Fourmile Canyon Creek
19th to 22nd Streets

Community and Environmental Assessment Process Report

March 2012

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EXECUTIVE SUMMARY

The Fourmile Canyon Creek project from 19th to 22nd Streets is bound by 19th Street on the west, Upland Avenue on the north, 22nd Street on the east and Riverside Avenue on the south. The purpose of the project is to improve safety and accessibility in the area of Fourmile Canyon Creek within the project bounds. Project objectives include the following:

- Provide flood improvements at 19th Street and Fourmile Canyon Creek
- Improve emergency access to Tamarack Avenue
- Improve pedestrian and bicycle access from 22nd Street to Crest View Elementary School and 19th Street

Crest View Elementary School is located at the northwest corner of 19th Street and Sumac Avenue. During a 100-year storm event, flooding would prohibit safe vehicular access to Crest View Elementary School. In 2009, the city completed a flood mitigation study for Fourmile Canyon Creek and Wonderland Creek. City Council stated the importance of flood improvements at Crest View Elementary School to provide safe vehicular access during a major storm event.

Vehicular access to Tamarack Avenue is currently only available by way of 22nd Street from the east. Recent and potential future annexations in the project area allow for subdivision of existing parcels. Future subdivisions will require a secondary access for emergency vehicles to Tamarack Avenue. The North Boulder Subcommunity Plan (NoBo Plan) and the Transportation Master Plan (TMP) show a secondary road connection from Upland to Tamarack Avenues along the west property line of 2010 Upland (**Figure 2.3** Current NoBo Plan).

A multi-use path exists along Fourmile Canyon Creek from Foothills Parkway to 28th Street (**Figure 2.2** Existing and Proposed Connections). The path will be extended in 2012 from 28th Street to 26th Street through Elks Neighborhood Park along Fourmile Canyon Creek. On-street designated bike routes and small segments of multi-use path exist west of 26th Street to 22nd. The NoBo Plan the TMP and the Greenways Master Plan (GMP) show a conceptual multi-use path connection alignment along Fourmile Canyon Creek from the east end of Riverside Lane at 22nd Street to 19th Street.

Project alternatives fall into three categories: 1) flood mitigation alternatives at 19th Street and Fourmile Canyon Creek, 2) alternatives to provide improved emergency access to Tamarack Avenue, and 3) east-west bicycle and pedestrian connection alternatives. This Community Environmental Assessment Process (CEAP) report presents a comparative evaluation of the following specific alignment alternatives in each category:

<u>Flood Improvements</u> (shown on **Figure 3.1**)

- F1: Replace the existing bridge at Fourmile Canyon Creek and 19th Street with box culverts sized to convey 100-year event flows.
- F2: Replace the existing bridge at Fourmile Canyon Creek and 19th Street with box culverts sized to convey 100-year event flows. One of the box culverts would be used as a pedestrian and bicycle underpass.

Emergency Access to Tamarack Avenue (shown on **Figure 3.3**)

- EA1: A 20-foot wide paved local access road located within a 30-foot wide right-of-way between parcels 2010 Upland Avenue and 4306 19th Street. This alternative would provide primary emergency access to Tamarack Avenue from Upland Avenue and serve motor vehicle, bicycle and pedestrian traffic in a shared roadway.
- EA2: A 12-foot wide paved multi-use path located within a 20-foot wide right-of-way between parcels 2010 Upland Avenue and 4306 19th Street. This alternative would provide secondary emergency access to Tamarack Avenue from Upland Avenue and also serve non-motorized traffic.
- EA3: A 12-foot wide paved multi-use path located within an existing 20-foot wide right-of-way just south of parcel 4270 19th Street. This alternative would provide secondary emergency access to Tamarack Avenue from 19th Street and also serve non-motorized traffic.

East-West Bicycle and Pedestrian Connections (shown on **Figure 3.5**)

- EW1: A 5-foot wide sidewalk along the north side of Riverside Lane / Avenue and the east side of 19th Street.
- EW2: Multi-use path along the north side of Fourmile Canyon Creek. Two subalternatives for this alignment were evaluated:
  a) a 10-foot wide concrete path
  b) an 8-foot wide crusher fine path
- EW3: A 5-foot wide sidewalk along the north side of Tamarack Avenue connecting to a 10-foot wide concrete multi-use path from the west end of Tamarack Avenue east to 19th St.
- EW4: No new connections.

Staff Recommendations

The Greenways Advisory Committee (GAC), which is made up of one representative from each of the following advisory boards: Parks and Recreation Board, Planning Board, Transportation Board, Water Resources Advisory Board, Environmental Board and Open Space Board of Trustees, conducted a public hearing for the Fourmile Canyon Creek CEAP on Thursday, Feb. 15, 2012. The following presents staff recommendations based on results from the GAC meeting. **Figure 5.1** presents a map showing the recommended alternatives.

Flood Improvements

The underpass option (F2) for flood mitigation at Fourmile Canyon Creek and 19th Street is recommended. It was overwhelmingly selected as the preferred alternative from responders to public comment and would provide vehicle traffic separation at 19th Street. The GAC unanimously (6-0) recommended approval of this alternative. Construction of this alternative will require purchase of an easement from 4270 19th Street.

Improved Emergency Access to Tamarck

The 19th Street to Tamarack Avenue alignment (EA3) is the recommended alternative to provide improved emergency vehicle access to Tamarack Avenue. This alternative would consolidate the future bicycle and pedestrian access to Tamarack Avenue with emergency access. Normal vehicular access would not be permitted. It would require enhancing the crossing of Fourmile

Canyon Creek to accommodate emergency vehicles. By eliminating the proposed north-south access to Tamarack (shown in the NoBo Plan) just east of 19th Street, several properties (4306 Upland, 2010 Upland and 4270 19th Street) will not be fronted by public access on three sides. The proposed east-west emergency access alignment and elimination of the north-south alignment would not require an amendment to the NoBo Plan but would be accomplished through the annexation process. The City Transportation, Community Planning and Development Review Divisions agree that a local access roadway providing full (non-emergency) vehicular access is not warranted based on current and projected traffic volumes generated by potential future subdivisions along Tamarack Avenue. The GAC unanimously (6-0) recommended approval of this alternative.

East-West Bicycle and Pedestrian Connection

The 10-foot wide concrete path alignment along Fourmile Canyon Creek (EW2a) was originally recommended by staff for the east-west connection. The GAC, however, did not recommend the construction of a multi-use path along Fourmile Canyon Creek at this time, but unanimously (6-0) recommended keeping this multi-use path alignment in city master plans and the North Boulder Subcommunity Plan. During discussion leading to the motion, the GAC suggested that this be the last path segment be constructed and the city should instead work towards constructing path segments further to the west and east of the project area. In addition, the GAC recommended upgrading the current soft surface trail connection between Sumac Avenue and Riverside Lane/22nd Street to concrete and directed the city to pursue easements along Fourmile Canyon Creek for pedestrian/bicycle and habitat mitigation purposes. During discussions leading to the motion, the GAC requested that staff evaluate on-street bicycle and pedestrian routes and provide bike route signage from 26th Street and the Elks Park to Crest View Elementary.

As a result of the GAC motions, the following summarizes the revised staff recommendation for east-west bicycle and pedestrian connections:

- Keep the conceptual alignment of a future multi-use path connection along Fourmile Canyon Creek in the North Boulder Subcommunity Plan and Greenways and Transportation master plans;
- Work to secure the easements required for the Fourmile Canyon Creek path alignment;
- Do not proceed with the design and construction of a multi-use path along Fourmile Canyon Creek between 19th and 22nd Streets at this time, but evaluate other ways to improve bicycle and pedestrian connectivity for Crest View Elementary School students and other people trying to navigate from 26th Street to 19th Street; and
- Upgrade the soft-surface trail segment between Sumac Avenue and Riverside Lane to a concrete multi-use path.

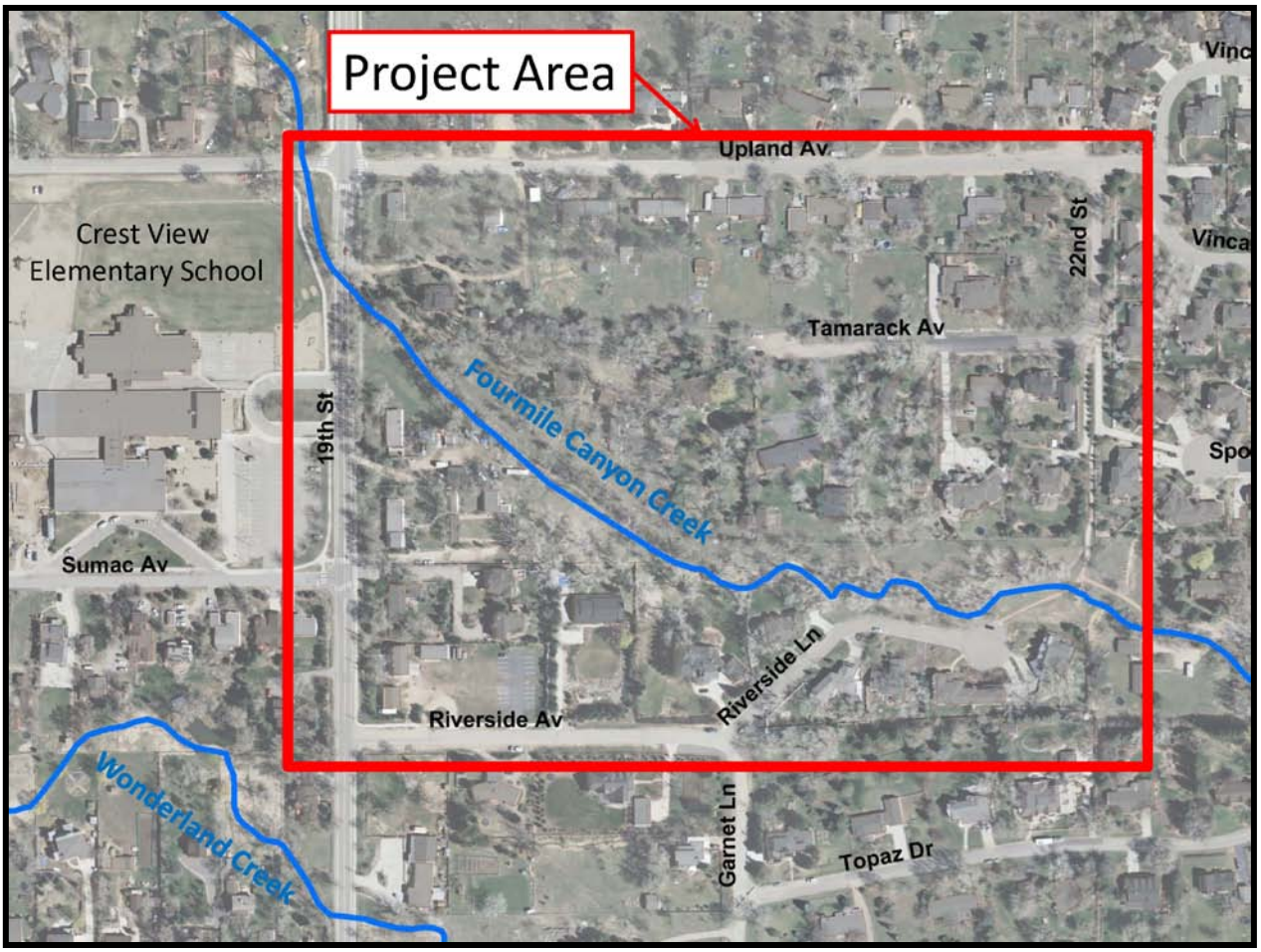
It should be noted that flood and Greenways improvements between Broadway and 19th Street are currently shown in the five year CIP and will be evaluated as a separate CEAP. As a result, construction of the multi-use path along Fourmile Canyon Creek between 19th to 22nd Streets will not be reconsidered in the next five years.

1.0 DESCRIPTION AND LOCATION OF THE PROJECT

The Fourmile Canyon Creek project from 19th to 22nd Streets is bound by 19th Street on the west, Upland Avenue on the north, 22nd Street on the east and Riverside Avenue on the south (**Figure 1.0**). The purpose of the project is to improve safety and accessibility in the area of Fourmile Canyon Creek within the project bounds. Project objectives include the following:

- Provide flood improvements at 19th Street and Fourmile Canyon Creek
- Improve emergency access to Tamarack Avenue
- Improve pedestrian and bicycle access from 22nd Street to Crest View Elementary School and 19th Street

Figure 1.0 Project Location



2.0 BACKGROUND, PURPOSE AND NEED FOR THE PROJECT

In 2009, the city completed a flood mitigation study for Fourmile Canyon Creek and Wonderland Creek. During a 100-year storm event, flooding would prohibit safe vehicular access to Crest View Elementary School (see **Figure 2.1**). During the Nov. 10, 2009 Council Meeting City Council stated the importance of flood improvements at Crest View Elementary School to provide safe vehicular access during a major storm event. To accomplish this, channel improvements will be required at the crossings of Violet Avenue, Upland Avenue and 19th Streets along Fourmile Canyon Creek and at 19th Street along Wonderland Creek. Funding is shown in the Greenways and Flood Utilities 2011-2016 CIP for flood mitigation, a multi-use path connection and environmental restoration. The initial proposed project is for flood mitigation at 19th Street and Fourmile Canyon Creek.

The North Boulder Subcommunity Plan (NoBo) Plan was adopted by City Council and Planning Board in 1995. The Plan created a vision to guide future development and change while preserving character and livability of existing residential neighborhoods. The NoBo Plan called for new residential neighborhoods on the north and a new mixed-use village center along Broadway. It also developed conceptual-level pedestrian, bicycle and vehicular connection alignments in support of this future land use. A proposed multi-use path along Fourmile Canyon Creek from Riverside Lane to 19th Street, a proposed east-west multi-use path from the western extension of Tamarack Avenue to 19th Street and a proposed north-south secondary road from Tamarack Avenue to Upland Avenue are currently shown for this area in the NoBo Plan (**Figures 2.2 and 2.3**). These improvements were also incorporated into the Transportation and Greenways Master Plans.

Since the NoBo Plan was adopted, several parcels have been annexed into the City of Boulder and resulted in amendments to the NoBo Plan. The following presents a summary of connection changes in the recent annexations within the project area:

- 1997 - Crestview East Annexation
    - Amended the NoBo Plan to change the use of a proposed path along Fourmile Canyon Creek between Riverside Lane to 19th Street from pedestrian only to bike and pedestrian use.
    - 22nd Street right-of-way was shifted to the west.
- Jan. 2009 - 2020 Upland and 4240 19th Street Annexations
    - The proposed annexation agreement included a redevelopment improvement requirement for the property owners to construct and complete a 12-foot wide multi-use path along the south side of Fourmile Canyon Creek. City Council members raised concern for the path along Fourmile Canyon Creek. City Council approved the annexation without requiring the proposed multi-use path easement and construction requirement along Fourmile Canyon Creek citing habitat concerns and the lack of available data at the time relative to those concerns (the NoBo Plan was not amended).

- Oct. 2009 - Crestview East Annexation
    - Annexation agreement amended the NoBo Plan and the Transportation Master Plan for eight connections shown in **Figure 2.3**, all of them north and east of this project's area.
    - Staff proposed elimination of the planned secondary road from Upland Avenue to Tamarack Avenue and substitution of a multi-use path / emergency access. Analysis supporting this recommendation was based on the limited number of homes along Tamarack Avenue, the limited subdivision potential, and the estate-type setting along Tamarack. Planning Board approved the annexation without this change and this staff recommendation was subsequently not included in the memorandum to City Council. A neighborhood petition to have the future roadway removed from the NoBo Plan was, however, included as an attachment to the memorandum (provided as **Attachment 2** to this CEAP). Staff was later directed to facilitate a public process to consider the purpose, need and impacts of this improved access to Tamarack Avenue. This CEAP provides a comparative analysis of the alignments in support of the staff recommendation to provide a minimum development improvement of improving emergency and non-motorized access to Tamarack Avenue.

Crest View Elementary School is located at the northwest corner of 19th Street and Sumac Avenue. Crest View Elementary School serves a large population that includes students east of 28th Street (see **Figure 2.4**). BVSD encourages students to walk and bicycle to school and only provides bus service to students living outside a two mile radius from a school with a few exceptions. One exception is for Crest View Elementary School students living east of 28th Street because BVSD considers 28th Street a barrier to children that could otherwise walk or bicycle to school. A multi-use path exists along Fourmile Canyon Creek from Foothills Parkway to 28th Street. The path will be extended in 2012 from 28th Street to 26th Street through the Elks Park along Fourmile Canyon Creek. On-street designated bike routes and small segments of multi-use path exist west of 26th Street to 22nd Street (**Figure 2.2**).

The Community and Environmental Assessment Process (CEAP) is a formal review process to consider the impacts of public development projects. The purpose of the CEAP is to assess potential impacts of conceptual project alternatives in order to inform the selection and refinement of a preferred alternative. The CEAP provides the opportunity to balance multiple community goals in the design of a capital project by assessing a project against the policies outlined in the Boulder Valley Comprehensive Plan and department master plans.

Figure 2.1: Existing Conditions Floodplains

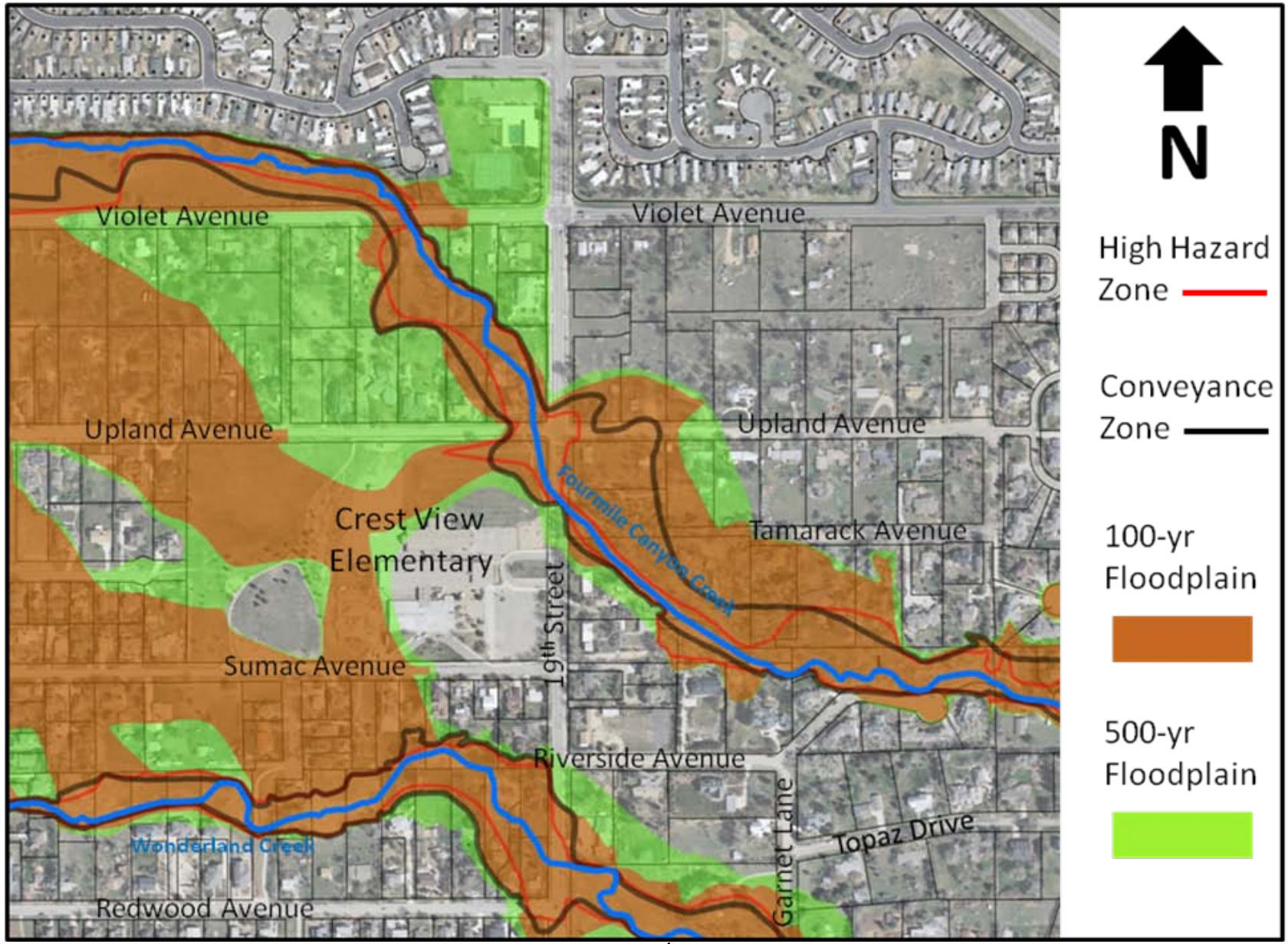


Figure 2.2: Existing and Proposed Connections (Adopted in City Master Plans)

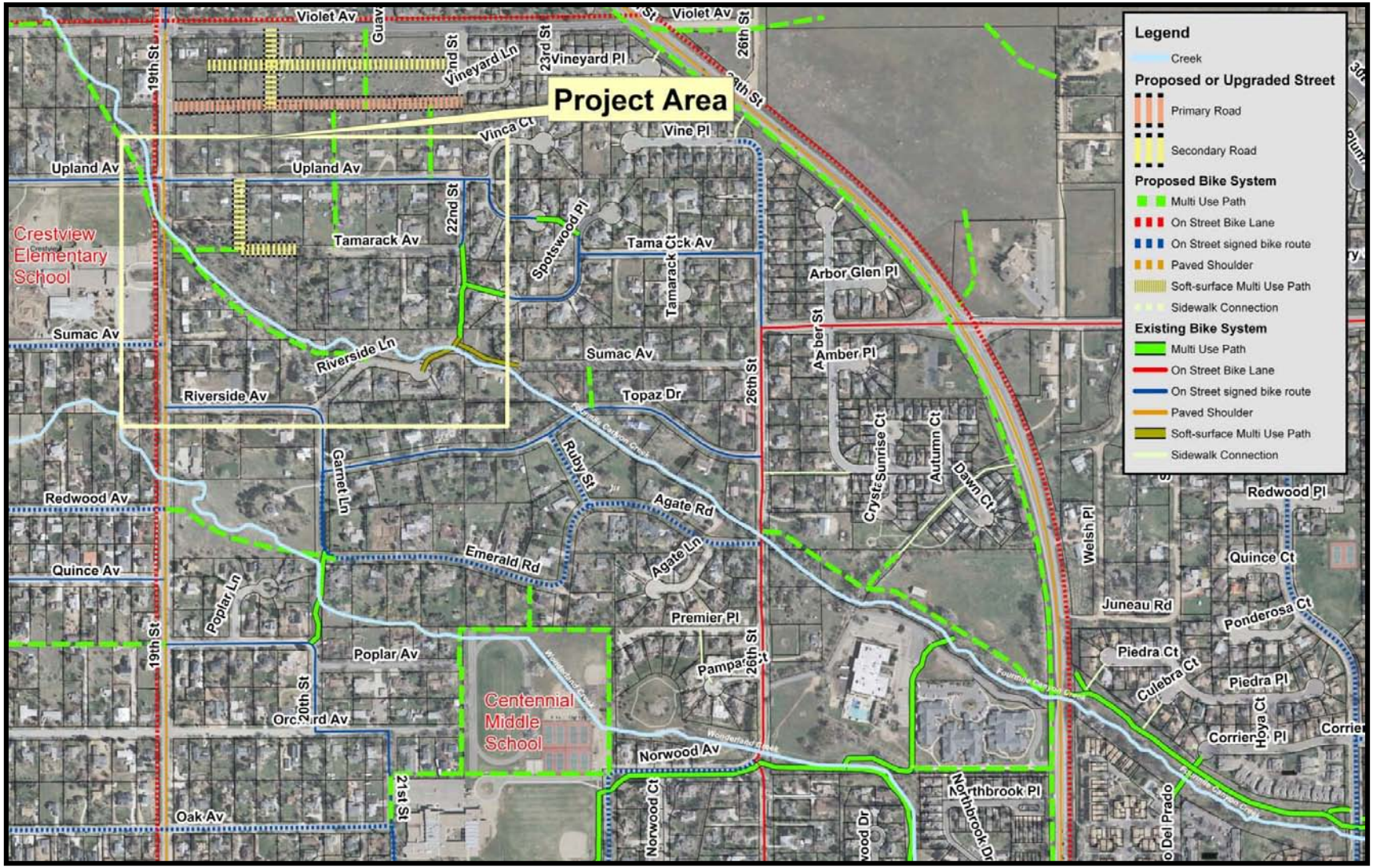


Figure 2.3: Current North Boulder Subcommunity Plan based on changes from Oct. 2009 Crestview East Annexation

