

## Westerly Creek

### VISION

When the goals of the city are achieved...

- Westerly Creek will be reclaimed as an urban drainageway that adequately conveys flood waters and mitigates flood hazards for abutting land uses and properties currently within the 100-year floodplain.
- The Westerly Creek Greenway is a multiple-use-corridor that passes through Original Aurora and which is integrated into surrounding neighborhoods, including connections to Lowry and Stapleton redevelopments.
- The Westerly Creek Greenway initiative serves as a model for successful collaboration between public and private stakeholders and partners to achieve common goals.
- The Westerly Creek Greenway is an urban amenity that contributes to the identity of Original Aurora, strengthens community, and enhances the quality of life.
- The Westerly Creek Greenway is a catalyst that supports economic development, urban renewal, and revitalization objectives for Original Aurora.
- The Westerly Creek Greenway provides opportunities for recreation and alternative modes of transportation.

### DISCUSSION

**Overview.** This vision is predicated on Westerly Creek being recognized as a defining land use component and an essential catalyst to the long-term health and renewal of Northwest Aurora. Elsewhere in the comprehensive plan strategies related to Original Aurora and the Montview Corridor are particularly relevant to the role this creek can play in building a positive sense of community and identity.

The redevelopment of Stapleton and Lowry and the planning associated with those projects in the 1990s increased attention on the creek's potential to better serve community needs in Aurora and Denver. Those redevelopments have since demonstrated the value of this drainageway as an environmental, recreational, social and economic resource.

Within Lowry, a redesigned Westerly Creek corridor provides a wide variety of creative flood control and recreational amenities. Within the Stapleton redevelopment, Westerly Creek was designed as the primary north-south open space buffer that separates yet unifies the east and west portions of the community. The greenway corridor offers multiple opportunities for active and passive recreation and a well-developed, interconnected trail network for pedestrians and bicyclists.

The remaining one mile stretch of un-reclaimed Westerly Creek that connects Lowry and Stapleton, between 11<sup>th</sup> Avenue and Montview Boulevard, offers similar opportunities to invigorate and revitalize Original Aurora. Over the past 15 years several studies have recommended concepts, options, and opportunities to capitalize on the many



**Reclaimed Westerly Creek through Lowry Redevelopment**

benefits that will result from reclaiming Westerly Creek between Lowry and Stapleton. For contextual purposes this plan often refers to many sections of the creek; however the focus of this plan is the area in Aurora between 13<sup>th</sup> Avenue and Montview Boulevard.

The purpose of this comprehensive plan amendment is three-fold:

1. To provide background information on greenways and Aurora policy for handling drainageways
2. To evaluate where planning for Westerly Creek stands
3. To provide a recommended course of action to begin reclaiming the creek corridor

**Greenway Principles.** A greenway is a linear open space corridor that links together and protects resources that are interesting, important, unique or special in some way. A greenway typically follows a stream and contains a trail that facilitates recreation and non-motorized transportation through the corridor. An important attribute of a greenway is its ability to fulfill multiple objectives by incorporating environmental,

recreational, social and economic values and functions.

Currently, Westerly Creek in Original Aurora does not conform to the definition of a greenway. The creek is also inconsistent with contemporary drainageway planning philosophy and city policy regarding multiple-use; the creek corridor is constrained, discontinuous and single-use in function in most areas. In contrast, the current planning approach for drainageways is to provide for open drainage systems serving multiple public purposes, including flood protection, stormwater management, wildlife habitat, natural ecosystem protection, open space, recreation, parks, trails, and utility corridors.

Even with a clear vision and strong supporting policies, greenways commonly evolve over time and are realized incrementally as opportunities arise, funding becomes available, and/or redevelopment occurs. The timeframes for completion of greenways vary based on the complexity of projects, urgency for flood improvements, and available funding sources. Urban areas

pose unique constraints for greenways due to encroachments and existing private and public uses and investments.

In Aurora, City Code requirements advance greenway policies and ensure that open space corridors are integrated into development projects. Principal techniques used by the city to assemble a typical greenway include the use of zoning, site planning and land dedication requirements. Floodplain regulations are a mechanism that helps keep open space corridors intact for greenway and trail purposes in addition to flood management. Unfortunately, tools that are effective at expanding and protecting the greenway system as the city grows and develops in “greenfield” areas are not always applicable to parts of the city that are already developed and urbanized.

## EXISTING CONDITIONS

**Watershed Boundaries.** Westerly Creek drains an area in both Aurora and Denver and is a tributary to Sand Creek (see Fig. 1). The creek passes through two distinct parts of the two cities. The southern section is comprised of the upper half of the watershed extending from the vicinity of Yale Avenue and I-225 to Alameda Avenue near Peoria Street. The southern section includes development that occurred more recently and incorporates modern drainage practices. The northern section passes through east Denver and Original Aurora. The northern section includes Lowry and Stapleton redevelopments and some of the oldest areas of Aurora that date back to the 1800s.

