MARTIN LUTHER KING, JR. BLVD. EXTENSION
ENVIRONMENTAL ASSESSMENT

APPENDIX A – SECTION 106 NATIVE AMERICAN
CONSULTATION LETTER RECIPIENTS
September 22, 2010

Ms. Jennifer Schaufele  
Executive Director  
Denver Regional Council of Governments  
1290 Broadway, Suite 700  
Denver, Colorado 80203-5606

RE: Martin Luther King Jr. Boulevard Extension

Dear Ms. Schaufele:

The City of Aurora strongly supports completing the extension of Martin Luther King Jr. Boulevard (MLK Blvd.) between I-25 and Peoria Streets. Construction of this project would complete a transportation link between Stapleton and the Anschutz/Fitzsimons Medical Campus resulting in a direct connection with Fitzsimons Parkway. A high quality facility serving efficient vehicular, transit, bicycle and pedestrian travel between these two major activity centers is a high priority for Aurora.

The extension of MLK Blvd. will link one of the nation's largest infill projects, with 30,000 residents and 35,000 employees at build-out, with the Anschutz/Fitzsimons Medical Campus, with an estimated 45,000 employees at build-out. Clearly this is a critical multi-modal transportation link that urgently needs to be completed in the near future.

We well recognize the transportation funding limitations currently facing the region. Aurora supports the consideration of discretionary and "newly programmed" funds as they may become available to be directed towards this key project. The MLK extension is complementary to the completed Fitzsimons Parkway that provides direct circulation and access throughout the Fitzsimons Medical Campus. Additionally, completing this project will build on the success that we have realized recently in programming funds for improving the I-225/Colfax/17th Place interchange that provides direct connections to the Fitzsimons Medical Campus.

The City's investment in this world class medical facility has created a regional resource that is deserving of intergovernmental support to realize the full economic benefit of this diversified medical campus. DRCOG provides regional leadership and oversight in programming scarce transportation funding and has consistently supported key regional transportation projects.

We appreciate your full and serious consideration in identifying funding for this strategic project. If you have any questions feel free to contact me. Thank you for your time and consideration of this important project.

Sincerely,

Edward J. Tauer  
Mayor
This page is intentionally left blank.
Environmental Assessment Underway for MLK Extension from Havana to Peoria

The extension of Martin Luther King, Jr. Boulevard (MLK) from Havana Street east to Peoria Street and Fitzsimons Parkway has long been part of the Stapleton Development Plan. This project will connect Denver and the Stapleton community with the Fitzsimons redevelopment and Fitzsimons-Anschutz Medical Campus. The MLK extension will include a four-lane, median-divided roadway and a wide, multiuse path for pedestrians and bicycles. This improvement is one of several planned routes that will provide pedestrians, cyclists, and trail users connectivity to the Sand Creek Regional Greenway.

Forest City has engaged consultants to prepare an Environmental Assessment (EA) for the project. The study is being performed to meet requirements of the National Environmental Policy Act making it eligible for Federal funding if available. While Federal funding assistance is not assured and there is currently no specific schedule for construction of the MLK extension, there is widespread support for the project. The regional nature of this project will create an important link between Denver and Aurora.

The EA is expected to be complete within the next few months, and will be reviewed by the Colorado Department of Transportation (CDOT) and the Federal Highway Administration (FHWA). Additional information will be published about the project as the EA advances.

Information provided by URS Corporation. URS project contact is Kelly Maiorana at 303-299-7834.
This page is intentionally left blank.
Mr. Alonzo Chalepah  
Chairman  
Apache Tribe of Oklahoma  
P.O. Box 1220  
Anadarko, OK 73005

Ms. Janice Prairie Chief-Bosell  
Chairwoman  
Cheyenne and Arapaho Tribes of Oklahoma  
P.O. Box 38  
Concho, OK 73022

Mr. Harvey Spoonhunter  
Chairman  
Northern Arapaho Business Council  
P.O. Box 396  
Fort Washakie, WY 82514

Mr. Leroy Spang  
Chairman  
Northern Cheyenne Tribe  
P.O. Box 128  
Lame Deer, MT 59043

Mr. George Howell  
President  
Pawnee Nation of Oklahoma  
881 Little Lee Drive  
Pawnee, OK 74058

Mr. Donny Tofpi  
Chairman  
Kiowa Business Committee  
Kiowa Tribe of Oklahoma  
P.O. Box 369  
Carnegie, OK 73015

Mr. Michael Burgess  
Chairman  
Comanche Tribal Business Committee  
Comanche Nation of Oklahoma  
P.O. Box 908  
Lawton, OK 73502

Mr. Joseph J. Brings Plenty, Sr.  
Chairman  
Cheyenne River Sioux Tribal Council  
P.O. Box 590  
Eagle Butter, SD 57625

Mr. Brandon Sazue, Sr.  
Chairman  
Crow Creek Sioux Tribal Council  
P.O. Box 50  
Fort Thompson, SD 57325

Ms. Theresa Twobulls  
President  
Oglala Sioux Tribal Council  
P.O. Box 320  
Pine Ridge, SD 57770

Mr. Rodney Bordeaux  
President  
P.O. Box 430  
Rosebud, SD 57570

Mr. Charles Murphy  
Chairman  
Standing Rock Sioux Tribal Council  
P.O. Box D  
Fort Yates, ND 58538
This page is intentionally left blank.
Mr. Alonzo Chalepah, Chairman  
Apache Tribe of Oklahoma  
P.O. Box 1220  
Anadarko, OK 73005

SUBJECT: Request for Section 106 Consultation, Martin Luther King, Jr. Boulevard Extension Environmental Assessment, City and County of Denver, Colorado

Dear Mr. Chalepah:

The City and County of Denver, Colorado (CCD), in cooperation with the Federal Highway Administration (FHWA) and Colorado Department of Transportation (CDOT), is preparing an Environmental Assessment (EA) that will address the effects of a proposed extension to Martin Luther King, Jr. Boulevard in northeast Denver. The project is located at the eastern edge of the Stapleton Redevelopment, the site of the former Stapleton International Airport, which has been rezoned for commercial and residential development. The majority of the proposed project is within the CCD, but a small portion on the eastern end extends into the adjacent City of Aurora. The new segment of road will complete an east-west arterial connection between Havana Street and Peoria Avenue, a distance of approximately 1.1 miles. By connecting existing arterial corridors the project will meet the current and forecasted transportation demands generated by the Stapleton and nearby Fitzsimmons redevelopments. Pursuant to the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality (CEQ) implementing regulations (40 CFR 1500-1508), FHWA, CDOT and CCD are documenting the potential social, economic and environmental consequences of this action. Please refer to the enclosed aerial map for a view of the project study area.

FHWA will serve as the lead agency for this undertaking, and CDOT staff will facilitate the tribal consultation process. The agencies are seeking the participation of regional Native American tribal governments in cultural resources consultation for the undertaking, as described in Section 106 of the National Historic Preservation Act and implementing regulations 36 CFR 800 et seq. As a consulting party you are offered the opportunity to identify concerns about cultural resources and comment on how the project might affect them. Further, if it is found that the project will impact cultural resources that are eligible for inclusion on the National Register of Historic Places and are of religious or cultural significance to your tribe, your role in the consultation process would include participation in resolving how best to avoid, minimize, or mitigate those impacts. It is our hope that by describing the proposed undertaking we can be more effective in protecting areas important to American Indian people. If you have interest in this undertaking and in cultural resources that may be of religious or cultural significance to your tribe, we invite you to be a consulting party.

As shown on the enclosed map, the project is located in a partially developed and/or disturbed part of Denver, but also includes a segment of Sand Creek. The Area of Potential Effect (APE)
for cultural resource studies, as defined in 36 CFR 800.16(d), has not been finalized but will encompass the entire area subject to direct and indirect impacts from the project. A comprehensive survey and assessment of historic properties in the APE as ultimately established will be conducted as part of the environmental documentation. Tribes that elect to become consulting parties for the undertaking will be notified of the results of the survey and asked to comment on our eligibility and effects determinations. Any information you may have regarding places or sites important to your tribe that are located within or near the project area would assist us in our efforts to comprehensively identify and evaluate cultural resources.

