VEGETATION AND NOXIOUS WEEDS TECHNICAL MEMORANDUM

Dillon Drive Flyover
Dillon Drive and Interstate 25 Interchange
Pueblo, Colorado

August 25, 2010

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Acronyms

BMP	Best Management Practices
CDOA	Colorado Department of Agriculture
CDOT	Colorado Department of Transportation
CRS	Colorado Revised Statute
CSP	Central Shortgrass Prairie
EA	Environmental Assessment
EO	Executive Order
I-25	Interstate 25
NRCS	Natural Resource Conservation Service
PACOG	Pueblo Area Council of Governments
ROW	Right-of-Way
USDA	United States Department of Agriculture

Introduction

An environmental assessment (EA) is being completed for the Pueblo Dillon Flyover project. This technical memorandum summarizes the effects of the proposed Pueblo Dillon Drive Flyover project on vegetation and noxious weeds. This project would provide access from Interstate (I-25) to Dillon Drive/Platteville Boulevard near the existing Eden Road and I-25 Interchange (Eden Interchange) in Pueblo County, Colorado. Exhibit 1 shows the location of the proposed project.

This proposed new access to I-25 would require construction of a new bridge over I-25 at Dillon Drive, and new on- and off-ramps to I-25 south of that bridge. These new ramps would replace the existing ramps at the south half of the Eden Interchange, which would be removed. This configuration, called a "split diamond interchange," provides all of the movements of a typical "diamond" interchange except the freeway connections are split between two nearby roads. In this case, the connections would be from Dillon Drive and Eden Road. A new two-way road along the west side of I-25 at the existing frontage road would connect the south half of this interchange at Dillon Drive with the north half at Eden Road.

Documentation of current vegetation communities and the presence of state and county-listed noxious weeds have been completed. State regulations are in place to protect biological resources from potential invasion of non-native plant species and conserve important habitat including shortgrass prairie. These regulations are outlined in the Colorado Department of Agriculture (CDOA) Noxious Weeds Act (Colorado Revised Statute (CRS) 35-5-101; CRS 35-5.5-101; and Executive Order (EO) D-006-99).

The information in this technical memorandum is based on information readily available as of July 2009. This technical memorandum will not be updated. New information and data, such as impacts, may be incorporated into subsequent documents.

Methods

The project area (Exhibit 2) was used as the resource-specific study area (study area). The study area was assessed for potential constraints associated with the presence of important vegetation habitats and state- and county-listed noxious weeds. A review of federal and state lists of species with potential to occur in the study area was also conducted**.** All of the species on these lists have the potential to occur in Pueblo County, and the study area, where suitable habitat is present. Information on vegetation was obtained from existing sources, including maps, databases, publications, and agency information; from a field survey; and from review of aerial photographs.

The project team completed a field assessment of the study area in November 23, 2008. During the field survey, dominant vegetation communities were mapped (Exhibit 3). In addition to the dominant vegetation communities, weed species defined as noxious by the CDOA, and the Pueblo County Noxious Weed Management Program, were identified and mapped (Exhibit 4).

Affected Environment

The study area is a narrow corridor which includes paved and unpaved roads, vegetated roadsides, undeveloped grasslands, Colorado Department of Transportation (CDOT) right-of-way (ROW), a stormwater drainage basin and unnamed drainage ditches and commercial and industrial properties. Project-related activities within the study area would likely include: road construction on I-25 in CDOT ROW and on auxiliary roads; grading and slope reconstruction within the I-25 corridor; mowing of shoulder, median and roadside areas; center median construction; construction of a bridge spanning the I-25 corridor; guardrail construction; landscaping; and the construction of stormwater channels and basins.

Vegetation

Colorado's Eastern Plains, a portion of the Central Shortgrass Prairie (CSP) ecoregion, covers one-third of the state of Colorado, from approximately I-25 to the Kansas border (Bailey, 1995). The study area is within this ecoregion. Climate has been the primary driver affecting the vegetation and landscape within the CSP; however, urban expansion and frequent disturbances now dictate the vegetation and landscape.

Botanical names follow the US Department of Agriculture Natural Resource Conservation Service Plants Database (USDA, 2009).

