

Elisabeth Haub School of Law Environmental Law & Policy Hack

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I. Introduction

examples of existing projects in the city. The section also includes a recommendation for Denver's zoning authority for how best to integrate ~~the~~ and natural environments to increase green space. Concrete steps the City should take to ensure implementation does not adversely affect environmental justice communities are included throughout. The final section looks at the existing paved spaces in Denver, and examines how the city can update those areas with vegetative landscapes or more efficient pavement management systems to increase the natural spaces within the city along with other benefits to the cityscape. In total, the brief overviews vegetative landscapes native to Denver and provides two case studies for how green spaces can be added to the urban landscape to maximize ecosystem services in the face of climate change.

II.

The climate of the plains is relatively uniform, with low humidity, abundant sunshine, lower precipitation than the national average, and seasonal temperature changes. In the summers, the average temperature peaks in July at 88 degrees, and the city sees, on average, 34 days above 90 degrees. With winter comes drastically colder temperatures. The average high in January is only 46 degrees, while the average low temperature is 17 degrees. On average, 155 days each year see the night

As global temperatures rise, Denver has seen a noticeable warming¹⁶ Statewide annual average temperatures have increased¹⁷ degrees over the past 30 years, with four of the last six warmest years on record all occurred during the period of 2012-¹⁷ The state has been in a relatively dry period since 2000, with below average snowpacks combining with the above average temperatures to create severe and¹⁸ moisture drought conditions across the state. Projections show that the state will continue to warm over the coming decades, from 2.5 degrees to 5 degrees by mid century¹⁹ Denver may soon see even larger swings in seasonal¹⁹ weather, and a greater frequency of severe weather events.²⁰

III. Methodologies for Increasing Native Landscapes

1. Nonnative Plant Species

The combination of soil types, landscapes, and climate have allowed a wide variety of plant types to thrive in Colorado's²¹ foothills and eastern plains. As Denver was a major hub of westward expansion in the 1800s, many travelers brought seeds of plants from all across the globe.²² Many of these plants have come to dominate Colorado's landscapes and often it is hard to discern what is a native plant and what is not.²³ Colorado's Weed Management Act defines a nonnative plant species as "a plant which is not indigenous to the state or Colorado, nor to the native plant community in which it is found."²⁴ Although these plants have come to thrive in

¹⁶ Jeff Lukas, Western water Assessment Western Water Assessment 1 (2014).

¹⁷ Id.

¹⁸ Id. at 2.

¹⁹ Id. at 3.

²⁰ Id.

²¹ Low-Water Native Plants for Colorado Garden Colorado Native Plant Society, <https://extension.colostate.edu/docs/pubs/native/FrontRange.pdf>

²² Native Plant Revegetation Guide for Colorado, Colorado Parks and Wildlife, 1 <https://cpw.state.co.us/Documents/CNAP/RevegetationGuide.pdf> (hereinafter "CPW")

²³ Id.

²⁴ Id. (quoting Title 35, Colorado Revised Statutes: Colorado Weed Management Act)

Colorado's Front Range, there are many risks associated with the introduction and cultivation of nonnative plants²⁵.

Many nonnative plants are able to rapidly spread and outcompete their native counterparts for water, light, and soil nutrients²⁶.

Purple Loosestrife⁶³

While loss to natural habitat can be devastating to the natural ecosystem of the area,

While introducing nonnative plant species in landscaping or otherwise can be detrimental, using native species can have a cascade of positive effects. “Native” is broadly defined as a plant having occurred before European settlement in North America.³⁸ Using these plants in landscaping has an immediate positive impact on the environment and embraces the regional cultural identity that has been lost in conventional garden and landscape³⁹ design. Substituting suburban neighborhood lawns, for example, with regional style landscapes fosters a diverse habitat for plants and animals.⁴⁰ Native species are pre-adapted to the climate, allowing them to flourish without high inputs of energy, water, or fertilizer.⁴¹ As they stand now, most landscaping requires heavy fertilizer use, irrigation, and other resource inputs that native plants would not require.⁴²

