DEPARTMENT OF TRANSPORTATION

US HIGHWAY 34

BUSINESS ROUTE

State Highway 257 to 71st Avenue

STA0342-037

Environmental Assessment

October 2005

Project STA 0342-037
US HIGHWAY 34 BUSINESS ROUTE

ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to
42 USC 4332 (2) (C)

By the
US Department of Transportation, Federal Highway Administration,
and Colorado Department of Transportation

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

LIST OF ACRONYMS

A

ADT	Average Daily Traffic
AMI	Area Median Income
AOI	Area of Influence
APCD	Air Pollution Control Division
APE	Area of Potential Effects
AQPC	Air Quality Planning Council

B

BMP	Best Management Practice
BTEX	Benzene, Toluene, Ethyl Benzene, and Xylenes

C

CDBG	Community Development Block Grant
CDOT	Colorado Department of Transportation
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
CE	Categorical Exclusion
CEQ	Council on Environmental Quality
CO	Carbon Monoxide

D

dB	Decibels
dBA	Decibels “A” Weighted Scale
DRCOG	Denver Regional Council of Government

E

EA	Environmental Assessment
EAC	Early Action Compact
EDR	Environmental Data Resources
EO	Executive Order
EPB	Environmental Programs Branch
EPA	Environmental Protection Agency

F

FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FWPCA	Federal Water Pollution Control Act

H

HAPs	Hazardous Air Pollutants
HUD	US Department of Housing and Urban Development

L

LOS	Level of Service

M

MBTA	Migratory Bird Treaty Act
mph	Miles Per Hour
MS4	Municipal Separate Storm Sewer Systems
MSAT	Mobile Source Air Toxics

N

NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act of 1969
NFRT	North Front Range Transportation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places

O

OAHP	Office of Archaeology and Historic Preservation

P

PMSA	Primary Metropolitan Statistical Area
POW	Prisoner of War
ppm	Parts per Million
PVREA	Poudre Valley Rural Electric Association

R

RTP	Regional Transportation Plan

S

SH	State Highway
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SWMP	Storm Water Management Plan

T

TEA-21	Transportation Equity Act for the 21st Century
TIP	Transportation Improvement Program

U

US	United States
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tanks

V

VMT	Vehicle Miles Traveled

W

WQCD	Water Quality Control Division

1.0 PURPOSE AND NEED

1.1 INTRODUCTION AND DESCRIPTION OF PROPOSED ACTION

The Federal Highway Administration (FHWA), in conjunction with the Colorado Department of Transportation (CDOT), initiated an Environmental Assessment (EA) for transportation improvements to United States (US) Business 34 between 71st Avenue and State Highway (SH) 257 in the City of Greeley, Colorado. The project boundaries (see Figure 1.1) are located entirely in Weld County.

In accordance with the National Environmental Policy Act of 1969 (NEPA), actions proposed by federal agencies or that receive federal funding must consider environmental and socioeconomic impacts. This EA evaluates the impacts of the proposed action(s) and documents avoidance, minimization, and mitigation measures.

US Business 34 is an east/west highway that begins on the eastern edge of Greeley, Colorado and ends just west of SH 257. The project area begins at 71st Avenue and ends at SH 257. This segment of the highway is approximately 4.2 miles in length and consists of a two-lane undivided highway with no turn lanes and minimal shoulder width. Major north/south streets along the highway are 71st Avenue, 83rd Avenue, and 95th Avenue. The posted speed limit is 55 miles per hour (mph) with a design speed of 60 mph. The CDOT right-of-way in this corridor is approximately 103 feet.

CDOT proposes to reconstruct US Business 34 between 71st Avenue and SH 257 as a four-lane highway. The four-lane improvements include a 16-foot median, 10-foot shoulders, and signals at 83rd Avenue and 95th Avenue. The design speed will be between 50 and 60 mph. The new right-of-way width will be 180 feet.

1.2 PURPOSE AND NEED FOR THE ACTION

The purpose of this project is to ensure that future travel demand projections on US Business 34 can be accommodated and improve mobility, safety, and access. CDOT aims to proactively build for future travel demands on this highway before mobility declines significantly.

The need to improve the roadway to meet future travel demand projections is illustrated by the following:

- Traffic increases on US Business 34 are projected by the North Front Range 2030 Regional Transportation Plan to occur at an estimated 2.4 percent annually or 60 percent in 25 years (NFRTP 2004).
- Greeley's population has been projected to grow 105 percent between 1998 and 2020 (City of Greeley 2002).
- Traffic projections by the North Front Range 2030 Regional Transportation Plan indicate the Level of Service (LOS) will degrade on US Business 34 from a current B and deteriorate to F without needed improvements.
- The project will provide traffic continuity by upgrading this two-lane highway segment to four-lanes and connecting with the existing four-lane highway on the eastern and western boundaries of the project.

1.3 TRAVEL DEMAND

Travel demand is calculated by identifying trip generation (sources of trips such as commute to work, shopping, home), distribution (where trips go), mode choice (automobile, bus, etc.), and traffic assignment (this information is used to generate trips on various highway networks). For this project, travel demand was forecast for the year 2030.

Level of Service

LOS is a qualitative measure describing the operational characteristics of a traffic stream, ranked from A (best) to F (worst). LOS is described in terms of factors such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Highway LOS ratings are as follows:

- LOS A – Free flow operations
- LOS B – Reasonably free-flow operations
- LOS C – Noticeable traffic
- LOS D – Declining speeds and congestion beginning to form
- LOS E – Maximum service flow (full capacity)
- LOS F – Heavy congestion, significant delays, stop-and-go traffic

The factors used to determine LOS differ depending on the type of highway and intersection. For instance, an intersection LOS is based on vehicle seconds of delay, whereas highway LOS is generally based on a volume-over-capacity ratio. For two-lane highways, the percent of no-passing zones is also considered.

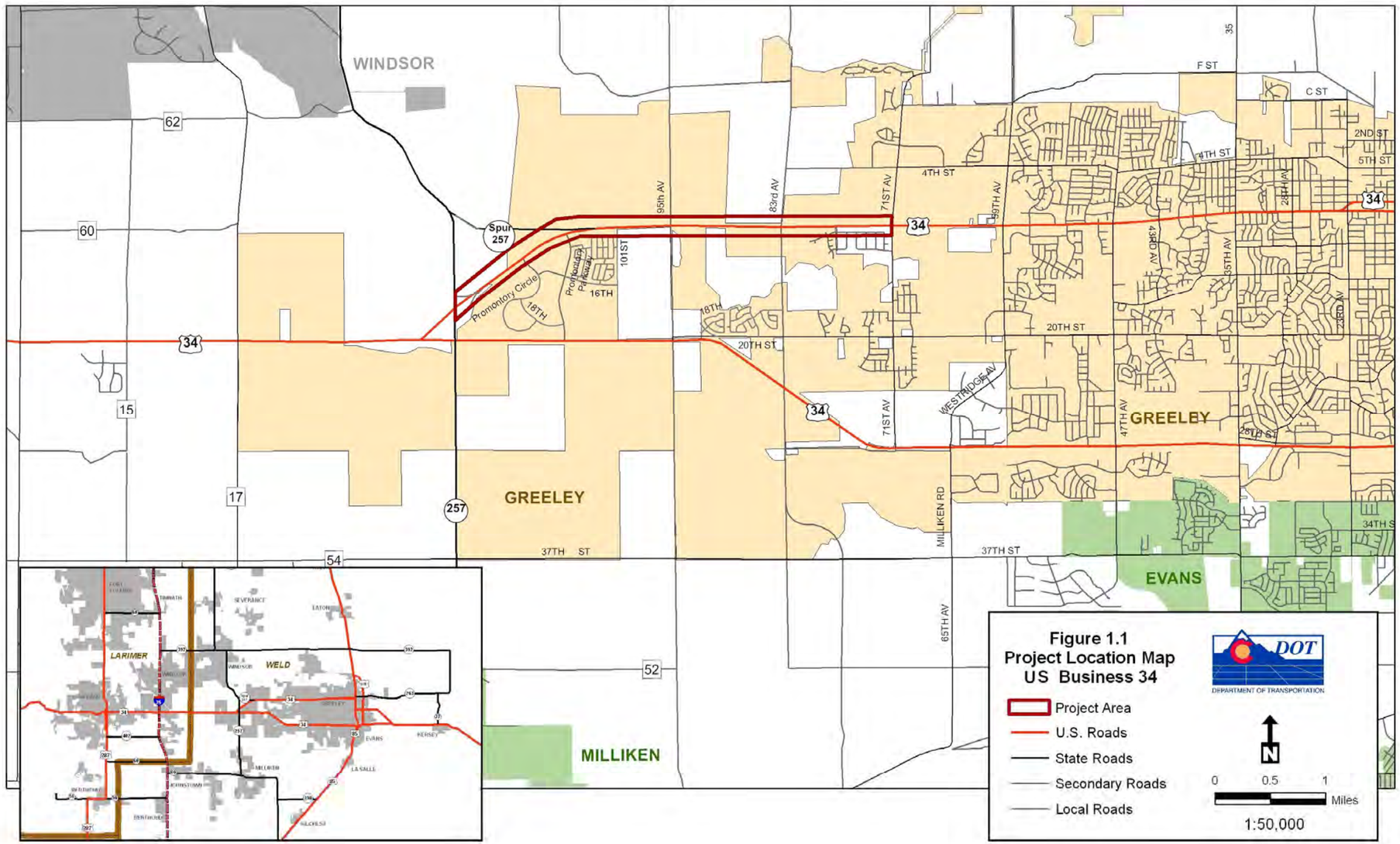
Average Daily Traffic

Current average daily traffic (ADT) volumes for this segment of US Business 34 were based on traffic counts taken in June 2004 and are shown in Table 1.1. The highway is currently designed to handle a total of 27,936 passenger cars per day for both east and west bound traffic. Traffic projections for 2030 identify ADT volumes that show significant increases over current volumes. The 2030 projections were determined based on the 2004 existing traffic data, The North Front Range 2030 Regional Transportation Plan, and Greeley Comprehensive Transportation Plan 2020. Projected 2030 ADT volumes are shown in Table 1.1.

