

City of Colorado Springs

LANDSCAPE CODE AND POLICY MANUAL



EFFECTIVE JUNE 2023



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7.4.9 INTRODUCTION

Colorado Springs is situated in a semiarid region of the American West between the western edge of the Great Plains and the Front Range of the Rocky Mountains. Due to the changes in elevation within the City limits, which ranges from approximately 5,500 feet to 7,500 feet above sea level, this setting provides distinctive topographic features and rich ecological diversity. The widely varied local plant communities are indicators of that diversity.

In order to provide a framework for understanding the local natural environment and to facilitate landscape design that references and reinforces our regional character, this manual contains policies, procedures, standards for Landscape and Irrigation installation, explanatory graphics, and required plant lists. The manual supplements the Landscape Code in the current UDC and should serve as a catalyst for innovative approaches to landscape and irrigation design.

The 2023 Landscape Code and Policy Manual is reflective of the 2023 UDC. The community objectives of water conservation, landscape sustainability and the protection of regional character can be accomplished through preservation of landforms and indigenous plant communities; and through the development of landscapes that evoke the qualities of our regional character, and yet provide the benefits valued in urban settings.

The Landscape Code & Policy Manual contains references to the current Landscape Code and all policies regarding required landscaping and irrigation of applicable public and private property, and public rights-of-way. The principles and standards included are valid for all landscape design.

Document Layout

This manual contains the language from the City of Colorado Springs' Unified Development Code (UDC) Part 7.4.9 Landscaping and Green Space. The landscape and irrigation manual policies, procedures, standards for each item or site category are designated by Policy Numbers that correspond with the UDC Part 7.4.9 Landscaping and Green Space. Appendices are located at the end of the manual with additional information and requirements.

Definitions

As-built plans: Revised plans reflecting the actual conditions of a landscape or irrigation system installation.

Berm: An earthen mound designed to provide visual interest on a site, screening of undesirable views, noise reduction, etc.

Canopy (also known as overstory): The upper vegetative cover of a tree or plant grouping.

Certified Irrigation Designer: A person who has completed the Certified Irrigation Designer Program of The Irrigation Association and has an active certification from the association.

Compact Lot: Lots developed with or designed to be developed with Single-family Detached, Single-family Attached, or Two-Family Dwellings on an individually platted lot in the R-Flex Medium or R-Flex High zone districts, or lots in residential developments or portions of residential developments in the PDZ district with development densities equivalent to those permitted in the R-Flex Medium or R-Flex High zone districts.

Critical root zone: The ground area around a tree trunk determined by a radius of one foot (1') for each one inch (1") of trunk diameter.

Deciduous: A plant with foliage that is shed annually.

Double frontage lot: A lot having frontage on two (2) parallel or approximately parallel streets.

Dripline: A vertical line extending from the tips of the outermost branches of a tree to the ground.

Driveway, Commercial: Primary access, that may be private or public, off of a public right-of-way into a commercial or mixed-use developed site.

Ecosystem: A characteristic assemblage of plant and animal life within a specific physical environment, and all interactions among species, and between species and their environment.

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

Green Space, Active: Private common areas inclusive of grass, trees, or other vegetation set aside for recreational purposes. This can include, but is not limited to, dog parks, outdoor swimming pools, playgrounds, athletic fields and courts, trail systems and seating areas along trail systems, and plazas.

Green Space, Non-Activated: Private common areas inclusive of grass, trees, or other vegetation set aside for aesthetic purposes.

Greenway Oriented Unit: An attached or detached dwelling unit with the entry façade facing a common green space and garage fronting an alley in a development.

Ground cover: Plants, other than turf grass, normally reaching an average maximum height of not more than twenty-four inches (24") at maturity.

Evapotranspiration (ET): A measure of water depletion from the soil due to evaporation from the soil surface and transpiration through plant foliage.

High Water Use Turfgrass: A continuous plant coverage consisting of cool season grasses that requires regular weekly watering to survive, such as Kentucky Bluegrass.

Historically adapted plant: A self-propagating species that is not indigenous to the regional native plant community it occupies but was likely introduced by early settlers and is now so prevalent as to appear indigenous.

Hydrozone: A portion of a landscape area having plants with similar water needs that are either not irrigated or irrigated by a circuit or circuits with the same schedule.

Hydrozoning: The design practice of grouping plants by similar water requirements to maximize potential efficiency of irrigation.

Introduced plant: A plant that is not indigenous to Colorado Springs but is used in landscaping due to its adaptable qualities. It is generally a nursery trade cultivar or variety, or a native to the region, but does not naturally occur in the City limits.

Irrigation plan: A two-dimensional plan drawn to scale that shows the layout of irrigation components, component specifications, and hydrozones. Layout of pipes may be depicted diagram, but location of irrigation heads and irrigation schedules is specified.

Irrigation system: A permanent, artificial watering system designed to transport and distribute water to landscape plants.

Landscape: Any combination of living plants, such as trees, shrubs, vines, ground covers, flowers, 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, reflecting pools, outdoor artwork, screen walls, fences, or benches.

Landscape buffer: Land area with landscape plantings and other components used to visibly separate one use from another or to shield or block noise, lights, or other nuisances.

Landscape Policy Manual: A document containing policies, procedures, standards, maps, and plant lists necessary to implement the landscape standards and regulations of this UDC.

Landscape setback: A required landscape planting area on private property that is adjacent to a street right-of-way and includes the parkway; or that is adjacent to a non-street boundary of a zone district.

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

Licensed Architect: A person who is currently licensed by any state government of the United States to practice the profession of architecture.

Licensed Landscape Architect: A person who is currently licensed by any state government of the United States to practice the profession of landscape architecture and has an active license.

Local native plant community: A plant community that is indigenous within the Colorado Springs City limits.

Low-water-use plants: Plants that require less than thirty percent (30%) of reference evapotranspiration to maintain optimum appearance.

Microclimate: The climate of a specific place within a given area.

Parking Lot: An area where motor vehicles are parked or displayed, including parking lots, vehicular display lots, rental lots, depots, and stacking lanes, but not including parking garages.

Mulch: Nonliving organic and synthetic materials customarily used in landscape design to retard erosion and retain moisture, and that provide a protective covering around plants to reduce weed growth and to maintain even temperatures around plant roots.

Native grass: A drought tolerant native grass species that requires reduced or no supplemental irrigation to survive. Also referenced as Native Seed.

Non-potable water: Water that has not been treated to make it safe for drinking.

Open space: A tract of land that is kept in its natural state in perpetuity for public use. Vacant land that may be subject to future development is not considered open space. There is no specified size range for open space, other than the minimum area needed to conserve a significant natural feature.

Ornamental tree: A tree planted primarily for its decorative value, or for screening and that typically does not exceed a height of thirty feet (30') in Colorado Springs.

Parkway: That portion of the public right-of-way typically located between the curb and private property line for which the adjacent property owner has a legal responsibility to maintain for the public good. Also referred to as a tree lawn.

Plant community: A natural association of vegetation that is dominated by one or more prominent species, or a characteristic physical attribute.

Rain sensor or rain shutoff device: A device connected to an irrigation controller that overrides scheduled irrigation when significant precipitation has been detected.

Reclaimed water: Treated, recycled water.

Regional native plant community: Any plant community with a geographic distribution indigenous to all or part of the Front Range of the Southern Rocky Mountains.

Registered Professional Engineer: A person who is currently registered by any state government of the United States as a professional engineer.

Restrictive covenant: A limitation of the use of land usually set forth in the deed or other recorded instrument.

Right-of-Way or Street Right-of-Way: The area of land designated for streets, sidewalks, utilities, and public use.

Screening: A method of visually shielding or obscuring one abutting or nearby structure or use from another by fencing, walls, densely planted vegetation, or berms.

Selected Plants for Colorado Springs: The plant list located in Appendix B of the Landscape Policy Manual

Semiarid climate: A climate characterized by ten to twenty inches (10" - 20") of annual precipitation.

Shade tree: A deciduous (or rarely, an evergreen) tree planted primarily for its high crown of foliage or over-head canopy. A major shade tree at maturity reaches a height of at least fifty feet (50').

Shrub: A self-supporting woody perennial plant of low to medium height characterized by multiple stems and branches continuous from the base, usually not more than twelve feet (12') in height at its maturity. It may be evergreen or deciduous.

Signature plant: Vegetation designated in Appendix B of the Landscape Policy Manual as native, "borrowed" native, historically adapted, or compatible in a specific regional native plant community of Colorado Springs.

Significant vegetation: A plant or plants recommended for retention by the City Forester because of size, indigenous character, species type(s), unique environmental benefits, or because it is difficult to provide comparable replacement vegetation.

Site Distance Line: The triangular area at the intersection of the curb lines of two (2) streets or a railroad right-of-way line and a street curb line with dimensions from such curb lines necessary to protect required minimum horizontal and vertical sight distances as shown in the Engineering Criteria or as otherwise required by the City Engineer based on considerations of traffic, bicycle, and pedestrian safety.

Site plan: A two-dimensional representation, drawn to scale, of the total area of a development project, including building footprints, roadways, and parking areas.

Soil amendment: Organic and inorganic materials added to soil to improve texture, nutrients, moisture holding capacity, and infiltration rates.

Street tree: A tree planted in the street right-of-way (parkway) between the curb or edge of road and the adjoining property line to provide shade, spatial definition, and human scale, and to enhance the street environment.

Street Oriented Unit: A Single-family Detached or Single-family Attached dwelling unit with a garage fronting on a public or private street.

Streetscape: The landscape treatment of a street edge, including vegetation, sidewalks, streetlights, fencing, signs, utilities, etc.

Sustainability, horticultural: A characteristic of landscapes adapted to local soil and climatic conditions that results in the healthy growth and longevity of installed plant materials.

Tree: A large, woody plant having one or several self-supporting stems or trunks and numerous branches. It may be classified as deciduous or evergreen.

Turf/turfgrass: Continuous plant coverage consisting of hybridized grasses that, when regularly mowed, form a dense growth of leaf blades and roots.

Understory: Assemblages of natural low-level woody, herbaceous, and ground cover plant species that exist in the area below the canopy of trees.

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

Water harvesting: Design for capturing and using water runoff from natural or artificial, on-site precipitation.

Xeriscape: A water efficient landscape adapted to the local environment.

Xeriscape principles: Methods of professional land- scaping that include: planning and design, soil analysis, efficient irrigation, appropriate plant selection, practical turf areas, use of mulches, and proper maintenance.

For any definitions not included in this Manual, please reference the current UDC Section 7.6.301, "Definitions".

7.4.9 LANDSCAPING AND GREEN SPACE LAND USE CODE

7.4.901 Purpose

The purpose of this Part 7.4.9 is to establish requirements for the design, installation, and maintenance of landscapes that contribute ecologically and aesthetically to the growth and economic prosperity of the City; that achieve healthy, attractive, and safe environments according to recognized water conservation principles; and that conserve, protect, and promote the unique natural identity and environment of the City; and to establish standards that:

- A. Protect and efficiently use limited water resources through water conservation including the use of xeriscape principles, standards for the selection, installation, and maintenance of organic soil amendments and plant materials, and the conservation of indigenous plant communities;
- B. Enhance the aesthetics of the City, through enhanced streetscapes, the incorporation of native and compatible introduced plants, plant communities, and ecosystems into landscape design, the screening of parking lots and objectionable uses and activities, and the incorporation of green space in ways that harmonize and enhance the natural and built environment;
- C. Improve environmental quality by reducing the urban heat island effect, conserving native plant communities and vegetation, reducing soil erosion, reducing air, water, and noise pollution by reducing the mowing and fertilization requirements of limited turf areas, and preserving ecological diversity and species habitat;
- D. Support the installation of landscapes suited to local soil, climate, water supply, and on-site conditions for improved plant growth and survivability;
- E. Protect existing vegetation, including natural plant communities, to mitigate the effects of development on the natural environment;
- F. Make the City more attractive through the physical and psychological benefits of landscaping that soften the visual harshness of urban development, by stimulating pride in the City's natural heritage, and by protecting the public health, safety, and general welfare;
- G. Safeguard and enhance the value of land and public and private investment through incorporation of landscaping into development; and retain and enhance the City's natural beauty, which is an important factor in attracting economic development;
- H. Control certain exotic plant species that have a negative effect on public health or degrade native ecosystems; and
- I. If the property is located within the WUI-O district, provides for reduced wildfire risks through the City of Colorado Springs Fire Prevention Code and Standards landscaping requirements.

7.4.902 Applicability

A. General Standards

Except as otherwise provided by Subsection B below, the requirements of this Part 7.4.9 shall apply to all land when the following activities take place:

- 1. All new construction of primary structures;

2. All construction projects that increase the gross floor area of any primary structure on the lot by fifty (50) percent or more, measured cumulatively with any other activities that increased gross floor area of primary structures on the lot in the previous five (5) years;
3. If a site has sixty (60) percent or more impervious area, any site alteration that increases impervious surface area by ten (10) percent through any change other than an increase in the gross floor area of any primary structure, unless the property as a whole complies with the standards in Subsection 7.4.202A (Sustainability and Resilient Development Incentive);
4. Any change of use that results in the conversion of an attached or detached single-family or two-family dwelling to multi-family or nonresidential use;
5. The conversion of vacant land to nonresidential use that does not involve the construction of a primary structure;
6. The total redevelopment (demolition and new construction) of any primary structure on a lot; and
7. All government and utility service property zoned PF (Public Facilities);
8. Any alteration or reconfiguration of fifty (50) percent or more of existing developed landscape areas; and
9. A project that seeks a Major Modification to an approved Development Plan, including a change of use.

B. Exemptions

Except as provided in Subsection D below, the following are exempt from the requirements of this Part 7.4.9:

1. An individual detached single-family or two-family dwelling on its own lot;
2. Any valid, unexpired Development Plan approved prior to November 1, 1998, for which there is neither a change of use nor a major amendment to the plan;
3. Any temporary event approved in accordance with this UDC;
4. Any construction projects that increase the gross floor area of any primary structure on the lot by less than fifty (50) percent, measured cumulatively with any other activities that increased gross floor area of primary structures on the lot in the previous five (5) years;
5. Bona fide agricultural activities;
6. Currently approved Development Plans that are changed by a Minor Modification after the Effective Date of the UDC;
7. Master planned public parks, zoned PK, in conformance with Section 7.2.406 (PK: Public Parks); and
8. Medians in arterial street rights-of-way approved by the Park and Recreation Advisory Board.

C. Land in WUI-O District

Projects in the WUI-O district shall comply with additional requirements in Section 7.2.604 (WUI-O: Wildland Urban Interface Overlay) and related City of Colorado Springs Fire Prevention Code and Standards requirements.

D. Land in the SS-O District

Projects in the SS-O district shall comply with additional requirements in Section 7.2.603(SS-O: Streamside Overlay).

Policy 7.4.902.D.1: All tree species planted within the SS-O Streamside Overlay shall be an approved species as shown in the current Selected Plants for Colorado Springs in Appendix A.

Policy 7.4.902.D.2: Landscaping part of stream bank stabilization should be selected with the following traits: deep root systems, fibrous root systems, legumes with deep roots and nitrogen fixing capabilities, tall/leafy crowns, and/or low spreading plants.

Policy 7.4.902.D.3: All information required on the most current Landscape Check Lists located on the City of Colorado Spring Website for all SS-O Streamside Overlay requirements shall be provided.

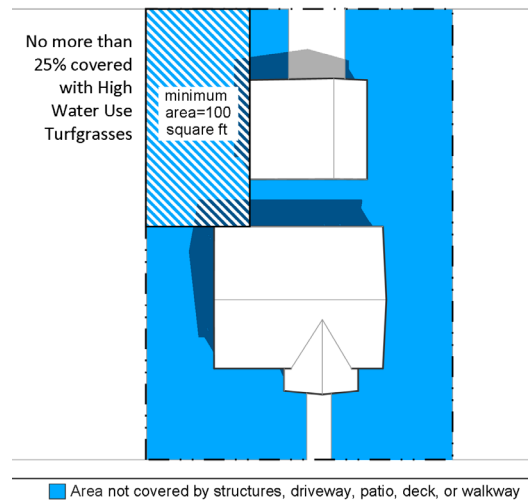
E. Special Requirements

The following requirements shall apply to attached or detached single-family or two-family dwelling residential projects:

1. Maximum High-Water Use Turfgrass

To reduce the use of the City’s limited water resources for outdoor irrigation:

- a. No more than twenty-five (25) percent of the portion of a lot not covered by a primary or accessory structure or a driveway, patio, deck, or walkway, and no contiguous area less than one hundred (100) square feet in area, shall be planted with High Water Use Turfgrass. The one hundred (100) square foot limit shall not apply to the Parkway.

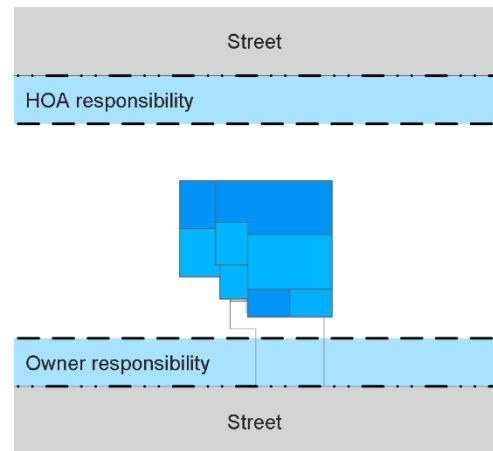


Policy 7.4.902.E.1.a.1: All proposed new attached or detached single-family or two-family dwelling residential projects that are part of a Development Plan shall follow requirements shown in Appendix C.

- b. The irrigation water service connection shall be sized appropriately to accommodate irrigation during the hours and days outlined in the Water Shortage Ordinance, Chapter 12, Article 4, Part 13 of the Code of the City of Colorado Springs. All irrigation water shall be metered and have appropriate backflow prevention as identified by Colorado Springs Utilities Water Line Extension and Service Standards.
- c. Any restrictive covenant that becomes effective on or after November 1, 1998, shall not require the use of High Water Use Turfgrass. This provision shall not restrict the individual and voluntary use of High Water Use Turfgrass.

2. **Double Frontage Lot Streetscape**

- a. Where double frontage lots are approved as part of a Subdivision Plat, Land Use Plan, or Development Plan, installation of landscape is required in all adjacent tracts and right-of-way areas. This includes any proposed landscape improvements including irrigation system, plant material, fence, and sidewalk along the secondary frontage (generally that facing an arterial or collector street not providing access to the lot). Installation shall be the responsibility of the developer.
- b. Maintenance shall be the responsibility of a homeowners' association or other special district or association acceptable to the City, and shall be so noted on the Subdivision Plat, Land Use Plan, or Development Plan. Establishment of a landscape easement with individual lot owner responsibility is not acceptable and a creation of a landscape tract to be maintained by an entity acceptable to the Manager may be required.



3. **Common Areas**

Landscaped common areas, such as green space tracts, entrances, medians, and roundabouts in attached or detached single-family or two-family dwelling residential projects shall be installed by the developer. Responsibility for maintenance of all such common areas shall be given to a homeowners' association or other special district or association acceptable to the City, and shall be so noted on the Development Plan, Subdivision Plat, or Land Use Plan.

Policy 7.4.902.E.3.1: All proposed common areas shall follow requirements shown in Appendices C and E.

4. **Dissolved Homeowners' Association or Other Special District**

Where a homeowners' association or other special district or association that is responsible for maintenance of landscaped common areas dissolves or is no longer in existence, the current owner of the landscaped common areas shall be responsible for maintenance.

F. **Preservation Areas**

1. Subdivision Plats or Land Use Plans may designate areas of land or water as preservation areas in which the following activities are prohibited unless specifically permitted by the approved Subdivision Plat or Land Use Plan.

- a. Construction or placing of buildings, roads, signs, billboards or other advertising, utilities, or other structures on or above the ground;
- b. Dumping or placing of soil or other substance or material as landfill, or dumping or placing of trash, waste or unsightly or offensive materials;

- c. Removal or destruction of trees, shrubs, or other vegetation;
- d. Excavation, dredging or removal of loam, gravel, soil, rock, or other mineral substance in such manner to affect the surface;
- e. Activities detrimental to drainage, flood control, erosion control or soil conservation; or
- f. Other acts or uses detrimental to such retention of land or water areas.

2. Some preservation areas may be further designated as “Oasis” plant communities in which indigenous plant communities are retained in their entirety, with canopy trees, understory plants and ground covers left intact and undisturbed as credit toward required landscaping on Development Plans.

G. FBZ Regulating Plans

Alternate landscaping standards may be included as a part of an FBZ regulating plan. In case of a conflict between the provisions of this Part 7.4.9, and the landscaping standards included in an FBZ regulating plan, the standards included in an FBZ regulating plan shall apply.

Policy 7.4.902.G.1: All Plans in FBZ Zone Districts requiring a Landscape or Irrigation Plan shall provide all applicable items currently shown on the most current landscape and irrigation checklists provided on the City of Colorado Springs website.

Policy 7.4.902.G.2: All Plans in FBZ Zone Districts shall use the approved tree and screening shrub species shown in Appendix A.

Policy 7.4.902.G.3: All Plans in FBZ Zone Districts providing street trees within urban areas should utilize the following recommendations:

- a. The minimum dimensions of the planting area around the street tree are 5'x 8' area and utilize a raised curb and planting area perimeter.
- b. Consider the use of a subgrade tree root zone planting system to promote healthy urban trees. This would include “silva-cell” system or at a minimum “CU Structural Soil” in planting beds to assist with the long-term health of the proposed street trees. Some root zone planting systems in the public right-of-way may require a formal maintenance agreement to address long term infrastructure considerations.
- c. Based on overall health of urban trees and long-term maintenance costs, tree grates are not recommended to be used. Tree grates may be considered in urban areas with limited sidewalk width and significant pedestrian volume.

7.4.903 Landscape Policy Manual

A. The Planning Department is authorized to adopt, and as necessary make revisions to, a Landscape Policy Manual containing provisions that implement and supplement the provisions of this Part 7.4.9, Section 7.5.524 (Administrative Adjustment), Section 7.5.803 (Nonconforming Site Features), and Chapter 7 of this Code, and other City regulations and standards as they relate to landscaping, irrigation, buffering, screening, fences, grading, and walls.

B. The Landscape Policy Manual includes information about policies, procedures, standards, and maps relevant to this Part 7.4.9. In particular, the manual provides specific information on permitted and prohibited species; guides to xeriscape, Landscapes, irrigation and

other water-conserving forms of landscaping that are highly adapted to the microclimates of the City; information about preservation of trees including preservation areas, the Oasis landscaping concept, available credit for preservation of existing vegetation; and submission requirements for the landscape plan, irrigation plan, and other materials required to be filed with the City.

C. Specifications, plans, and construction practices regarding the irrigation system and Total Landscape Water Budget Methodology shall comply with the Landscape Policy Manual.

Policy 7.4.903.C.1: All proposed new projects shall follow requirements shown in Appendices D and E.

D. The provisions of the Landscape Policy Manual shall supplement but not supersede the requirements of this UDC. If there is a conflict between the standards in this Part 7.4.9 and the provisions of the Landscape Policy Manual, the provisions of this Part 7.4.9 shall apply. If the Manual addresses a topic related to landscaping, irrigation, buffering, screening, grading, fences, and walls that does not conflict with this UDC, the applicant shall comply with all provisions, policies, and standards in the Landscape Policy Manual to the maximum extent feasible.

7.4.904 General Landscape and Green Space Requirements

A. Required Plans and Documents

1. When Landscape and Irrigation Plans are required as part of the applications described below:

- a. A Preliminary Landscape Plan, with applicable supporting material, shall be approved concurrently with the Development Plan review if a Final Landscape Plan is not submitted.

Policy 7.4.904.A.1.a.1: The Preliminary Landscape Plan shall consist of all the information required on the most current Preliminary Landscape Check List located on the City of Colorado Springs Website.

- b. A Final Landscape Plan, with applicable supporting material, shall be submitted with the Development Plan or at time of Building Permit application and shall be approved before any Building Permit approval, any landscape construction, and issuance of a Certificate of Occupancy. Development within the WUI-O district shall submit the Final Landscape Plan concurrent with the Development Plan review, and the Fire Code Official shall give approval prior to any landscape installation and issuance of a Certificate of Occupancy.

Policy 7.4.904.A.1.b.1: The Final Landscape Plan shall consist of all the information required on the most current Final Landscape Check List located on the City of Colorado Springs Website.

Policy 7.4.904.A.1.b.2: Depending on the overall size and complexity of the Final Landscape Plan, the Manger may require a smaller size scale be used for the plans.

- c. An Irrigation Plan, with applicable supporting material,

Policy 7.4.904.A.1.c.1: The Irrigation Plan shall consist of all the information required on the most current Irrigation Check List located on the City of Colorado Springs Website and all requirements shown in Appendix E.

Policy 7.4.904.A.1.c.2 The Irrigation Plan shall be submitted concurrently with or after approval of a Final Landscape Plan.

- (1) Shall be submitted with the Development Plan or at the time of Building Permit application and shall be approved before any Building Permit approval, irrigation construction, and issuance of a Certificate of Occupancy; or
- (2) Upon request by the applicant, the irrigation plan can be submitted ninety (90) days subsequent to a Building Permit issuance and approved prior to any irrigation construction and issuance of a Certificate of Occupancy. Specifications, plans, and construction practices regarding the irrigation system shall comply with the Landscape Policy Manual.
 - d. For commercial projects less than one (1) acre in size, the Manager may require that the Final Landscape and Irrigation Plan, with applicable support material, be submitted and approved concurrent with the Development Plan review.
 - e. In the case of the conversion of land requiring a Development Plan that does not involve the construction of a structure, a Final Landscape and Irrigation Plan, with applicable support material, shall be submitted and approved concurrent with the Development Plan review.

2. Documents shall clearly and completely describe the design and any techniques and features provided to implement the design and meet the requirements of this Part and the current approved Landscape Policy Manual.

3. A Landscape Architect licensed by the State of Colorado shall prepare all required landscape plans and supporting material.

Policy 7.4.904.A.3.1: The licensed Landscape Architect shall have a current unexpired certification and no active discipline or board actions against them.

4. A Landscape Architect licensed by the State of Colorado, or a Certified Irrigation Designer shall prepare all required irrigation plans and supporting material.

Policy 7.4.904.A.4.1: The Certified Irrigation Designer shall have a current unexpired certification and no active discipline or board actions against them.

B. Site Category Areas Required to be Landscaped

1. The following areas of each lot or contiguous lots in a common development are required to be landscaped in accordance with the requirements of this Part 7.4.9:
 - a. Street frontages and parkways, and double frontage lot streetscapes (see Section Article 7.17.4.905 (Street Frontage and Street Trees));
 - b. Property edge landscape buffers (see Section Article 7.17.4.906 (Property Edge Landscape Buffers));
 - c. Parking lots (see Section Article 7.17.4.907 (Parking Lot Landscaping));

- d. The interior of the development (see Section Article 7.17.4.908 (Additional Interior Landscaping)); and
- e. Screening (see Subsection Article 7.17.4.908D.7 (Location of Landscaping)).

2. The locations and quantities of plants shall comply with the requirements established for the various category areas to be landscape as listed in Subsection B above. The site category minimum number of trees are cumulative. Areas or trees provided to meet each site category requirement may not consist of areas or trees that are proposed to meet the minimum requirements of other site categories.

Policy 7.4.904.B.2.1: All required information for site category areas shall follow the format shown in Appendix F.

Policy 7.4.904.B.2.2: All city-required notes shall be provided on the plans as shown in Appendix F.

C. Any calculation of a landscaping requirement that results in a fractional number shall follow Section 7.6.202 (Fractions).

Policy 7.4.904.C.1: Pursuant to UDC Section 7.6.202, when a calculation of a landscaping requirement results in a fractional number, the requirements shall be considered the next greatest whole number.

D. **Plant Materials**

1. **General**

- a. All trees and vegetation shall comply with the Landscape Policy Manual and all other standards of the Manual. Alternative or new species may be approved by the Manager provided they comply with the intent of this Part and the Landscape Policy Manual.

Policy 7.4.904.D.1.a.1: All-proposed trees and vegetation shall follow all requirements and allowable species as shown in Appendices A and G.

Policy 7.4.904.D.1.a.2: A minimum of seventy percent (70%) of the chosen plants for each project within the City shall be from the Current Selected Plants for Colorado Springs as shown in Appendix A.

Policy 7.4.904.D.1.a.3: All plant characteristics (water usage/exposure/tolerance/mature height and width) should follow the Current Selected Plants for Colorado Springs as shown in Appendix A.

Policy 7.4.904.D.1.a.4: All plants shall meet or exceed standards established by the Colorado Nursery Act and the American Standard of Nursery Stock. All plants shall be typical of their species, healthy, free of disease, insect pests and mechanical injuries, have adequate root systems, and otherwise be consistent with the intent of the Landscape Code and Landscape Policy Manual.

Policy 7.4.904.D.1.a.5: Installation of all plants shall be in accordance with the planting details located on the cities web page with regard to planting hole depth, size and shape, root ball preparation, construction of drip irrigation, appropriate staking and guying, mulching, and watering.

Policy 7.4.904.D.1.a.6: Each plant shall be shown on the landscape plan within the range of mature size indicated in Appendix A.

Policy 7.4.904.D.1.a.7: Plant materials shall be listed on the plan in conformance with Appendix G.

Policy 7.4.904.D.1.a.8: All tree spacing shall conform to the range of average mature spread for each respective species in Appendix A. Design flexibility is allowed for the spacing of trees on private property that results in a twenty percent (20%) reduction in spacing.

Policy 7.4.904.D.1.a.9: In all cases, the natural form of planting (tree/shrub) shall be accommodated when planting near paved areas such as streets, sidewalks, driveways, and parking lots. This will normally require a minimum five-foot (5') setback for deciduous trees and an eight to fifteen (8'-15') setback for evergreen trees, depending on the species and variety selected. For trees located within parkways/tree lawns, the tree should be placed in the middle between the detached walk and curb.

Policy 7.4.904.D.1.a.10: The Manger may allow the use of #1 container size ornamental grasses for plant material requirements if the proposed grass species has limited availability and is classified as a xeric or low water use ornamental grass in the current Selected Plants for Colorado Springs (Appendix A)

Policy 7.4.904.D.1.a.11: The Manger may require that if different construction phasing is planned for the project, all proposed landscaping/groundcover be shown in separate tables with totals (square feet/number of plants) for each different phase.

Policy 7.4.904.D.1.a.12: Tree stakes shall be removed from the site within 12 to 18 months of planting.

Policy 7.4.904.D.1.a.13: Minor revisions to an approved final landscape plan may be requested due to the lack of plant availability. Substitutions may be permitted, and following criteria shall be followed:

- The quantities of the provided plants are not reduced;
- The size of the plant material and location is not altered. (minor plant relocations due to site constraints may be allowed);
- The replacement plant material is equal to the plant being substituted in terms of the current landscape manual requirements; and
- The replacement plant material is hardy and adaptable to site-specific conditions and chosen from Appendix A or otherwise approved by the Manger.