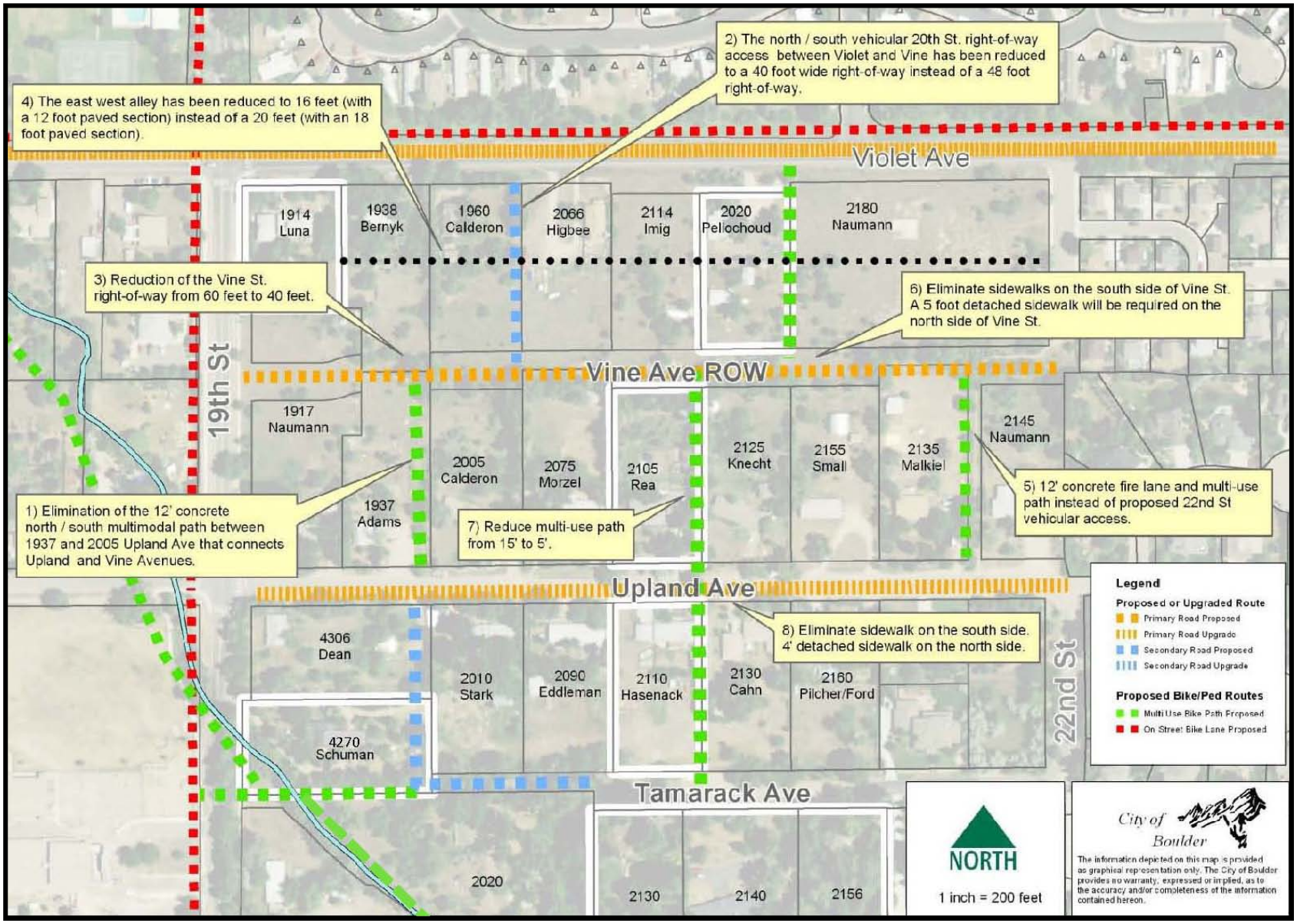
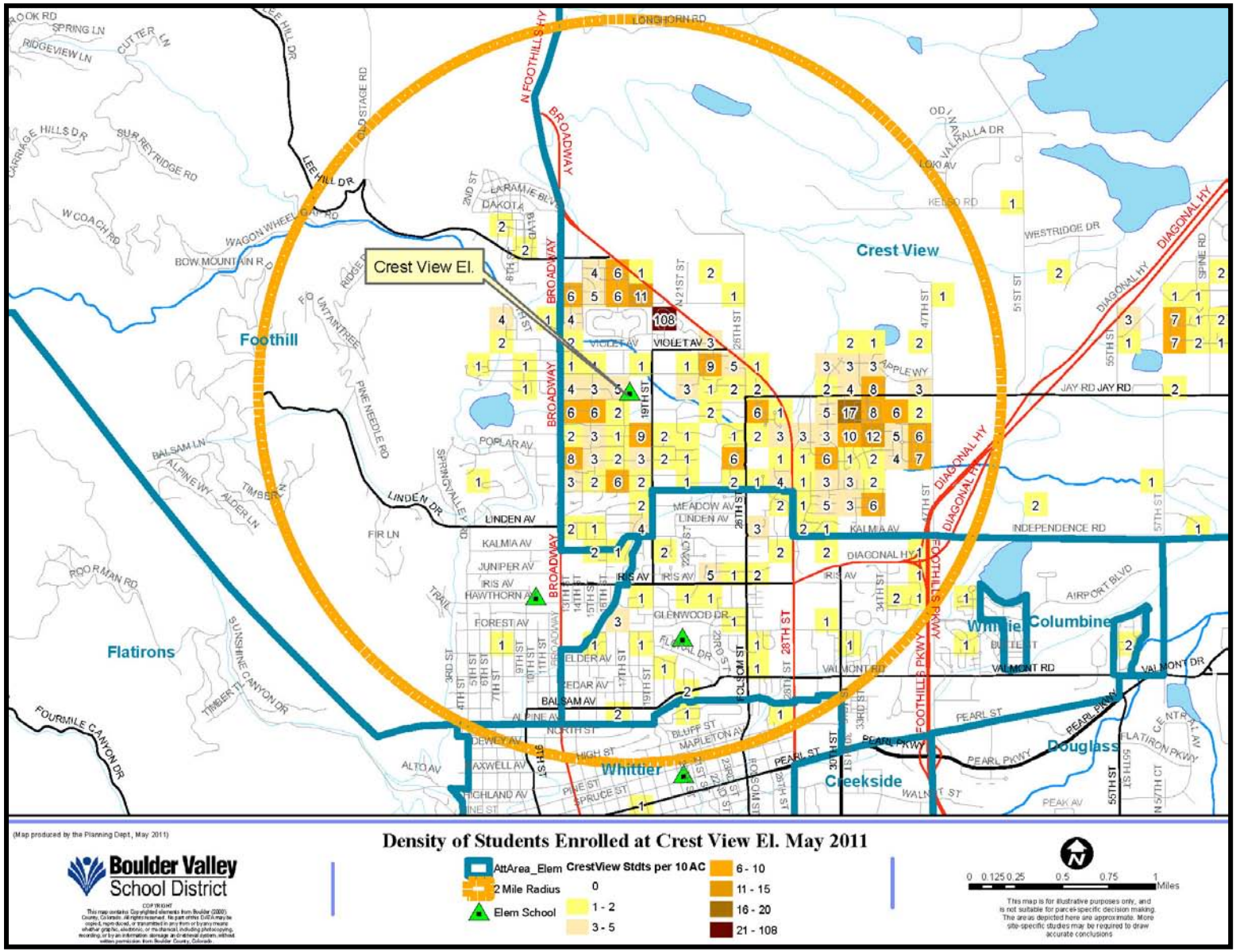


Figure 2.4: Density of Students Enrolled at Crest View Elementary School



3.0 DESCRIPTION OF PROJECT ALTERNATIVES AND SUMMARY OF MAJOR ISSUES

Description of Project Alternatives

Project alternatives fall into three categories:

1) Flood improvements at 19th Street and Fourmile Canyon Creek
2) Improved emergency access to Tamarack Avenue
3) East-west bicycle and pedestrian connections

Flood Improvements / 19th Street Crossing

Two alternatives for flood mitigation are presented for consideration. Both alternatives would be sized to convey flow resulting from a 100-year storm event. One alternative would not include a pedestrian / bicycle underpass and one would. **Figure 3.1** presents the two alternatives. It should be noted that construction of the flood improvements at Fourmile Canyon Creek and 19th Street will still result in residual flood risk as shown on **Figure 3.1**. Safe vehicular access to Crest View Elementary School will require subsequent upgrades to existing crossings along Fourmile Canyon Creek at Upland Avenue and Violet Avenue and Wonderland Creek at 19th Street. It should also be noted that both alternatives will require purchase of a flood easement from parcel 4270 19th Street. **Figure 3.2** presents a summary of major issues related to the flood mitigation alternatives.

F1 (No Bicycle and Pedestrian Underpass): This alternative would replace the existing 19th Street bridge with double 8-foot high by 12-foot wide box culverts. The alternative would also require relocation of an existing sanitary sewer line and water line along with limited upstream and downstream channel work. New sidewalk segments would be constructed along with a pedestrian bridge on the east side of 19th Street. Concept-level cost for this alternative is $838,000.

F2 (Bicycle and Pedestrian Underpass): This alternative is very similar to F1 with the exception that one of the box culverts would be used as a pedestrian and bicycle underpass. A 10-foot wide concrete multi-use path would be constructed on both sides of the box culvert to complete the underpass. Concept-level cost for this alternative is $972,000.

Improved Emergency Access to Tamarack Avenue

Three alignments have been developed to improve emergency access to Tamarack Avenue. At a minimum, emergency access will be required once annexed properties subdivide and therefore a Status Quo alternative is not included. Two of the three options limit vehicular access to only authorized emergency vehicles. All three options provide non-motorized pedestrian/bicycle access. The following presents a summary description of each option. **Figure 3.3** presents a map showing the alignments. **Figure 3.4** presents a summary of major issues related to the east-west alignments.

EA1 (Primary Emergency Access): This option is shown on the existing North Boulder Subcommunity (NoBo) Plan and Transportation Master Plan (TMP). It would provide vehicular, including primary emergency, access from Upland Avenue to Tamarack Avenue by constructing a local access secondary road connection between 2010 Upland Avenue and 4306 / 4270 19th Street. A 20-foot wide paved road would be constructed within a 30-foot wide right-of-way. The paved surface would provide shared space for primary emergency, vehicular, pedestrian and bike travel. The concept-level cost for the road option is $42,000. This cost is entirely developer responsibility based on current annexation agreements. Right-of-way would, however, be needed from 4270 19th Street.

EA2 (Secondary Emergency Access): This option would provide secondary emergency, pedestrian and bicycle access on the same alignment as NS1 via a 12-foot wide concrete multi-use path located within a 20-foot wide right-of-way. The concept-level cost for this alignment option is $25,000. This cost is entirely developer responsibility based on current annexation agreements. Right-of-way would, however, be needed from 4270 19th Street.

EA3 (Secondary Emergency Access): This option would provide secondary emergency, pedestrian and bicycle access east to 19th Street from Tamarack Avenue via a 12-foot wide concrete path within a 20-foot wide right-of-way. The concept-level cost for a combined emergency and pedestrian / bicycle access is $240,000. Right-of-way would be needed from 4270 19th Street (the cost of which is included in the flood improvements at 19th Street).

East-West Bicycle and Pedestrian Connections

Three east-west alignments have been developed based on input to date in addition to a Status Quo alternative. The following presents a summary description of each alignment. **Figure 3.5** presents a map showing the alignments. **Figure 3.6** presents a summary of major issues related to the east-west alignments.

EW1 (Riverside): This alignment would begin at the existing soft-surface multi-use trail located at the east end of Riverside Lane, follow Riverside Lane / Avenue west to an existing sidewalk segment located on the west end of Riverside Avenue. The new segment of 5-foot wide concrete sidewalk along Riverside Lane would be constructed within the existing roadway by restricting parking along the north side. This alternative includes a new sidewalk along the east side of 19th Street. Most of the new sidewalk for this alignment will not be detached from the roadway by a landscape strip and will require new curb and gutter. The concept-level cost for this alignment option is $237,000. Of the total project cost, developers are responsible for approximately $47,000 of improvements based on current annexation agreements. Snow removal would be the responsibility of the adjacent property owner with the exception of the cul-de-sac segment located at the east end of Riverside Lane. This segment is adjacent to city-owned easement and snow removal would be provided by city staff. **Figure 3.7** presents renderings showing existing conditions and the proposed sidewalk along Riverside Lane.

EW2a/b (Fourmile Canyon Creek): This alignment is the one shown in the existing NoBo Plan, TMP and Greenways Master Plan. It would begin on the east at the existing multi-use path located between 22nd Street and Riverside Lane and extend west along the north side of Fourmile

Canyon Creek to 19th Street. Sub-alternative (a) would provide an 8-foot wide crusher fine path. Sub-alternative (b) would provide a 10-foot wide concrete path. The crusher-fine path would not be plowed but the city would maintain the concrete path to transportation standards and perform snow removal and routine maintenance including sweeping. The concept-level cost for the crusher fine path option is $269,000 and $307,000 for the concrete path. Developers are responsible for approximately $159,000 of improvements for either alternative based on current annexation agreements. **Figure 3.8** presents renderings showing existing conditions, the proposed 10-foot wide concrete path option and the eight-foot wide crusher fine path option. This alternative would require the purchase of an easement from 2020 Upland.

EW3 (Tamarack Avenue): This alignment would begin at the end of the existing concrete multi-use path at the intersection of 22nd Street and Tamarack Avenue. This alignment would include a 5-foot wide detached sidewalk along the north side of Tamarack Avenue and a 10-foot wide concrete multi-use path from the west end of Tamarack Avenue to 19th Street. This connection is shown in the NoBo Plan and TMP. The concept-level cost for this alignment option is $248,000. Of the total project cost, developers are responsible for approximately $159,000 of improvements based on current annexation agreements. **Figure 3.9** presents renderings showing existing conditions and the proposed 10-foot wide concrete path west of Tamarack Avenue.

EW4 (Status Quo): This alternative would not construct any new trail connections.

Table 3.1 presents a summary of all project alternatives.

Table 3.1 Project Alternatives Summary

Alternatives	Concept-Level Cost Estimate[1]	Description
Flood Mitigation / 19th Street Crossing		
F1 (No Bicycle and Pedestrian Underpass)	$838,000 total cost $0 private* $838,000 public	Bridge replaced with twin Box Culverts sized for 100-year flows
F2 (Bicycle and Pedestrian Underpass)	$972,000 total cost $0 private* $972,000 public	Bridge replaced with twin Box Culverts sized for 100-year flows and pedestrian underpass of 19th street
Improved Emergency Access to Tamarack Avenue		
EA1 (Primary Emergency)	$42,000 total cost $42,000 private* $0 public	North-south primary emergency access (local access road) from Upland Avenue to Tamarack Avenue
EA2 (Secondary Emergency)	$25,000 total cost $25,000 private* $0 public	North-south secondary emergency and bike/pedestrian access from Upland Avenue to Tamarack Avenue
EA3 (Secondary Emergency)	$239,000 total cost $159,000 private* $80,000**	East-west secondary emergency and bike/ pedestrian access from 19th Street to Tamarack Avenue
East-West Bicycle and Pedestrian Connections		
EW1 (Riverside)	$237,000 total cost $47,000 private* $190,000 public	5-foot wide sidewalk along the north side of Riverside Lane / Avenue (within existing roadway) and east side of 19th Street
EW2 (Fourmile Canyon Creek) • (a) 10-foot concrete path	$307,000 total cost $159,000 private* $148,000 public	10-foot wide concrete path along the north side of Fourmile Canyon Creek
• (b) 8-foot crusher fine path	$269,000 total cost $159,000 private* $110,000 public	8-foot wide crusher fine path along the north side of Fourmile Canyon Creek
EW3 (Tamarack Avenue)	$248,000 total cost $159,000 private* $89,000 public	5-foot wide detached sidewalk along north side of Tamarack Avenue and a 10-foot wide concrete path from the end of Tamarack Avenue to 19th Street
EW4 (Status Quo)	$0	Maintains existing conditions

* Private costs based on current annexation agreements

** Difference in cost to enhance bike/ped crossing to accommodate emergency vehicle

Figure 3.1 Flood Mitigation Alternatives

F1 – No Underpass

F2 – Pedestrian / Bicycle Underpass

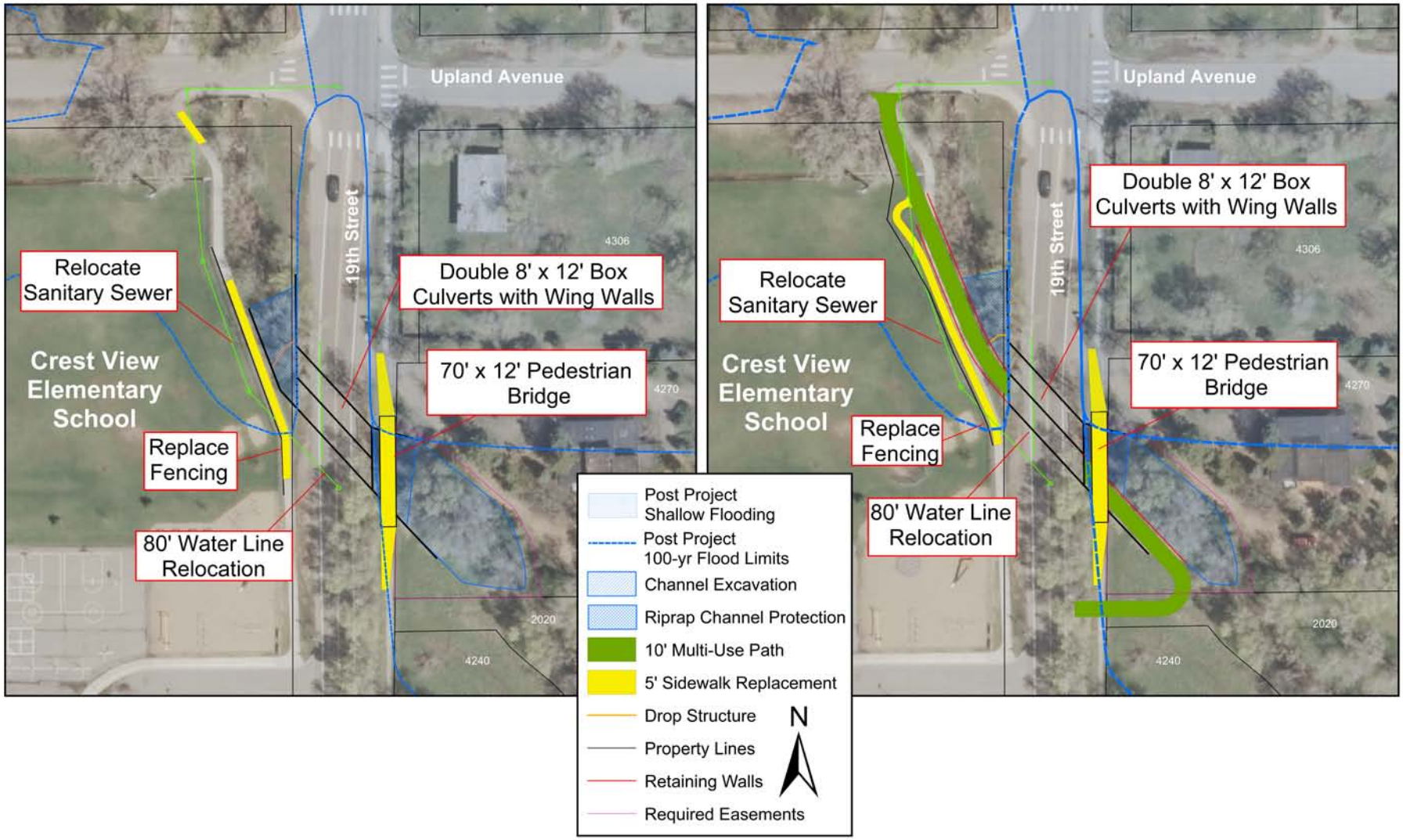
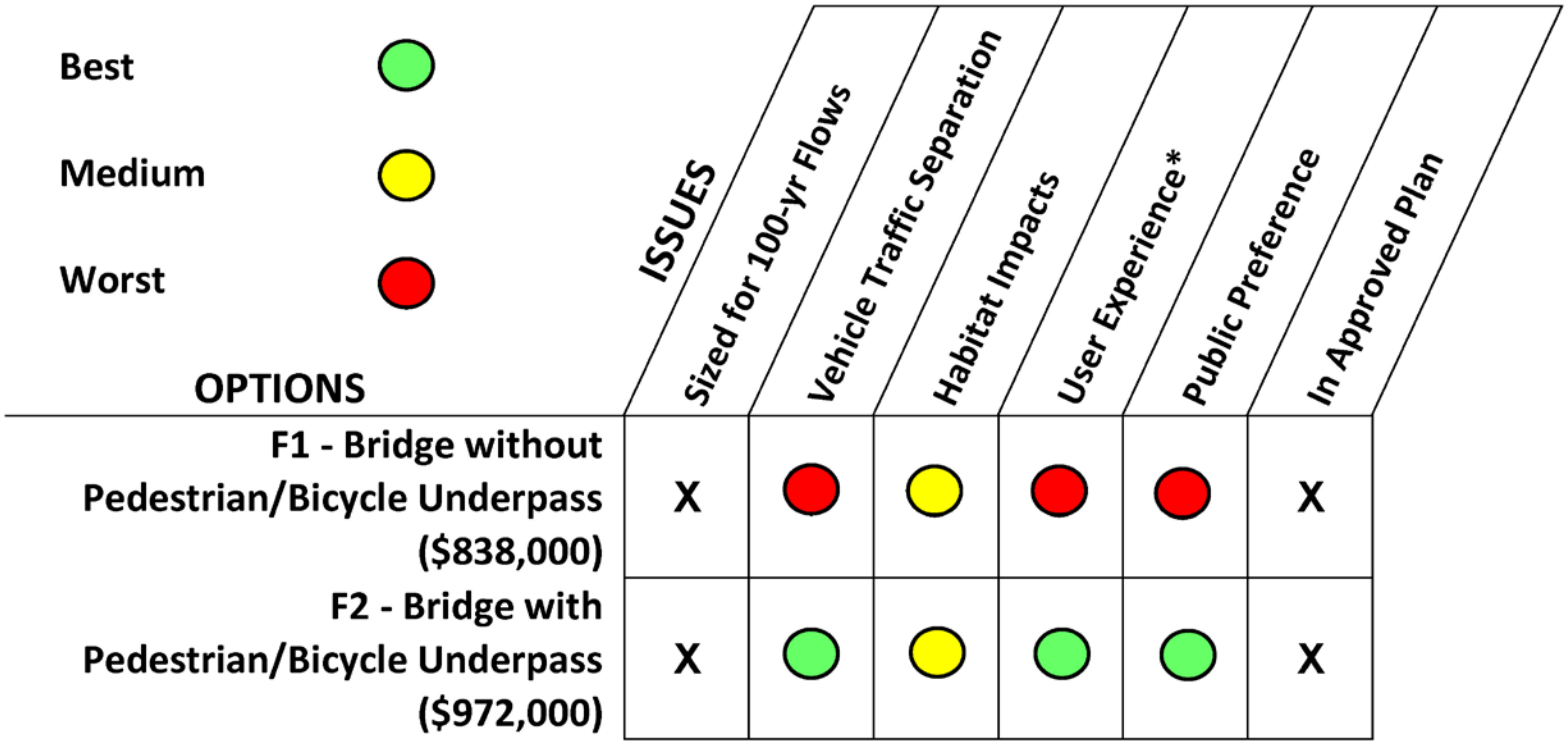


Figure 3.2 Flood Mitigation Alternatives Summary of Major Issues



* If no underpass is provided, users would be required to cross at existing crossings located at Upland and south on 19th (a new mid-block crossing would not meet city distance standards)

Figure 3.3 Improved Emergency Access to Tamarack Avenue Alignments

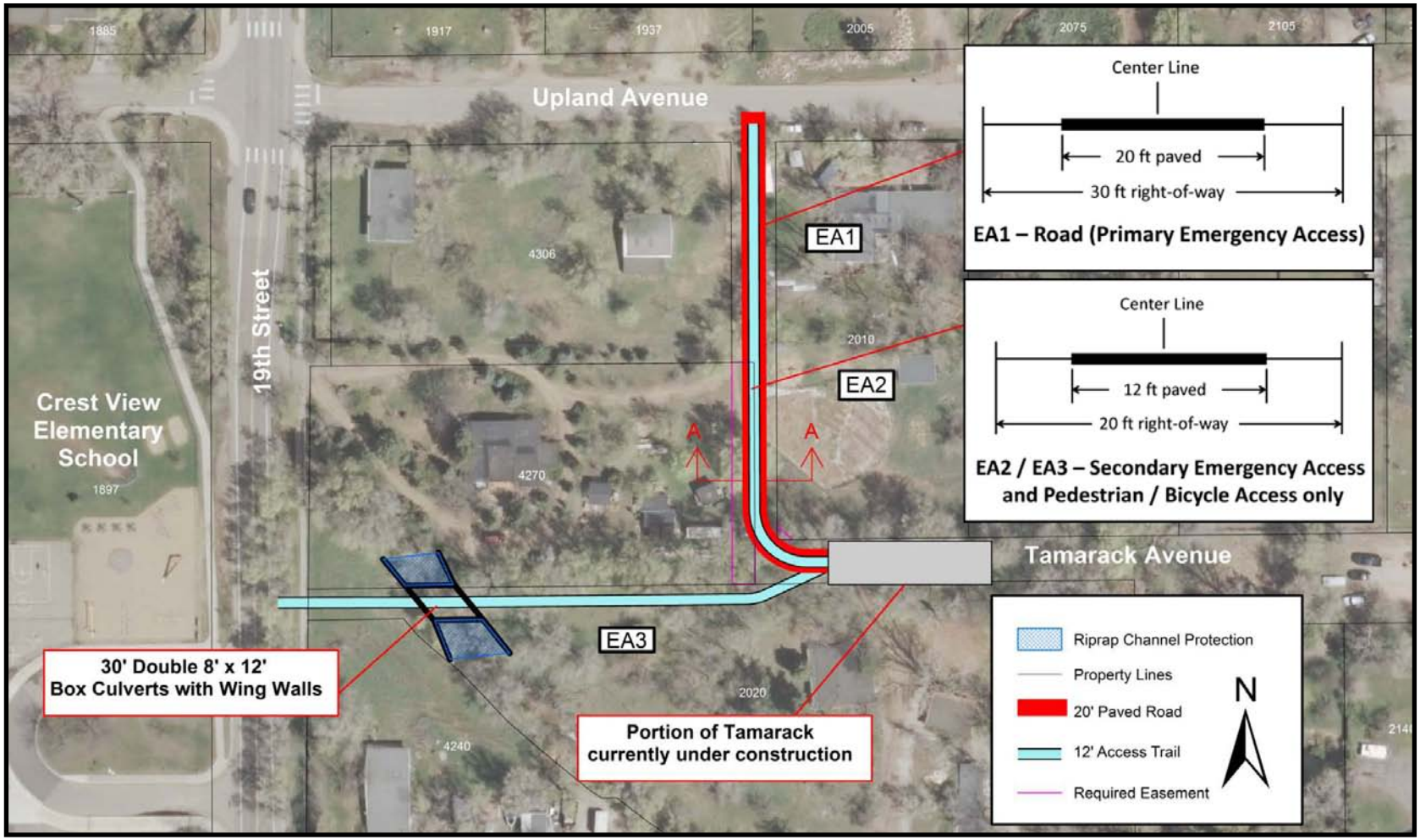
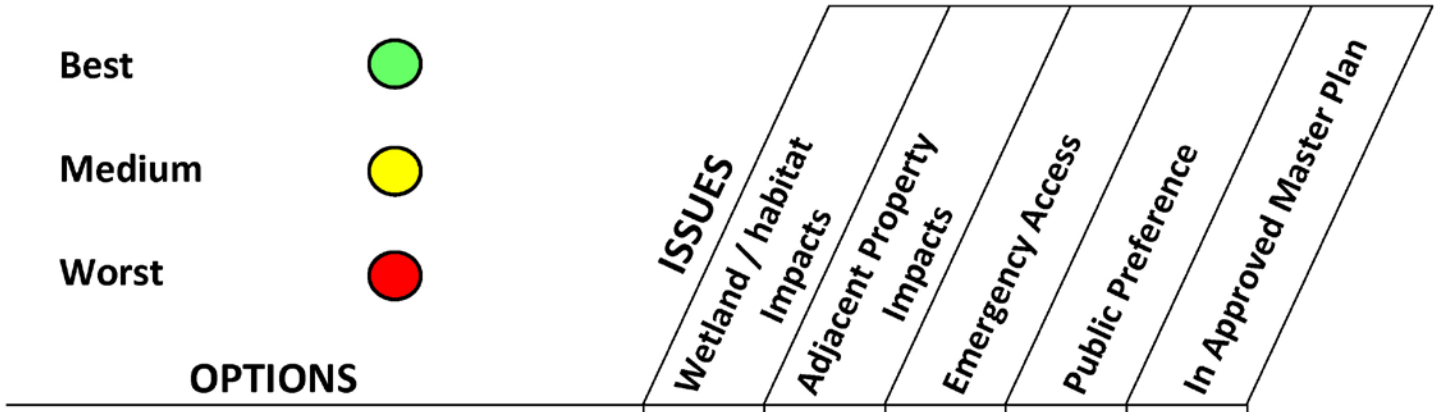