Table 1.1
Existing 2004 and Projected 2030 ADT Volumes

Location	2004 ADT Volumes- East Bound	2030 ADT Projection- East Bound	2004 ADT Volumes- West Bound	2030 ADT Projection- West Bound
Between Promontory Circle and Promontory Parkway	6,450	18,810	8,380	24,620
Between Promontory Parkway and 95th Avenue	6,670	19,750	8,610	25,280
Between 95th Avenue and 83rd Avenue	6,630	19,400	8,650	25,200
Between 83rd Avenue and 77th Avenue	6,020	17,700	8,640	25,640
Between 77th Avenue and 71st Avenue	5,960	17,830	8,860	26,020

Figure 1.1
Project Location Map



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Currently, this segment of US Business 34 operates at a LOS of A or B. However, without this capacity upgrade, by 2030 the LOS deteriorates to F. These increases in 2030 traffic are the result of a number of factors including local and regional population growth, residential and commercial development along the corridor, and local travel demands along this highway. In addition to these population and development factors, traffic forecasts for US Business 34 include North Front Range Transportation (NFRT) and Air Quality Planning Council (AQPC), and City of Greeley planning assumptions.

1.3.1 Accident History

A total of 34 accidents were documented by CDOT from 1997 to 2000 within the project area. These accidents resulted in 22 injuries; with no fatalities resulting from the injuries. The majority of the accidents (21) occurred during daylight hours.

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2.0 ALTERNATIVES

This chapter describes the alternatives that were considered and analyzed in this EA. Alternatives were developed to assist in evaluating and comparing the environmental effects of all reasonable alternatives, including the No-Action Alternative. These alternatives meet the objectives of the proposed action while minimizing or avoiding adverse environmental impacts to the greatest extent possible. A total of 18 action alternatives and the No-Action Alternative were evaluated during the screening process. Six of the action alternatives addressed options for the roadway between 71st Avenue and 101st Avenue on the east whereas, three action alternatives were developed to address options between 101st Avenue and SH 257 on the west. Consequently, each of the six eastern alternatives could be coupled with each of the three western alternatives for a total of 18 action alternatives.

2.1 ALTERNATIVES IDENTIFICATION

The EA process started with scoping to identify issues and concerns related to US Business 34 and its potential improvement. These issues and concerns were used to:

- Develop the purpose and need for the project
- Develop reasonable alternatives to evaluate
- Identify screening criteria to apply to alternatives development
- Identify alternatives to retain for further study

2.2 ALTERNATIVE MODES OF TRANSPORTATION

Alternative modes of transportation were considered during the project scoping process. The NFRT & AQPC has a goal of replacing some of the single-occupancy vehicle trips with a different mode of transportation (for example, pedestrian, bicycle, carpool, transit, vanpool). US Business 34 has few current alternative modes of transportation available to commuters along the corridor. The alternative means of transportation were evaluated for this project as described below.

2.2.1 Bus

No local bus routes are currently available along US Business 34. However, the *Greeley Comprehensive Transportation Plan Mobility 2020* has identified this corridor for new transit service by 2010. All of the alternatives would provide adequate accommodations for increased bus traffic.

2.2.2 Bicycle/Pedestrian

Currently, there are no bicycle or pedestrian trails along the highway; however, some bicycle use does occur. Although there are no plans to construct bike lanes, the action alternatives would provide the necessary right-of-way for future construction by local agencies, CDOT, or other parties.

2.2.3 Carpool/Vanpool

Carpooling is promoted in the Greeley area through a regional program called SMARTTRIPS. This public program is designed to reduce automobile dependency and promote the use of alternative transportation in northern Colorado. The program encourages residents to leave their

cars at home at least one day a week to help preserve air quality, decrease traffic, conserve fuel, and promote better health.

Vanpools leave Greeley for Fort Collins and other nearby northern Colorado cities as part of the SMARTTRIPS initiative. Additionally, ten SMARTTRIPS vans operate between Greeley and Denver daily. The vanpools originate from strategic locations in Greeley. The impact of this program on regional or US Business 34 travel demand has not been calculated. All of the alternatives would continue to accommodate SMARTRIPS.

2.3 ALTERNATIVES DEVELOPMENT

The purpose and need for this project are to improve mobility, safety, and access on the existing US Business 34 between 71st Avenue and SH 257. A total of 18 action alternatives and the No-Action Alternative were initially evaluated for the project. Table 2.1 shows the six eastern action alternatives and the three western alternatives that were combined to total 18 action alternatives for the overall corridor study. Thus, eastern Alternatives A through F were coupled with western Alternatives 1, 2, and 3 to make a total of 18 (e.g. A-1, A-2, A-3, B-1, B-2, B-3, C-1….) action alternatives for screening.

Table 2.1
Alternatives Evaluated for US Business 34

East Segment Alternatives 71st Avenue to 101st Avenue	West Segment Alternatives 101st Avenue to State Highway 257
Alternative A - Shifts between the north and south sides of the current alignment.	Alternative 1 - Hold the centerline and widen on the north side.
Alternative B - Shifts between the north and south sides of the current alignment. This alternative is the same as Alternative C-1, except for a shift to the south in the vicinity of 95th Avenue.	Alternative 2 - Hold the centerline and widen on the north and south side.
Alternative C - Shifts between the north and south sides of the current alignment. This alternative is the same as Alternative B-1, except for a shift to the north in the vicinity of 95th Avenue.	Alternative 3 - Hold the centerline and widen on the south side.
Alternative D - Hold the centerline and widen on the north side.	
Alternative E - Hold the centerline and widen on the north and south side.	
Alternative F - Hold the centerline and widen on the south side.	

2.3.1 No-Action Alternative

As required by the NEPA, the No-Action Alternative has been considered throughout the EA as a viable alternative. This alternative would result in no changes to the existing highway. However, standard operation and maintenance practices would continue. The human and natural environments bordering the highway would remain as they currently exist, except for any development that may occur independent of improvements to the highway.

2.4 ACTION ALTERNATIVES CROSS SECTIONS

2.4.1 Cross-Section Development

Originally a 240-foot right-of-way was considered for the proposed action. During the alternative development process, the cross-section was narrowed to 180 feet to reduce potential impacts and respond to public and agency comments while maintaining desired design requirements.

Two types of cross-sections (typical sections), rural and urban, were reviewed for incorporation into the design of improvements to US Business 34 (Figure 2.1 and Figure 2.2). Rural cross-sections include wide shoulders and are appropriate for high speed traffic in undeveloped areas. In contrast, urban cross-sections include curb and gutter designs that are more appropriate for speed limits 45 mph or less.

Although the project area may become more urban in the foreseeable future, it is more characterized as a rural arterial at the present time. For this reason, CDOT proposes to improve US Business 34 using the rural cross-section. This design will most effectively allow for later transition from rural to urban design in the future.

Rural Cross-Section

The proposed rural cross-section is shown in Figure 2.1. The design features of this cross-section are a 180-foot right-of-way with four 12-foot general purpose travel lanes (two in each direction), a 16-foot median that serves as a continuous left turn lane, and two 10-foot shoulders.

Right of way for the rural cross-section is sufficient to allow for a change in classification from a rural to an urban cross-section. The potential future conversion to an urban cross-section design has not yet been determined. Figure 2.2 shows a potential urban cross-section for this segment of US Business 34.

2.5 ALTERNATIVES CONSIDERED FOR ADDITIONAL STUDY

Screening was conducted to reduce the set of 18 possible alternatives to the most reasonable and prudent alternatives for detailed analysis. The six primary eastern alternatives and the three primary western alternatives were screened on their own merits for simplicity. The results of the screening are displayed in Table 2.2 and Table 2.3.

All 18 alternatives met the purpose and need for action; however, some alternatives resulted in greater impact to the human and natural environment. Alternative A was screened out due to the complexity of constructing three crossover structures. Alternatives D and E were dropped from further consideration due to potentially high numbers of relocations. Alternative F was dropped due to the number of relocations and powerline conflicts. Of the western alternatives, both Alternatives 2 and 3 were dropped from further evaluation because of constructability issues, namely a conflict with stormwater structures on newly developed lands.

In summary, Alternatives B and C on the east and Alternative 1 on the west were retained for detailed analysis along with the No-Action Alternative. Upon combining the east and west segments, two action alternatives (B-1 and C-1) were carried forward for full evaluation.

2.5.1 No-Action Alternative

The proposed project will not be constructed and US Business 34 between 71st Avenue and SH 257 will remain as it currently exists. Routine maintenance activities will continue. The No-Action Alternative does not resolve the previously described deficiencies with the current highway. Current traffic demands and anticipated growth in the area has led CDOT to determine that the LOS may decrease from the current level B to a level F in 2030. The No-Action Alternative does not address this issue and would likely result in a significant deterioration in LOS along this highway in the next 20 + years.

2.5.2 Alternative B-1

US Business 34 from 71st Avenue to SH 257 would be widened approximately 80 feet from its present dimensions to increase capacity from two to four-lanes in each direction. The new roadway would follow the existing alignment with some shifts between the north and south sides to minimize impacts. From 101st Avenue to approximately 0.5 miles east of 95th Avenue, Alternative B-1 would shift the alignment southward and create a gentle curve. Figures 2.3-2.5 show the location of Alternative B-1.