- b. Trees shall be spaced to allow for mature growth of trees, in accordance with the Landscape Policy Manual, without interfering with maintenance or use of overhead power lines, underground utility infrastructure, structures, walks, or drives.

- c. The minimum planting or installation sizes of plant materials shall comply with Table 7.4.9-A.

Table 7.4.9-A Plant Material Requirements	
Plant Type	Minimum Planting or Installation Size
Deciduous shade tree	1.5 inch caliper measured 6 inches above ground
Deciduous ornamental tree	1 inch caliper measured 6 inches above ground; or Multi-stemmed clump form with minimum height of 4 feet
Evergreen tree	6 feet height
Evergreen and deciduous shrubs	#5 container size
Ornamental grasses	#3 or #5 container size
Ground covers and vines	2.25 or 4 inch flat-type container, #1 or #5 container size

- d. To promote species diversity, on sites with twelve (12) or more trees, no more than thirty-five (35) percent of the trees used on a site may be from a single tree species.
- e. At least forty (40) percent of site trees shall be trees that will exceed thirty (30) feet in height at maturity.
- f. Tree species with invasive roots and brittle branches shall be planted at least twenty-five (25) feet from public wastewater, water, and stormwater lines, streets, curbs, and sidewalks. These species include Elder (Sambucus), Willow (Salix) and Cottonwood (Populus).

Policy 7.4.904.D.1.f.1: All current prohibited right-of-way (ROW) trees as defined by City Forestry shall not be planted within the public ROW or private property within the City. With approval, some of these prohibited species may be planted for SS-O Streamside Overlay tree requirements but must follow the current minimum 25' distance requirement listed above and be shown in Appendix A as permitted for SS-O Streamside Overlay properties.

- g. Plants with similar water needs within each site microclimate (i.e., shade, west facing, toe of slope, etc.) shall be zoned or grouped together for efficiency of water application, to prevent water waste, and to provide optimum application of water to the plants.

Policy 7.4.904.D.1.g.1: All proposed trees and vegetation shall follow all requirements and allowable species as shown in Appendices A, D, and E for similar water needs and irrigation requirements.

Policy 7.4.904.D.1.g.2: All proposed trees located within low water use areas shall use only low water use species as listed in Appendix A. In

some cases, trees planted within SS-O Streamside Overlay areas could be exempted but would be approved on case-by-case review.

Policy 7.4.904.D.1.g.3: All proposed trees located within high water use areas shall use only medium to high water use species as listed in Appendix A.

2. High Water Use Turfgrass

- a. High Water Use Turfgrass shall be hydrozoned and irrigated separately because of its unique water demand.
- b. High Water Use Turfgrass cannot be used as an infill material and should be used as a planned amenity or element, as defined in the Landscape Manual, in the designed landscape.

Policy 7.4.904.D.2.b.1: The following areas would be considered an amenity/element which would allow the use of High-Water Use Turfgrass. These areas will be determined and approved by the Manager.

- Designed Active Green Space which shows that the space will be used as amenity and has pre-determined benefit for users and/or the city.
- Play fields and high use play areas designed for the benefit for users/or the city.
- Limited areas adjacent to City ROW and approved on case-by-case review.

- c. High Water Use Turfgrass shall not comprise more than twenty-five (25) percent of the total green space area of the site, and shall not:

Policy 7.4.904.D.2.c.1: – High Water Use Turfgrass shall be calculated as shown in Appendix D.

- (1) Be used on slopes greater than 5:1;
- (2) Be used in medians, parking lot islands, or parking lot planters;

Policy 7.4.904.D.2.b.(2).1: – High Water Use Turfgrass is not permitted within roundabouts located within a public or private ROW.

- (3) Be used in any configuration that cannot be efficiently irrigated;
- (4) Be used in street right-of-way between curb and sidewalk or on other locations on a site that are less than seven (7) feet wide; and
- (5) Be used in areas with a contiguous area less than one hundred (100) square feet.

3. Ground Cover

All landscaped areas shall consist of one hundred (100) percent ground plane coverage in living vegetation, organic mulch, or, to a limited extent, ornamental paving or rock mulch as follows:

- a. At least seventy-five (75) percent of all proposed shrub bed areas shall initially consist of plants and include organic mulch, cobble, or rock.
- b. Ornamental paving (excluding sidewalks) or rock/cobble mulch without vegetation shall not exceed twenty-five (25) percent of any site category area.

- c. Organic mulch shall be installed around each tree in shrub beds with rock or cobble mulch. In shrub beds with slopes greater than 3:1, angular rock or cobble is required.
- d. At least seventy-five (75) percent of each landscape category area shall be covered by vegetation within three (3) years of planting.
- e. Vegetative cover shall consist of ground covers, perennials, shrubs, native ornamental grasses, bulbs, and native grass mixes, or High-Water Use Turfgrasses.
 - Policy 7.4.904.D.3.e.1: All proposed perennials, bulbs, and annual flower areas shall use organic mulch.
- f. The foliage crown of trees shall not be counted in the seventy-five (75) percent calculation of vegetative cover.
- g. Specifications, plans, and construction practices regarding native seed vegetation shall comply with City Engineering, Stormwater and Landscape Policy Manual Standards, and shall comply with requirements of the Fire Code Official if the development is located in the WUI-O district.
 - Policy 7.4.904.D.3.g.1: All proposed native seed vegetation shall follow all requirements and allowable species as shown in Appendix B.
- h. Native seed establishment shall meet uniform coverage and gap (six (6) inch by six (6) inch) criteria with low weed content (eighty (80) percent Native Grasses to twenty (20) percent weeds, or better).
- i. Up to ten (10) percent of the area not required to be covered by living material may be covered by artificial turf if the Manager determines that the inclusions of such material will not compromise the visual appearance of the required landscape area or is necessary because of the difficult of maintaining other types of non-living material due to site conditions.
 - Policy 7.4.904.D.3.i.1: All proposed artificial turf locations shall be located and designed as a program element/amenity for project.
 - Policy 7.4.904.D.3.i.2: All proposed artificial turf shall be rated for commercial use and installed according to the manufacturer's specifications. A detail shall be provided showing proposed type, material, drainage, edge treatment, and construction. Installing artificial turf directly on top of concrete/asphalt is prohibited.
 - Policy 7.4.904.D.3.i.3: Installation of artificial turf within public rights-of-way or adjacent to private road/driveway is prohibited.
 - Policy 7.4.904.D.3.i.4: Artificial turf shall consist of materials that appear natural in appearance and color. The use of indoor/outdoor plastic or nylon carpeting as an installation of artificial turf is prohibited.
 - Policy 7.4.904.D.3.i.5: Artificial turf shall be maintained in a fadeless condition and shall be kept free of dirt, mud, stains, weeds, debris, tears, holes, and impressions. Maintenance shall include, but not be limited to:

cleaning, brushing, debris removal; repairing of depressions and ruts to maintain a visually-level surface; elimination of any odors, flat or matted areas, weeds, and evasive roots; and all edges of the artificial turf shall not be loose and must be maintained with appropriate edging or stakes.

Policy 7.4.904.D.3.i.6: Artificial turf must be replaced if it falls into disrepair with fading, holes, or loose areas. Replacement and repairs shall be done with like materials from the same manufacturer and done so in a manner that results in a repair that blends in with the existing artificial turf.

Policy 7.4.904.D.3.i.7: If Artificial turf is proposed within a dog park area the Manager may require the installation of a sprinkler or wash-down system to minimize pet waste and odor. Design of these systems must be included on a plan's facility sheet to document relationship with stormwater or wastewater systems.

E. Fire Safety and Utility Constraints

1. Fire Department Constraints

Within three (3) feet of the circumference of a fire hydrant, plantings shall be limited to eight (8) inch mature height. Landscaping shall not restrict the use of or obscure the view of any fire hydrant, Fire Department connection, outside horn/strobe, required signage, or other safety features. Access roadways used by the Fire Department shall remain clear and unobstructed to a minimum height of fourteen (14) feet with widths as individually prescribed for the development to protect public health and safety.

2. Utility Constraints

- a. Landscaping shall not interfere with the general function, safety, or accessibility of any gas, electric, water, sewer, telephone, or stormwater facilities, or other drainage or utility easements.
- b. All landscaping adjacent to, above, or beneath utilities shall comply with standards of the respective governing utility and the Landscape Policy Manual.
- c. All improvements, including landscaping, must comply with all applicable requirements of the Colorado Springs Utilities Line Extension and Service Standards, the National Electrical Code, the National Electrical Safety Code, and the "Use of Electric Line Rights-of-Way by Other Parties" prepared by the CSU Electric Utility.
- d. All trees shall be planted at least six (6) feet from fire hydrants, valve boxes, curb stop boxes, underground utility vaults/structures, gas lines, stormwater infrastructure utility poles, street light standards, and above-ground utility structures such as transformer enclosures.
- e. Trees shall be planted at least six (6) feet from underground utilities and comply with all Colorado Springs Utilities regulations regarding wet and dry utilities and tree distances.

Policy 7.4.904.A.E.2.e.1: Trees shall be planted at least fifteen feet (15') from underground water and wastewater utilities and comply with current Colorado Springs Utilities Standards and Regulations.

- f. When a tree is placed under overhead utility lines, its height range at maturity shall not exceed twenty-five (25) feet and the tree species must be selected from the City Forester's "Approved Street Tree List for Colorado Springs."

Policy 7.4.904.A.E.2.f.1: All proposed trees located under high-power transmission lines shall follow current Colorado Springs Utilities Standards and Regulations.

- g. Water service connections for all irrigated areas shall be consistent with all Colorado Springs Utilities regulations.
- h. All irrigation water shall be metered and have appropriate backflow prevention as identified by Colorado Springs Utilities Water Line Extension and Service Standards.
- i. The irrigation water service connection shall be sized appropriately to accommodate irrigation during the hours and days outlined in the Water Shortage Ordinance, Chapter 12, Article 4, Part 13 of the City Code of Colorado Springs.

F. Conservation of Soil and Drainage

1. Soil Conservation

Topsoil shall be stockpiled during construction for use in landscape areas prior to planting. At minimum, enough topsoil must be stripped and stored to provide for at least four (4) inches of spread topsoil in new landscape areas. Stripped topsoil must be stored in an area away from machinery and construction operations and care must be taken to protect the topsoil as a valuable commodity. Topsoil shall be stored in piles or rows no more than four (4) feet deep where possible; to keep soil organisms alive until the topsoil is reinstalled.

Policy 7.4.902.F.1.a: The Final Landscape Plan shall show proposed topsoil storage areas on plans and notes on how the required topsoil shall be stored and reinstalled to keep soil organisms alive.

2. Soil Analysis

- a. In order to develop a planting plan suited to the site, an existing soil analysis report shall be conducted by an established soil analysis laboratory and be submitted with the Final Landscape Plan. The Soil analysis report shall provide at the minimum, the soil texture, percentage of organic matter, pH, total soluble salts and recommended amounts of soil amendments and fertilizers where appropriate. A report shall be provided for each type of proposed new landscape type (sod, shrub beds, and native seed).
- b. In some certain situations the existing Soil Analysis Report and amendment/fertilizer recommendations may be submitted and approved with the Irrigation Plan submittal if the Manager determines the delay will have no adverse impact on the selection or survival of required landscaping. The

applicant shall request the deferral with the Final Landscape Plan and if approved by the Planning Department, all required information shall be submitted with the Irrigation Plan.

- c. A written request for waiver of the soil analysis may be approved by the City where landscape improvements are minimal and the applicant demonstrates sufficient measures will be undertaken to amend the existing soil to provide an acceptable growing medium.

Policy 7.4.902.F.2.c.1: Minimum amount of soil amendments shall be used as listed below for all approved waivers for soil testing and be shown on the landscape plan.:

- All high-water turf areas – 4 CU YDs per 1000 SF
- All shrub bed areas – 3 CU Yds per 1000 SF
- All native seed areas – 2 CU Yds per 1000 SF

3. **Soil Amendments and Preparation**

Soil amendments to improve water drainage, moisture penetration or retention, and nutrient availability shall be provided as determined by the soil analysis. Tilling of the soil to incorporate amendments and counter any compaction or soil consolidation shall be required for all landscape planting areas. Soil preparation shall be consistent with the cultural needs of the plant species proposed for each site category and meeting Colorado Springs Utilities soil amendment requirements for establishing new plant material.

Policy 7.4.902.F.3.1: The soil amendments and fertilizer recommendations are required to be applied to correct deficiencies per the soils report. Soil amendments and fertilizer recommendations shall be shown on the Approved Final Landscape Plan and should follow all requirements in Appendix G.

Policy 7.4.902.F.3.2: The soil amendment mix shall be chosen from one of current Colorado Springs Utilities Approved Soil Amendment Suppliers. The proposed soil amendment mix for the project shall be included in this list and may be found at the link below.

- <https://www.csu.org/Documents/SoilAmendments.pdf>

4. **Drainage**

All drainage within landscaped areas, including the use of swales, shall comply with this UDC, the Landscape Policy Manual, and Engineering Criteria. Where existing native plant communities are to be retained, drainage patterns shall not be altered so as to be detrimental to the viability of the plants.

Policy 7.4.902.F.4.1: The Preliminary and Final Landscape Plan shall provide all the information listed below and shown on the most current Landscape Check Lists located on the City of Colorado Springs Website. The grading information shall provide all information necessary to clearly indicate existing and proposed grading for the site.

- Existing (dashed) and proposed (solid) grading (including contour intervals).
- Proposed slopes and swales with slope percentage amounts provided on the plans.
- Label all retaining walls and include general heights (top and bottom of wall information may be required).
- Providing adequate drainage for survival of plant material.
- The mitigation of slopes that are difficult to vegetate or irrigate or would result in water runoff onto paved surfaces.
- Aesthetically and functionally placed berms that provide general contouring of the ground plan that are aesthetically pleasing and contribute to the intent of the landscape design.
- Any other applicable grading information needed for the review.

Policy 7.4.902.F.4.2: The following standards shall be met for slopes and berms.

- Planting areas shall be sloped to allow installation and long-term health of tree and shrub species. This would include planting the root ball at grade and providing a saucer rim on the downhill side. A short retaining wall/boulders may be needed to provide the planting area on a slope.
- Slopes shall provide for adequate drainage.
- All planting areas shall have a minimum slope of two percent (2%).
- Slopes shall ensure positive drainage away from structures.
- Slopes that cause irrigation runoff onto pave areas are prohibited.
- No slope shall exceed 2:1 without terraces or retaining walls.
- Slopes adjacent to conservation areas shall not significantly alter historic drainage patterns or create additional runoff.
- Slopes to be planted shall have rough or scarified surface to slow runoff and collect moisture for plants.
- Ground plane plantings for slopes with a gradient greater than 4:1 shall consist of ground covers, native grasses and/or shrubs.
- Revegetated slopes greater than 3:1 shall require a mix of plant species with deep, variable rooting systems.
- Berms shall be graded to have naturalistic forms and the slope shall not exceed 3:1.
- Top of the berm shall be at least three feet (3') wide for any berm steeper than 4:1.
- Toe of berm shall have a minimum three-foot (3') landing to mitigate water runoff. Landing gradient shall not exceed 6:1.

Policy 7.4.902.F.4.3: The Landscape Plans shall provide all the information listed on the most current Landscape Check Lists located on the City of Colorado Springs Website for required City Green Infrastructure improvements and should follow all requirements in Appendix H.

G. Maintenance

1. Landscaping, screening, and buffers shall be maintained in compliance with the standards of this Part.
2. The owner is responsible for the maintenance, repair, and replacement of all required landscaping, screening, and curbing unless maintenance is assigned through covenants to another party (e.g., a homeowners' or property owners' association) with the City's approval.
3. All landscaped areas shall be maintained with a neat and orderly appearance, which includes pruning, removal, and replacement of dead or diseased plants and trees, disposal of litter, repair of damaged walls and hard surface areas, and upkeep of irrigation systems.

Policy 7.4.902.G.3.1: All above ground temporary irrigation components (main/lateral lines/valves and wires/sprinkler heads/etc.) shall be removed and disposed of by the site's responsible landscape maintenance party and/or owner at time of conclusion of temporary watering for the site. At no time should visible unused/broken temporary irrigation components be left on the site.

Policy 7.4.902.G.3.2: Apply fertilizer only on an as-need basis and avoid excess application of fertilizer on turf and plants.

Policy 7.4.902.G.3.3: Eliminate plant pests including weeds, harmful insects, and diseases.

4. Landscaped areas that lose required vegetation shall be re-vegetated and re-mulched to avoid erosion.
5. Where landscaping was installed pursuant to a Land Use Plan, Development Plan, or Landscape Plan, the landscaping shall be replaced according to any landscaping and maintenance plan associated with that approval.
6. Trees or plants that die shall be replaced by the owner as expeditiously as possible. All plant material that is in poor health or not living shall be replaced with equivalent vegetation and maintained in good health throughout the life of the project.
7. Street trees shall be maintained and kept alive and healthy. Maintaining, removing, and replacing existing street trees or other trees planted in the public right-of-way shall be the responsibility of adjacent property owners.
8. Fences, walls, and other barriers shall be maintained in good repair. All barriers that are damaged, broken, or with failing paint shall be repaired, replaced, or refinished.
9. For double frontage lots, when a tract is not platted, street rights-of-way or parkways between a property line and curb or street pavement adjoining the property shall be maintained by the adjacent landowner.
10. Stumps of removed trees and shrubs shall be ground out to four (4) inches below existing grade located on the site and rights-of-way.

11. Vegetation shall be maintained so as to inhibit the spread of noxious weeds, and to mitigate hazards, such as the spread of wildfires, slope failures, soil erosion, and increased flooding.

12. Native seed shall be maintained and provide the necessary maintenance practices to aid in the growth of the approved native seed mix and long term goal of naturalization. This includes weed control, overseeding, irrigation (if installed), and correct mowing schedules. The approved native seed mix will determine the height of the native seed grasses and should be allowed to grow and establish new seed heads and repopulate the growing area.

13. Vegetation on residential properties in the WUI-O district shall be maintained in accordance with the City of Colorado Springs Fire Prevention Code and Standards.

14. Vegetation adjacent to public sidewalks or that extend over a public or private street or alley shall be maintained with eight (8) feet of clear space between the existing grade and lowest limb for pedestrian safety.

7.4.905 Street Frontage and Street Trees

A. Purpose

The purpose of this Section Article 7.17.4.905 is to establish landscape planting areas parallel to and including adjacent street rights-of-way. The standards of this Section are intended to require plantings of trees and other vegetation to provide a pleasing continuation of vegetation along the streetscape.

B. Landscaped Setbacks and Trees Required

1. Landscape Setback Requirements

- a. Except as provided in Subsection 0 below, the street frontage of each property subject to this Part 7.4.9 shall provide landscaping as shown in the table below.

Table 7.4.9-B Landscape Setback and Tree Requirements			
Street Type	Front and Corner Street Frontage Landscape Setback Width, Min. (ft.) [1]	Secondary Frontage on Double Frontage Lot Landscape Setback Width, Min. (ft.)	Tree Planting Requirements
Freeway or Expressway	25	25	1 per 20 linear ft.
Principal Arterial	25	15	1 per 20 linear ft.
Minor Arterial Street	20	10	1 per 25 linear ft.
Non-Arterial Street	10	6	1 per 30 linear ft.

Table 7.4.9-B NOTES:

[1] For up to one-half (1/2) of the site frontage, the Manager may approve a reduced landscape setback if the average depth complies with the standards of this table.

Policy 7.4.905.B.1.1: The following setback standards apply to following street classifications:

- Major Arterial streets shall follow the Principal Arterial standards in Table 7.4.9-B.
- Collector, Residential or Industrial streets shall follow the Non-Arterial Street standards in Table 7.4.9-B.

b. The following exceptions apply to the landscape setback requirement:

(1) Commercial driveways and sidewalks to afford limited access may cross the landscape setback.

(2) Parking lots and loading areas shall not be located in the required landscape setback.

Policy 7.4.905.B.1.(2).1: Internal site driveways, drive-thrus, or access roads should not be located within the required landscape setback areas.

(3) Public sidewalks may enter into a required landscaped setback or double frontage lot streetscape area if sufficient landscaping is provided and maintained in the right-of-way to adequately compensate for the resulting loss of landscaping in the setback or streetscape area.

2. Tree Requirements

Trees or alternate vegetation shall be planted in the landscape setback and shall comply with the following standards:

Policy 7.4.905.B.2.1: Upright juniper species may only be used to meet tree requirements when site constraints limit or prevent the planting of a tree. Some examples would be utilities, easements, and available planting space. If permitted by the Manager, the upright juniper shall meet all current evergreen tree requirements in Table 7.4.9-A.

a. **General**

(1) To the greatest extent possible, trees shall be planted on center, in alignment with any similar street frontage or landscaping on adjacent lots, and within fifty (50) feet of the property line adjacent to the street.

Policy 7.4.905.B.2.(1).1: Trees should be placed along the total required length of the setback area next to the roadway and not bunched or massed in just a few areas adjacent to the roadway.

(2) Trees may be located in adjacent right-of-way if:

- (a) Existing development bars placing street trees in the landscaped setback area;
- (b) For a City street, the City Forester's street tree standards are met;

- (c) For a state highway, CDOT and City Forester’s street tree standards are met;
 - (d) There are no conflicts with utility easements, drainage facilities, or other easements; and
 - (e) Street widening is not anticipated.
- (3) A maximum of twenty-five (25) percent of required setback or streetscape trees may be substituted with shrubs or ornamental grasses as follows:
- (a) Ten (10) shrubs with a minimum #5 container size may substitute for each tree; and
 - (b) Two (2) ornamental grass clumps with a minimum #3 container size, may substitute for each shrub.
- (c) In the streetscape, all substituted shrubs located within the right-of-way shall be low-water-use plants or plants adaptable to low-water-use conditions.
- (4) In the rear yard of a double-frontage lot:
- (a) Up to twenty-five (25) percent of the streetscape trees may be placed in the rear yard behind the fence or wall.
 - (b) Any substituted shrubs or ornamental grasses shall be planted in the streetscape.
 - (c) In the streetscape, all shrubs shall be low-water-use plants or plants adaptable to low-water-use conditions.

b. **Street-Oriented Lots**

When individual lots for attached and detached single-family and two-family dwellings are platted with frontage on a public or private street, at least one (1) tree per lot shall be located in tree lawn that is at least seven (7) feet wide, or within the front yard of each lot.

Policy 7.4.905.B.2.4.(c).b.1: Required Street-Oriented Lot trees shall be only applicable to Compact Lot Projects.

3. **Walls and Fences in Street Frontage Areas**

- a. Walls and fences that comply with the standards of Section 7.4.910 (Fences and Walls) may be placed in the landscape setback if they comply with the following standards:

(1) Opaque portions of fences and walls visible from a public or private street shall not exceed a height of three (3) feet above existing grade at the base of the fence or wall, unless otherwise provided in this Subsection (3).

(2) The Manager may allow a retaining wall higher than three (3) feet if required due to special grading conditions, provided that the wall is visually softened by plantings of trees or shrubs and allowance is made for the efficient operation and maintenance of utility infrastructure.

Policy 7.4.905.B.3.(2).1: Upright shrub species shall be used and at least fifty percent (50%) of these plantings shall be evergreen/broadleaf and be shown on the current Selected Plants for Colorado Springs in Appendix A as allowable for this use. The proposed grading at the base of the wall shall be designed to provide an adequate planting area for the required vegetation.

(3) The Manager may require the installation of an opaque sound barrier between three (3) feet and eight (8) feet in height, or an applicant may propose and the Manager may approve the installation of an opaque sound barrier between three (3) feet and eight (8) feet in height, when property is located adjacent to a major street and the Manager determines that the sound barrier is necessary to mitigate adverse impacts of traffic noise on a residential or mixed-use development.

(4) Opaque walls and fences higher than three (3) feet shall be located outside of the required landscaped setback unless the Manager determines that location within a required landscaped setback is necessary in order for the wall or fence to serve its intended purpose.

(5) Walls and fences shall complement the architectural components of the site and be sufficiently low or open to permit views for security and safety.

- b. A seven (7) foot opaque wall or fence that complies with the standards of Section 7.4.910 (Fences and Walls) shall be established in the landscape setback of the rear of a double frontage lot.

C. **Street Trees in Parkways**

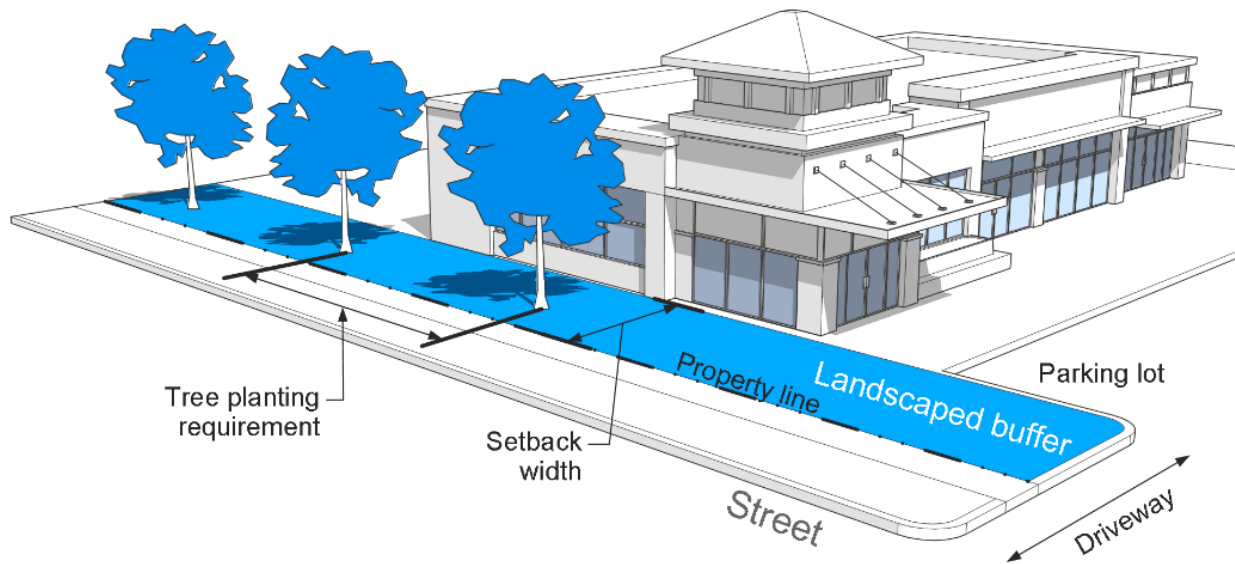
Street trees are required in parkways adjacent to property subject to this Part 7.4.9, subject to the following conditions:

1. A permit shall be obtained from the City Forester prior to planting any tree in the public right-of-way unless that planting is included as part of an approved Development Plan;
2. Street trees shall be selected from “Approved Street Tree List for Colorado Springs” list provided by the City Forester, or as otherwise permitted by the City Forester;
3. The planting area shall be at least seven (7) feet wide. In a section of a planting area that is less than seven (7) feet wide, rock, ground cover plantings, or decorative pavers may be used;
4. Street trees included as part of a Development Plan approved after March 11, 1986, shall be maintained by the owner of the adjacent property;
5. Trees shall be planted and maintained:
 - a. At least five (5) feet from:

Policy 7.4.905.C.5.a.1: For all parkways/tree lawns less than 10 feet (10’) wide, all ROW trees shall be placed in the middle between the detached walk and curb.
 - (1) The face of a curb along arterial roads on the City Major Thoroughfare Plan;
 - (2) An attached sidewalk; and
 - (3) Any driveway.
 - b. Within the center of the planting area, except as necessary to comply with the distance requirement of Subsection a above;
6. No plantings or landscape elements within the Sight Distance Line may exceed thirty (30) inches in height. Deciduous trees may be located within these areas but branches shall be trimmed so that the lowest branch is a minimum of six (6) feet above ground.

Policy 7.4.905.C.6.1: No evergreen trees may be located within the Sight Distance Line.

7. To avoid Site Distance Line obstructions, new trees shall not be planted closer than forty (40) feet from any street corner.



D. Medians

All medians must comply with standards in the Landscape Policy Manual.

Policy 7.4.905.D.1: All trees and shrubs located within medians shall be low-water-use plants or plants adaptable to low-water-use conditions. All species shall be shown on the current Selected Plants for Colorado Springs in Appendix A as allowable for planting in medians.

Policy 7.4.905.D.2: Proposed native seed shall use the approved seed mixes as shown in Appendix B.

Policy 7.4.905.D.3: Installation and maintenance of proposed medians shall follow UDC Subsection 7.4.902.E.3.

Policy 7.4.905.D.4: Permanent in-ground irrigation is required for all medians with vegetation, and all shall follow all requirements as shown in Appendices D and E.

7.4.906 Property Edge Landscape Buffers

A. Purpose

The purpose of this Section Article 7.17.4.906 is to buffer existing development from adjacent new development of different types, scales, or intensities by providing visual barriers between those land uses, providing more privacy, and protecting adjacent existing uses from potential wind, dust, noise, traffic, glare, visual disorder, and harmful or noxious effects of the new development.

B. Property Edge Buffer Standards

New development shall provide property edge buffering along rear and interior side lot lines with adjacent properties in the following situations, regardless of whether the new development is larger or smaller or more or less intensive than the existing adjacent use.

Policy 7.4.906.B.1: A Buffer 2 is required along the common property line between a nonresidential or multi-family use and a property zoned PK (Public Park) or an existing property with city park land use.

Policy 7.4.906.B.2: A Buffer 2 is required along the common property line between a mixed-used zoned property proposing nonresidential or multi-family use(s) and a property with existing attached/detached single-family and two-family dwellings use.

1. Buffers Required

- a. A landscape buffer that complies with the standards of this Section 7.4.906 is required as indicated in Table 7.4.9-C, based on the applicant's proposed use of the subject property and the existing or designated use of the adjacent property and the following types of buffers, measured from the property line.

Policy 7.4.906.B.1.a.1: Mixed-used zoned property shall follow the proposed designated use for the project (residential/ multi-family/ commercial/ industrial) to determine the required buffer.

(1) Buffer 1

Landscape strip meeting the standards for trees, shrubs, and vegetative cover in the Landscape Policy Manual and at least ten (10) feet in width incorporating a fence or wall meeting the standards of Section Article 7.17.4.910 (Fences and Walls) and up to seven (7) feet in height provided there are no conflicts with public utilities.

Policy 7.4.906.B.1.(1).1: All required buffer fence/walls shall be a minimum of six (6) feet in height.

(2) Buffer 2

Landscape strip meeting the standards for trees, shrubs, and vegetative cover in the Landscape Policy Manual at least fifteen (15) feet in width and incorporating a wall or fence meeting the standards of Section Article 7.17.4.910 (Fences and Walls) and seven (7) feet in height provided there are no conflicts with public utilities.

