of \$1,659,000. An interfund loan agreement between Castle Rock Water and Parks and Recreation will provide the up-front capital cost required to fund the conversion project. Construction will begin in late October 2022 and be complete by March 1, 2023 to accommodate spring baseball, softball and soccer and ensure that fields are useable before the 2023 irrigation season.

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

Conversions of irrigated bluegrass athletic fields to synthetic turf have been supported by past Town Council and Commission members. The last similar conversion project occurred at Metzler Ranch Park in 2018. Conversions save water, reduce maintenance and improve programming capabilities.

Discussion

Due to anticipated short-term demand challenges and the need for long-term water savings, Castle Rock Water initiated discussions to reduce water use, especially peak water use during irrigation season, through the removal of natural grass. Peak water use or demand can be as high as 19 million gallons per day during summer at the height of irrigation season. Typical winter usage is around 5 million gallons per day. Roughly 42% of total water use is applied to outdoor irrigation of turf and other landscapes. Water used for irrigation is not easily recaptured as reusable water supply. The peak demand and the inability to easily reuse water applied to outdoor landscapes makes outdoor water irrigation the most expensive use of the resource.

Parks and Recreation Staff recommended Paintbrush Park as a conversion project for several reasons. When compared to other parks, the conversion will provide significant maintenance savings through the elimination of infield and outfield upkeep, including aeration, fertilization and irrigation. The organization of the complex will also allow for substantial water savings (\$40,000 annually). The conversion will improve the athletic programming capacity of the facility by reducing cancellations due to wet infield conditions and will also reduce maintenance that can be utilized for other facilities.

Castle Rock Water and Parks and Recreation Staff partnered to convert the baseball fields at Metzler Ranch Park in 2018, which experienced significant success. Savings to date in water use are estimated at 14.8 million gallons. The project at Metzler Ranch Park was structured in a very similar manner as the proposed project, with a capital payment by Castle Rock Water for saved water and then an interfund loan. To date, the remaining balance on the loan is \$1,029,028, and the loan is on schedule to be paid off by December 31, 2033 with a final balloon payment of \$518,322.

Budget Impact

Academy is a certified vendor through The Interlocal Purchasing System (TIPS) and meets the requirements outlined for a Sole Source purchase under the established criteria of the Town's Purchasing Policy as a Cooperative Purchasing Group. Further, review of the proposed cost from Academy has been assessed by Staff and is competitive with pricing for similar projects.

The proposal from Academy is separated by the softball fields and the soccer field.

Softball fields (approximately 154,000 sq. ft.)	\$1,086,000
Soccer field (approximately 66,000 sq. ft.)	\$573,000
Total	\$1,659,000

An interfund loan agreement between Castle Rock Water and Parks and Recreation will provide the \$1.659 million up-front capital cost required to fund the conversion project. This loan agreement will be at 1.5% interest. Castle Rock Water will also make a capital contribution in an amount of \$683,200 derived from \$56,000 per acre foot times 12.2 acre-feet of saved water. This per acre foot cost is a reasonable but high-end estimate to purchase and fully develop renewable water rights. This high-end price is justified by the immediate nature of the project (i.e. it will be available for savings next irrigation season) and the fact that water will be removed from outdoor irrigation uses, which are the most costly uses for the resource in part because this water cannot be recovered for reuse. The General Fund (Parks) will repay the remaining balance through a \$40,000 annual payment through water savings for 15 years, which is the life of the turf. Up to an additional \$33,000 per year in funding for the next 15 years would be paid through lodging tax to cover the remaining conversion cost. The General Fund (Parks) will be responsible for the maintenance and operation of the turf after installation.

This project will be expensed to General Fund Parks Capital line item 110-5275-452.78-47.

Staff Recommendation

Staff recommends approving an equipment and services acquisition agreement between the Town of Castle Rock and Academy Sports Turf, Inc. for the Paintbrush Park Synthetic Turf Conversion Project.

Proposed Motion

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

Alternate Motions

"I move to approve the Resolution as introduced by title with the following changes _____"

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

Attachments

Resolution
Exhibit 1 - Sole Source Justification Form
Exhibit 2 - Agreement



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 8. **File #:** WC 2022-073

To: Members of the Castle Rock Water Commission

From: Mark Marlowe, P.E., Director of Castle Rock Water

Update on Deer Creek Water Rights Purchase
Town Council Agenda Date: NA

Executive Summary

This will be an update item only.



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 9. **File #:** WC 2022-074

To: Members of the Castle Rock Water Commission

From: Mark Marlowe, P.E., Director of Castle Rock Water

Update on the Revised Regional Wastewater Proposal
Town Council Agenda Date: NA

Executive Summary

This will be an update item only.



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 10. **File #:** WC 2022-075

To: Members of the Castle Rock Water Commission

From: Mark Marlowe, P.E., Director of Castle Rock Water
Roy Gallea, P.E., Engineering Manager

Resolution Approving the Amended and Restated Property Lease Agreement between the Town of Castle Rock and Celco Partnership D/B/A Verizon Wireless for a Communication Tower in Downtown Castle Rock
Town Council Agenda Date: July 16, 2022

Executive Summary

Attached is a copy of the Council Memo for the above referenced project for your information.