Figure 3.4 Improved Emergency Access to Tamarack Avenue Summary of Major Issues



	Total Cost	Private Cost*	Public Cost
EA1 - Road	$42,000	$42,000	$0
EA2 - Emergency/Ped/Bike Only	$25,000	$25,000	$0
EA3 - Emergency/Ped/Bike Only	$80,000**	$80,000	$0

* Private costs based on current annexation agreement commitments

** Cost difference to enhance bike/ped access to accommodate emergency access vehicles

Figure 3.5 East-West Bicycle and Pedestrian Connections

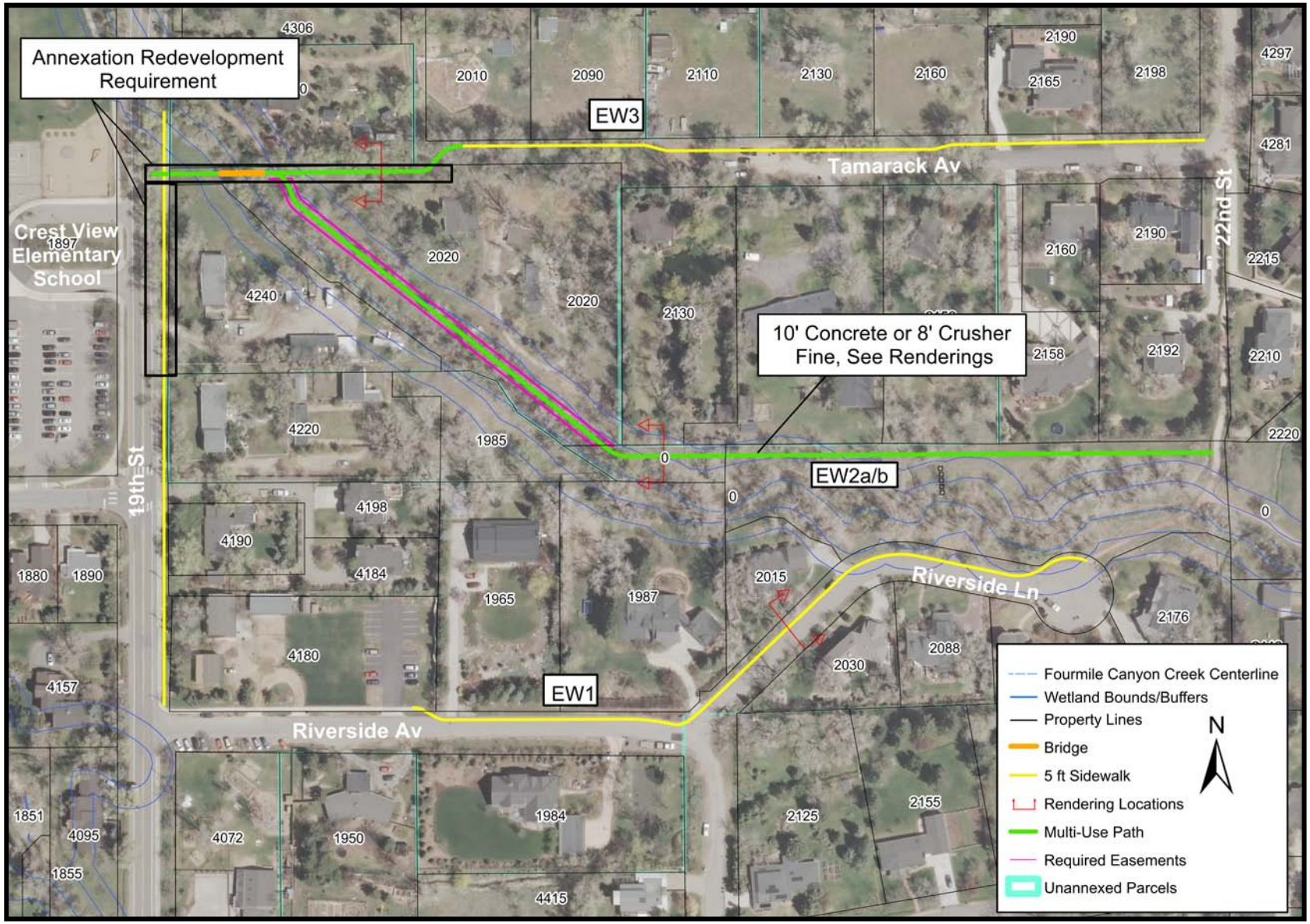
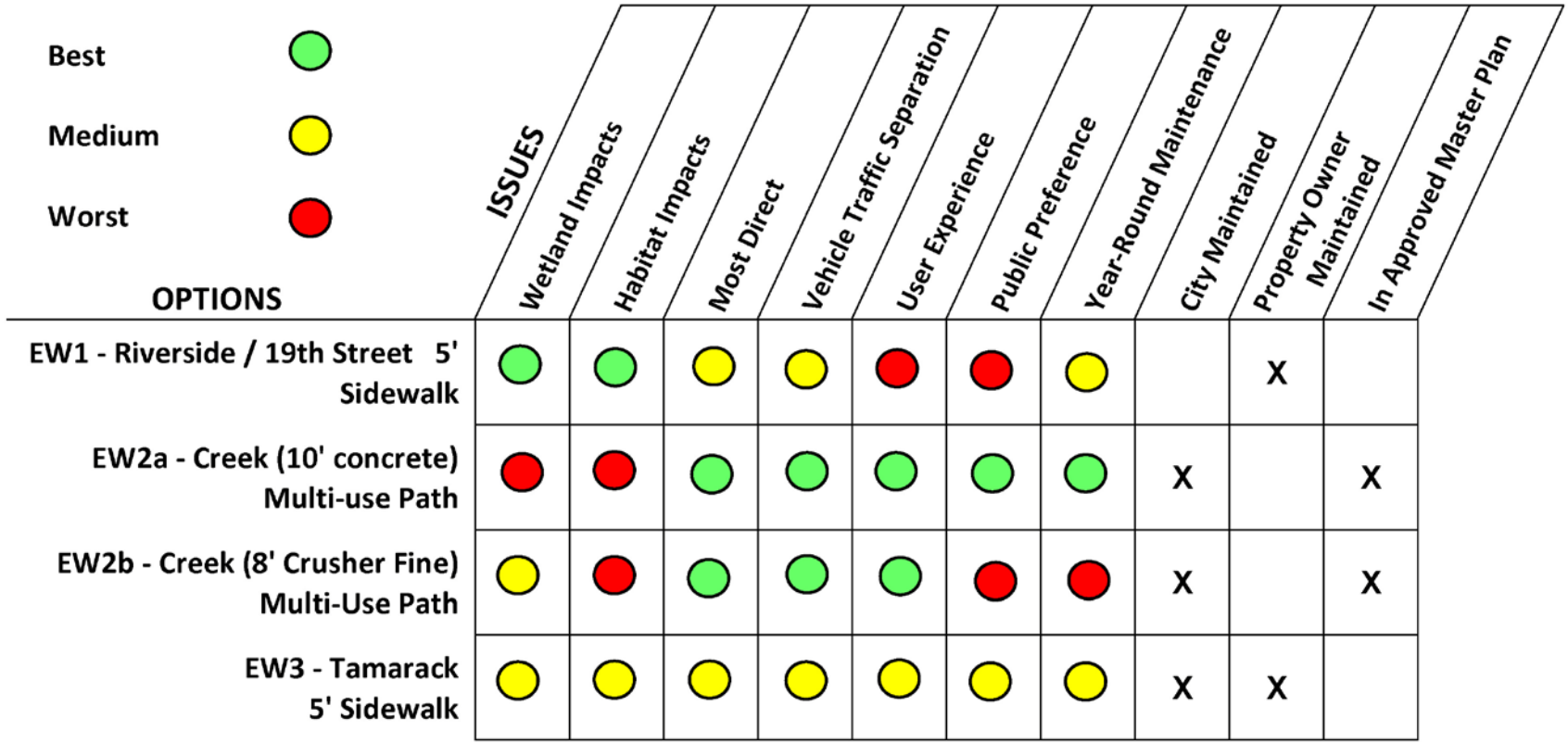


Figure 3.6 East-West Pedestrian and Bicycle Connections Summary of Major Issues



	Total Cost	Private Cost*	Public Cost
EW1 - Riverside / 19th Street	$237,000	$47,000	$190,000
EW2a - Creek (10' concrete)	$307,000	$159,000	$148,000
EW2b - Creek (8' Crusher Fine)	$269,000	$159,000	$110,000
EW3 - Tamarack	$248,000	$159,000	$89,000

* Private costs based on current annexation agreement commitments

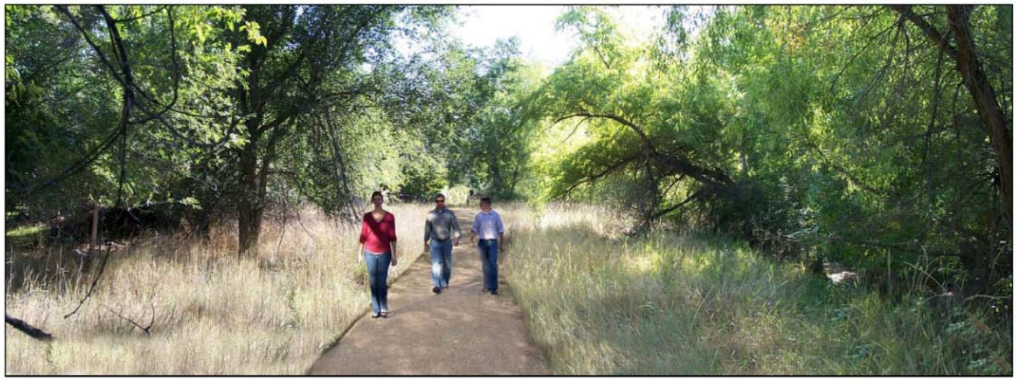
Figure 3.7 EW1 Riverside Lane Renderings

Existing Conditions

Proposed Sidewalk

Figure 3.8 EW2 Fourmile Canyon Creek Renderings

Existing Conditions



Proposed 8’ Crusher Fine Multi-Use Path

Proposed 10’ Concrete Multi-Use Path

Figure 3.9 EW3 Tamarack Lane Renderings

Existing Conditions

Proposed Multi-Use Path with Post-Rail Fence and Plantings

Proposed Multi-Use Path with Privacy Fence and Plantings

4.0 PERMITS, WETLANDS PROTECTION AND HABITAT ENHANCEMENT

Construction of the project components may require the following permits:

- Colorado Department of Public Health and Environment Colorado Stormwater Discharge Permit (Construction Activity General Permit and Stormwater Management Plan)
- City of Boulder Floodplain Development Permit
- City of Boulder Wetlands Permit
- United States Army Corps of Engineers 404 Wetlands Permit
- Colorado Department of Public Health and Environment Colorado Construction Dewatering Permit
- City of Boulder construction dewatering discharge agreement

A portion of the proposed flood improvements is currently located on land not annexed by the city. This site, however, will not trigger the need to prepare a County Areas and Activities of State Interest 1041 Review Application.

A comprehensive Greenways Riparian Habitat Assessment was completed in 1999 as part of the Greenways Master Plan. The riparian habitat was evaluated based on the quality of vegetation (native or non-native), the vegetative structure and the quality of the habitat based on the presence of bird species. Each stream reach was rated for each of these criteria, with a rating of very poor to excellent. Fourmile Canyon Creek within the proposed project area received the following ratings:

- Vegetative Structure: Very good
- Native Plant Habitat: Good
- Bird Habitat: Poor to good
- Aquatic Habitat: Marginal

The Greenways Master Plan also ranked each of the six Greenways objectives for each stream reach for the purpose of balancing conflicting interests at the time a project is being undertaken. Each objective was given a low to high rank based on specific criteria outlined in the Master Plan. Fourmile Canyon Creek within the proposed project area received the following rankings:

- Habitat: Medium
- Water Quality: Medium
- Transportation: High
- Recreation: High
- Flood: High

The transportation and recreation objectives in this reach ranked high, recognizing the relationship of this reach to Crest View Elementary School and nearby parks. Habitat restoration ranked medium in this reach, based on the average ranking of the existing habitat and the ability to easily replace and enhance the existing vegetation.

The following provides a summary of findings from a site visit conducted by ERO Resources, Corp. on August 24, 2011 (**Attachment 1**). The Fourmile Canyon Creek riparian corridor provides habitat for a variety of wildlife. Riparian corridors are particularly important in urban areas where they are often used as movement corridors for larger mammal such as deer and for nesting by songbirds and raptors. Species that use riparian corridors in developed areas are

typically common species tolerant of human encroachment. As a result, although diverse, most plant and wildlife species in urban riparian areas are not unique or uncommon. Based on a review of background information, the site visit, and professional experience, ERO determined that significant natural resources that would make the project infeasible are not likely to be present in the study area. There is no suitable habitat for federally listed threatened or endangered species. Although there is suitable nesting substrate and residents report the presence of nesting owls, no raptor nests were observed in the study area. It is likely that one or more nests were present but obscured from view by leaves. Because Fourmile Canyon Creek is ephemeral, there are virtually no wetlands in the study area and the lateral extent of riparian trees and shrubs is limited due to encroachment. The city's proposed project would not affect any unique or significant natural resources, but there would be impacts to regulated resources including Fourmile Canyon Creek and its riparian areas. The impacts would be addressed through the Clean Water Act Section 404 and City of Boulder Wetland permitting processes. In the event an active nest is present, the city would comply with the Migratory Bird Treaty Act.

The concept designs were developed to minimize impacts to existing water bodies and riparian areas regulated by the city by locating project features outside of the wetland limits and buffers and sensitive habitat to the extent possible. The proposed flood improvement will, however, impact wetlands and waters of the U.S. The project will mitigate buffer impacts by replacing to the extent possible, non-native species with native species and in-kind habitat.

5.0 PREFERRED PROJECT ALTERNATIVE

The Greenways Advisory Committee (GAC), which is made up of one representative from each of the following advisory boards: Parks and Recreation Board, Planning Board, Transportation Board, Water Resources Advisory Board, Environmental Board and Open Space Board of Trustees, conducted a public hearing for the Fourmile Canyon Creek CEAP on Thursday, Feb. 15, 2012. The following presents staff recommendations based on results from the GAC meeting. **Figure 5.1** presents a map showing the recommended alternatives.

Flood Mitigation

The pedestrian/bicycle underpass option (F2) for flood mitigation at Fourmile Canyon Creek and 19th Street is recommended. It was overwhelmingly selected as the preferred alternative from responders to public comment and would provide vehicle traffic separation at 19th Street. This alternative provides safer access to Crest View Elementary School and the proposed multi-use path connection and Greenways system west of 19th Street. The GAC unanimously (6-0) recommended approval of this alternative. Construction of this alternative will require purchase of an easement from 4270 19th Street. The estimated conceptual-level construction cost for this alternative is $972,000.

Improved Emergency Access to Tamarack Avenue

The 19th Street to Tamarack Avenue alignment (EA3) is the recommended alternative to provide improved emergency vehicle access to Tamarack Avenue. This alternative would consolidate the future bicycle and pedestrian access to Tamarack Avenue with emergency access. Normal vehicular access would not be permitted. It would require enhancing the crossing of Fourmile Canyon Creek to accommodate emergency vehicles. By eliminating the proposed north-south access to Tamarack (shown in the NoBo Plan) just east of 19th Street, several properties (4306 Upland, 2010 Upland and 4270 19th Street) will not be fronted by public access on three sides. The proposed east-west emergency access alignment and elimination of the north-south alignment would not require an amendment to the NoBo Plan but would be accomplished through the annexation process. The GAC unanimously (6-0) recommended approval of this alternative.

Public input received during this CEAP process, continues to express concern for a north-south connection that permits automobile access. The City Public Works for Transportation, Community Planning & Development Review Divisions and the Boulder Fire Departments all support the elimination of secondary roadway connection and the substitution of an alignment that provides non-motorized and secondary emergency access to Tamarack.

Construction of the preferred alternative (EA3) will require purchase of an easement from 4270 19th Street. The estimated conceptual-level construction cost for a combined emergency and pedestrian / bicycle access is $240,000. This alignment would replace the proposed secondary road connection to Upland Avenue shown in the NoBo Plan and TMP.

East-West Bicycle and Pedestrian Connection

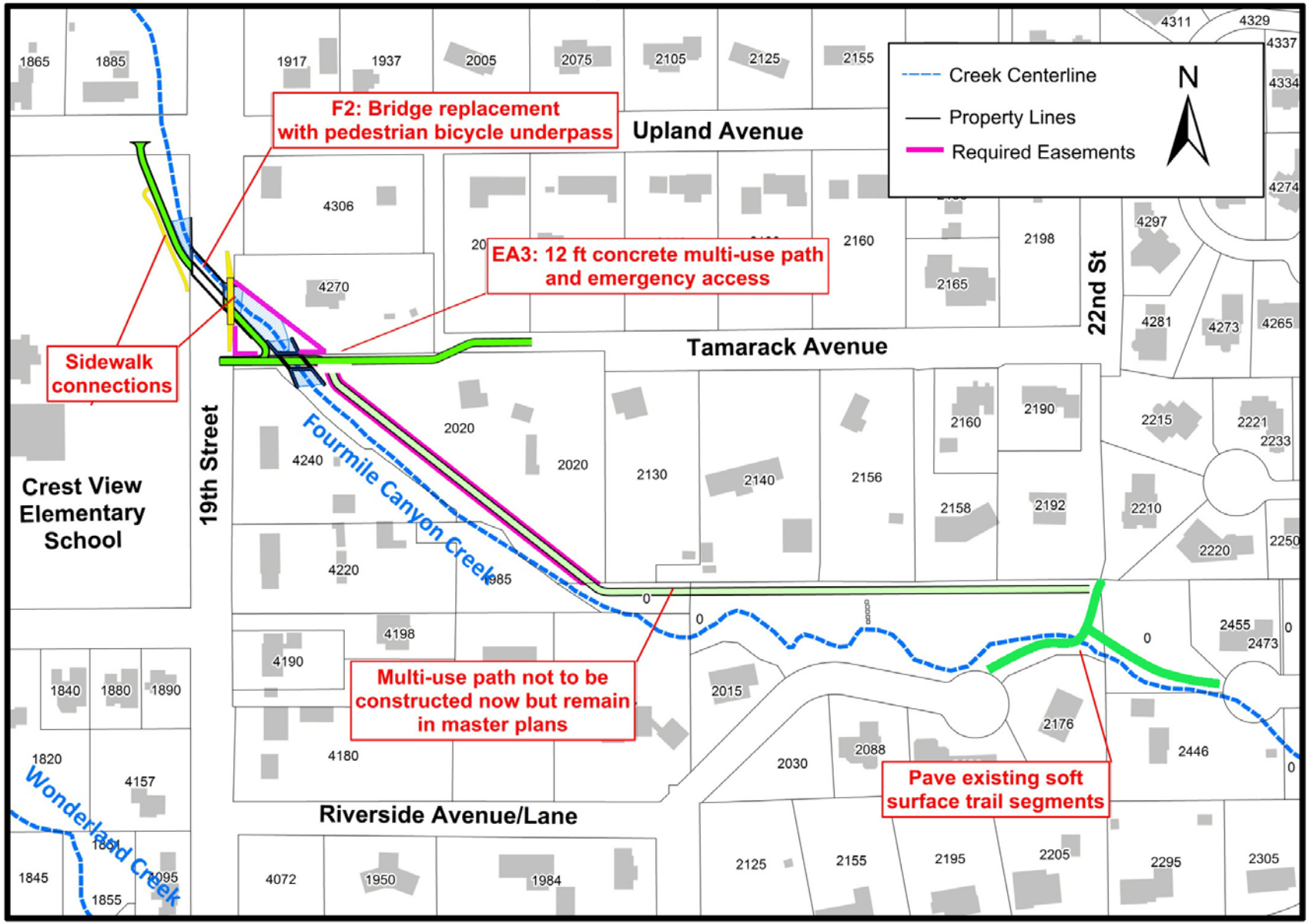
The 10-foot wide concrete path alignment along Fourmile Canyon Creek (EW2a) was originally recommended by staff for the east-west connection. The GAC, however, did not recommend the construction of a multi-use path along Fourmile Canyon Creek at this time, but unanimously (6-0) recommended keeping this multi-use path alignment in city master plans and the North Boulder Subcommunity Plan. During discussion leading to the motion, the GAC suggested that this be the last path segment be constructed and the city should instead work towards constructing path segments further to the west and east of the project area. In addition, the GAC recommended upgrading the current soft surface trail connection between Sumac Avenue and Riverside Lane/22nd Street to concrete and directed the city to pursue easements along Fourmile Canyon Creek for pedestrian/bicycle and habitat mitigation purposes. During discussions leading to the motion, the GAC requested that staff evaluate on-street bicycle and pedestrian routes and provide bike route signage from 26th Street and the Elks Park to Crest View Elementary.

As a result of the GAC motions, the following summarizes the revised staff recommendation for east-west bicycle and pedestrian connections:

- Keep the conceptual alignment of a future multi-use path connection along Fourmile Canyon Creek in the North Boulder Subcommunity Plan and Greenways and Transportation master plans;
- Work to secure the easements required for the Fourmile Canyon Creek path alignment;
- Do not proceed with the design and construction of a multi-use path along Fourmile Canyon Creek between 19th and 22nd Streets at this time, but evaluate other ways to improve bicycle and pedestrian connectivity for Crest View Elementary School students and other people trying to navigate from 26th Street to 19th Street; and
- Upgrade the soft-surface trail segment between Sumac Avenue and Riverside Lane to a concrete multi-use path.

It should be noted that flood and Greenways improvements between Broadway and 19th Street are currently shown in the five year CIP and will be evaluated as a separate CEAP. As a result, construction of the multi-use path along Fourmile Canyon Creek between 19th to 22nd Streets will not be reconsidered in the next five years. The concept-level cost to pave the connection from Sumac Avenue to Riverside Lane and install bike route signs is approximately $28,500.

Figure 5.1: Summary of Recommended Alternatives



6.0 PUBLIC INPUT

Staff conducted an open house on Wednesday, May 11, 2011 at Crest View Elementary School. Thirty seven people attended the meeting and 22 comment sheets were submitted. The following provides a summary of the written comments:

- Ten people identified they lived within the project area and ten lived outside the project area.
- Eight were in favor of the flood improvements and none opposed.
- Ten stated the new crossing should include an underpass and eight stated it should not.
- Ten stated their preference for the Fourmile Canyon Creek path alignment, five preferred the Tamarack alignment and four the Riverside alignment.

The city also received five e-comments following the initial open house. One person stated preference for the Riverside Lane alternative and one for the Fourmile Canyon Creek alignment. Four stated a preference for a pedestrian/bicycle underpass in conjunction with the flood mitigation alternative and one preferred only a bridge. All five people stated they lived inside the project area. **Attachment 3** presents a summary of the comment sheets from the initial open house along with e-comments.

Based on the comments received from the first open house, staff refined the details of the project alternatives, including an evaluation of necessary easements and project costs, and a second open house was conducted on Wednesday, October 26, 2011 at Crest View Elementary School. Twenty four people attended and 22 comment sheets were submitted (**Attachment 4**). The following provides a summary of the written comments:

- Thirteen people identified they lived within the project area and eight lived outside the project area.
- Eighteen stated the flood mitigation alternative should include a pedestrian/bicycle underpass and three stated it should not.
- Twelve people ranked 'status quo' their highest priority for east-west alignments, eight people ranked the Fourmile Canyon Creek alignment as highest and two ranked the Tamarack Avenue alignment highest. The Tamarak Avenue alignment received the greatest number of second ranked priorities with 11.
- Eleven people ranked the east-west alignment to improve access to Tamarack Avenue as their preferred alternative, six ranked the north-south pedestrian / bicycle / secondary emergency access alternative as preferred and two preferred the north-south road alternative.

Staff presented to the Crest View Parent Teacher Organization (PTO) on Monday, November 14, 2011. Thirteen completed comment sheets were submitted. Eleven people ranked the paved Fourmile Canyon Creek alignment their first choice, one person ranked the Riverside alignment first and one ranked the Tamarack alignment first. All 13 were in favor of a pedestrian/bicycle underpass at 19th Street.

Boards displaying project alternatives and comment sheets were also placed in the main hallway of Crest View Elementary School from Oct. 31 through Nov. 14, 2011. The city received 17 completed comments. One person stated a preference for the Riverside east-west alignment

alternative, three the paved Fourmile Canyon Creek alignment, nine the crusher fine Fourmile Canyon Creek alignment, three the Tamarack Avenue alignment and one preferred the status quo. Two people stated a preference for a bridge only for flood mitigation and 13 stated it should include a pedestrian/bicycle underpass. **Attachment 5** presents a summary of the Crest View Elementary School PTO and 'hallway' comments.

Attachment 6 presents a summary of e-comments received following the second Open House (through March 7, 2012).

The Greenways Advisory Committee (GAC), which is made up of one representative from each of the following advisory boards: Parks and Recreation Board, Planning Board, Transportation Board, Water Resources Advisory Board, Environmental Board and Open Space Board of Trustees, conducted a public hearing for the Fourmile Canyon Creek CEAP on Thursday, Feb. 15, 2012. Approximately 30 people presented at the public hearing. An audio recording of the GAC meeting is available at www.Bouldercolorado.gov > City A-Z > G > Greenways Program > Current Greenways Projects and Opportunities > Fourmile Canyon Creek (19th – 22nd Streets) CEAP.

On several occasions throughout the CEAP process, the city project team met with residents that would be directly impacted by proposed project alternatives. Though no one alternative meets the desires of all residents, staff supports the recommended alternatives as being best able to address concerns of affected residents and meet the goals of city Master Plans. In addition, while the property owner of 2020 Upland has expressed no current interest in selling an easement for the east-west Fourmile Canyon Creek multi-use path alignment, the preferred alignment and proposed path connection to improve non-motorized and emergency access to Tamarck Avenue (from the west end of Tamarack Avenue to 19th Street) can serve as an east-west path alignment in the interim and until an easement is secured. Furthermore, based on input from the GAC, staff will focus work plan efforts to complete other missing path links east and west of the project area prior to reconsidering construction of the Fourmile Canyon Creek path alignment. In addition, staff will evaluate other ways to improve bicycle and pedestrian connectivity for Crest View Elementary School students and other people trying to navigate from 26th Street to 19th Street.