The Denver metropolitan area is home to a number of American Indian residents. If you are aware of members of your tribe living in proximity to the study area who would be interested in participating in the NEPA consultation process on some level, please notify us so that we may facilitate that interaction.

We are committed to ensuring that tribal governments are informed of and involved in decisions that may impact places with cultural significance. If you are interested in becoming a consulting party for the Martin Luther King, Jr. Boulevard Extension EA, please complete and return the enclosed Consultation Interest Response Form to CDOT Native American consultation liaison Dan Jepson within 45 days at the address or facsimile number listed at the bottom of that sheet. Mr. Jepson can also be reached via Email at daniel.jepson@dot.state.co.us, or by telephone at (303)757-9631. The 45-day period has been established to encourage your participation at this early stage in project development. Failure to respond within this time frame will not prevent your tribe from becoming a consulting party at a later date. However, studies and decision making will proceed and it may become difficult to reconsider previous determinations or findings, unless significant new information is introduced.

Thank you for considering this request for consultation.

Sincerely Yours,

[Signature]

John M. Cater
Division Administrator

Enclosure

cc: Jordan Rudel, CDOT Region 6 Environmental Office
    Dan Jepson, CDOT Environmental Programs
    K. Johnston, URS Corp.
    Ms. Angela Bullcoming, Director
FEDERAL HIGHWAY ADMINISTRATION/COLORADO DEPARTMENT OF TRANSPORTATION
SECTION 106 TRIBAL CONSULTATION INTEREST RESPONSE FORM

PROJECT: Martin Luther King, Jr. Boulevard Extension Environmental Assessment
The Tribe [is / is not] (circle one) interested in becoming a consulting party for the Colorado Department of Transportation project referenced above, for the purpose of complying with Section 106 of the National Historic Preservation Act and its implementing regulations (36 CFR 800). If your tribe will be a consulting party, please answer the questions below.

Signed:__________________________________________
Name and Title

CONSULTING PARTY STATUS [36 CFR §800.2(c)(3)]
Do you know of any specific sites or places to which your tribe attaches religious and cultural significance that may be affected by this project?

Yes No If yes, please explain the general nature of these places and how or why they are significant (use additional pages if necessary). Locational information is not required.

SCOPE OF IDENTIFICATION EFFORTS [36 CFR §800.4(a)(4)]
Do you have information you can provide us that will assist us in identifying sites or places that may be of religious or cultural significance to your tribe?

Yes No If yes, please explain.

CONFIDENTIALITY OF INFORMATION [36 CFR §800.11(c)]
Is there any information you have provided here, or may provide in the future, that you wish to remain confidential?

Yes No If yes, please explain.

Please complete and return this form within 60 days via US Mail, fax or Email to:

Dan Jepson, Section 106 Native American Liaison
Colorado Department of Transportation
Environmental Programs Branch
4201 E. Arkansas Ave., Shumate Bldg.
Denver, CO 80222
FAX: (303)757-9445
daniel.jepson@dot.state.co.us
February 18, 2011

Mr. Edward C. Nichols
State Historic Preservation Officer
History Colorado
1560 Broadway, Ste. 400
Denver, CO 80202

SUBJECT: Limited Results Survey Report, Martin Luther King, Jr. Blvd. Extension Environmental Assessment, Adams and Denver Counties

Dear Mr. Nichols:

Attached for your files is the Limited Results Survey Form completed for the project referenced above. The City and County of Denver, (CCD), in cooperation with the Federal Highway Administration (FHWA) and Colorado Department of Transportation (CDOT), is preparing an Environmental Assessment (EA) that will address the effects of a proposed extension to Martin Luther King, Jr. Boulevard in northeast Denver. The project is located at the eastern edge of the Stapleton Redevelopment, the site of the former Stapleton International Airport, which has been rezoned for commercial and residential development. The majority of the proposed project is within the CCD, but a small portion on the eastern end extends into the adjacent City of Aurora (Adams County). The new segment of road will complete an east-west arterial connection between Havana Street and Peoria Avenue, a distance of approximately 1.1 miles. By connecting existing arterial corridors the project will meet the current and forecasted transportation demands generated by the Stapleton and nearby Fitzsimmons redevelopments.

The inventory was conducted by URS Corporation under contract to Forest City Stapleton, on behalf of CDOT. The survey resulted in the documentation of two isolated finds (5DV11024, a single lithic flake; and 5DV11025, a fragment of amethyst bottle glass). Both isolates are recommended as not eligible for the National Register of Historic Places. CDOT concurs with the survey methodology employed and the results obtained, and recommends that no historic properties (either archaeological or historical) will be affected. Under Stipulation IV(F)(4) of the 2010 Section 106 Programmatic Agreement executed by our respective agencies, the report is submitted for information purposes only and no action from your office is requested.

Please contact CDOT Senior Staff Archaeologist Dan Jepson at (303)757-9631 if you have questions regarding either the project or report.

Very truly yours,

Jane Hann, Manager
Environmental Programs Branch

Enclosures
MARTIN LUTHER KING, JR. BLVD. EXTENSION ENVIRONMENTAL ASSESSMENT

APPENDIX B – BIOLOGICAL RESOURCES REPORT
November 11, 2010

Jordan Rudel
Colorado Department of Transportation, Region 6
2000 S. Holly Street
Denver, Colorado 80222

RE: Initial Biological Resources Report for the Martin Luther King Boulevard Environmental Assessment Project, Denver, Colorado.

Dear Mr. Rudel:

The following information provides an overview of biological resources found within the Martin Luther King Boulevard Environmental Assessment Project (the Project) area and immediate vicinity, in addition to identifying potential environmental permits.

Title:
Biological Resources Report for the Martin Luther King, Jr. Boulevard Extension Environmental Assessment

Date of Site Visit:
September 20, 2010

Name of Preparer:
Whitney Wimer
Environmental Scientist
URS Corporation
8181 East Tufts Avenue
Denver, CO 80237

Prepared for:
Forest City Enterprises
1401 17th Street, Suite 510
Denver, CO 80202

Introduction:
As part of the Stapleton Development, Forest City Enterprises is proposing to upgrade and expand Havana Way between Iola Street (St) and Moline St. In addition the project intends to extend Martin Luther King, Jr. Boulevard (MLK) from Moline St to the intersection of Peoria St and Fitzsimons Parkway (Pkwy) (Figure 1). The MLK Blvd upgrade and expansion will include a 4-lane, median divided roadway, a multiuse sidewalk/path for pedestrians and bicycles, and prairie dog preserve.

Methods:
URS environmental scientist Whitney Wimer conducted a pedestrian assessment of the project area on September 20, 2010. Along the existing Havana Way, the study area was confined to the existing fences. In the vacant lot east of Moline St., the study area was
buffered by 100 feet. The assessment commenced at 2:10 P.M. Weather was overcast throughout the survey, with the average temperature at approximately 86 degrees Fahrenheit.

Information collected prior to surveys included:

- A review of the federal, state and other threatened and endangered species with the potential to occur within Denver County, Colorado
- A review of Denver County Noxious Weed Management Program
- The Montbello U.S. Geological Service 7.5 minute quadrangle map
- A review of the criteria for Senate Bill 40 jurisdiction, and
- A review of the Colorado Department of Transportation (CDOT) Shortgrass Prairie Initiative (SGPI).

During the survey, the following information was recorded:

- Vegetative habitats
- Habitat community structure
- Dominant species within each vegetative strata
- The occurrence of noxious weeds species, distribution, and quantity
- The occurrence of any wildlife, nests, burrows, or dens with special emphasis placed on listed species or species protected by the CDOT SGPI.

Photographs of the site were taken from representative vantage points. A thermometer was used to record the site temperature. Plant species were identified using Weber and Wittmann (2001) and other references relevant to the region.