**Historical Development of Westerly Creek.** The treatment of Westerly Creek reflects its history and the way in which it was developed over time. Its character is typical for creeks located in older urban areas. In earlier times it was common to treat creeks as obstacles that had to be overcome. They were often diverted, relocated, and placed in underground pipes

to accommodate the demand for development. Smaller drainages with low average flows, such as Westerly Creek, were not carefully studied for their flood damage potential.

Growth in Original Aurora in the late 1800s through the mid-1900s unfortunately followed this practice. Westerly Creek was not respected as a feature worthy of preservation for the natural functions it performs, namely for its ability to convey flood waters during storm events. Instead, the creek was channelized, filled in and piped. As development in the watershed spread, drainage flows increased and flooding became more common.

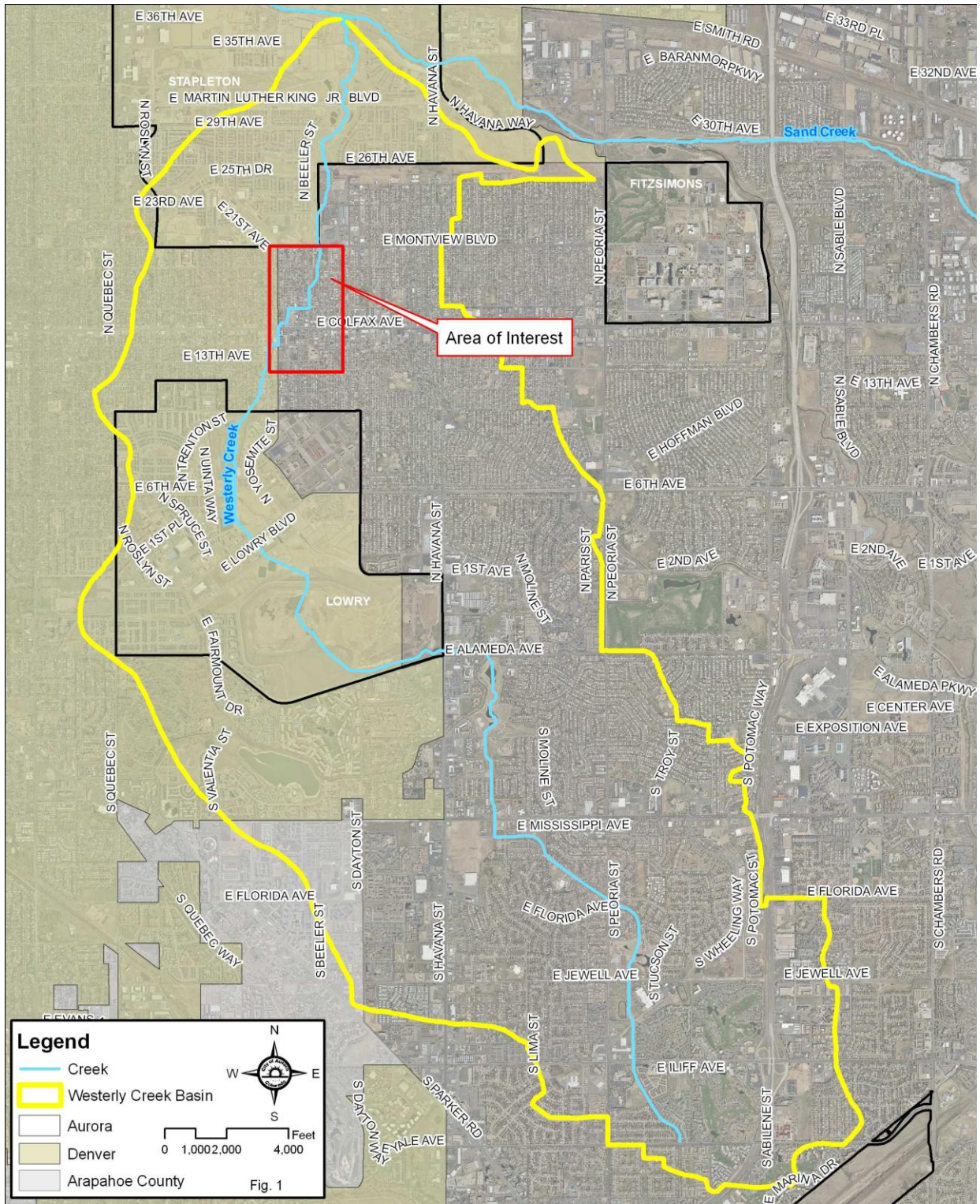
Parking lots, houses, stores, industries, military installations, a public community garden, and other structures were constructed where the creek once flowed. This occurred both in the Aurora and Denver reaches. Some stretches of an open drainage channel remained, but much of the creek in the lower half of the watershed either became an underground conduit or simply drained across streets and properties following the path of least resistance afforded by the lowest elevations.

In fact, many flood events, some minor and others more significant, have been recorded in the Westerly Creek watershed. Possibly the worst flood in the lower reach was in 1965, which damaged numerous buildings, streets and bridges.

Over the course of several decades, efforts to alleviate flood hazard potential through the installation of drainage-related infrastructure included the following:

- 1950s construction of the Kelly Road Dam in Denver to control runoff from the Lowry Air Force Base.
- 1980s construction of a combination of underground culverts and open channels in Aurora and Denver to convey flows for 10-year storms.