On March 14, 2012, the Friends of Fourmile Canyon Creek submitted a response to the draft CEAP. The report, which includes their own survey, is included as **Attachment 7**.

Figure 6.1 presents a graphical summary of public input for the flood mitigation alternatives. **Figure 6.2** presents a graphical summary of public input for alternatives to improve emergency access to Tamarack Avenue. **Figure 6.3** presents a graphical summary of public input for the east-west connection alternatives.

Figure 6.1: Flood Mitigation Alternatives Summary of Public Input

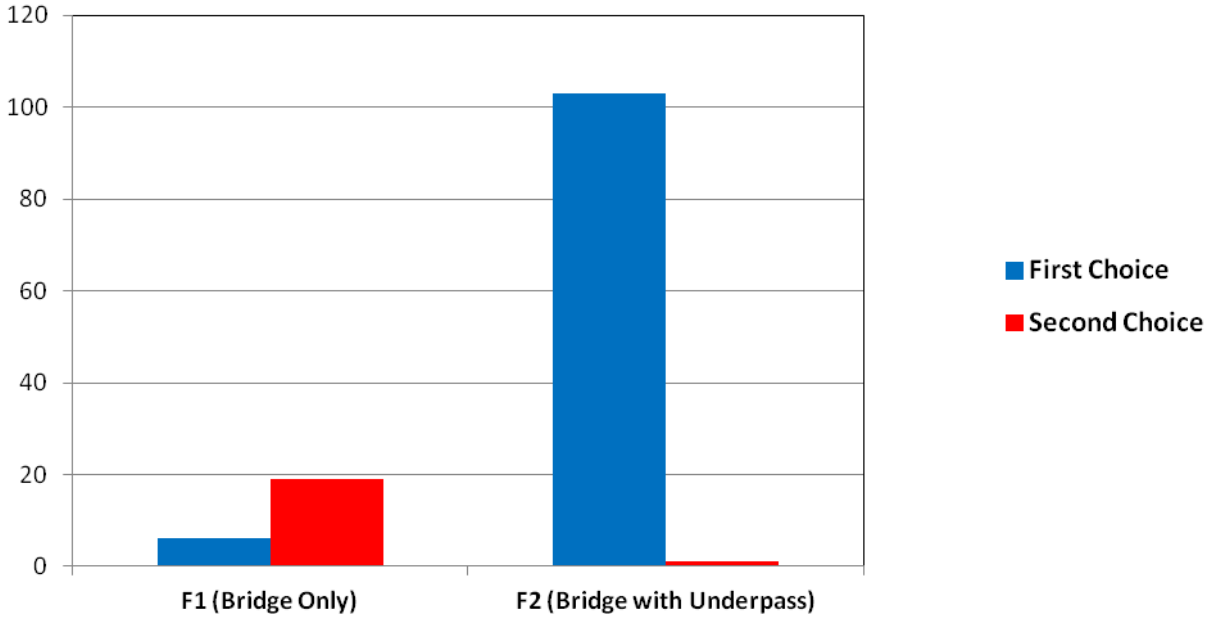


Figure 6.2: Improved Emergency Access to Tamarack Summary of Public Input

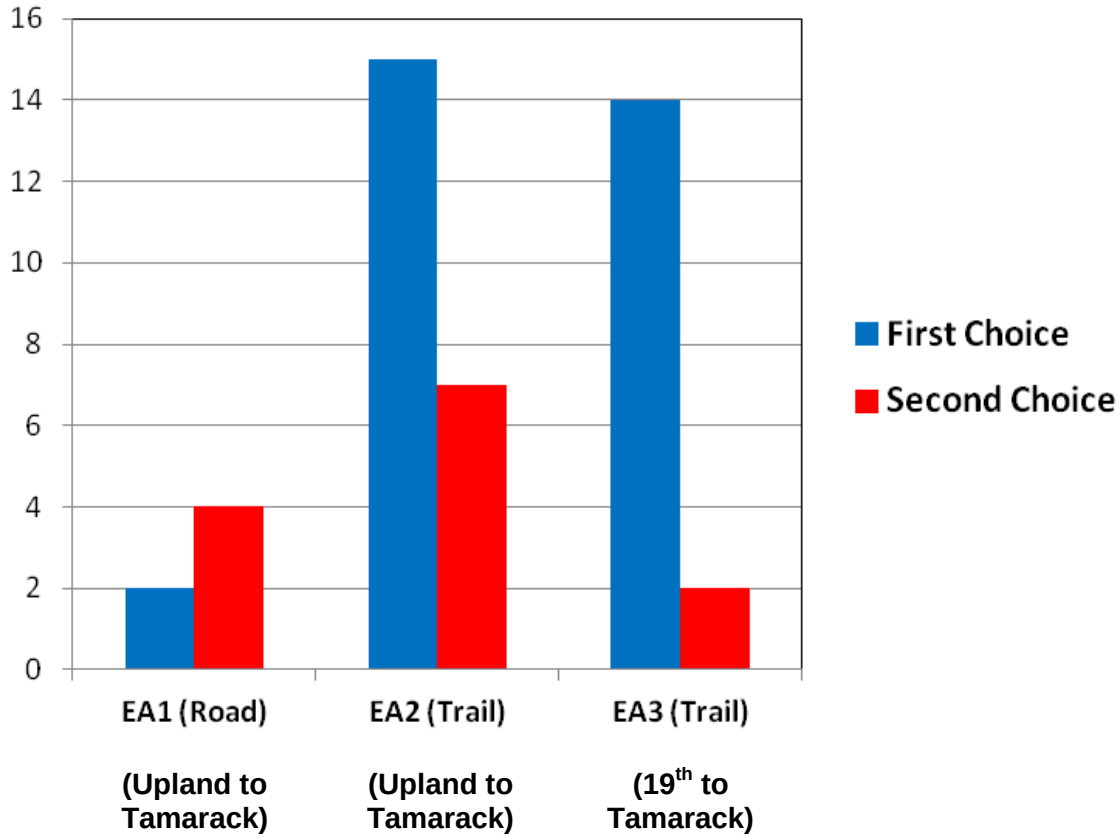
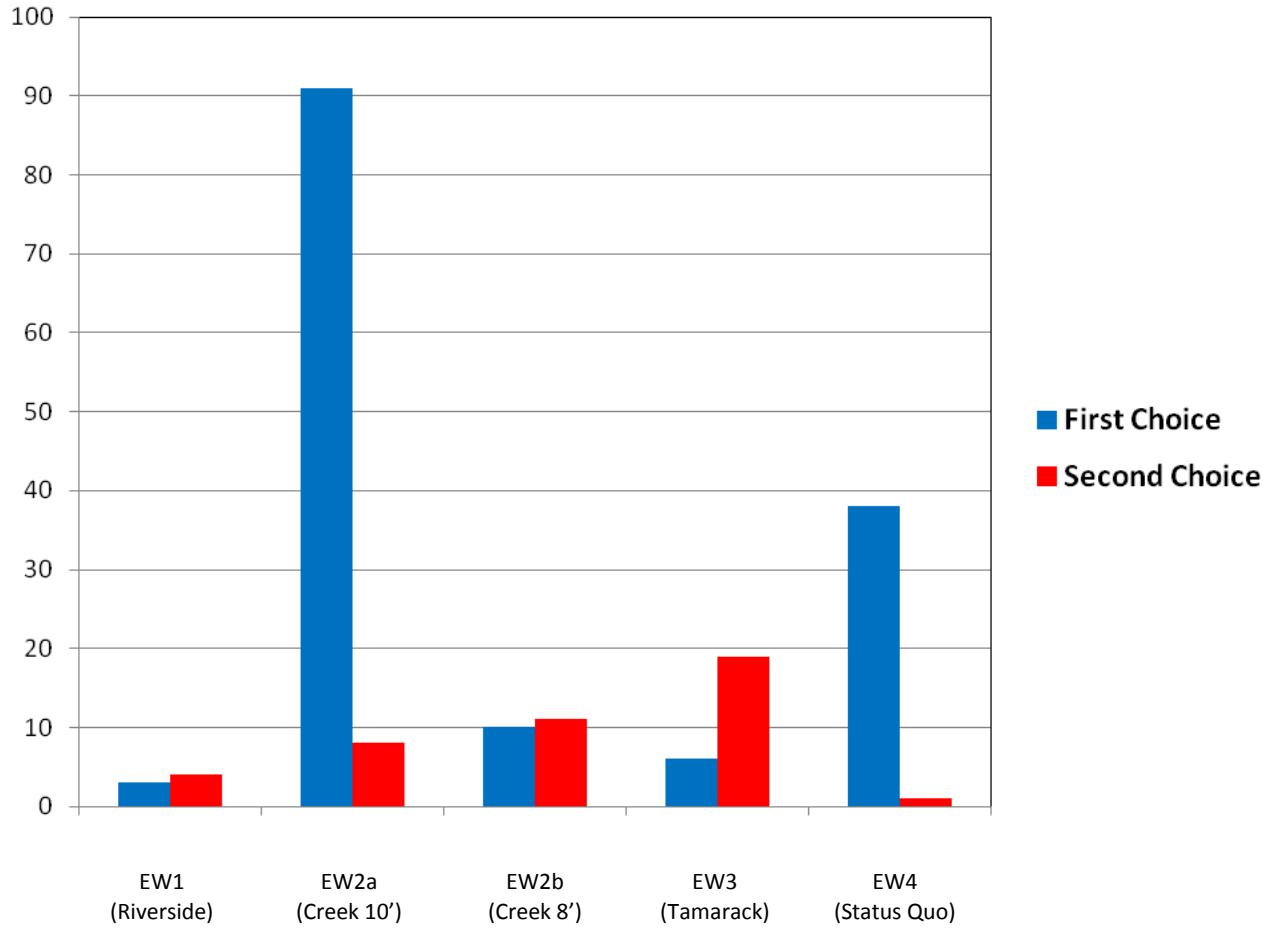


Figure 6.3: East-West Bicycle and Pedestrian Connection Alternatives Summary of Public Input



7.0 STAFF PROJECT MANAGER

The project is managed by Kurt Bauer (Engineering Project Manager) with support from Annie Noble (Greenways Coordinator), Marni Ratzel (Transportation Planner II) and Marie Zuzack (Planner 1).

8.0 OTHER CONSULTANTS OR RELEVANT CONTACTS

The project consultant team lead is the civil engineering firm of Belt Collins West. ERO Resources Corporation is contracted for environmental support.

9.0 GOALS ASSESSMENT

1) Using the Boulder Valley Comprehensive Plan and department master plans, describe the primary city goals and benefits that the project will help to achieve:

   a) Community Sustainability Goals – How does the project improve the quality of economic, environmental and social health with future generations in mind?
   The project's proposed trail component will help to achieve Boulder Valley Comprehensive Plan's Sustainability Framework Policies by working to extend the built environment mobility grid, help create a sustainable urban form, enhance quality of life within the city and reduce greenhouse gas emissions. The proposed flood mitigation component will work to mitigate geologic and natural hazards by reducing the flood hazard at Fourmile Canyon Creek at 19th Street.

   b) BVCP Goals related to:

- Community Design
  The project's proposed trail components match the BVCP Sustainable Urban Form Definition by extending the pedestrian and bike-friendly mobility grid.

- Facilities and Services
  The proposed project includes transportation and flood improvements. These facilities further the BVCP Utility and Parks and Trails policy goals.

- Environment
  The proposed multi-use trail extension will work to reduce greenhouse gas emissions by helping to reduce single occupancy vehicle miles.

- Economy
  This project will help to create a strong and complete transportation system – noted in the BVCP as necessary for a thriving economy - by extending the pedestrian and bicycle trail system.

- Transportation
  Extension of the multi-use trail system as proposed in this project will work to reduce single occupancy auto trips, a goal of the BVCP and the Climate Action Plan.

- Housing
  The proposed trail extension will serve residents in the North Boulder Subcommunity as well as users traveling to Crest View Elementary School and other destinations on foot or by bicycle.

- Social Concerns and Human Services
  Crest View Elementary School is bounded on the south by Wonderland Creek and on the north by Fourmile Canyon Creek. Existing conditions would result in the inability to safely access the school during a major storm event. This project would work to mitigate the flood risk by upgrading the Fourmile Canyon Creek stream crossing at 19th Street. The project would also increase emergency access to Tamarack Avenue and provide a safe pedestrian and bicycle route to Crest View Elementary School.

c) Describe any regional goals (potential benefits or impacts to regional systems or plans?)
This project will work to complete the regional mobility grid by extending the multi-use path system as presented in the North Boulder Subcommunity, Transportation and Greenways Master Plans.

2) Is this project referenced in a master plan, subcommunity or area plan? If so, what is the context in terms of goals, objectives, larger system plans, etc.? If not, why not?
The proposed trail connection is identified in the North Boulder Subcommunity Plan, Transportation Master Plan and the Greenways Master Plan. A key goal of all three plans is to provide and improve pedestrian and bicycle connections where they are needed but currently missing or substandard. The flood mitigation measure proposed with this project is identified as a priority in the Fourmile Canyon Creek and Wonderland Creek Flood Mitigation Final Plan. Completion of this project will fulfill these important plan components.

3) Will this project be in conflict with the goals or policies in any departmental master plan and what are the tradeoffs among city policies and goals in the proposed project alternative? (e.g. higher financial investment to gain better long-term services or fewer environmental impacts)
The recommended project alternatives were developed to be sensitive to the ecology, terrain and privacy of adjacent residents and surroundings. Alternatives will, however, have some environmental and social impact. It is acknowledged that while urban species are tolerant to human presence and the addition of this path connection will not eliminate species, there could be wildlife impacts through the reduction in number of animals as a result of this project. The specific alignment was determined by the project's environmental consultant in an effort to minimize impacts to mature and native riparian vegetation. The project will include enhancement to the riparian habitat through native plantings. In addition, if this path is constructed, the city's Greenways habitat crew would assume maintenance responsibilities, facilitating control of invasive species.

4) List other city projects in the project area that are listed in a departmental master plan or the CIP.

Two additional stream crossings along Fourmile Canyon Creek and one on Wonderland Creek are identified as being a high priority in the Fourmile Creek and Wonderland Creek Flood Mitigation Final Plan. Upgrades to all three stream crossings (located just outside the project area) will allow safe vehicular access to Crest View Elementary School during a major storm event.

5) What are the major city, state and federal standards that will apply to the proposed project? How will the project exceed city, state or federal standards and regulations (e.g. environmental, health, safety or transportation standards)?
The project's trail system will be designed to meet or exceed ADA requirements, meet or exceed city and national standards for the development of bikeway facilities, meet or exceed the city's wetland ordinance requirements, include habitat enhancements, meet or exceed Urban Drainage and Flood Control District standards and comply with all required city, state and federal permits.

6) Are there cumulative impacts to any resources from this and other projects that need to be recognized and mitigated?
The project will result in temporary impacts to water bodies regulated by the city and habitat during construction that will be fully mitigated based on compliance with the city's wetland ordinance.

10.0 IMPACT ASSESSMENT

The following checklists table identifies potential short and long-term impacts from the project alternatives.

++ indicates a high positive effect or improved condition
+ indicates a positive effect or improved condition
- indicates a negative effect or impact
-- indicates a high negative effect or impact
O indicates no effect

Checklist questions are answered following each table for all categories identified as having a potential + or - impact. The preferred alternative components are highlighted in yellow. Individual alternatives were ranked against each other in the following table. It should be noted that EW4 (Status Quo) alternative is not included in the table as no impacts would be realized. It should further be noted that EW2 sub-alternatives 'a' and 'b' have been combined as the impacts were considered similar. For example, each of the east-west trail alignment alternatives was evaluated against each other to determine the relative impact ranking.

Project Title: Fourmile Canyon Creek 19th-22nd Streets Project	**Alternatives**							
	Flood Mitigation		East-West Connections			Access to Tamarack		
	F1 (Bridge Only)	F2 (Underpass)	EW1 (Riverside)	EW2a/b (Creek)	EW3 (Tamarack)	NS1 (Road)	NS2 (Trail)	EW1 (19th to Tamarack)
A. Natural Areas or Features								
a. Construction activities	-	--	O	--	-	O	O	-
b. Native vegetation removal	-	--	O	--	-	O	O	-
c. Human or domestic animal encroachment	O	-	O	--	-	O	O	-
d. Chemicals (including petroleum products, fertilizers, pesticides, herbicides)	O	O	O	O	O	O	O	O
e. Behavioral displacement of wildlife species (due to noise from use activities)	O	-	O	--	-	O	O	-
f. Habitat removal	-	--	O	--	-	O	O	-
g. Introduction of non-native plant species in the site landscaping	O	O	O	O	O	O	O	O
h. Changes to groundwater or surface runoff	O	O	O	O	O	O	O	O
i. Wind erosion	O	O	O	O	O	O	O	O
2. Loss of mature trees or significant plants?	-	--	O	-	O	O	O	O
B. Riparian Areas / Floodplain								
1. Encroachment upon the 100-year, conveyance or high hazard flood zones?	O	O	O	O	O	O	O	O
2. Disturbance to or fragmentation of a riparian corridor?	-	-	O	-	O	O	O	O
C. Wetlands								
1. Disturbance to or loss of a wetland on site?	-	-	O	-	O	O	O	-
D. Geology and Soils								

Project Title: Fourmile Canyon Creek 19th-22nd Streets Project	Alternatives							
	Flood Mitigation		East-West Connections			Access to Tamarack		
	F1 (Bridge Only)	F2 (Underpass)	EW1 (Riverside)	EW2a/b (Creek)	EW3 (Tamarack)	NS1 (Road)	NS2 (Trail)	EW1 (19th to Tamarack)
1. a. Impacts to unique geological or physical features?	O	O	O	O	O	O	O	O
b. Geological development constraints?	O	O	O	O	O	O	O	O
c. Substantial changes in topography?	O	O	O	O	O	O	O	O
d. Changes in soil or fill materials on the site?	O	O	O	O	O	O	O	O
e. Phasing of earth work?	O	O	O	O	O	O	O	O
E. Water Quality								
1. Impacts to water quality from any of the following?								
a. Clearing, excavation, grading or other construction activities	-	--	-	--	-	--	-	-
b. Change in hardscape	-	--	-	--	-	--	-	-
c. Change in site ground features	O	O	O	O	O	O	O	O
d. change in storm drainage	+	+	O	O	O	O	O	O
e. change in vegetation	-	--	-	--	-	-	-	-
f. change in pedestrian and vehicle traffic	O	-	O	--	O	-	O	O
g. pollutants	O	O	O	O	O	O	O	O
2. Exposure of groundwater contamination from excavation or pumping?	-	-	O	O	O	O	O	O
F. Air Quality								
a. From mobile sources?	O	+	+	+	+	O	+	+
b. From stationary sources?	O	O	O	O	O	O	O	O
G. Resource Conservation								
1. Changes in water use?	O	O	O	O	O	O	O	O
2. Increases or decreases in energy use?	O	+	+	+	+	+	+	+
3. Generation of excess waste?	O	O	O	O	O	O	O	O
H. Cultural / Historic Resources								
1. a. Impacts to a prehistoric or archaeological site?	O	O	O	O	O	O	O	O
b. Impacts to a building or structure over fifty years of age?	O	O	O	O	O	O	O	O
c. impacts to a historic feature of the site?	O	O	O	O	O	O	O	O
d. Impacts to significant agricultural land?	O	O	O	O	O	O	O	O
I. Visual Quality								
1. a. Effects on scenic vistas or public views?	O	O	O	O	O	O	O	O
b. Effects on the aesthetics of a site open to public view?	O	O	O	O	O	O	O	O
c. Effects on views to unique geological or physical features?	O	O	O	O	O	O	O	O
D. Changes in lighting?	O	O	O	O	O	O	O	O
J. Safety								
1. Health hazards, odors or radon?	O	O	O	O	O	O	O	O
2. Disposal of hazardous materials?	O	O	O	O	O	O	O	O

Project Title: Fourmile Canyon Creek 19th-22nd Streets Project	Alternatives							
	Flood Mitigation		East-West Connections			Access to Tamarack		
	F1 (Bridge Only)	F2 (Underpass)	EW1 (Riverside)	EW2a/b (Creek)	EW3 (Tamarack)	NS1 (Road)	NS2 (Trail)	EW1 (19th to Tamarack)
3. Site hazards?	+	++	+	++	+	+	++	++
K. Physiological Well-being								
1. Exposure to excessive noise?	O	O	O	O	O	O	O	O
2. Excessive light or glare?	O	O	O	O	O	O	O	O
3. Increase in vibrations?	O	O	O	O	O	-	O	O
L. Services								
1. Additional need for:								
a. Water or sanitary sewer services?	O	O	O	O	O	O	O	O
b. Storm sewer / flood control features?	+	+	O	O	O	O	O	O
c. Maintenance of pipes, culverts and manholes?	+	+	O	O	O	O	O	O
d. Police services?	O	O	O	O	O	O	O	O
e. Fire protection services?	O	O	O	O	O	++	+	+
f. Recreation or parks facilities?	O	O	O	+	O	O	O	O
g. Library services?	O	O	O	O	O	O	O	O
h. Transportation improvements / traffic mitigation?	+	++	+	++	+	+	+	+
i. Parking	O	O	O	O	O	O	O	O
j. Affordable housing?	O	O	O	O	O	O	O	O
k. Open space / urban open land?	O	O	O	O	O	O	O	O
l. Power or energy use?	O	+	+	+	+	+	+	+
m. Telecommunications?	O	O	O	O	O	O	O	O
n. Health care / social services?	O	O	O	O	O	O	O	O
o. Trash removal or recycling services?	O	O	O	O	O	O	O	O
M. Special Populations								
1. Effects on:								
a. Persons with disabilities?	+	++	+	++	+	+	+	+
b. Senior population?	+	++	+	++	+	+	+	+
c. Children or youth?	+	++	+	++	+	+	+	+
d. Restricted income persons	+	+	+	+	+	+	+	+
e. People of diverse backgrounds (including Latino and other immigrants)?	+	+	+	+	+	+	+	+
f. Neighborhoods	+	+	+	+	+	+	+	+
g. Sensitive populations located near the project (e.g. schools, hospitals and nursing homes)?	+	+	+	+	+	+	+	+
N. Economy								
1. Utilization of existing infrastructure?	O	O	O	O	O	O	O	O
2. Effect on operating expenses?	+	+	-	-	-	-	-	-
3. Effect on economic activity?	O	O	O	O	O	O	O	O
4. Impacts to businesses, employment, retail sales or city revenue?	O	O	O	O	O	O	O	O

11.0 CHECK LIST QUESTIONS

Note: The following questions are a supplement to the CEAP checklist. Only checklist items having a – or + anticipated impact have questions answered in full.

A. Natural Areas

1. Describe the potential for disturbance to or loss of significant: species, plant communities, wildlife habitats, or ecosystems via any of the activities listed below (significant species include any species listed or proposed to be listed as rare, threatened or endangered on federal, state or county lists) – See below
a. Construction activities
b. Native vegetation removal
c. Human or domestic animal encroachment
d. Chemicals to be stored or used on the site (including petroleum products, fertilizers, pesticides, herbicides)
e. Behavioral displacement of wildlife species (due to noise from use activities)
f. Introduction of non-native plant species in the site landscaping
g. Changes to groundwater (including installation of sump pumps) or surface runoff (storm drainage, natural stream) on the site
h. Potential for discharge of sediment to any body of water either in the short term (construction-related) or long term
i. Potential for wind erosion and transport of dust and sediment from the site

2. Describe the potential for disturbance to or loss of mature trees or significant plants. – See below

If the potential impacts have been identified, please provide any of the following information that is relevant to the project:

- A description of how the proposed project would avoid, minimize or mitigate identified impacts
- A habitat assessment of the site, including: 1) a list of plant and animal species and plant communities of special concern found on the site; 2) a wildlife habitat evaluation of the site
- Map of the site showing the location of any Boulder Valley Natural Ecosystem, Boulder County Environmental Conservation Area, or critical wildlife habitat – Not Applicable

A comprehensive Greenways Riparian Habitat Assessment was completed in 1999 as part of the Greenways Master Plan. The riparian habitat was evaluated based on the quality of vegetation (native or non-native), the vegetative structure and the quality of the habitat based on the presence of bird species. Each stream reach was rated for each of these criteria, with a rating of very poor to excellent. Fourmile Canyon Creek along the proposed project reach received the following ratings:

- Vegetative Structure: Very good
- Native Plant Habitat: Good
- Bird Habitat: Poor to good

The aquatic habitat within the Greenways system was evaluated in a separate study and was rated on a scale of poor to excellent. Fourmile Canyon Creek along the proposed project reach rated marginal.

The Greenways Master Plan also ranked each of the six Greenways objectives for each stream reach for the purpose of balancing conflicting interests at the time a project is being undertaken. Each objective was given a low to high rank based on specific criteria outlined in the Master Plan. Fourmile Canyon Creek along the proposed project reach received the following rankings:

- Habitat: Medium
- Water Quality: Medium
- Transportation: High
- Recreation: High
- Flood: High

The inventory states a trail connection along Fourmile Canyon Creek as an opportunity.

The following provides a summary of findings from a site visit conducted by ERO Resources, Corp. on August 24, 2011 (**Attachment 1**). The Fourmile Canyon Creek riparian corridor provides habitat for a variety of wildlife. Riparian corridors are particularly important in urban areas where they are often used as movement corridors for larger mammals such as deer and for nesting by songbirds and raptors. Species that use riparian corridors in developed areas are typically common species tolerant of human encroachment. As a result, although diverse, most plant and wildlife species in urban riparian areas are not unique or uncommon.

Based on a review of background information, the site visit, and professional experience, ERO determined that significant natural resources that would make the project infeasible are not likely to be present in the study area. There is no suitable habitat for federally listed threatened or endangered species. Although there is suitable nesting substrate and residents report the presence of nesting owls, no raptor nests were observed in the study area. It is likely that one or more nests were present but obscured from view by leaves. Because Fourmile Canyon Creek is ephemeral, there are virtually no wetlands in the study area and the lateral extent of riparian trees and shrubs is limited due to encroachment.