2.5.3 Alternative C-1

This alternative is the same as B-1 except Alternative C-1 would shift the new alignment northward between 101st Avenue and 0.5 miles east of 95th Avenue. This would create a slightly more abrupt curve than Alternative B-1; however, both alternatives would meet all design standards and provide a safe roadway for motorists. Figures 2.3-2.5 show the location of Alternative C-1.

Figure 2.1
US 34 Business from SH 257 East to 71st Avenue
Rural Typical Section
(Proposed for this project)

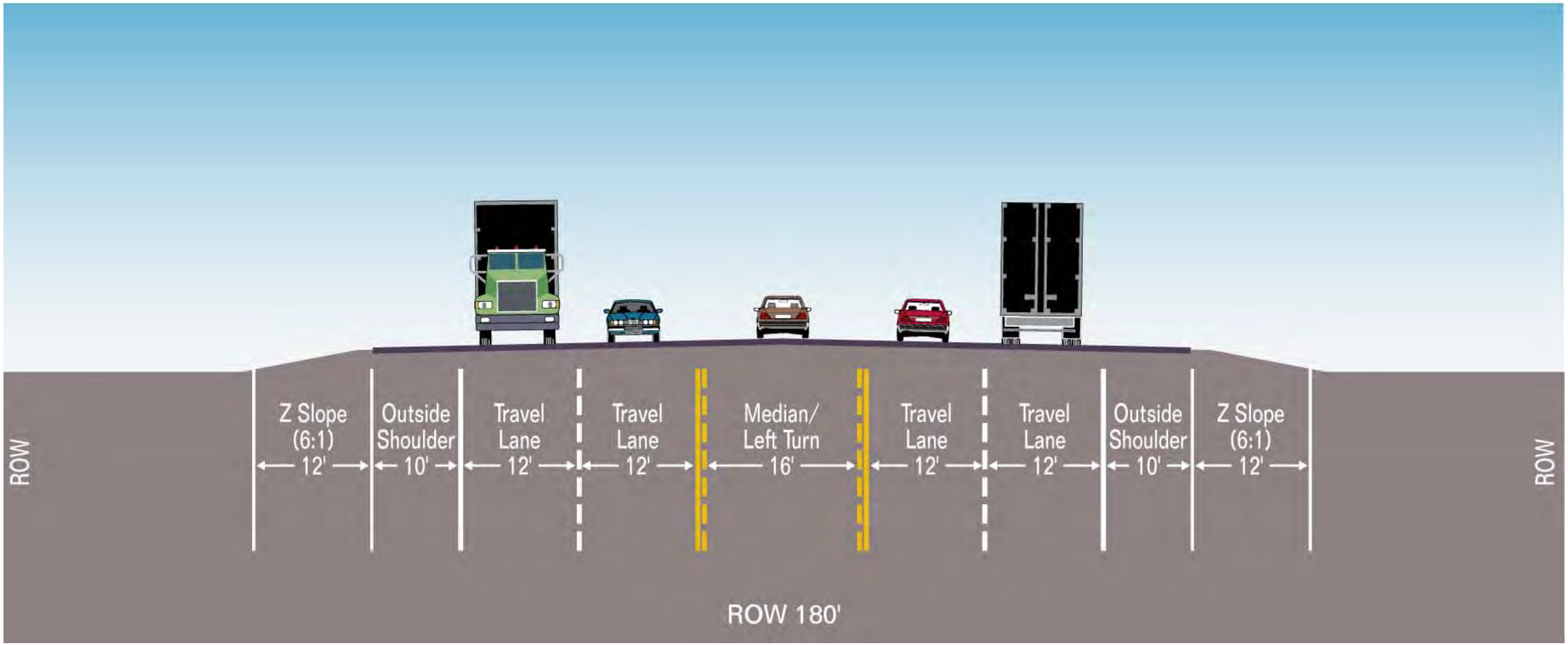


Figure 2.2
US 34 Business from SH 257 East to 71st Avenue
Urban Typical Section

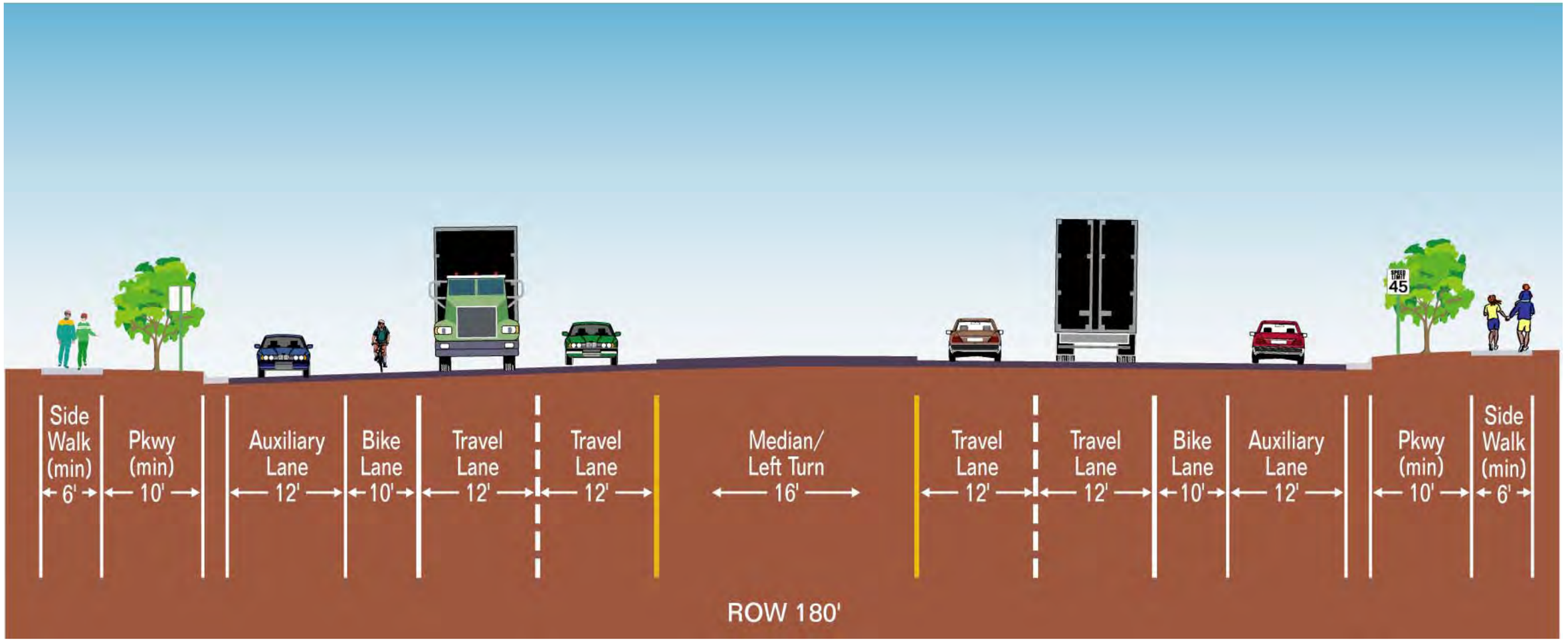


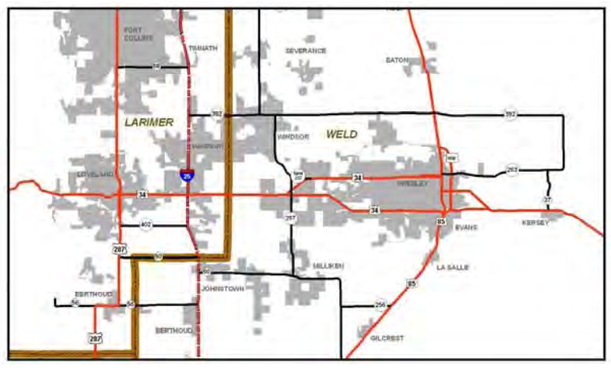
Table 2.2
Screening Criteria for the East Segment Alternatives – 71st Avenue to 101st Avenue

	No-Action	A (Meander)	B (Meander)	C (Meander)	D (North)	E (Center)	F (South)
Transportation Issues							
Traffic operations (LOS) Years-2002 and 2030	2002-B 2030-F	2002-B 2030-C	2002-B 2030-C	2002-B 2030-C	2002-B 2030-C	2002-B 2030-C	2002-B 2030-C
Environmental Issues							
Potential residential relocations	None	2	3	3	7	7	4
Non-jurisdictional wetlands (acres)	None	0.7	0.6	0.7	0.7	0.8	0.9
Jurisdictional wetlands (acres)	None	None	0.2	0.2	None	None	None
Threatened and endangered species	None	None	None	None	None	None	None
Prairie dog (acres)	None	≈2	≈ 2	≈ 2	≈ 2	≈2	≈1
Hazardous material	None	None	None	None	None	None	None
Historic resources	None	None	None	None	None	None	None
Archaeology	None	None	None	None	None	None	None
Paleontology	None	None	None	None	None	None	None
Air quality	None	None	None	None	None	None	None
Noise	None	26	27	26	24	24	25
Prime farmland (acres)	None	≈ 1.5	≈ 1	≈ 1	≈ 1	≈1	≈ 1
Environmental justice	None	None	None	None	None	None	None
4(f)	None	None	None	None	None	None	None
Construction/Maintenance Issues							
Constructability	Roadway deterioration	Three crossovers	Two crossovers	Two crossovers	Best geometrics zero crossovers	Centerline construction, zero crossovers	One crossover, powerline conflict
Maintenance	Continued roadway deterioration	Improved	Improved	Improved	Improved	Improved	Improved
Comments							
Local agencies	Undesirable	No comment	No comment	No comment	No comment	No comment	No comment
Public	No consensus	No consensus	No consensus	No consensus	No consensus	No consensus	No consensus