Westerly Creek Drainage Basin

Figure 1



- 1990s construction of the Westerly Creek Dam as a regional stormwater detention dam upstream from the Kelly Road Dam in Denver to reduce flows downstream.

Ongoing redevelopment of the former Lowry Air Force Base and Stapleton Airport has dramatically changed the character of Westerly Creek as it passes through these new, mixed-use developments. The creek has been reclaimed – converted from a mix of open channel and underground culverts into a continuous, naturalized channel. Buildings and associated improvements are now set back from the creek and do not encroach into the floodplain. The creek has become a centerpiece of these projects. It is now a major amenity that is celebrated by not only the immediate neighborhoods but the larger community as well. The multiple-objective approach to drainageway and greenway corridor planning supports important redevelopment goals.

Through Original Aurora, Westerly Creek remains, for the most part, “boxed in” – literally and figuratively (see Fig. 2). The creek is conveyed through box culverts in two sections of the city between 14<sup>th</sup> Avenue

and Montview Boulevard. The culverts are buried within street rights-of-way in the following locations:

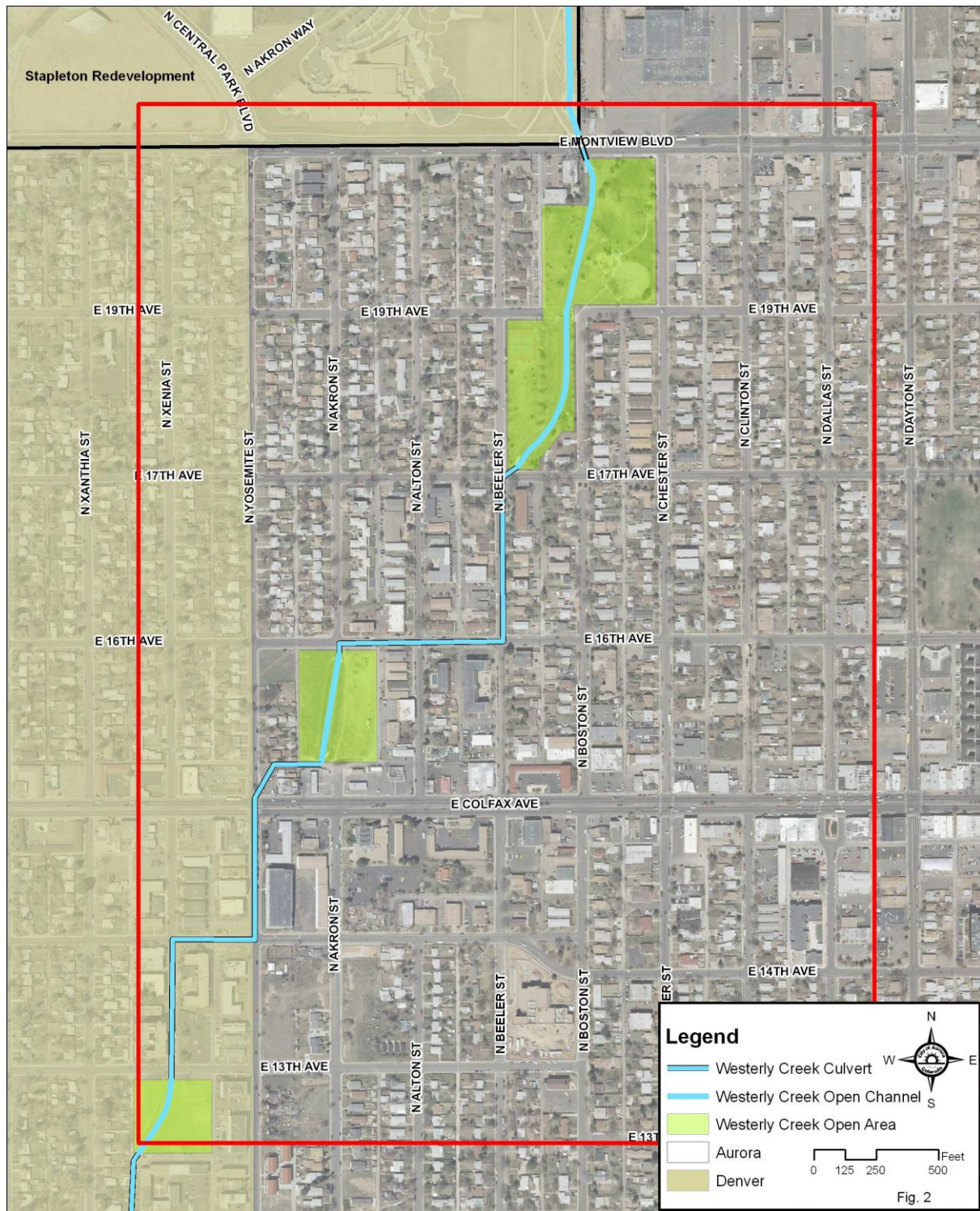
- under Yosemite Street and an alley extending from 14<sup>th</sup> Avenue to just north of Colfax Avenue; and
- under 16<sup>th</sup> Avenue and Beeler Street between Akron Street and 17<sup>th</sup> Avenue.