**Observations/Results:**

The project area is located within the City of Denver in Denver County, Colorado and the City of Aurora in Adams County. The project area can be found within the U.S. Geological Survey Montebello 7.5 minute quadrangle (USGS 1994) within Section 26 of Township 3 South and Range 67 West. The western end of the project is located at approximately Latitude 39.760647, Longitude -104.865692. The eastern end of the project is located at approximately Latitude 39.754845, Longitude -104.846863. Elevation in the project area is approximately 5,341 feet above sea level.

Land use surrounding the project is primarily natural areas and residential developments. The project area is bounded to the north by Bluff Lake Nature Center and Sand Creek Regional Greenway. To the west and south the project area is bounded by the Stapleton residential development. The area east of existing MLK Blvd is vacant land inhabited by black tailed prairie dogs (*Cynomys ludovicianus*). An existing marked pipeline crosses the vacant property from west to east. Figure 1 shows the project area.
Vegetation

Vegetative communities within the project area fall into two habitat types: short grass prairie and disturbed/barren. Of these, the disturbed/barren (open) habitat constitutes of the largest acreage within the project area. These habitat types are discussed below.

Short grass prairie habitat vegetation comprises approximately 1.5 acres within the project area and includes all the northern grassy verges along the existing portion of Havana Way. The short grass prairie habitat within the corridor is long and narrow with a dirt trail running through most of the habitat; therefore the vegetation community would be considered low quality. However, outside the project area within the Bluff Lake Nature Center the vegetation community would be considered medium to high quality.

The dominant vegetative stratum is the herbaceous stratum. The herbaceous stratum is comprised of native and non-native species. The native species are more predominant farther from the roadway. Native herbaceous species observed include western wheatgrass (*Pascopyrum smithii*), blue grama (*Bouteloua gracilis*), buffalo grass (*Bouteloua dactyloides*), sideoats grama (*Bouteloua curtipendula*), and curly cup gumweed (*Grindelia squarrosa*). Non-native species observed include crested wheatgrass (*Agropyron cristatum*), prickly lettuce (*Lactuca serriola*), smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*), kochia (*Kochia scoparia*), alfalfa (*Medicago sativa*), common mallow (*Malva neglecta*), and field bindweed (*Convovulus arvensis*). The shrub stratum is comprised of rubber rabbitbrush (*Chrysothamnus nauseosus*).

Disturbed/barren habitat vegetation comprises approximately 8.5 acres within the project area and includes the grassy verge along the south side of Havana Way, all vacant land, and paved or gravel roads or trails. This community would be considered to be of an overall low quality. Vegetation within this community is predominantly noxious and other weedy species, with native species comprising less than 30 percent of the total community.

Two general vegetative strata; herbaceous and shrub are present within the disturbed vegetative community. The herbaceous stratum is comprised of predominantly non-native species including smooth brome, cheatgrass, kochia, alfalfa, common mallow, field bindweed, and Russian knapweed (*Acroptilon repens*). Native herbaceous species observed within the disturbed habitat included Western wheatgrass, blue grama, curly cup gumweed, purple aster (*Machaeranthera canescens*), cowpen daisy (*Verbesina encelioides*) and curly dock (*Rumex crispus*). Bare ground within this habitat encompasses approximately 25 percent. The shrub stratum is comprised of rubber rabbitbrush.

The vacant land located to the east of the existing Havana Way appears to have been sprayed for noxious weeds. The area has only a few living plants of rubber rabbitbrush, purple aster, and cowpen daisy. The dead vegetation is dominated by field bindweed with one area of curly dock.

Representative photographs of the vegetative communities are included in the attachments.
Noxious Weeds
Several noxious weeds occur within the shortgrass prairie and disturbed vegetative communities. These are listed in Table 1 below. As discussed in the Vegetation section, the vacant lot was recently dominated by field bindweed.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Noxious Weed List</th>
<th>Occurrence in Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field bindweed</td>
<td><em>Convovulus arvensis</em></td>
<td>C No</td>
<td>Common throughout both vegetative communities.</td>
</tr>
<tr>
<td>Canada thistle</td>
<td><em>Cirsium arvense</em></td>
<td>B Yes</td>
<td>Occasional individuals observed, with the number of individuals increasing on the western end of the project area.</td>
</tr>
<tr>
<td>Russian knapweed</td>
<td><em>Acroptilon repens</em></td>
<td>B Yes</td>
<td>Occasional individuals.</td>
</tr>
</tbody>
</table>

1Source: Colorado Department of Agriculture (CDA) Noxious Weed Management Program (2010a).
2Source CDA - Denver County Noxious Weed Management Program (2010b)

Wildlife Including Species Protected Under the Migratory Bird Treaty Act
Few species of wildlife were observed within the project area. A snowy egret (*Egretta thula*) was observed flying over the project area toward Sand Creek. Black tailed prairie dogs are the most abundant species within the project area. A colony exists in the vacant land east of the existing Havana Way and a few active burrows were observed along the western end of the project area. The prairie dog colony was walked for sign of burrowing owls, none was observed. As the survey was conducted later in the summer, other migratory bird species may nest within the project area, but have moved off.

Wetlands and Surface Waters
No wetlands or surface water features were observed within the project area.

Federal, State, and Shortgrass Prairie Initiative (SGPI) Listed Species
The United States Fish and Wildlife Service, the State of Colorado, and CDOT list 139 federally and state threatened or endangered species, as well as species of concern. Of the 139 species identified by the agencies, only 29 have the potential to occur within Denver and Adams Counties, Colorado. These species are listed in Table 2. The Shortgrass Prairie Initiative (SGPI) includes all vegetation regardless of types within the project area. There is approximately 8.0 acres of land that would fall under the SGPI within the project area. Of the 29 species discussed in Table 2, only 2 species have the potential to occur within the project area.
Table 2
Listed Species with the Potential to Occur or be Affected by the Project in Denver and Adams Counties, Colorado