Table 2.3
Screening Criteria for West Segment Alternatives – 101st Avenue to SH 257

	No-Action	1 (North)	2 (Center)	3 (South)
Transportation Issues				
Traffic operations (LOS) Years - 2002 and 2030	2002–B/2030-F	2002–B/2030-C	2002-B/2030-C	2002-B/2030-C
Environmental Issues				
Potential residential relocations	None	None	None	None
Non-jurisdictional wetlands (acres)	None	None	None	0.3
Jurisdictional wetlands (acres)	None	None	None	None
Threatened and endangered species	None	None	None	None
Prairie dogs (acres)	None	2.4	1.9	0.5
Hazardous materials (acres)	None	None	None	None
Historic resources	None	None	None	None
Archaeology	None	None	None	None
Paleontology	None	None	None	None
Air quality	No improvement	Slight improvement	Slight improvement	Slight improvement
Noise (sensitive noise receptors)	None	None	None	None
Prime farmland	None	None	None	None
Environmental justice	None	None	None	None
4(f)	None	None	None	None
Construction/Maintenance Issues				
Constructability	No issue	Best geometrics	Development, hydraulic issues	Development, hydraulic issues
Maintenance	Continued roadway deterioration	Improved	Improved	Improved
Comments				
Local agencies	No comment	Preferred – consistent with City Comprehensive Plan	Undesirable	Undesirable
Public	No comment	Preferred	Undesirable	Undesirable

Figure 2.3
US Business 34



Alternative B-1
Right of Way

Alternative C-1
Right of Way

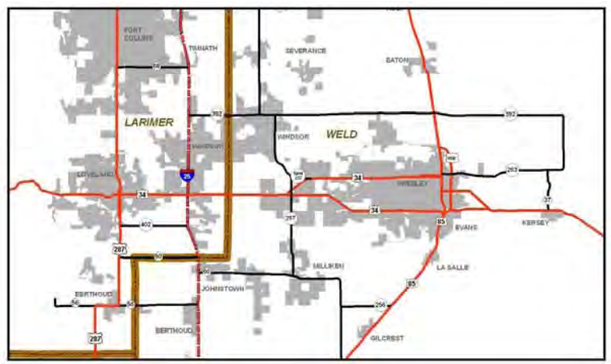
Figure 2.3
US Business 34
71st Avenue to
83rd Avenue

N

0 500 1,000 Feet

1:6,000

Figure 2.4
US Business 34



Alternative B-1
Right of Way

Alternative C-1
Right of Way

Figure 2.4
US Business 34
83rd Avenue to
95th Avenue

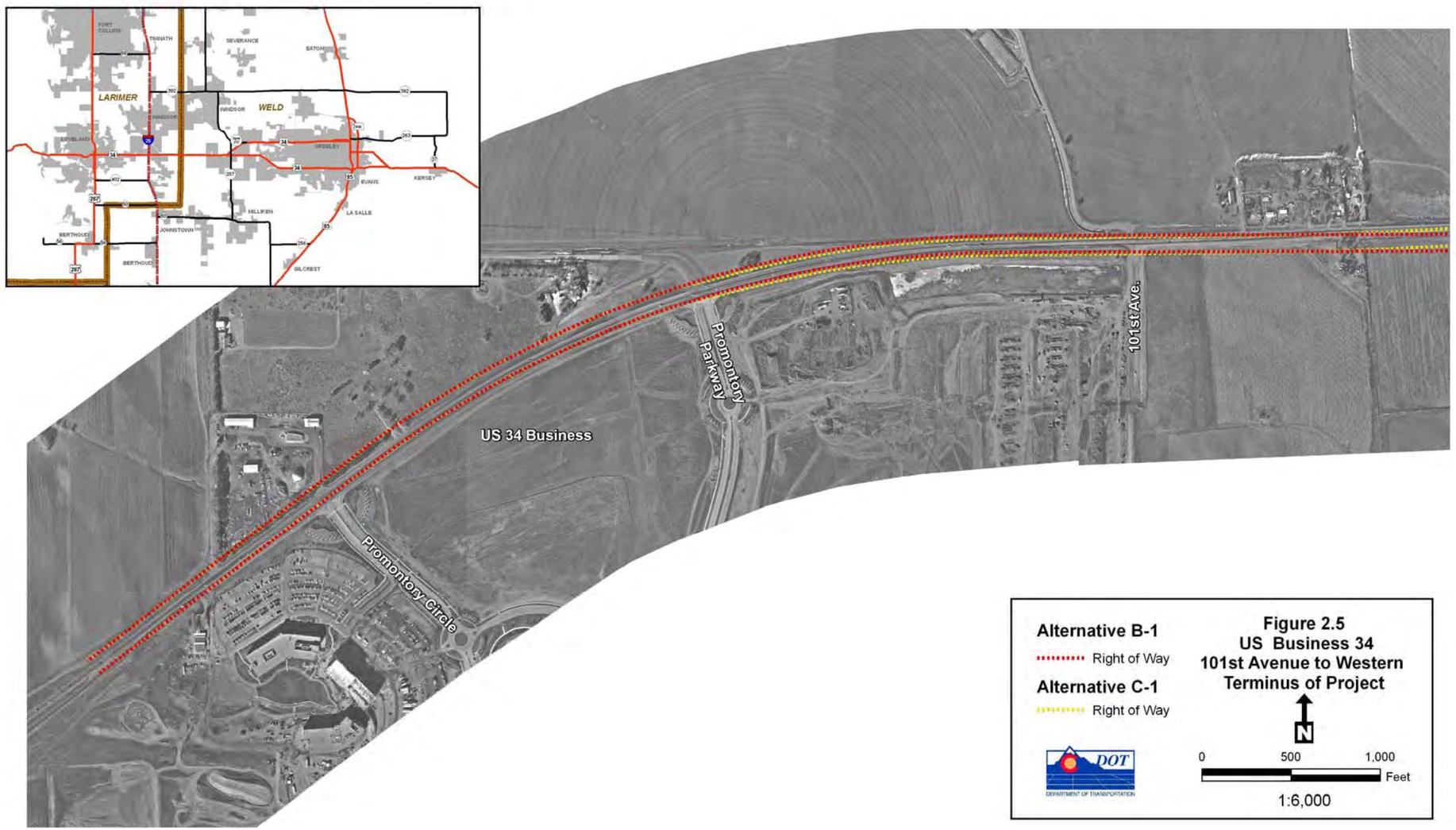
N

DOT
DEPARTMENT OF TRANSPORTATION

0 500 1,000
Feet

1:6,000

Figure 2.5
US Business 34



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3.0 AFFECTED ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION

This chapter describes the existing condition of natural and human resources in the project area that could be impacted by the No-Action, B-1, and C-1 Alternatives. The resources evaluated include those listed in the FHWA Guidance Document for Preparing and Processing Environmental and Section 4(f) Documents (FHWA 1987). Potential impacts of the No-Action, B-1, and C-1 Alternatives are identified and mitigation measures are listed where applicable. The "project area" generally refers to US Business 34 from 71st Avenue to SH 257.

3.1 VEGETATION

3.1.1 Existing Conditions

The primary vegetation types occurring in the project area include agricultural (dryland and irrigated), urban, and mid- and mixed-grass prairie.

Agricultural

Agricultural lands represent the dominant vegetation type within the project area. The agricultural practices in the project area are primarily classified as dry land and irrigated agricultural land. This includes fallow lands, rural development, and ranch/farm facilities. Major crop species typically include: corn, sugar beet, wheat, barley, rye, and other small grains.

Urban

The urban vegetation type represents landscaped areas associated with residential and commercial development. Included in this category are cities, towns, villages, strip developments along highways, transportation, power, communication facilities, shopping centers, and industrial and commercial complexes. Residential and commercial developments occur on both the north and south side of the highway.

Mid and Mixed Grass Prairie

Major grass species within the project area are composed of native and introduced grasses such as blue grama (*Bouteloua gracilis*), side-oats grama (*Bouteloua curtipendula*), buffalo grass (*Buchloe dactyloides*), switch grass (*Panicum virgatum L.*), barnyard grass (*Echinochloa crusgalli*), green foxtail (*Setaria viridis*), yellow foxtail (*Setaria pumila*), foxtail barley (*Hordeum jubatum*), quackgrass (*Elytrigia repens*), smooth brome (*Bromopsis inermis*), and crested wheat-grass (*Agropyron cristatum*). Very little native prairie occurs in the project area due to conversion of this vegetation to grazing and farming, industrial, commercial, and residential development. As a result, existing land cover varies from historic conditions.

3.1.2 Impacts

No-Action

No soil disturbing activities would occur and no vegetation would be impacted.

Alternative B-1

Upgrades to US Business 34 would temporarily and permanently remove mid- and mixed-grass prairie as well as agricultural lands during construction activities. Approximately 10.5 acres of

agricultural, three acres of mid- and mixed-grass prairie, and one acre of urban vegetation would be impacted by the project. These impacts would include temporary and permanent loss of vegetation from building the road.

Alternative C-1

Impacts related to vegetation would be the same as those discussed for Alternative B-1.

3.1.3 Mitigation

The following mitigation measures will be used to ensure revegetation of disturbed areas:

- During final design, the grading plan will minimize removal of vegetation where possible.
- Weed free topsoil will be salvaged from construction areas and stockpiled separately from topsoil known to contain noxious weeds. No importation of topsoil will be allowed on site.
- Temporary and permanent erosion control will implemented per the CDOT Erosion Control and Stormwater Management Quality Guide.
- Disturbed areas will be reseeded with native grasses and forbs.
- During construction, vehicle operation will be limited to the designated construction area.