The city's proposed project would not affect any unique or significant natural resources, but there would be impacts to regulated resources including Fourmile Canyon Creek and its riparian areas. The impacts would be addressed through the Clean Water Act Section 404 and City of Boulder Wetland permitting processes. In the event an active nest is present, the city would comply with the MBTA.

a. Construction Activities

The Fourmile Canyon Creek multi-use path alignment alternatives (EW2a and EW2b) and the flood mitigation alternatives involve construction activities in and around Fourmile Canyon Creek. The construction crew will be required to implement Construction Best Management Practices that would be defined in a Storm Water Management Plan in accordance with a Colorado Department of Public Health and Environment Colorado Stormwater Discharge Permit. Some impacts during construction, however, will be unavoidable.

b. Native Vegetation
Flood mitigation measures and the Fourmile Canyon Creek trail alignment would require removing native vegetation. Only native vegetation will be used in site landscaping and revegetation. The Fourmile Canyon Creek trail alignment would help facilitate control of invasive species by the Greenways Habitat Maintenance Crew.

c. Human or domestic animal encroachment
The project is located in an urbanized area. Increased use by humans or domestic animals is not anticipated to permanently impact the wildlife that currently inhabits the area (see **Attachment 1** Environmental Assessment Report).

d. Chemicals
No project alternative would include the use of chemicals beyond those used during construction. A Stormwater Management plan is required for construction permitting and will include measures to control chemical spills.

e. Wildlife Displacement
Construction activities will likely limit the use of the area by species. It is anticipated that these species will return to the area following the construction period (see **Attachment 1** Environmental Assessment Report).

f. Habitat Removal
The project will temporarily remove habitat during construction. Hardscape features such as the concrete or crusher fine trail along Fourmile Canyon Creek would permanently eliminate some habitat. Native vegetation would be used for site landscaping and the Fourmile Canyon Creek trail alignment would help facilitate control of invasive species by the Greenways Habitat Maintenance Crew. It is therefore anticipated that overall, habitat would therefore be enhanced by the project.

g. Introduction on Non-Native Species
The project would landscape with native species. Invasive species are located within the Fourmile Canyon Creek riparian corridor. The Fourmile Canyon Creek trail alignment project would help facilitate Greenways Habitat maintenance to remove noxious and weed species and foster healthy native species.

h. Changes in Groundwater or Surface Water – No impacts

i. Wind Erosion – No impacts

2. Loss of Mature Trees or Significant Plants
The proposed flood mitigation measures would require removing native vegetation and some trees. Only native vegetation will be used in site landscaping and trees would be planted to replace any losses. There are no known sensitive species in the project corridor (see **Attachment 1** Environmental Assessment Report).

B. Riparian Areas / Floodplains
1. Describe the extent to which the project will encroach upon the 100-year, conveyance or high hazard flood zones – See below

2. Describe the extent to which the project will encroach upon, disturb, or fragment a riparian corridor (this includes impacts to the existing channel of flow, stream banks, adjacent riparian zone extending 50 feet out from each bank, and any existing drainage from the site to a creek or stream) – See below

If potential impacts have been identified, please provide any of the following information that is relevant to the project:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts to habitat, vegetation, aquatic life or water quality
- A map showing the location of any streams, ditches and other water bodies on or near the project site
- A map showing the location of the 100-year flood, conveyance, and high hazard flood zones relative to the project site

Crest View Elementary School is located at the northwest corner of 19th Street and Sumac Avenue. During a 100-year storm event, flooding would prohibit safe vehicular access to Crest View Elementary School. In 2009, the city completed a flood mitigation study for Fourmile Canyon Creek and Wonderland Creek. City Council stated the importance of flood improvements at Crest View Elementary school to provide safe vehicular access during a major storm event. **Figure 2.4** presents the existing floodplain conditions. The proposed flood mitigation alternatives at 19th Street and Fourmile Canyon Creek would work towards the goal of providing safe vehicular access to Crest View Elementary School. **Figure 3.8** presents estimated post-project shallow flooding and 100-year floodplain limits. Full mitigation will require future upgrades to existing crossings of Fourmile Canyon Creek at Violet Avenue, Upland Avenue and 19th Street along with 19th Street at Wonderland Creek. Construction of project elements located within the wetlands buffer would be fully mitigated based on the City of Boulder's wetland permit.

C. Wetlands
1. Describe any disturbance to or loss of a wetland on site that may result from the project. – See below

If potential impacts have been identified, please provide any of the following information that is relevant to the project:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts.
- A map showing the location of any wetlands on or near the site. Identify both those wetlands and buffer areas which are jurisdictional under city code (on the wetlands map in our ordinance) and other wetlands pursuant to federal criteria (definitional).

Figure 3.1 presents the project alternatives in relationship to wetland bounds. The proposed flood mitigation alternatives and the 19th Street to Tamarack alternative to provide emergency access to Tamarack Avenue (EW1) would directly impact the wetlands. A portion of the Fourmile Canyon Creek trail alignments (EW2) would be located within the outer 25 foot

wetlands buffer zone. Work and corresponding mitigation would be done in compliance with the city's wetland permit requirements.

D. Geology and Soils

1. Describe any:

a. impacts to unique geologic or physical features – No impacts

b. geologic development constraints or effects to earth conditions or landslide, erosion or subsidence – No impacts

c. substantial changes in topography – No impacts

d. changes in soil or fill material on the site that may result from the project – No impacts

e. Phasing of earth work – No impacts

If potential impacts have been identified, please provide any of the following information that is relevant to the project:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts.
- A map showing the location of any unique geologic or physical features, or hazardous soil or geologic conditions on the site.

E. Water Quality

1. Describe any impacts to water quality that may result from any of the following:

a. Clearing, excavation, grading or other construction activities that will be involved with the project – Construction of the proposed flood mitigation features will require excavation and grading within the creek. This work will be done in accordance with construction site best management practices developed specifically for the project and documented in a storm water management plan as required for a Colorado Department of Public Health and Environment Colorado Stormwater Discharge Permit.

b. Changes in the amount of hardscape (paving, concrete, brick, or buildings) in the project area – Connection alternatives Fourmile Canyon Creek multi-use trail alternative (EW2a), Tamarack (EW3) and the increased access to Tamarack Avenue alternatives NS1, NS2 and EW1 include construction of concrete trail segments. Runoff from the connection alternatives EW2 and EW3 would be routed to pervious surfaces prior to discharge to Fourmile Canyon Creek.

c. Permanent changes in site ground features such as paved areas or changes in topography – Connection alternatives Fourmile Canyon Creek multi-use trail alternative (EW2a), Tamarack (EW3) and the increased access to Tamarack Avenue alternatives NS1, NS2 and EW1 include construction of concrete trail segments.

d. Changes in the storm drainage from the site after project completion – The proposed flood mitigation alternatives would work to mitigate flood risk in the area (three additional existing creek crossings will need to be updated to fully provide safe vehicular access to Crest View Elementary School during a major storm event).

e. Change in vegetation – The project will disrupt / remove vegetation during construction. The project landscaping will use native plantings.

f. Change in pedestrian and vehicle traffic – The project includes alternatives to extend the multi-use path system or provide sidewalks that will encourage alternative modes of transportation and therefore help to decrease vehicle traffic. The flood mitigation alternatives will work to provide safe vehicular access to Crest View Elementary School during a major storm event.

g. Potential pollution sources during and after construction (may include temporary or permanent use or storage of petroleum products, fertilizers, pesticides or herbicides) – Construction of the project features would require heavy equipment with associated petro-chemicals. Source control of these chemicals would be included in the project storm water management plan construction site best management practices.

2. Describe any pumping of groundwater that may be anticipated either during construction or as a result of the project. If excavation or pumping is planned, what is known about groundwater contamination in the surrounding area (1/4 mile radius of the project) and the direction of groundwater flow? – See below

If any potential impacts have been identified, please provide any of the following that is relevant to the project:

- A description of how the proposed project would avoid, minimize, or mitigate impacts to water quality
- Information from city water quality files and other sources (state oil inspector or the CDPHE) on sites with soil and groundwater impacts within 1/4 mile radius of the project
- Groundwater levels from borings or temporary peizometers prior to proposed dewatering or installation of drainage structures

Construction of the flood mitigation measures would require excavation and groundwater will likely be encountered. It is therefore likely that the work will be conducted based on requirements of a Colorado Department of Public Health and Environment Colorado Construction Dewatering Permit and a City of Boulder construction dewatering discharge agreement. There are no known groundwater contaminant sources within a ¼ mile of the project locations where excavation will be required.

F. Air Quality

1. Describe potential short or long term impacts to air quality resulting from this project. Distinguish between impacts from mobile sources (VMT/trips) and stationary sources (APEN, HAPS).

Construction of the project will result in temporary increases in emissions. The trail components of the project will, however, encourage use of alternative transportation modes and therefore help to reduce overall city emissions. The project will not result in any stationary air quality impacts.

G. Resource Conservation

1. Describe potential changes in water use that may result from the project.

a. Estimate the indoor, outdoor (irrigation) and total daily water use for the facility – No impacts

b. Describe plans for minimizing water use on the site (Xeriscape landscaping, efficient irrigation system) – No impacts

2. Describe potential increases or decreases in energy use that may result from the project.

a. Describe plans for minimizing energy use on the project or how energy conservation measures will be incorporated into the building design

The trail components of the project will facilitate use of alternative transportation modes and therefore help to reduce overall city emissions. The project will not result in any stationary air quality impacts.

b. Describe plans for using renewable energy sources on the project or how renewable energy sources will be incorporated into the building design – No impacts

c. Describe how the project will be built to LEED standards – No impacts

3. Describe the potential for excess waste generation resulting from the project. If potential impacts to waste generation have been identified, please describe plans for recycling and waste minimization (deconstruction, reuse, recycling, green points). – No impacts

H. Cultural / Historic Resources

1. Describe any impacts to:

a. a prehistoric or historic archaeological site – No impacts

b. a building or structure over fifty years of age – No impacts

c. a historic feature of the site such as an irrigation ditch – No impacts

d. significant agricultural lands that may result from the project – No impacts

If any potential impacts have been identified, please provide the following:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts.

I. Visual Quality

1. Describe the effects on:

a. scenic vistas or views open to the public – No impacts

b. the aesthetics of a site open to public view – No impacts

c. view corridors from the site to unique geologic or physical features that may result from the project – No impacts

d. changes in lighting – No impacts

J. Safety

1. Describe any additional health hazards, odors or exposure of people to radon that may result from the project – No impacts

2. Describe measures for the disposal of hazardous materials – No impacts

3. Describe any additional hazards that may result from the project (including risk of explosion or the release of hazardous substances such as oil, pesticides, chemicals or radiation) – See Below

If potential impacts have been identified, please provide the following:

- A description of how the proposed project would avoid, minimize, or mitigate identified impacts during or after site construction through management of hazardous materials or application of safety precautions.

The proposed flood mitigation alternatives would work towards providing safe vehicular access to Crest View Elementary School during a major storm event. The east-west trail alternatives would provide a safer way for school children and trail users than is currently available. Upland Avenue is currently the only way to provide emergency access to Tamarack Avenue. The increased access to Tamarack Avenue alternatives would provide a second primary or secondary emergency access route to Tamarack Avenue.

K. Physiological Well-being

1. Describe the potential for exposure of people to excessive noise, light or glare caused by any phase of the project (construction or operations) **–** See below

2. Describe any increase in vibrations or odor that may result from the project **–** See below

If potential impacts have been identified, please provide the following:

- A description of how the project would avoid, minimize or mitigate identified impacts

The project would result in increased vibrations and noise during construction. This disruption would be minimized by conducting construction only during weekdays during normal business hours. The primary emergency access alternative (NS1) would increase noise from traffic to adjacent parcels 2010 and 4306 Upland and 4270 19th Street.

L. Services

1. Describe any increased need for the following services as a result of the project:

a. Water or sanitary sewer services – No impacts

b. Storm sewer / flood control features

The project flood mitigation measures would work towards providing safe vehicular access to Crest View Elementary School.

c. Maintenance of pipes, culverts and manholes

The proposed project flood mitigation infrastructure will require period maintenance. This maintenance cost is shared with the Urban Drainage and Flood Control District.

d. Police services – The project flood mitigation measures would work towards providing safe vehicular access to Crest View Elementary School. The alternatives to provide increased access to Tamarack Avenue would provide a second primary or secondary emergency access route to Tamarack Avenue.

e. Fire protection – The project flood mitigation measures would work towards providing safe vehicular access to Crest View Elementary School. The alternatives to provide increased access to Tamarack Avenue would provide a second primary or secondary emergency access route to Tamarack Avenue.

f. Recreation or parks facilities – The east-west Fourmile Canyon Creek multi-use trail alternative (EW2) would provide recreational opportunities

g. Libraries – No impacts

h. Transportation improvements / traffic mitigation – The trail and sidewalk alternatives may increase the amount of alternative transportation miles and therefore decrease the maintenance requirements on existing roadways (though the recommended trail alignment will require city maintenance).

i. Parking – The east-west Riverside Lane alternative (EW1) would eliminate some on street parking.

j. Affordable housing – No impacts

k. Open space / urban open land – No impacts

l. Power or energy use – The trail and sidewalk alternatives may increase the amount of alternative transportation miles and therefore decrease the use of oil and gas.
m. Telecommunications – No impacts
n. Health care / social services – No impacts
o. Trash removal or recycling services – No impacts

2. Describe any impacts to any of the above existing or planned city services or department master plans as a result of this project (e.g. budget, available parking, planned use of the site, public access, automobile / pedestrian conflicts, views) – The Fourmile Canyon Creek multi-use trail alignment (EW2) is shown in the North Boulder Subcommunity Plan, the Transportation Master Plan and the Greenways Master Plan. The secondary road (NS1) increased access to Tamarack Avenue alignment is shown in the North Boulder Subcommunity Plan. Selection of alternative alignments from these shown in the plans will require plan amendments.

M. Special Populations
1. Describe any effects the project may have on the following special populations:
a. Persons with disabilities **–** See below
b. Senior populations **–** See below
c. Children or youth **–** See below
d. Restricted income persons **–** See below
e. People of diverse backgrounds – See below
f. Sensitive populations located near the project (e.g. adjacent neighborhoods or property owners, schools, hospitals, nursing homes) **–** See below

If potential impacts have been identified, please provide the following:
- A description of how the proposed project would avoid, minimize, or mitigate identified impact
- A description of how the proposed project would benefit special populations

All proposed project connection alternatives would provide a safer pedestrian and bicycle route than is currently available. The flood mitigation alternative that includes an underpass at 19th (F2) would provide a safe way to cross 19th Street.

N. Economic Vitality
1. Use of existing infrastructure – No impacts
2. Effect on operating expenses - The proposed project flood mitigation infrastructure will require period maintenance. This maintenance cost is shared with the Urban Drainage and Flood Control District. The alternatives that include multi-use trail segments will require snow removal by the city (sidewalk snow removal would be the responsibility of the property owner)

3. Describe how the project will enhance economic activity in the city or region or generate economic opportunities. **–** No impacts

4. Describe any potential impacts to:
a. businesses in the vicinity of the project (ROW, access or parking) **–** No impacts
b. employment **–** No impacts
c. retail sales or city revenue and how they might be mitigated **–** No impacts

ATTACHMENT 1

ERO RESOURCES ENVIRONMENTAL EVALUATION MEMORANDUM

ERO Resources Corp.

October 10, 2011

To: Kurt Bauer, City of Boulder
Annie Noble, City of Boulder
David Love – Belt Collins

From: Mary L. Powell

Re: Review of 19th St. to 22nd St. Trail and Flood Improvements for Natural Resource "Red Flags"

Background

The City of Boulder is proposing flood control and recreation trail improvements along Fourmile Canyon Creek between 19th Street and 22nd Street. On August 24, 2011 ERO Resources Corp. (ERO) assessed the area within which project alternatives are proposed for the presence of significant natural resources that could make the current project concepts difficult or infeasible to implement. Potential significant natural resources include habitat for threatened or endangered species, raptor nests, unique wetlands or other sensitive vegetation communities, and use by regulated wildlife such as black-tailed prairie dog.

General Description of Study Area

The study area is generally bounded by 19th Street, Upland Avenue, 22nd Street, and Riverside Lane and Avenue. Tamarak Avenue extends east from 22nd Street to about ¾ of the way between 22nd Street and 19th Street. Fourmile Canyon Creek flows from northwest to southeast through the site.

Through most of the project area, Fourmile Canyon Creek flows through areas with large-lot residential development. The sizes of the residential lots vary from around 0.75 to 1.25 acres. The houses along Upland Avenue are generally close to the street, while the others are set back from streets. The creek and its floodplain have been encroached upon by the development and the creek appears to have been channelized along most of its length.

Currently, Fourmile Canyon Creek is incised and isolated from its floodplain in most of the study area. The channel bottom is formed of varies sizes of cobble and rock with interstitial sands and gravel. At the east end of the study area, the channel is not as deeply incised and has access to narrow floodplain terraces. Fourmile Canyon Creek is an ephemeral to intermittent stream that conveys large volumes of water following precipitation events. Small base flows may be present during spring runoff. The creek was not flowing during the site visit.

Denver
1842 Clarkson St.
Denver, CO 80218
303.830.1188

Boise
3314 Grace St.
Boise, ID 83703
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Durango
1065 Main Ave., Ste. 200
Durango, CO 81301
970.422.2136

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P.O. Box 932
161 South 2nd St.
Hotchkiss, CO 81419
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www.eroresources.com

Vegetation in the study area is dominated by a plains cottonwood (*Populus deltoides*) riparian community. In addition to plains cottonwood, the tree overstory includes Siberian elm (*Ulmus pumila*), peachleaf willow (*Salix amygdaloides*), crack willow (*Salix fragilis*), and box elder (*Acer negundo*). Areas without a dense tree overstory are dominated by introduced upland grasses, particularly crested wheatgrass (*Agropyron cristatum*) and smooth brome (*Bromus inermis*).

The Natural Resource Conservation Service has mapped soils in the study area as Nederland very cobbly sandy loam. This soil type is derived from cobbly loamy alluvium and is well drained.

Study Area by Alternative Alignment

Each alignment alternative was assessed for natural resources to gather information that will aid in identifying potential impacts for each alternative.

19th Street

Vegetation along 19th Street is dominated by Siberian elm and introduced species such as smooth brome, crested wheatgrass, and chicory (*Cichorium intybus*). The parcel of property south of Fourmile Canyon Creek adjacent to 19th Street is dominated by crested wheatgrass and bindweed (*Convolvulus arvensis*). Because it is dominated by introduced upland species, this area provides only limited habitat value for small birds and mammals. West of the 19th Street bridge, the Fourmile Canyon Creek riparian community has been encroached upon by 19th Street, the school recreation field, and a multipurpose path. In addition to several Siberian elms and cottonwood, sandbar willow (*Salix exigua*) provide shrub cover along the creek.

In general, habitat along 19th Street is of low value to wildlife. It is likely that small songbirds nest in the trees lining the street, but there are no sensitive plant communities or habitat that would support threatened or endangered species.

Riverside Lane and Avenue

For the most part, vegetation along Riverside Avenue and Riverside Lane is dominated by maintained landscaping and mowed turfgrass. At the east end of Riverside Lane, near the cul-de-sac, the road parallels the Fourmile Canyon Creek riparian community and there are a number of Siberian elm and cottonwood trees adjacent to the road.

The riparian community along Riverside Lane provides the only well-developed wildlife habitat in this alignment. Small songbirds are present and likely nest in the area. Deer, fox, and raccoon may move through this area, but are more likely to use the wider riparian corridor north of Fourmile Canyon Creek at this reach.

Upland Avenue and 22nd Street

Residential lots line all of Upland Avenue and 22nd Street. Along Upland Avenue, the homes are close to the road and most of the lots are mowed turfgrass. Scattered Siberian elm, cottonwood, and conifers are clustered near the homes. The homes along 22nd Street tend to be larger and are situated more centrally on the lots.

The presence of homes and human activity limits the value of habitat along these routes. Songbirds and small mammals such as mice and fox squirrels (*Sciurus niger*) make use of this habitat.

Tamarak Avenue

Tamarak Avenue extends from 22nd Street and terminates about 340 feet from 19th Street. Along the street, conditions are similar to those along Upland Avenue and 22nd Street, but the homes are farther from the street. Cottonwood and Siberian elm are scattered along the street. From its terminus to its extended alignment to 19th Street, there is a thick canopy of cottonwood trees. South of the extended alignment is an undeveloped area that includes Fourmile Canyon Creek and the riparian corridor.

For most of the distance along Tamarak Avenue, habitat value is lowered by the presence of homes and human activity. At the undeveloped west end of the alignment, the numerous trees provide habitat for songbirds and owls. Neighbors have reported the frequent presence of owls in this area, including nesting owls. Recent tree removal and home building in this area has likely reduced the use of the area by owls and other birds, but use may return to pre-disturbance levels if the wildlife becomes acclimated to the changes. In addition to birds, deer, fox, raccoon, and other wildlife use this area to move along the creek, rest, and forage.

Fourmile Canyon Creek Corridor

As previously described, the Fourmile Canyon Creek riparian corridor is dominated by an overstory of plains cottonwood and Siberian elm. Homes and maintained yards encroach upon the creek in several places, with the closest encroachment toward the west end of the corridor where a parking area on the south side of the creek comes to within about 20 feet of the creek. The rest of the corridor has a more undeveloped character, but wildlife use of the corridor is affected by the presence of human activity and by barriers to movement along the corridor up and downstream of the study area.

The most open area along the corridor is at the east end of the study area in the City of Boulder parcel. In this parcel, the creek is less incised and has a more sinuous alignment than elsewhere in the corridor. This parcel has an area of open uplands on the north side of the creek.

The riparian corridor provides the highest quality habitat in the study area and previously mentioned wildlife species would be present. Deer are most likely to be found along the creek and the potential for nesting raptors, including owls, is highest. As in other parts of the study area, wildlife use of the area is limited by the presence of development and human activity.

Threatened and Endangered Species

During the site visit, ERO assessed the study area for suitable habitat for federally listed threatened and endangered species protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA). The project area does not fall within U.S. Fish and Wildlife Service (Service) habitat or survey guidelines for the majority of the species listed by the Service as potentially occurring in Boulder County (Table 1).

Table 1. Federally threatened, endangered, and candidate species potentially found in Boulder County or potentially affected by projects in Boulder County.

Common Name	Scientific Name	Status*	Habitat	Suitable Habitat Present
Mammals				
Canada lynx	*Lynx canadensis*	T	Climax boreal forest with a dense understory of thickets and windfalls	No
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	T	Shrub riparian/wet meadows	No
Birds				
Interior least tern**	*Sterna antillarum athalassos*	E	Sandy/pebble beaches on lakes, reservoirs, and rivers	No habitat and no depletions anticipated
Mexican spotted owl	*Strix occidentalis*	T	Closed canopy forests in steep canyons	No
Piping plover**	*Charadrius melodus*	T	Sandy lakeshore beaches, river sandbars	No habitat and no depletions anticipated
Whooping crane**	*Grus americana*	E	Mudflats around reservoirs and in agricultural areas	No habitat and no depletions anticipated
Fish				
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	T	Cold, clear, gravel headwater streams and mountain lakes	No
Pallid sturgeon**	*Scaphirhynchus albus*	E	Large, turbid, free-flowing rivers with a strong current and gravel or sandy substrate	No habitat and no depletions anticipated
Plants				
Colorado butterfly plant	*Gaura neomexicana* ssp. *coloradensis*	T	Subirrigated, alluvial soils on level floodplains and drainage bottoms between 5,000 and 6,000 feet in elevation	No
Ute ladies'-tresses orchid	*Spiranthes diluvialis*	T	Moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes below 6,500 feet in elevation	No

Common Name	Scientific Name	Status*	Habitat	Suitable Habitat Present
Western prairie fringed orchid**	*Platanthera praeclara*	T	Moist to wet prairies and meadows	No habitat and no depletions anticipated

*T = Federally Threatened Species, E = Federally Endangered Species.
**Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other counties or states.
Source: Service 2010.

Because of the association of the Preble's meadow jumping mouse (Preble's), Ute ladies'-tresses orchid (ULTO), and Colorado butterfly plant (CBP) to wetland/riparian habitat along the Colorado Front Range, ERO evaluated the potential for these species to occur in the project area.

Preble's Meadow Jumping Mouse

Typically, Preble's occurs below 7,600 feet in elevation, generally in lowlands with medium to high moisture along permanent or intermittent streams and canals. Preble's occurs in low undergrowth consisting of grasses and forbs, in open wet meadows, riparian corridors near forests, or where tall shrubs and low trees provide adequate cover. Preble's typically inhabits areas characterized by well-developed plains riparian vegetation with relatively undisturbed grassland and a water source nearby.

ERO evaluated the project area and determined that suitable habitat is not present in the study area and Preble's would not be affected by work in the study area because —

- Fourmile Canyon Creek is ephemeral and does not provide a consistent water source, which is typically associated with Preble's.
- The study area is isolated from other known populations of Preble's by urban development. The nearest known population of Preble's is located over 3 miles away on Upper Bear Creek in El Dorado Canyon.
- A trapping survey was performed on Fourmile Canyon Creek just upstream of 19th Street in 1997 and Preble's was not present.
- Developed land and the back yards of houses surround the project site.

Because of these reasons, it is unlikely that the project area supports a population of Preble's or that Preble's moves through the corridor. Therefore, any work in the study are would have no effect on individual Preble's or the continued existence of the species.

Ute Ladies'-Tresses Orchid

Ute ladies'-tresses orchid occurs at elevations below 6,500 feet in moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes where the soil is seasonally saturated within 18 inches of the surface. Generally, the species occurs where the vegetative cover is relatively open and not overly dense or overgrazed.

ERO determined that the project area is not conducive to the establishment of Ute ladies'-tresses orchid and differs from the criteria of the Service's November 1992 *Interim Survey Requirements for* Spiranthes diluvialis for the following reasons:

- Fourmile Canyon Creek is ephemeral and incised and does not support the type of sub-irrigated wetlands with which Ute ladies'-tresses orchid is typically associated.
- Most of the riparian corridor is heavily shaded by tree canopy and would likely preclude the shade-intolerant orchid.
- Dry uplands, dominated by introduced species, and mowed yards surround the project area.

Because of these reasons, it is unlikely that the project area supports a population of Ute ladies'-tresses orchid. Therefore, any work in the study are would have no effect on individuals or the continued existence of the species.

Colorado Butterfly Plant

The Colorado butterfly plant is a short-lived perennial herb found in moist areas of floodplains. It occurs on subirrigated, alluvial soils on level or slightly sloping floodplains and drainage bottoms at elevations 5,000 to 6,400 feet. Colonies are often found in low depressions or along bends in wide, active, meandering stream channels that are periodically disturbed.

The Service has not established formal survey guidelines for the Colorado butterfly plant, but has indicated that areas similar to, and slightly drier than, Ute ladies'-tresses orchid habitat should be assessed. ERO determined that Colorado butterfly plant habitat does not occur at the project area because there is an abrupt transition from channel to uplands and wet and mesic areas are lacking.

Other Sensitive Species and Wildlife

Habitat in the study area is typical for disturbed riparian habitat throughout the City of Boulder and surrounding areas. Although this type of habitat supports more species of wildlife than do habitats such as uplands or urban areas, there are no unique or particularly sensitive plant communities or wildlife species present. Migratory birds make the most use of the study area and are protected by the Migratory Bird Treaty Act (MBTA).