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status1</th>
<th>Habitat2</th>
<th>Potential Habitat within the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bald eagle</td>
<td><em>Haliaeetus leucocephalus</em></td>
<td>BGEPA, ST, SGPI</td>
<td>Reservoirs and rivers. Winter habitat includes grasslands near prairie dog colonies.</td>
<td>No suitable habitat within the project area. The species may occur along Sand Creek.</td>
</tr>
<tr>
<td>Burrowing owl</td>
<td><em>Athene cunicularia</em></td>
<td>MBTA, ST, SGPI</td>
<td>Open, dry grasslands, inhabiting the abandoned underground burrows of other animals.</td>
<td>Prairie dog colony present within the project area, <em>may effect but not likely to adversely affect</em>.</td>
</tr>
<tr>
<td>Ferruginous hawk</td>
<td><em>Buteo regalis</em></td>
<td>MBTA, SC, SGPI</td>
<td>Grasslands and semidesert shrublands. Generally avoid areas with high human disturbance.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Interior least tern3</td>
<td><em>Sternula antillarum</em></td>
<td>FE, SE</td>
<td>Nesting habitat consists of barren areas near water (e.g., saline flats, sand bars, and shores of large impoundments).</td>
<td>Project will not result in water depletions. <em>No effect</em>.</td>
</tr>
<tr>
<td>Lark bunting</td>
<td><em>Calamospiza melanocorys</em></td>
<td>MBTA, SGPI</td>
<td>Shortgrass prairie with low to medium height grasslands. Prefer areas with 10 – 15% bare ground and 10- 30% shrub cover.</td>
<td>No suitable habitat within the project area. Species may occur within Bluff Lake Nature Center.</td>
</tr>
<tr>
<td>Loggerhead shrike</td>
<td><em>Lanius ludovicianus</em></td>
<td>MBTA, SGPI</td>
<td>Open riparian areas, agricultural areas, grasslands, and shrublands, especially semidesert shrublands, sometimes open piñon-juniper woodlands.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>McCown’s longspur</td>
<td><em>Calcarius maccownii</em></td>
<td>MBTA, SGPI</td>
<td>Plains and grasslands with sparse vegetation and minimal leaf litter.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Mexican spotted owl</td>
<td><em>Strix occidentalis lucida</em></td>
<td>FT, ST MBTA</td>
<td>Prefer uneven-aged mixed conifer forests with high basal area, many snags, and downed logs. Prefer areas that experienced minimal human disturbance.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Mountain plover</td>
<td><em>Charadrius montanus</em></td>
<td>MBTA, SGPI</td>
<td>Prairie grasslands, arid plains and fields. Nesting plovers choose shortgrass prairies grazed by prairie dogs, bison and cattle, and overgrazed tallgrass and fallow fields.</td>
<td>Area is not large enough to provide suitable habitat. <em>No effect</em>.</td>
</tr>
<tr>
<td>Piping plover3</td>
<td><em>Charadrius melodus</em></td>
<td>FT, ST, MBTA</td>
<td>Habitat consists of sparsely vegetated wetlands, open beaches, and sandbars adjacent to or within streams and impoundments.</td>
<td>Project will not result in water depletions. <em>No effect</em>.</td>
</tr>
<tr>
<td>Common Name</td>
<td>Scientific Name</td>
<td>Status</td>
<td>Habitat</td>
<td>Potential Habitat within the Project</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------</td>
<td>-----------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------</td>
</tr>
<tr>
<td>Whooping crane3</td>
<td><em>Grus Americana</em></td>
<td>FE, SE, MBTA</td>
<td>Spring and fall migrant. Rests in wetlands with low, sparse vegetation in level to moderately rolling landscapes. Prefers areas away from human activity.</td>
<td>Project will not result in water depletions. No effect.</td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brassy minnow</td>
<td><em>Hybognathus hankinsoni</em></td>
<td>ST, SGPI</td>
<td>Found in clear, cool pools of sluggish water over sand or gravel with rooted aquatic vegetation.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Common shiner</td>
<td><em>Notropis cornutus</em></td>
<td>ST, SGPI</td>
<td>Requires streams of moderate gradient with cool, clear water, gravel bottoms, and shade.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Flathead chub</td>
<td><em>Hybopsis gracilis</em></td>
<td>SC, SGPI</td>
<td>Prefers main channels of turbid, moderate to strong current rivers that have mud, rock, or sand substrates.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Pallid sturgeon3</td>
<td><em>Scaphirhynchus albus</em></td>
<td>FE</td>
<td>Occurs in large, turbid, free-flowing riverine habitat.</td>
<td>Project will not result in water depletions. No effect.</td>
</tr>
<tr>
<td>Suckermouth minnow</td>
<td><em>Phenacobius mirabilis</em></td>
<td>SE, SGPI</td>
<td>Prefers clear shallow water with riffles, a sand gravel or bedrock substrate, and year round flows.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Insects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arogos skipper</td>
<td><em>Atrytone arogos</em></td>
<td>SGPI</td>
<td>Found in relatively undisturbed mixed and tallgrass prairies, meadows, sand prairies, and serpentine barrens.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Hops feeding azure</td>
<td><em>Celastrina humulus</em></td>
<td>SGPI</td>
<td>Associated with permanent water and patches of hops. Hops are the larval food source.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Ottoe skipper</td>
<td><em>Hesperia ottoe</em></td>
<td>SGPI</td>
<td>Prefers unplowed, open mid-grass to tall grass prairie, or high quality grazed prairie. They avoid weedy conditions.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Regal fritillary</td>
<td><em>Speyeria idalia</em></td>
<td>SGPI</td>
<td>Prefers tallgrass and mixed-grass prairie, where it is found in moist meadows, marshes, and wet fields.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Mammals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black tailed prairie dog</td>
<td><em>Cynomys ludovicianus</em></td>
<td>SC, SGPI</td>
<td>Shortgrass or mixed prairie. Colony present, may effect</td>
<td></td>
</tr>
<tr>
<td>Preble’s meadow jumping mouse</td>
<td><em>Zapus hudsonius preblei</em></td>
<td>FT</td>
<td>Prefers a variety of habitats from tallgrass habitats near water, plains riparian shrub land, riparian transition zones, and reclaimed grassland.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Mollusk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cylindrical papershell</td>
<td><em>Annodontoids ferussacianus</em></td>
<td>SC, SGPI</td>
<td>Found where water velocity allows for stable substrates for burrowing but in which siltation does not occur.</td>
<td>No suitable habitat.</td>
</tr>
</tbody>
</table>
Table 2
Listed Species with the Potential to Occur or be Affected by the Project in Denver and Adams Counties, Colorado

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status</th>
<th>Habitat</th>
<th>Potential Habitat within the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giant floater</td>
<td>Pyganodon grandis</td>
<td>SGPI</td>
<td>Found where water velocity allows for stable substrates for burrowing but in which siltation does not occur.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Plants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ute ladies’-tresses orchid</td>
<td>Spiranthes diluvialis</td>
<td>FT</td>
<td>Occurs along riparian edges, gravel bars, high flow channels, and moist to wet meadows along perennial streams.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Western prairie fringe orchid</td>
<td>Platanthera praecella</td>
<td>FT</td>
<td>Moist to wet native prairies. Prairies may also be located along roads and railroad rights-of-way.</td>
<td>Project will not result in water depletions. No effect.</td>
</tr>
<tr>
<td>Reptiles/Amphibians</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern cricket frog</td>
<td>Acris crepitans</td>
<td>SC, SGPI</td>
<td>Prefers gently sloping banks of ponds, ditches, and marshes.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Northern leopard frog</td>
<td>Rana pipiens</td>
<td>SC, SGPI</td>
<td>Wet meadows and the banks of shallows of marshes, ponds, lakes, reservoirs, streams, and irrigation ditches.</td>
<td>No suitable habitat.</td>
</tr>
<tr>
<td>Ornate box turtle</td>
<td>Terrapene ornata</td>
<td>SGPI</td>
<td>Prefers open grasslands and sandhills with soft sandy soils. Found in prairie dog colonies.</td>
<td>Prairie dog colony is in a disturbed and isolated area. No suitable habitat.</td>
</tr>
</tbody>
</table>

1Source: USFWS 2010 and CDOW 2010. FC = Federal Candidate, FE = Federally Endangered, FT = Federally Threatened, SE = State Endangered, ST = State Threatened, SC = State Species of Concern, SGPI = Shortgrass Prairie Initiative Identified Species of Concern, MBTA = Migratory Bird treaty Act, BGEPA = Bald and Golden Eagle Protection Act


USFWS lists these species as threatened or endangered because water depletions in the North Platte, South Platte and Laramie River Basins may affect the species and or critical habitat associated with the Platte River in Nebraska (2010).

Conclusions:
The project area is located within an area that is undergoing development. Although portions of the project area are located within open space, habitats within the project area are highly degraded and of low quality. Issues of concern on this project are presented below.

Senate Bill 40 Wildlife Certification
Senate Bill 40 (SB40) focuses on the protection of fishing waters while protecting and preserving all fish and wildlife habitats associated with Colorado streams. There are four criteria for determining if a stream falls under the jurisdiction of SB 40 therefore requiring an SB40 Wildlife Certification to be issued by Colorado Division of Wildlife (CDOW).

A stream is considered to under the jurisdiction of SB40 if it meets any one or more of the following criteria (CDOT 2003):

1. All perennial streams represented by solid blue lines on U.S. Geological Survey 7.5 minute Quadrangle maps.
2. Segments of ephemeral and intermittent streams providing live water beneficial to fish and wildlife.

3. Segments of streams at which 25 percent or more of the vegetation is comprised of riparian vegetation...or other plants dependent on ground water. Such segments shall be within 300 feet upstream or downstream of the project. The 300-foot distance shall be measured along the length of the stream.

4. Segments of streams having wetlands present within 600 feet upstream or downstream of the project. The 600-foot distance shall be measured along the length of the stream.

The project will not impact any streams or wetlands; therefore the project would not require SB40 certification.

Noxious Weeds

Four noxious species are present within the project area. Of the noxious weeds listed, field bindweed covers the most acreage within the project area, encompassing a large portion of the disturbed habitat area. It appears that weed control has been conducted within the prairie dog colony residing in the vacant lot; however it is not known how long ago weed control has occurred. Other noxious weeds are present in only single populations throughout the site.

Weed control is clearly indicated for this site before construction commences, but the size of the site and the numbers of species present may not indicate a need for a weed management plan.