3.2 NOXIOUS WEEDS

"Noxious weed" is a legally defined term that refers to a specific plant species designated for mandatory control by branches of local, state, or federal government due to the harm, actual or potential, that the species is capable of inflicting upon the resources and values of society. To be designated as a noxious weed by state or local governments in Colorado, the species must be non-native to the state and meet one or more of these criteria:

a) Aggressively invades or is detrimental to economic crops or native plant communities;

b) Is poisonous to livestock;

c) Is a carrier of detrimental insects, diseases, or parasites; or

d) The direct or indirect effect of the presence of this plant is detrimental to the environmentally sound management of natural or agricultural ecosystems.

3.2.1 Existing Conditions

Noxious Weed Project Area Inventory

A field assessment to inventory noxious weed species was conducted for the project. The existing vegetation in the project area was surveyed for the state listed noxious weeds occurring in Colorado, listed noxious weeds for Weld County, and noxious weeds that are listed on the CDOT Statewide Maintenance List.

Three species of noxious weeds, Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), and tamarisk (*Tamarix spp.*) were found. Patches of these weeds were scattered in and adjacent to the US Business 34 right-of-way. The *Noxious Weed Management Plan* (see Appendix C) shows the location of these noxious weed populations and provides control recommendations for each weed species.

Other non-native weed species within the project area include: kochia (*Kochia scoparia*), rough pigweed (*Amaranthus retroflexus*), puncturevine (*Tribulus terrestris*), and quackgrass (*Elytrigia repens*).

3.2.2 Impacts

No-Action Alternative

No soil disturbing activities would occur that would initiate new noxious weed infestation. Existing patches of noxious weeds would continue to exist within the highway right-of-way and will not be disturbed or made to spread. CDOT integrated weed management would continue to be implemented along the existing highway right-of-way.

Alternative B-1

Upgrades to US Business 34 would clear existing grass and herbaceous plant cover along the highway and create favorable conditions for noxious weeds. Noxious weed infestation is currently light to moderate. Through utilization of the mitigation measures described in Section 3.2.3 and the *Noxious Weed Management Plan* (Appendix C) prepared for the project, noxious weed impacts will be minimal.

Alternative C-1

Impacts related to noxious weed infestation would be the same as those discussed for Alternative B-1.

3.2.3 Mitigation

The degree of noxious weed infestation in the project area is relatively light to moderate in certain areas, but manageable through integrated weed management, which includes prevention of additional infestations during construction. Prevention measures will include the following:

- Clean equipment prior to entering the construction site to prevent spread of noxious weeds by wind, water, or accidental transport on construction vehicles.
- Topsoil shall consist of loose friable loam free of subsoil, refuse, stumps, roots, rocks, brush, noxious weed seed and reproductive vegetative plant parts such as, but not limited to: knapweed, purple loosestrife, and Canadian thistle, heavy clay, hard clods, toxic substances, or other material which would be detrimental to its use on the project.
- No importation of topsoil will be allowed onsite.
- Disturbed areas will be reclaimed in phases throughout construction with native grasses and forbs.
- In accordance with the Colorado Weed Free Forage Crop Certification Act[1], mulches or strawbales utilized for erosion control purposes will be certified weed-free[1].
- All seed mixes, soil, and nursery material used for reclamation will be free of noxious weed seeds, roots, and rhizomes.
- No fertilizer will be used on site.
- Herbicides shall be applied by use of wicks or sponges to avoid off-target injury.
- Broadcast herbicide spraying will only be approved through written consent of the Engineer.

[1] *In 1993, the Colorado Legislature passed the Weed Free Forage Crop Certification Act (C.R.S. §35-27.5-103, 1993 Supp.). This law provides a mechanism to prevent weed seed dissemination in hay, forage, and mulch. "Weed free" is defined as to be free from propagative plant parts and free from weed seed from plants set forth on state or regional lists. "Weed free certification" is defined as crop inspected and certified as free of noxious weeds by the commissioner pursuant to this article.*

- Periodic surveys will take place during the design and construction period to identify and treat noxious weeds that have developed.
- Contractor's vehicles and equipment will be inspected before they are used for construction to ensure that they are free of soil and debris capable of transporting noxious weeds, seeds, or roots.

3.3 WILDLIFE HABITAT AND WILDLIFE SPECIES

3.3.1 Existing Conditions

A large portion of the wildlife habitat within the project area has been disturbed by agricultural, residential, and commercial activities. This disturbance has fragmented wildlife habitat and limits the diversity and distribution of wildlife.

Wildlife species potentially found in the project area include mammals that are common across the Front Range of Colorado. The following species have adapted to living in agricultural and suburban areas in the region: raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), and small mammals such as deer mouse (*Peromyscus maniculatus*), meadow vole (*Microtus pennsylvanicus*), cottontail (*Sylvilagus spp.*), fox squirrel (*Sciurus niger*), and black-tailed prairie dog (*Cynomys ludovicianus*). Urban and agricultural developments limit the distribution of larger mammals.

Songbirds (native and non-native) also utilize habitat within the project area. Common species include: robin (*Turdus migratoris*), blue jay (*Cyanocitta cristata*), black-billed magpie (*Pica hudsonia*), house sparrow (*Passer domesticus*), mourning dove (*Zenaida acroura*), rock dove (*Columba livia*), great horned owl (*Bubo virginianus*), and northern flicker (*Colaptes auratus*). Several other native songbirds that occur in short to mid-grass prairie include: western meadowlark (*Sturnella neglecta*), lark bunting (*Calamospiza melanocorys*), and the horned lark (*Eremophila alpestris*). Lack of suitable nesting habitat limits avian distribution within the project area.

3.3.2 Impacts

No-Action Alternative

No impacts to wildlife or their habitat would occur.

Alternative B-1

This alternative would temporarily displace some wildlife, including both mammal and avian species that utilize grassy habitat along the highway right-of-way. The increase in road surface could result in more road mortality to small mammals and some bird species. The overall project related impacts to wildlife would be minimal.

Alternative C-1

The impacts to wildlife would be the same as discussed for Alternative B-1.

3.3.3 Mitigation

If construction is due to take place during bird nesting season a survey will occur prior to and up to the start of construction. If raptor nests are located during the survey, seasonal construction restrictions will be implemented.

3.4 WETLANDS

3.4.1 Existing Conditions

Wetland surveys were conducted along the highway right-of-way by CDOT wetland scientists to document the location and extent of wetlands located within the project area. Prior to the field study, a desktop review of National Wetland Inventory maps and aerial photography was conducted to identify the location of existing wetlands in the project area. Wetlands located in the project area were primarily created by seasonal hydrological conditions and consist of typical wetland vegetation such as cattails and sedges. The *Wetland Finding Report* located in Appendix B addresses wetlands in greater detail.

Seven wetland areas were identified along the US Business 34 project corridor. All are less than one acre and are primarily associated with roadside and irrigation ditches. These isolated wetlands have been created by drainage patterns along the road and seasonal hydrology associated with irrigation ditches. All of these wetlands have been reviewed by the United States Army Corps of Engineers (USACE). Their review determined that all of the wetlands are non-jurisdictional except for one located on the south side of US Business 34 near 83rd Avenue (USACE 2004). This jurisdictional wetland is approximately 0.2 acres and is associated with Jones Ditch. The rest of the wetlands are non-jurisdictional and are subject to review by CDOT and the FHWA.

3.4.2 Impacts

No-Action Alternative

No wetlands would be lost or impacted.

Alternative B-1

Approximately 0.6 acres of wetlands would be impacted by the alignment. These wetlands are located along the north and south sides of the highway. Jurisdictional wetlands account for approximately 0.2 acres of the anticipated impacts. All of the seven wetlands identified as occurring within the project area may be impacted to some degree. Impacts would result primarily from fill being placed over roadside ditches and loss or gain of hydrological functions from newly created drainage patterns. The increase in impervious pavement along US Business 34 may result in more runoff and could potentially create additional wetland acreage along the highway.

Temporary impacts to wetlands would include short-term modification that will be returned to their pre-construction condition after construction. These short-term impacts could include sedimentation, erosion, or noxious weed invasion.

Alternative C-1

Impacts to wetlands would be similar to those anticipated for Alternative B-1. The impacts would be approximately 0.7 acres of wetlands. Of these, impacts to jurisdictional wetlands would be 0.2 acres.

3.4.3 Mitigation

Due to the lack of suitable onsite mitigation opportunities, CDOT has determined that mitigation will occur at an off-site location. Mitigation for the loss of project wetlands is being pursued through an agreement with the Colorado Division of Wildlife (CDOW) to upgrade wetlands within the Big Thompson River Ponds State Wildlife Area.

In addition to the aforementioned mitigation measures, the following will be employed to minimize adverse impacts to wetlands during project construction:

- Temporary erosion control and sediment control Best Management Practices (BMPs) will be installed prior to ground disturbance activities. Completed areas shall be permanently stabilized within seven days.
- Unnecessary temporary impacts will be avoided by fencing the limits of disturbance during construction.
- No equipment staging or storage of construction materials will occur within 50 feet of wetlands.
- The use of chemicals, such as soil stabilizers, dust inhibitors, and fertilizers within 50 feet of wetlands will be prohibited.
- No discharge of effluent into wetlands will occur.
- Temporary fill material will not be stored within wetlands.
- All areas of exposed soil will be seeded and/or planted, and mulched throughout construction (following completion of each section). Mulch and mulch tackifier will be placed for temporary erosion control when seeding and/or planting cannot occur due to seasonal constraints.
- Wetland temporarily impacted during construction will be restored.