Rapid urbanization in the Denver area has significantly reduced biodiversity as habitat is removed for development and replaced with landscaped areas.⁴³ Landscaping with native plants has been shown to help maintain that biodiversity, providing food, shelter, and other important resources for small mammals, birds, and native pollinators.⁴⁴ By choosing to work with native plant species, there is less disruption to the food web and other important ecosystems of an area during development.⁴⁵ Furthermore, because these species are adapted to the native soils, the roots are better adapted to capture rainwater and prevent runoff.⁴⁶ An added benefit to this soil adaptation is that a lack of fertilizer or other additives minimizes soil disruption during

construction and other development.⁴⁷ This is critical for ensuring the stability of the soil life web which enables proper nutrient cycling, an essential element in the prosperity of plants.⁴⁸

A. Native Plant Communities

In selecting native plants for landscaping or revegetation, it is essential to understand how various species work together in harmony. Colorado has several distinct “floristic regions” – i.e. subclimates that have distinct flora growth patterns.⁴⁹ Denver lies in the Eastern Plains and Foothills region, which is dominated by grasslands. Denveroniven.

Shortgrass prairie with plains yucca and sand sage.⁵⁷

One characteristic of the prairie that makes the landscape so unique also makes it rather difficult to properly restore.⁵⁸ Prairie's once covered hundreds of thousands of square miles across the US.⁵⁹ These vast expanses allowed highly complex species interactions to take place and fostered deep connections between the flora and the fauna.⁶⁰ When attempting to recreate these landscapes, it may be impossible to fully cultivate these interactions on small parcels of land.⁶¹ If successful, it will like

Shrublands are often considered to be transitional communities, existing where grasslands transition into forests or other woodland areas.⁶⁶ This means that shrubs can be a companion plant to many grasses or trees, as the soil and climate they exist in touches the boundaries of both communities.⁶⁷ Shrubs also thrive in areas where large rocks dominate the soil, making planting other species difficult.⁶⁸ The rocks catch the rainfall and direct the runoff to their edges, allowing moisture-hungry shrubs to thrive.⁶⁹

Sagebrush shrubland⁷⁰

The final floristic region found near Denver is the woodlands. This region occurs in the areas where canyons on the plains create foothill conditions.⁷¹ These areas are characterized as having one or more species of small trees, typically oneseed juniper, Rocky Mountain juniper, piñon pine, or limber pine, as the dominant form of upper vegetation.⁷² These trees require more moisture and deeper soils than shrubs or grasses, which restricts these

⁶⁶ Id. at 23.

⁶⁷ Id.

⁶⁸ Id.

⁶⁹ Id.

⁷⁰ Ecological Systems: Sagebrush Shrubland, Colorado Natural Heritage Program (November 2011), <https://prairieecologist.com/tag/shortgrass/>.

⁷¹ CPW, *supra*note 22, at 28.

⁷² Id.

woodland communities to rocky, mesic sites that feature above average moisture levels for the area.⁷³

A common woodland community found in elevation ranges and climates that mimic Denver's is that of the juniper woodlands.⁷⁴ These communities are characterized by short, spaced out juniper trees, with several types of shrubs and cacti living between, and grass and forb cover inversely proportional to the density of the juniper.⁷⁵ Another common woodland community that is abundant in the Denver area is that of the ponderosa pine woodlands.⁷⁶ These communities are characterized by spaced out ponderosa pines with dense shrubs in the understories and little to no grasses.⁷⁷ These sites typically occur at the base of foothills or atop mesas on rocky areas with less moisture.⁷⁸

Colorado Juniper Woodland⁷⁹

⁷³ Id.

⁷⁴ Id. at 29.

⁷⁵ Id.

⁷⁶ Id. at 31.

⁷⁷ Id.

⁷⁸ Id.

⁷⁹ Pinyon-Juniper Woodland, <https://www.sciencesource.com/archive/PinyonJuniperWoodlandSS2506741.html> (last visited September 25, 2020). a

Whether looking at these changes already occurring in some plant communities or creating a framework to adapt to upcoming and unknown changes, it is crucial to understand that the landscape surrounding Denver will always provide a guide to the natural ways in which species interact with one another. These interactions of plant communities will serve as a guide throughout this brief, ensuring that all aspects of development are designed to serve a single purpose: to use the natural landscape to the benefit of urban design.

IV. Avenues for Local Management of Climate Friendly Vegetative Spaces

In order to increase the footprint of native plant communities in the urban landscape, the City of Denver needs to act purposefully and consider the adaptive and mitigative benefits of these landscapes. This section discusses the legal authorities guiding Denver's planning and zoning decisionmaking and recommends adjusting the Denver zoning map to align with the goals of the City's Master Plan.