Species Protected under the MBTA

Depending on the timing of construction, the project could harm migratory birds, their nests, or young. Construction should be scheduled to occur outside the nesting season for migratory birds (April 1 through August 31). CDOW recommends surveying for burrowing owls between March 15 and October 31 (CDOW 2007). If construction is scheduled to occur within the nesting seasons, preconstruction nest surveys should occur before clearing activities commence.

If you have any questions, please call Whitney Wimer at 303.740.2686 or contact me via e-mail at Whitney_Wimer@urscorp.com.

Sincerely,

URS Corporation

Whitney Wimer
Environmental Scientist
References


This page is intentionally left blank.
Attachment A
Figures
REFERENCE MAP

Sept, 2010

(not to scale)
Attachment B
Photographs
Photo 1 – Looking east along the existing trail on the north side of Havana Way.

Photo 2 – Looking southeast across Havana Way.
Photo 3 – Looking northwest on the north side of the existing Havana Way.

Photo 4 – Looking east along the proposed new alignment of Martin Luther King Jr. Boulevard (MLK Blvd.) through the vacant lot inhabited by prairie dogs.
Photo 5 – Looking southeast at the proposed intersection of MLK Blvd. and Peoria Street.

Photo 6 – Looking west at the north side of Havana Way.
Photo 7 – Looking southwest at the south side of Havana Way.

Photo 8 – Looking south across Havana Way.
SECTION 4(F) DE MINIMIS DOCUMENTATION

Introduction

Section 4(f) was created when the U.S. Department of Transportation (USDOT) was formed in 1966. It was initially codified at Title 49 United States Code (USC) Section 1653(f) [Section 4(f) of the USDOT Act of 1966]. Later that year, Title 23 USC Section 138 was added. Since then Section 1653(f) has been reworded and recodified at 23 CFR 774. These statutes have no real practical distinction and are still commonly referred to as “Section 4(f)”.

Congress amended Section 4(f) in 2005 when it enacted the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59, enacted August 10, 2005) (SAFETEA-LU). Section 6009 of SAFETEA-LU added a new subsection to Section 4(f), which authorizes the FHWA to approve a project that results in a de minimis impact to a Section 4(f) resource without the evaluation of avoidance alternatives typically required in a Section 4(f) Evaluation.

In order to be protected under Section 4(f), public parks and recreation facilities must be considered “significant,” as determined by the federal, state, or local officials having jurisdiction over them. Historic sites qualifying for Section 4(f) protection must be officially listed on, or eligible for inclusion in the NRHP, or contribute to a historic district that is eligible for or listed on the NRHP. FHWA has also developed guidance for determining de minimis impacts to these Section 4(f) resources.

Coordination

One recreational trail, the Sand Creek Regional Greenway, would be impacted by the Proposed Action. No historic properties or wildlife or waterfowl refuges would be converted to a transportation use by the Proposed Action. The Bluff Lake Nature Center, located north of the proposed project, would not be impacted by the Proposed Action. CDOT intends to pursue a finding of de minimis impact from the Federal Highway Administration Division Administrator for this Section 4(f) resource. For a de minimis finding, the officials with jurisdiction over the resource must also provide written concurrence that the project will not adversely effect the activities, features, and attributes that qualify the property for protection under Section 4(f).

CDOT has requested concurrence from the Sand Creek Regional Greenway Partnership for the de minimis finding of impacts to the Sand Creek Regional Greenway. The FHWA would then
consider making a de minimis finding. As part of that decision, FHWA is soliciting comments on the effects this project would have on the attributes, features, and activities that occur on the Sand Creek Regional Greenway. The public hearing and comment period that will be conducted by CDOT regarding this EA will serve as the opportunity for agency and public review and comment for these impacts.

**Sand Creek Regional Greenway**

*Property Description*

The Sand Creek Regional Greenway is a long, narrow piece of land used for recreation by multiple transportation modes and is used by pedestrians, bicycles, and equestrians. In the project area, the trail extends from Havana Street along the north side of the existing Havana Way. Near where Havana Way turns to connect to Moline Street the trail continues to the east, parallel to Sand Creek. Just before Peoria Street, the trail separates into two parts. One part continues east under Peoria Street. The other part turns to the southeast, ending at the corner of 25th Avenue and Peoria Street.

*Section 4(f) Use*

The Proposed Action would reconstruct and widen the existing Havana Way to a 4-lane arterial and extend it east to the existing intersection of Peoria Street and Fitzsimons Parkway. A raised landscaped median, curb and gutter, and a detached 8 to 10-foot wide, multi-use path would be constructed along the length of the extension to provide pedestrian and bicycle connectivity. A plan view drawing of the Proposed Action and a typical section is shown in [Figure C-1](#).

The Proposed Action would require the southern portion of the Sand Creek Greenway be relocated to Peoria Street. The trail would then continue south adjacent to Peoria Street to 25th Avenue on a 10-foot wide multi-use path. This relocation would not impact the overall connectivity of the trail or the access provided by the existing trail, as the main portion of the trail is located just south of Sand Creek, where it underpasses Peoria Street. However, it would require users to cross the proposed Martin Luther King, Jr. Boulevard at a crosswalk. Coordination with the Sand Creek Regional Greenway has been conducted prior to this Environmental Assessment, resulting in an agreement that the trail would be relocated prior to construction of the Proposed Action. Therefore, use during construction would not be impacted.
On the eastern end of the project, the trail would be maintained and would not be impacted by the Proposed Action. Coordination with the Sand Creek Regional Greenway regarding the exact location of the trail and the distance from the roadway is ongoing.

**Enhancements**

As the area between the proposed Martin Luther King Jr. Boulevard and 25th Avenue is developed, the portion of the trail adjacent to Peoria Street would be paved.
AIR QUALITY TECHNICAL MEMORANDUM

Introduction

The extension of Martin Luther King, Jr. Boulevard (MLK Blvd.), from Havana Street to Peoria Street resides in an attainment/maintenance area for carbon monoxide (CO) and particulate matter 10 micrometer in diameter or less (PM$_{10}$). The project area is also in a nonattainment area for 8-hour ozone (O3) according to the 1997 National Ambient Air Quality Standards (NAAQS). Due to the status of these three pollutants in the Denver area, this project is subject to a project-level conformity analysis.

The project-level conformity analysis requires a Level of Service (LOS) analysis to be performed at all intersections where traffic could be affected by the project. For intersections operating at LOS grade D or worse, a hot spot analysis for CO has been completed.

In general, the Build Alternative would reduce congestion in the area by providing a direct route between Havana Street and Peoria Street. This project would not result in any meaningful changes to traffic volumes, vehicle mix, or other factors that would cause an increase in emissions impacts compared to the No-Build Alternative.

Methods

Carbon Monoxide Hot Spot Analysis

Carbon monoxide hot spot modeling is required for all signalized intersections with a 2035 forecast LOS of D or worse during the morning (AM) and evening (PM) peak hours. The intersection of MLK Blvd. and Peoria Street was the only intersection in this project to receive a LOS of D or worse.

The hot spot analysis was completed using the EPA’s CAL3QHC model (EPA 1992 and 1995). The CAL3QHC model is a computer program that estimates CO concentrations from moving and idling motor vehicles at intersections. The following are some of the inputs to the model:

- Projected traffic volumes
- Emission factors (free-flow and idle)
- Traffic signal timing
- Roadway geometry
- Worst-case meteorological conditions

Worst-case meteorological conditions are defined as a wind speed of 1 meter per second and an atmospheric stability of class D. The worst-case wind direction is determined by the model as the wind speed that results in the largest concentration at each receptor.