Policy 7.4.906.B.1.(2).1: All required buffer fence/walls shall be a minimum of six (6) feet in height.

**Table 7.4.9-C
Landscape Buffer Screening Requirements**

Adjacent Use	Applicant's Use				
	Attached and Detached Single-Family and Two-Family Dwelling	Multi-Family Dwelling	Mixed-Use	Commercial	Industrial
Attached and Detached Single-Family and Two-Family Dwelling	N/A	2	1	2	2
Multi-Family Dwelling	2	N/A	1	2	2
Mixed-Use	1	1	N/A	1	2
Commercial	2	2	1	N/A	2
Industrial	2	2	2	2	N/A

2. Tree Requirements

Trees or alternate vegetation shall be planted in the landscape buffer and shall comply with the following standards:

- a. One (1) tree shall be planted for every twenty (20) linear feet of buffer length or fraction thereof;

Policy 7.4.906.B.2.a.1: Trees should be placed along the total required length of the buffer area next to property line (in or near the buffer) and not bunched or massed in a few areas adjacent to the property line.

- b. At least fifty (50) percent of the plantings shall be evergreen; and
- c. A maximum of fifty (50) percent of required buffer trees may be substituted with shrubs or ornamental grasses as follows:

Policy 7.4.906.B.2.c.1: All tree and shrub species shall be shown on the current Selected Plants for Colorado Springs (Appendix A) as allowable for meeting buffer vegetation requirements.

Policy 7.4.906.B.2.c.2: Upright juniper species may only be used to meet tree requirements when site constraints limit or prevent the planting of a tree. Some examples would be utilities, easements, and available planting space. If permitted by the Manager, the upright juniper shall meet all current evergreen tree requirements in Table 7.4.9-A.

- (1) Ten (10) shrubs with a minimum #5 container size may substitute for each tree; and
- (2) Two (2) ornamental grass clumps with a minimum #3 container size may substitute for each shrub.

3. Additional Requirements

- a. This Section 7.4.906 shall not require the demolition, alteration, or removal of any existing structures or utility infrastructure. However, if a structure occupying a required property edge buffer is demolished or removed, the buffer standards of this Section 7.4.906 shall be applied to the space so vacated.
- b. All buffers and screening required by this Section 7.4.906 shall be located on the lot where the development occurs.
- c. If adjacent development includes a buffer and required plantings that meet the standards of this Section 7.4.906, the applicant is only required to provide the additional buffer and/or required plantings (if any) necessary to meet the required screening standards in this Section 7.4.906. If the existing landscaping on adjacent property meets the standards in this Section as applied to the proposed use of the applicant's property, no additional buffer needs to be installed by the applicant.

Policy 7.4.906.B.3.c.1: All existing vegetation being used to meet buffer requirements need to meet UDC Section 7.4.911 (Conservation of On-Site Trees and Shrubs).

Policy 7.4.906.B.3.c.2: All existing fencing shall meet UDC Section 7.4.910 (Fences and Walls) and be a minimum of six (6) feet in height and be in good condition.

Policy 7.4.906.B.3.c.3: All existing vegetation and fencing shall be clearly shown and labeled (including type/ size/ condition/ ownership/maintenance responsibility) on the landscape plan.

- d. A Buffer 2 is required along the common property line between an adjacent nonresidential use and a vacant residentially zoned property.
- e. In the WUI-O district, buffering on residential properties shall comply with the requirements of the City of Colorado Springs Fire Prevention Code and Standards.

7.4.907 Parking Lot Landscaping

A. Purpose

The purpose of this Section Article 7.17.4.907 is to provide landscaping areas internal to surface parking lots that provide shade, visual screening of parked cars, avoid large expanses of uninterrupted pavement, and screen adjacent properties and rights-of-way and walkways from potential headlight glare, pollution, and noise from the parking lot.

B. Minimum Required Plantings

Policy 7.4.907.B.1: All required parking lot shade trees must be shown as an allowable tree species in the current Selected Plants for Colorado Springs (Appendix A). These medium to large deciduous species have a horizontal growth habit which provides shade and minimize heat island effect.

1. Interior Lot Plantings

Shade trees shall be provided in every parking lot with fifteen (15) or more surface vehicular parking spaces at a ratio of one shade tree for every fifteen (15) parking spaces or fraction thereof, and shall comply with the following standards:

- a. Required trees shall be planted in a dispersed configuration to spread shade throughout the parking lot. On each side of each parking aisle, no more than fifteen (15) adjacent parking spaces shall be located without at least one (1) of the required trees.
- b. Required trees shall be planted so that no more than fifteen (15) adjacent parking spaces (on one side of a parking aisle) are located without at least one of the required shade trees.
- c. A planter used for tree planting shall meet the following standards:

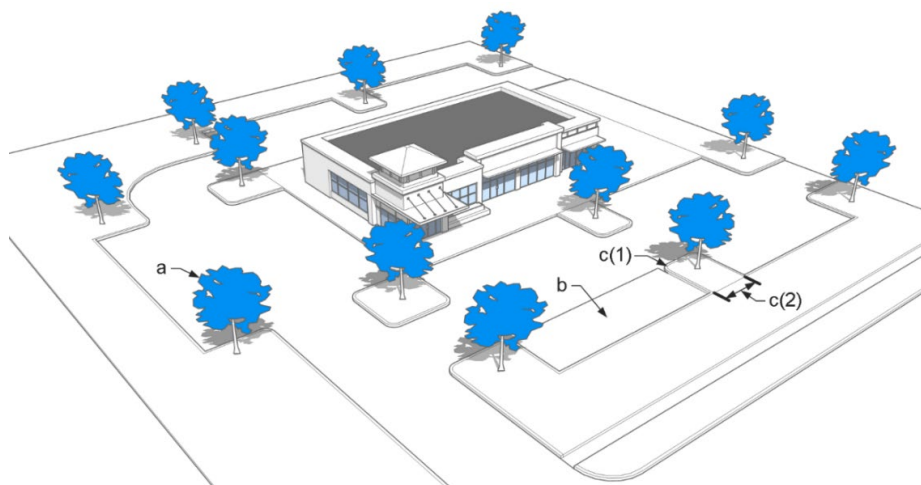
(1) Each tree planting space shall be at least three hundred (300) square feet in size and shall provide at least one hundred and fifty (150) square feet of planter space (or the equivalent soil rooting volume) for each planted tree.

(2) Each planter shall be at least ten (10) feet in width from curb to curb.

Policy 7.4.907.B.1.(2).1: On a case-by-case review, the Manger may allow a reduction in planter width if a subgrade tree root zone planting system is incorporated into the parking island design. Examples would include "Silva-Cell" system or "CU Structural Soil". These would need to be installed per manufacturer's recommendations and detailed on the approved plans.

(3) If soil in the parking lot has been compacted by grading operations, the soil within the planter shall be tilled, or removed to a depth of thirty (30) inches and replaced with an acceptable growing medium for the species being installed.

- d. When these standards are applied to the Heavy Vehicle and Equipment Sales and Rental use or the Automobile and Light Vehicle Sales and Rental use, each two hundred and fifty (250) square feet (or fraction thereof) of vehicle or equipment display or storage area shall be counted as the equivalent of one parking space.

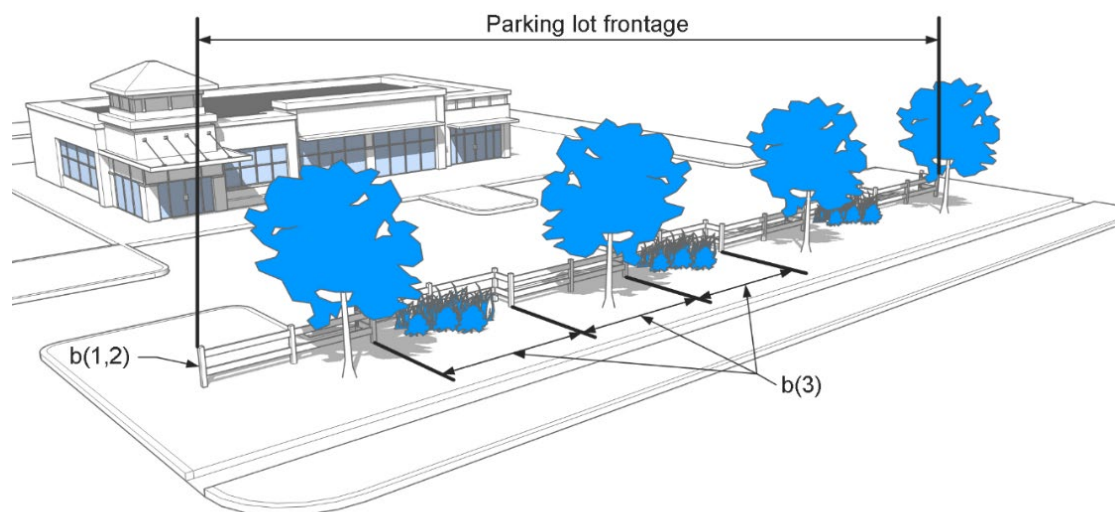


2. Perimeter Screening Plantings

The following additional standards shall apply to screen the view of parked vehicles when viewed from public rights-of-way or adjacent properties unless the Manager determines that landscaping installed pursuant to Sections Article 7.17.4.905 (Street Frontage and Street Trees) or Article 7.17.4.906 (Property Edge Landscape Buffers), provides equal or better screening of parked vehicles when viewed from those locations.

- a. At least two-thirds ($2/3$) of the frontage of any applicable parking lot (exclusive of the width of any vehicular access points) when viewed from a public right-of-way or adjacent property shall be screened from view with screening that complies with the Subsection b below.
- b. The screening shall consist of a fence or wall between three (3) feet and four (4) feet in height, measured from the surface of the parking spaces that are to be screened, and that comply with the following standards.
 - (1) The fence or wall meets the standards of Section 7.4.910 (Fences and Walls);
 - (2) The fence or wall attractively complements the vegetation and berms;
 - (3) The structures include architectural articulation or visual variety when viewed from adjacent lots or rights-of-way through changes in materials, wall or fence height, or the horizontal alignment of the wall or fence, or through the planting of vines, shrubs, or trees, and those instances of articulation or variety occur at least once for each twenty (20) linear feet of wall or fence length; and
 - (4) As an alternative to Subsections (1) through (3) above, at the applicant's option, the screening may consist of vegetation or combination of plantings and berms with an eventual height of three (3) feet or more, with vegetation being needed or broad-leaved evergreen plants.

Policy 7.4.907.B.2.(4).1: All shrub and tree species shall be shown on the current Selected Plants for Colorado Springs in Appendix A as allowable for meeting perimeter screening plant requirements.



C. Corner Visibility

No required planting shall interfere with visibility in the Sight Distance Line.

Policy 7.4.907.C.1: All proposed plantings located within corner visibility areas shall follow UDC Subsection 7.4.905.C and deciduous trees may be located within these areas, but branches shall be trimmed so that the lowest branch is a minimum of eight (8) feet above ground. Evergreen trees are not allowed within a sight distance line.

7.4.908 Additional Interior Landscaping

A. Purpose

The purpose of the interior landscaping requirements is to ensure that each new multi-family residential development and nonresidential development achieves at least a minimum amount of total landscaped area, to separate building areas from parking lots, through landscaping that is adapted to the site, reflects the varying microclimates and respective building facade orientations, and visually ties the buildings and motor vehicle parking, storage, and display areas to the site and to the larger regional context.

B. Amount of Landscaping and Green Space

Interior landscaping shall include green space that meets the following standard to enhance residential and non-residential development, in addition to other required landscaping and buffering:

1. General

- a. In addition to the landscaping and buffering required by Sections Article 7.17.4.905 (Street Frontage and Street Trees), Article 7.17.4.906 (Property Edge Landscape Buffers), and Article 7.17.4.907 (Parking Lot Landscaping), residential and nonresidential development shall install the following amounts of landscaping on the interior of the site.

(1) All multi-family projects shall provide a minimum of fifteen (15) percent total green space. Of the fifteen (15) percent, ten (10) percent shall be active green space and five (5) percent shall be non-activated green space. If multiple residential structures are located on one lot, the requirement shall apply to the lot as a whole, and not to any defined space occupied by a single residential building.

Policy 7.4.908.B.1.(1).1: Active and Non-Active green space areas shall be defined as shown in UDC Section 7.6.301 (Definitions).

Policy 7.4.908.B.1.(1).2: Active and Non-Active green space areas shall be shown and labeled on the landscaping plan and clearly showing that the required percentages are being met. Additional information (including details) may be required and shown on the plans to confirm this requirement is being met.

(2) All nonresidential development projects shall provide a minimum non-activated green space area equal to five (5) percent of the gross site area.

- b. On heavy industrial projects where internal landscaping may be inappropriate due to the necessary configuration and use of the site, the Manager may allow

some or all of the required additional interior landscaping to be relocated to the main property entrances or office areas or outside of the wall or fence on the perimeter of the property.

- c. Paved plazas may account for up to fifty (50) percent of the required landscaping area if they contain trees that provide visual relief to building elevations that form major public views of the project. Sidewalks that provide basic pedestrian circulation only shall not be credited towards the minimum internal landscaping area requirement.

2. **Compact Development Lots**

The following additional standards shall apply to Compact Lots:

- a. Each development shall provide a minimum green space area equal to ten (10) percent of the gross site area. Of the total area, fifty (50) percent shall be contiguous active green space.
- b. The Manager may consider up to a twenty-five (25) percent relief to the minimum green space requirement when the development is within six hundred and sixty (660) feet of a park that is accessible by a trail.

C. **Type of Landscaping**

1. One (1) tree shall be planted for every five hundred (500) square feet of required minimum internal green space area.

2. All required trees in nonresidential projects and fifty (50) percent of the required trees in multi-family projects may be substituted by shrubs as follows:

- a. Ten (10) shrubs, with a minimum #5 container size may be substituted for one (1) tree.
- b. Two (2) ornamental grass clumps, with a minimum #3 container size, may be substituted for one (1) shrub.

Policy 7.4.908.C.2.b.1: Upright juniper species may only be used to meet tree requirements when site constraints limit or prevent the planting of a tree. Some examples would be utilities, easements, and available planting space. If permitted by the Manager, the upright juniper shall meet all current evergreen tree requirements in Table 7.4.9-A.

3. In the WUI-O district, landscaping on residential properties shall comply with the requirements of the City of Colorado Springs Fire Prevention Code and Standards.

D. **Location of Landscaping**

Landscaping installed in accordance with this Subsection Article 7.17.4.908D shall be placed in the following locations:

- 1. Adjacent to building elevations facing adjacent public rights-of-way and private streets;
- 2. Within a plaza or courtyard between buildings or portions of buildings;

Policy 7.4.908.D.2.1: Soil preparation and amendments shall be provided for all planting areas located within a plaza/courtyard area. A detail shall be provided showing the proposed installation in these areas.

3. In a space provided to separate building areas from parking areas;

4. As a buffer at the edge of a private stormwater water quality and/or detention facility on the same lot;
5. In an “oasis” area of the site with intensive plantings near building entrances, pedestrian gathering places, or parking lots;
6. In a similar location of the site that substantially conforms to the stated purposes of the required internal landscape area and approved by the Manager; or
7. In the WUI-O district, landscaping on residential properties shall be placed in accordance with the requirements of the City of Colorado Springs Fire Prevention Code and Standards.

7.4.909 Screening

A. Purpose

The purpose of this Section Article 7.17.4.909 is to ensure that development establishes vegetative screening or walls and fences to shield loading, storage, and service areas from view from adjoining properties, public rights-of-way, and private streets.

B. Applicability and Exceptions

The standards in this Section Article 7.17.4.909 apply to all development except the following:

1. Attached and detached single-family and two-family dwellings in a single structure located on a single lot; or
2. Along property lines between adjacent properties in the LI or GI zone districts.

C. Required Screening

1. Areas to be Screened

Screening that meets the standards of this Subsection Article 7.17.4.909C is required in the following areas to screen them view from adjacent properties and public or private streets or walkways:

- a. Around any refuse or recycling collection areas, including trash bins;
- b. Around any loading or utility service area, drive-throughs, vehicle repair bay, or vehicle fueling area;
- c. Around any stormwater water quality and/or detention facility in a residential zone district or a residential component of a mixed-use development or PDZ district; and
- d. Within ten (10) feet of any ground floor façade of a parking garage that is not occupied by a non-parking ground floor use and is visible from an adjacent property or public or private street

Policy 7.4.909.C.1.d.1: Dog parks may be required to include screening or buffering with screen walls or landscape plantings to provide positive relationships and screening with surrounding land uses.

Policy 7.4.909.C.1.d.2: Proposed AC units located within landscape areas shall be screened with either landscaping plantings or a screening wall.

2. Screening Standards

The required screening shall meet the following standards:

- a. All refuse collection areas adjacent to streets and properties shall have an opaque screen fence or wall and vegetative screen plants at least seven (7) feet in height.
- b. All loading or utility service area, drive-throughs, vehicle repair bay, or vehicle fueling areas shall be screened with a vegetative screen.
- c. If a vegetative screen is installed, plants shall be a fastigiated form of plant species and shall comply with all applicable standards in the Landscape Policy Manual.

Policy 7.4.909.C.2.c.1: All shrub and tree species shall be shown on the current Selected Plants for Colorado Springs in Appendix A as allowable for meeting screening plant requirements and at least fifty (50) percent of the plantings shall be evergreen.

- d. A fence or wall shall comply with the standards of Section Article 7.17.4.910 (Fences and Walls).
- e. Required foundation plantings along facades of parking garages shall comply with Section Article 7.17.4.906 (Property Edge Landscape Buffers).

7.4.910 Fences and Walls

A. Purpose

The purpose of this Section Article 7.17.4.910 is to provide aesthetic and location standards for fences and walls to improve the beauty of the City and ensure that fences and walls are not located where they could be safety hazards.

Policy 7.4.910.A.1: For all proposed retaining walls located adjacent to street frontage ROWs outside landscape setbacks and adjacent properties that are higher than 6 feet tall, the Manager may require that upright shrub species and/or trees to be planted along the base of the wall to help screen the wall. At least fifty percent (50%) of these plantings shall be evergreen/broadleaf and be shown on the current Selected Plants for Colorado Springs (Appendix A) as allowable for this use. The proposed grading at the base of the wall shall be designed to provide an adequate planting area for the required vegetation.

Policy 7.4.910.A.2: For all proposed retaining walls located adjacent to street frontage ROWs and adjacent properties that are higher than 8 feet tall, the Manager may require that additional wall articulation be provided to help soften the wall elevation. This could include use of variety of block colors, textures, and sizes.

Policy 7.4.910.A.3: All proposed retaining walls shall be shown and labeled with general heights on the plans. A detail(s) shall also be provided on the plans showing proposed materials and construction. The Manager may require top and bottom wall elevations to be included for walls on the landscape plans.

Policy 7.4.910.A.4: All proposed fencing/screening walls shall be shown and labeled on the plans. A detail(s) shall also be provided on the plans showing proposed materials and construction. Elevations/sections may also be required based on the proposed size and height of the wall.

Policy 7.4.910.A.5: All proposed site retaining walls that are not subject to review by Pikes Peak Regional Building Department (i.e., located more than 5 feet from an accessible entrance to a building) and that have a fall of 30" (thirty inches) or greater adjacent to a high use pedestrian area (sidewalk/parking lot/etc.) shall provide fall protection (guardrail/fencing/etc.) on top of the proposed wall(s).

These should be shown and labeled on the landscape plan and a detail provided.

B. Location and Maximum Height

Except in the HS-O district or otherwise stated in this Section Article 7.17.4.910, fences or walls less than seven (7) feet in height may be placed anywhere on a property, provided the fence complies with the following additional standards:

1. Fences shall not block access to electric or gas meters, fire hydrants, Fire Department connections, and other fire protection appurtenances.
2. Fences located between the front façade of a primary structure and any lot frontage adjacent to a public or private street may not exceed four (4) feet in height.
3. Opaque fences on corner lots shall not extend beyond the established front yard setback.
4. Fences over thirty (30) inches in height are prohibited in any Sight Distance Line.
5. Fences and walls may only be located within preservation areas in accordance with the terms of an approved Development Plan.
6. Fences taller than the maximum heights permitted in this Subsection Article 7.17.4.910B are considered to be accessory structures and shall meet the setback and height requirements for accessory structures in Part 7.4.2 (Dimensional Standards).
7. Fences may be located adjacent to or on top of retaining walls provided that the height of the fence material, excluding the retaining wall, does not exceed the maximum permitted height of a permitted fence in that location.

C. Measurement of Fence Height

Fence height shall be measured in accord with Subsection 7.6.204B (Fence Height).

D. Fence and Wall Materials

1. Fences and walls may include masonry walls, solid wood fencing, chain-link fencing with permahedge inserts, or chain-link fencing with opaque slats. The specific type of screening materials shall be determined in conjunction with the review of a Development Plan where one is required. Examples of acceptable fencing types are shown below.
2. Exterior use of tarps, plastic sheeting, polypropylene, or other similar materials as flexible or inflexible screening or fencing is prohibited when visible from beyond the property boundaries, except for City-installed or maintained snow fence or as part of active construction or remodeling project or as illustrated as part of a City-approved construction or grading and erosion control plan.
3. The use of barbed wire, razor wire, or electric shock fencing shall be prohibited except as shown below:

a. **Commercial or Industrial Uses**

Barbed wire or razor wire is permitted at a height six (6) feet or higher above existing grade.

b. **Agricultural Uses**

- (1) Electric shock fencing consisting of direct current shall be permitted in association with an agricultural use involving the control or containment of animals only.
- (2) Barbed wire shall be allowed except in connection with a residential use of the property.

c. **Residential Uses**

- (1) Barbed wire and electric shock fencing may not be located along public rights-of-way, public sidewalks, or public open spaces. Where barbed wire or electric shock fencing are permitted, they may not extend into the required front yard setback.
- (2) Razor wire is prohibited.

7.4.911 Conservation of On-Site Trees and Shrubs

A. **Purpose**

The purpose of this Section 7.4.911 is to provide credit for the conservation of existing natural, healthy vegetation on development sites, which helps to preserve natural ecosystems.

B. **Credit**

1. An applicant required to install landscaping pursuant to this Part 7.4.9 shall receive credit for preserving existing significant trees and vegetation against all tree planting requirements that would otherwise apply in this Part.
2. Trees and existing vegetation that the applicant proposes to retain shall be indicated on the landscape plan.
3. Existing trees and vegetation shall not be invasive and not be dead or dying. They shall be credited towards required landscaping as follows:

Policy 7.4.911.3.1: No invasive or problematic species may be considered per City Forestry current prohibited tree list. With approval, some of these prohibited species may be planted/approved for Streamside tree requirements but must follow the current minimum 25' distance requirement listed above and be shown in Appendix A as permitted for streamside areas.

Policy 7.4.911.3.2: Pursuant to UDC Section 7.2.603 (Streamside Overlay), all trees being used to meet Streamside Inner and Outer requirements shall be a minimum of two (2) to four (4) inches in caliper DBH (Diameter at Breast Height) to be qualified as one existing tree.

a. **Deciduous Trees**

A credit of one (1) tree per every one-and-one-half (1 ½) inch in caliper DBH (Diameter at Breast Height) of an existing qualified deciduous or ornamental tree.

Policy 7.4.911.3.a.1: Credit will only be applied for one existing deciduous tree meeting one required deciduous tree and meeting the minimum diameter size.

b. **Evergreen Trees**

A credit of one tree per every six (6) feet in height of an existing qualified evergreen tree.

Policy 7.4.911.3.b.1: Credit will only be applied for one existing evergreen tree meeting one required evergreen tree and meeting the minimum height size.

c. **Shrubs**

A credit of one shrub for each existing qualified shrub.

C. **Tree Retention Standards**

Specifications, plans, and construction practices regarding the retention of significant vegetation on development sites shall comply with the standards in the Landscape Policy Manual.

Policy 7.4.911.3.C.1: All existing vegetation shall be clearly shown and labeled (including size and species) on the landscape plan. Provide protection methods (details/notes) to be used. Additional information (elevations/notes/etc.) also may be required.

7.4.912 Landscape Installation, Verification, and Deferral

A. **Landscape and Irrigation Installation and Verification Requirement**

1. Except as provided in Subsection B below, all landscaping, irrigation systems, and other site work shown on the approved Landscape Plan and Irrigation Plan shall be properly installed and stabilized against soil erosion or financially assured as follows:

- a. In the case of a double frontage lot streetscape requirement or common area, installation and stabilization shall occur, or assurance shall be provided, before a Building Permit is issued;
- b. In the case of a conversion of vacant land to a nonresidential use that does not involve the construction of a structure, assurance shall be provided before a final Development Plan is approved; or
- c. For all other development, installation and stabilization shall occur, or assurance shall be provided, before a Certificate of Occupancy is issued;

Policy 7.4.912.A.1.c.1: Before the release of a Certificate of Occupancy for any development which all the required landscaping and irrigation has been installed, the owner or developer shall provide current signed and executed landscape and irrigation affidavits and soil receipts showing installed soil amendments. All landscape policy items listed in UDC Subsection 7.4.912.B.3.a would also apply.

2. In the WUI-O district, each lot containing a residential use shall complete a fire inspection before a Certificate of Occupancy may be issued.

B. Deferral of Landscape or Irrigation Installation

When all or some portion of the required landscaping, irrigation system, or other site work cannot be installed due to seasonal conditions that would jeopardize the health of plant materials or prohibit the installation of the irrigation system or plant materials, or due to the unavailability of plant material or construction activities, the owner or developer may make the following arrangements in order to secure a Certificate of Occupancy:

1. An acceptable assurance shall be posted with the Manager. Acceptable assurances shall include cash; cahiers, certified, company, or personal checks; certificates of deposit; irrevocable letters of credit, and/or subdivision bonds. The assurance shall be accompanied by a description of the uncompleted landscaping, irrigation system (including dedicated irrigation meter if required), and/or any required private site improvement(s) identified by the Manager, plus labor charge. A cost estimate or contractor's executed bid of the cost required to complete the work shall be provided. The assurance shall be an amount equal to the cost estimate.

Policy 7.4.912.B.1.a: Where native seed is proposed, it shall be financially assured, and the assurance shall not be released until the native seeding is meeting all city establishment requirements (this can take up to 3 years).

2. The owner or developer shall agree in writing that the owner or developer and any successors or assign, shall complete the required landscaping, irrigation system, and/or site work within one (1) year or less from the date of issuance of the Certificate of Occupancy.

3. The owner or developer agree that the assurance will not be released until all of the required landscaping, irrigation system, and/or site work has been installed and verified by City staff to comply with this Part 7.4.9. The following standards must be met:

- a. The owner or developer shall provide current signed and executed landscape and irrigation affidavits and soil receipts showing installed soil amendments.

Policy 7.4.912.B.3.a.1: Required site inspection(s) and executed landscape and irrigation affidavits shall be completed and dated during the years active growing season that the Financial Assurances or Certificate of Occupancy is requested to be released. The active growing season shall be determined per UDC Subsection 7.4.912.B.3.b.

Policy 7.4.912.B.3.a.2: Only the most current landscape and irrigation affidavits located on the City of Colorado Springs website will be accepted.

Section 7.4.912.B.3.a.3: Affidavits/inspections dated outside the current active growing season will not be accepted.

Policy 7.4.912.B.3.a.4: The Colorado Licensed Landscape Architect and/or Certified Irrigation Designer of record for the project shall complete the site inspection and certify that the project was installed and in compliance with the approved Final Landscape and Irrigation Plan on file in City Planning.

Policy 7.4.912.B.3.a.5: If the Colorado Licensed Landscape Architect and/or Certified Irrigation Designer of record states that the site is not in compliance with the approved Final Landscape and Irrigation Plan, the

missing items/work/etc. shall be remediated and corrected before submitting the certified landscape and irrigation affidavits to the city. Manager's verification and site inspection will not take place until complete and certified affidavits are submitted and approved.

Policy 7.4.912.B.3.a.6: With approval by Manager, if the original Colorado Licensed Landscape Architect and/or Certified Irrigation Designer of record is no longer available (retired/deceased/etc.), a current Colorado licensed Landscape Architect and/or Certified Irrigation Designer may be allowed to complete the required site inspection(s) and certify that the project was installed and in compliance with the approved Final Landscape and Irrigation Plan on file in City Planning.

- b. The City staff's verification shall occur during the active growing season. The Manager shall determine the dates when inspections will stop for the year and start the following spring.

7.4.913 Alternatives and Adjustments

A. The Manager may approve alternative types or designs of landscaping, buffering, and screening requirements, unless specifically prohibited for that type of property, building, or use in this UDC, if the Manager determines that the alternative provide at least equivalent quality, visual appeal, screening, effectiveness, durability, hardiness, and performance to the specific requirements of this Part 0 the proposed alternatives and/or adjustments are consistent with requirements and guidance and requirements listed in the Landscape Policy Manual.

Policy 7.4.913.A.1: Alternative proposed landscape adjustments shall follow the listed general standards below.

- Alternative landscape adjustment shall apply only to the specific site for which it is requested and shall not establish a precedent for approval of other requests.
- The request for landscape adjustments shall be submitted at time of Development Plan submittal and follow all requirements in Appendix F.
- City planning recognizes that the specific landscape requirements in the UDC and Landscape Policy Manual cannot and do not anticipate all possible landscape situations.
- Alternative landscape adjustment is a procedure that enables a development to occur where the intent of Code is met through an alternative landscape design. It is not a waiver of regulations, rather it permits a site-specific plan that results in a better design, while meeting the intent of the Landscape Code.

Policy 7.4.913.A.2: The Manger shall decide whether to approve, approve with conditions, or deny a request for alternative landscape adjustments pursuant to all the criteria listed below. If approved or approved with conditions, the approved alternative landscape adjustments shall be noted on the approved landscape plan.

- The alternative landscape adjustment proposal meets the objectives of the current UDC and Landscape Manual equal to or better than compliance with the regulations contained in the UDC and Landscape Manual.
- The request includes sufficient explanation and justification by both written and graphic means.
- The design shall provide alternative landscape design which includes compensation. Some examples of compensation but not limited to would be additional plantings (trees/shrubs), screen wall(s) and overall site enhancements not currently required by current Code for the site.
- The granting of the alternative landscape design will not result in an adverse impact on the surrounding properties.
- If the Manager finds that the application has not met the above criteria, the applicant may request that the request be forwarded to the City Planning Commission as an application for a Non-Use Variance. This request must be processed during the Development Plan submittal.

B. On residential lots in the WUI-O district, all alternatives and adjustments to landscaping shall be approved by the Fire Code Official.