Presently, there are two vegetation community types within the study area. These communities are described below:

Shortgrass Prairie: The shortgrass prairie community includes a mixture of perennial and annual, native and non-native species, which have developed from long-term natural succession or seeding of former agricultural lands. The shortgrass prairie primarily consists of grasses that grow to approximately two feet tall in areas that are not mowed (i.e., roadsides and medians). Both introduced and native species of forbs, shrubs, and cacti occur and are common throughout this community. Common species include:

- Native grass species: western wheatgrass (*Pascopyrum smithii*), needle and thread (*Hesperostipa comata*), slender wheatgrass (*Elymus trachycaulus*), tumble windmill grass (*Chloris verticillata*), and blue grama (*Bouteloua gracilis*).
- Introduced grass species: smooth brome (*Bromus inermis*), crested wheatgrass (*Agropyron smithii*), and cheatgrass (*Bromus tectorum*).
- Native forbs: common sunflower (*Helianthus annuus*), curlycup gumweed (*Grindelia squarrosa*), and hairy false goldenaster (*Heterotheca villosa*).

- Introduced forbs: field bindweed (*Convolvulus arvensis*), Russian thistle (*Salsola tragus*), kochia (*Kochia scoparia*), hoary cress (*Cardaria draba*), tall tumblemustard (*Sisymbrium altissimum*), and perennial pepperweed (*Lepidium latifolium*).
- Native shrubs and cacti: saltbush (*Atriplex canescens*), rabbitbrush (*Ericameria nauseosa*), and cholla cactus (*Opuntia imbricata*).
- Introduced shrubs: Salt cedar (*Tamarix ramosissima*).

Approximately 30 percent of the project area is shortgrass prairie community. Vegetation cover in the shortgrass prairie community is native grasses and shrubs. Dominant species include blue grama, saltbush, rabbitbrush, and cholla cactus. Less dominant species within the shortgrass prairie include the non-native grasses crested wheatgrass and smooth brome and non-native forbs kochia and field bindweed. These species are primarily located adjacent to I-25 and in the corridor median.

Disturbed: The remaining 70 percent of the project area occurs within the disturbed vegetation community. Approximately 40 percent of the disturbed area is comprised of bare soil or paved surfaces, and is void of vegetation. The remaining 60 percent of the disturbed area primarily consists of dominant non-native vegetation cover including field bindweed, Russian thistle, and kochia. Less dominant vegetation within the disturbed community includes cheatgrass and native annual sunflower.

Noxious Weeds

Noxious weeds occur throughout the study area and occasionally dominate a community. Noxious weeds are plant species not native to Colorado and are regulated under state law because they have negative impacts on crops, native plant communities, livestock, and/or the management of natural or agricultural areas. Colorado currently has 71 species listed as noxious weeds (CDOA, 2009). Colorado-listed noxious weeds are presented in Appendix A. CDOT adheres to this noxious weed list.

Under the permanent rules for the administration and enforcement of the Colorado Noxious Weed Act, state-listed species are placed into one of three categories (CDOA, 2008):

1) **List A** species are designated for eradication, and require prevention of seed production or development of reproductive propagules.

2) **List B** species are managed by the state noxious weed management plan, with the goal of stopping the continued spread of these species.

3) **List C** species are those for which the State, in consultation with other parties, would develop management plans with the goal of supporting jurisdictions that choose to require management of those species.

This project occurs in Pueblo County. Appendix B provides a list of species defined as noxious by the Pueblo County Weed Management Program (Pueblo County, 2009). All species listed by Pueblo County are also on the CDOA noxious weeds list. Field bindweed and kochia are distributed, and often dominant, throughout most shortgrass prairie and disturbed habitats within the study area. Field bindweed is often dominant adjacent to roads and parking lots. Kochia is common throughout all of the study area, and is most dominant in areas where there have been repeated soil disturbances. Perennial pepperweed and cheatgrass are wide spread in roadside ditches throughout the study area. Salt cedar is common to stormwater drainage basins and ditches within the study area.

Field bindweed is a CDOA -listed noxious weed (Appendix A). Kochia is not a CDOA-listed species; however, it is exotic to North America and commonly dominates frequently disturbed vegetation communities in the western United States. The majority of the noxious weeds within the study area are located west of I-25, adjacent to Frontage Road and Platteville Boulevard/Dillon Drive, where commercial and industrial activities have disturbed the soil surface (Exhibit 4).