1. Vegetative Landscapes

Integrating green spaces into the urban environment can play a critical role in mitigating and adapting to climate change.⁸⁴ Vegetative landscapes provide an opportunity to use land management techniques and local government legal authority to jointly address environmental challenges from stormwater management to increased carbon emissions.⁸⁵ The ability of vegetative landscapes to assist in mitigation and adaptation underlines the importance of adjusting urban green spaces in a way that is mindful of "local characteristics and vulnerabilities to climate change."⁸⁶

While increasing greenspaces in an urban environment is a great way to provide essential ecosystem services in the face of climate change, it must be done in a just way. In order to equitably increase urban green spaces, substantial stakeholder engagement must be a part of the process.⁸⁶ Increasing urban greenspaces is often associated with the gentrification process and impacts on all communities must be considered as local governments use their planning tools to increase vegetative landscapes.⁸⁷ The City of Denver should use all the tools available to it to ensure that increasing green spaces to mitigate and adapt to climate change does not unduly burden environmental justice communities.

This portion of the brief discusses how the City of Denver can use its police powers to increase the footprint and utility of natural vegetative landscapes to provide the greatest

planning to land use decision making⁸⁸. The Mayor oversees Departments, Offices, and Agencies that are either directly responsible for creation and management of vegetative spaces and landscapes or that, through law reform and implementation of progressive resource management policies, could be involved in such management⁸⁹. These departments include: Community Planning and Development, Parks and Recreation, Public Health and Environment, and Public Works⁹⁰. Agencies and offices that touch on vegetative landscapes include: the Board of Adjustment for Zoning Appeals. Denver Water Department, Performance Based Infrastructure, Emergency Management, and Denver Biological Gardens⁹¹. The multiple governmental players involved underscore the importance of coordination across governmental entities and highlights the ability of innovation in maximizing the potential of ecosystem services from vegetative landscapes.

The Community Planning and Development Department (“CPD”) in concert with the Board of Adjustment for Zoning Appeals is responsible for planning and zoning in the City and County of Denver⁹². Their responsibilities include: permitting, neighborhood planning, community engagement, and enforcing and implementing the zoning code⁹³. The Planning Board, an eleven member board within CPD, is responsible for advising the Mayor and City Council on land use planning and zoning decisions⁹⁴. The Planning Board acts according to the

planning commission is also given authority over approving all plans for improvements to city streets, as well as the installation of new city streets.¹⁰²

Colorado state statutes also grant municipalities the power to engage in zoning.¹⁰³ The grant of authority includes zoning for the,

“[P]urpose of promoting health, safety, morals, or the general welfare of the community, including energy conservation and the promotion of solar energy utilization, the

general welfare.¹⁰⁷ All legal authorities that the CPD and the Planning Board are responsible for adhering to make it clear that planning and zoning to increase the general welfare is encouraged.

Given it's delegated legal authority from both the State and the City of Denver, the CPD and the Planning Board has the greatest ability to leverage the police powers of the City to increase green space in the urban environment. Planning and zoning to increase vegetative landscapes will increase the general welfare by providing critical environmental benefits. The next session uses the backdrop of CPD and the Planning Board's legal authority to further discuss the importance of land use planning and suggests zoning designation that combines the natural environment with the built environment.

V. Existing Legal Mechanisms for Creating and Managing Vegetative Spaces and Opportunities for Increasing Vegetative Landscapes Through These Mechanisms

It is widely acknowledged that local governments are in the best position to promote and implement vegetative landscapes to provide ecosystem services such as stormwater management.¹⁰⁸ The two most effective tools the City of Denver has to encourage and develop vegetative landscapes are land use planning, through the development of a master plan, and zoning that implements the master plan. The City's current master plan is Comprehensive Plan 2040, a comprehensive and holistic approach to planning.¹⁰⁹ The Planning Board and CP should use the Comprehensive Plan 2040 to leverage implementation of vegetative landscapes in the short term and in the long term should create a master plan that explicitly addresses how to increase green spaces in an environmentally just way. Once a master plan is in place, the Planning Board can use it to guide zoning decisions.

¹⁰⁷ See discussion of benefits of natural landscapes in methodologies.

¹⁰⁸ Overcoming Barriers to Green Infrastructure, Environmental Protection Agency, <https://www.epa.gov/green-infrastructure/overcoming-barriers-green-infrastructure> (last accessed Sept. 22, 2020).