3.5 THREATENED, ENDANGERED, AND SENSITIVE SPECIES

3.5.1 Existing Conditions

Table 3.1 identifies the federally listed species that potentially occur in Weld County, Colorado. Based on the existing habitat along US Business 34, the bald eagle is the only federally listed species that may occur within the project area. The CDOW has designated habitat within the project area as bald eagle winter range.

Table 3.1
Federally Listed Species with Potential to Occur in Weld County

Species		Status
Mammals		
Black-Footed Ferret	*Mustela nigripes*	Endangered
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblei*	Threatened
Birds		
Bald Eagle	*Haliaeetus leucocephalus*	Threatened
Mexican Spotted Owl	*Strix occidentalis lucida*	Threatened
Piping Plover*	*Charadrius melodus*	Threatened
Interior Least Tern*	*Sterna antillarum athalassos*	Endangered
Whooping Crane*	*Grus americana*	Endangered
Fish		
Pallid Sturgeon*	*Scaphirhychus albus*	Endangered
Plants		
Ute Ladies'-Tresses Orchid	*Spiranthes diluvialis*	Threatened
Colorado Butterfly Plant	*Gaura neomexicana ssp. coloradensis*	Threatened

** Indicates water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other states*

A records search, desktop study, and field assessment determined that none of the federally listed species (excluding the bald eagle) have been identified as occurring along US Business 34.

State Listed/Sensitive Wildlife Species

The State of Colorado has listed threatened, endangered, and sensitive species that have low or declining populations. This list is reviewed and approved by the Colorado Wildlife Conservation Commission. Table 3.2 identifies the potential state listed species occurring in the project area.

Table 3.2
Special Status Species in the Project Area

Species of Concern	Occurrence in Project Area
Black-tailed Prairie Dog	Present in Project Area
Burrowing Owl	Likely present in Project Area
Ferruginous Hawk	Likely winter visitor in Project Area
Northern Leopard Frog	Unlikely to occur in Project Area due to lack of habitat
Common Garter Snake	Unlikely to occur in Project Area due to lack of habitat

Black-Tailed Prairie Dog (*Cynomys ludovicianus*)

The black-tailed prairie dog is currently listed as a "Species of Special Concern" in the State of Colorado. In addition, CDOT has set forth guidelines to avoid and minimize impacts to black-tailed prairie dog towns or colonies. Occasional patches of undeveloped land have provided habitat for prairie dogs along the north side of US Business 34. One prairie dog colony (approximately 4.75 acres) is located within the project area. Based on data gathered by surveys conducted in October of 2003, the minimum population of this colony is estimated to be approximately 28 individuals (ERO 2003).

Burrowing Owl (*Athene cunicularia*)

The burrowing owl is a migratory species found in habitat that supports prairie dog towns/colonies and is currently listed as "threatened" by the State of Colorado. These owls are only present in Colorado from approximately March 1st through October 31st. Often times they will nest in colonies within a prairie dog town. The burrowing owl does not dig its own burrow; instead it relies on the burrow of the prairie dog. They are protected under the Migratory Bird Treaty Act (MBTA) and the species has been identified by the United States Fish and Wildlife Service (USFWS) as a migratory species of concern within BCA-18 (Shortgrass Prairie Region). The CDOW suggests inspecting prairie dog towns for burrowing owl presence between March 1st and October 31st.

Burrowing owls were not observed during the prairie dog surveys that were conducted in October 2003; however, an additional burrowing owl survey will be performed prior to any construction activity that could potentially impact the prairie dog colony between March 1st and October 31st.

Ferruginous Hawk (*Buteo regalis*)

The ferruginous hawk is considered a "Species of Special Concern" in the State of Colorado. This raptor is closely associated with grasslands and semi-desert shrublands. The ferruginous hawk utilizes isolated trees, rock outcrops, the ground, and structures such as windmills and power poles for nesting. The ferruginous hawk is a winter resident on the eastern plains of Colorado and is known to occur in Weld County. However, it is considered an uncommon winter migrant in the area. Ferruginous hawks have been identified as occurring within the project area.

3.5.2 Impacts

No-Action

No threatened, endangered, candidate, or sensitive species will be affected.

Alternative B-1

Approximately 2.4 acres of a black-tailed prairie dog colony would be impacted. Burrowing owls could also be impacted by the loss of this colony.

Alternative C-1

Impacts to threatened, endangered, and state-listed sensitive species would be the same as Alternative B-1.

3.5.3 Mitigation

Black-Tailed Prairie Dog

Project activities that impact the black-tail prairie dog colony will follow the CDOT policy outlined in the June 1, 2005 memo. A copy of the memo is located in Appendix A.

Burrowing Owl

The CDOW suggests inspecting prairie dog towns for burrowing owl presence for any activities occurring within their habitat between March 1st and October 31st. A burrowing owl survey will be performed prior to beginning construction on the US Business 34 roadway improvements. If burrowing owls are present within the project area, the CDOW recommends a 75 yard construction free buffer to prevent impacts to nesting owls.

Ferruginous Hawk

The project area will be surveyed prior to construction to determine if ferruginous hawk nests are located within ½ mile of project area. Nesting takes place between February 1st and July 15th. Seasonal restrictions or buffers will be implemented if active nests are located.

3.6 HISTORIC AND ARCHAEOLOGICAL PRESERVATION

Section 106 of the National Historic Preservation Act (16 USC 470, as amended) and its implementing regulations (36 CFR 800) require federal agencies to consider the effects of planned undertakings on historic properties. Historic properties usually consist of sites, buildings, structures, districts or objects usually in excess of 50 years old that are eligible for or listed on the National Register of Historic Places (NRHP).

3.6.1 Existing Conditions

Inventory Methods and Results

In consultation with the State Historic Preservation Officer (SHPO), an Area of Potential Effects (APE) was established for the US Business 34 project. The APE encompasses the geographic area within which the undertaking may directly or indirectly cause alterations in the character or use of NRHP eligible or listed properties. A corridor measuring 600 feet wide, centered on the existing highway alignment, comprised the APE, extending the entire 4.2 mile length of the project. This area incorporated the No-Action Alternative as well as the two action alternatives. Historic properties that will be impacted directly and/or indirectly by one or more of the action alternatives are discussed below.

Prior to conducting field surveys to identify, document, and evaluate historic and prehistoric resources in the APE, a file search was completed through the online database compiled and maintained by the Office of Archaeology and Historic Preservation, Colorado Historic Society. Although several sites had previously been documented partially or completely within the project area, including a dairy farm, a segment of a historic irrigation ditch, and a portion of a World War II prisoner of war camp, none were eligible for listing in the NRHP.

In 2002 and 2003, the APE was systematically inventoried for historical and archaeological resources, respectively (Painter 2003a, 2003b). In addition to the three previously recorded sites, 13 historic residential, commercial, and agricultural sites, one irrigation ditch segment, and two prehistoric isolated artifacts were newly documented. Consultation with SHPO, FHWA and CDOT determined that none of these resources are eligible for nomination to the NRHP (see Appendix A for related correspondence).

Section 106 Public Involvement

The Section 106 regulations stipulate that federal agencies must make a reasonable and good faith effort to involve public agencies or entities that may have an interest in historic properties located within the APE of a proposed undertaking (36 CFR 800.2[c] & [d]). Consulting parties may include, but are not necessarily limited to, Native American tribes with an existing or historical connection to an area, representatives of local governments, and certain individuals and organizations with a demonstrated interest in a project that have concerns with the undertaking's effects on historic properties.

Native American Consultation

As noted above, historic preservation regulations mandate that federal agencies must coordinate with interested Native American tribes in the planning process for federal undertakings, as defined in 36 CFR 800.16(y). Consultation with a Native American tribe recognizes the government-to-government relationship between the United States government and sovereign tribal groups. Federal agencies must be sensitive to the fact that historic properties of religious and cultural significance to one or more tribes may be located on ancestral, aboriginal, or ceded lands beyond modern reservation boundaries. Consulting tribes are offered the opportunity to identify concerns about cultural resources and comment on how the project might affect them. If it is found that the project will impact cultural resources that are eligible for inclusion on the NRHP and are of religious or cultural significance to one or more consulting tribes, their role in the consultation process may also include participation in resolving how best to avoid, minimize, or mitigate those impacts. By describing the proposed undertaking and the nature of any known cultural sites, and consulting with the interested Native American community, CDOT and FHWA strive to effectively protect areas important to Native American people.

In October 2004, FHWA contacted 12 federally recognized tribes with an established interest in Weld County, Colorado, and invited them to participate as consulting parties:

- Apache Tribe (Oklahoma)
- Cheyenne and Arapaho Tribes (Oklahoma) *(two tribes administered by a unified tribal government)*
- Cheyenne River Sioux tribe (South Dakota)
- Comanche Nation (Oklahoma)
- Crow Creek Sioux Tribe (South Dakota)
- Kiowa Tribe (Oklahoma)
- Northern Arapaho Tribe (Wyoming)
- Northern Cheyenne Tribe (Montana)
- Ogalala Sioux Tribe (South Dakota)
- Pawnee Nation (Oklahoma)
- Rosebud Sioux Tribe (South Dakota)
- Standing Rock Sioux Tribe (North Dakota)

The Comanche Nation of Oklahoma responded to the invitation, expressing a desire to be a consulting party for the project (Appendix A). No specific issues of concern regarding the proposed undertaking were raised by the Comanche Nation in the context of known places of religious or cultural significance. No other tribes responded to the consultation request.

The Comanche Nation continued to receive information about the project as it became available, and every opportunity was taken to involve them in the NEPA planning and project development process. In so doing, FHWA and CDOT fulfilled their legal obligations for tribal consultation under federal law.