Impact Evaluation

No-Action Alternative

Regardless of whether the Pueblo Dillon Drive Flyover is constructed or not, growth and development would continue to occur in the Pueblo region (Pueblo Area Council of Governments (PACOG), 2002). Under the No-Action Alternative, the study area would not remain as is. Urban expansion would continue to occur throughout the study area and undeveloped land, where zoned, would likely be developed for commercial and residential purposes.

Direct Impacts

The No-Action Alternative would change vegetation communities in the long-term. Grassland vegetation communities would be converted to commercial and residential development, parking lots, and associated infrastructure. Those areas not converted could potentially become prairie dog colonies, as neighboring prairie dogs would likely move or expand their colony. Noxious weeds, including cheatgrass, kochia, field bindweed and salt cedar, would continue to spread from their current populations to infest other areas not currently dominated by noxious weeds. Commercial, residential, and transportation-related development would continue with increased population growth, further fragmenting the study area.

Indirect Impacts
Indirect impacts to vegetation and noxious weeds would occur from the No-Action Alternative. With continued development, vehicle traffic and construction will continue to occur in the project study area and impact vegetation communities by reducing the size of these communities, and potentially increasing the spread of noxious weeds.

Temporary Construction Impacts
Temporary construction impacts as a result of the No-Action Alternative would include impacts to vegetation communities where vehicle and equipment would be stored for future commercial, residential, and transportation projects.

Preferred Alternative

The Preferred Alternative for this project generally runs parallel to I-25, north and south of the proposed Dillon Drive/I-25 flyover, on the west side of the project area (Exhibit 2). Improvements to approximately 800 feet of the existing Frontage Road, west of I-25 and north of the proposed interchange, and 1,000 feet of the existing Platteville Boulevard/Dillon Drive, west of the Dillon Drive and Frontage Road intersection at I-25, are included in the Preferred Alternative. Additionally, construction of an I-25 northbound exit/bridge to Dillon Drive, on the east side of I-25, and northbound Frontage Road east of I-25 between the proposed Dillon Drive Bridge and the existing Eden interchange, is included in the proposed Preferred Alternative.

Direct Impacts
Most of the impacts would occur in the disturbed vegetation community. Impacts to this community would primarily occur adjacent to existing frontage and auxiliary roads, and I-25 on the west side of the project area.

There would be approximately 16.3 acres of direct impacts to the shortgrass prairie community. Construction activities east and west of I-25 are likely to impact the stormwater ditches and drainage basins located within the proposed project area.

Direct impacts to vegetation would result from vegetation clearing and earth moving for project-related construction. Loss of vegetation during construction may increase the likelihood for soil erosion during construction. Eroded soils and sediment could be transported in stormwater and create secondary disturbances to vegetation communities or block stormwater drainage ditches. Most impacts would be permanent, as the former vegetation community would be replaced with newly constructed roads and/or structures.

Indirect Impacts
Indirect impacts from construction of the Preferred Alternative would include the spread of noxious weeds from within the project area to other areas not currently invaded. Construction of the Preferred Alternative may also lead to increased development in the surrounding area. This could reduce the total area comprised of vegetation communities.

Temporary Construction Impacts
Temporary construction impacts of the Preferred Alternative would include disturbance of vegetation communities where construction vehicles and equipment are stored. Also, construction equipment has the potential to introduce and spread noxious weeds to areas within and outside the project area that are not already invaded by these species.

Mitigation

Vegetation

The following mitigation strategies would be used to limit impacts to vegetation during construction.

- Installation of silt fences, erosion logs, temporary berms, and other water quality and erosion control Best Management Practices (BMPs) would be used to prevent degradation of vegetation communities adjacent to the construction area by transport of eroded sediment.
- Areas of temporary disturbance within the project area would be seeded with an appropriate mixture of native grasses and forbs and shrubs would be planted where appropriate.
- Disturbed areas will be reseeded as soon as practical to reduce duration of time bare ground is exposed to potential erosion or potential invasive weed colonization.
- The construction contractor must be trained and have previous experience in the proper use of BMPs.