¹⁰⁹ Comprehensive Plan 2040: Denver's Plan for the Future (May 2019), https://www.denvergov.org/content/dam/denvergov/Portals/Denveright/documents/comp-plan/Denver_Comprehensive_Plan_2040_city_council_draft.pdf

The discussion below assesses the possibility and promise of land planning and the ability of rezoning to require the combination of the built environment with the natural environment.

1. Land-Use Planning

Land-use planning is a collaborative process where multiple stakeholders, both within government and outside of it, come together to create a plan for the development of a neighborhood or community.¹¹⁰ The stakeholder process of planning is critical to assuring that ultimate planning decisions are just. Planning should include voices from all communities with an emphasis on environmental justice communities.¹¹¹ Aspects of development that should be considered in a plan include the level, intensity, location, and character of development.¹¹² As important as considering the kind and quantity of development is planning what spaces should be set aside and for what purpose and the impact these decisions will have on the most historically vulnerable communities.¹¹³

Planning for conservation values and ecosystem services is a relatively new discipline but there is a history of success when these values are integrated into land planning.¹¹⁴ Conservation values and ecosystem services can be integrated into land plans by strategically considering the placement of vegetative landscapes and the ecological functions of these urban ecosystems.¹¹⁵ Considering ecologically sustainable land uses and their ecological benefit

¹¹⁰ Understanding the Basics of Land Use and Planning, Institute for Local Government (2019), https://www.ca-ilg.org/sites/main/files/fileattachments/2010_landuseplanning.pdf?1387495993

¹¹¹ See generally KENNETH A. GOULD & TAMMY L. LEWIS, GREEN GENTRIFICATION: URBAN SUSTAINABILITY AND THE STRUGGLE FOR ENVIRONMENTAL JUSTICE (2017).

¹¹² Id. at 2.

¹¹³ Id.

¹¹⁴ Case Study Briefs, Landscape Performance Series, <https://www.landscapeperformance.org/casestudies> (last accessed Sept. 23, 2020).

¹¹⁵ See Ecological Principles for Managing Land Use, The Ecological Society for America's Committee on Land Use (2000), <https://cfpub.epa.gov/watertrain/pdf/modules/landuseb.pdf>

this ecologically minded planning, would be aided by adoption of the mixed zoning proposal described in detail in Section 3.

Denver has already successfully implemented vegetative landscapes into the urban environment through the planning and zoning process. Three case studies in the City stand out as strong examples of the successful integration of the natural or “green” environment into the built environment; the Cherry Creeks North Improvements and Fillmore Plaza, the Westerly Creek at Stapleton, and the TAXI II development.¹²⁰ These projects each highlight a different way to increase vegetative landscapes.

The Cherry Creeks North Improvement and Fillmore Plaza and the TAXI II development are both examples of integrating vegetative landscapes into commercial and residential developments.¹²¹ The Cherry Creek project sought to integrate vegetative landscapes to reduce energy and water consumption and revitalize the shopping district. To date, the integration has been extremely successful, reducing water consumption by over 10 million gallons annually and energy consumption by 223,000 kilowatts per year.¹²² Given the 20 year drought on the Colorado River and the lack of water along the Front Range, these water consumption savings are of immeasurable value in a climate changed world.

The TAXI II development is similar in strategy to the Cherry Creek Project and has had similar success.¹²⁴ This development is along a waterway and provides considerable stormwater management ecosystem services. In a single year, the space helps drought, natural

¹²⁰ Case Study Briefs, Landscape Performance Series, <https://www.landscapeperformance.org/case-studies/610/728> TCC

ecosystem processes, 2 million gallons of water that would otherwise drain directly into the water way.¹²⁵ In addition, the trees planted in the development area sequester nearly 8,000 lbs of carbon a year.¹²⁶ These two projects show the ability of local governments to increase the ecological values of urban spaces through including small scale vegetative landscapes. Neither development project involved considerable footprints for the vegetative spaces but the strategic selection of plants and landscape strategies, such as the use of swales and stormwater gardens, provided considerable ecosystem services.¹²⁷