The model estimates CO concentrations at receptors that are placed alongside the roadways. Receptors must be placed 3 meters (9.8 feet) from the outside edge of the roadways. For this project, receptors were placed at all four corners of the intersection and then every 25 meters (82 feet) alongside each of the roadways.
The CAL3QHC model produces estimates of 1-hour CO concentrations. These 1-hour concentrations were then converted to 8-hour values using the following formulas.

\[
\text{1-hour CO concentration} = \text{Modeled 1-hour value} \times \text{Altitude Adjustment Factor} + \text{1-hour Background Concentration}
\]

\[
\text{8-hour CO concentration} = \text{Modeled 1-hour value} \times \text{Persistence Factor} \times \text{Altitude Adjustment Factor} + \text{8-hour Background Concentration}
\]

For this project, a value of 0.57 was used for the Persistence Factor and a value of 1.13 was used for the Altitude Adjustment Factor (CDOT 2010). Values of 8.9 ppm and 4.6 ppm were used for 1-hour and 8-hour CO background concentrations, respectively (APCD 2010).

\[PM_{10}\]

The EPA has not released final guidance for a quantitative analysis of PM10 and therefore, is not required. A qualitative analysis of PM10 was performed for this project by evaluating monitor data and the CDPHE 2008 emissions inventory. This project would not result in any meaningful changes to traffic volumes, vehicle mix, or other factors that would cause an increase in emissions impacts compared to the No-Build Alternative.

**Mobile Source Air Toxics**

Mobile source air toxics (MSATs) are toxic compounds emitted from vehicles. MSATs are a subset of the 188 air toxics defined by the Clean Air Act. The EPA has identified the following seven compounds as MSATs: acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases, formaldehyde, naphthalene, and polycyclic organic matter (FHWA 2009).

Current modeling tools are not able to estimate emissions of MSATs. Qualitative analysis is difficult to perform due to the lack of air quality monitors measuring these pollutants. Currently, a method to estimate the environmental impacts resulting from the construction or modification of transportation facilities, with regard to MSATs, does not exist.

Even though there is no accepted model or accepted science for determining the impacts of project specific MSATs, as noted above, EPA predicts that its national control programs will result in meaningful future reductions in MSAT emissions, as measured on both a per vehicle mile and total fleet basis.

For each alternative in this Environmental Assessment, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the Build Alternative is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the preferred action alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOBILE6.2 model, emissions of all of the priority MSAT except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models. Because the estimated VMT under each of the Alternatives are nearly the same it is expected there would be no appreciable difference in overall MSAT emissions among the various
alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

Results

**Carbon Monoxide Hot Spot Analysis Results**

The intersection of MLK Blvd. and Peoria Street was the only intersection in the project with a LOS of D or worse. Therefore, hot spot modeling was performed using the CAL3QHC model to estimate CO concentrations. Based on the model results, neither the AM or PM peaks are expected to exceed the 1-hour or 8-hour CO standards. The results are included in the following table.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>LOS</th>
<th>Modeled Concentrations</th>
<th>Background Concentrations</th>
<th>Final Concentrations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM</td>
<td>PM</td>
<td>1-hour CO (ppm)</td>
<td>AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Altitude Adjustment</td>
<td>PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Persistency Factor</td>
<td>PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-hour CO (ppm)</td>
<td>1-hour CO (ppm)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8-hour CO (ppm)</td>
<td>8-hour CO (ppm)</td>
</tr>
<tr>
<td>MLK Blvd. &amp; Peoria Street</td>
<td>D</td>
<td>D</td>
<td>4.8</td>
<td>1.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.1</td>
<td>0.57</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.13</td>
<td>8.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.57</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.9</td>
<td>14.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.6</td>
<td>13.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14.3</td>
<td>7.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>13.5</td>
<td>7.2</td>
</tr>
<tr>
<td>NAAQS</td>
<td></td>
<td></td>
<td></td>
<td>35.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.0</td>
</tr>
</tbody>
</table>

Notes:
- AM/PM = morning/evening rush hours
- ppm = parts per million

**PM$_{10}$ Qualitative Analysis**

The project lies in an attainment area for PM$_{10}$ and there have been no exceedances of the NAAQS standard at the closest monitoring station (Table 2). Inspection of the Adams and Denver County emissions inventories reveals that construction and road dust account for the majority of PM$_{10}$ emissions (Table 3). Vehicles rank as the third highest contributor to PM$_{10}$ emissions in Denver County, but it accounts for only 3 percent of the total emissions.

<table>
<thead>
<tr>
<th>Monitor</th>
<th>Averaging Time</th>
<th>PM$_{10}$ (µg/m$^3$)</th>
<th>NAAQS Standard</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welby-3174 E. 78th Ave.</td>
<td>24-hour (2nd Max)</td>
<td>150</td>
<td>95</td>
<td>66</td>
<td>82</td>
<td>73</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual Mean</td>
<td>50</td>
<td>30</td>
<td>32</td>
<td>28</td>
<td>30</td>
<td>27</td>
<td></td>
</tr>
</tbody>
</table>

Source: EPA, 2010
Notes:
1. If a monitoring station has more than one monitor for a pollutant, the highest reading among the monitors was used.
Table 3: 2008 PM$_{10}$ Emissions for Adams and Denver Counties

<table>
<thead>
<tr>
<th>County</th>
<th>Four Highest Emissions Categories</th>
<th>Total (tons/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Construction</td>
<td>Road Dust</td>
</tr>
<tr>
<td>Adams</td>
<td>5,828 (30%)</td>
<td>4,934 (26%)</td>
</tr>
<tr>
<td>Denver</td>
<td>15,726 (76%)</td>
<td>3,027 (15%)</td>
</tr>
</tbody>
</table>

Source: CDPHE, 2010

The largest amount of PM$_{10}$ emissions as a result of this project is expected to occur during construction. Since this is a temporary impact, it is not considered part of the project-level conformity analysis (CDOT 2008). However, mitigation measures have been incorporated into this project to address air quality concerns during construction.

Permanent impacts would result from the changes to the traffic volume and the amount of congestion at the intersection. The modifications to the intersection should increase the traffic volume, but should also reduce congestion. The two effects are expected to offset each other, thus little to no impact on PM$_{10}$ emissions is expected.

REFERENCES

APCD. 2010. *Personal communication*. Electronic mail received on October 4, 2010.

CDOT. 2010. *Personal communication*. Electronic mail received on October 4, 2010.


Federal Highway Administration (FHWA), 2009. *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA*
MARTIN LUTHER KING, JR. BLVD. EXTENSION ENVIRONMENTAL ASSESSMENT

APPENDIX E – NOISE ANALYSIS TECHNICAL MEMORANDUM
OVERVIEW

This noise analysis was completed for the Martin Luther King Jr. Extension project in Denver, Colorado. The project location is shown on Figure 1 in Attachment A. The purpose of the analysis is to evaluate the affect that the future roadway project traffic noise has on noise sensitive areas (residences, businesses, schools, parks, etc.) and to evaluate the necessity, feasibility and reasonableness of noise mitigation along the corridor where noise impacts are identified.

In accordance with the Colorado Department of Transportation (CDOT) Noise Analysis and Abatement Guidelines (CDOT, December 1, 2002), noise abatement will be considered for Type I projects where noise impacts are identified. A Type I project is one that includes construction of a transportation facility on a new location, increases the number of through traffic lanes or alters the horizontal or vertical alignment of an existing transportation facility. Projects that do not meet the Type I project criteria are not required to undergo noise analysis. Since this project increases the number of through traffic lanes and includes a portion of construction on a new location, it is considered a Type 1 project.

Existing noise levels were characterized and future noise levels were modeled to determine possible traffic noise impacts associated with the project. This process was completed according to CDOT Noise Analysis and Abatement Guidelines and Federal (Federal Regulation 23 CFR 772) noise policies and regulations. Noise impacts were evaluated using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) Version 2.5 computer program for receiver locations along the affected routes of the project.

All sound level measurements and estimates in this document are reported as Leq(h) in units of decibel (dB) and are A-weighted. The Leq (equivalent steady state sound level) describes the receiver’s average noise exposure from all events over a given period of time. Leq(h) is the hourly value of Leq. The “A” indicates that the sound has been filtered to reduce the strength of very low and very high frequency sounds, much as the human ear would hear.