Consultation with Local Organizations

In 2003 and 2004, several local historic preservation organizations expressed a desire to become Section 106 consulting parties for this project. These entities included:

- City of Greeley Historic Preservation Commission
- City of Greeley Museums
- Historic Greeley, Inc.
- Daughters of the American Revolution, Centennial State Chapter

These groups, both individually and collectively, articulated concerns regarding CDOT's level of effort in documenting and evaluating historic properties in the project corridor, and indicated the desire to be closely involved with the project. FHWA and CDOT made the commitment to include these entities in the parallel Section 106 and NEPA documentation processes. In particular, the organizations were concerned with the status and disposition of the World War II prisoner of war (POW) camp site (5WL768), a portion of which is located within the project APE.

Two low stone pillars, located on private property just beyond the existing highway right-of-way, mark the original entrance to the POW camp, where German prisoners captured in Europe and North Africa were held between 1943 and 1946. As noted above, the POW camp does not meet minimum eligibility criteria for listing on the NRHP, as it exhibits virtually no original physical integrity. The site is presently used as an agricultural field; all architectural remains were removed long ago, and the potential for intact archaeological materials associated with the 1940s occupation is considered negligible within the project APE. Regardless of the NRHP eligibility determination, however, there is a great deal of local interest in the camp, and especially the pillars. At least one of the consulting parties is working to nominate the pillars as a local historic landmark.

In October 2004, CDOT coordinated a meeting with the consulting parties to discuss a variety of issues, focusing primarily on the potential effect from the proposed highway improvements on the stone pillars. Both of the Action (Build) Alternatives described in Chapter 2 will impact the pillars. As such, discussion at the meeting focused on strategies for relocating the pillars and avoiding future adverse effects to these locally significant features. As a result of these discussions, CDOT made the commitment to work with the consulting parties to move the pillars to a nearby location where they would remain intact and available as interpretive features of the camp for the traveling public. Because the NEPA documentation and design process was in progress, the exact location for relocating the pillars was not determined at the meeting. Minutes from the meeting are contained in Appendix A.

CDOT and FHWA will continue to work with the local consulting parties throughout project planning and development, as well as during construction, to ensure that the pillars are relocated and protected to the satisfaction of all concerned.

3.6.2 Impacts

No-Action

No historic properties eligible for nomination to the NRHP will be affected by the No-Action Alternative.

Alternative B-1

No historic properties eligible for the NRHP or archaeological resources will be affected. However, two locally significant pillars marking the location of the World War II POW Camp (5WL768) will be impacted. In consultation with the Section 106 consulting parties noted in Section 3.6.1, FHWA and CDOT have made the commitment to relocate the pillars to a nearby location where they will be accessible to the traveling public.

Alternative C-1

Impacts would be the same as described for Alternative B-1.

3.6.3 Mitigation

As indicated under Alternative B-1, above, FHWA and CDOT will work with the designated consulting parties to relocate the POW camp pillars to a new location to allow for continued public visitation and potential interpretation by the local entities.

3.7 PALEONTOLOGY

The Colorado Historical, Pre-historical, and Archaeological Resources Act of 1973 mandates paleontological resources compliance.

3.7.1 Existing Conditions

A CDOT Paleontologist conducted on-the-ground surveys for paleontological resources along US Business 34. After reviewing geological maps, it was determined the only portion of the project area requiring a field survey was located south of the existing highway and west of 95th Avenue. In this area, the Fox Hills Sandstone and the overlying late Holocene to late Pleistocene eolian clay, silt, sand, and granules unit (comment 9-5) are exposed in a large, linear depression paralleling the existing highway alignment; the depression appears to be an abandoned materials pit.

The Fox Hills Sandstone consists of buff or brown, concretionary sandstone and sandy shale, and soft consolidated, white sandstone (Dane and Pierce 1936). The Fox Hills is approximately 65.5 to 68 million years old. It includes marine sands of foreshore, bar, and lagoonal origin representing the last years of the Late Cretaceous inland seaway (Kauffman 1977). Fossil plants, invertebrates, bony fish scales and vertebrae, shark teeth, crocodile teeth, and an insect have been documented from scattered locations in this formation in Larimer, Weld, Morgan, Adams, and El Paso Counties.

The unnamed eolian clay, silt, sand, and granules unit is composed of light-brown to reddish-brown to olive-gray, windblown sediments, which are preserved mainly as sand dunes east of I-25. On the surface of the unnamed eolian clay, silt, sand, and granules unit exposure in the abandoned materials pit south of US Business 34, the field survey did locate the single jaw of a

pocket mouse, *Perognathus sp*. This rodent genus is documented as occurring in the region (Fitzgerald et al. 1994). The specimen could be from the Holocene (less than 10,000 years old, and not of paleontological concern), or late Pleistocene age. The CDOT Paleontologist documented this specimen as an isolated find, and insignificant scientifically.

The literature search of the project area did not reveal any previously recorded fossil locations in the project area.

3.7.2 Impacts

No-Action

The No-Action Alternative would not disturb new right-of-way or impact any previously unrecorded paleontological resources.

Alternative B-1

The literature search and field survey did not identify any previously recorded or new finds within the project area. This alternative would not result in any known impacts to paleontological resources.

Alternative C-1

Potential impacts to paleontological resources would be the same as identified for Alternative B-1.

3.7.3 Mitigation

No mitigation for paleontological resources has been recommended for the project. However, if these resources are uncovered during construction, the CDOT Paleontologist will be notified immediately.

3.8 FLOODPLAINS

3.8.1 Existing Conditions

Based on the review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Weld County, Colorado, the project area is not located in a floodplain.

3.9 WATER RESOURCES AND QUALITY

3.9.1 Existing Conditions

Surface Water

The Cache La Poudre River is located approximately 3.5 miles north of the project area. This river is an important supply of water for the city and provides water through direct flows and storage rights. The project area does not contain any perennial or intermittent streams that could provide year-long or storm water flows to the Cache La Poudre River.

Groundwater Resources

The Safe Drinking Water Act of 1974 was established to protect the quality of drinking water in the United States. This law focuses on all waters actually or potentially designated for drinking

water, whether from above ground or underground sources. It authorizes the US Environmental Protection Agency (EPA) to establish safe standards of purity and requires all owners or operators of public water systems to comply with primary (health-related) standards.

Most of Greeley's drinking water comes from surface water, such as the Cache La Poudre River. Some use of aquifers for drinking water may occur just outside the city, especially in some of the agricultural residences. The aquifers in the project area are located in the Cretaceous Fox Hills Formation. However, a search of the State Engineers Office identified no wells within the project area.

Colorado Discharge Permit System Overview

Federal water quality requirements were first instituted by the passage of the Federal Water Pollution Control Act (FWPCA) Amendments of 1972. Title IV, Permits and Licenses, of the FWPCA created the system for permitting wastewater discharges known as the National Pollutant Discharge Elimination System (NPDES) permit program. These permits place a limit on the amount of pollutants that may be discharged into state waters. The State of Colorado was granted authority from EPA to issue these permits and manage the NPDES program through the Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Division (WQCD). In Colorado, NPDES requirements are carried out through the Colorado Discharge Permit System (CDPS). There are two phases of the CDPS currently in effect. On November 16, 1990, EPA issued Phase I that requires all operators of medium and large municipal separate storm sewer systems (MS4s), such as CDOT, to obtain a CDPS permit and develop a storm water management program designed to prevent harmful pollutants from being washed by storm water runoff into the MS4, then discharged from the MS4 into local water bodies. Development of a construction storm water management plan (SWMP) for soil disturbances of five acres or more was the cornerstone of this program. The most important feature of this plan is the identification of BMPs designed to prevent pollutants from reaching waterways.

Phase II was published in the Federal Register on December 8, 1999, and requires operators of regulated small MS4s, such as Weld County, to obtain a CDPS permit and develop a storm water management program designed to prevent harmful pollutants from being washed into the MS4 and being deposited in waterways. This program set forth immediate and more stringent controls on construction activity discharges by requiring projects one acre or larger in size to secure a CDPS permit for storm water discharges during construction.

The City of Greeley participates in the CDPS program and is a standard MS4 Phase II permit holder. Half of the proposed project area falls within the area identified for inclusion in their MS4 permitting area.

3.9.2 Impacts

No-Action

The No-Action Alternative would not disturb additional soils or create additional runoff that may result in adverse impacts to water resources.

Alternative B-1

Although the proposed action does not convey road run-off or storm water flows into intermittent or perennial waterways; the increase in impervious surface would result in additional run-off to wetlands and irrigation ditches. Temporary and permanent water quality impacts may result from the following project activities:

- Potential increase in phosphorus and nutrient levels due to increased run-off.
- Potential petroleum releases from construction equipment.
- Increase in sediment releases from construction activities. This could result in an increase in sediment and total suspended solids in irrigation canals and/or wetlands.
- Potential increase in salt, sand, and deicer releases to irrigation systems.
- Potential increase in copper from vehicle brake emissions and in zinc/cadmium from tire wear.
- Potential increase in particulate matter and mercury from vehicle exhaust.

Alternative C-1

The water quality impacts would be the same as identified for Alternative B-1.

3.9.3 Mitigation

All BMPs for this project will be designed in accordance with CDOT's MS4 Permit titled "New Development and Redevelopment Program," which was implemented in February 2004. The project is also committed to following CDOT's Erosion Control and Stormwater Quality Guide and CDOT Specifications for Road and Bridge Construction, sections 107.25 and 208.

Water quality mitigation measures will include the following:

- Implementation of temporary erosion control and storm water control measures during construction.
- Implementation of permanent erosion control and storm water measures to address slope erosion and roadway run-off.
- Installation and maintenance of existing and new BMPs.
- Development of a spill prevention and emergency response plan for use during construction to address the storage, handling, and use of chemicals, fuels, and lubricants.