The third case study of the successful development of a vegetative landscape after land use planning is the Westerly Creek at Stapleton.¹²⁸ This project is different in kind from the projects described above because the primary focus of the project was the vegetative landscape. This area includes fifty acres of native prairie vegetation along a waterway.¹²⁹ Through strategic development of the area to maximize the benefits of the vegetative landscape, the area now sequesters nearly 240 tons of carbon a year and decreased floodplain from 183 to 66 acres by increasing water holding capacity.¹³⁰ Like the other two development projects, many of the benefits provided by this area are related to water conservation and control; two major environmental issues facing expanding Front Range communities.¹³¹

The three projects that have already been completed within the City of Denver serve as examples of the opportunities that exist for integrating green space into development projects when vegetative landscape planning becomes a feature of site planning. Future master plans

should prioritize the importance of this form of development. The following Sections discuss how Denver can leverage the zoning police power to require or incentivize integrative development.

2. Zoning

The zoning power is one of the most important powers of a local government. Through zoning ordinances, cities can shape the feel and character of neighborhoods and the urban landscape. As discussed above, in Denver, the entity responsible for zoning is the Denver Community Planning and Development Department (“CPD”).¹³² This is the same entity responsible for planning. Combining these responsibilities within one entity is permissible under Colorado law.¹³³ The zoning authority allows CPD to regulate the use and development of properties across the city.¹³⁴ Currently, CPD has three designations for vegetative landscapes: open space for public parks, recreation, and conservation.¹³⁵ While vegetative landscapes can be integrated into development projects in residential, business, and mixed-use zoning designations, explicit endorsement of vegetative landscapes in these spaces would facilitate increasing urban greenspace.¹³⁶

According to their zoning and planning powers, the Planning Board and CPD is responsible for reviewing and approving all proposed development projects to ensure they comply with the land use plan and zoning regulations passed pursuant to their authority.¹³⁷

¹³² Planning Board, Community Planning and Development, Denver, <https://citycountydenver.prod.adobe.com/content/denvergov/en/community-planning-and-development/planning-and-design/planning-board.html> (last visited Sept. 25, 2020).

¹³³ Colo. Rev. Stat. § 323-211.

¹³⁴ Zoning, Colorado Department of Local Affairs, [https://cdola.colorado.gov/zoning#:~:text=Zoning%20is%20the%20most%20common,development%20on%20parcels%20of%20land.&text=Other%20types5c4.2 \(o\)l.2 \(s\)-24.2 \(x\)12 \(2.9 \(m\)12.9 \(uni\)6.9 \(t\)-5.2 \(y.7 \(L\)14.6 \(o36131\)Tj](https://cdola.colorado.gov/zoning#:~:text=Zoning%20is%20the%20most%20common,development%20on%20parcels%20of%20land.&text=Other%20types5c4.2 (o)l.2 (s)-24.2 (x)12 (2.9 (m)12.9 (uni)6.9 (t)-5.2 (y.7 (L)14.6 (o36131)Tj)

While many of the specific development decisions are made by developers, CPD should incentivize integration of green spaces by increasing areas zoned for open space, encouraging vegetative landscaping in areas zoned as business or residential, and redesigning the zoning map to add areas zoned for mixed use, where the mixed use is integrating the natural and vegetative landscape. The zoning map should be updated to reflect these changes, including the addition of areas zoned for mixed use, where the mixed use is integrating the natural and vegetative landscape. The zoning map should be updated to reflect these changes, including the addition of areas zoned for mixed use, where the mixed use is integrating the natural and vegetative landscape.

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authority.¹³⁹ Regulations should be created to designate appropriate implementation of native vegetation for certain landscapes. This regulatory power should also be used to create a procedure for considering potential impacts of development on environmental justice communities. Under these regulations, developers should be required to adopt mitigation measures to ensure that their developments do not have inequitable impacts. The Planning Board should predicate approval of development plan on adherence to these environmental justice and native species regulations.

In developing and implementing the regulations around appropriate native landscapes for certain areas of the City, the CPD should focus on increasing native species benefits to pollinators, stormwater management functions, and reducing the urban heat island effect. The focus should be on increasing natural landscapes, replacing impervious surfaces with green spaces, and strategically implementing vegetative landscapes to prevent water pollution, reduce excess erosion and lessen the impact of the heat island effect.