Migratory Birds

ERO assessed the project area for potential habitat and the presence of species protected by the MBTA. Migratory birds, as well as their eggs and active nests, are protected under the MBTA. In addition to the MBTA, the Colorado Division of Parks and Wildlife recommends establishing buffers around active raptor nests in which encroachment should be limited.

Migratory bird habitat typically includes trees and shrubs, but upland grasslands also are used for nesting. ERO did not observe any nests during the site visit, but the fully-leafed out condition of the trees prevented a thorough survey. Residents in the study area have reported the presence of nesting owls, and numerous other bird species such

as magpie (*Pica pica*), European starling (*Sturnus vulgaris*), northern flicker (*Colaptes auratus*), and lesser goldfinch (*Carduelis psaltria*) are likely to nest as well.

If the proposed project would require removing or disturbing trees and shrubs, a survey for active nests should be done prior to the work to ensure that active migratory bird nests are not present. If an active raptor nest is present, the City should consult with Colorado Division of Parks and Wildlife to develop appropriate mitigation measures minimize adverse effects.

Other Wildlife

As with any human development, including multi-purpose trails, wildlife species sensitive to human disturbance are likely to decline in abundance or abandon the area, while other wildlife species adapted to urban development are likely to remain in the study area. Species likely to decline would include some raptors and possibly coyotes. Species likely to increase would include red fox, raccoon, and great horned owl. Overall, surrounding and continuing development contributes to a decline in the number and diversity of wildlife species nearby and to a change in species composition to favor species that adapt better to human disturbance.

Conclusions

The Fourmile Canyon Creek riparian corridor provides habitat for a variety of wildlife. Riparian corridors are particularly important in urban areas where they are often used as movement corridors for larger mammal such as deer and for nesting by songbirds and raptors. Species that use riparian corridors in developed areas are typically common species tolerant of human encroachment. As a result, although diverse, most plant and wildlife species in urban riparian areas are not unique or uncommon.

Based on a review of background information, the site visit, and professional experience, ERO determined that significant natural resources that would make the project infeasible are not likely to be present in the study area. There is no suitable habitat for federally listed threatened or endangered species. Although there is suitable nesting substrate and residents report the presence of nesting owls, no raptor nests were observed in the study area. It is likely that one or more nests were present but obscured from view by leaves. Because Fourmile Canyon Creek is ephemeral, there are virtually no wetlands in the study area and the lateral extent of riparian trees and shrubs is limited due to encroachment.

The City's proposed project would not affect any unique or significant natural resources, but there would be impacts to regulated resources including Fourmile Canyon Creek and its riparian areas. The impacts would be addressed through the Clean Water Act Section 404 and City of Boulder Wetland permitting processes. In the event an active nest is present, the City would comply with the MBTA.

ATTACHMENT 2

OCT. 6, 2009 NEIGHBORHOOD PETITION

PETITION

We, the undersigned, as neighbors of the enclave of Crestview East, are in opposition to the construction of 20th St. between Tamarack and Upland. There is no need for any type of additional vehicular connectivity between Tamarack and Upland east of 19th St.. There is already a road, 22nd St., which provides pedestrian, vehicular and fire access connectivity to Tamarack, which is a dead end street. Pedestrian connectivity will connect to the Four Mile Creek path leading pedestrians to 19 th St. In addition, the Crestview East Neighborhood Annexation provides one north/south pedestrian/bicycle multi-use connection from Tamarack to Upland between 2110 and 2130 Upland as required by transportation staff, thus eliminating the need for an additional north/south pedestrian/bicycle multi-use connection. Since the Crestview East Annexation adds, at most, six additional homes on Tamarack, the increased density does not justify the destructive environmental impact that building an additional road would demand.

Signature: _____ Address: 4270 19th St Bldr CO 80304

Signature: _____ Address: 4270 19th St Bldr Co 80304

Signature: _____ Address: 2130 Tamarack Ave

Signature: _____ Address: 2130 Tamarack Ave Boulder, Co

Signature: _____ Address: 2150 Tamarack Ave Boulder CO 80304

Signature: _____ Address: 2156 Tamarack Ave 303 4414 1216

Signature: _____ Address: 2158 Tamarack Ave.

Signature: _____ Address: 2198 Upland Ave.

Signature: _____ Address: 2198 Upland Ave 3449795

Signature: _____ Address: 2160 Upland Ave.

Signature: _____ Address: 2125 Upland Ave

Signature: _____ Address: 2105 UPLAND AVE.

Signature: _____ Address: 2075 Upland Ave.

Signature: _____ Address: 2010 Upland Ave

PETITION

We, the undersigned, as neighbors of the enclave of Crestview East, are in opposition to the construction of 20th St. between Tamarack and Upland. There is no need for any type of additional vehicular connectivity between Tamarack and Upland east of 19th St.. There is already a road, 22nd St., which provides pedestrian, vehicular and fire access connectivity to Tamarack, which is a dead end street. Pedestrian connectivity will connect to the Four Mile Creek path leading pedestrians to 19 th St. In addition, the Crestview East Neighborhood Annexation provides one north/south pedestrian/bicycle multi-use connection from Tamarack to Upland between 2110 and 2130 Upland as required by transportation staff, thus eliminating the need for an additional north/south pedestrian/bicycle multi-use connection. Since the Crestview East Annexation adds, at most, six additional homes on Tamarack, the increased density does not justify the destructive environmental impact that building an additional road would demand.

Signature: _____ Address: 2130 Upland Ave

Signature: _____ Address: 2130 Upland Ave

Signature: Anne Hakenson Address: 2010 Upland Ave

Signature: C. A Adams Address: 1937 Upland Ave.

Signature: Drew Dolan Address: 2020 Upland / 2681 Kalmia

Signature: _____ Address: _____

Signature: _____ Address: _____

Signature: _____ Address: _____

Signature: _____ Address: _____

Signature: _____ Address: _____

Signature: _____ Address: _____

Signature: _____ Address: _____

Signature: _____ Address: _____

Signature: _____ Address: _____

5A - 75

ATTACHMENT 3

INITIAL OPEN HOUSE COMMENT SHEET SUMMARY

Fourmile Canyon Creek CEAP 19th to 22nd Streets
Open House Wednesday May 11, 2011 Comments

37 members of the public attended the Open House. The following presents a summary of the comments. E-comments results are included in Red Font (summary as received before second open house conducted on Oct. 26, 2011). Completed comment sheets and e-comments should be read for full input.

TRAIL ALIGNMENTS

My preference for east-west pedestrian & bicycle access from 22nd Street to 19th Street and Crest View Elementary School is: (*See attached figure for routes)*

Rt 1	Rt 2	Rt 3	Rt 4	Rt 5	Rt A	Rt B
4 1	10 1	1	5	2	0	0

OTHER CONNECTIONS

I think the following other connections such as north-south (vehicular / bike and pedestrian) are important and should be considered:

Route 'A' should be emergency access only = 5

Not needed = 5 *Needed = 6 (almost all voiced alignment A)*

19th STREET FLOOD IMPROVEMENTS

- Comments / concerns relating to the proposed flood improvements at 19th Street and Fourmile Canyon Creek:

Agree with flood improvements = 8

Oppose flood improvements = 0

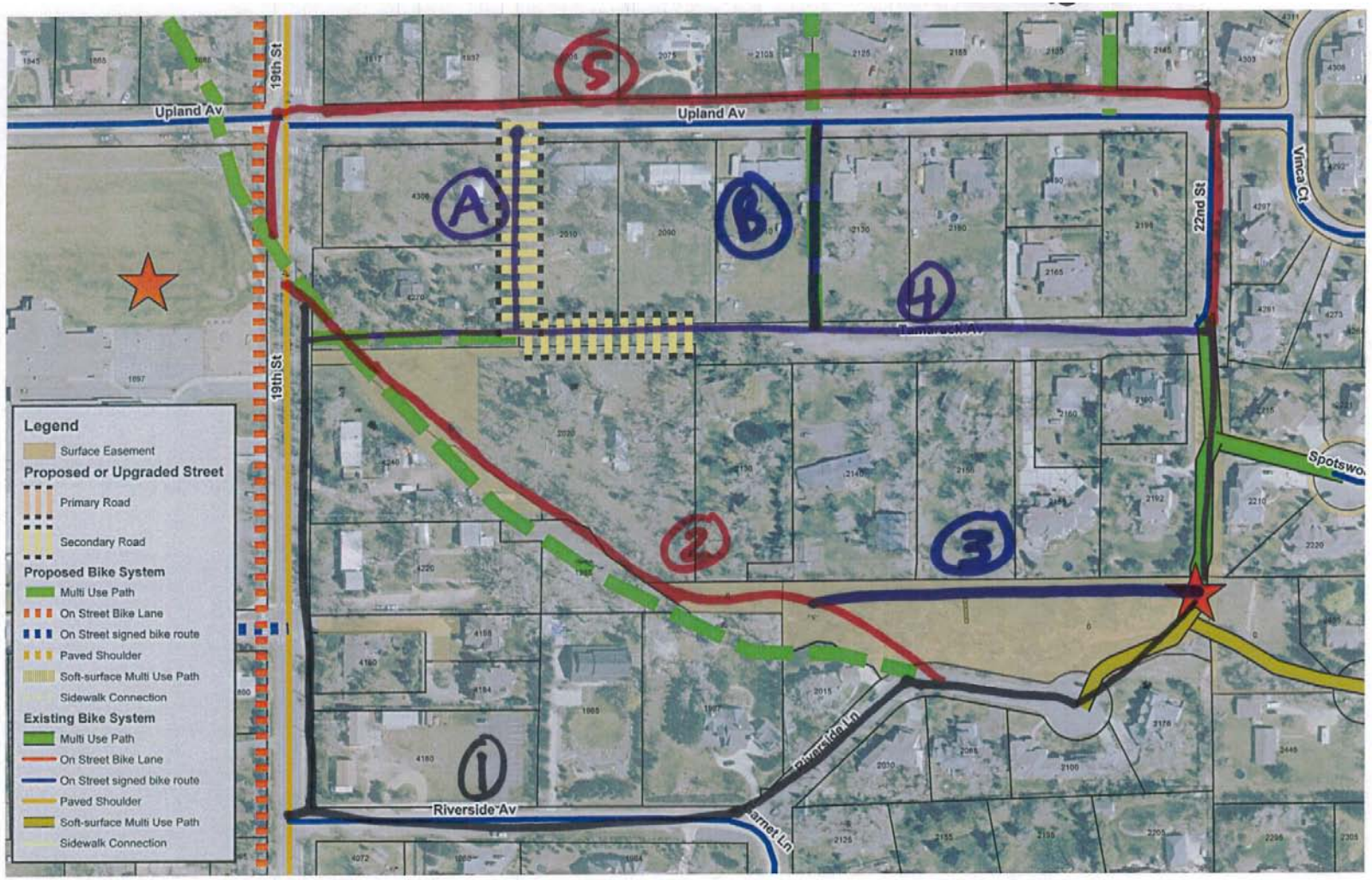
- Should the new flood improvement crossing under 19th Street include a bike/pedestrian underpass? *10* Yes *8* No
  Comments: *3* *1*

OTHER

Other comments and concerns for staff to consider:

I LIVE: (check all that apply)

Inside the project area	*10* *5*	Outside the project area	*10*	Part of Crestview Elementary Community	*9* *2*



Potential Bike/Pedestrian Route Options

= Connection Point

ATTACHMENT 4

SECOND OPEN HOUSE COMMENT SHEET SUMMARY

Fourmile Canyon Creek CEAP 19th to 22nd Streets
Open House Wednesday October 26, 2011
COMMENTS

24 people attended the Open House. 22 comment sheets were submitted. The following presents a summary of the comments. Completed comment sheets should be read for full input.

EAST-WEST TRAIL ALIGNMENTS

Please rank in order of preference (1 being the best choice) the following east-west alignments:

EW1 (Riverside) ☐ EW2 (Creek) ☐ EW3 (Tamarack) ☐ EW4 (Status Quo) ☐

Comments on east-west alignments:

Summary of rankings:

Rankings	*EW1*	*EW2*	*EW3*	*EW4*
1	*0*	*8*	*2*	*12*
2	*4*	*2*	*11*	*1*
3	*8*	*2*	*3*	*1*
4	*2*	*3*	*2*	*4*

Emergency Access Options

Please rank in order of preference (1 being the best choice) the following north-south alignments:

EA1 (Road) ☐ EA2 (Trail) ☐ EA3 (Trail) ☐

Comments on the emergency access options:

Summary of rankings:

Rankings	*EA1*	*EA2*	*EA3*
1	*2*	*6*	*13*
2	*4*	*7*	*2*
3	*8*	*1*	*1*

19th STREET FLOOD IMPROVEMENTS

Please rank in order of preference (1 being the best choice) the following flood mitigation alternatives:

F1 (Bridge Only) [ ] F2 (Bridge with Underpass) [ ]

Comments on the flood mitigation alternatives:

Rankings	*F1*	*F2*
1	*3*	*18*
2	*8*	*1*

I LIVE: (check all that apply)

Inside the project area [*13*] Outside the project area [*8*] Part of Crest View Elementary Community [*4*]

ATTACHMENT 5

CREST VIEW PTO AND 'HALLWAY' SUMMARY OF COMMENTS

COMMENTS
On Bicycle and Pedestrian Access to Crest View

City staff provided a brief presentation to the Crest View PTO on Monday, Nov. 14 at 1:30 p.m. The following presents a summary of the 13 completed comment sheets received. The discussion did not include discussion or seek input on increasing access to Tamarack Avenue.

EAST-WEST TRAIL ALIGNMENTS

Please rank in order of preference (1 being the best choice) the following east-west alignments:

EW1 (Riverside)	EW2a (Creek, 10' concrete path)	EW2b (Creek, 8' gravel path)	EW3 (Tamarack)	EW4 (Status Quo)
☐	☐	☐	☐	☐

Comments on east-west alignments:

Rankings	*EW1*	*EW2a*	*EW2b*	*EW3*	*EW4*
1	*1*	*11*	*0*	*1*	*0*
2	*0*	*2*	*7*	*5*	*0*
3	*6*	*0*	*0*	*5*	*0*
4	*3*	*0*	*5*	*2*	*0*
5	*0*	*0*	*0*	*0*	*10*

19th STREET FLOOD IMPROVEMENTS

Please rank in order of preference (1 being the best choice) the following flood mitigation alternatives:

F1 (Bridge Only) ☐ F2 (Bridge with Underpass) ☐

Comments on the flood mitigation alternatives:

Rankings	*F1*	*F2*
1	*0*	*13*
2	*6*	*0*

COMMENTS
On Bicycle and Pedestrian Access to Crest View

Project east-west alignment and flood mitigation alternatives along with comment sheets were placed in the main hallway at Crest View Elementary School from Oct. 31 to Nov. 14. The city received 17 completed comments sheets. A summary of the rankings are provided below.

EAST-WEST TRAIL ALIGNMENTS

Please rank in order of preference (1 being the best choice) the following east-west alignments:

EW1 (Riverside)	EW2a (Creek, 10' concrete path)	EW2b (Creek, 8' gravel path)	EW3 (Tamarack)	EW4 (Status Quo)
☐	☐	☐	☐	☐

Comments on east-west alignments:

Rankings	*EW1*	*EW2a*	*EW2b*	*EW3*	*EW4*
1	*1*	*3*	*9*	*3*	*1*
2	*0*	*4*	*4*	*3*	*0*
3	*5*	*3*	*0*	*0*	*2*
4	*4*	*2*	*0*	*4*	*0*
5	*1*	*1*	*0*	*1*	*6*

19th STREET FLOOD IMPROVEMENTS

Please rank in order of preference (1 being the best choice) the following flood mitigation alternatives:

F1 (Bridge Only) ☐ F2 (Bridge with Underpass) ☐

Comments on the flood mitigation alternatives:

Rankings	*F1*	*F2*
1	*2*	*13*
2	*5*	*0*

ATTACHMENT 6

E-COMMENT SUMMARY
(Oct. 26, 2011 – March 7, 2012)

Fourmile Canyon Creek CEAP 19th to 22nd Streets

Summary of E-comments

Oct. 26, 2011 – March 7, 2012

104* (excluding repeats) e-comments were received following the second open house from Oct. 26, 2011 – March 6, 2012. The following provides a summary of the e-comments. Completed e-comments should be read for full input.

Trail Alignment Comments:
The following provides a sum total of the stated preferred east-west alignment:

EW1 (Riverside)	EW2a (Creek, Paved)	EW2b (Creek, Soft)	EW3 (Tamarack)	EW4 (Status Quo)
2	69	1	0	25

Other Connection Comments:

EA1 (Road N-S)	EA2 (Trail N-S)	EA3 (E-W)
0	9	1

Flood Improvements Comments:
The following provides a sum total of the stated preferred flood mitigation alternative:

F1 (Bridge only)	F2 (Bridge with Underpass
1	59

Live Inside Project Area: 21

Live Outside Project Area: 64

Crest View Elementary Community: 24

* It should be noted that not all comments submitted responded to all of the questions.

ATTACHMENT 7

FRIENDS OF FOURMILE CANYON CREEK
SAFE ROUTES REPORT AND SURVEY

Safe Routes Fourmile (DRAFT)

An Initiative of the Friends of Fourmile Canyon Creek (FFCC)

This document outlines possible improvements to a set of eight popular on-street pedestrian and bicycle routes through the neighborhoods surrounding the Fourmile Canyon Creek between 19th and 26th Streets. The goals of this document are to increase the safety and provide education and signage to make the routes more obvious and useable.

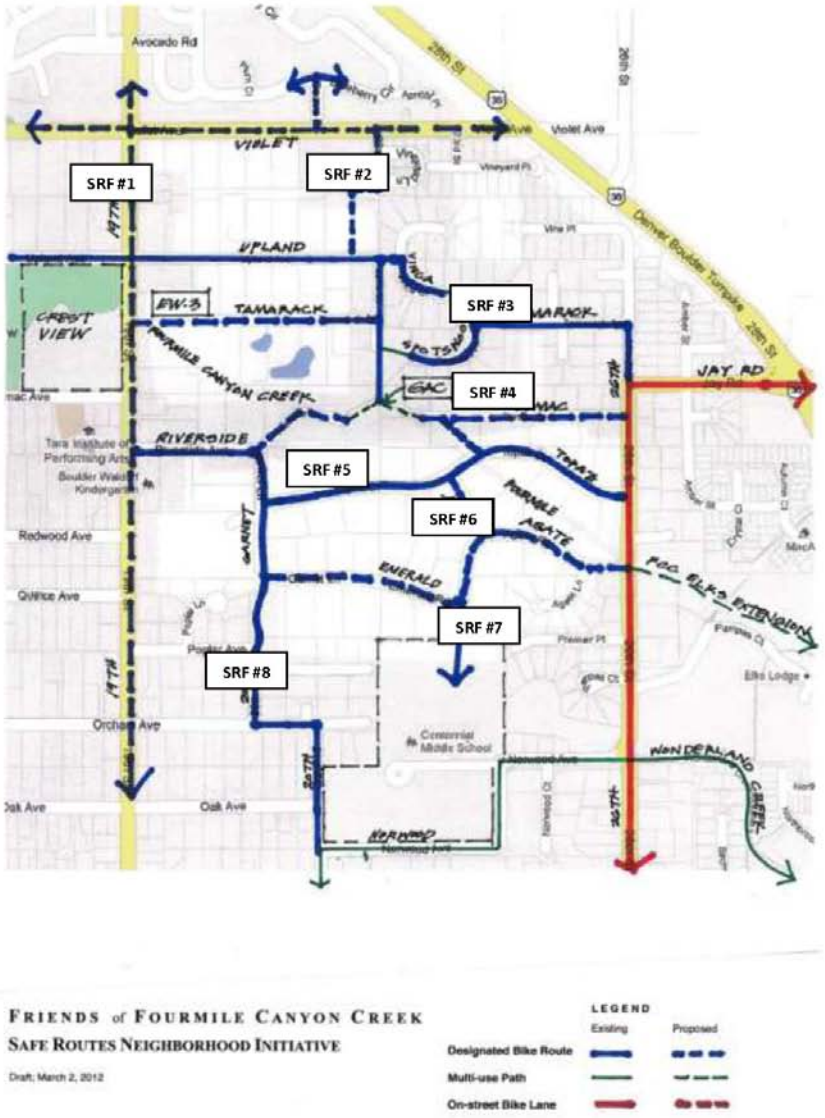
3/12/2012

Executive Summary

Safe Routes Fourmile (SRF) is a citizen initiative of the Friends of Fourmile Canyon Creek (FFCC) to suggest near-term improvements to on-street routes through the Fourmile Canyon Creek neighborhoods. SRF is based on a theme of discussion introduced by Greenways Advisory Committee member Kate Ryan at the February 15th meeting. The gist of this theme is whether the city should explore near-term improvements for safety and education on routes within the Fourmile neighborhoods. SRF is not in conflict with the proposed East West Multi-use path along Fourmile Creek. While FFCC still opposes the construction of that path, we do recognize the legitimate concerns of Crest View Elementary and Cycling communities with regards to safety and efficiency of travel through our neighborhoods. SRF is an attempt to demonstrate alternatives to the proposed paved Multi-use path on Fourmile Canyon Creek. It is our desire to use this as a working document to spur constructive discussions and to help set near-term tasks to improve the overall safety and usability of the numerous on-street routes. A final plan would necessarily include specific capital improvements, maintenance changes, and an educational program. In addition, the plan should include metrics that can be used to evaluate the effectiveness of SRF with respect to the overall goals of safety and usability.

Safe Routes Fourmile Routes Overview

This document contains a collection of eight distinct on-street routes through the neighborhoods which border the Fourmile Canyon Creek. Below is a System Map of the routes. Routes #1 - #6 primarily serve homes to the north and east for children headed to Crest View Elementary School. Routes #7 and #8 serve homes to the north and east for access to Centennial Middle School.



Safe Routes Fourmile Systems Map

Route #1 – 19th St.

This route follows 19th Street south to Sumac Ave. and Crestview. The route is 0.25 miles and can be walked in about 5 minutes.

19th Street and Violet Ave

This intersection is already a 4-Way Stop on a busy intersection surrounded by sidewalks. No further improvements are recommended.

19th Street and Upland Ave

This intersection is already an Enhanced Pedestrian Crossing with no further improvements recommended. **We recommend efforts to encourage children to take the 19th and Fourmile Underpass when completed (Option F2).**

Route #2 – East Violet Ave, Upland Ave

This route starts at the East end of Violet Ave, travels along an unimproved footpath between Violet and Upland Ave and crosses 19th St. at Upland. The route is 0.5 miles and takes about 9 minutes to walk.

Violet Ave and 22nd Street

This intersection funnels children from North and East Violet (Boulder Meadows) to routes south. We recommend a **4-Way Stop** or **Enhanced Pedestrian Crossing** for this intersection as an alternative to 19th and Violet Ave.

22nd Street and Footpath to Upland Ave

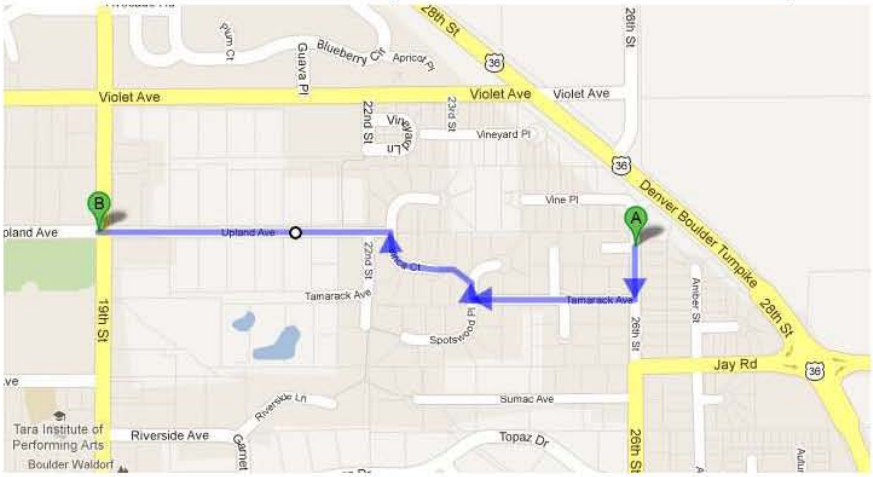
At the South end of 22nd St there is an unimproved footpath which leads across to Upland Ave. We recommend the consideration of either **an improved pedestrian footpath** or **multi-use crusher fine pedestrian/bicycle path**.

The footpath terminates at the sidewalk on Upland Ave. **We recommend improvements to allow bicycles to ride smoothly onto Upland Ave**.

Upland Ave and 19th Street

This intersection is already an Enhanced Pedestrian Crossing with no further improvements recommended. **We recommend efforts to encourage children to take the 19th and Fourmile Underpass when completed (Option F2).**

Route #3 – Tamarack Ave, Spotswood Pl, Vinca Ct, and Upland Ave



This route follows Tamarack Ave to Vinca Ct and Upland Ave. The route is 0.6 miles long and requires about 13 minutes to walk.

26th Street and Tamarack Ave

This intersection has extremely light traffic. We do not recommend any improvements.

Tamarack Ave and Spotswood Pl

This intersection has good signage indicating a bike route. We do not recommend any improvements.

Spotswood Pl to Vinca Ct

This is an existing pedestrian/bicycle path which has good signage.

Upland Ave and 19th Street

This intersection is already an Enhanced Pedestrian Crossing with no further improvements recommended. **We recommend efforts to encourage children to take the 19th and Fourmile Underpass when completed (Option F2).**

Route #4 – Tamarack Ave, Spotswood Pl, Tamarack Ave, EA3

This route follows Tamarack Ave to Spotswood Pl and then West again on Tamarack Ave. This route assumes that Tamarack improvements including EA3 (Emergency Access path from Tamarack to 19th St.) will be completed. The route is 0.6 miles long and requires about 13 minutes to walk.

26th Street and Tamarack Ave

This intersection has extremely light traffic. We do not recommend any improvements.

Tamarack Ave and Spotswood Pl

This intersection has good signage indicating a bike route. We do not recommend any improvements.