7.4.914 Landscape Manual Appendices and Addendums

- A. Selected Plants for Colorado Springs
- B. Selected Native Seed Mixes for Colorado Springs
- C. Single and two-family Residential Water Use Typical(s)
- D. Hydro Diagram Format
- E. Irrigation Plan Requirements and Formats
- F. Site Category Calculation Format, Alternative Landscape Adjustment, and Site Note Requirements.
- G. Plant Schedule and Soil Amendment/Fertilizer Recommendations Format
- H. City Green Infrastructure Requirements
- I. Native and Water Wise Grass Installation and Maintenance Manual Addendum

Selected Plants for Colorado Springs

The Selected Plants for Colorado Springs revisions are in response to the current updated zoning and subdivision ordinance for the City and the current Landscape Manual which has not been comprehensively updated since the late 1990s. The purpose for selected plants for Colorado Springs is to improve the quality of landscapes within the City and create a framework for successful landscapes which are uniquely tailored to Colorado Springs. Plant selection should demonstrate the following characteristics, water-efficient, horticulturally sustainable, and balanced diversity.

Based on the City's geographic location approximately 5,500 to 7,500 feet above sea level with varied topographic features and a rich ecological diversity, appropriate plant selections are needed when selecting plant species for a given site and purpose. Selecting plant species for a site should follow all listed requirements in the current UDC and Landscape Code and Policy Manual. Plant material listed in the approved Selected Plant List include allowable species for specific site requirements and other important information which should be used when creating the landscape plan.

The following legend items listed below apply for the following plant list:

Botanical Name/Common Name – Plants are categorized as Deciduous Trees, Ornamental Trees, Evergreen Trees, Deciduous Shrubs, Evergreen Shrubs and Ornamental Grasses. A plant genus that offers many species and cultivars is noted as spp. and cvs.

Water Use Requirement – The water needed for species once established. Actual plant water needs will vary for several reasons, including weather conditions, soil type, sun exposure, root depth, wind and elevation. Water adjustments may be needed based on your site.

Sun Exposure – Indicates the range of a plant's shade tolerance, Full Sun, Part Sun and Shade. Plants should not be located contradictory to the plant's exposure type. Example, using a full sun species in full shade.

USDA Hardiness Zone – Ratings are only a general guide to winter hardiness. Zones are numbered and divided according to average annual minimum temperatures. In Colorado Springs, zones range from 3 to 6. These ranges are based on the current USDA Plant Hardiness Zone Map.

Mature Height and Width – Mature height and width reflect the range of expected size at maturity in Colorado Springs and the provided sizes should be used when designing the plant material on the plans.

Meets Current Code Requirements – If indicated on the plant list, these plants meet the following requirements:

- **SCREEN** – Indicates if this tree or shrub is approved to be used to meet screening requirements.
- **WALL/TRASH** – Indicates if this tree or shrub is approved to be used to meet screening requirements for trash enclosures and retaining walls.
- **PARK** – Indicates if this tree may be used to meet parking lot tree requirements.
- **ROW** – Indicates if this tree is approved by City Forestry for planting in public street rights-of-way.
- **STREAM** – Indicates if this tree is allowed to be planted within City Streamside areas.
- **RESTRICTED** – Indicates that this tree or shrub can only be planted in certain areas within the city.

Comments – Additional information about the plant.

Selected Plants for Colorado Springs

DECIDUOUS TREES

Botanical/Common Name	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Acer freemanii Maple, Autumn (cvs)	Med	Full	5	50'-60'/30'-40' mod to fast	PARK/ROW	Chlorotic in alkaline soils, 40' spacing, not allowed in low water use areas
Acer x grandidentatum Maple, Bigtooth	Low-Med	Full	4	30'-40'/30'-40' moderate	PARK/ROW/STREAM/ MEDIAN	Single stem only in ROW, 30 foot spacing
Acer platanoides Maple, Norway (cvs)	Med	Full	4	30'-45'/25'-30' moderate	PARK/ROW	Leaf scorch, aphids, 30' spacing, prefers acidic soil, not allowed in low water use areas
Acer negundo Boxelder, Sensation	Low-Med	Full	2	30'-50'/20'-30' fast	RESTRICTED – STREAM ONLY	Suckers, self-sows, only allowed in Streamside areas
Acer rubrum Maple, Red	Med-High	Full	3	30'-40'/30'-40' moderate	PARK/ROW	Chlorotic in alkaline soils, 30' spacing, not allowed in low water use areas
Acer saccharum Maple, Sugar (cvs)	Med	Full - Part	4	40'-60'/30'-40' slow	PARK/ROW	Chlorotic in alkaline Soils, do not use plant in compacted soil/ low water area areas
Aesculus glabra Buckeye, Ohio	Med	Part	4	30'-50'/15'-20' slow	ROW	Fruit and seed litter, seeds poisonous, 30' spacing, not allowed in low water use areas
Betula occidentalis Birch, Rocky Mountain	Med-High	Full	4	20'-30'/15'-20' moderate	RESTRICTED - STREAM ONLY	Bronze birch borer, high water use, locate in inter buffer area
Catalpa Speciosa Catalpa, Western	Low-Med	Full - Part	4	40'-60'/20'-40' slow	ROW/MEDIAN/ STREAM	Fruit and seed liter, 40 foot spacing
Celtis occidentalis Hackberry, Common	Low-Med	Full-Part	3	30'-40'/30'-40' slow to mod	PARK/ROW/MEDIAN/ STREAM	Seed litter, 40 foot spacing

Legend

Water Use:

Xeric -	Water twice per month or less, once established.
Low -	Water about once per week, once established.
Medium-	Water about twice per week, once established.
High -	Water three days per week, or more.

Code Requirements:

SCREEN –	Indicates if this tree or shrub is approved to be used to meet screening requirements.
WALL/TRASH –	Indicates if this tree or shrub is approved to be used to meet screening requirements for trash enclosures and/or retaining walls.
PARK –	Indicates if this tree may be used to meet parking lot tree requirements.
ROW/MEDIAN –	Indicates if this tree or shrub is approved by City Forestry/Planning for planting in public street rights-of-way.
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Selected Plants for Colorado Springs

<i>DECIDUOUS TREES</i> <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Corylus colurna Filbert, Turkish	Low - Med	Full - Part	4	30'-40'/20'-30' slow	PARK/ROW/MEDIANS	Drought tolerant
Ginkgo biloba Ginkgo/Maidenhair	Med	Full	3	30'-50'/15'-30' slow	ROW	Male only, slow growing,
Gleditsia triacanthos Honeylocust (cvs)	Low-Med	Full	4	30'-50'/30'-50' slow to mod	PARK/ROW/MEDIAN	Overplanted, thornless/seedless varieties only, 40 foot spacing
Gymnocladus dioica 'Espresso' Coffeetree, Kentucky	Low-Med	Full	5	40'-50'/30'-40' slow	PARK/ROW/MEDIAN/ STREAM	Seedless variety only, leaves out late
Kocloreuteria paniculate Tree, Golden Rain	Low	Full	5	20'-30'/20'-30' moderate	ROW/MEDIAN/STREAM	Seed liter, re-seeds prolifically
Malus spp. (seedless only) Crabapple (cvs)	Low	Full	Varies	Varies moderate	ROW/MEDIAN/ STREAM	Non-fruiting varieties only, use disease resistant types only
Morus alba (seedless only) Mulberry	Med	Shade-Full	5	35'-40'/35'-40'	ROW	Male version only, can be planted in full shade locations, not allowed in low water use areas
Phellodendron amurense Corktree, Amur	Low-Med	Full	4	25'-30'/15'-20' slow	ROW/MEDIAN/STREAM	Male version only
Platanus x acerifolia 'Bloodgood' Planetree, London	Med-High	Full	5	50'-80'/50'-80'	ROW	Anthraco-nose, needs a protected site, not allowed in low water use areas
Populus acuminata Cottonwood, Lanceleaf	Low-Med	Full	3	40'-50'/30'-40' mod-fast	RESTRICTED – STREAM/ LARGE OPEN AREA	Use only in large native areas

Legend

Water Use:

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Code Requirements:

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Selected Plants for Colorado Springs

<i>DECIDUOUS TREES</i> <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Populus angustifolia Cottonwood, Narrowleaf	Low-Med	Full	3	40'-80'/50'-60' mod-fast	RESTRICTED – STREAM/ LARGE OPEN AREA	Vigorous suckering, use only in large native areas
Populus sargentii Cottonwood, Plains	Med-High	Full	2	40'-80'/20'-80' fast	RESTRICTED – STREAM/ LARGE OPEN AREA	Use only in large native areas
Quercus bicolor Oak, Swamp White	Low-Med	Full	4	25'-30'/25'-30'	PARK/ROW/MEDIAN/ STREAM	Chlorotic in alkaline soils
Quercus buckleyi Oak, Texas Red	Low	Full	5	30'-45'/30'-40' moderate	PARK/ROW/MEDIAN/ STREAM	Not predictably hardy
Quercus palustris Oak, Pin	Med	Full	5	50'-60'/40'-50' slow	PARK/ROW	Chlorotic in alkaline soils, not allowed in low use water use areas
Quercus macrocarpa Oak, Bur	Low-Med	Full	4	50'-60'/35'-50' slow	PARK/ROW/MEDIAN/ STREAM	Acorns
Quercus muehlenbergii Oak, Chinkapin	Low-Med	Full	4	50'-60'-/50'-60' slow	PARK/ROW/MEDIAN/ STREAM	Tolerate alkaline soils
Quercus robur Oak, English	Low-Med	Full	5	50'-80'/50'-80' slow	ROW/MEDIAN/STREAM	Acorns
Quercus rubra Oak, Red	Med	Full	5	50'-80'/40'-60' slow	ROW	Chlorotic in alkaline soils, not allowed in low water use areas
Quercus spp. 'Fastigiata' Oak, Columnar	Low-Med	Full	5	50'-60'/15'-20' slow	PARK/ROW/MEDIAN	Narrow, upright form
Quercus shumard Oak, Shumard	Low-Med	Full	5	40'-60'/40'-60' moderate	PARK/ROW/MEDIAN/ STREAM	Acorns

Legend

Water Use:

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Medium-	Water about twice per week, once established.
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SCREEN –	Indicates if this tree or shrub is approved to be used to meet screening requirements.
WALL/TRASH –	Indicates if this tree or shrub is approved to be used to meet screening requirements for trash enclosures and/or retaining walls.
PARK –	Indicates if this tree may be used to meet parking lot tree requirements.
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WALL/TRASH –	Indicates if this tree or shrub is approved to be used to meet screening requirements for trash enclosures and/or retaining walls.
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Selected Plants for Colorado Springs

<i>DECIDUOUS TREES</i> <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
<i>Salix amygdaloides</i> Willow, Peachleaf	Med-High	Full	5	30'-40'/25'-35' fast	RESTRICTED – STREAM ONLY	Aphids and cankers
<i>Sorbus aucuparia</i> Ash, Mountain	Med	Full	3	15'-30'/15'-20'	ROW	Fireblight, not allowed in low use water areas
<i>Styphnolobium japonicum</i> Pagoda tree, Japanese	Med	Full	4	50'-60'/40'-50' moderate	PARK/ROW/ STREAM	Needs protected site, not allowed in low water use areas
<i>Syringa reticulata</i> 'Ivory Silk' Tree Lilac, Japanese	Med	Full	4	20'-30'/15'-25' moderate	ROW/STREAM	Needs protected site, not allowed in low water use areas
<i>Tilia americana</i> Linden, American (cvs)	Med	Full-Part	3	50'-70'/25'-30' slow-mod	ROW	Not tolerant of road salts, not allowed in low water use areas
<i>Tilia cordata</i> Linden, Littleleaf	Med	Full	4	30'-50'/15'-20' moderate	ROW	Not tolerant of road salts, not allowed in low water use areas
<i>Tilia tomentosa</i> Linden, Silverleaf	Med	Full	4	50'-70'/25'-30' moderate	ROW	Not tolerant of road salts, not allowed in low water use areas
<i>Ulmus spp.</i> Elm, Hybrid (cvs)	Low-Med	Full	4	50'-60'/40'-50' moderate	ROW/MEDIAN	Use disease resistant varieties only
<i>Zelkova serrata</i> Zelkova, Japanese	Med	Full	3	50'-75'/30'-40' mod-fast	PARK	Tolerant of a variety of soil conditions, not allowed in low water use areas

Legend

Water Use:

Xeric -	Water twice per month or less, once established.
Low -	Water about once per week, once established.
Medium-High -	Water about twice per week, once established.
High -	Water three days per week, or more.

Code Requirements:

SCREEN –	Indicates if this tree or shrub is approved to be used to meet screening requirements.
WALL/TRASH –	Indicates if this tree or shrub is approved to be used to meet screening requirements for trash enclosures and/or retaining walls.
PARK –	Indicates if this tree may be used to meet parking lot tree requirements.
ROW/MEDIAN –	Indicates if this tree or shrub is approved by City Forestry/Planning for planting in public street rights-of-way.
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Selected Plants for Colorado Springs

ORNAMENTAL TREES

Botanical/Common Name	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Acer ginnala Maple, Ginnala/Amur (cvs)	Low-Med	Full-Part	2	15'-25'/15'-20' slow	ROW/MEDIANS	Chlorotic in Alkaline Soils, wide spreading growth habit
Acer tataricum Maple, Tataricum	Low-Med	Full-Part	4	15'-20'/15'-20' Slow-mod	ROW/MEDIANS	Wide spreading growth habit
Amelanchier canadensis Serviceberry, Shadblow	Low-Med	Ful-Part	3	12'-25'/15'-20' slow	STREAM	Best used as a multi-stem, suckering habit, very hardy
Cercis canadensis Redbud, Eastern	High	Full-Part	5	20'-30'/20'-30' slow-mod	ROW	Single stem only, needs protected site, very salt sensitive, not allowed in low water use areas
Crataegus spp. (thornless only) Hawthorn (cvs)	Low-Med	Full	4	20'-30'/20'-30' slow	ROW/MEDAINS	Wide spreading growth habit
Prunus cerasifera Plum, Newport	Med	Full-Part	4	15'-30'/15'-25' fast	ROW/MEDAINS	Typically fruitless, short lived, borers, not allowed in low water use areas
Prunus maackii Chokecherry, Amur	Low-Med	Full	2	20'-30'/15'-20' moderate	ROW/MEDAINS	Sensitive to overwatering
Prunus nigra Plum, 'Princess Kay'	Med	Full	2	20'-30'/10'-20' moderate	ROW	Typically fruitless, prone to suckering, not allowed in low water use areas
Prunus x virginiana Chokecherry, Common	Low-Med	Full	2	20'-25'/10'-15' mod to fast	ROW	Single trunk only, other varieties prone to suckering
Pyrus calleryana (fruitless only) Pear, Callery (cvs)	Med	Full	5	30'-40'/20'-30' moderate	ROW	None-fruiting varieties only, fireblight, not allowed in low water use areas

Legend

Water Use:

Xeric -	Water twice per month or less, once established.
Low -	Water about once per week, once established.
Medium-	Water about twice per week, once established.
High -	Water three days per week, or more.

Code Requirements:

SCREEN –	Indicates if this tree or shrub is approved to be used to meet screening requirements.
WALL/TRASH –	Indicates if this tree or shrub is approved to be used to meet screening requirements for trash enclosures and/or retaining walls.
PARK –	Indicates if this tree may be used to meet parking lot tree requirements.
ROW/MEDIAN –	Indicates if this tree or shrub is approved by City Forestry/Planning for planting in public street rights-of-way.
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Selected Plants for Colorado Springs

ORNAMENTAL TREES <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Pyrus ussuriensis (fruitless only) Pear, Ussuriensis (cvs)	Low-Med	Full	4	25'-35'/25'-35' moderate	ROW/MEDAINS	None-fruiting varieties only, fireblight

EVERGREEN TREES

<i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Abies concolor Fir, White	Med	Full-Part-Shade	4	50'-70'/15'-25' slow	SCREEN/WALL/TRASH	Needs moisture and well drained soils, chlorosis, not allowed in low water use areas
Juniperus monosperma Juniper, One-Seed	Low	Full	4	10'-25'/10'-25' Slow	SCREEN/WALL/TRASH	Needs a dry site, extremely drought tolerant
Juniperus scopulorum Juniper, Rocky Mountain	Low	Full	4	15'-25'/8'-15' slow	SCREEN/WALL/TRASH	Extremely drought tolerant, low maintenance
Juniperus virginiana Juniper, Eastern Redcedar	Low-Med	Full	3	Varies slow	SCREEN/WALL/TRASH	Not tolerant a windy site
Picea glauca 'Densata' Spruce, Black Hills	Med	Full	2	30'-40'/10'-15' slow	SCREEN/WALL/TRASH	Pyramidal growth habit, low maintenance, not allowed in low water use areas
Picea pungens Spruce, Colorado	Med	Full-Part	2	50'-60'/20-30' slow	SCREEN/WALL/TRASH	Provide adequate space for planting, nuisance pests, not allowed in low water use areas
Picea pungens 'Baby blue eyes' Spruce, Baby Blue Eyes	Med	Full-Part	2	15'-30'/10'-15' slow	SCREEN/WALL/TRASH	Possible IPS issues, not allowed in low water use areas

Legend

Water Use:

Xeric -	Water twice per month or less, once established.
Low -	Water about once per week, once established.
Medium-High -	Water about twice per week, once established.
High -	Water three days per week, or more.

Code Requirements:

SCREEN –	Indicates if this tree or shrub is approved to be used to meet screening requirements.
WALL/TRASH –	Indicates if this tree or shrub is approved to be used to meet screening requirements for trash enclosures and/or retaining walls.
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ROW/MEDIAN –	Indicates if this tree or shrub is approved by City Forestry/Planning for planting in public street rights-of-way.
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Selected Plants for Colorado Springs

<i>EVERGREEN TREES</i> <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Pinus aristata Pine, Bristlecone	Low-Med	Full	4	20'-40'/10'-20' slow	SCREEN/WALL/ TRASH	Slow growing, do not plant in high water use lawn
Pinus edulis Pine, Pinyon	Low	Full	4	10'-25'/10'-25' slow	SCREEN/WALL/ TRASH	Drought-tolerant, do not plant in high water use lawn
Pinus flexilis Pine, Vanderwolf's Pyramid	Low-Med	Full-Part	2	20'-40'/10'-25' moderate	SCREEN/WALL/ TRASH	Moderate grow habit and unique appearance
Pinus heldreichii Pine, Bosnian	Low-Med	Full-Part	5	20'-25'/10'-15' slow	SCREEN/WALL/ TRASH	Not as dense as other evergreens.
Pinus nigra Pine, Austrian	Med	Full	4	40'-60'/20'-35' moderate	SCREEN/WALL/ TRASH	Provide adequate space for planting, needle litter, not allowed in low water use areas
Pinus ponderosa Pine, Ponderosa	Low	Full	3	50'-60'/20'-30' moderate	ROW/MEDAINS/WALL/ SCREEN/TRASH	Only evergreen tree allowed in ROW, needle litter, Provide adequate space for planting
Pinus stobiformis Pine, Southwestern White	Low-Med	Full	5	40'-50'/20'-30' moderate	SCREEN/WALL/ TRASH	May be hard to find in the trade
Pinus sylvestris Pine, Scotch	Med	Full	2	40'-50'/25'-35' moderate	SCREEN/WALL/ TRASH	Mountain Pine Beetle, fast growth rate, not allowed in low water use areas

Legend

Water Use:

Xeric -	Water twice per month or less, once established.
Low -	Water about once per week, once established.
Medium-High -	Water about twice per week, once established.
High -	Water three days per week, or more.

Code Requirements:

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Selected Plants for Colorado Springs

DECIDUOUS SHRUBS

Botanical/Common Name	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Accer ginnala Maple, Ginnala (cvs)	Low-Med	Full-Part-Shade	2	15'-20'/15'-20' slow	STREAM	Hardy, fall color, poor in heavy clay soils
Acer glabrum Maple, Rocky Mountain	Med	Full	2	Varies slow	STREAM	Native near streams, needs well drained soil and moisture
Amelanchier alnifolia Serviceberry, Western	Low	Full-Part	4	8'-12'/8'-12' moderate	WALL	Large multi-stemmed native shrub, edible fruit persists into winter
Amelanchier canadensis Serviceberry, Shadblow	Med	Full-Part	3	15'-20'/8'-15' slow	STREAM	Large multi-stemmed, upright growth habit, hardy
Amorpha canescens Leadplant	Xeric	Full	3	2'-3'/3'-4' moderate	-	Excellent small xeric shrub, native to Colorado
Amorpha fruticose Desert Indigo Bush	Xeric	Full	3	4'-10'/8'-10' slow	STREAM/WALL	Hardy, low water use, difficult to remove after establishment
Aronia arbutifolia Chokeberry, Brilliant Red	Med	Full to Shade	4	6'/4-6' slow-mod	SCREEN/WALL	Multi-stemmed and upright growth habit, sucker in wetter areas, fruit
Aronia melanocarpa Chokeberry, Black	Low	Full to Shade	4	6'/6' slow-mod	SCREEN/WALL	Multi-stemmed and upright growth habit, sucker in wetter areas, fruit
Atriplex canescens Saltbush, Four-wing	Xeric	Full	4	3'-4'/3'-4' slow-mod	-	Very drought-tolerant
Berberis thunbergii Barberry, Japanese (cvs)	Med	Full	4	4'-5'/4'-5' moderate	SCREEN/WALL	Leaves out early spring, spiny thorns, deer resistant
Caragana arborescens Peashrub, Siberian	Xeric	Full-Part	2	6'-10'/6'-8' moderate	WALL/SCREEN/TRASH	Upright oval shape shrub, hardy, thorns, drought-tolerant, can re-seed

Legend

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Selected Plants for Colorado Springs

<i>DECIDUOUS SHRUBS</i> <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Caragana microphylla 'Tidy' Tity Littleleaf, Peashrub	Low	Full	4	8'-10'/5'-7' moderate	-	Drought-tolerant
Caryopteris x clandonensis Spirea, Blue Mist (cvs)	Low-Med	Full	4	3'-4'/3'-4' moderate	-	Cut back winter kill in spring, attract bees, many cultivars
Chamaebatiari millefolium Fernbush	Xeric	Full	4	4'-6'/4'-6' slow	SCREEN	Drought-tolerant, pleasant aroma, semi-evergreen
Cotinus coggygia 'Royal Purple' Purple Smoke bush	Low	Full	5	6'-8'/6'-8' moderate	-	Upright rounded growth habit, winter dieback, needs protected site
Cotoneaster acutifolius Cotoneaster, Peking	Low	Full-Part	4	6'-8'/6'-8' moderate	WALL/SCREEN/ TRASH	Low-maintenance dense medium-size shrub
Cotoneaster apiculatus Cotoneaster, Cranberry	Low	Full-Part	5	3'/3'-6' moderate	-	Low-maintenance small dense sized shrub, nice foliage and fruit
Ericameria nauseosus Rabbitbrush, Tall	Xeric	Full	2	3'-6'/4'-6' slow	SCREEN/WALL	Medium size mounding form, low-maintenance, drought-tolerant
Ericameria nauseosus 'Baby blue' Rabbitbrush, Baby Blue/Dwarf	Xeric	Full-Part	4	1'-3'/2'-3' slow	-	Small mounding form, low-maintenance, drought-tolerant
Fallugia paradoxa Apache Plume	Xeric	Full	4	4'-6'/4'-6' moderate	SCREEN/WALL	Drought-tolerant native shrub, long bloom period, four season interest
Forestiera pubescens Privet, New Mexican	Xeric	Full-Part	4	8'-12'/8'-12' slow	SCREEN/SCREEN/ TRASH	Upright growth habit, early bloom
Holodiscus dumosus Spirea, Rock	Xeric	Full	4	4'-6'/4'-6' moderate	SCREEN/WALL	Drought-tolerant native shrub, prolific flowers

Legend

Water Use:

Xeric -	Water twice per month or less, once established.
Low -	Water about once per week, once established.
Medium-	Water about twice per week, once established.
High -	Water three days per week, or more.

Code Requirements:

SCREEN –	Indicates if this tree or shrub is approved to be used to meet screening requirements.
WALL/TRASH –	Indicates if this tree or shrub is approved to be used to meet screening requirements for trash enclosures and/or retaining walls.
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Selected Plants for Colorado Springs

<i>DECIDUOUS SHRUBS</i> <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Lonicera korolkowii 'Floribunda' Blue Velvet, Honeysuckle	Low-Med	Full	4	8'-12'/8'-10' moderate	WALL	Drought-tolerant, confirm the location based on size of plant
Physocarpus opulifolius Ninebark (cvs)	Low-Med	Sun-Part	3	varies moderate	SCREEN	Confirm cultivar is sized for the space
Prunus besseyi 'P011S' Sand Cherry, Pawnee Buttes	Xeric	Sun-Part	3	15"-18"/4'-5' slow	-	Native low-growing ground cover shrub, nice fall color
Prunus tomentosa Cherry, Nanking	Low	Full	3	6'-10'/10'-15' mod-fast	WALL/TRASH	Large drought-tolerant shrub, confirm location and size
Quercus gambelii Oak, Scrub (Gambel)	Xeric	Full	4	8'-20'/10'-15' slow	STREAM	Difficult to transplant, poor availability, do not over water
Rhamnus frangula 'Columnaris' Buckthorn, Tallhedge Columnar	Low-Med	Full	3	8'-10'/3'-4'	WALL/TRASH/ SCREEN	Upright columnar shrub, thornless
Rhamnus frangula 'Ron Williams' Buckthorn, Fine Line	Med	Full	3	6'-10'/3' moderate	WALL/TRASH/ SCREEN	Upright columnar shrub, thornless
Rhus trilobata Sumac, Threeleaf	Xeric	Full	3	5'-6'/5'-6' moderate	SCREEN/WALL	drought-tolerant shrub, perform well in hot dry sunny areas
Rhus trilobata 'Autumn Amber' Sumac, Autumn Amber	Xeric	Full	3	6"-12"/6'-8' moderate	-	drought-tolerant shrub, perform well in hot dry sunny areas
Rhus trilobata 'Gro-Low' Sumac, Grow Low	Xeric	Full	3	2'-3'/6'-8' moderate	-	drought-tolerant shrub, perform well in hot dry sunny areas

Legend

Water Use:

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Selected Plants for Colorado Springs

<i>DECIDUOUS SHRUBS</i> <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
<i>Ribes alpinum</i> Currant, Alpine	Low	Full to Shade	2	3'-6'/3'-6' moderate	-	Medium drought-tolerant shrub, perform well in shade sites
<i>Ribes alpinum</i> "Green Mound" Currant, Green Mound Alpine	Low	Full-Part	3	2'-4'/2'-4' moderate	-	Small globe-shape drought-tolerant shrub
<i>Rosa foetida</i> 'Bicolor' Rose, Austrian Copper	Low	Full	3	6'-8'/5'-7' moderate	WALL	Upright arching growth habit, stunning flower color
<i>Rosa</i> 'Nearly Wild' Rose, Nearly Wild	Mod	Full	3	2'-3'/2'-3' moderate	-	Small shrub rose, long bloom time, aphid issues
<i>Spirea japonica</i> Spirea (cvs)	Mod	Full-Part	4	2'-3'/3'-4' moderate	-	Small mounding shrub, many cultivars,
<i>Symphoricarpos albus</i> Snowberry, Common	Low	Full to Shade	3	3'-5'/3'-5' moderate	SCREEN	Medium drought-tolerant shrub, good in shady areas
<i>Symphoricarpos x chenaultii</i> "Hancock" Coralberry, Hancock	Low	Full-Part	4	2'-3'/5'-10' moderate	-	Low-growing spreading shrub, good for erosion control
<i>Syringa meyeri</i> 'Palibin' Lilac, Dwarf Korean	Low	Full	3	4'-6'/4'-6' moderate	SCREEN/WALL	Medium drought-tolerant shrub, dense, broadly rounded shape
<i>Syringa pubescens</i> 'Miss Kim' Lilac, Miss Kim Dwarf	Low	Full	3	4'-6'/4'-6' moderate	SCREEN/WALL	Medium drought-tolerant shrub, dense, broadly rounded shape
<i>Viburnum x juddii</i> Viburnum, Judd	Low	Full to Shade	5	4'-6'/4'-6' moderate	SCREEN/WALL	Medium drought-tolerant shrub, dense, gray-green leaves

Legend

Water Use:

Xeric -	Water twice per month or less, once established.
Low -	Water about once per week, once established.
Medium-	Water about twice per week, once established.
High -	Water three days per week, or more.