In addition to confinement resulting from the use of culverts, Westerly Creek is further restricted simply by the nature of surrounding private property and existing urban patterns. Practically all adjoining parcels are developed, leaving little opportunity to easily pursue an alternative alignment for drainage conveyance or to carve out a greenway.

**Flooding Hazards.** The current conveyance capacity of Westerly Creek is inadequate to protect properties along its course. Of primary concern is the fact that the drainage cannot convey a 100-year storm event without major flooding impacts. The reality is that the system has no more than a 10-year storm capacity. Any flows exceeding that magnitude will result in flood damages and losses.



Westerly Creek Open Channel Through Northwest Aurora



### Westerly Creek Sections

**Figure 2**



Figure 3 maps the geographic extent of the 100-year floodplain, which is expressed as the area that has a one percent chance of being flooded in any year. A total of 107 structures in Original Aurora lie within the floodplain and would potentially be affected by such a flood.

**Opportunity Triangle.** Demands on the transportation network increase each day as Fitzsimons, Lowry and Stapleton continue to redevelop (see Fig. 4). In particular, the bike and pedestrian network connecting these very large residential and employment hubs is incomplete and lacks dedicated routes (see Fig. 5). Continued student growth associated with the Aurora and Colorado Community College campus at Lowry strains the system as does commuting options at Fitzsimons. The 2011 opening of the Central Park interchange on I-70 will increase motor vehicle traffic to the area and increase safety hazards for cyclists and pedestrians.

## Plans and Programs

Over approximately the past 15 years, a number of plans and programs have been completed in an effort to address issues associated with Westerly Creek. These plans are summarized below.

### Completed Plans

- ***Westerly Creek Corridor Revitalization Master Plan.*** This 1997 plan was prepared by Wenk Associates and was funded by Aurora, Denver, Lowry Redevelopment Authority, Stapleton Development Corporation, and Great Outdoors Colorado. It focused on formulating “corridor concepts” and guidance for creating a greenway corridor design and restoration of the creek. It also recommended construction of a trail along the creek. The plan was instrumental in influencing the creek revitalization that has occurred in Lowry and Stapleton. The report recommends that Westerly Creek be daylighted in Original Aurora and that property acquisitions occur in order to provide parks, trails and other open space amenities.
- ***Montview Boulevard Corridor Study.*** The purpose of this 1998 study prepared by Aurora was to recommend action items needed to enhance Montview Boulevard based on the premise the street would become a primary travel route between Fitzsimons and Stapleton. The study recognized the opportunity to create a greenway and trail following Westerly Creek and recommended a trail connection under Montview Boulevard.
- ***Original Aurora Redevelopment Feasibility Analysis.*** Spurred by the redevelopment projects at Fitzsimons, Stapleton and Lowry, Aurora hired BBC Research & Consulting in 2000, to develop concepts, policies and strategies to stimulate redevelopment in Original Aurora. Improved trail connectivity between neighborhoods and development of new open space amenities along Westerly Creek connecting Lowry and Stapleton were recommended.
- ***Northwest Aurora Bicycle & Pedestrian Master Plan.*** The purpose of this plan, which was prepared by Aurora in 2006, was to formulate recommendations to coordinate the planning and provision of bicycle and pedestrian facilities in Northwest Aurora. The plan recognized the need for further study to create a major off-