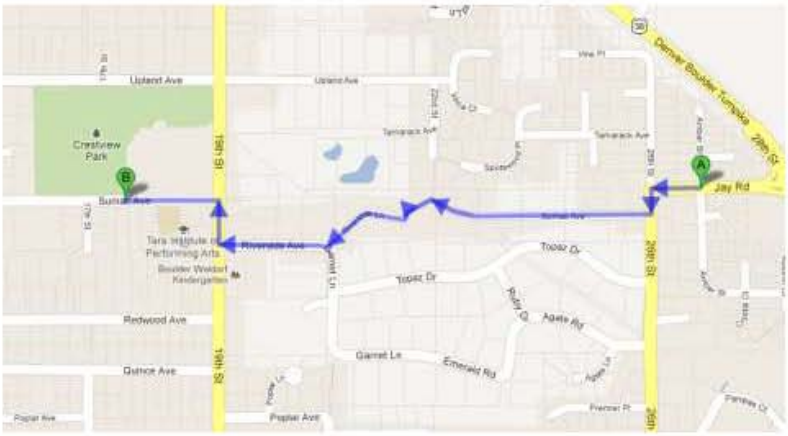
Spotswood Pl to 22nd & Tamarack Ave

This is an existing pedestrian/bicycle path with good signage. No improvements are necessary.

Tamarack Ave to EA3

This portion of the route is still under development. If and when EA3 is completed, then this route will become viable.

Route #5 – Jay Rd, 26th St, Sumac Ave, Multi-Use Path, Riverside Ln, Riverside Ave, 19th St



This route guides children from the north of Jay and Sumac along Sumac Ave and Riverside Lane to 19th Street. The route is 0.8 miles long and requires about 16 minutes to walk.

Jay Rd and 26th St

This intersection includes a 3-Way Stop and good signage. No further improvements are necessary.

26th St and Sumac Ave

This intersection is not protected from the east. **A crosswalk for pedestrians** may be considered.

Sumac Ave

This section of the route follows Sumac Ave which is unplowed during the winter. We recommend **additional snow removal** for this section up to the multi-use path.

Sumac Ave to Multi-Use Path

This section of Sumac Ave terminates at a crusher fine multi-use path. **We recommend that this path be paved with concrete and be plowed in the winter.**

Multi-Use Path to Riverside Lane

The Multi-Use path terminates to the south at Riverside Lane. **Riverside Lane is unplowed in the winter. We recommend that Riverside Lane be plowed.**

Riverside Ln and Riverside Ave.

The route follows connects Riverside Lane to the right with Riverside Ave to the left. This intersection is not plowed in the winter and we recommend **additional snow removal** for this section up to 19th St.

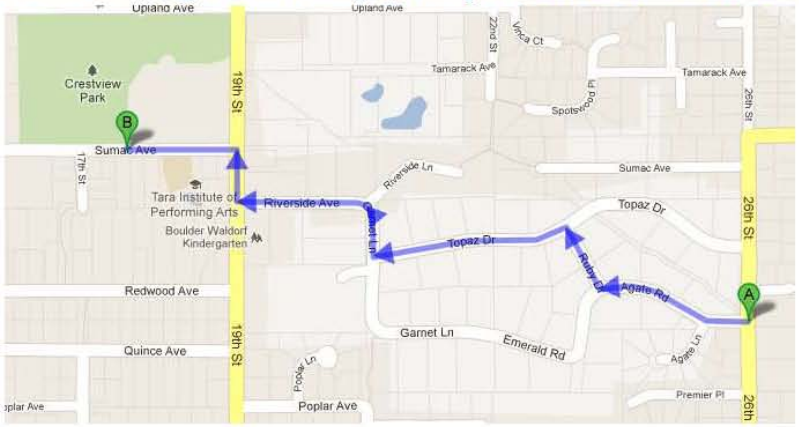
Riverside Ave. and 19th St.

The route follows 19th St. to the right. This intersection contains an existing sidewalk as well as sidewalks and bicycle lanes along 19th St. There are no improvements recommended for it.

19th Street and Sumac Ave.

The route crosses 19th St. within the Enhanced Pedestrian crossing at Sumac Ave. This is a high traffic crossing during school hours. **Education to encourage children to cross to the north via the Fourmile Creek pedestrian/bicycle underpass should be considered.**

Route #6 – Agate Rd, Ruby Dr, Topaz Dr, Garnet Ln, Riverside Ave, 19th St



This route starts at the intersection of 26th Street and Agate Rd. The route is 0.8 miles and can be walked in about 16 minutes.

26th St. and Agate Rd.

This intersection has relatively light traffic, but the FFCC suggests that an **Enhanced Pedestrian/Bicycle Crosswalk** be considered.

Agate Rd. and Ruby Dr.

The route follows this intersection to the right along Ruby St. It is generally safe (light vehicle traffic) but **Yield to Pedestrians/Bicycle signs** may be considered to improve safety for small children.

Ruby Dr. and Topaz Dr.

The route follows this intersection to the right along Topaz Dr. Again **Yield to Pedestrians/Bicycle signs** may be considered for this intersection.

Topaz Dr. and Garnet Ln.

The route follows Garnet Ln to the right. **We recommend snow removal on the pedestrian/bicycle rights-of-way through this intersection.**

Garnet Ln. and Riverside Ave.

The route follows Riverside Ave. to the left. This intersection is not plowed in the winter and we recommend **additional snow removal** for this section up to 19th St.

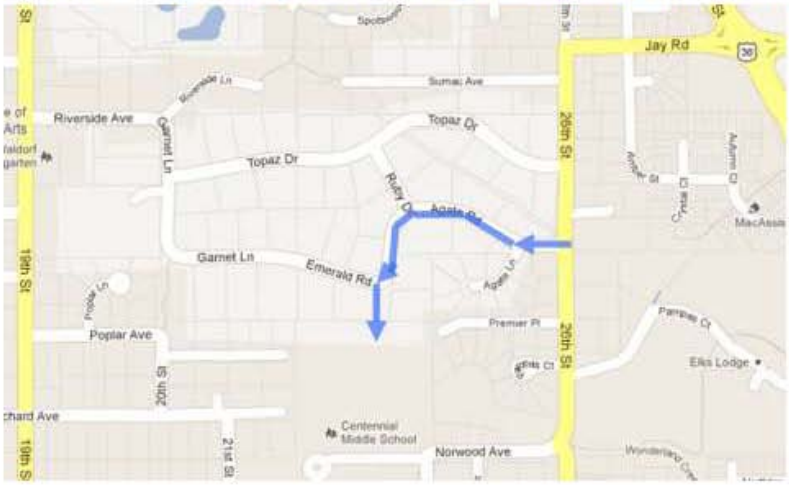
Riverside Ave. and 19th St.

The route follows 19th St. to the right. This intersection contains an existing sidewalk as well as sidewalks and bicycle lanes along 19th St. There are no improvements recommended for it.

19th Street and Sumac Ave.

The route crosses 19th St. within the Enhanced Pedestrian crossing at Sumac Ave. This is a high traffic crossing during school hours. **Education to encourage children to use the Fourmile Creek pedestrian/bicycle underpass should be considered.**

Route #7 – Agate Rd, Emerald Rd, Centennial Middle School North



This route starts at the intersection of 26th Street and Agate Rd., follows Agate past Ruby Dr. to Emerald, then enters Centennial Middle School . The route is 0.6 miles and can be walked in about 13 minutes.

26th St. and Agate Rd.

This intersection has relatively light traffic, but the FFOC suggests that an **Enhanced Pedestrian/Bicycle Crosswalk** be considered.

Agate Rd. and Ruby Dr.

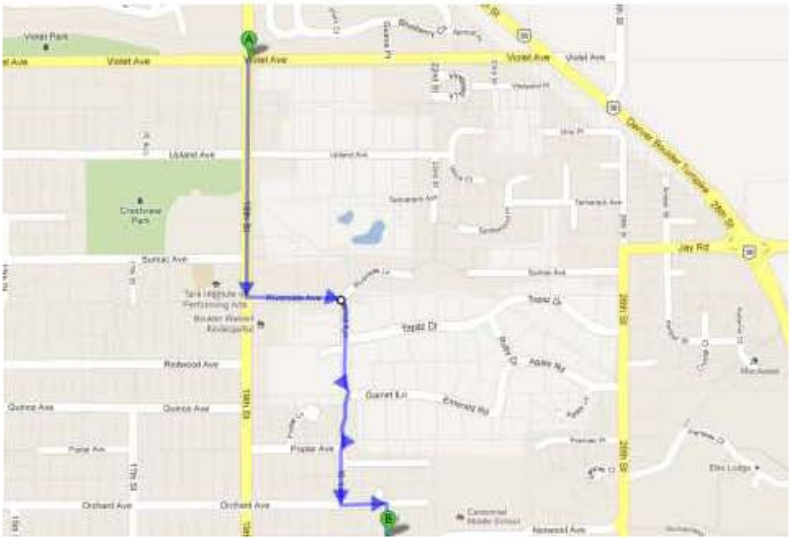
The route follows this intersection to the left along Agate to Emerald Rd. It is generally safe (light vehicle traffic) but **Yield to Pedestrians/Bicycle signs** may be considered to improve safety for small children.

Emerald Rd to Centennial Middle School

The route follows Agate to Emerald and then cuts down this pedestrian/bicycle path at the north end of the running track and on to the school grounds.

Route #8 – 19th St, Riverside Ave, Garnet Ln, Multi-Use Path, Poplar/20th St, Orchard Ave/21st St, Centennial Middle School West

This route follows 19th Street south to Riverside Ave, Garnet Ln, and then cuts through a paved multi-use path to Poplar Ave, 20th St, Orchard Ave, and then 21st St. The route is 0.8 miles and can be walked in about 16 minutes.



19th Street and Violet Ave

The route follows 19th Street south past Violet.

19th Street and Riverside Ave

The route comes from the right off of 19th Street onto Riverside Ave.

Garnet Lane

The route crosses to Garnet Lane through the traffic mitigation device and continues south along Garnet to the left.
Snow removal at the device is recommended.

Garnet Lane and Multi-Use Path

At the southernmost portion of Garnet Lane, the route follows a paved Multi-Use path.

Multi-Use Path and Poplar Ave

The Multi-Use path exits on to Poplar and 20th St. **Snow removal along 20th Street is recommended.**

Orchard Ave and 21st Street

The route continues along Orchard Ave, then turns on 21st Street which fronts Centennial Middle School.

Summary of Improvements

This section lists the possible capital improvements, maintenance, and educational initiatives recommended by this initiative.

Near-Term Capital Improvements

- Sidewalks along Violet Ave both east and west of 19th St
- Concrete Paving of existing Multi-Use paths between 22nd St, Sumac Ave, and Riverside Lane
- Redesign of traffic mitigation device at Garnet Ave and Topaz Dr to allow for snow removal
- Improvements to pedestrian path between 22nd St and Upland Ave possibly including improvement to a Multi-Use path along with smooth transitions for bicycles
- 4-Way Stop at Violet Ave and 22nd Street
- Enhance Pedestrian Crosswalk at 26th St and Agate Rd
- Yield to Pedestrian/Bicycle Signs at Ruby Dr and Topaz Dr
- Yield to Pedestrian/Bicycle Signs at Ruby Dr and Agate Rd
- Enhanced Pedestrian Crosswalk at 26th St and Sumac Ave

Maintenance (Snow Removal)

- Multi-Use paths between 22nd St, Sumac Ave, and Riverside Lane
- Sumac Ave between 22nd and 26th St
- Riverside Ave and Riverside Lane
- For pedestrian/bicycle access through Garnet Ave traffic mitigation at Garnet and Topaz
- Tamarack Ave, Vinca Ct, and Spotswood Pl
- Upland Ave

Educational Initiatives

- Review plan with Crest View Elementary PTO and incorporate input
- Review plan with Community Cycles group and incorporate input
- Addition of final routes to the GoBoulder bicycle map
- Education initiative at Crest View Elementary to encourage children to use pedestrian/bicycle underpass when available instead of the crossings at Sumac Ave and Upland on 19th St.

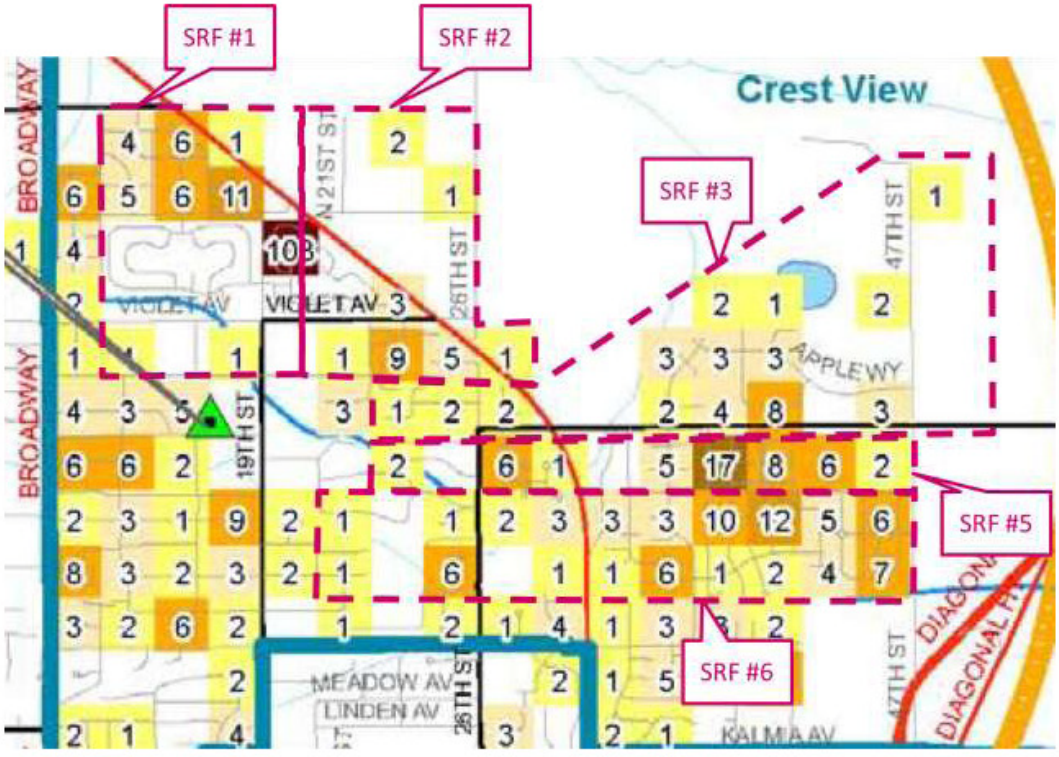
Scoring of Crestview Population vs. Routes

This section provides a summary of the expected maximum possible traffic on each route. This is based on the Crest View Elementary census data provided in the Draft Fourmile CEAP. Data for the several other educational facilities in the area (Centennial MS, New Horizons School, Boulder Waldorf Kindergarten, and Tara Institute for the Performing Arts) should also be considered if available.

In addition, we assume that children will take the shortest possible route to school. We do not yet include Route #4 due to the lack of EA3 crossing at 19th and Tamarack Ave.

Route	Description	Max. Children	%
#1	19th & Violet	107	33%
#2	22nd & Upland	55	17%
#3	Tamarack, Vinca, Upland	37	12%
#5	Sumac, Riverside, 19th	47	15%
#6	Agate, Ruby, Topaz, Garnet, Riverside, 19th	75	23%

Below are the detailed boundaries that define the derivation of the totals above.



We would suggest that these tables be used to prioritize any improvement projects if there are scarce funds. Thus Routes #1 and #6 should take priority.

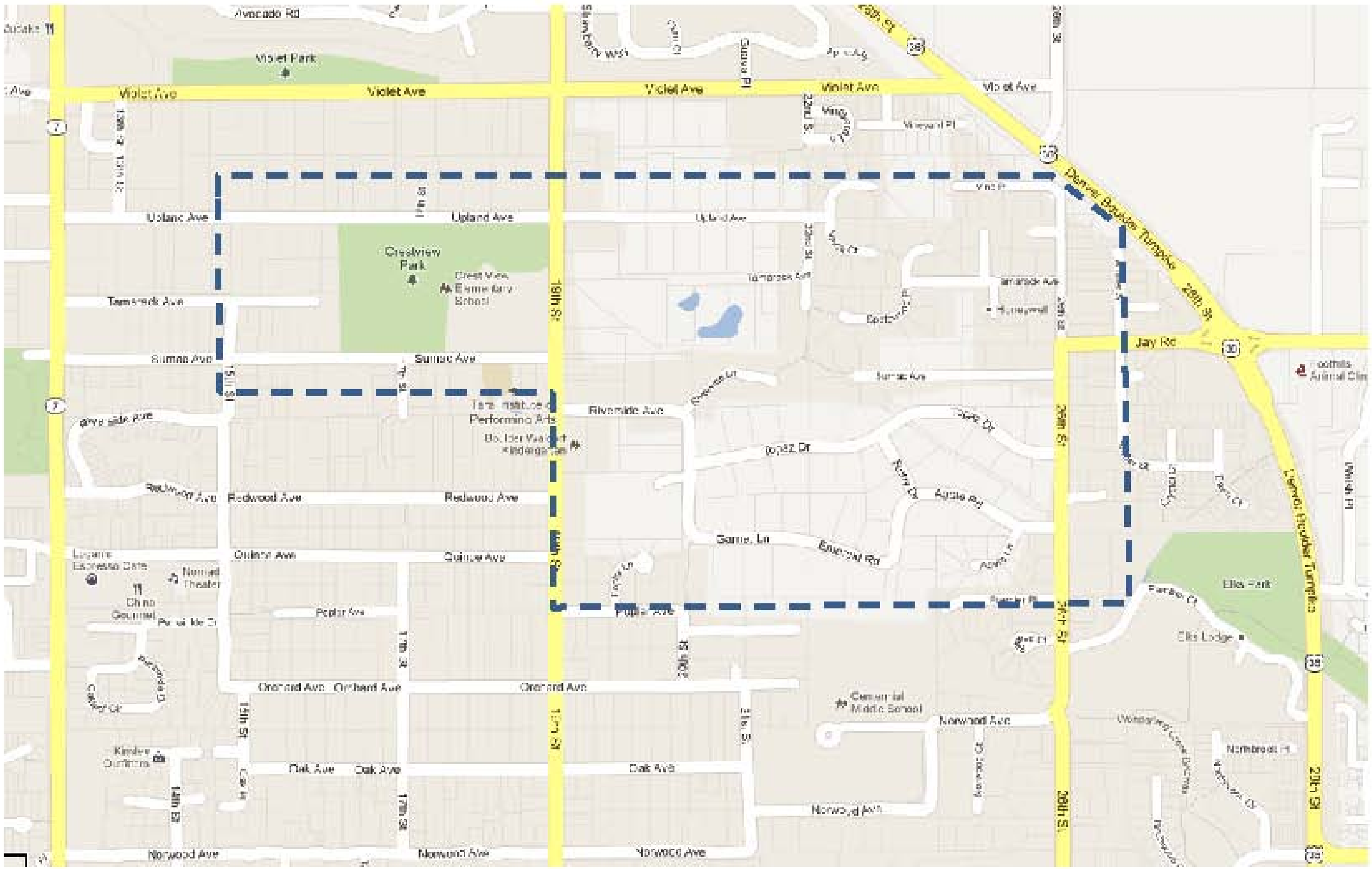
Friends of Fourmile Canyon Creek

Summary of Ballot Results

Executive Summary

- This document presents the results of a survey initiated by Friends of Fourmile Canyon Creek (FFCC) between early January and the February 15th GAC meeting
- The results show a strong opposition to the proposed EW2 option (path along Fourmile Canyon Creek) with 81% opposed
- The results for the Emergency Access and Flood Improvement options were mixed
- The results are presented as summary graphs for each individual response and as maps of household location vs. response for the household

Survey Distribution



Crestview Interface Neighborhood Coalition (CINC) Fourmile Canyon Creek Project

NEIGHBORHOOD BALLOT

Neighbor Information*

Name: _____

Address: _____

Email: _____

Phone: _____

*Specific "neighbor" information is important for production of survey maps to present to the city, communication about CINC email and Facebook drives. We promise to keep specific responses private.

Item No. 1 East-West Trail Solutions

Please choose the solution from the East-West Trail options presented that you find **MOST** acceptable:

- ☐ **EW1 (Riverside Sidewalk)**
- ☐ **EW2 (Fourmile Creek Path)[1]**
- ☐ **EW3 (Tamarack Path & Sidewalk)**
- ☐ **EW4 (No New Connections)**
- ☐ **EW5 (Soft Path connection between 19th and Tamarack)[2]**

Please choose the solution from the East - West Trail options presented that you find **LEAST** acceptable:

- ☐ **EW1 (Riverside Sidewalk)**
- ☐ **EW2 (Fourmile Creek Path)[1]**
- ☐ **EW3 (Tamarack Path & Sidewalk)**
- ☐ **EW4 (No New Connections)**
- ☐ **EW5 (Soft Path connection between 19th and Tamarack)[2]**

Comment _____

_____

_____

Item No. 2 Emergency Access

Please choose the solution from the Emergency Access options presented that you find **MOST** acceptable:

- ☐ **EA1 (20 ft. Paved Road) 2010 Upland and 4306 and 19th)**
- ☐ **EA2 (12 ft. Multi-Use Path between 2010 Upland and 4306 19th)**
- ☐ **EA3 (12 ft. Multi-Use Path south of 4270 19th)[1]**
- ☐ **No New Access**

Please choose the solution from the Emergency Access options presented that you find **LEAST** acceptable:

- ☐ **EA1 (20 ft. Paved Road between 2010 Upland and 4306 and 19th)**
- ☐ **EA2 (12 ft. Multi-Use Path between 2010 Upland and 4306 19th)**
- ☐ **EA3 (12 ft. Multi-Use Path south of 4270 19th)[1]**
- ☐ **No New Access**

Comment _____

_____

Item No. 3 Flood Improvements

Please choose the solution from the East-West Trail options presented that you find **MOST** acceptable:

- ☐ **F1 (Box Culverts Only)**
- ☐ **F2 (Box Culvert & Pedestrian/Bicycle Underpass)[1]**
- ☐ **None of the above**

Comment _____

_____

[1] Recommended solution in Fourmile Canyon Creek CEAP [2] Not included in CEAP

If you **do not** wish to fill out this form, please feel free to contact **David Munsinger** at 303-819-7603 or david.munsinger@alum.mit.edu to express your opinion.

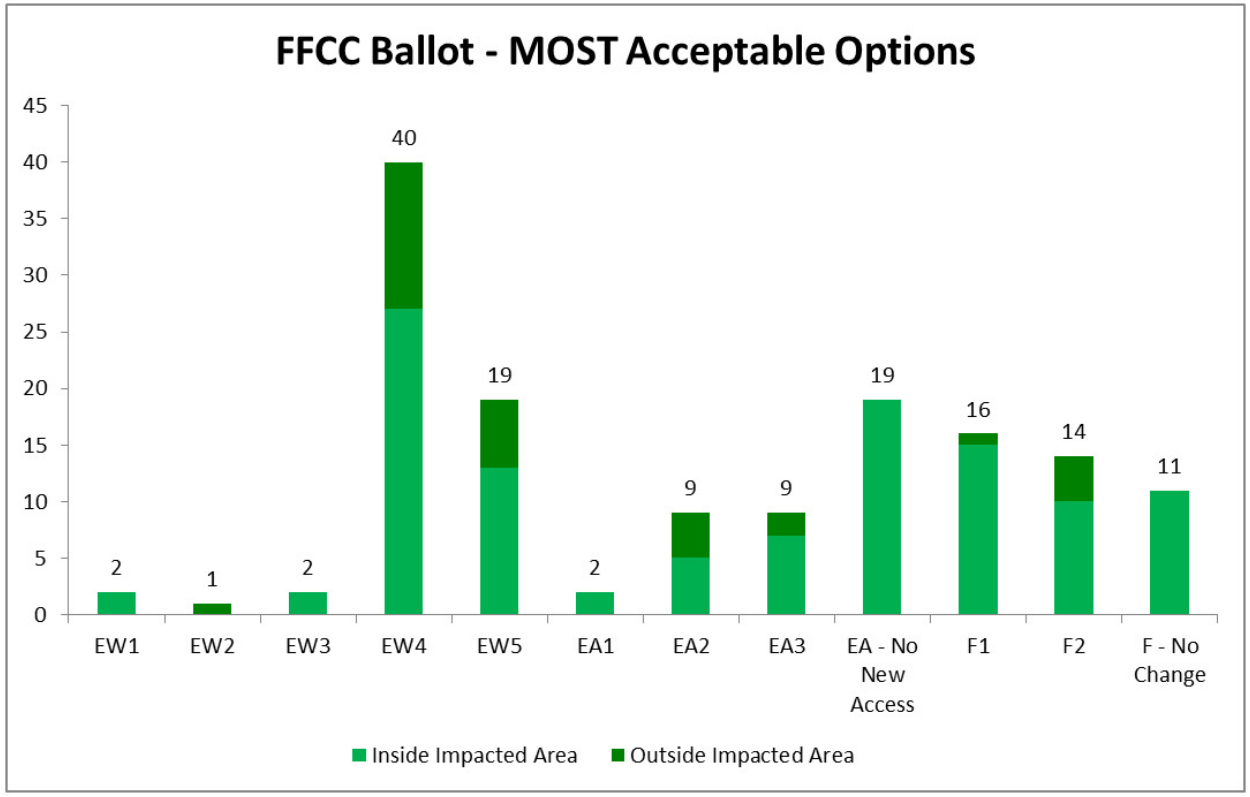
If you would like to continue to received updated information, postings will occur on our Facebook site and through accessing the following public file: https://public.me.com/communitybydesign Go to the folder marked CINC.