Code Requirements:

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Selected Plants for Colorado Springs

EVERGREEN SHRUBS

Botanical/Common Name	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
Arctostaphylos uva-ursi Kinnikinnick	Low	Full to Shade	2	4"-6"/2'-6' slow	-	Low growing ground cover shrub, good under Ponderosa Pines
Arctostaphylos x coloradoensis 'Chieftan' Manzanita, Chieftan	Low-Med	Full-Part	5	18"-36"/5'-8' Slow	-	Low growing ground cover shrub
Arctostaphylos x coloradoensis 'Panchito' Manzanita, Panchito	Low	Full-Part	4	10"-18"/24"-36" slow	-	Low growing drought tolerant ground cover shrub
Artemisia tridentata Sagebrush, Western	Xeric	Full	4	4'-6'/3'-6' slow	SCREEN	Median size drought tolerant shrub
Cercocarpus intricatus Mahogany, Littleleaf Mountain	Xeric	Full	3	3'-5'/2'-3' slow	SCREEN	Median size drought tolerant shrub
Cercocarpus montanus Mahogany, Mountain	Xeric	Full	2	6'-10'/4'-6' slow	WALL/TRASH	Provide adequate space for planting, drought tolerant shrub
Ephedra equisetina Fir, Bluestem Joint	Xeric	Full-Part	4	4'-6'/3'-8' slow	SCREEN/WALL/TRASH	Drought-tolerant, exceptional plant for winter interest
Juniperus chinensis 'Armstrong' Juniper, Armstrong	Low	Full	4	4'-5'/4'-5' moderate	SCREEN/WALL	Median size drought tolerant shrub, hardy
Juniperus chinensis 'Spartan' Juniper, Spartan	Low	Full	4	10'-15'/4'-5' fast	SCREEN/WALL/TRASH	Upright columnar shrub, up to 7,000 feet elevation
Juniperus horizontalis 'Blue Chip' Juniper, Blue Chip Creeping	Low	Full	3	10"-12"/6'-8' moderate	-	Low growing drought tolerant ground cover shrub

Legend

Water Use:

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Selected Plants for Colorado Springs

<i>EVERGREEN SHRUBS</i> <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
<i>Juniperus sabina</i> 'Arcadia' Juniper, Arcadia	Low	Full	3	18"-24"/4'-6' moderate	-	Low spreading groundcover shrub
<i>Juniperus sabina</i> 'Buffalo' Juniper, Buffalo	Low	Full	2	12"-18"/6'-8' moderate	-	Low growing drought tolerant ground cover shrub
<i>Juniperus x media</i> "Pfiterana Compact" Juniper, Compact Pfizer	Low	Full	4	4'-5'/4'-5' moderate	SCREEN/WALL	Median size drought tolerant shrub, hardy, Salt tolerance
<i>Juniperus sabina</i> 'Tamariscifolia' Juniper, Tammy	Low	Full	5	3'-4'/6'-8' moderate	SCREEN	Median size drought tolerant shrub
<i>Juniperus scopulorum</i> 'Cologreen' Juniper, Cologreen	Low	Full	3	15'-20'/5'-8' moderate	SCREEN/WALL/ TRASH	Upright columnar shrub, up to 7,500 feet elevation
<i>Juniperus scopulorum</i> 'Moonglow' Juniper, Moonglow	Low	Full	3	15'-20'/5'-8' moderate	SCREEN/WALL/ TRASH	Upright columnar shrub, up to 8,500 feet elevation
<i>Juniperus scopulorum</i> 'Woodward' Juniper, Woodward	Low	Full	3	15'-20'/4'-5' moderate	SCREEN/WALL/ TRASH	Upright columnar shrub, up to 8,500 feet elevation
<i>Juniperus virginiana</i> 'Blue Arrow' Juniper, Blue Arrow	Low	Full	4	8'-12'/2'-3' moderate	SCREEN/WALL/ TRASH	Upright columnar shrub, up to 7,000 feet elevation

Legend

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Selected Plants for Colorado Springs

<i>EVERGREEN SHRUBS</i> <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
<i>Juniperus virginiana</i> 'Skyrocket' Juniper, Skyrocket	Low	Full	4	15'-20'/4'-5' moderate	SCREEN/WALL/ TRASH	Upright columnar shrub, up to 7,000 feet elevation
<i>Picea abies</i> 'Nidiformis' Spruce, Birds Nest	Mod	Full	3	3'-5'/3'-5' slow	-	Median size drought tolerant shrub
<i>Pinus mugo</i> 'Maps' Pine, Mops Dwarf Mugo	Low	Full	2	2'-3'/2'-3' slow	-	Small size drought tolerant shrub
<i>Pinus sylvestris</i> 'Hillside Creeper' Pine, Hillside Creeper	Low	Full	3	2'-4'/6'-8' slow	-	drought tolerant shrub
<i>Yucca glauca</i> Soapweed	Xeric	Full	4	1'-3'/1'-3' moderate	-	Plant it away from walkways/ pedestrians due to its sharp spines

ORNAMENTAL GRASSES

<i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
<i>Andropogon gerardii</i> Bluestem, Big	Xeric	Full	3	3'-6'/2'-3' moderate	SCREEN/WALL	Confirm location, can grow up to 6' tall
<i>Bouteloua curtipendula</i> Grama, Sideoats	Xeric	Full	4	18"-24"/18"-24" moderate	-	Warm season grass, tolerant of clay and alkaline soils
<i>Bouteloua gracilis</i> 'Blonde Ambition' Blue Grama, Blonde Ambition	Xeric	Full	4	2'-3'/2'-3' moderate	-	Warm season grass
<i>Calamagrostis brachytricha</i> Grass, Korean Feather Reed	Med	Full-Shade	4	2'-3'/1'-2' moderate	-	Does not tolerate drought well, needs regular moisture to grow

Legend

Water Use:

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Selected Plants for Colorado Springs

<i>ORNAMENTAL GRASSES</i> <i>Botanical/Common Name</i>	Water Use	Sun Exposure	USDA Hardiness Zone	Mature Height/Width/Growth	Code Requirements	Comments
<i>Calamagrostis x acutiflora</i> 'Karl Foerster' Grass, Feather Reed	Med	Full-Part	4	3'-4'/1'-2' moderate	SCREEN	Over planted, needs regular moisture to thrive
<i>Helictotrichon sempevirens</i> Grass, Blue Oat	Low	Full-Part	4	2'-4'/2'-4' moderate	SCREEN	Reliable ornamental grass, highly adaptable
<i>Miscanthus sinensis</i> Miscanthus (cvs)	Med	Full	4	2'-3'/2'-3' moderate	-	Compact growth habit
<i>Muhlenbergia reverchonii</i> 'Undaunted' Grass, Undaunted Ruby Muhly	Low	Full-Part	5	2'-4'/2'-4' moderate	-	Reliable ornamental grass, highly adaptable
<i>Nassella tenuissima</i> Grass, Mexican Feather	Low	Full	5	2'-3'/3'-3' moderate	-	Small drought-tolerant grass
<i>Panicum virgatum</i> Switchgrass (cvs)	Low	Full	4	3'-5'/1'-2' moderate	SCREEN	Warm season grass, upright growth habit, good for screening
<i>Schizachyrium scoparium</i> Bluestem (cvs)	Xeric	Full	4	2'-3'/1'-2' moderate	-	Drought-tolerant native grass, tolerate a range of low water situations
<i>Sporobolus heterolepis</i> Dropseed, Prairie	Low	Full	4	24"-30"/18"-24" moderate	-	Small Drought-tolerant native grass
<i>Sporobolus wrightii</i> Sacaton, Giant	Xeric	Full	5	5'-7'/3'-5' moderate	SCREEN/WALL	Confirm location, can grow up to 7' tall

Legend

Water Use:

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Selected Native Seed Mixes for Plants for Colorado Springs

A. General Standards

1. See the Native and Water Wise Grass Installation and Maintenance Manual Addendum I in the current City Landscape Manual for best practices installing and maintaining native seed vegetation and water wise grasses in urban and suburban landscapes in Colorado Springs. It distills the best practices from industry experts into actionable procedures and offers usable resources for landscape owners/managers and design professionals.
2. The use of native and water wise seed mixes within the City of Colorado Springs provide the following benefits and are required for open space areas which are disturbed due to construction and disturbance activities and not designed with other types of landscape improvements.
 - Significant water savings, often ranging from 25-75% compared to traditional turfgrass. Native seed mixes should have a low irrigation requirement (8-10 inches of supplemental irrigation per growing season).
 - Most native and water wise grasses require less mowing and fertilization and maximize maintenance savings.
 - Native grasses provide valuable habitat and food sources for insects, birds, and wildlife.
 - Including native grasses in urban landscapes can improve water and air quality, sequester carbon, manage stormwater, and moderate urban heat.
 - Native and water wise grass projects can contribute to a project/organization's sustainability goals.

B. Overall Design Standards

1. When determining native seed locations for a project, the following characteristics should be followed and applied to the overall landscape design.
 - Have full sun conditions, at least six or more hours of sun per day. Most native and water wise grass species require full sun conditions to grow well.
 - Locate in low-traffic areas. Many native and water wise grasses cannot withstand consistent foot traffic from people or pets.
 - Do not locate within a snow pile holding location. Native grasses can be killed by concentrated salts. Don't plant native grasses in areas where plowed snow with salt or sand will be piled.
 - Choose the proper species for the proposed location and use during the design stage. Example, for stormwater detention and infiltration, consider selecting species that can tolerate periodic flooding. Required native seed mixes for different areas are included in this Appendix.
 - Steep slopes and swales with stormwater may need species with rhizomes or deep roots to withstand erosion. In addition, these areas may need soil stabilization measures, like erosion blankets, during the establishment phase and may be required by the Manger.
2. The following seed mixes listed below in this Appendix must be used unless a custom grass seed mix is approved. The seeding rates must match the amounts shown in the seed mixes below based on installation method and irrigation.
3. The following prohibited species crested wheatgrass (*Agropyron cristatum*) or smooth brome (*Bromus inermis*) may not be planted within the city.

4. Irrigation shall be provided to ensure germination, establishment, and long term care of native seed areas. Permanent in-ground irrigation is required for all native seed areas located next to road frontages and in highly visible areas.
5. Temporary irrigation may be proposed where allowed to support native seed vegetation but design techniques for water re-use must be exemplified such as grading (depressions or swales) to direct water and supplying soil moisture to support vegetation. Temporary irrigating during the establishment phase will dramatically improve the likelihood of good seed germination, seedling growth, and soil cover. Projects with no irrigation may take five to ten years to establish because of variations in natural rainfall and weather conditions.
6. Non-irrigated native seed areas may be proposed but should be located away from highly visible areas/public ROW and will be approved by City staff on case-by-case review. Timing and best installation practices should be followed to ensure germination. Non-irrigated projects are not guaranteed to be successful in Colorado Springs climate where precipitation is erratic and unpredictable.
7. Native seed installation timing shall be included on the plans which can vary based on the type of grasses being installed and if irrigated. Following standards should be followed:
 - Seeding single species projects with irrigation (warm season species are best planted from June 1 to August 1 and cool season species can be seeded from April 1 to June 15, or August 1 to September 15)
 - Seeding mixes of cool and warm season species with irrigation (Seed mixes are best planted between May 1 and September 1)
 - Seeding non-irrigated projects (Seed is best planted between Nov. 1 and May 1)
8. General initial installation and long-term maintenance native seed notes shall be included on the plans that outlines irrigation scheduling, mowing frequency, mowing height, fertilizer timing, weed control, and recommended equipment to be used to ensure the project goals and grass health are achieved. See the Native and Water Wise Grass Installation and Maintenance Manual Addendum I in this manual for more information on best practices for your project.

C. Stormwater Detention Native Seed Area(s) Design Standards

1. For all proposed Stormwater Pond Facilities, the El Paso County Conservation District All-Purpose is required to be used. See Table A below for this required mix.
2. Table A shall be included on the Final Landscape Plan and include all the information currently shown in this table. The proposed installation method and irrigation type shall also be shown and required Seeding Rate (lbs PLS/acre) provided.
3. Due to the overall growth habit and height, this seed mix is not recommended in most other open space areas outside stormwater detention areas (use the El Paso County Low Grow Mix shown in Table B). If you are looking for a taller growth habit, this mix can be used but should be strategically placed on the site.
4. The El Paso County Conservation District All-Purpose native seed mix shall not be used in highly visible small landscape spaces (under 8 feet wide) or in areas with consistent foot traffic from people or pets.
5. For portions of facilities located near or on the bottom or where wet soil conditions occur. Planting of potted nursery stock wetland plants 2-foot on-center is recommended for sites with wetland hydrology.
6. The use of wildflowers or shrubs (potted plants or seeds) at time of grass seeding is allowed for El Paso County Conservation District All-Purpose Mix and can be a benefit for pollinators if broadleaf herbicides will not be broadcast across the site.

7. Allow this native seed to grow to species height and keep seedheads for winter interest and reseed for the following year. This mix is a good choice for areas where irrigation will be turned off long-term and a groundcover being used for ecological restoration.

Table A. El Paso County Conservation District All-Purpose Mix for Upland, Transition and Pond Areas

Common Name	Scientific Name	Growth Season/Form	% of Mix	<u>Pounds PLS</u>	<u>Pounds PLS</u>	<u>Pounds PLS</u>
				<ul style="list-style-type: none"> • Irrigated broadcast • Irrigated hydroseeded (80 seeds/sq ft)	<ul style="list-style-type: none"> • non-irrigated/broadcast • non-irrigated/hydroseeded • irrigated drilled (40 seeds/sq ft)	<ul style="list-style-type: none"> • non-irrigated drilled (20 seeds/sq ft)
Big Bluestem	<i>Andropogon gerardii</i>	Warm, sod	20	4.4	2.2	1.1
Blue Grama	<i>Bouteloua gracilis</i>	Warm, bunch	10	0.5	0.25	0.13
Green Needlegrass (1)	<i>Nassella viridula</i>	Cool, bunch	10	2.0	1.0	0.5
Western Wheatgrass	<i>Pascopyrum smithii</i>	Cool, sod	20	6.4	3.2	1.6
Sideoats Grama	<i>Bouteloua curtipendula</i>	Warm, bunch	10	2.0	1.0	0.5
Switchgrass (1)	<i>Panicum virgatum</i>	Warm, bunch/sod	10	0.8	0.4	0.2
Prairie Sandreed	<i>Calimovilfa longifolia</i>	Warm, sod	10	1.2	0.6	0.3
Yellow Indiangrass (1)	<i>Sorghastrum nutans</i>	Warm, sod	10	2.0	1.0	0.5
Seed rate (lbs PLS/acre)				19.3	9.7	4.8

(1) Species marked that will do well in the bottom of Pond Areas

D. All-Purpose Low Grow Native Seed Area Design Standards

1. Based on growth habit and height characteristics, this mix is recommended to be used for all proposed open space native seed areas outside of detention pond areas.
2. Table B shall be included on the Final Landscape Plan and include all the information currently shown in this table. The proposed installation method and irrigation type shall also be shown and required Seeding Rate (lbs PLS/acre) provided.
3. The El Paso County All-Purpose Low Grow native seed mix shall not be used in highly visible small landscape spaces (under 8 feet wide) or in areas with consistent foot traffic from people or pets.
4. The use of wildflowers or shrubs (potted plants or seeds) at time of grass seeding is allowed for El Paso County All-Purpose Low Grow Mix and can be a benefit for pollinators if broadleaf herbicides will not be broadcast across the site.

Table B. El Paso County All-Purpose Low Grow Mix for Upland and Transition Areas

Common Name	Scientific Name	Growth Season/Form	% of Mix	<u>Pounds PLS</u>	<u>Pounds PLS</u>	<u>Pounds PLS</u>
				<ul style="list-style-type: none"> • Irrigated broadcast • Irrigated hydroseeded (80 seeds/sq ft)	<ul style="list-style-type: none"> • non-irrigated broadcast • non-irrigated hydroseeded • irrigated drilled (40 seeds/sq ft)	<ul style="list-style-type: none"> • non-irrigated drilled (20 seeds/sq ft)
Buffalograss	<i>Buchloe dactyloides</i>	Warm, sod	25	9.6	4.8	2.4
Blue Grama	<i>Bouteloua gracilis</i>	Warm, bunch	20	10.8	5.4	2.7
Sideoats Grama	<i>Bouteloua curtipendula</i>	Warm, bunch	29	5.6	2.8	1.4
Green Needlegrass	<i>Nassella viridula</i>	Cool, bunch	5	3.2	1.6	0.8
Western Wheatgrass	<i>Pascopyrum smithii</i>	Cool, sod	20	12.0	6.0	3.0
Sand Dropseed	<i>Sporobolus cryptandrus</i>	Warm, bunch	1	0.8	0.4	0.2
Seed rate (lbs PLS/acre)				42.0	21.0	10.3

E. Custom Native Seed Mix Design Standards

1. Projects requesting a custom grass seed mix should contain at least 90% native species and should not include the prohibited species crested wheatgrass (*Agropyron cristatum*) or smooth brome (*Bromus inermis*). A species will be considered native if it is listed as a species native to Colorado in the USDA Plants Database (plants.usda.gov). The custom grass seed mix should be made after consultation with a qualified revegetation specialist and submitted to the Stormwater Enterprise (if applicable) and City Planning for review and approval.

F. Custom Manicured Native Seed Types and Design Standards

1. Buffalograss – This short grass is a good ground cover replacement for high-water turf grass for low to moderate traffic areas. This short grass grows 3 inches to 6 inch tall and the spreading habit makes it valuable for stabilizing slopes and tolerating moderate traffic. The following site considerations should be measured before selecting this type of native seed grass. See the Native and Water Wise Grass Installation and Maintenance Manual Addendum I for more information.
 - Not suitable for very sandy soils, very shady locations, and saline soils (greater than 6-8 mmhos/cm salinity).
 - Is actively growing and green from late May to September and it goes dormant (turns brown) with the first hard frost in the fall.
 - Best for full-sun sites up to 6,800 ft in elevation with clay content in the soil.
 - Permanent in-ground irrigation is required.
 - Active weed management before planting, during establishment, and as a long-term maintenance practice is critical for success. Weed management is very important for the installation and long-term maintenance of buffalograss.
 - Proper establishment and management practices are critical for the success of new installations and germination of buffalograss.
2. Blue Grama – This short grass is a good ground cover replacement for high-water turf grass for only low traffic areas. This short grass grows 6 inches to 18 inch tall (with seedheads) and is tolerant of many soil types and growing conditions. The following site considerations should be measured before selecting this type of native seed grass. See the Native and Water Wise Grass Installation and Maintenance Manual Addendum I for more information.
 - Best for full-sun sites up to 8,500 ft in elevation.
 - Grows best when mowed three times per year or less
 - Is actively growing and green from mid-May to early October and it goes dormant (turns brown) with the first hard frost in the fall.
 - Permanent in-ground irrigation is required.
3. Buffalograss/Blue Grama mix– This short grass mix is a good ground cover replacement for high-water turf grass for low traffic areas. This short grass grows 6 inches to 18 inch tall (with seedheads) and has a more uniform appearance than the El Paso County All-Purpose Low Grow Mix mixture. The following site considerations should be measured before selecting this type of native seed mix. See the Native and Water Wise Grass Installation and Maintenance Manual Addendum I for more information.
 - Best for full-sun sites up to 7,000 ft in elevation.
 - Can be mowed for a lawn-like appearance or left unmowed for a more natural look; moderate traffic tolerance.

- Is actively growing and green from mid-May to early October and it goes dormant (turns brown) with the first hard frost in the fall.
- Permanent in-ground irrigation is required.

Table C. Native Seed Selection Chart

Grass Species or Mix	Desirable/Required Areas	Limitations
El Paso County Conservation District All Purpose Mix (Table A above)	<ul style="list-style-type: none"> • Stormwater ponds or detention structures (required). • Open space where taller species are suitable (should be strategically sited, not recommend in most locations). 	Not for use in highly-visible locations, narrow areas less than 8 feet wide, or where taller grasses are not desired.
El Paso County All-Purpose Low Grow Mix (Table B above)	<ul style="list-style-type: none"> • Open space areas. 	Narrow areas less than 8 feet wide, or high-traffic areas.
Custom Native Seed Mix	<ul style="list-style-type: none"> • For specialized site conditions or ecological functions. • Requires City approval. 	Requires at least 90% native species and cannot contain smooth brome or crested wheatgrass.
Buffalograss	<ul style="list-style-type: none"> • Highly visible locations and areas less than 8 feet wide where a more uniform, manicured appearance is desired. • Can be mowed for a traditional lawn appearance. 	Not for high-traffic areas.
Blue Grama Grass	<ul style="list-style-type: none"> • Highly visible locations and areas less than 8 feet wide where a more uniform appearance is desired. 	Will be taller than a traditional turfgrass lawn. Grows best when mowed one to four times per year. Not for high-traffic areas.
Buffalo/Blue Grama Grass Mix	<ul style="list-style-type: none"> • Highly visible locations and areas less than 8 feet wide where a more uniform, manicured appearance is desired. 	Not for high-traffic areas.

G. Wildland-Urban Interface (WUI) and Native Seed

1. Projects in the WUI-O district shall comply with additional requirements in Section 7.2.604 (WUI-O: Wildland Urban Interface Overlay) and related City of Colorado Springs Fire Prevention Code and Standards requirements. (UDC 7.4.902.C)
2. See the latest version of the Ignition Resistant Construction Design Manual published by Colorado Springs Fire Department regarding both legal requirements and recommended guidance for Wildland-Urban Interface areas within the City. This guidance document can be found on the City of Colorado Springs Fire Department Website under Fire Code Resources - www.coloradosprings.gov/WUI

New Single and Two-Family Residential Water Use Typical(s)

A. General Standards

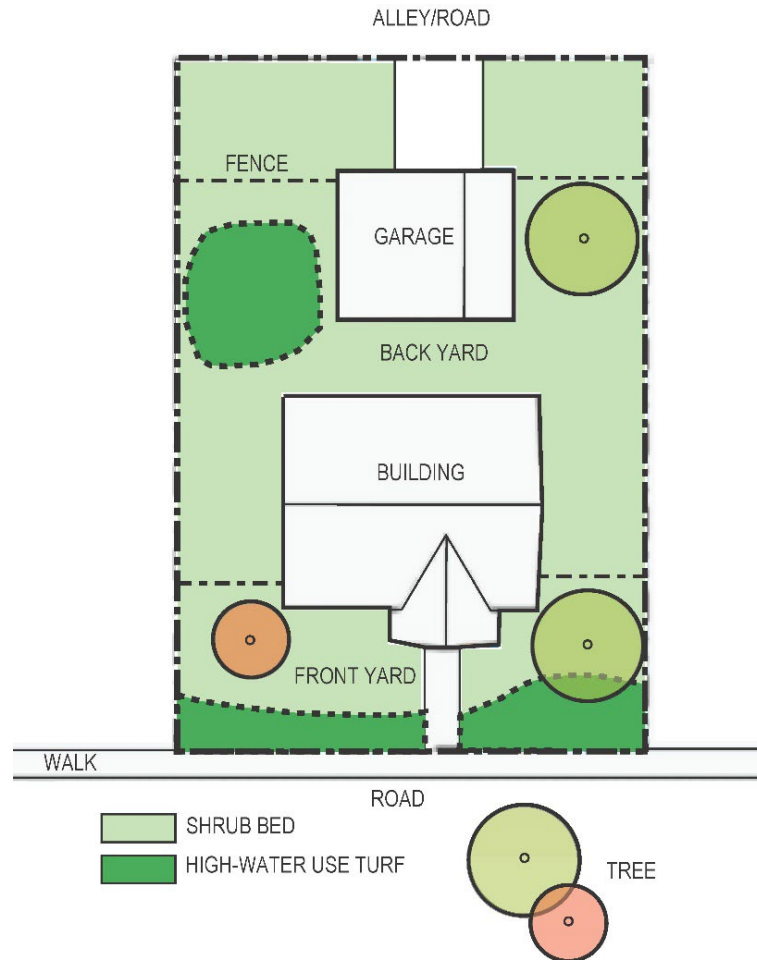
1. For all proposed single and two-family residential projects, a lot landscape typical(s) shall be provided with the preliminary and final landscape plans. These typical(s) shall show how the development is meeting the current requirements for these projects listed in City UCD section 7.4.902.E.
2. A typical shall be provided for each proposed lot type size including corner lots. Based on the number of lots, sizes and configurations, an average lot size(s)/typical(s) may be used but will be determined and approved by the Manager during the City's plan review.
3. All proposed open space landscape areas/tracts located within the limits of the project (outside individual residential lots) shall follow the Hydrozone Diagram shown in Appendix D.
4. The irrigation water service connection shall be sized appropriately to accommodate irrigation during the hours and days outlined in the Water Shortage Ordinance, Chapter 12, Article 4, Part 13 of the Code of the City of Colorado Springs for all individual lot irrigation system(s). All irrigation water shall be metered and have appropriate backflow prevention as identified by Colorado Springs Utilities Water Line Extension and Service Standards.
5. No more than twenty-five (25) percent of the portion of a lot not covered by a primary or accessory structure or a driveway, patio, deck, or walkway shall be planted with High Water Use Turfgrass.
6. No contiguous High-Water Use Turfgrass area shall be less than one hundred (100) square feet in area. The one hundred (100) square foot limit shall not apply to the Parkway/Tree Lawn area located within City ROW.
7. Any proposed ROW landscaping (tree lawn) located between a detached walk/property line and curb shall be included in the overall open space area. Any proposed High-Water Use turfgrass in this area would be part of the allowable twenty-five (25) percent turfgrass for the lot.
8. All Compact Lot projects with street-oriented lots shall provide one (1) tree per lot and be in either a tree lawn that is at least seven (7) feet wide, or within the front yard of each lot per City UCD Section 7.4.905.B.2.(4c). These trees shall be shown and labeled on the landscape typical(s).
9. For all Compact Lot projects, a recommended tree species list shall be provided with the typical(s) and chosen from the current Forestry City Approved Street Tree List.
10. The Maximum High-Water Use Turfgrass requirement for single and two-family residential water use shall follow the current applicability standards of the UDC Section 7.1.104.

B. Landscape Typical Standards

1. The typical(s) shall show the following:
 - Be at scale and provide drawing scale.
 - All street linework (curb/gutter/alley/etc.) and property lines.
 - All proposed attached/detached sidewalks and driveways including widths.
 - All proposed building/garage footprints or building envelope(s) (general locations).
 - All proposed fencing (general locations).
 - Show landscape areas (sod/shrub beds/native seed/rock areas/etc.) with hatches.
 - Provide total amounts in Square Feet (SF) and material type for each.
 - Proposed tree locations (compact lots).
 - Easements, building setbacks and ROW widths.
 - Utility (wet/dry) connections for each lot.
2. The following calculations shall be provided in a chart for each of the typical(s):
 - Total amount of open space areas in Square Feet (SF) including ROW areas.

- Total amount of each proposed landscape area (high-water use turfgrass/med-water use shrub beds and low-water use native seed) in Square Feet (SF).
- Show that the 25% limit for turf is being met.
- Provide totals for all lots for the site as outlined above.

3. Example Typical below



	Typical Total	Overall Totals (84 Lots)
Open Space –	4,300 SF	361,200 SF
High-Water Use Turfgrass –	1,075 SF (25%)	90,300 SF (25%)
Med-Water Shrub beds -	3,225 SF (75%)	270,900 SF (75%)

4. The following notes shall be included with the landscape typical(s):

- “All Trees located within City ROW are to be chosen from the current Forestry City Approved Street Tree List.”
- “All required Compact Lot trees shall be installed by the developer/builder. Long term maintenance responsibility and irrigation for trees will be provided by _____ “ (applicant to provide)
- “All required Compact Lot trees shall have an automatic irrigation system (drip/sod irrigation/etc.) which provides watering at time of planting.”

HydroZone Diagram Format

A. Hydrozone Diagram Standards

1. A Hydrozone Diagram shall be provided with the Preliminary and Final Landscape Plan. This diagram shall show how the development is meeting overall water use per City UCD section 7.4.902.E.1 and 7.4.903.C.
2. To calculate the total amount of allowable High-Water Use Turfgrass, the Hydrozone diagram shall show the total amount of designed irrigated green space landscape areas and include the total for the following, High (High-water turf/sod), Median (shrub beds with plantings) and Low (native seed). Based on this total amount, a maximum of 25% of this area may be High-Water use Turfgrass.
3. Before City approval of Final Landscape Plan, the applicant shall complete the online Irrigated Landscape Area Reporting System from Colorado Springs Utilities. Once this has been completed, an automatic email will be sent to the applicant and City Planning for confirmation. Enter the hydrozone totals and irrigation types from the Final Landscape Plan at the following link:
 - <https://forms.office.com/Pages/ResponsePage.aspx?id=zqe0Sp8HRkOyt4FfDUce7Ls1wrAGGhFDm1mAWBm4JJVUQTBTvjITNTdXRFpUUDAwOVpPWVE0VFpYMi4u>
4. The Diagram shall show the following:
 - All site linework (streets/sidewalks/property lines/hardscape areas/driveways/etc.).
 - All proposed structures (buildings/garages/park features/etc.).
 - Show proposed water use areas (High/Median/Low) with hatches. The landscape types are High (High-water turf/sod), Median (shrub beds with plantings) and Low (native seed).
 - The proposed Hydrozone Diagram should match the proposed landscape design.
 - Provide labels on the plans for High/Median/Low water use areas.
 - Provide total amounts in Square Feet (SF) for proposed area and overall total.

5. Example of a Hydrozone Diagram below

HYDROZONE DIAGRAM

LEGEND



Irrigation Plan Requirements and Formats

A. General Standards

The Following requirements shall apply to all irrigation plans for the City.

1. A Landscape Architect licensed by the State of Colorado, or a Certified Irrigation Designer shall prepare all required irrigation plans and supporting material. The licensed LA or Certified designer shall have a current unexpired certification and no active discipline or board actions against them.
2. As-built irrigation plans are required when the installation of the irrigation system does not comply with the approved irrigation plan. The Manger may require that the as-built irrigation plans be prepared by either a Landscape Architect licensed by the State of Colorado or a Certified Irrigation Designer.
3. Due to the semiarid climate, drying winds, and lack of consistent natural precipitation in Colorado Springs, supplemental irrigation is required for all proposed landscaping within the city.
4. Irrigation shall be provided to ensure germination, establishment, and long care of native seed areas. Permanent in-ground irrigation is required for all native seed areas located next to road frontages and in highly visible areas.
5. Temporary irrigation may be proposed where allowed to support native seed vegetation establishment but design techniques for water re-use must be exemplified such as grading (depressions or swales) to direct water and supplying soil moisture to support vegetation.
6. The Irrigation Plan shall consist of all the information required on the most current Irrigation Check List located on the City of Colorado Springs Web Site. The Irrigation Plan shall be submitted concurrently or after approval of a Final Landscape Plan.
7. The irrigation plan shall graphically and through notes/details depict a water-efficient design consistent with the approved Final Landscape Plan and Hydro Diagram. This would include separate irrigation zones for all hydrozone areas (low, moderate and high) and the irrigation design should work with proposed landscape plantings, slopes, microclimates, environment factors and available water pressure. System shall be designed in conformance with manufacturer's recommendations for water efficiency.
8. The irrigation system design shall be designed to prevent runoff, overspray, low-head drainage, and other similar conditions where irrigation water flows or sprays onto areas not intended for irrigation.
9. The irrigation system shall be designed to apply water at a rate not exceeding the infiltration rate of the soil.
10. Irrigation systems served with non-potable water must comply with current Colorado Springs Utilities Water Line Extension & Service Standards.
11. All above ground temporary irrigation components (main/lateral lines/valves and wires/sprinkler heads/etc.) shall be removed and disposed of by the sites responsible landscape maintenance party and/or owner at time of conclusion of temporary watering for the site. At no time should visible unused/broken temporary irrigation components be left on the property.
12. The required water service (point of connection) shall be installed and be operational as required to coincide with planting installation.
13. The irrigation system shall be properly winterized each season.
14. The irrigation system shall be properly maintained which would include but not limited to inspection, testing and repair, adjusting sprinkler patterns and drip components, calibration of equipment and system controller programing.

15. Water service connections for all irrigated areas shall be consistent with all Colorado Springs Utilities regulations (7.4.904.A.E.2.g)
16. All irrigation water shall be metered and have appropriate backflow prevention as identified by Colorado Springs Utilities Water Line extension and Service Standards. (7.4.904.A.E.2.h)
17. Per current Colorado Springs Utilities standards, no accessible access (drain/filter access/blow out port/ect.) can be located before the backflow unit. The backflow unit shall be located a maximum of ten feet (10') away from the proposed main water source.
18. The proposed irrigation water service connection (Meter/Tap) shall be sized appropriately to accommodate irrigation during the hours and days outlined in the Water Shortage Ordinance, Chapter 12, Article 4, Part 13 of the City Code of Colorado Springs (7.4.904.A.E.2.i).
19. For all design irrigation systems, if more than three days a week are required to provide required coverage with spray/rotor stations/valves, a Water Allocation Plan is required from Colorado Springs Utilities.
20. If a Water Allocation Plan is required/requested from Colorado Springs Utilities, additional information will be needed and shown on the irrigation plan before plan approval.