Attachments

Attachment A: Copy of Council Memo



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/16/2022

Item #: 18. **File #:** TMP 2022-607

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

**Resolution Approving the Amended and Restated Property Lease Agreement
Between the Town of Castle Rock and Cellco Partnership D/B/A Verizon Wireless for
a Communication Tower in Downtown Castle Rock**

Executive Summary

On March 1, 1998 a lease agreement between the Town and US West NewVector was executed to place a tower at 1582 Reservoir Road (Reservoir #3 site) for an initial term of five years and set to expire on February 28, 2023 (**Attachment B**). Cellco Partnership is proposing a lease agreement for five (5) years with seven (7) additional five (5) year renewals (**Exhibit 1**). American Tower subleases, manages, operates and maintains the tower.

Discussion

As part of the new lease, American Tower is proposing an increase of 20 feet of the lattice structure of the existing wireless cellular facility and add additional panel antennas to accommodate the addition of AT & T on to the wireless cellular facility. Providers currently located on the tower include Verizon Wireless and T-mobile.

The wireless cellular facility, considered to be a macro facility, lies within a 103 foot by 35 foot fenced in area. This area also being the lease area. Within the lease area there is the tower itself, two equipment shelters, and several concrete pads with numerous equipment cabinets situated on them. The tower itself is an 80-foot lattice structure, with numerous panel antennas around its perimeter. At its top is an Omni antenna, owned and used by Castle Rock Water, which brings the effective tower height to 97 feet. The proposed new tower configuration, with the 20-foot increase of the lattice structure, will also include an Omni antenna at the top, owned and used by Castle Rock Water, which will give the wireless cellular facility a total height of 115 feet.

On May 19, 2020, Town Staff brought the height increase proposal to Town Council for discussion and direction. At that time Town Council directed staff to work with American Tower on the height

Item #: 18. File #: TMP 2022-607

increase and a tri-party consent agreement between the Town, American Tower, and AT &T. The consent agreement was required for any collocation of a new provider on to the wireless cellular facility by the current lease and required Town Council approval. Shortly after bringing the item to Town Council, American Tower approached the Town about extending the lease with the Town. Instead of the consent agreement, American Tower and Town staff rolled the height increase and collocation into the new lease. Per the new lease, future collocations do not require a consent agreement. Future collocations will be required to meet all Town code requirements. The proposed height increase meets the definition of an eligible facilities request per FCC regulations. Any wireless cellular facilities projects that meet the definition of an eligible facilities request are reviewed and approved administratively per the Town's wireless cellular facility regulations. American Tower submitted plans in March of 2021 for the height increase. The plans were conditionally approved by Town staff in November 2021. The condition of approval being the approval and execution of the new lease by Town Council. The conditionally approved plans are included as exhibit C-1 of the lease.

Budget Impact

The Town will collect rent in the amount of \$2,467.21 per month (\$29,606.52 yearly) per the terms of the attached lease extension with an annual 3% increase in the base rent. In addition to the base rent, the tenant will pay the Town 33.33% of any rents actually received by any subleases.

Staff Recommendation

Staff recommends approval of the resolution authorizing the amended and restated property lease agreement with Cellco Partnership d/b/a Verizon Wireless.

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: Lease Agreement
Attachment B: American Tower Master Lease



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 11. **File #:** WC 2022-076

To: Members of the Castle Rock Water Commission

From: Mark Marlowe, P.E., Director of Castle Rock Water
Sandi Aguilar, Customer Relations Program Manager

Grand Re-Opening of the Plum Creek Water Purification Facility (PCWPF)
Town Council Agenda Date: NA

Executive Summary

Attached is an invitation to join us at the Grand Re-Opening of the Plum Creek Water Purification Facility (PCWPF) on September 21, 2022 from 4:00 pm to 7:00 pm.

Attachments

Attachment A: PCWPF Grand Re-Opening Invite

THE WHOLE FAMILY IS INVITED!



OUR FLAGSHIP **PLUM CREEK WATER PURIFICATION FACILITY** IS OPEN FOR TOURS AND WE'RE CELEBRATING WITH A

GRAND RE-OPENING!

Tour the state-of-the-art water purification facility where Castle Rock water goes through an advanced filtration, which includes nine processes that filter and attack particles all the way down to a molecular scale. **You'll also see the control center** with giant monitors keeping tabs on all of the treatments and processes in the plant.







CASTLE ROCK WATER OPEN HOUSE

4 to 7 p.m.

Wednesday, Sept. 21

**Plum Creek Water Purification Facility
1929 Liggett Road, Castle Rock**



-  **Come ask our water engineers, planners and professionals** about reuse water, long-term supply plans and the future for conservation.
-  **Mini-workshops will be held every 30 minutes.** You'll learn how to program your controller, get tips for winterization and find out about backflow prevention devices. Each workshop offers hands-on examples.
-  **We'll have activities for children** like Bash the Bottle, bubbles and watercolors.
-  **We'll provide gourmet hot dogs, salads and an ice cream bar** for a quick, tasty bite.

CASTLE ROCK
Water
175 Kellogg Court
Castle Rock, CO 80104

PRSR STD
U.S. POSTAGE
PAID
CASTLE ROCK, CO
PERMIT NO. 18

YOU'RE INVITED

*******ECRWSS/EDDM*******
Postal Customer
Castle Rock, CO



Town of Castle Rock

Agenda Memorandum

Agenda Date: 8/31/2022

Item #: 12. **File #:** WC 2022-077

To: Members of the Castle Rock Water Commission

From: Mark Marlowe, P.E., Director of Castle Rock Water

Upcoming Town Council Items
Town Council Agenda Date: NA

Executive Summary

This item is an informational update only, and is designed to give Commission a preview of time critical items that may need to go to Council prior to review at a Commission Meeting.

Items for this month include:

There are no additional items at this time.