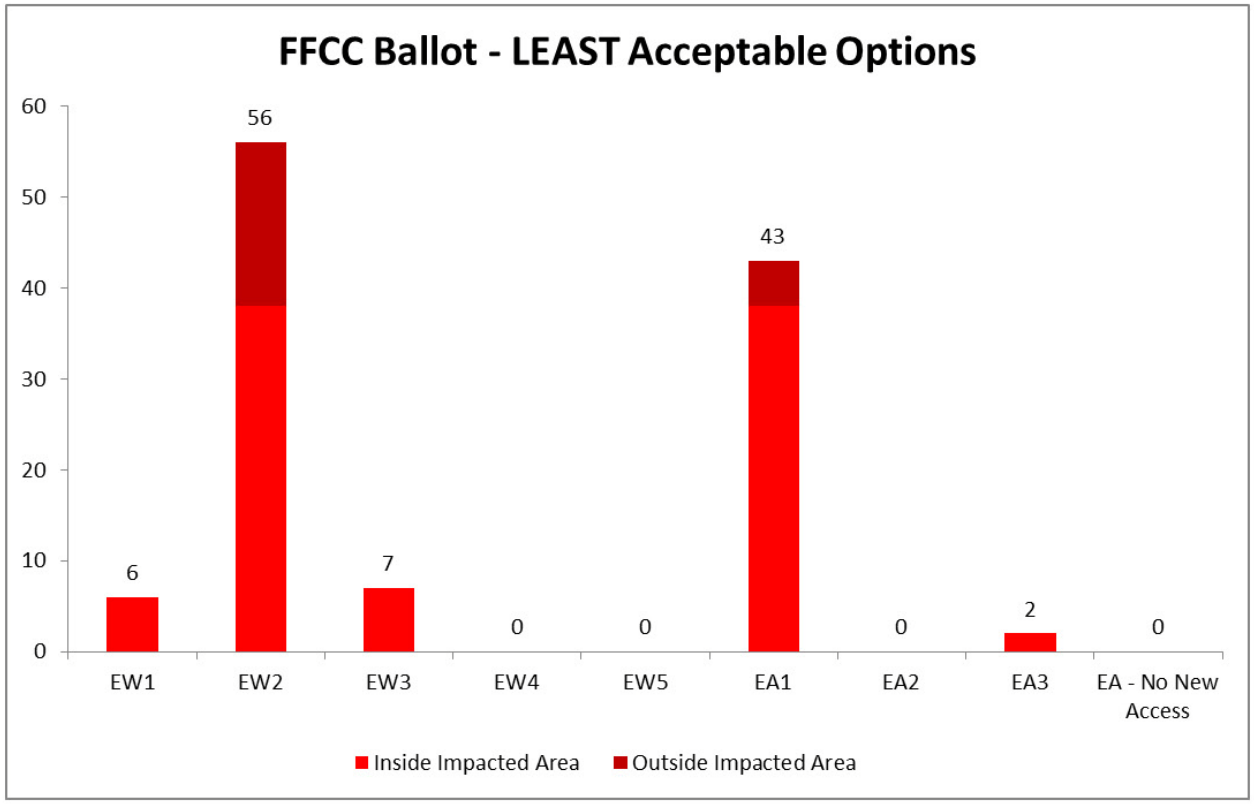
Ballot Results [1]

- East West Access
  - EW4 (No New Access) is the **CLEAR CHOICE** with **63%** of the respondents choosing this option
  - EW5 (Ped Path option proposed by FFCC) is 2nd with **30%** of the respondents
  - Without the EW5 option, more than 90% of the respondents would have selected the EW4 option on the city's survey
  - EW2 was **CLEARLY OPPOSED** with **81%** of the respondents voting against the proposal

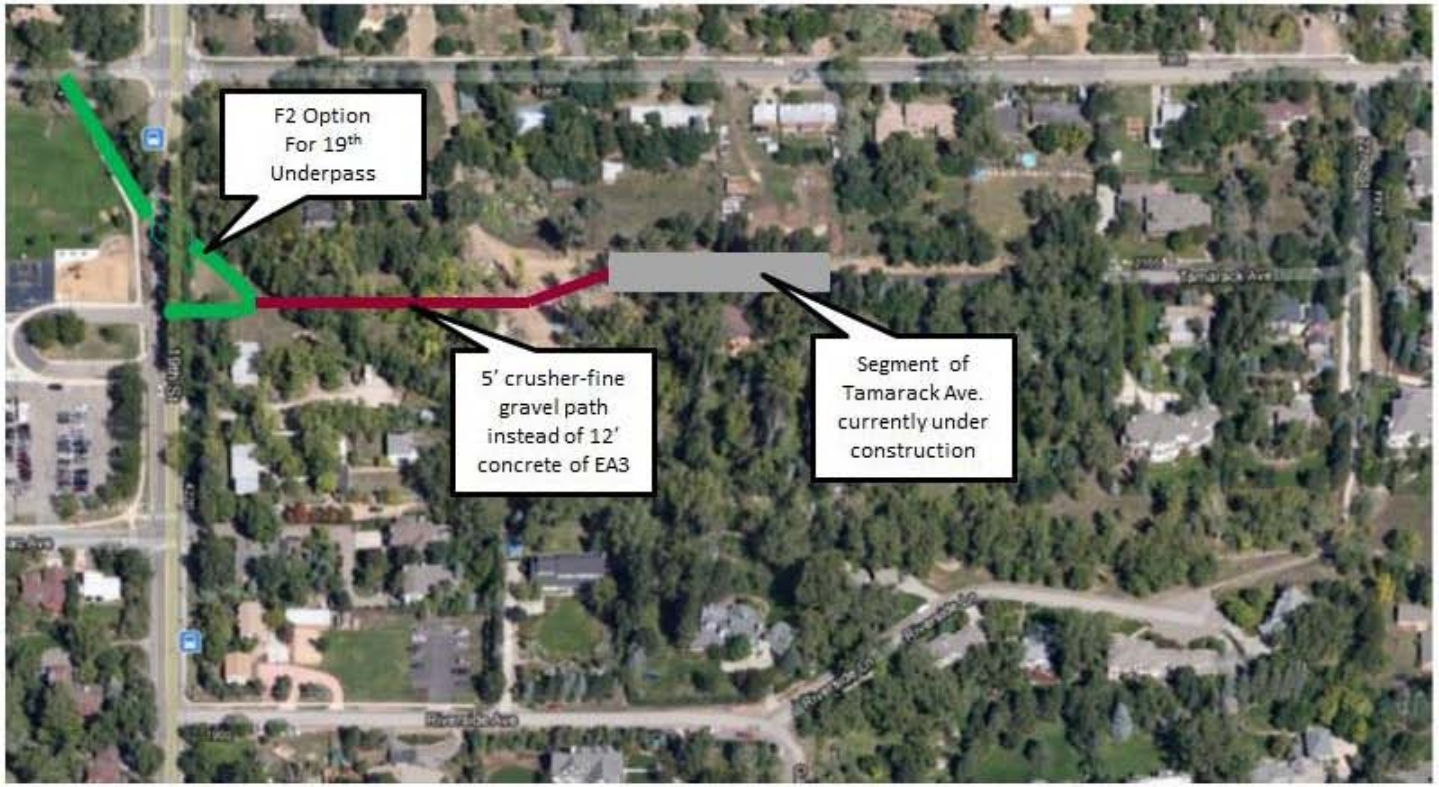
Ballot Results [2]

- Emergency Access
  - No New Access was the **1ST CHOICE** of **49%** of the respondents
  - Option EA1 was overwhelmingly **OPPOSED** with **96%** voting against this option
- Flood Improvements
  - Respondents were split fairly evenly between F1, F2, and No Change, with F1 leading at **39%**


FFCC Ballot - MOST Acceptable Options
45
40
35
30
25
20
15
10
5
0
2
1
2
40
19
2
9
9
19
16
14
11
EW1
EW2
EW3
EW4
EW5
EA1
EA2
EA3
EA - No New Access
F1
F2
F - No Change
Inside Impacted Area
Outside Impacted Area

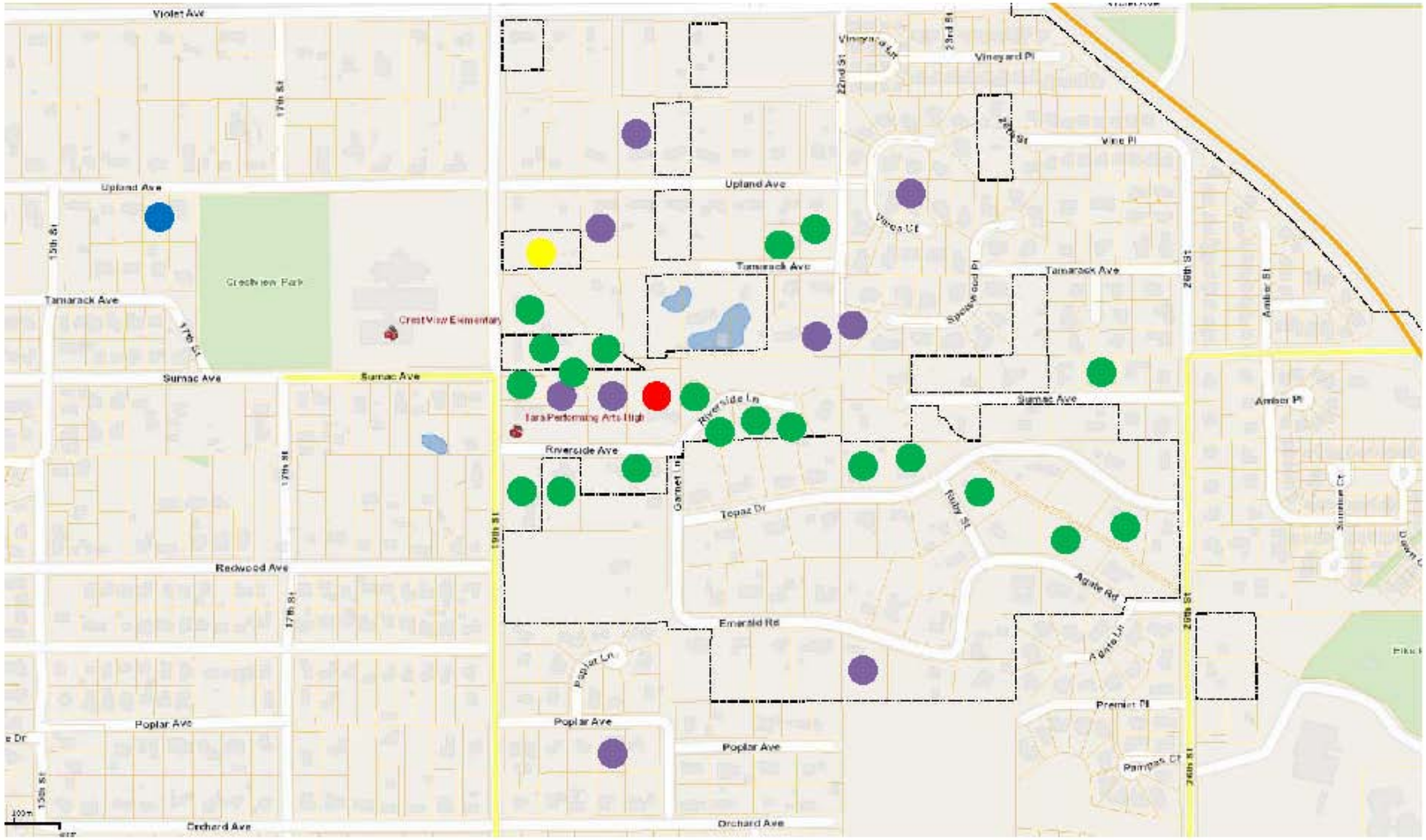

FFCC Ballot - LEAST Acceptable Options
60
50
40
30
20
10
0
6
56
7
0
0
43
0
2
0
EW1
EW2
EW3
EW4
EW5
EA1
EA2
EA3
EA - No New Access
Inside Impacted Area
Outside Impacted Area

EW5 Proposal



Boulder County Enclave

Fourmile CEAP Options – East West Connections (MOST Acceptable)



EW 1: Sidewalk on Riverside

EW 2: Fourmile Creek Path

EW 3: Sidewalk on Tamarack

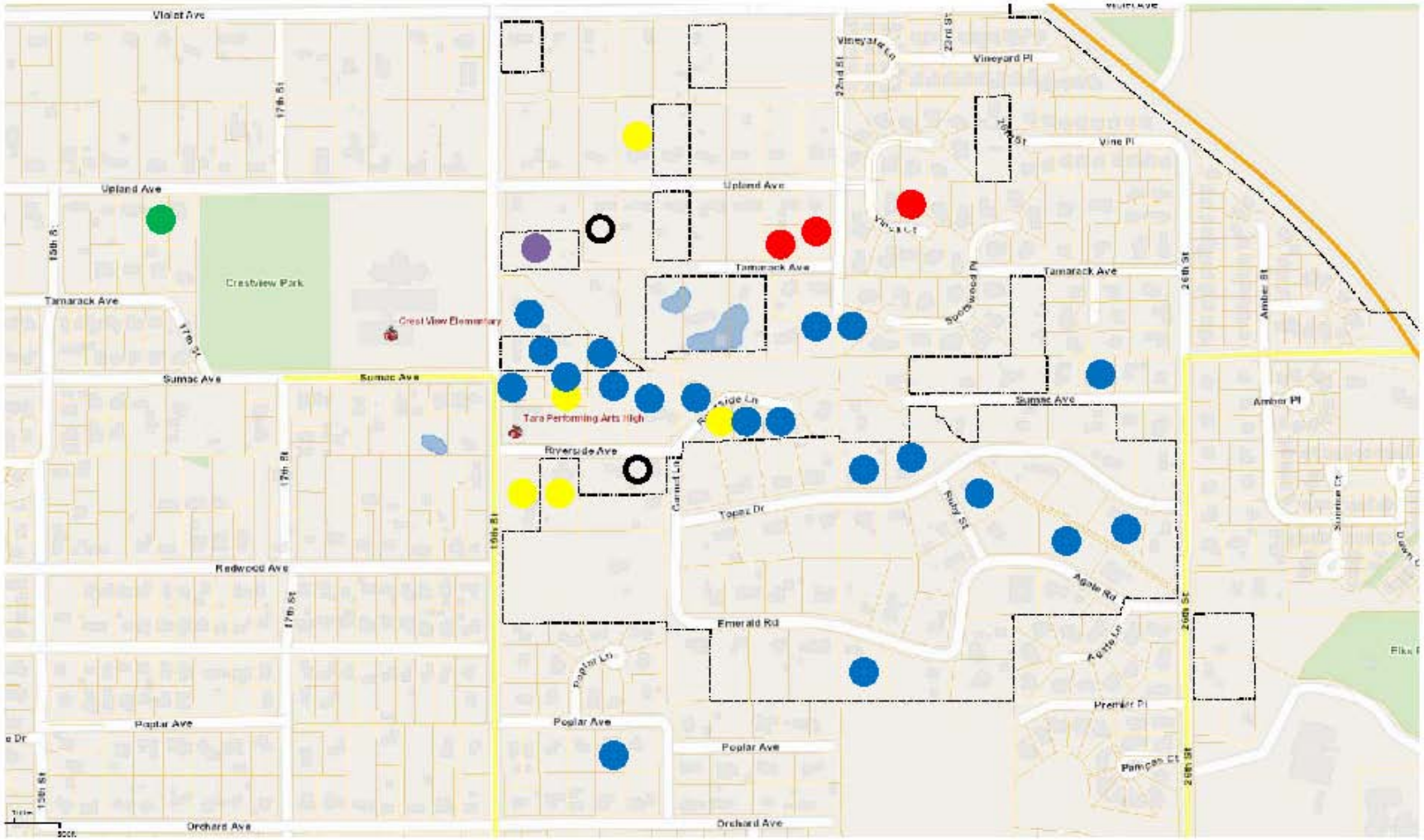
EW 4: No New Connections

EW 5: Crusher-fine Path 19th to Tamarack

No Opinion Offered

Fourmile CEAP Options – East West Connections (LEAST Acceptable)

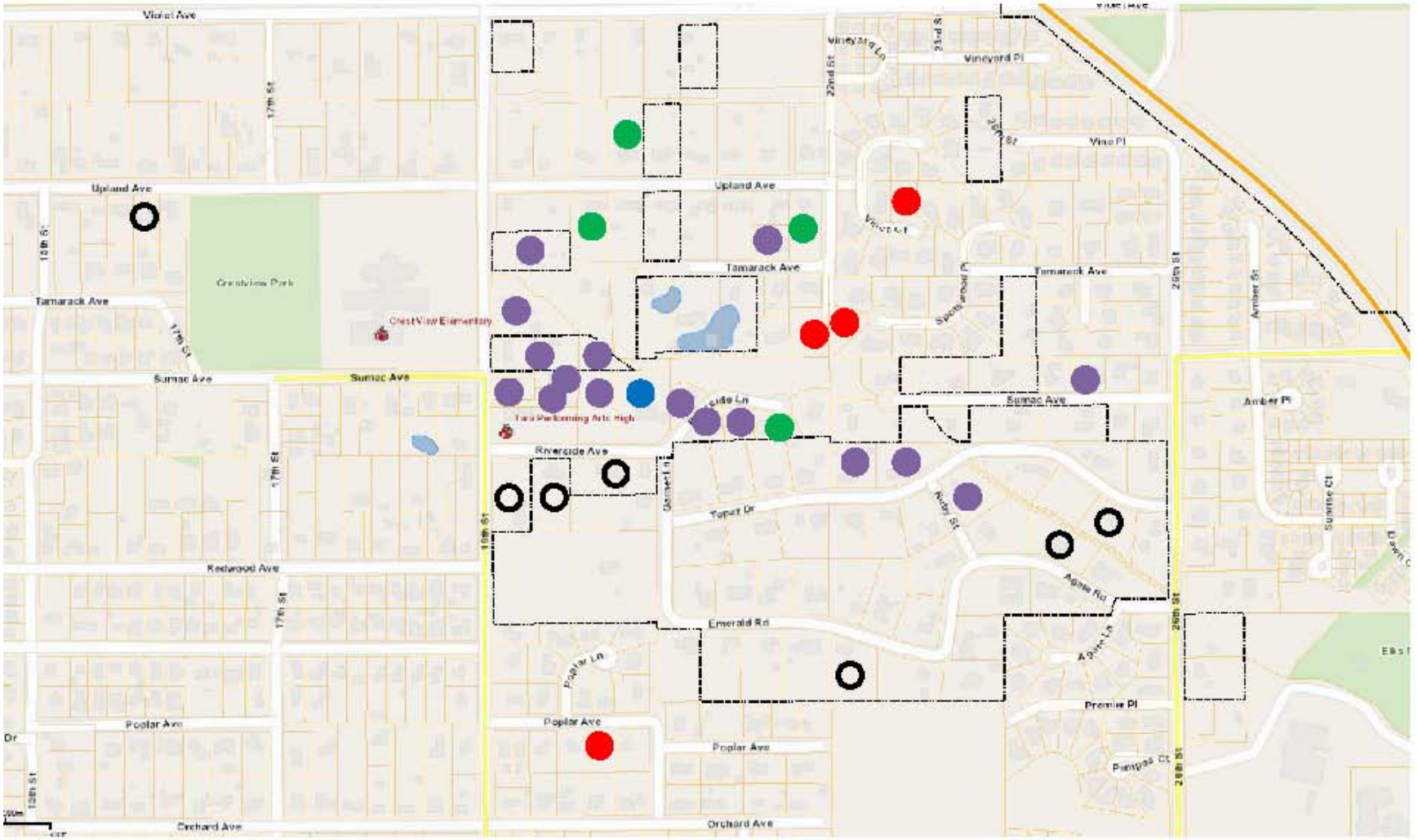
Boulder County Enclave



EW 1: Sidewalk on Riverside
EW 2: Fourmile Creek Path
EW 3: Sidewalk on Tamarack
EW 4: No New Connections
EW 5: Crusher-fine Path 19th to Tamarack
No Opinion Offered

Boulder County Enclave

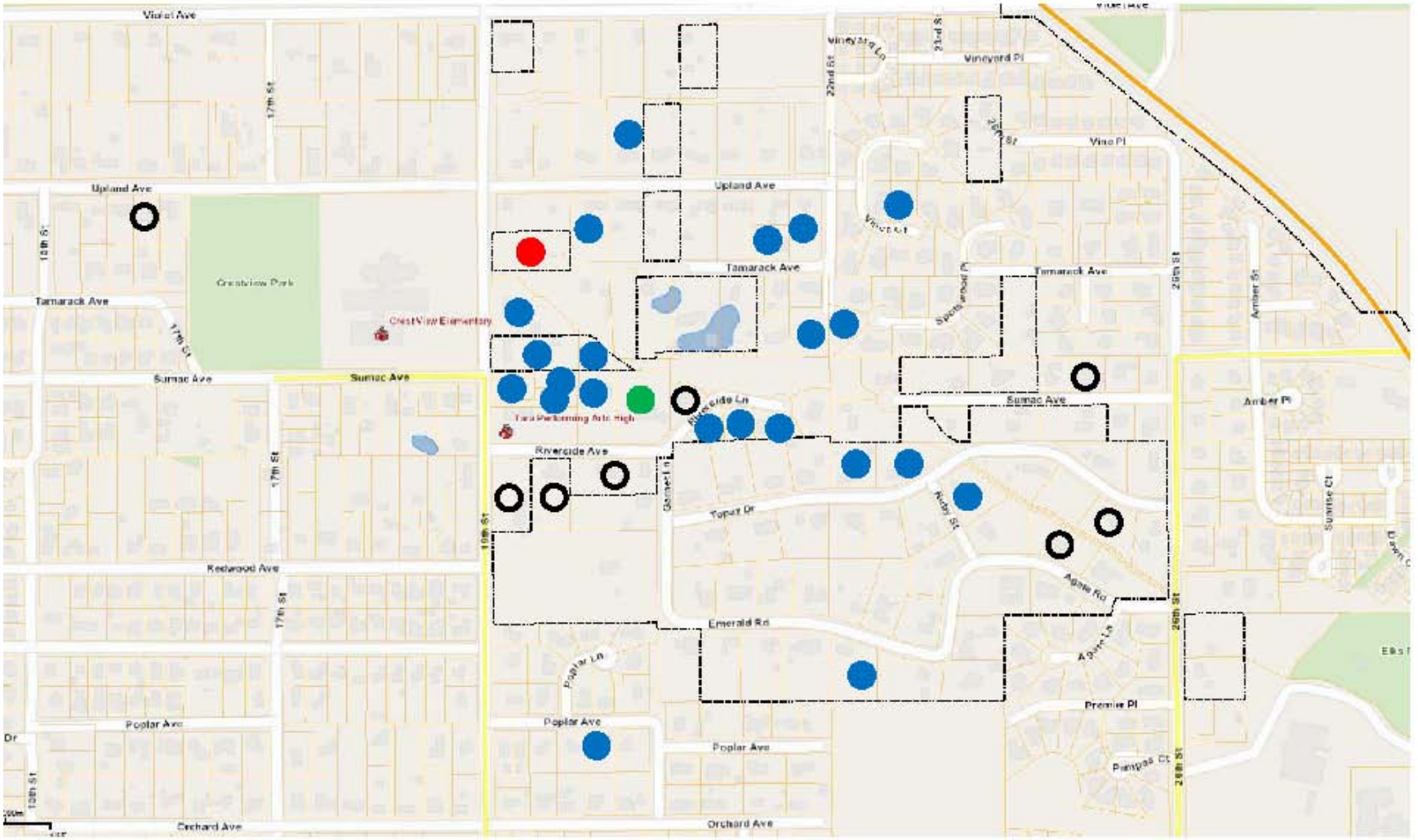
Fourmile CEAP Options – Emergency Access (MOST Acceptable)



- EA1: 20 ft. Paved Road 2010 Upland and 4306 19th St.
- EA2: 12 ft. Multi-Use Path between 2010 Upland and 4306 19th St.
- EA3: 12 ft. Multi-Use Path south of 4270 19th St.
- No New Access
- No Opinion Offered

Boulder County Enclave

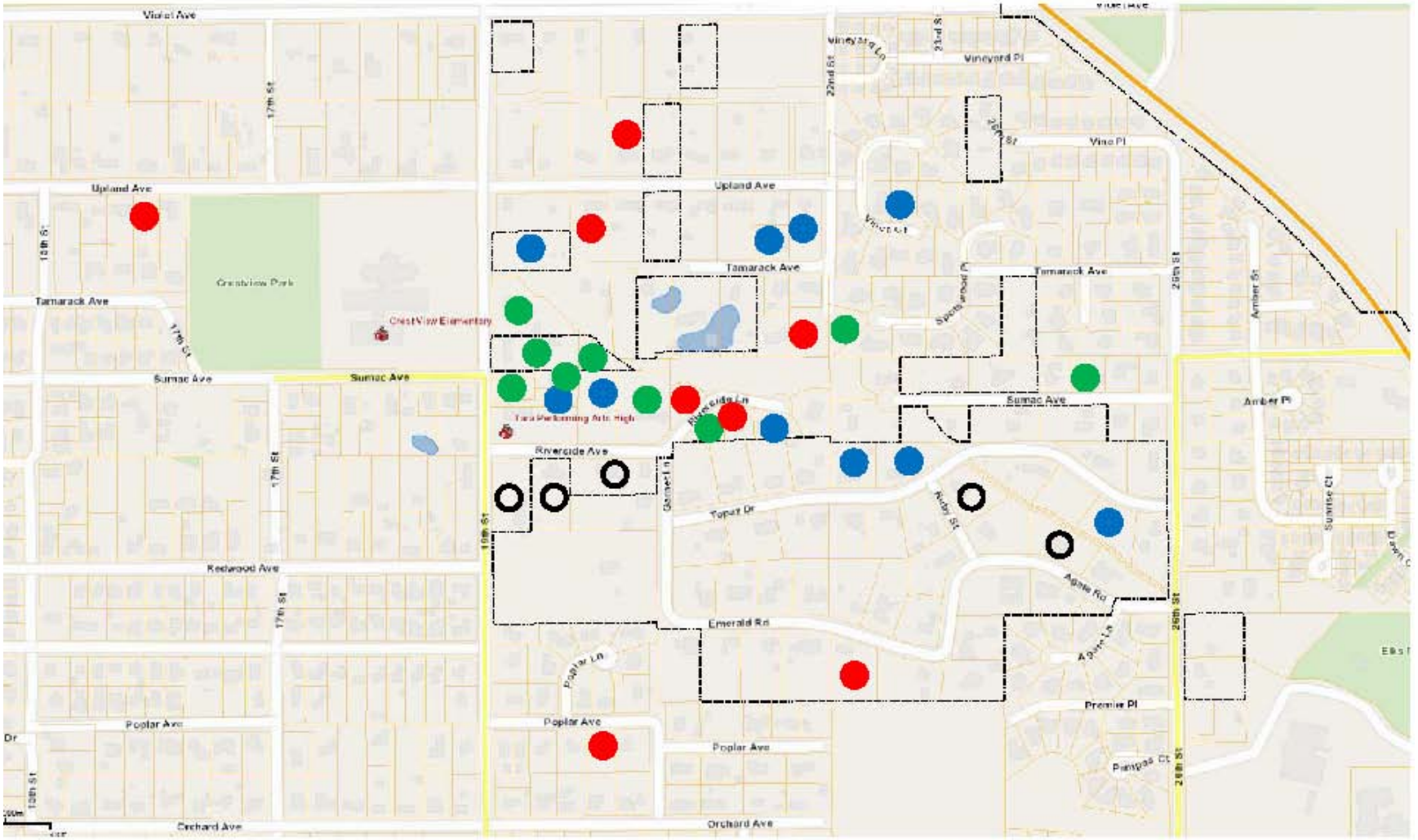
Fourmile CEAP Options – Emergency Access (LEAST Acceptable)



- EA1: 20 ft. Paved Road 2010 Upland and 4306 19th St.
- EA2: 12 ft. Multi-Use Path between 2010 Upland and 4306 19th St.
- EA3: 12 ft. Multi-Use Path south of 4270 19th St.
- No New Access
- No Opinion Offered

Boulder County Enclave

Fourmile CEAP Options – Flood Improvements



F1: Box Culverts Only

F2: Box Culverts & Pedestrian/Bicycle Underpass

No Change to 19th and Fourmile Underpass

No Opinion Offered