B. Plan Standards

1. The plans shall include a plan, general irrigation notes, details and any other items that may be necessary by Planning Staff. All proposed components shall have their equipment sized.
2. A irrigation legend shall be included which identifies all symbols and indicates the manufacturer, precipitation rate, g.p.m's, radii of each head type and detail reference call out as well as any pertinent information about the equipment used including P.O.C and meter sizes.
3. All points of connection (P.O.C.) and water meters shall be noted, and sizes called out on the plans and include the proposed type of connection (dedicated irrigation meter, domestic connection, sub-metered). The point of connection(s) shall also indicate the type of water source (potable/non-potable) and the static water pressure.
4. Per current CSU standards, a PRV will be installed before the meter by Colorado Springs Utilities staff and a maximum of 80 PSI will be allowed after this valve for all city meter locations.
5. The sites water pressure shall be noted on the irrigation plans and include existing and required minimum. If needed, booster pump information shall be included on the 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.
6. All irrigation equipment installed flush with grade for safety.
7. All existing non-irrigated plant communities to remain onsite shall preserve existing drainage patterns and are not to be irrigated.
8. The plans shall illustrate the location, type, and size of all components of the irrigation system including the following requirements:
 - a. **Main and lateral lines**
 - Proposed pipe sizes shall be indicated numerically (i.e. 1/2", 3/4", 1" etc.).
 - Locations shall work with all utilities and underground improvements.

- The proposed main line pressure (pressure per square inch) shown on the plans. The irrigation design shall consider minimum and maximum allowable mainline pressures.
 - Total Required operating pressure for each control valve/zone.
 - Provide quick coupling valves where needed for the project and connected to an irrigation main line.
 - Water pressure regulated with valves (PRV) as needed for the system and prevent water hammer within the system. All mainline and lateral pipe sizes shall be designed large enough to provide adequate water supply to worst case scenario stations without exceeding 5 feet per second.
 - Sleeving shall be provided for all main and lateral lines as required.
- b. **Drip Lines and systems**
- All drip line shall be staked to the ground and covered by mulch. No exposed drip lines shall be visible after installation and for the life of the project.
 - All proposed trees or shrubs located within native seed areas shall be on a dedicated drip control valve connected to the automatic system controller.
 - Each proposed planting type and size shall include the number of required drip emitters and be installed per manufacturer's recommendations.
 - A flush point is required at the end of all proposed drip lines and shall be located within a valve box.
 - Sleeving shall be provided for all drip lines as needed.
- c. **Control Valves**
- Each station shall have proposed valve size and station number given.
 - Provide gallon per minute for each valve.
 - Provide a manual shutoff valve for each valve within the valve box.
 - Additional manual shutoff valves shall be installed between the control valve(s) and the main water supply as needed.
- d. **Sprinkler heads**
- Sprinkler heads shall have matched precipitation rates within each control valve circuit and head types shall not be mixed within the circuit.
 - Low volume and low trajectory spray nozzles shall be used.
 - A minimum 6-inch sprinkler/rotor body shall be used for all proposed high-water use turf and native seed locations.
 - Pooling and flowing of water is not allowed.
- e. **System controllers**
- Automatic controlled utilizing non-volatile memory.
 - Capable of dual or multiple programming.
 - Must have multiple cycle start capacity and a flexible calendar program.
 - Equipped to use a rain shut-off (weather-based system or soil/air moisture detection).
 - Long term power source provided for all controllers.
- f. **Rain sensors**
- All irrigation designs shall include a rain sensor that prevent the system from running during a rainfall/freeze event and is installed to automatically shut down the irrigation system.

9. Provide a calculated annual irrigation water use table for the site, this would include the proposed amount of high water (sod), medium (shrub beds) and low (native seed) use landscape areas. The amount of square feet and gallons should be provided for each type of landscape area and an overall irrigated amount for square feet and gallons should be included.
10. An irrigation schedule shall be included in the plan set and include the following information for each proposed valve/station: P.O.C number (if more than 1), Controller number (if more than 1), station/valve number, proposed plant material, irrigation type (pop-up/rotor/drip/etc.), design operating pressure (pressure per square inch), application rate (inches per hour), flow rate (gallons per minute), run time per station (min), number of cycles, number of irrigation days a week and estimated water usage (gal/wk). The schedule should also show how the Water Wise Rules irrigation schedule requirements will be met.
11. For all systems having 7 or more spray valves (turf/native seed areas), a critical calculation (worst case) shall be provided on the plans and each piece of equipment shall be listed in the calculation along with the associated loss and minimum required pressure needed. The calculation shall include the total pressure loss of all equipment used in the system to the point of connection. This is recommended for all irrigation systems.
12. The following notes shall be included on the irrigation plans and be listed in a section called “Standard City of Colorado Springs Irrigation Notes”:
- “The City has adopted permanent water-wise regulations as of January 1, 2020, which will affect the overall operation of the irrigation system. From May 1 to October 15, sprinklers can be operated before 10 a.m. and after 6 p.m. Watering is limited to three days a week (Drip irrigation is allowed at any time). Establishment permits are required from Colorado Springs Utilities for customers who need to temporarily water more than three days a week to establish new landscapes. Allocation plans are available for customers who need more watering schedule flexibility from Colorado Springs Utilities.”
 - “For all design irrigation systems, if more than three days a week are required to provide required coverage with spray/rotor stations/valves, a Water Allocation Plan is required from Colorado Springs Utilities.”
 - “City Affidavit Note – The design professional of record is to complete the irrigation inspection affidavit based on approved Irrigation Plan. This should require limited construction observation visits and a functional test of the irrigation system shall be performed to accurately complete the affidavit. Final CO or financial assurances release shall not be processed until an executed and approved affidavit is submitted to City Staff. When ready to call for inspection and submit affidavits, first contact the city planner of record for the project (719-385-5905) and as necessary our DRE office (719-385-5982)”.

Site Category Calculation Format, Alternative Landscape Adjustment and Site Notes Requirements

A. Site Category Calculation Format General Standards

1. All projects shall include the applicable Site Category Calculation Charts as shown below.
2. If alternative landscape adjustment is requested and approved, each site category item requesting a change shall have a star (*) located next to change and the following note be provided below the chart "Alternative Landscape Adjustment Requested".
3. If existing trees are being used to meet site requirements, each site category shall include the number of existing trees being used and the following note be provided below the chart "All existing trees being used to meet site landscape requirements shall be replaced if not in a healthy condition."

LANDSCAPE SETBACKS (7.4.905)

Street Name	Street Classification	Width Req./Prov.	Linear Footage	Tree/Feet Required	No. of Trees Required/Provided
Jones Drive	Principal Arterial	25'/25'	350'	1 per 20'	18/15 (shrub substitutes)
Scott Lane	Non-Arterial	10'/8**	200'	1 per 30'	7/7 (3 existing)
Shrub Substitutes Required/Provided	Ornamental Grass subs Required/Provided	Plan Symbol Abbreviation	Percent ground coverage Required/Provided		
30/20	20/20	JD	75%/75%		
n/a	n/a	SD	75%/75%		

*Alternative Landscape Adjustment Requested (if applicable).

All existing trees being used to meet site landscape requirements shall be replaced if not in a healthy condition.

PROPERTY EDGE LANDSCAPE BUFFERS (7.4.906)

Property Line	Width Req./Prov.	Linear Footage	Tree/Feet Required	No. of Trees Required/Provided	Evergreen Trees Required/Provided
West Property Line	15'/15'	200'	1 per 20'	10/10	5/10
East Property Line	10'/8**	80'	1 per 20'	4/4 (2 existing)	2/2
Shrub Substitutes Required/Provided	Ornamental Grass subs Required/Provided	Plan Symbol Abbreviation	Percent ground coverage Required/Provided		Length of 6' tall Fence Req./Prov.
n/a	n/a	WB	75%/75%		200'/200'
n/a	n/a	EB	75%/75%		80' (existing)

*Alternative Landscape Adjustment Requested (if applicable).

All existing trees being used to meet site landscape requirements shall be replaced if not in a healthy condition.

PARKING LOT LANDSCAPING (7.4.907)

No. of Vehicle Spaces	Shade Trees (1 per 15) Req./Prov.	Parking Lot Footage	Length of frontage (Excluding entry access)	2/3 Length of frontage
120	8/8	Jones Drive	200'	133
		Scott Lane	80'	53
No. of 3' tall screening plants	Evergreen Plants (min. 50 percent) Provided	Plan Symbol Abbreviation	Percent ground coverage Required/Provided	Length of screening wall/fence/berm
60	30	PL	75%/75%	60' Fence
40	20	PL	75%/75%	n/a

INTERIOR LANDSCAPING (7.4.908)

Gross Site Area (SF) 75,000 SF	Percent Minimum Internal Area (%) Required 15% (MF)	Internal Area (SF) Required/Provided 11,250 SF/20,000 SF	Internal Trees (1 per 500 SF) Required/Provided 23/16 + shrubs
Shrub Substitutes Required/Provided 70/60	Ornamental Grass subs Required/Provided 20/20	Plan Symbol Abbreviation IL	Percent ground coverage Required/Provided 75%/75%
Green Space Required (yes/no) Yes	Active Green Space Percent/SF Required/Provided 10% (7,500 SF)/ 10% (7,500 SF)	Non-Active Green Space Percent/SF Required/Provided 5% (3,750 SF)/ 5% (3,750 SF)	Active Green Space Design Elements Playground and Outdoor Swimming Pool

COMPACT LOT LANDSCAPING (7.4.905 AND 7.4.908)

Gross Site Area (SF) 100,000 SF	Percent Minimum Internal Area (%) 10%	Internal Area (SF) Required/Provided 10,000 SF/20,000 SF	Internal Trees (1 per 500 SF) Required/Provided 20/16 + shrubs
Shrub Substitutes Required/Provided 40/30	Ornamental Grass subs Required/Provided 20/20	Plan Symbol Abbreviation IL	Percent ground coverage Required/Provided 75%/75%
Green Space Required (yes/no) Yes	Active Green Space Percent/SF Required/Provided 5% (5,000 SF)/ 5% (5,000 SF)	Non-Active Green Space Percent/SF Required/Provided 5% (5,000 SF)/ 5% (5,000 SF)	Active Green Space Design Elements Dog Park and Plaza Areas
Street Oriented Lots (yes/no) Yes	Number of Street Oriented Lots 156	Number of Trees (1 per lot) Required/Provided 156/156	

B. Alternative Landscape Adjustment Format General Standards

- All projects requesting Alternative Landscape Adjustment shall include the following information listed below in text form below the Site Category Calculation Charts for each request.
 - Separate request numbers and information (if multiple adjustments are requested)
 - Code section and requirement that is being affected by the request.
 - Justification for adjustment and how we are meeting the intent of the landscape code.
 - Proposal for alternative landscape design including compensation as needed.

2. Example of format below:

Request #1

- Code Section – 7.4.905
- Requirement – 25’ wide landscape setback
- Justification – Due to site and utility constraints, a reduction of five (5) feet is requested along Jones Drive and provide a 20’ landscape setback along this street.
- Proposal - Additional tree and shrub plantings will be provided within this setback area which will substantially exceed the setback planting requirements and help screen the proposed development from the adjacent existing properties.

C. Required Landscape Site Notes

1. The following landscape notes shall be provided on all Preliminary and Final Landscape plans and be listed in a section called “Standard City of Colorado Springs Landscape Notes”.
 - “A Final Landscape and Irrigation Plan, with applicable supporting material, shall be submitted at time of Building Permit application and shall be approved before any Building Permit approval, any landscape or irrigation construction, and issuance of a Certificate of Occupancy.”
 - “All proposed landscaping shall be watered by an automatic irrigation system which will provide drip irrigation to all shrub beds and trees within native seed areas and spray irrigation to all high-water use turf and native seed areas.”
 - “The Owner or Developer is required to provide inspection affidavits executed by the Colorado Licensed Landscape Architect or Certified Irrigation Designer of record for the project, which certifies that the project was installed and in compliance with the approved Final Landscape and Irrigation Plan on file in City Planning. This should require limited construction observation visits to accurately complete the affidavits. When ready to call for inspection and submit affidavits, first contact the city planner of record for the project (719-385-5905) and as necessary our DRE office (719-385-5982).”
 - “Copies of receipts/delivery tickets for soil amendments installed on the project are required to be provided with the inspection affidavits.”
 - “If soil in the parking lot has been compacted by grading operations, the soil within the planter shall be tilled, or removed to a depth of thirty (30) inches and replaced with an acceptable growing medium for the species being installed.”
 - “Tilling of the existing soil to incorporate amendments and counter any compaction or soil consolidation shall be required for all landscape planting areas.”
 - “Accessible routes, including ramps and sidewalks, within the public right-of-way shall be per city engineering standard drawings and specifications. engineering development review division inspector will have the final authority on accepting the public improvements.” (Note – this note is only for urban downtown projects within the city)
2. The following landscape notes shall be provided on the cover sheet of all Development Plans and be included in the general note section. If a different party (Metro District/HOA/etc.) is responsible for long term maintenance other than the property Owner, update these notes to reflect this.
 - “Landscape improvements and maintenance shall be the responsibility of Owner, and/or their assigns”.
 - “All street trees and streetscape improvements located in the ROW will be maintained by the abutting property owner.”

Plant Schedule and Soil Amendment Fertilizer Recommendations Format

A. Plant Schedule Format General Standards

1. All Final Landscape Plans shall include a plant schedule on the plans as shown below.
2. Preliminary Landscape Plans can include conceptual planting schedule which includes the following just for trees: Tree Abbreviations, Quantities, Botanical Name and Common Name.

Deciduous Trees							
Abbreviation	Qty.	Botanical Name	Common Name	Mature Ht. & Width	Planting Size	Code Requirements	Notes
HAC	4	Celtis occidentalis	Hackberry	35'x35'	1.5 Cal	Park/ROW/Stream	B&B
HAW	3	Crataegus crus-galli inermis	Cockspur Hawthorn	25'x30'	1.0 Cal	ROW/Stream/Green	B&B
CRB	5	Malus 'Spring Snow'	Spring Snow Crabapple	25'x25'	1.0 Cal	ROW/Stream/Green	B&B
OAK	7	Quercus macrocarpa	Bur Oak	60'x50'	1.5 Cal	Park/ROW/Stream/Green	B&B
Evergreen Trees							
FIR	3	Abies concolor	White Fir	50'x20'	6' Ht.	Screen/Wall/Trash	B&B
AUS	8	Pinus nigra	Austrian Pine	50'x30'	6' Ht.	Screen/Wall/Trash	B&B
PON	4	Pinus ponderosa	Ponderosa Pine	50'x25'	6' Ht.	Screen/Wall/Trash	B&B
34	TOTAL NUMBER OF TREES (100% Selected Species - Minimum 70%)						
Deciduous & Evergreen Shrubs							
LEA	31	Amorpha canescens	Leadplant	3'x3'	5 gal.	Median	Cont.
SGB	19	Cytisus purgans	Spanish Gold Broom	4'x4'	5 gal.	Screen/Median/Stream	Cont.
GGJ	13	Juniperus scopulorum	Gray Gleam Juniper	12'x5'	5 gal.	Screen/Wall/Trash	Cont.
63	TOTAL NUMBER OF SHRUBS (79% Selected Species - Minimum 70%)						
Ornamental Grasses							
KFG	27	Calamagrostis brachytricha	Korean Feather Grass	3'x3'	5 gal.	Screen/Median/Green	Cont.
BAG	16	Helictotrichon sempervirens	Blue Avena Grass	3'x3'	3 gal.	Median/Green	Cont.
PDG	11	Sporobolus heterolepis	Prairie Dropseed	2'x2'	3 gal.	Green	Cont.
54	TOTAL NUMBER OF ORNAMENTAL GRASSES (100% Selected Species - Minimum 70%)						

B. Soil Amendment and Fertilizer Recommendation General Standards

1. All Final Landscape Plans shall include a chart on the plans outlining soil amendments and fertilizer amounts and provide all the information shown below including the notes below the chart. These recommendations shall be based on the required soil analysis report (horticulture). The required chart is shown below.
2. Per UDC section 7.4.904.A.F.2.B, the required Soil Amendment and Fertilizer Chart may be submitted with the irrigation plan if approved by the Manager.
3. Per UDC Section 7.4.902.F.3 Policy 2, The soil amendment mix shall be chosen from one of current Colorado Springs Utilities Approved Soil Amendment Suppliers. The proposed soil amendment mix for the project shall be included in this list and may be found at the link below.
 - <https://www.csu.org/Documents/SoilAmendments.pdf>
4. The use of Biosolids as a replacement for Class 1 soil amendments in the city are not allowed due to possible heavy metal content, pathogen levels and high salt levels.

Required Soil Amendments & Fertilizers			Site Soil Type – Sandy Loam / Organic Material amount – 2.0%				
Ground Plane Treatment	Class 1 OM Soil Amendment	Nitrogen (15 to 20 ppm)	Phosphorus (10 to 15 ppm)	Potassium (50 to 200 ppm)	Other (K,Zn,Fe, Mn, B,Cu & Biosol)	E.C., Salt or PH Treatment	RotoTill Depth
Sod Turfgrass	3 CU. YD. per 1000 SF	1.5 lb. per 1000 SF	0.5 lb. per 1000 SF	1.0 lb. per 1000 SF	4 oz FE per 1000 SF	n/a	6-8" Min
Native Seed	2 CU. YD. per 1000 SF	n/a	n/a	n/a	Biosol: 20 lbs per 1000 SF	n/a	6-8" Min
Shrub Beds	3 CU. YD. per 1000 SF	1.5 lb. per 1000 SF	0.5 lb. per 1000 SF	1.0 lb. per 1000 SF	4 oz FE per 1000 SF	n/a	6-8" Min

1. Provide the proposed soil amendment mix and local supplier. The proposed mix shall be chosen from the current Colorado Springs Utilities Approved Soil Amendment Suppliers.
2. Slow-release fertilizers are required for sandy soils.
3. Any other required soil amendment/fertilizer recommendations notes based on the soil testing lab report.

City Green Infrastructure Requirements

A. Plant Schedule Format General Standards

1. All proposed PIA's (Planned Infiltration Areas) should be shown and labeled on the landscape plan and should match the Drainage Report, Preliminary Grading and/or Site plan sheet(s) showing these locations. These areas should be shown with a solid light color hatch on the landscape sheet.
2. Show and label all proposed PIA swales with flow arrows on the landscape plan. Proposed trees should not be located at the bottom of any proposed swale.
3. High-Water use turf is not allowed for PIA areas located in medians, roundabouts, parking lot islands or parking lot planters.
4. Native seed is not allowed for PIA areas in highly visible small landscape spaces (under 8 feet wide) or in areas with consistent foot traffic from people or pets.

Colorado Guide to

**NATIVE AND
WATER WISE
GRASS**

Installation and Maintenance





Introduction

Native and water wise grasses are a valuable landscaping option to maximize the livability, environmental benefits, and climate resiliency of Colorado communities. When used as a replacement for high-water turf-grass in large commercial and municipal landscapes, these grasses save a significant amount of water. They are an integral part of the water wise and sustainable landscapes of the future.

This document describes the best practices for installing and maintaining native and water wise grasses in urban and suburban landscapes in Colorado. It distills the best practices from industry experts into actionable procedures and offers usable resources for landscape owners/managers and professionals.

The objectives of this manual are to:

- Document guidance from experienced professionals and describe the best practices to maximize project success.
- Identify common causes of failure, potential risks, and provide guidance to improve outcomes.
- Provide usable tools for landscape professionals, project managers, program managers, and associated parties involved in decisions and oversight of grass projects.
- Include case studies to showcase options, costs vs. benefits, and water/maintenance savings.

Native and water wise grasses can be used in a variety of ways, including as:

1. A low-water substitute for traditional lawn turfgrasses for low-traffic sites
2. A low-water, low-maintenance groundcover for large, low-use areas
3. An integral part of Colorado-friendly, western-style landscapes that embrace the beauty of native plants and the natural environment
4. A way to create habitat for wildlife, birds, and insects in urban areas
5. Ecological restoration of disturbed sites

Because native grasses can be used to accomplish different objectives, there are a variety of ways they can be installed and maintained. This manual includes methods specifically for urban and suburban landscapes to achieve quick seed germination, rapid soil cover, minimal weed competition, and active growth during summer months.

These practices differ in many ways from dryland range planting and ecological restoration techniques. In an urban/suburban setting, the visual and usability expectations can be significantly different and irrigation systems are often available. The recommended practices in this resource can be modified to lower input options if slower establishment or a more natural appearance is acceptable.

This manual will be updated as best practices and industry knowledge evolve.



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City of Boulder

City of Colorado Springs

City of Fort Collins

City of Fountain

City of Greeley

City of Longmont

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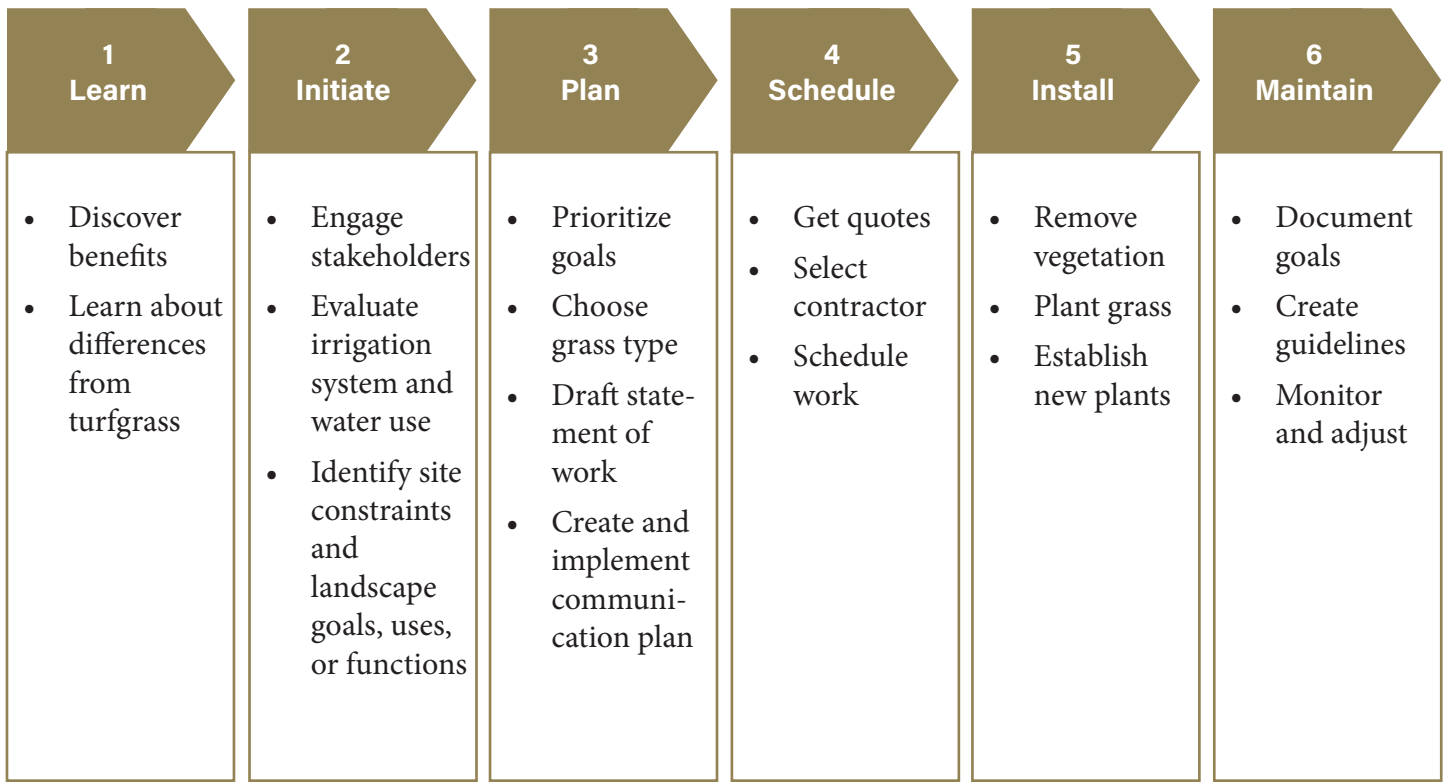
Sun Maintenance Services, LLC

Denver Water

Western Resource Advocates

Grass Conversion Project Phases

Using these six phases as a planning framework will lead to greater success with a grass conversion project.



While all the project phases are important for a successful project, your interests will determine where to focus. What's your top interest?

1. If your top interest is reducing landscape water use, [focus on irrigation efficiency](#) first, then consider vegetation changes.
2. If your top interest is more resilient grass type, [focus on matching a grass](#) option to the property's site constraints and developing a sound long-term maintenance plan.
3. If your top interest is maximizing environmental benefits of the landscape, [focus on grass species choices](#) and functional landscape design and maintenance practices that support wildlife lifecycles.

Learning about Native and Water Wise Grass Projects

1. Using native and water wise grasses in landscapes has proven benefits.
 - a. Water savings. Conversion projects can yield significant water savings, often ranging from 25-75% compared to traditional turfgrass. The water-saving potential of a project depends on the difference between the current and future water use. The following are major factors:
 1. Current water use
 - a. How much irrigation does the existing landscape vegetation require?
 - b. How efficient is the existing irrigation system?
 - c. How is the irrigation system scheduled and managed?
 - d. How much irrigation is being applied?
 2. Future water use
 - a. How much irrigation does the native or water wise grass require?
 - b. What water requirements will remain (shrubs, trees, retained turfgrass, other vegetation) that will differ from the new native grass requirements?
 - c. How much water will be saved through better irrigation equipment, layout, and management, as well as leak repair?
 - b. To maximize water savings, use a grass type with a low irrigation requirement (8-10 inches of supplemental irrigation per growing season) and complete water-saving irrigation updates, if the irrigation system will continue to be used after establishment. Along Colorado's Front Range, Kentucky bluegrass requires 24 inches of supplemental irrigation, or more if the irrigation system is less efficient.
 - a. Maintenance savings. Most native and water wise grasses require less mowing and fertilization. For example, naturalistic prairie grass mixes or blue grama areas can be mowed as little as once per year in late winter and fertilized only during establishment. Buffalograss and cold-hardy Bermudagrass can be mowed once every 4-8 weeks and fertilized once or twice in mid-summer. For comparison, Kentucky bluegrass is typically mowed weekly (or 26 times per year in Colorado) and fertilized three to four times per growing season. To maximize maintenance savings, choose a grass option that can be mowed and fertilized infrequently.
 - b. Environmental benefits. Native grasses provide valuable habitat and food sources for insects, birds, and wildlife. Many animal species are dependent upon native grasses to reproduce. To maximize the environmental benefits for insects, birds, and wildlife, choose a mixture of native grasses consistent with the reference plant community in the [NRCS Ecological Site Description](#) for that location. Choose species that are commonly found in the area in similar ecological conditions. Incorporate native flowers, shrubs and forbs if feasible.
 - c. Livability benefits. Including grasses in urban landscapes can improve water and air quality, sequester carbon, manage stormwater, and moderate urban heat.
 - d. Community benefits. Native and water wise grass projects can contribute to an organization's

sustainability and climate resiliency goals. If education is included, it can create an opportunity for community members to be better informed about resource stewardship, local ecology, and the value of natural resources.

2. Key differences from traditional turfgrass

a. Foot traffic tolerance. Kentucky bluegrass and other cool-season turfgrasses have excellent foot traffic tolerance due to their rapid growth and spreading habit. Many native and water wise grasses have less traffic tolerance due to their bunching growth habit and are best used where traffic is infrequent, like front yards or peripheral areas. A few spreading native and water wise grasses, like buffalograss and cold-hardy Bermudagrass, have moderate to high traffic tolerance and can be used where some sustained use will occur.

b. Aesthetic characteristics. Native and water wise grasses can look different from traditional turfgrasses due to their color, active growth season, seedheads, height, and uniformity. Native grasses can help create landscapes that reflect the beauty of Colorado's natural environment in urban areas since much of Colorado's natural vegetation is grassland.

1. Leaf color. Some native grasses have leaves that are lighter green or blue in color during summer. The leaves of many native grasses turn beautiful yellow, orange and red tones in fall, which can create an attractive fall landscape.

2. Active growth period. Warm season native and water wise grasses grow best in midsummer. They come out of dormancy and turn green later than cool-season turfgrasses (mid-May) and go dormant or turn brown earlier (early October). This shorter growing season can result in significant water savings due to less irrigation required in spring and fall. Warm season grasses grow well in the height of summer (June, July, and August) when many traditional turfgrasses show browning or slow growth due to midsummer heat.

3. Seedheads. Many native and water wise grasses will produce noticeable seedheads in mid to late summer. These can enhance their ornamental quality and wildlife value or be removed by mowing to create a more manicured look. Like traditional lawn grasses Some cultivars of buffalograss ('Legacy' and 'Prestige') do not produce seedheads.

4. Height. Buffalograss and Bermudagrass are shorter than traditional turfgrass and require less mowing. Select short grasses where a mowed appearance is desired. Many native grasses are taller than traditional turfgrass and perform best when mowed infrequently, no shorter than six inches tall. Naturalistic landscapes, areas adjacent to open space, peripheral areas, and large areas with defined walkways or sidewalks can be ideal areas to use taller grasses.

5. Uniform appearance. Traditional turfgrass has a shorter, uniform height. Areas with a single type of native or water wise grass will be more uniform in height, color, and texture than native grass mixes. Native grass mixes, which usually incorporate five to fifteen species, will display a variety of leaf colors, taller heights, and seedheads.

c. Public perception. Because many native and water wise grasses are taller than traditional turfgrass, have seedheads, or appear less uniform in height, color, or texture, the public may perceive the area as "weedy." Later spring green up can also cause concerns from community members. Education and outreach throughout the planning, implementation and maintenance of the project is a critical component of project success. Communicating the project's long-term goals and benefits can help

with public acceptance. Check local ordinances to determine where taller grasses are allowed.

d. Maintenance needs. Caring for native and water wise grasses requires different techniques and timing than traditional turfgrass. Using a typical weekly turfgrass maintenance schedule for native or water wise grass can prevent the expected project savings from being realized and lead to unhealthy native grass. Develop a maintenance plan that outlines irrigation scheduling, mowing frequency, mowing height, fertilizer timing, weed control, and recommended equipment to be used to ensure the project goals and grass health are achieved. Find a customizable maintenance template at coloradonativegrass.org.

e. Suitable locations. Native and water wise grasses work best in low-use or low-maintenance areas. They can work especially well in areas where turfgrass may be difficult to maintain, like medians, tree lawns, slopes, and stormwater management areas. Low-traffic or peripheral areas of parks, campuses, and business landscapes can also be ideal.

f. Wildfire concerns. While dry grasses are flammable, they can be managed to reduce the risk from wildfire. Use these strategies in combination with a site-wide fire mitigation plan.

1. Choose shorter species. Where wildfire risk is high, select shorter grasses to minimize the fuel load.

2. Water periodically. Green, actively growing grasses are generally not a fire concern. To prevent grasses from turning brown in summer, irrigate periodically during the growing season to prevent them from going dormant in hot, dry weather. Consistent moisture (watering one to four times per month) will lessen the chance they will catch on fire. Watering consistently throughout the summer is a more effective approach than watering dormant grasses heavily when fire concern is high. It can take several weeks for grasses to come out of dormancy and is not an effective emergency approach.