Westerly Creek South of Montview Boulevard in Aurora

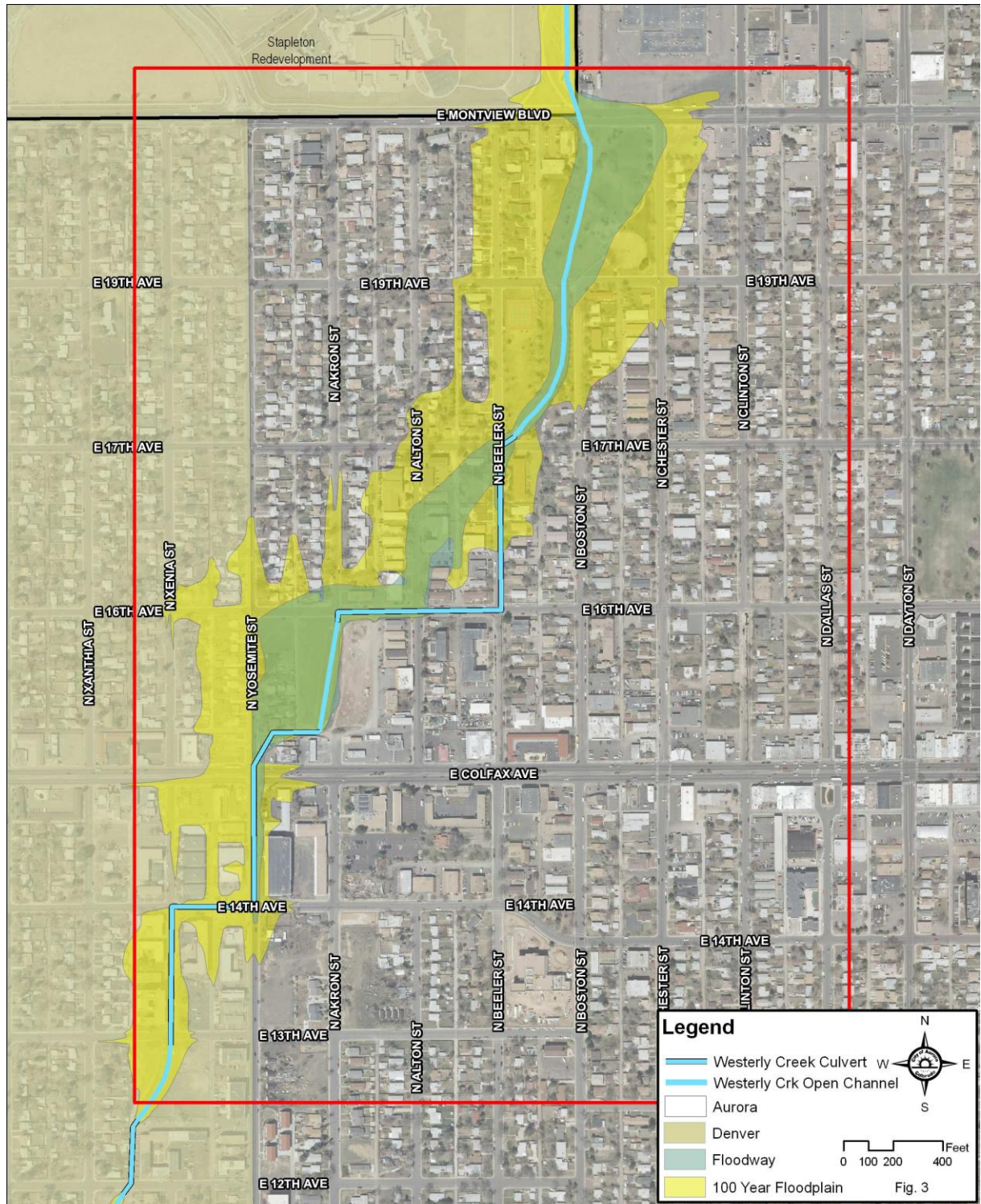
street trail and open space corridor along Westerly Creek.

- ***Feasibility Study Westerly Creek Corridor.*** This 2007 study by the Matrix Design Group was funded by Denver and the Colorado Water Conservation Board. It explored conceptual alternative alignments and potential drainage solutions to enhance connectivity between Lowry and Stapleton. Short-term and long-term improvements and alignments for a greenway and trail were proposed.
- ***Westerly Creek Drainageway Update.*** This 2010 master drainageway plan prepared by Kiowa Engineering Corporation was sponsored by Aurora, Denver and the Urban Drainage and Flood Control District. It presents conceptual designs for increasing the conveyance capacity of Westerly Creek to 100-year storm levels and to remove properties and structures from the floodplain between Westerly Creek Dam and Sand Creek.

The study presents a master plan for drainage improvements to reduce existing and potential flooding problems between 11<sup>th</sup> and 23<sup>rd</sup> Avenues and made the following general recommendations for the sections in Aurora:

- Reach 2 (17<sup>th</sup> to 23<sup>rd</sup> Avenues): Replace the Westerly Creek box culverts under Montview Boulevard with a bridge that can accommodate the 100-year flood, and lower the grade of the creek between 17<sup>th</sup> and 23<sup>rd</sup> Avenues to allow for maintenance vehicles under Montview Boulevard.
- Reach 3 (Colfax to 17<sup>th</sup> Avenues): Two alternatives were evaluated including an underground culvert alternative and an open channel alternative.
- Reach 4 (11<sup>th</sup> to Colfax Avenues): Alternatives were evaluated for new underground culverts and an open channel.