Noxious Weeds

An integrated Noxious Weed Management Plan would be developed during final design. This plan would be implemented during construction and would include identification of noxious weeds in the project footprint, weed management goals and objectives, and preventive and control methods. Preventive measures may include the following:

- Contractors' vehicles would be inspected before they are used for construction to ensure they are free of soil and debris capable of transporting noxious weed seeds or roots.
- Noxious weeds observed in and near the construction area at the start of construction would be treated with herbicides or physically removed to prevent seeds from blowing into disturbed areas during construction. Disturbed areas will be reseeded as soon as practical to reduce duration of time bare ground is exposed to potential erosion or potential invasive weed colonization.
- Periodic surveys would occur during the construction period to identify and treat noxious weed populations that have developed.
- Potential areas of topsoil salvage would be assessed for presence and abundance of noxious weeds or their seeds prior to salvage. Topsoil from heavily infested areas would either be treated by spraying, taken offsite, or buried during construction.

- Areas of temporary disturbance would be reclaimed in phases throughout construction and seeded using a permanent native seed mixture. If areas are complete and permanent seeding cannot occur due to the time of year, mulch and mulch tackifier would be used for temporary erosion control until seeding can occur.
- Only certified weed-free mulch and bales would be used.

Weed control would use the principles of integrated pest management to treat target weed species efficiently and effectively by using management techniques such as biological, chemical and/or mechanical, both during and after construction**.** Weed control methods would be selected based on the management goal for the species, the nature of the existing environment, and the methods recommended by Colorado State University, County Weed Boards, and other weed experts. The presence of important wildlife habitat or threatened and endangered species would be considered when choosing control methods.

References

Bailey, R.G., 1995. Descriptions of the Ecoregions of the United States. USDA-FS publication 1391, Washington, DC.

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Pueblo Area Council of Governments (PACOG), 2002. *Pueblo Regional Development Plan*. Pueblo, Colorado. July 25, 2002.

Pueblo County, 2009. Pueblo County Department of Planning and Development, Noxious Weed Management Program "Noxious Weeds List." Accessed on-line at http://www.co.pueblo.co.us/planning/landuse/weed_management.aspx?id=783&terms=Noxious+weeds#Noxious_Weeds. Accessed July 2009.

United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), 2009. **"**Plants Database". Accessed on-line at http://plants.usda.gov/index.html. Accessed July 2009.

Appendix A. Colorado Department of Agriculture Noxious Weeds List

List A Noxious Weeds	
African rue	*Peganum harmala*
Camelthorn	*Alhagi pseudalhagi*
Common crupina	*Crupina vulgaris*
Cypress spurge	*Euphorbia cyparissias*
Dyer's woad	*Isatis tinctoria*
Giant salvinia	*Salvinia molesta*
Hydrilla	*Hydrilla verticillata*
Meadow knapweed	*Centaurea pratensis*
Mediterranean sage	*Salvia aethiopis*
Medusahead	*Taeniatherum caput-medusae*
Myrtle spurge	*Euphorbia myrsinites*
Orange hawkweed	*Hieracium aurantiacum*
Purple loosestrife	*Lythrum salicaria*
Rush skeletonweed	*Chondrilla juncea*
Sericea lespedeza	*Lespedeza cuneata*
Squarrose knapweed	*Centaurea virgata*
Tansy ragwort	*Senecio jacobaea*
Yellow starthistle	*Centaurea solstitialis*
List B Noxious Weeds	
Absinth wormwood	*Artemisia absinthium*
Black henbane	*Hyoscyamus niger*
Bouncingbet	*Saponaria officinalis*
Bull thistle	*Cirsium vulgare*
Canada thistle	*Cirsium arvense*
Chinese clematis	*Clematis orientalis*
Common tansy	*Tanacetum vulgare*
Common teasel	*Dipsacus fullonum*
Corn chamomile	*Anthemis arvensis*
Cutleaf teasel	*Dipsacus laciniatus*
Dalmatian toadflax, broad-leaved	*Linaria dalmatica*
Dalmatian toadflax, narrow-leaved	*Linaria genistifolia*
Dame's rocket	*Hesperis matronalis*
Diffuse knapweed	*Centaurea diffusa*
Eurasian watermilfoil	*Myriophyllum spicatum*
Hoary cress	*Cardaria draba*
Houndstongue	*Cynoglossum officinale*
Leafy spurge	*Euphorbia esula*