3. Mow grasses in fall. Fall mowing can reduce the fuel load for the winter when grass fires may occur. Mow grasses no shorter than six inches tall. Mowed grass areas may be more susceptible to weed invasion and will require more monitoring and weed control. An alternative to mowing the entire stand is to mow firebreaks at strategic locations and allow some areas of grass to remain unmowed until early spring. Grasses can also be mowed around wooden fences or structures to reduce risk.

4. Manage ladder fuels. Shrub and tree branches close to the ground may catch fire if they are in close contact with burning native grasses. Consider proactively pruning lower tree and shrub branches to prevent fire from moving into the tree canopy. Mow grasses under trees and shrubs, or separate native grasses from tree and shrub areas. Keep taller grasses away from flammable structures as well.

3. For more information

a. Visit the [Colorado State University Extension Lawn Conversion Resources Page](#).

b. Explore the native grass project case studies

c. Learn from the grass profiles.

4. Checklist for success.
 - a. Clearly define the reasons for a native or water wise grass project.
 - b. Decide if the aesthetic and functional differences will meet requirements and expectations.
 - c. Decide if the project team's capacity or commitment level is sufficient for success.

Initiate

1. Engage stakeholders and form a project team.
 - a. To set the stage for success, determine the stakeholders of the project. This could include anyone potentially impacted by the project, including the property owner or manager, project manager, governing Board members, municipal planning department, landscape contractors, irrigation and maintenance personnel, facility managers, residents, and members of the larger community.
 - b. By informing stakeholders of the project's purpose, scope, budget, and schedule, they can provide input and advocate for the project's success.
 - c. If possible, form a project team that will be responsible or accountable for project tasks. Include members who will contribute to the project in some way or want stay informed about the project's progress. Meet regularly to discuss progress, challenges, and solutions.
2. Consider irrigation efficiency and repair early in the planning phase. Transitioning to sustainable landscape water use is important for all Colorado communities. If water savings is a project priority, address the irrigation system before converting the grass to a different species. Investing in irrigation efficiency through fixing leaks, more frequent maintenance checks and repairs, better management, and equipment upgrades can often achieve 25% water savings (or greater) even without vegetation changes.

Another benefit of investing in irrigation efficiency is that savings can be realized as soon as irrigation changes are made. Savings from vegetation changes often take longer to realize since regular watering is required during seed germination and establishment. If a conversion project is already planned, it is important to invest in irrigation repairs and upgrades before planting to ensure its success.

3. Here are steps to address irrigation efficiency.
 - a. Assess past water use. If past water use records are available, gather several years of water use data. Past utility bills and consumption records can contain this information. Compare the actual irrigation use to the recommended amount for the type of turf or vegetation and geographical location. Determine if the property has been underwatered or overwatered on average. Some water providers have staff who can provide this service. Irrigation efficiency or water management professionals may also be able to help.
 - b. Define a water use goal. Once the current irrigation use is quantified, define a future water use goal. This can be a percentage reduction or an average annual gallons per square foot goal. It will help define a water management strategy, identify design options, and measure success. A cost-benefit analysis of potential landscape projects based on the water use goal can help determine which projects to fund.
 - c. Have an irrigation system evaluation performed. Landscape professionals and irrigation specialists can evaluate the existing conditions of a sprinkler system to determine beneficial upgrades and repairs. Through an onsite inspection of the system, they can identify leaks, scheduling improvements, and opportunities for savings through equipment replacements. Ask for a prioritized list of work or a site walk-through so that repairs and improvements can be implemented in a systematic way. Rebates for repairs and equipment upgrades may be available from the local water provider.

d. Try irrigation efficiency or reduction measures first. If the site has been overwatered historically and there is an opportunity to gain savings through repairs, better irrigation management, or equipment changes, determine if irrigation reductions or efficiency measures can meet the water use goal without vegetation changes. A cost-benefit analysis of options may help. Another approach is to try simply reducing the frequency of watering days or run times to see if water savings can be accomplished while maintaining an acceptable appearance of the grass. These low-cost options sometimes achieve the organization's goals without having to undertake major conversion projects.

e. Map irrigation zones to conversion sites and areas where turf will be retained. Often, landscape managers will choose to retain some turfgrass at a site and convert other areas to native or water wise grass. Because native grass should be watered on a different schedule from traditional turfgrass or preserved trees/shrubs, it is important to define and separate grass conversion areas based on existing irrigation zones. By ensuring that irrigation zones are matched to the water needs of the vegetation to be supported, the native grass can be watered less often than the remaining turfgrass, trees, or shrubs through irrigation scheduling. If an irrigation system map is available, identify irrigation zones for potential grass conversion and turfgrass retention. If an irrigation map is not available, the person performing the irrigation evaluation can help identify the location of potential conversion areas. Sometimes the irrigation system will need to be reconfigured to accommodate the grass conversion or retain portions of turfgrass. Future site-wide water use can be calculated once the future vegetation type is identified.

f. Implement, refine, and monitor. Once a plan has been implemented, monitor water use and refine actions as needed to meet the community's goals.

4. Checklist for success:

- a. Identify stakeholders and form a project team to support the project.
- b. Try fixing, upgrading, and managing the irrigation system first to gain water savings and create a foundation for successful grass establishment.
- c. Define the areas that will be converted to native or water wise grasses by irrigation zone.

Choosing a Grass Type

1. Steps to choose a grass option. Once you've determined that a native or water wise grass project makes sense, the next step is to determine what type of grass to install. The following steps will define the objectives and requirements that will influence the project decisions and its long-term maintenance. Work with stakeholders to gain agreement and record the information. See [Table 1](#) for the most common native and water wise grass species and mixes used in Colorado's Front Range.
 - a. Identify standards and requirements, if applicable.
 - b. Prioritize project objectives.
 - c. Inventory landscape uses by location.
 - d. Identify site conditions and constraints.
 - e. Record visual appearance preferences.
 - f. Choose from suitable options.
2. Identify standards and requirements. Research if there are any landscape standards or specifications from codes, covenants, or other requirements. Determine if your project will need to be reviewed by any local governing entities during the planning stage. If review is required, incorporate this task into your project schedule.
3. Prioritize project objectives. Rank the following objectives from the most important to least important.
 - a. Maximizing cost savings from less mowing, fertilizer, and watering.
 - b. Stewarding the environment more by using less water, energy, fertilizer and chemicals while maximizing ecological function.
 - c. Improving landscape appearance by using vegetation better adapted to the local climate and conditions. This may be a priority on sites where the grass has struggled. Identify the root causes of the grass decline to determine if any irrigation improvements, landscape modifications, or maintenance changes might be needed before changing the grass type.
4. Inventory landscape uses by location. Identify on a site map any of the areas that will be used for the following:
 - a. Play areas or regular use
 - b. Pathways where the grass needs be short within a six-foot buffer
 - c. Pet use (urine)
 - d. Slope stabilization
 - e. Stormwater management

f. Locations for piled snow in winter

g. Identify site conditions and constraints. Many grasses require specific conditions to grow well. By inventorying the existing site conditions and noting and constraints, it will be possible to choose a grass type that has the best chance of thriving at the location. Important site conditions to note include:

1. Sun/shade
2. Soil type
3. Presence of valuable trees/shrubs
4. Elevation
5. Slopes
6. Site drainage
7. De-icing salts in winter
8. Notes where the irrigation system in good working condition or will need improvements or modifications.

h. Record visual appearance preferences. Determine if the native grass areas should have a uniform and tidy appearance or if a more naturalistic look is acceptable. Height and uniformity are the most important components to gain agreement on with stakeholders. Visual appearance characteristics include:

1. Height
2. Uniformity
3. Active growth season
4. Presence of seedheads in fall/winter
5. Color
6. Density

i. Choose from suitable options. After determining the project objectives, landscape uses, site conditions, and appearance preferences, use [Table 2](#) to determine the feasible options. If the desired qualities or site characteristics are significantly different across the property, divide the property into different areas and match the grass option to the area. This may result in two or more grass options being used at the property.

j. Confirm the availability of seed, plugs, or sod. Once you've selected a grass type, have the landscape contractor or project manager confirm that the seed, sod, or plugs are available for sale. Contact the suppliers several months before the materials are needed. Sometimes crop failures, changes in

production levels, and business closures can affect availability.

k. Project timing. Some grasses are best planted in June and July. Determine if staff and contractors can execute the project at the ideal time or workarounds will need to be developed.

5. Suggestions for special circumstances.

a. Native grass lawn. Few Colorado native grasses will achieve a traditional lawn-like look. Buffalograss may be the best option, but is best suited to elevations below 6,800 feet. It does not grow well on very sandy or gravelly soils. Allowing the grass to grow taller than a traditional lawn periodically will allow for greater grass type choices. Choose a single species or the buffalograss/blue grama grass mix for a more uniform appearance.

b. Maximizing ecological function. Support wildlife, birds, and pollinators with Colorado-friendly native grasses. Include a variety of grasses by using a mixture of species to add Colorado-style beauty, color and texture. The native prairie mix or a customized native grass mix are good options. Preserve seedheads for winter interest by not mowing in fall. Taller grass species like little bluestem, big bluestem, switchgrass can be included in a mix for more ecological value. Add wildflowers or shrubs (potted plants or seeds) at time of grass seeding to benefit pollinators if broadleaf herbicides will not be broadcast across the site.

c. Pathways. If mowing along pathways will be continual, consider seeding with only a short grass, like buffalograss, three to six feet on either side the pathway in the “beauty band.” Seed taller grasses beyond the “beauty band” zone. Continual mowing of taller grasses close to pathways will cause them to turn brown, stop growing, and be more prone to weed invasion.

d. “Naturalized” Low-input Kentucky Bluegrass with infrequent watering, mowing, and fertilizing can result in a low to moderate turf quality that mimics a native grass area. Seedheads can give the area a “natural” appearance. By changing the management practices, it may be possible to achieve the project objectives without changing the grass type.

6. Checklist for success

- a. Work with the project team to identify site condition constraints and prioritize project goals
- b. Choose a grass type that will tolerate the site’s constraints and meet as many of the goals as possible.
- c. Confirm availability of selected seed, plugs, or sod before making a final selection.

Table 1: Common Native and Water wise Grass Types for Colorado Landscapes; require 8-10 Inches of Irrigation per Growing Season or Less along Colorado's Front Range (50-80% irrigation reduction compared to cool season turfgrass).

Grass Type	Uses	Notes
Buffalograss	<ul style="list-style-type: none"> • Lawn replacement • Groundcover for low to moderate traffic areas • Good groundcover for Front-Range, Colorado-style landscape designs 	<ul style="list-style-type: none"> • Short grass; grows to 3 to 6 inches tall. • Minimal mowing required. • Best for full-sun sites up to 6,800 ft in elevation with clay content in the soil. • Not suitable for very sandy soils. • Spreading habit makes it valuable for stabilizing slopes and tolerating moderate traffic. • Can tolerate occasional flooding in stormwater infrastructure.
Blue grama grass	<ul style="list-style-type: none"> • Best used as a groundcover for low-traffic areas • Good groundcover for Colorado-style landscape designs 	<ul style="list-style-type: none"> • Grows 6 to 18 inches tall (with seedheads). • Best for full-sun sites up to 8,500 ft in elevation. • Tolerant of many soil types and growing conditions. • Grows best when mowed three times per year or less. • Not traffic tolerant.
Buffalograss/blue grama grass mixture	<ul style="list-style-type: none"> • Groundcover for low-traffic areas • “Low-grow,” low-maintenance native grass mix for natural landscapes or restoration • Good groundcover for Colorado-style landscape designs 	<ul style="list-style-type: none"> • More uniform appearance than native shortgrass prairie mixture. • Can be mowed for a lawn-like appearance or left unmowed for a more natural look; moderate traffic tolerance • Grows 6 to 18 inches tall (with seedheads). • Best for full-sun sites up to 7,000 ft in elevation. • Tolerant of many soil types; good choice when soil type is variable or unknown
Native shortgrass prairie mixture <small>(Often includes grasses like buffalograss, blue grama, sideoats grama, western wheatgrass, green needle)</small>	<ul style="list-style-type: none"> • G for low-traffic areas • Can provide wildlife, bird, and pollinator habitat • Groundcover for ecological restoration 	<ul style="list-style-type: none"> • Standard mixture of common Front Range warm and cool-season grasses provides a low-grow variety of color and texture. Not suitable for frequent foot traffic. • Grows 12 to 18 inches tall (with seedheads). • Best for full-sun sites up to 7,000 ft in elevation. • Good choice for areas where irrigation will be turned off long-term.
Customized native grass mixture <small>(Several different grass species are included based on site conditions, ecological function, and visual look.)</small>	<ul style="list-style-type: none"> • Groundcover for low-traffic areas • Can provide wildlife, bird, and pollinator habitat • Groundcover for ecological restoration 	<ul style="list-style-type: none"> • Grasses can be customized for any elevation, height, part shade, and site conditions. • Taller grasses can be included to maximize wildlife, bird, and insect value. • Flowers and shrubs can be included to support pollinators, birds, and wildlife. • Good choice for areas where irrigation will be turned off long-term. • Not suitable for frequent foot traffic.
Cold-hardy Bermudagrass (not native to Colorado)	<ul style="list-style-type: none"> • Lawn turfgrass replacement 	<ul style="list-style-type: none"> • Considered experimental; winter hardiness is being evaluated in Front Range sites. • Traffic tolerant. Cold hardy to 6,500 ft in elevation; not native to Colorado. • Mow to 1-2 inches for manicured look; unmowed it will grow to 4 inches tall. • Slow vertical growth rate results in less mowing.

Table 2: Grass Characteristics by Species or Mixture Type. *Additional species are included for specialized site constraints.*

Characteristic	Buffalograss	Blue Grama Grass	Buffalo/Blue Grama Grass Mix	Native Prairie Mix	Customized Native Grass Mix	Western Wheatgrass	Cold Hardy Bermudagrass	Fine Fescue	DogTuff Bermudagrass
Requires 50-80% less irrigation water than a traditional lawn.	●	●	●	●	●	●	●		
Tolerates shade (less than 6 hours of sun per day).								●	
Can be used for a low-water lawn (uniform look and short height).	●						●		
Suitable where a uniform appearance is desired.	●	●	●			●	●	●	●
Will have variation in height, leaf color, and leaf width.				●	●				
Grows best when mowed infrequently and allowed to grow 12 -24 inches tall.		●	●	●	●				
Active growth is May through early October; grows best in midsummer heat.	●	●	●				●		●
Active growth is April - November; slows in midsummer heat.				●	●	●		●	
Suitable for elevations above 6,800 ft.		●			●	●		●	
Tolerates sandy or gravelly soils.		●	●	●				●	
Tolerates frequent salts from pet urine or de-icing salts.						●	●		●
Tolerates periodic flooding.	●				●	●			
Stabilizes slopes and prevents soil erosion.	●		●		●	●			
Native to Colorado; supports pollinators and birds	●	●	●	●	●	●			
Suitable for six-foot pathway buffers or “beauty bands.”	●								
Can tolerate broadcast applications of weed control products.	●	●	●			●	●	●	●

Planning

1. Engage stakeholders, project team, and wider community in the planning process. It's important to figure out how the team will accomplish the tasks required for a successful project.
 - a. Organize the project team. The project team consists of the people who will contribute to the project planning, execution, and maintenance phases. Once team members have been identified, draft a high-level timeline and determine how often you'll meet, communication needs, and each person's role and responsibilities. Identify decision makers and outline how decisions will be made and recorded, as well as how conflicts will be resolved. Develop a plan to communicate within the project team to ensure progress and success.
 - b. Involve stakeholders. Stakeholder engagement is critical for a project's success. Identify stakeholders that could be impacted by the project. Determine how and when to involve them and develop a communication plan to inform them, gain feedback during the planning phase, identify issues, and manage expectations. Clearly communicate the project's objectives such as minimizing maintenance costs, reducing or eliminating irrigation, encouraging wildlife, etc. Communicate the changes in appearance, cost, process, and timeline so stakeholders understand the goals and have realistic expectations throughout the project.
 - c. Plan consistent communication. Reaching out to stakeholders at regular time intervals or project milestones is very important. Expect the residents to be curious and interested in providing feedback. Signing the area before the project starts and at major milestones has proven to be an effective method in combination with other communication channels. Regular communication can help prevent native grass areas being watered, fertilized, and mowed like lawn areas in an attempt to make them look more manicured.

Plan how to respond to common community concerns, should they arise, such as:

1. It will look more unkept and messy than traditional turfgrass
2. It may turn brown
3. Native grass areas will be weedy
4. It might become a fire hazard
5. Tall grass attracts unwanted wildlife like snakes, rodents, predators or problematic insects.
6. Native grasses will invade lawns and gardens

[Reduced Maintenance Grass Areas for HOAs](#) by Dr. Tony Koski, Turfgrass Extension Professor at Colorado State University, provides information about how to address these concerns.

- d. Identify key personnel. There are a few important roles for a native or water wise grass project. In smaller projects, an individual may play more than one role. Some roles may be filled through the bidding and contracting process. Identify or designate decision makers.
 1. Project manager – identify, organize, and manage the resources needed to complete the project.

2. Communication manager – Communicate messages and decisions to other team members. Manage education and outreach to stakeholders.
 3. Irrigation professional – assess the irrigation system’s current state, provide recommendations, and make improvements. Manage irrigation during establishment and long-term maintenance (if applicable).
 4. Landscape installation contractor – kill and/or remove existing vegetation, acquire seed/sod/plugs, plant new grass, manage weeds and irrigation through the establishment process. Irrigation may be managed by either the landscape installation or the irrigation professional.
 5. Landscape maintenance contractor or in-house maintenance staff– mow and fertilize grass over the long-term. Proactively manage weeds and irrigation (if applicable).
2. Identify financial resources to pay for the project. In the planning phase, begin to figure out where the money will come from and the process to secure funds.
 - a. Estimate project costs. Research similar projects or find cost-per-square-foot estimates to develop a cost estimate range for initial planning. Ask landscape experts for guidance.
 - b. Access in-house funding. Talk with the financial managers in your organization to see if funding is available. Learn how budget is allocated and the steps required to reserve money.
 - c. Grants and rebates. Financial assistance may be available through municipal, water provider, state, federal, or private entities. Turf replacement, xeriscape rebates, and turfgrass to native grass programs may be applicable. Check the program rules, process, lead times, and requirements to ensure your project is eligible for funding.
 3. Select the site(s).
 - a. Start with low-risk areas to build capacity. Gaining the skills to be successful with native grass seeding projects can be a learning process. There may be bumps along the way that put the project at risk of being cancelled. Consider starting with low visibility, low value areas, including those where the existing vegetation may be in poor condition and improvement will be valued. If challenges arise, the project team may be able to course correct without negative feedback from stakeholders. It may be wise to save high visibility, high value areas for a later phase when the team is more experienced and stakeholders have had greater exposure to native grasses. This can lead to more successful projects over the long-term.
 - b. The best areas for native or water wise grass projects are sunny, low traffic, and have few valuable large shade trees.
 1. Full sun conditions. When choosing areas to convert, look for areas that receive at least six or more hours of sun per day. Most native and water wise grass species require full sun conditions to grow well.
 2. Choose low-traffic, low-use areas. Many native and water wise grasses cannot withstand consistent foot traffic from people or pets. Look for areas to convert where concentrated play, traffic, and use are infrequent for best success. Adding gravel or concrete pathways can help make large

native grass areas more usable. Buffalograss and Bermudagrass can tolerate more traffic and may be suitable options depending on the site conditions.

3. Avoid snow pile locations. Native grasses can be killed by concentrated salts. Don't plant native grasses in areas where plowed snow with salt or sand will be piled. Concentrated high-salt runoff can also cause damage.
4. Look for areas without large, valuable shade trees. Native and water wise grass conversion areas will be watered less. Consider the impact of less irrigation on existing trees over the long term.
 - a. Large, healthy shade trees growing in irrigated turfgrass are likely to experience stress when the water is cut back, leading to decline and death. If preserving trees is a high priority, then the area may not be suitable for native or water wise grass, or irrigation modifications will be needed to ensure the tree's water needs are met.
 - b. For large or closely spaced trees, identify a suitable mulch or groundcover to be used under the entire tree canopy where native grasses are not suitable.
 - c. Pine and evergreen trees often require less water than deciduous trees and can be compatible with native grass, especially if the area will be watered periodically. Low water shade trees, like oaks and hackberry, may also work.
 - d. If a conversion area will not be irrigated over the long-term, it will be challenging for existing or newly planted trees to survive without extra water.
 - e. In new construction, trees can be irrigated with drip irrigation in native grass areas to provide extra water. This option may represent added costs for existing landscapes. It may be expensive to add a dedicated drip irrigation zone to trees. The cost will depend on the existing site conditions and should be evaluated for feasibility.
 - f. If existing trees are not providing much value due to their poor condition, it may not be worth considering the project impacts on tree health.
- c. Part-shade to shade situations. Because most water wise and native grasses require six or more hours of direct sun per day during the growing season, part-shade and full shade areas are not suitable for native grass conversions. To reduce the amount of irrigation in shady areas, consider removing grass and installing wood chip or shredded wood mulch. Another option is to overseed with fine fescue grass for limited water savings. Fine fescue can tolerate shade under deciduous trees and can be watered twice per week on average (~30% reduction along Colorado's Front Range).
- d. Green infrastructure. If a native grass area will serve a green infrastructure function, like storm-water detention and infiltration, take these requirements into account during the planning process. If the grass will be submerged on occasion, consider selecting species that can tolerate periodic flooding like buffalograss, green needle, western wheatgrass, or switchgrass. If parking lot or sidewalk runoff will be diverted into the area, choose grass species that is also salt tolerant to prevent death from deicing salts.

Steep slopes and swales with rushing stormwater may need species with rhizomes or deep roots to withstand erosion. In addition, these areas may need soil stabilization measures, like erosion blankets, during the establishment phase. While green infrastructure landscaping may be designed to handle temporary flooding, it is also important to install irrigation to water the grass during extended hot, dry conditions. Irrigation is especially important in areas with reflected heat from concrete, asphalt,

and bricks. Stormwater rules may dictate certain species or installation techniques. Check with your city or stormwater entity for more guidance.

4. Irrigation system considerations during the planning phase

a. Temporary irrigation. If an area will not be irrigated long-term, consider using a temporary irrigation system for better germination and establishment.

1. A temporary irrigation system is built above ground, left in place for one or more years, then eventually dismantled and removed.
2. Irrigating will dramatically improve the likelihood of good seed germination, seedling growth, and soil cover. Projects with no irrigation may take five to ten years to establish because of variations in natural rainfall and weather conditions.

b. Permanent irrigation systems. Using an existing in-ground irrigation system can be a tremendous asset for a native or water wise grass project. It can be used to ensure successful seed germination and establishment. Once the grasses reach maturity, the area can be watered less often (one to four times per month) or only during hot, dry periods. To maximize water savings and plant health:

1. Zone native grass separate from turfgrass. Native and water wise grasses should be watered on a different schedule than turfgrass. Be sure to plan the project so entire irrigation zones are converted to native grass. Do not convert a portion of a zone unless the existing vegetation can tolerate being watered less often.
2. Modify irrigation zones. If site conditions make it challenging to convert an entire irrigation zone, it may be possible to modify the existing layout of the irrigation system by changing one or more zones. This may involve separating, connecting, or adding irrigation zones. If other irrigation modifications are necessary, consider adding a drip zone(s) to maintain the health of existing trees.
3. Change to taller heads. Where native grasses will not be mowed, install or replace existing heads with taller ones (at least 6 inches) to allow the irrigation water to spray over the grass seed-heads without being blocked. Protect valuable trees and shrubs. Modifying an irrigation system may involve trenching. Avoid damaging the roots of existing trees and shrubs by only trenching outside of the dripline.
4. Upgrade to high-efficiency equipment. A native grass project can be an ideal time to upgrade irrigation equipment. This may involve replacing existing heads, nozzles, and controllers with more modern or high-efficiency models. Newer equipment can improve plant health, save water, and make landscape management easier. Many water providers offer rebates for high-efficiency irrigation equipment.
5. Install flow sensors. These devices monitor the water flow and alert staff if the flow is significantly different from expected. They help identify leaks and irrigation problems that can result in over or underwatering.

5. Develop a project statement of work. Once the project has been defined, record the scope of the proj-

ect, the location, key tasks, and measures of success in a statement of work. This document can be used both as a communication tool and to ask for price bids from potential contractors. See coloradonativegrass.org for a sample statement of work.

- a. Outline services required beyond seed planting, such as site preparation, irrigation repairs/upgrades, weed control, irrigation management, and post-planting inspections.
 - b. Specify the desired warranty period.
6. Municipal review process, if applicable. Some municipalities and counties require native grass projects to be reviewed and approved before the project starts. Check with your local government or regional building department for details.
7. Receive bids from installation contractors. Use the statement of work to ask potential contractors for price bids and when they can schedule the work. Try to get more than one bid to compare offerings from different businesses. Many contractors will want to walk through the site and ask clarification questions before submitting a bid.
 - a. Select a contractor. Compare prices and schedules to determine the best offer. Take into account a contractor's knowledge and experience with native and water wise grass installation projects and weigh their value-add services. Ask for references from projects similar in size and scope to verify the contractor has the skills and judgement needed to be successful. Ensure they have the desired seeding and mowing equipment (one that can mow at 6 inches or greater). When a contractor has been selected, notify them and schedule the project within an acceptable window of time for the installation. Draft a responsibility matrix to clarify roles and determine communication protocols to resolve issues. See coloradonativegrass.org for sample list of tasks for a responsibility matrix.
8. Create a plan for transitioning between project phases. Often, the installation contractor is not the same personnel that will maintain the native grass over time. By creating a transition plan with clear tasks, guidelines, and expectations for the maintenance personnel, a project is much more likely to achieve its objectives. Arrange a meeting with the project team and maintenance personnel both prior to and at handoff time to ensure success. Coordination with the person managing the irrigation system is critical.
9. Community and neighborhood outreach. Before the project starts, communicate with stakeholders and the larger community about the project plan, the goals and objectives, and what they can expect to see over the next few months. It is important to communicate that native grasses often take longer to grow and establish than turfgrasses to set expectations appropriately. Emails, newsletters, temporary signs, and in-person or virtual meetings can all be effective delivery methods. Proactive communication can greatly reduce negative comments from the public and residents.

10. Checklist for success.

- a. Engage stakeholders, project team, and wider community in the planning process.
- b. Find the money to pay for the project, select the site(s) for conversion, and develop a statement of work.
- c. Get bids from contractor, select one, and schedule the work.
- d. Plan for transitioning the project to the maintenance personnel.
- e. Conduct community outreach.

Installation Process

1. Plant propagule type (seed, sod, plugs, or sprigs). Native and water wise grasses can be installed by seed, sod, plugs or sprigs. Be sure to plan your project with the correct propagule type.
 - a. Seed – most native grasses are planted by seed.
 - b. Sod – Bermudagrass is the only option currently sold as sod.
 - c. Plugs – plugs are small plants sold in trays. The plants are planted 12-18 inches apart and fill in over time. Buffalograss and Dog Tuff Bermudagrass are two grass types commonly sold as plugs. Buffalograss plugs contain only the female plants, so the grass looks more uniform due to the absence of the male plant flower stalks.
 - d. Sprigs – Sprigs are pieces of ground up sod used for planting Bermudagrass only (see “Sprigging”).
 2. Timing projects. It is important to seed at the right time of year, which varies based on the type of grasses being installed.
 - a. Seeding single species projects with irrigation
 1. Warm season species like buffalograss, blue grama, and Bermudagrass are best planted from June 1 to July 31, depending on the weather. They will germinate and root best when the soil temperature is warm in mid-summer. Seeding too late in the year may result in small seedlings that are likely to be killed by winter weather.
 2. Cool season species like western wheatgrass and fine fescue can be seeded from April 1 to June 15, or August 1 to September 15.
 - b. Seeding mixes of cool and warm season species like the native prairie or customized mixture with irrigation
 1. Seed mixes are best planted between May 1 and August 31.
 - c. Seeding non-irrigated projects
 1. Seed is best planted between November 1 and May 1. By planting after the growing season ends in early winter, the seed will be chilled by cold weather to break dormancy and is more like to work its way down in the soil. When the temperature and moisture conditions are favorable in the spring, seed will germinate and begin to grow. If there is a lack of precipitation, the seed may not germinate. Non-irrigated projects are not guaranteed to be successful in Colorado’s climate where precipitation is erratic and unpredictable.
 - d. Plugs, sod, and sprigs of Bermudagrass or buffalograss
 1. Best planted between June 1 and August 1, when warm season grasses are growing rapidly.
 3. Vegetation and weed removal. It’s important to kill any existing grass and weeds before planting to achieve a uniform appearance, maximize the environmental benefits of the new grasses, and ensure
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water saving is achieved. This can be done through applying a non-selective herbicide like glyphosate or using a sod cutter.

- a. Herbicide – Weed and grass killers can be effective in killing persistent species and preserve valuable organic matter/topsoil. Water the existing plants prior to treating with herbicide since many formulations will only work on well-watered, actively growing vegetation. Two to three applications may be needed to fully kill the existing vegetation. Control problematic weeds and tree suckers before planting, perhaps by tank mixing two or more types of herbicides. If weeds are present after three herbicide applications, consult an expert for other herbicide recommendations that can be more effective. Make sure enough time is built into the project schedule for several applications, if needed. Follow all directions on the herbicide label.
- b. Sod cutter – Live grass can be removed with a sod cutter. This is the quickest method to remove existing grass, but also removes the valuable organic matter and topsoil. The removed material will need to be disposed of or recycled. Also, the existing turfgrass may regrow from the roots after the new grass is installed. This method won't remove many persistent types of weeds since they often regrow from root fragments deep in the soil. Removal of existing grass may trigger stormwater and sediment control measures, which can add permitting requirements, cost, and time to a project.
- c. Cardboard method – For small projects, it may be possible to wet the soil thoroughly and then cover the area in cardboard and mulch for a year to shade out existing grasses and weeds. Plan on planting the year after the area is mulched. Rake off the mulch and any cardboard that hasn't broken down before planting to expose the surface of the soil.
- d. Silage tarps – These large, light-proof tarps are commonly used in organic agriculture for pre-planting weed control. Although highly experimental, they may be worth considering if the site conditions and schedule are favorable.

4. Soil Preparation

- a. Test the soil. Most native grasses do not need soil amendment (compost, manure, or topsoil) added to the soil prior to planting unless the soil organic matter is below 1-2%. Early in the project, send a soil sample to a professional soil testing lab to determine what soil preparation may be needed, if any.
- b. Decide if the soil needs tilling. Tilling may not be necessary if the existing soil is not compacted. Some seeding methods can plant seed directly into dead grass and weeds, which minimizes weed seed germination and avoids disrupting the soil structure. Plugs can also be planted into dead material. However, if the soil is compacted, then tilling is an important step prior to planting. Alleviating soil compaction will help air and water move into the soil, creating a healthier rooting environment for the new grass. Tilling is also important to do before installing Bermudagrass sod since the sod needs direct contact with the soil surface to establish. After tilling, fine grade the soil to break up clumps and level the surface through harrowing, dragging, or raking.
- c. Core aeration. In areas where tilling is not possible, like around the roots of mature trees, core aeration can help alleviate soil compaction to a limited extent.