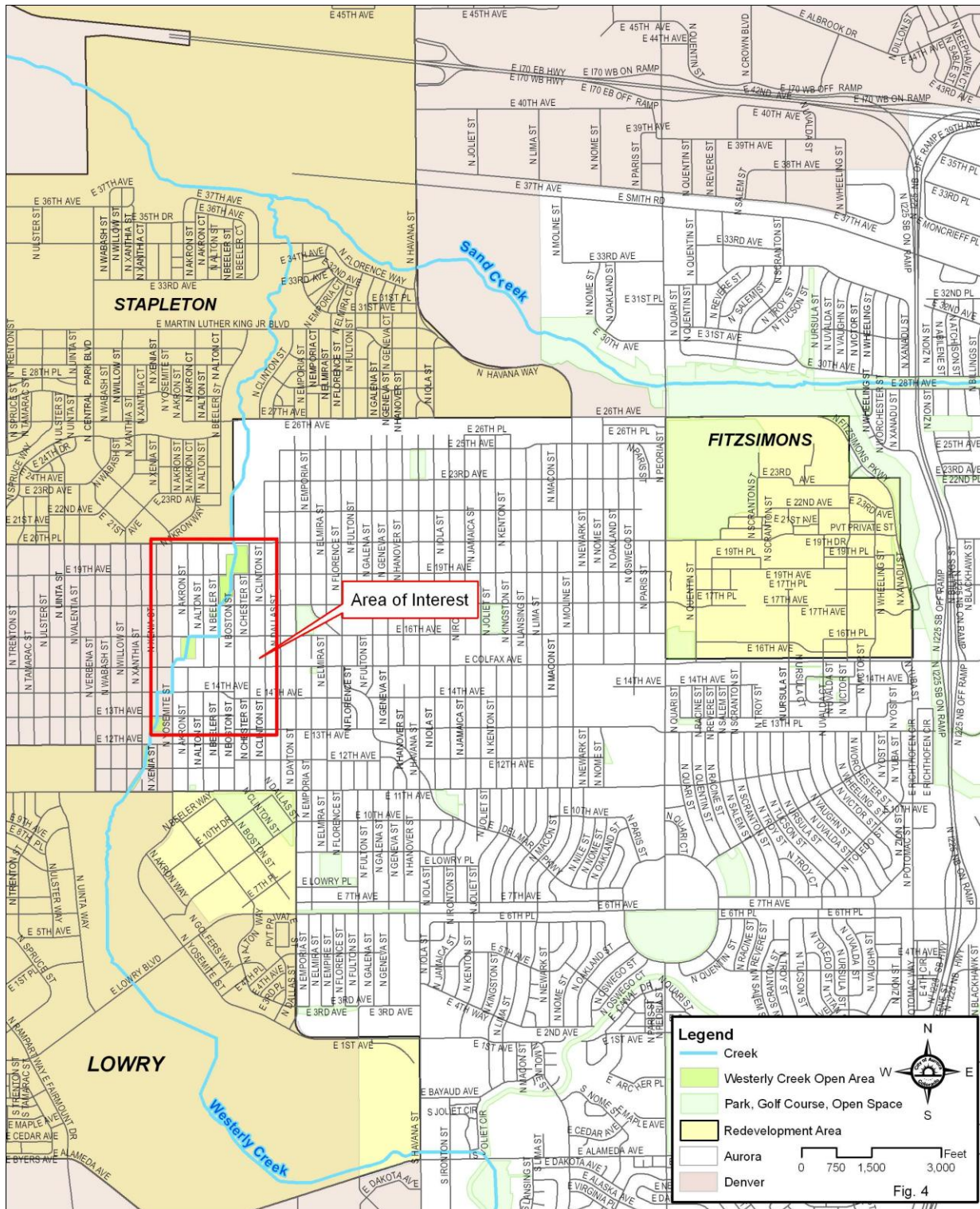




Westerly Creek Floodplain

Figure 3





Westerly Creek within the Opportunity Triangle

Figure 4



This effort also factored in greenway planning principles in response to strong public and private interest. Consequently, the study did not recommend implementation of preferred alternatives, except for Reach 2 where consensus was achieved that recommended a parallel maintenance facility through Montview Park and under Montview Boulevard. The study noted that the following benefits were not quantified in the benefit-cost analysis: “the provision of new and enhanced open space and park amenities to the surrounding community, connecting Lowry and Stapleton for alternative modes of transportation...enhancement of wildlife habitat, increased development potential, increased property value, and an improved image for the community surrounding the drainage corridor...”

### Plans in Progress

- ***Westerly Creek Greenway Master Plan.*** This plan is being prepared by the Westerly Creek Connection, a citizens’ advocacy group seeking to facilitate a greenway along Westerly Creek. The plan envisions a creek transformed into an open, naturalistic channel, featuring a regional trail connection and open space amenities.
- ***Montview Community Plan.*** The Planning and Development Services Department is engaged in efforts to facilitate revitalization and economic redevelopment along Montview Boulevard. A blight study is being prepared to define urban renewal areas and economic development strategies. Properties redeveloping adjacent to Westerly

Creek must employ strategies that facilitate creation of the greenway and additional parks and open spaces.

- ***Federal Emergency Management Agency (FEMA) Grant.*** The Aurora Water department has applied to FEMA for a grant to replace the Montview Boulevard bridge and to re-grade the creek channel between 17<sup>th</sup> and 23<sup>rd</sup> Avenues to ease flooding in the surrounding community. This grant will implement Reach 2 recommendations from the 2010 *Westerly Creek Drainageway Update* prepared by Kiowa Engineering. The new bridge and channel re-grading would increase flood flow capacity and remove 48 structures from the floodplain. Montview bridge improvements in Reach 2 also ensure uninterrupted east-west emergency access along Montview Boulevard in the event of a flood event.

- ***Montview Park Master Planning.*** The Aurora Parks, Recreation & Open Space Department will be undertaking the preparation of a master plan to renovate Montview Park. The master plan will be separate from, but coordinated with, Aurora Water’s engineering for Westerly Creek as part of the FEMA grant.

If the FEMA grant is approved and the city implements corresponding modifications to Montview bridge and subsequent channel improvements, the remaining issues related to daylighting Westerly Creek in Aurora are limited to an area extending for less than four city blocks including the culvert crossings of 16<sup>th</sup>, 17<sup>th</sup>, and Colfax Avenues.