The City of Denver should combine the tools available to them under the land-use planning power and the zoning power to incentivize vegetative landscapes in the built environment. This should include tailoring the built and natural environment use zones to best accomplish the Comprehensive Plan 2040 goals of resilience and health. The City should implement and enforce regulations to do the same. These combined measures will help increase vegetative landscapes and assist Denver in mitigating and adapting to climate change. In taking all of the preceding actions, the CPD must prioritize reducing adverse impacts on environmental justice communities

¹³⁹ Chapter 12, Community Planning and Development, City Code of Ordinances.

The second and third types of pavement management systems we will discuss are both known as permeable pavement. Like the variety of HAP, there are many ways to create permeable pavement, and we will focus on two distinct varieties of permeable pavements in this analysis. The first of the two types of permeable pavement is hard, permeable pavement (HPP) that uses a series of interconnected layers leading to reservoirs or water management systems.¹⁴⁸ The water management reservoirs store excess water and snowmelt, only to release the water through evaporation and infiltration.¹⁴⁹ The problem with this type of system is that generally HPP reaches higher temperatures than HAP when it is used, such as is often the case in more arid climates. Since Denver is such a climate, we have determined that HPP is unlikely to be better for Denver than HAP in the same spaces.

The second type of permeable pavement, however, has an important role in Denver's attempt to control its heat island effect. This is often called green or soft, permeable pavement (SPP). SPP also uses the concept of storing excess water, but uses plant life and engineered soil surfaces as its doorway mechanism for the regulation of moisture.¹⁵¹ These spaces are also engineered at depth, and like the HPP require a system to appropriately manage water that is absorbed.¹⁶² Green permeable spaces are often seen as grassy areas, but this is by no means the only way to create SPP. In fact, due to Denver's dry climate, a drought-resistant natural landscape is liable to be much more manageable for Denver. Due to this natural landscape use, SPP should be engineered with low-traffic areas in mind.

¹⁴⁸ SOAK UP THE RAIN: PERMEABLE PAVEMENT, EPA <https://www.epa.gov/soakuptherain/soak-up-permeable-pavement> (last visited Sep. 28, 2020).

¹⁴⁹ Santamouris, *supra* note 144 at 225.

¹⁵⁰ Liv Haselbach, Pervious Concrete and Mitigation of the Urban Heat Island Effect, Nat'l Academies of Sci., Eng'g, and Med. (2009) <https://trid.trb.org/view/880515>

By utilizing SPP in low traffic areas, some of the previously discussed benefits that Denver would take advantage of are: an increase in resistance to water erosion, decrease in flooding during heavy waterfall, increase in carbon offset with plant life, decreased heat island effect, and reduction of energy consumption for cooling purposes.¹⁵⁷ All of this is combined with the intangible factors such as more beautiful cityscapes with natural terrain, such as shrublands discussed above, as opposed to impermeable paved surfaces, and increased biodiversity as native fauna take advantage of the revitalized natural environment. This type of SPP could easily be utilized in areas with recreational foot traffic ~~car~~ parking,¹⁵⁸ alongside sidewalk areas for business districts,¹⁵⁹ even transition spaces,¹⁶⁰ covering a large portion of Denver. Since we know that the reduction of green and natural spaces in Denver has been a contentious issue in recent¹⁶¹ years, we are hoping to take advantage of areas that are more readily under local control than the expensive plots of land being developed into residential areas. Although the benefits of SPP usage in Denver seem real, Denver must keep in mind increases in difficulty for snow removal during its lengthy snow season.

In order to fully take advantage of engineered pavement solutions, Denver can marry the low-traffic SPP with HAP in areas seeing higher traffic. This includes business areas, and other high-volume sidewalks, and streets. Considering the impressive results in heat reflection of HAP, Denver could realize large reductions in its heat island effect. Additionally, since Denver would

¹⁵⁷ See generally Scholz,

simultaneously helped to decrease retail vacancy rates over three years and also brought in an additional \$1 million in tax revenue the first year alone.¹⁶⁵ Many other examples of pavement management systems have shown that careful planning can lead to decreases in watering, replacement, and maintenance costs.¹⁶⁶

Besides these two obvious incentives, there are the factors of decreasing energy usage by reducing the heat island effect, increasing natural spaces, and water reclamation to consider. Overall, the incentives are strong enough to justify the City's use of these pavement management systems.

As shown, Denver can take advantage p.-4 (e h)-g n0.0 8.04 -0 0 8.04 339.72 686.04 Tm [(1)0.5

We hereby certify that the brief for Colorado Law is the product of the undersigned. We further