Appendix A. Colorado Department of Agriculture Noxious Weeds List

List B Noxious Weeds	
Mayweed chamomile	*Anthemis cotula*
Moth mullein	*Verbascum blattaria*
Musk thistle	*Carduus nutans*
Oxeye daisy	*Chrysanthemum leucanthemum*
Perennial pepperweed	*Lepidium latifolium*
Plumeless thistle	*Carduus acanthoides*
Quackgrass	*Elytrigia repens*
Redstem filaree	*Erodium cicutarium*
Russian knapweed	*Acroptilon repens*
Russian-olive	*Elaeagnus angustifolia*
Salt cedar	*Tamarix chinensis, T.parviflora, and T. ramosissima*
Scentless chamomile	*Matricaria perforata*
Scotch thistle	*Onopordum acanthium*
Scotch thistle	*Onopordum tauricum*
Spotted knapweed	*Centaurea maculosa*
Spurred anoda	*Anoda cristata*
Sulfur cinquefoil	*Potentilla recta*
Venice mallow	*Hibiscus trionum*
Wild caraway	*Carum carvi*
Yellow nutsedge	*Cyperus esculentus*
Yellow toadflax	*Linaria vulgaris*
List C Noxious Weeds	
Chicory	*Cichorium intybus*
Common burdock	*Arctium minus*
Common mullein	*Verbascum thapsus*
Common St. Johnswort	*Hypericum perforatum*
Downy brome	*Bromus tectorum*
Field bindweed	*Convolvulus arvensis*
Halogeton	*Halogeton glomeratus*
Johnsongrass	*Sorghum halepense*
Jointed goatgrass	*Aegilops cylindrica*
Perennial sowthistle	*Sonchus arvensis*
Poison hemlock	*Conium maculatum*
Puncturevine	*Tribulus terrestris*
Velvetleaf	*Abutilon theophrasti*
Wild proso millet	*Panicum miliaceum*

Source: Colorado Department of Agriculture, Noxious Weeds Management Program, 2009.

Appendix B. Pueblo County Weed Management Program Noxious Weeds List

Common Name[1]	Scientific Name[1]	Location in Project Corridor[2]	Colorado State Weeds List[3]
Bouncing bet	*Saponaria officinalis*	NA	B
Canada thistle	*Cirsium arvense*	NA	B
Cheatgrass	***Bromus tectorum***	**Roadside ditches**	**C**
Chicory	*Cichorium intybus*	NA	C
Common burdock	*Arctium minus*	NA	C
Common mullein	*Verbascum thapsus*	NA	C
Common teasel	*Dipsacus fullonum*	NA	B
Dame's rocket	*Hesperis matronalis*	NA	B
Diffuse knapweed	*Centaurea diffusa*	NA	B
Field bindweed	***Convolvulus arvensis***	**Entire**	**C**
Hoary cress	***Cardaria draba***	**Roadside ditches**	**B**
Houndstongue	*Cynoglossum officinale*	NA	B
Jointed goatgrass	*Aegilops cylindrica*	NA	C
Leafy spurge	*Euphorbia esula*	NA	B
Musk thistle	*Carduus nutans*	NA	B
Myrtle spurge	*Euphorbia myrsinites*	NA	A
Perennial pepperweed	***Lepidium latifolium***	**Roadside ditches**	**B**
Poison hemlock	*Conium maculatum*	NA	C
Puncturevine	*Tribulus terrestris*	NA	C
Redstem filaree	*Erodium cicutarium*	NA	B
Russian knapweed	*Acroptilon repens*	NA	B
Russian olive	*Elaeagnus angustifolia*	NA	B
Salt cedar (tamarisk)	***Tamarix ramosissima***	**Stormwater drainages/drainage basin**	**B**
Scotch thistle	*Onopordum acanthium*	NA	B
Taurian thistle	*Onopordum tauricam*	NA	NA
Yellow starthistle	*Centaurea solstitialis*	NA	A
Yellow toadflax	*Linaria vulgaris*	NA	B

Notes:
Bold indicates species was observed in study area
NA: Not applicable; not observed
Source(s):
[1] Pueblo County Planning and Development, Noxious Weed Management Program, 2009.
[2] Field observations November 23, 2008.
[3] Colorado Department of Agriculture, Noxious Weeds Management Program, 2009.