In recognition of the many past and present efforts to address flood hazard



Westerly Creek North of Montview Boulevard in Stapleton

reduction goals in conjunction with the transformation of Westerly Creek into a community amenity, Aurora seeks to build on these programs and complete the daylighting of Westerly Creek in Aurora.

**Reclaiming Westerly Creek.** A useful tool in the creation of a greenway is a plan and policy that outlines the vision of the corridor, guides its alignment and geographic extent, and identifies steps necessary to implement the plan. Typically, greenway improvements occur from downstream to upstream as downstream areas receive the largest volume of water during a flood event. This is also the case for Westerly Creek.

A key step at the north end of the corridor in Aurora will be increasing the capacity to convey floodwaters under Montview Boulevard to accommodate a 100-year flood and allow maintenance vehicles to cross under Montview Boulevard. Aurora is pursuing a FEMA grant to replace the Montview Boulevard bridge and to provide subsequent channel improvements.

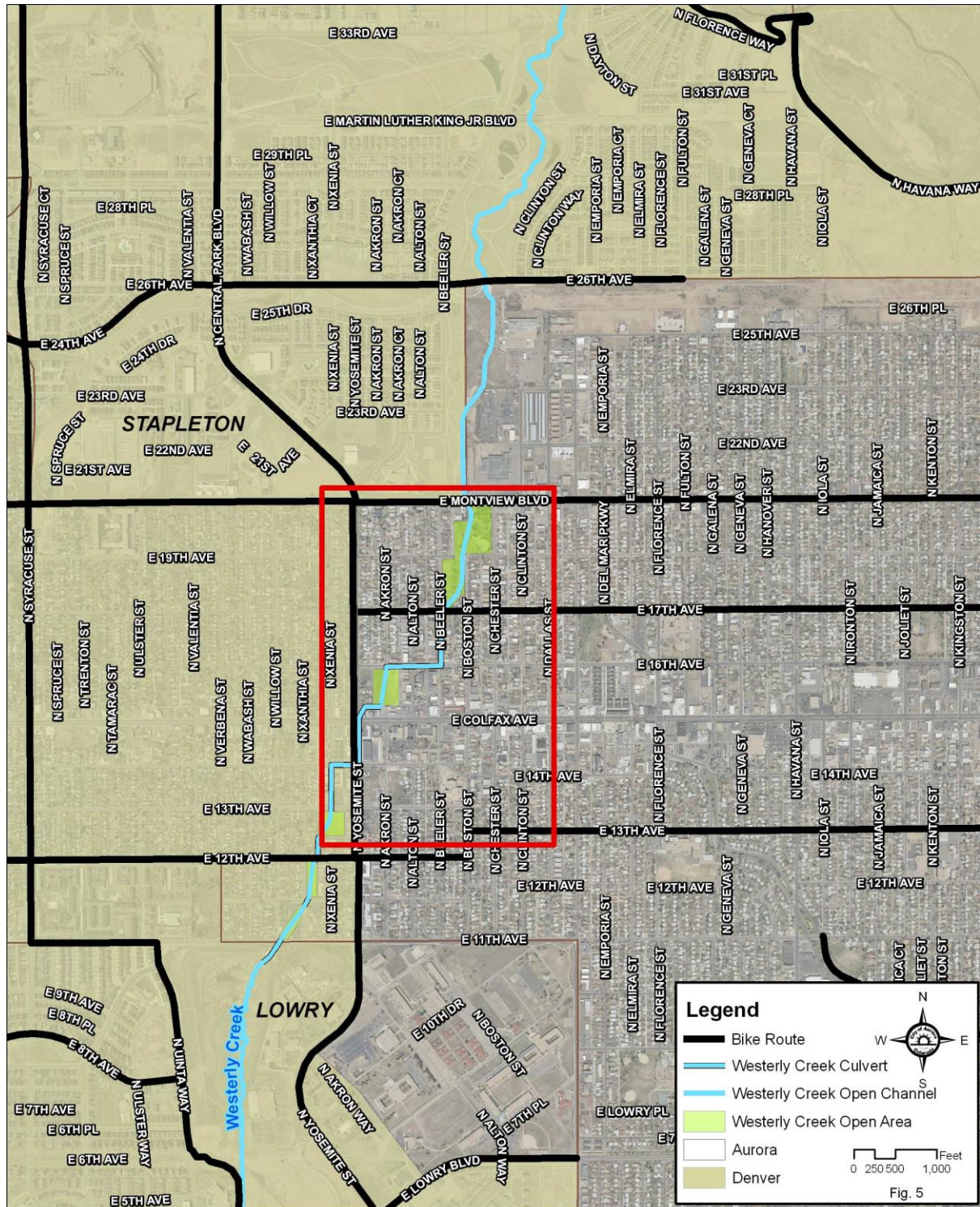
Between Montview Boulevard and 17<sup>th</sup> Avenue is Montview Park. The Parks,

Recreation and Open Space Department will prepare a master plan for the park to include the renovation of the park and appropriate designs to accommodate a greenway.