5. Irrigation system modifications or temporary irrigation
 - a. Address any upgrades, repairs, and changes prior to planting. See [Section 4](#) for more information.
 - b. Build the temporary irrigation system (if applicable) after rough grading and soil preparation.
6. Planting methods and equipment. Grass seed needs to be in contact with the soil to germinate well. Common seeding methods are described below. Most native grass seed grows best when planted 0.25 to 0.5 inches deep in consistently moist soil. If a project site has areas with different characteristics, more than one seeding method may be needed.
 - a. Drill seeding – This planting method uses a machine that plants the seed directly into the soil at a specified depth. Because the seed is protected by the soil, better germination results and less seed can be planted. A drill seeder can also plant into existing dead grass and vegetation, so the area does not have to be tilled first, potentially saving on soil preparation costs. Drill seeding works best in areas accessible by machines and where the soil is not compacted. Use a machine with a seed box designed to continually agitate and mix native seed mixes. Make at least two passes in different directions, if possible, to prevent stripes or rows of seed.
 - b. Slit seeding – A slit seeder or slice seeder is a machine that uses blades to cut slits in the soil roughly one inch apart and plants the seed in the slits. Walk-behind models can be used in small areas. A slit seeder plants the seed directly into the soil, which can improve germination rates. It is not necessary to remove the dead grass and vegetation before slit seeding. Slit seeders work best for single-species projects since the hopper is not designed to continually mix the seed, which is required for native grass mixes.
 - c. Hand broadcast and rake – Native grass seed is often unusually shaped, large, or fluffy, which makes it difficult for it to pass through a traditional spreader uniformly. For small areas with prepared soil, spreading seed by hand can work well. To determine how much seed to use, find the seeding rate in the grass profiles and calculate the amount of seed needed for the square footage of the area. Hand broadcasting seed can also work for sloped areas but is too labor intensive for large spaces. Rake the area after spreading the seed to mix it into the top half inch of soil.
 - d. Core aeration and hand broadcasting – For areas where the soil is not compacted, it may be not necessary to rototill. Core aerate the area heavily so the holes are several inches apart. Hand broadcast the seed evenly throughout the area. The seed that falls into the aeration holes is more likely to germinate. If the aeration holes are closely spaced, the new grass will fill in the area over time. By not tilling the soil, this method reduces the amount of weeds in the new grass and preserves the soil structure
 - e. Hydroseeding – This planting method is where grass seed, fertilizer, tackifier and fibrous mulch are mixed with water into a slurry and sprayed over an area onto the soil surface with a machine. This can be a cost-effective way to cover a large area. It can be used for steep slopes where other planting methods are not practical. Make sure the tank has been cleaned prior to seeding to remove the type of seed previously used.

Hydroseeding is generally not used for small areas. The downside of hydroseeding is that the seed remains on the soil surface, rather than in close contact with the soil, and is more exposed to birds, wind, and animals. An alternative is to spray the seed and fertilizer first, then spray the mulch and tackifier in a separate application. This can result in more evenly spread seed and better mulch cover.

Ultimately, the seed germination percentage in hydroseeded projects is lower. If hydroseeding is used, double the seeding rate to compensate for the lower germination percentage.

f. Laying sod – If sodding, remove any existing live grass with a sod cutter or till dead grass and weeds into the soil before planting. Remove clumps and fine grade the soil. Lay the pieces in an overlapping pattern and ensure good contact between the sod and the soil surface.

g. Sprigger – A sprigger is a machine that grinds large rolls of Bermudagrass sod and plants the pieces of roots, rhizomes, and stolons into the soil. The rhizomes and stolon pieces are watered frequently and can establish in a few weeks or months. Sprigging is a way to plant large areas with Bermudagrass without having to sod the whole area. It is best suited to large areas accessible to machinery.

7. Seeding specifications and protection

a. Seeding rate and planting depth. Check the specifications for the species to be planted.

b. Starter fertilizer. Apply an organic or starter fertilizer to the soil at the recommended rate prior to planting.

c. Mulch. Hydromulch, crimped straw, or pelletized seed mulch can help protect the seed on non-irrigated projects. Wood chip mulch is not used for grass seeding projects.

d. Topdressing. Do not topdress the lawn with sand, soil, or peatmoss after seeding.

e. Erosion blankets. Erosion blankets may be helpful to stabilize the soil on steep slopes or in areas where moving water might cause erosion. Erosion blankets are meant to hold the soil temporarily until the grass can establish and stabilize the soil with its rhizomes. Choose a biodegradable blanket type with the specifications needed for the slope or potential water volume and velocity. Biodegradable blankets, rather than blankets with plastic netting, break down over time when the grass has matured. Blankets can be removed after germination, but this process can damage young seedlings and is best performed with care.

8. Project signage, community outreach




a. Once the project activities have started, consider posting signage to educate stakeholders about what is happening, the project goals, and what to expect.

b. Let the community know what to expect through relevant communication channels to help garner support of the project and minimize complaints.

Establishment

1. Watering schedule. Before planting, check with your water provider to see if a temporary watering permit for new seed or sod is required. Once the seed, sprigs, plugs, or sod is installed, use a watering schedule similar the guidelines in Table 3.
2. Use this information as a starting point. Check the site daily for the first few weeks and adjust the run time of the sprinklers if the soil is too wet or too dry. Actual run times can be reduced based on irrigation head type, soil type, slope, and exposure. Monitor the soil moisture in several locations periodically and adjust the schedule as needed.

Table 3: Sample Watering Guidelines for Grass Seeding Projects

Weeks After Seeding	Application Rate per Watering Cycle	Frequency	Minutes per Cycle (fixed spray nozzles) 	Minutes per Cycle (rotors) 	Minutes per Cycle (high efficiency nozzles)* 	Notes
0-2	0.1 inches	Two to three time per day	4	9	12	Keep soil surface consistently moist but avoid runoff and puddling.
3-4	0.2 inches	Once per day	8	18	24	Moisten soil daily to prevent new seedlings from dehydrating.
5-6	0.3 inches	Every other day	12	27	36	Allow soil surface to dry out between waterings but maintain consistent moisture farther down.
7-8	0.3 inches	Three times per week	12	27	36	Top inch of soil can dry out between waterings. Moisture in soil profile will encourage healthy roots.
9-12	0.5 inches	Twice per week	20	45	60	As seedlings grow longer roots they can gradually be watered less often.
13-16	0.5 inches	Once per week	20	45	60	Water regularly to encourage health of new seedlings.
Year 2 and beyond	0.5 inches	Once per month or as needed	20	45	60	Schedule water to achieve project goals and desired grass appearance.

Courtesy of Jarod Clayton, Colorado Springs Parks and Recreation Department. If runoff occurs, use cycle and soak scheduling. Break up the total watering time into 2-3 segments and wait one hour between segments to allow the water to soak into the soil.

3. Fertilization. Fertilizing new seedling stands helps them grow quickly so the leaves fully cover the soil. Apply a controlled-release or organic fertilizer at planting OR fertilize regularly with a very light dose of quickly available fertilizer. A light dose of fertilizer can be applied as often as weekly, but at a significantly lower rate than standard lawn fertilization. Apply 0.1-0.2 pounds of nitrogen per 1,000 square feet each time the area is fertilized. Do not fertilize after mid-August.
4. Weed control. It is common for weeds to grow during the germination and establishment phase. Control weeds early to reduce competition for moisture and nutrients, improve grass seedling growth, and reduce stakeholder complaints. If most tough to control weeds were killed prior to planting, most of the resulting weeds will be easy to control with specialized herbicides. Proactive weed management during establishment will result in healthy grass stands with minimal weed issues over time and is highly recommended.

Use herbicides labeled as safe for the grasses planted. Do not use traditional lawn weed killers like 2,4-D on native or water wise grasses. One common approach is to use carfentrazone (Quicksilver) to control broadleaf weeds and quinclorac (Drive) to control grassy annual weeds. Both herbicides can be used as soon as the weeds begin to germinate and will not harm most new grass seedlings. Early and frequent herbicide application (if needed) is key to successful projects. Hand weeding is an option for smaller projects or where resources allow.

5. Mowing. Mowing is optional during the establishment phase. Leaving the grass taller, and potentially even unmowed for the first year, if allowed by your HOA or city ordinances, will allow it to grow deeper roots. If the grass grows tall enough to look unsightly or cause concern, mow it as high as possible, ideally so the grass is four to six inches tall after mowing. This may require specialized mowing equipment or a mowing subcontractor, as not all mowers can be adjusted this high. A weed eater can be used for smaller areas. A hedge trimmer attachment can be helpful.

Try to mow so that no more than one-third of the height of the grass blades, on average, are cut off during mowing. In other words, avoid letting the grass grow extremely tall and then mowing it short. Do not leave clumps of clippings laying on top of the mowed grass. Mowing the grass too short can cause it to go into shock and may take several weeks to begin growing again. While turfgrasses often have growing points close to the soil surface and can tolerate low mowing, many native grasses have growing points four to six inches above the soil. They cannot tolerate low mowing like turfgrasses.

If weeds have not been controlled with herbicides, mowing when weeds are flowering can be used as a weed management strategy to prevent them from producing seeds. Mowing can also encourage lateral growth on some grasses.

6. Weather considerations. Unexpected weather events can affect project scheduling and grass establishment. It may be necessary to delay activities or implement corrective actions if weather negatively affects a project.
7. Steps to rehabilitate less successful projects. Weather, irrigation failures, and weeds may impact project success. Many projects can be improved even if they don't initially have a successful start. Here are a few corrective actions that can be used.
 - a. Control weeds. If weeds are not controlled soon after germination, the new stand of grass will become weedy. This can cause the perception that a project has failed. In these cases, determine if desirable grass seedlings are present and estimate how much of the soil surface is covered by plants.

If there is 35% or more soil coverage by desirable grass seedlings, try controlling the weeds before reseeding. Spray weeds with an herbicide that will eliminate the weeds without harming the grass. If the weeds are taller than 6 inches, mow the area first and then spray the weeds. Controlling the weeds will allow the grass seedling to receive more water, light, and nutrients, which can greatly increase how quickly the grass seedlings will establish.

b. Modify irrigation. In many cases, the area doesn't have enough soil moisture to cause successful germination. Assess if the irrigation system is covering the area sufficiently and make any needed repairs or adjustments. If it is functioning properly, increase number of start times per day or increase the run times, using the schedule in Tables 4 and 5 as guides. This can work if the seed has not yet germinated. If the seed has germinated then dried out and died, increasing the irrigation will not correct the project. Reseeding will be required.

c. Fertilize. If the grass has germinated but has not grown large enough to cover the soil, consider fertilizing with an organic or slow-release fertilizer. If the grass doesn't begin to grow quicker, then test if soil compaction is limiting growth. If compaction is an issue, then core aeration or tilling and reseeding may be necessary.

d. Reseed. If there are bare or thin areas, try seeding the problem areas again within the recommended seeding date range. If germination or establishment was not successful at all, the project will need to be redone, potentially from the vegetation removal stage. Identify the most likely cause of failure and make the needed corrections before trying again. If the soil is compacted, it may be important to till the area before replanting.

8. Checklist for Success

- a. Kill and/or remove the existing weeds and grass before planting. Expect two or more herbicide applications.
- b. Plant into dead grass and weeds if the soil is not compacted. If the soil is compacted, rototill before planting.
- c. Plant the seed, plugs, sod or sprigs at the right time of year with appropriate equipment, using the right seeding rate and planting depth.
- d. Water frequently to germinate and establish the grass using Tables 4 and 5 as guides.
- e. Proactively control weeds and mow if needed.
- f. Take corrective actions if required.

Long-term maintenance

1. Importance of a management plan. The long-term success of a native grass area depends on employing a sound management plan. The care of native grasses is significantly different than the protocols used for turfgrass maintenance. In many cases, if there is not a separate management plan, native grass areas will end up being cared for like turfgrasses. Water and maintenance savings are not achieved, and the health of the native grass can suffer.
2. Training staff and contractors. If the maintenance staff and contractors are not familiar with the methods used for native grass areas, it's important to invest in regular training, project site visits, and communication. Identify and communicate expectations so that everyone has a clear understanding of how the area should look, the maintenance inputs, and what to do if an issue arises. Support a close relationship between the contractor and maintenance staff to promote the best possible hand off from installation to maintenance. Train new or seasonal staff soon after they begin work.
3. Watering. Native grass areas can be watered in a variety of ways. Most native grasses do not require winter watering to prevent winterkill.

Table 4: Long-Term Watering Guidance Based on Project Objectives

Watering Level	Description	Notes
Not irrigated	Grass is watered with temporary irrigation for the first two growing seasons, then not watered again.	Maximizes water savings. Grass will be green during periods of active growth and sufficient precipitation. Grass will go dormant and turn brown during dry periods with no rain. Reduces irrigation maintenance; test the system at startup and once per month.
Irrigated periodically	Grass is watered consistently for the first two growing seasons. For season three and beyond, grass is watered only during hot, dry periods or when a greener appearance is desired.	This approach minimizes the amount of water needed to maintain the grasses' health. Allows flexibility to use more water on occasion or conserve water during times of shortage or drought.
Irrigated consistently	Grass is watered one to four times per month on average.	Keeps the grass green during its growing season. May be needed where aesthetics are important. Even with consistent watering, two-thirds water savings can be achieved compared to traditional turfgrass watering. Continued irrigation maintenance will be needed

4. **Fertilizing.** Most native grass areas can be fertilized less often than traditional lawns. While they don't need to be fertilized at all, periodic fertilization will lead to a thicker, denser stand of grass that may have a better appearance and have fewer weeds. Fertilization can also cause the grass to be greener. For areas where native grass is used as a lawn replacement or a low-water groundcover, fertilize warm season grasses once or twice in June or July when the grass is growing rapidly. Native grass mixes of warm and cool season grasses can be fertilized once in May. Low-input, naturalized, or restored areas do not need to be fertilized at all, but may have a less dense cover and some spaces between plants over time.

Table 5: Long-Term Fertilization Guidance Based on Project Objectives

Landscape Type	Grass Type	Frequency	Timing
Lawn replacement or solid groundcover	<ul style="list-style-type: none"> • Buffalograss • Blue grama grass • Bermudagrass 	Once or twice per growing season	June and/or July
Irrigated native grass mixes	<ul style="list-style-type: none"> • Native grasses mixes of warm and cool season grasses 	Once per growing season	Mid-May
Unirrigated naturalized areas, restoration projects	<ul style="list-style-type: none"> • Native grasses 	None	None

5. **Weed control.** Long-term weed control is an important task to keep native grass areas looking acceptable. Ideally, with proactive weed control early in the project, long-term weed control efforts can consist of spot spraying troublesome plants throughout the area. Do not use traditional lawn weed killers like 2,4-D on native or water wise grasses. Pre-emergent weed control products can be helpful in preventing new weeds from growing. Since pre-emergent products will also prevent new grass seed from germinating, use only in established grass stands where overseeding or germination of additional grass seed is not planned. Identify the weed species occurring in the area and include specific weed control strategies for those types of weeds. Only use products labeled as safe for the grasses in the area.
6. **Mowing.** Like watering, a variety of approaches can be used for mowing native grass areas. Check with your HOA or city ordinances to determine if mowing height rules apply to your site. The more often an area is watered, the more mowing it can tolerate. Non-irrigated areas should be mowed no more than once every 90 days. Irrigated areas can be mowed as frequently as every 30 days. Mow the grass as high as the equipment will allow, ideally to a height of at least four to six inches after mowing. Mowing high will minimize the shock to the grass, allow it to continue growing steadily, and prevent weeds from invading. If fire concerns are not an issue, avoid mowing grasses at the end of the growing season in fall to reduce soil erosion and weed invasion. Do not mow native grasses weekly like traditional turfgrasses.

Table 6: Mowing Options for Long-Term Maintenance

Mowing Frequency	Description	Notes
Minimal mowing	Mow once in February or March to remove dead grass blades.	Mowing yearly, which not required for plant health, will remove all the brown material and make the stand look healthier and greener in the summer. This mowing replaces periodic burning or grazing in urban and suburban locations. In areas where pollinator reproduction is a key objective, consider mowing once every two or three years.
Infrequent mowing	Mow once in February or March to remove dead grass blades. Mow once around June 1 and again around August 1.	This approach removes all the brown material in late winter and makes the stand look healthier and greener in the summer. Mowing 1-2 times in summer will make the stand more even in height for a more uniform appearance, but still retain the natural beauty and seedheads of the grasses.
Regular mowing	Mow once in February or March to remove dead grass blades. Grass is mowed once every 30 days through mid-October or when growth slows.	Results in the most uniform appearance. Best used for short grasses like buffalograss and “beauty bands” adjacent to sidewalks. Grass mowed this often will not produce seedheads. Taller grasses may have a browner appearance when mowed frequently and may benefit from less frequent mowing.

7. Remove litter and trash regularly. Native grass areas need regular cleanup of trash, litter, and other debris to retain a clean appearance. If regular policing of trash is neglected, the native grass will look forgotten and be a source of complaint even when the grass itself is healthy and thriving.
8. Sample long-term maintenance plans. See coloradonativegrass.org for a sample maintenance plan that can be modified as needed.
9. Management for fire mitigation. While dry grasses are flammable, they can be managed to reduce the risk from wildfire. Mow grasses where they are close to low tree branches and could potentially be a ladder fuel. Prune lower tree branches to prevent fire moving from grasses to the tree canopy. Mowing a firebreak at strategic locations can also be a good strategy and can allow some areas of grass to remain unmowed. Choose shorter grasses in areas where wildfire risk is high. Many native grasses cannot tolerate frequent, short mowing. Avoid mowing as the only strategy to mitigate fire risk.
10. Long-term signage. Having long-term signage in the area can communicate the project benefits to new community members and stakeholders. Well-designed signage can be an important interpretive tool to inform residents and visitors about native grasses and their advantages. It can help stakeholders perceive native grass areas as a community asset that contributes to sustainability and resilience.

Buffalograss Overview

Buffalograss is an excellent native grass option for lawn replacements, low-maintenance groundcover areas, and green infrastructure projects.

Benefits

- Short, uniform appearance works well in more manicured settings.
- Low maintenance. Mow 1-3 times per summer. Left unmowed, it will grow 3-6 inches tall. Fertilize once in mid-summer and water once per week or less.
- Drought tolerance. Goes dormant during drought or water restrictions and starts growing when moisture returns.

Water Savings

- Requires about one-third the water of a traditional lawn.
- Water once per week or less, May to October. Winter watering is not required.
- Newly-planted seed or plugs require regular watering for several months after planting as it forms new roots.

Considerations

- Needs at least six hours of sun to thrive.
- Grows up to 6,800 feet in elevation.
- Turns green later in spring (mid-May) and turns brown earlier in fall (early October) than a traditional lawn.
- Grows best on soils that have clay content. Will require significant water if planted on sandy, rocky, or gravelly soils.
- Tolerates moderate foot traffic, but not well-suited to high recreation areas.

Installation

- Use a cultivated variety (cultivar) for a greener color and more uniform growth habit. The cultivars 'Sundancer,' 'Prestige,' and 'Legacy' have proven success on Colorado's Front Range.
- 'Sundancer' is installed by seed, while 'Prestige' and 'Legacy' are installed by plugs. June 1 – July 31 is the optimal planting time.



Buffalograss Characteristics

- Botanical name: *Bouteloua dactyloides*
- Typical annual irrigation requirement: 8 - 10 inches or less
- Irrigation savings compared to turfgrass: 66%
- Warm or cool season: Warm
- Tolerance to foot traffic: Medium
- Salt tolerance: Poor
- Slope stabilization: Good
- Tolerance to temporary flooding: Good
- Leaf height: 3-6 inches:
- Height with seedheads: 3-6 inches
- Uniformity of appearance: Uniform appearance
- Active growth season in Colorado's Front Range: May to October
- Leaf color: Blue-green
- Density: Very dense
- Mowing requirement: One to three times per year
- Fertilizer requirement: Once in midsummer
- Ecological benefit for wildlife: High
- Shade tolerance: Poor
- Soil type limitation: Grows best on clay soil
- Elevation limit: 6,800 ft
- Native to Colorado: Yes
- Native location: Central Great Plains, from Texas to Nebraska and Wyoming
- Installation methods: Seed or plugs, sod can be used if commercially available
- Cultivars and notes: 'Sundancer' is a good cultivar for seeding projects. 'Prestige' and 'Legacy' have proven to be cold-hardy cultivars installed as plugs.
- Seeding depth: 0.25-0.50 inches
- Seeding rate for landscape projects: 3 lbs per 1,000 sf
- Plug spacing: 12 -18 inch centers
- Herbicide recommendations: Do not use traditional lawn weed killers on buffalograss. Use herbicides labeled as safe for buffalograss.

Blue Grama Grass Overview

Blue grama grass is a great option for hot, sunny, and dry areas where maintenance will be limited.

Benefits

- Well adapted. Once established, it will thrive in hot, dry, sunny locations on a variety of soil types.
- Low-maintenance. Blue grama works well for large, sloped or low-use areas. Fertilize once in mid-summer and water once per week.
- Drought tolerance. Goes dormant during drought or water restrictions and starts growing when moisture returns.
- Taller than buffalograss and grows attractive seedheads in fall. Works well with naturalistic and informal landscape designs.

Water Savings

- Requires about one-third the water of a traditional lawn.
- Water once per week or less, May to October. Winter watering is not required.
- Newly-planted seed requires regular watering for several months after planting as it forms new roots.

Considerations

- Needs at least six hours of sun to thrive.
- Grows up to 8,500 feet in elevation.
- Turns green later in spring (early May) and turns brown earlier in fall (late October) than a traditional lawn.
- Not tolerant to foot traffic, so does best in front yards or areas where people and pets do not walk repeatedly.

Installation

- Plant by seed. The ideal seeding time is June 1 to July 31 when soil temperatures are 65 degrees or greater.



Photo Credit: Loretta Mannix, The Horticulture Consultant

Blue Grama Characteristics

- Botanical name: *Bouteloua gracilis*
- Typical annual irrigation requirement: 8 - 10 inches or less
- Irrigation savings compared to turfgrass: 66%
- Warm or cool season: Warm
- Tolerance to foot traffic: Medium
- Salt tolerance: Poor
- Slope stabilization: Fair
- Tolerance to temporary flooding: Poor
- Leaf height: 6-12 inches:
- Height with seedheads: 12-24 inches
- Uniformity of appearance: Uniform appearance
- Active growth season in Colorado's Front Range: May to October
- Leaf color: Blue-green
- Density: Less dense
- Mowing requirement: One to three times per year
- Fertilizer requirement: Once in midsummer
- Ecological benefit for wildlife: High
- Shade tolerance: Poor
- Soil type limitation: Adaptable to most soil types
- Elevation limit: 8,500 ft
- Native to Colorado: Yes
- Native location: Western US
- Installation methods: Seed
- Cultivars and notes: 'Hachita' is common, successfully-used cultivar in Colorado landscapes. 'Alma' also works and grows taller leaf blades than 'Hachita.'
- Seeding depth: 0.25 inches
- Seeding rate for landscape projects: 1 to 1.5 lbs per 1,000 sf
- Herbicide recommendations: Do not use traditional lawn weed killers on blue grama grass. Use herbicides labeled as safe for blue grama grass

Buffalograss and Blue Grama Grass Mixture Overview

Buffalograss mixed with blue grama grass is a great option for hot, dry sites where the soil type, growing conditions, and mowing regime vary.

Benefits

- This mixture is a good option where the soil type is varied or unknown.
- Suitable for sites where the denser growth habit of buffalograss is desired with the taller seedheads and longer green season of the blue grama.
- Can be a good option where part of the area will be mowed and the other part left unmowed.
- The blue grama grows attractive seedheads in fall. Works well with naturalistic and informal landscape designs.
- Well adapted. Once established, it will thrive in hot, dry, sunny locations on a variety of soil types.
- Low-maintenance. Buffalograss mixed with blue grama works well for large, sloped or low-use areas. Fertilize once in mid-summer and water once per week.
- Drought tolerance. Goes dormant during drought or water restrictions and starts growing when moisture returns.

Water Savings

- Requires about one-third the water of a traditional lawn.
- Water once per week or less, May to October. Winter watering is not required.
- Newly-planted seed requires regular watering for several months after planting as it forms new roots.

Considerations

- Needs at least six hours of sun to thrive.
- Grows up to 6,800 feet in elevation. Above 6,800 feet, mix blue grama with a different grass since buffalograss will not thrive.
- Turns green later in spring (early May) and turns brown earlier in fall (late October) than a traditional lawn.
- Moderate foot traffic tolerance, but not suited to areas where recreation will be intense or constant.

Installation

- Plant by seed. The ideal seeding time is June 1 to July 31 when soil temperatures are 65 degrees or greater.
- Mixing 'Hachita' blue grama and 'Sundancer' buffalograss has successfully been used in Colorado projects.
- Blue grama seed is significantly lighter and smaller than buffalograss seed. A 50-50 mix by seed count may be 20% blue grama and 80% buffalograss by weight.



Buffalograss and Blue Grama Grass Mixture Characteristics

- Botanical name: *Bouteloua dactyloides* and *Bouteloua gracilis*
- Annual irrigation requirement: 8 - 10 inches
- Irrigation savings compared to turfgrass: 66%
- Warm or cool season: Warm
- Tolerance to foot traffic: Medium
- Salt tolerance: Poor
- Slope stabilization: Good
- Tolerance to temporary flooding: Moderate
- Leaf height: 6 - 12 inches
- Height with seedheads: 12 - 24 inches
- Uniformity of appearance: Uniform appearance
- Active growth season in Colorado's Front Range: May to October
- Leaf color: Blue-green
- Density: Very dense
- Mowing requirement: One to three times per year. Can be mowed monthly if required.
- Fertilizer requirement: Once in midsummer
- Ecological benefit for wildlife: High
- Shade tolerance: Poor
- Soil type limitation: Adaptable to most soil type
- Elevation limit: 6,800 ft.
- Native to Colorado: Yes
- Native location: Western US and Great Plains
- Installation methods: Seed
- Cultivars and notes: Mixing 'Hachita' blue grama and 'Sundancer' buffalograss has successfully been used in Colorado projects.
- Seeding depth: 0.25-0.50 inches
- Seeding rate for landscape projects: 3 lbs per 1,000 sf
- Recommended herbicides: Do not use traditional lawn weed killers on buffalograss and blue grama grass mixtures.

Native Shortgrass Prairie Mixture Overview

Native shortgrass prairie mixtures include shorter grasses that are naturally found east of the foothills, and can be a low-water, low-maintenance groundcover.

Benefits

- This type of grass mix can be used to create a sustainable landscape for naturalistic or informal areas where natural variations in color and texture are desirable.
- The variety of grasses maximizes the value to insect, birds, and wildlife. Flowers can be included for additional value if broadleaf weed killers will not be spread throughout the area.
- They can be a great landscaping option to create a transition between more formal landscaped areas and natural vegetation.
- The mix of different grass types allow it to adapt to varying weather conditions and different site characteristics.
- Shorter grasses can be mowed less often and cause less fire concerns than taller grasses.

Water Savings

- Shortgrass prairie mixes can be watered once per week during the growing season, during dry periods only, or not at all. Great option where water will be turned off long-term.
- During watering restrictions, shortgrass prairie areas can be left unwatered so irrigation can be redirected to higher value landscape areas.
- Requires regular watering for several weeks after planting while it establishes new roots.
- Does not require winter watering.

Considerations

- Native grass mixes have variation in texture, color and height that result in a less uniform appearance. Use in areas where the variation will be considered a benefit.
- Don't use in areas that will not be mowed regularly. Most of these grasses will turn brown and their growth will stagnate if mowed frequently.
- Where “beauty bands” are desirable, seed buffalograss in a 2 to 8 foot band adjacent to pathways and transition to the native prairie mix farther away.

Installation

- Native grass mixes are installed by seed.
- Be sure to purchase a mixture of true natives for the most long-lasting result. Avoid introduced or turfgrasses marketed as “low-grow” mixes.



Native Shortgrass Prairie Mixture Characteristics

- Botanical name: Various
- Typical annual irrigation requirement: 8 - 12 inches
- Irrigation savings compared to turfgrass: 66%
- Warm or cool season: Warm and cool
- Tolerance to foot traffic: Low
- Salt tolerance: Fair
- Slope stabilization: Good
- Tolerance to temporary flooding: Moderate
- Leaf height: 6 - 12 inches
- Height with seedheads: 12 - 24 inches
- Uniformity of appearance: More variation
- Active growth season in Colorado's Front Range: April to November, with some grasses often less active (brown) throughout the growing season
- Leaf color: Green to blue-green
- Density: Less dense, some bare soil between plants is acceptable
- Mowing requirement: One to three times per year
- Fertilizer requirement: Once in midsummer
- Ecological benefit for wildlife: Very High
- Shade tolerance: Poor
- Soil type limitation: Adaptable to most soil types
- Elevation limit: 7,000 ft.
- Native to Colorado: Yes
- Native location: Western US
- Installation methods: Seed
- Cultivars and notes: Most grass mixes will include pre-determined cultivars. Specific cultivars may be requested or custom mixes by most seed suppliers.
- Seeding depth: 0.25 to 0.50 inches
- Seeding rate for landscape projects: 2-3 lbs per 1,000 sf
- Herbicide recommendation: It can be challenging to find herbicides safe for both warm and cool season grasses. Spot spraying may be required.

Customized Grass Mixture Overview

Different species are selected for a customized grass mixes based on site conditions, ecological function, and desired visual look. This is a great option for insect, bird, and wildlife habitat and to restore disturbed areas.

Benefits

- Grasses can be customized for any elevation and site conditions.
- Taller grasses can be included to maximize wildlife, bird, and insect value.
- Flowers and shrubs can be included to support pollinators, birds, and wildlife.
- Good choice for areas where irrigation will be turned off long-term.
- Not suitable for frequent foot traffic.

Water Savings

- Custom native grass mixes can be watered once per week during the growing season, during dry periods only, or not at all. Great option where water will be turned off long-term.
- During watering restrictions, they can be left unwatered so irrigation can be redirected to higher value landscape areas.
- Requires regular watering for several weeks after planting while it establishes new roots.
- Does not require winter watering.

Considerations

- Native grass mixes have variation in texture, color and height that result in a less uniform appearance. Use in areas where the variation will be considered a benefit.
- Don't use in areas that will not be mowed regularly. Most of these grasses will turn brown and their growth will stagnate if mowed frequently.
- Where “beauty bands” are desirable, seed buffalograss or another short grass in a 2 to 8 foot band adjacent to pathways and transition to the native prairie mix farther away.

Installation

- Native grass mixes are installed by seed.
- Be sure to purchase a mixture of true natives for the most long-lasting result. Avoid introduced or turfgrasses marketed as “low-grow” mixes.

Characteristics

- Will depend upon grass species selected.