Noise Fundamentals and Impact Criteria

The Colorado Department of Transportation (CDOT) considers traffic noise impacts based on regulations that govern highway traffic noise for Federal-aid projects contained in Part 772 of Title 23 of the Code of Federal Regulations (23CFR772). FHWA requires all states to define at what value a predicted noise level approaches the Noise Abatement Criteria (NAC) defined in 23CFR772, and, thus, results in a noise impact (FHWA 1995). CDOT has defined “approach” as 1 dBA less than the FHWA NAC for use in identifying traffic noise impacts in traffic noise analyses. The CDOT NAC is shown in Table 1.
Table 1. CDOT Noise Abatement Criteria

<table>
<thead>
<tr>
<th>Activity Category</th>
<th>Leq(h), dBA*</th>
<th>Description of Activity Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>56 (Exterior)</td>
<td>Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where preservation of those qualities is essential if the area is to continue to serve its intended purpose.</td>
</tr>
<tr>
<td>B</td>
<td>66 (Exterior)</td>
<td>Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.</td>
</tr>
<tr>
<td>C</td>
<td>71 (Exterior)</td>
<td>Developed lands, properties, or activities not included in Categories A or B above.</td>
</tr>
<tr>
<td>D</td>
<td>None</td>
<td>Undeveloped lands.</td>
</tr>
<tr>
<td>E</td>
<td>51 (Interior)</td>
<td>Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.</td>
</tr>
</tbody>
</table>

Source: CDOT, 2002

*Hourly A-weighted sound level, reflecting a 1dBA approach value below 23CFR772

Two types of noise levels occurring at sensitive land use areas are considered impacts under the CDOT criteria:

1) Existing or Future noise levels that equal or exceed the CDOT NAC shown in Table 1 for the respective activity category.

2) Future noise levels that substantially exceed the existing noise levels. CDOT defines a substantial increase as an increase of at least 10 dBA, regardless of the absolute noise levels.

Therefore, if a project predicts a noise level equal to the values shown in Table 1, or a noise level greater than 10 dBA over existing levels, mitigation must be considered for the project in the appropriate locations. Some locations, however, may not be feasible or reasonable for abatement.

**Noise Analysis**

This noise analysis was performed to identify noise sensitive receivers that may be subjected to traffic noise impacts and to determine if mitigation should be considered. The determination of traffic noise impacts only results in consideration of mitigation, not that mitigation will be provided.

While most of the project area is undeveloped, there were two locations where noise sensitive receivers were identified and analyzed for impacts. The first location is a cluster of townhomes located in the southwest quadrant of the Iola Street and 29th Avenue intersection. The second location is the Bluff Lake Nature Center located north of the project alignment and east of Bluff Lake. The locations of these areas are shown on Figure 1 in Attachment A.

Existing noise measurements were taken at two locations in the vicinity of the proposed project. The existing noise measurements were recorded on mild, calm weekdays using a Quest Technologies 2900 integrating and logging sound level meter. Relevant data, such as traffic volumes, vehicle types, traffic speeds and existing concrete barriers were collected and included in the model setup for verification of FHWA’s Traffic Noise Model (TNM). The
two locations were located near the cluster of townhomes and the Bluff Lake Nature Center (BLNC).

A comparative analysis of the noise levels of the meter readings taken in the field and the modeled noise levels was performed to verify the accuracy of the noise model to predict existing or future noise levels. The model is validated if the measured noise levels and modeled noise levels are within +/- 3 dBA. The results of the comparative analysis are shown in Table 2.

<table>
<thead>
<tr>
<th>Location</th>
<th>Existing Meter Readings Leq(h), dBA</th>
<th>Existing Modeled Levels Leq(h), dBA</th>
<th>Difference Leq(h), dBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Townhomes</td>
<td>67.0</td>
<td>66.4</td>
<td>0.6</td>
</tr>
<tr>
<td>BLNC</td>
<td>57.6</td>
<td>56.7</td>
<td>0.9</td>
</tr>
</tbody>
</table>

The table indicates that the difference between the meter readings and the modeled noise levels is within the acceptable 3 dBA. Once validated, this model provided the basis for the development of the Existing and 2035 Build noise models.

Noise sensitive receivers were evaluated using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) Version 2.5 computer program for receiver locations in the vicinity of the project. These models were used to determine potential traffic noise impacts associated with the project. The models were modified as necessary to reflect the estimated worst case noise levels of the proposed project.

A total of 10 receivers were placed near the townhomes (one on each of the front porches of the nine units that face Iola Street and one in the common use area). One receiver was also placed in the pavilion area near the Bluff Lake Nature Center. These locations represent exterior areas of frequent human use. Receivers were modeled at a height of five feet above ground. These locations were used to establish the expected noise levels at the receivers. Table 3 contains the traffic noise levels for the Existing and 2035 Build conditions resulting from the TNM.

<table>
<thead>
<tr>
<th>Rec. Loc.</th>
<th>Represents</th>
<th>Existing Leq(h), dBA</th>
<th>Proposed Build Leq(h), dBA</th>
<th>NAC Criteria Leq(h), dBA</th>
<th>Equal or Exceed NAC Criteria?</th>
<th>10 dBA Increase Over Existing?</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Townhome Common Area</td>
<td>65.7</td>
<td>68.7</td>
<td>66</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>R2</td>
<td>Townhome</td>
<td>66.6</td>
<td>69.3</td>
<td>66</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>R3</td>
<td>Townhome</td>
<td>65.6</td>
<td>68.0</td>
<td>66</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>R4</td>
<td>Townhome</td>
<td>65.2</td>
<td>67.5</td>
<td>66</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>R5</td>
<td>Townhome</td>
<td>64.9</td>
<td>67.1</td>
<td>66</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>R6</td>
<td>Townhome</td>
<td>64.6</td>
<td>66.7</td>
<td>66</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>R7</td>
<td>Townhome</td>
<td>64.4</td>
<td>66.3</td>
<td>66</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>R8</td>
<td>Townhome</td>
<td>64.2</td>
<td>66.0</td>
<td>66</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>R9</td>
<td>Townhome</td>
<td>64.1</td>
<td>65.7</td>
<td>66</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>R10</td>
<td>Townhome</td>
<td>64.0</td>
<td>65.4</td>
<td>66</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>R11</td>
<td>BLNC Pavillion</td>
<td>52.6</td>
<td>57.3</td>
<td>66</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
The table indicates that eight of the ten receiver locations representing the townhomes are equal to or exceed the NAC of 66 dBA for activity category B. The receiver location that represents the Bluff Lake Nature Center pavilion does not exceed the NAC of 66 for activity category B. None of the receivers are expected to have a substantial increase in noise levels.

**Impacts**

Any receiver which either approaches or exceeds the noise abatement criteria under the existing or future conditions or is subjected to a substantial increase in noise levels is considered to be impacted by highway traffic noise. The results of the modeling analysis indicate that the Townhomes are impacted by highway traffic noise.

A noise contour indicating how far from the roadway traffic noise would affect new residential and noise sensitive land uses (NAC Category B) was generated for future compatible noise planning purposes along the MLK corridor. The 66 dBA contour line was calculated to be 120 feet from the proposed roadway centerline.

**Mitigation**

Any receivers which were determined to be impacted in the analysis are evaluated for traffic noise mitigation. When determining abatement measures, primary consideration is given to exterior areas surrounding residential areas or areas of frequent human use. All feasible and reasonable mitigation measures are required to be included in the roadway project. It is required that any potential noise abatement measure under consideration is one that provides a substantial reduction of noise levels. This is a noise reduction of no less than 5 decibels for at least one receiver. It is not considered a prudent investment of public funds to consider construction of a noise barrier that will not result in at least a readily perceptible noise reduction.

There are a number of measures that can be taken to mitigate for noise impacts. The following mitigation measures may be incorporated in highway projects to reduce traffic noise impacts.

- Traffic Management Measures (e.g. truck restrictions or the reduction of speed limits)
- Alteration of horizontal and vertical alignments
- Noise Barrier Construction

Due to right-of-way constraints on this project, the most practical and effective measure is the construction of vertical noise barriers where feasible and reasonable according to the CDOT Noise Abatement Guidelines.