Between 17<sup>th</sup> and Colfax Avenues the 100-year floodplain contains a high concentration of homes. In general, there is a significant need and potential for redevelopment in this area. However, existing flood hazards and floodplain regulations limit redevelopment potential for many property owners in the floodplain. Currently, redevelopment of existing properties in the Westerly Creek 100-year floodplain would require very expensive engineering modifications to structures to meet federal floodplain regulations. Most property owners likely cannot afford to redevelop unless drainage improvements are implemented to modify the floodplain limits, thereby removing their properties from the floodplain.

The city is currently undertaking redevelopment planning in surrounding areas. As redevelopment visioning occurs, the Westerly Creek area between 13<sup>th</sup> and 17<sup>th</sup> Avenues should be looked at, and the visioning should identify ways to decrease the extent of the floodplain, maximize land





Westerly Creek Bike Facilities

Figure 5

for redevelopment, and enhance the overall greenway as an amenity of the area. Tools such as urban renewal, tax increment financing, community development, and public/private partnerships should be considered as means for implementing specific projects. These tools, along with other funding and grant sources, will be used to partially assist with the provision of needed greenway improvements.

The redevelopment efforts in this area will likely require the voluntary acquisition of key properties. The city plans to construct a new bridge over Westerly Creek on Montview Boulevard and provide channel improvements to Westerly Creek.

Future plans include:

- Development of a new master plan for Montview Park; and,
- Development of cost estimate ranges for Reach 3 (Colfax to 17th Avenues) and Reach 4 (13<sup>th</sup> to Colfax Avenues) to provide 100-year drainage improvements that daylight the creek and development of a funding plan to include various sources such as redevelopment grants, open space/greenway grants, and the Urban Drainage & Flood Control District.

As redevelopment occurs, the city needs to ensure that detailed designs implement the drainage and greenway goals for the Westerly Creek corridor contained in this plan amendment. An important strategy will be redeveloping areas on more than a parcel by parcel basis. A range of tools will need to be applied to accomplish this redevelopment goal.

### Issues & Needs

- The several Westerly Creek plans completed to date have set the stage for the city to establish a clear policy regarding the need for a greenway in this corridor.
- Implementing any of the alternatives outlined in the *Westerly Creek Drainageway Update* for reducing flood hazards associated with Westerly Creek presents financial challenges to the city. Incremental floodplain improvements that do not stress the city's finances are needed.
- The Colorado Community College System headquarters and Aurora Community College located in Lowry continue to experience increased demand for their services. There is a need to plan for the redevelopment of the Lowry campus and the transportation needs of an expanding student population. Development of a Westerly Creek greenway trail provides a direct connection into the heart of the campus.
- Pedestrian and bicycle mobility in Northwest Aurora and the nearby Denver area is challenging due to the lack of a fine-grained, continuous network of facilities dedicated to accommodate these modes of travel. Traffic conditions on local streets hinder pedestrian and bicycle movement. Area-wide traffic is likely to worsen as the Lowry, Stapleton and Fitzsimons redevelopments build out, infill development continues and the I-70 interchange at Central Park Boulevard is completed.
- The northwest area of the city is deficient in park and open space amenities. Vacant land to provide these amenities is very scarce in the area.
- Accommodations for the Beeler Garden and renovations to Montview Park must be taken into consideration when planning improvements to or realignment of



Westerly Creek. Impacts to and the loss of existing park and open space resources should be minimized.

- There are no immediate development pressures in the area. This creates opportunity to begin implementing a phased approach to improving Westerly Creek.

- There is a need to ensure property acquisitions are generally pursued only with willing sellers in accordance with city policies.

## STRATEGIES

### Recommended Policy and Next Steps

1. The city's long-term goal is to establish a greenway with a daylighted creek which includes a trail and trail connections to accommodate pedestrians, bicycles and drainage maintenance equipment.
2. Obtain funding and complete the reconstruction of the Montview Boulevard bridge including channel improvements.
3. Future plans for Westerly Creek include:
  - a. Complete the master plan for Montview Park and provide greenway improvements in the park.
  - b. Include the area between 13<sup>th</sup> and 17<sup>th</sup> Avenues in the redevelopment vision efforts for the surrounding areas.
  - c. Undertake a multi-disciplinary planning and design effort to develop cost estimate ranges for Reach 3 (Colfax to 17th Avenues) and Reach 4 to provide 100-year drainage improvements that daylight the creek and development of a funding plan to include various sources such as redevelopment grants, open space/greenway grants, Adams and Arapahoe Counties, and the Urban Drainage & Flood Control District.
  - d. Explore ways for collaborating with Denver in the planning and implementation of the greenway between 13<sup>th</sup> and Colfax Avenues.
4. Monitor funding opportunities and seek partners to implement drainageway improvements and the greenway project.
5. Use the update to the city's bicycle and pedestrian master plan as an opportunity to identify stakeholders' needs for bicycle facilities in Northwest Aurora.
6. Coordinate with Denver to identify interim/phased on-street bicycle/pedestrian improvements to connect Lowry and Stapleton.