**Feasibility**

Feasibility generally deals with considering whether it is possible to build an abatement measure given site constraints and whether the abatement measure provides a minimum reduction in noise levels. Feasibility is limited by the following:

1) Topography
2) Access requirements for driveways, ramps, etc.
3) The presence of local cross streets
4) Other noise sources in the area (e.g. aircraft, rail)
5) Addressing the project purpose
6) Drainage
7) Utilities
8) Maintenance
9) Noise Reduction

Although a noise wall could obtain a substantial reduction (at least 5 decibels for at least one receiver location), noise mitigation for the townhomes in the southwest quadrant of the Iola Street and 29th Avenue intersection was determined to be not feasible based on the following:

a. The townhomes that represent the front row receptor locations have front door access that faces Iola Street. There is on-street parking for the townhomes along Iola Street with walkways to the front doors. Due to the intersection sidewalk crossings, walkway access from the townhomes, and driveway accesses along 29th Drive, a continuous noise wall could not be built. Openings in noise barriers for driveways and walkways reduce the effectiveness of barriers.

b. There is approximately 22 feet from the face of the Condos to the curb on Iola Street. This 22-foot buffer area contains a sidewalk, a 12-foot wide grass parkway, and landscaping. The parkway contains utilities and several above-ground utility boxes.

c. Due to the narrow width of the buffer area, a noise wall would create excessive reduction in site distance for vehicles at the intersection.

d. Due to the close proximity of a wall to the sidewalk and cross-streets, icing could occur on sidewalks and streets due to shading.

Secondary and Cumulative Effects

The geographic extent of noise effects has grown with the expansion of Denver’s urban area. Noise levels have also been influenced by increasing urban density and intensity of use over time. Noise effects associated with urban areas have encroached into rural lands as new development and transportation systems have been constructed over the past 40 years. These changes occur when un-built areas are replaced or become encroached upon by more intensive land uses such as roads or urban development. Major transportation projects that have previously increased noise levels include the construction of I-70 during the 1960s and Pena Boulevard and DIA in 1995. While noise levels have generally increased and have expanded spatially, some improvements have been made such as the closure of SIA in 1995.

Foreseeable future actions will also contribute urban noise as new development will convert large areas of rural land into more noise-intensive urban development. Additional housing, office, and commercial capacity coupled with forecasted population and employment growth will intensify noise generation. Future transit projects will also contribute to noise levels. Transit alignments located in existing transportation corridors will have the potential for cumulative effects through combined highway and transit noise. However, mitigation can limit these noise levels to be within acceptable thresholds.

Cumulative effects to noise levels would exist if projects added to past increases in noise levels or contributed to the collective noise effect of foreseeable future projects.
Unmitigated, projects would cause cumulative effects through both scenarios. Cumulative noise effects are controlled by the successful abatement of each major transportation action. Noise impacts for the Build Alternative would comply with CDOT’s Noise Abatement Criteria (CDOT 2002). Detailed information regarding the noise analysis can be found in Appendix E. Other present and reasonably foreseeable future transportation projects are also expected to mitigate such that noise effects are minimal. Change in noise levels due to the development of open areas does not require mitigation as this is within the context of urbanization. Denver zoning and regional plans are used to separate incompatible land uses in order to avoid noise nuisance. Ultimately, the potential for cumulative noise effects exists; however, it is likely to be minimized through mitigation.

Summary

This noise analysis was completed for the Martin Luther King Jr. Extension project to evaluate the affect that the future roadway project traffic noise has on noise sensitive areas (residences, businesses, schools, parks, etc.) and to evaluate the feasibility and reasonableness of noise mitigation along the corridor. The results of the analysis indicated that the townhomes in the southwest quadrant of the Iola Street and 29th Avenue intersection are expected to be impacted by roadway traffic noise.

The existing noise levels for the nine front row townhome units along Iola Street range from 64.0 dBA to 66.6 dBA. The 2035 Build noise level for these units are projected to range from 65.4 dBA to 69.3 dBA.

Noise mitigation for the townhomes was determined to not be feasible due to the reduction of acoustic effectiveness caused by gaps created to allow driveway, front door, and sidewalk access, creating reduced sight distance at the intersection, and the location of utility easement and above-ground utility boxes within buildable property frontage.

Therefore, noise abatement was determined to be not feasible and not reasonable to build at this location. CDOT Form #1209 is provided for the townhomes in Attachment B.
Attachment A

Figure 1 - Noise Analysis Map
Attachment B

CDOT Form #1209 - Noise Abatement Determination
COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project code (SA#)</th>
<th>STIP #</th>
<th>Project Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Town Homes @ Iola/39th Ave</td>
</tr>
</tbody>
</table>

A. FEASIBILITY:
1. Can a continuous noise barrier or berm be constructed? □ YES □ NO
2. Can a substantial noise reduction be achieved by constructing a noise barrier or berm?
   10 dBA: □ YES □ NO 7-10 dBA: □ YES □ NO 5-7 dBA: □ YES □ NO
3. Are there any "fatal flaw" safety or maintenance issues involving the proposed noise barrier or berm? □ YES □ NO

B. REASONABILITY:

<table>
<thead>
<tr>
<th>Extremely Reasonable</th>
<th>Reasonable</th>
<th>Marginally Reasonable</th>
<th>Unreasonably</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$3000-$3750</td>
<td>$3750-$4000</td>
</tr>
<tr>
<td>Less than $3000</td>
<td>70 dBA or More</td>
<td>66 - 70 dBA</td>
<td>63 - 66 dBA</td>
</tr>
<tr>
<td>More than 75%</td>
<td>50% - 75%</td>
<td>25% - 50%</td>
<td>Less than 25%</td>
</tr>
<tr>
<td>More than 75%</td>
<td>50% - 75%</td>
<td>25% - 50%</td>
<td>Less than 25%</td>
</tr>
<tr>
<td>More than 75%</td>
<td>50% - 75%</td>
<td>25% - 50%</td>
<td>Less than 25%</td>
</tr>
<tr>
<td>Greater than 10 dBA</td>
<td>5 - 10 dBA</td>
<td>0 - 5 dBA</td>
<td>Noise Level Decrease</td>
</tr>
</tbody>
</table>

*CATEGORY B – Residential, School, Hospital, Park, Picnic/Active Sports Area, Motel, Church, Library

C. INSULATION CONSIDERATION:
1. Are normal noise abatement measures physically infeasible or economically unreasonable? □ YES □ NO
   If the answer to 1 is YES, then:
   
   2. Does this project have noise impacts to public or non-profit buildings? □ YES □ NO
   3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? □ YES □ NO
   3. b. Are private residences impacted by 75 dB(A) or more? □ YES □ NO

D. ADDITIONAL CONSIDERATIONS:

E. DECISION:
1. Are noise mitigation measures feasible? □ YES □ NO
2. Are noise mitigation measures reasonable? □ YES □ NO
3. Is insulation of buildings both feasible and reasonable? □ YES □ NO
4. Shall noise mitigation measures be provided? □ YES □ NO

F. DECISION DESCRIPTION AND JUSTIFICATION

Provided on Attachment

Completed by: Donny Allison, URS Corporation
Date: 11-19-2010
F. DECISION DESCRIPTION AND JUSTIFICATION

Although a noise wall could obtain a substantial reduction (at least 5 decibels for at least one receiver location), noise mitigation for the townhomes in the southwest quadrant of the Iola Street and 29th Avenue intersection was determined to be not feasible based on the following:

a. A noise wall at this location does not fit the urban character of the existing and future development. The townhomes that represent the front row receptor locations have front door access that faces Iola Street. There is on-street parking for the townhomes along Iola Street with walkways to the front doors.

b. There is approximately 22 feet from the face of the Condos to the curb on Iola Street. This 22 foot buffer area contains flower beds, a sidewalk and a twelve foot wide grass area that contains above ground utilities.

c. Due to the narrow width of the buffer area, a noise wall would create excessive reduction in site distance for vehicles at the intersection.

d. Due to the intersection sidewalk crossings and walkway access from the on-street parking to the townhomes that face Iola Street and the walkway and driveway accesses along 29th Avenue, a continuous noise wall could not be built. Openings in noise barriers for driveways and walkways reduce the effectiveness of barriers.

e. Due to the close proximity of a wall to the sidewalk and cross-streets, icing could occur on sidewalks and streets due to shading.