3.10 AIR QUALITY

3.10.1 Existing Conditions

The EPA has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants to protect the public from health impacts associated with air pollution. These six criteria pollutants are carbon monoxide (CO), ozone, nitrogen dioxide, sulfur dioxide, lead, and particulate matter (ten microns or less in diameter and 2.5 microns or less in diameter).

The City of Greeley is contained within the NFRT and AQPC along with Fort Collins, Loveland, Berthoud, Evans, and Windsor. The latest transportation and demographic data from the NFRT and AQPC were used in demonstrating regional and local air quality conformity as described in Section 176 (c) of the Clean Air Act.

The City of Greeley is designated as an attainment/maintenance area for CO by the EPA. The EPA approved a revised CO maintenance plan for Greeley on January 20, 2004.

Because of monitored violations of the eight-hour ozone standard along the Front Range in 2002 and 2003, the Regional Air Quality Council, CDPHE, CDOT, Air Quality Control Commission, and the Denver Regional Council of Governments (DRCOG) have developed a plan for achieving the eight-hour ozone standard. In early 2004 the plan was amended to include Elbert, Larimer, Morgan, and Weld Counties as signatories. This plan, called an Early Action Compact (EAC) for Ozone, has specific milestones that must be met in order to attain the eight-hour ozone standard by December 31, 2007. EPA has deferred the non-attainment designation as long as the area meets the milestones in the EAC.

3.10.2 Conformity with Regional Transportation Plan

Section 176 (c) of the Clean Air Act and related requirements of the Transportation Equity Act for the 21st Century (TEA-21) require that transportation plans, programs, and projects assure conformity with the State Implementation Plan (SIP). This provision applies to areas designated as non-attainment or maintenance for any of the criteria pollutants. The US Business 34 reconstruction between 71st Avenue and SH 257 is included in the North Front Range 2030 Regional Transportation Plan and was included in the air quality modeling for the conformity determination. This project is also included in the North Front Range's fiscal year 2005 through fiscal year 2010 Transportation Improvement Program (TIP). This project meets these regional conformity requirements of the Clean Air Act.

3.10.3 Impacts (for B-1 and C-1 Alternatives)

Project Level Air Quality Impacts

Changes in traffic patterns, management, and demand were analyzed as part of this EA. The traffic study found that signalized intersections at Promontory Circle, Promontory Parkway, and 83rd Avenue would operate at LOS C in 2030 if the proposed improvements were constructed. However, the signalized intersection at 71st Avenue would operate at LOS F in 2030 with the proposed improvements. EPA air quality modeling guidance states that intersections which operate at LOS C or better are not likely to cause or contribute to an exceedance of CO standards and therefore, intersection hot spot modeling is not required. Based on this guidance, the 71st Avenue intersection was the focus of CO hot spot modeling.

CO Hot Spot Modeling

CO Modeling Results

The CO dispersion modeling was conducted for the 2004 existing, 2030 no action, and 2030 build scenarios. CDOT Environmental Programs Branch (EPB) provided 2004 emission factors (running-11.4 grams/vehicle mile and idle -121.3 grams/vehicle hour) for the CAL3QHC dispersion modeling. This methodology assumes a worst-case condition that would result in higher CO concentrations than an opening year scenario. This background value was added to the worst-case CAL3QHC predicted values. The results of the modeling for each scenario are included in Table 3.3.

Table 3.3
Predicted One-Hour and Eight-Hour CO Concentrations in Parts Per Million

Receptor #	2004 Existing		2030 No-Action		2030 Build	
	1-Hr	8-Hr	1-Hr	8-Hr	1-Hr	8-Hr
1	5.6	4.9	7.4	6.2	7.8	6.6
2	4.7	4.3	6.4	5.5	7.7	6.5
3	4.8	4.3	5.8	5.0	7.3	6.1
4	4.6	4.2	5.2	4.6	6.8	5.8

Notes: 1. Concentration + 3.0 ppm background concentration
2. An altitude adjustment of 1.3 and a persistence factor of 0.57 were used to calculate the 8-Hr concentrations

Although the highest predicted one-hour and eight-hour CO concentrations of 7.8 and 6.6 ppm occurred in the 2030 Build scenario at Receptor 1, none of the receptors approached the one-hour or eight-hour NAAQS of 35 ppm or 9 ppm. Project-related CO impacts are not expected with this project and no mitigation for CO impacts is required. This EA contains the input/output files from the CAL3QHC hot spot modeling in Appendix F.

The Air Pollution Control Division (APCD) of the CDPHE has concurred with CDOT's conclusions regarding the air quality impacts of the US Business 34 project.

3.10.4 Mobile Source Air Toxics

Air Quality

Mobile Source Air Toxics
In addition to the NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g. dry cleaners) and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

EPA is the lead Federal Agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. More recently EPA issued a Final Rule 66 FR 17229 on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources. This rule was issued under the authority in Section 202 of the Clean Air Act, and the rule's preamble provides the following summary information regarding the effects and control of MSATs:

> *Today's action addresses emissions of hazardous air pollutants (HAPs) from motor vehicles and their fuels. Hazardous air pollutants refer to a range of compounds that are known or suspected to have serious health or environmental impacts. Motor vehicles are significant contributors to national emissions of several hazardous air pollutants, notably benzene, formaldehyde, 1,3-butadiene, acetaldehyde, and diesel particulate matter and diesel exhaust organic gases.*

> *In today's action, we list 21 compounds emitted from motor vehicles that are known or suspected to cause cancer or other serious health effects. Our MSAT list includes various volatile organic compounds (VOCs) and metals, as well as diesel particulate matter and diesel exhaust organic gases (collectively DPM + DEOG). The selection methodology we used to develop this MSAT list, which may be used to add compounds to or remove compounds from the list in the future as new information becomes available, is also described. In today's action we also examine the mobile source contribution to national inventories of these emissions and the impacts of existing and newly promulgated mobile source control programs, including our reformulated gasoline (RFG) program, our national low emission vehicle (NLEV) standards, our Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and our proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 1990 and 2020, we project these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 67 to 76 percent, and will reduce on-highway diesel PM emissions by 90 percent.*

In the 2001 rulemaking, EPA identified six priority MSATs: acetaldehyde, benzene, formaldehyde, diesel exhaust, acrolein, 1,3 butadiene. EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The following toxicity information for the six prioritized MSATs was taken from the IRIS database Weight of Evidence Characterization summaries. This information is taken verbatim from the IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- Under the proposed revised Carcinogen Risk Assessment Guidelines (U.S. EPA, 1996), benzene is characterized as a known human carcinogen.
- Under the Draft Revised Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), the potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- Formaldehyde is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- Under EPA's 1999 Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), 1,3-butadiene is characterized as carcinogenic to humans by inhalation.
- Acetaldehyde is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- Using U.S. EPA's revised draft 1999 Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), diesel exhaust (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.

As noted, EPA is the lead Federal government agency responsible for the establishment of national air quality standards, national guidance and guidelines for the uniform and scientifically reliable study of air pollutants. To date, neither NAAQS for MSATs nor national project level guidelines or guidance to study MSATs under various climatic and geographic situations have been developed. Such limitations make the study of MSAT concentrations, exposures, and health impacts difficult and uncertain. Thus, accurate and reliable estimates of actual human health or environmental impacts from transportation projects and mobile source air toxics are not scientifically possible at this time.

EPA has also not established toxicity factors for diesel particulate matter, although one study asserts that this pollutant accounts for a large portion of MSAT health risk.

Project Level MSAT Discussion

The analysis of air toxics is an emerging field. The USDOT and EPA are currently working to develop and evaluate the technical tools necessary to perform air toxics analysis, including improvements to emissions models and air quality dispersion models. Limitations with the existing modeling tools preclude performing the same level of analysis that is typically performed for other pollutants, such as carbon monoxide. FHWA's ongoing work in air toxics includes a research program to determine and quantify the contribution of mobile sources to air toxic emissions, the establishment of policies for addressing air toxics in environmental reports, and the assessment of scientific literature on health impacts associated with motor vehicle toxic emissions.

Even though reliable quantitative methods do not exist to accurately estimate the health impacts of MSATs, it is possible to qualitatively assess future MSAT emissions under the project alternatives. Based on this approach, it is likely that either of the Action alternatives will result in lower MSAT emissions over the No Action case and that future emissions under both the Action and No Action scenarios will be lower than present day emissions.

For each alternative in this EA, the amount of MSATs emitted would be proportional to the vehicle miles traveled and congestion, assuming that other variables such as fleet mix are the same for each alternative. Because the congestion estimated for the No Action Alternative is higher than for any of the Action Alternatives, increased impacts to regional air quality related to MSATs are not expected from any of the Action Alternatives. In addition, because the estimated VMT under each of the Action Alternatives are nearly the same, it is expected there would be no appreciable difference in overall MSAT emissions between the two 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 MSAT emissions by 67 to 90 percent. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, projected reductions are so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future as well.

In sum, under all Action Alternatives in the design year it is expected there would be reduced MSAT emissions in the project area, relative to the No Action Alternative, due to reduced congestion and due to EPA's MSAT reduction programs. There could be slightly elevated but unquantifiable increases in MSATs to residents and others in a few localized areas where VMT increase, which may be important particularly to any members of sensitive populations. However, there will likely be decreases in MSAT emissions in locations where VMT are reduced. In general, MSAT levels are likely to decrease over time due to nationally-mandated cleaner vehicles and fuels.

Unavailable Information for Project Specific MSAT Impact Analysis

The science and modeling of project specific MSAT impacts has not developed to the point where there is certainty or scientific community acceptance. Accordingly, information on MSAT impacts on any of the alternatives in this EA is not available, and the means to obtain this information have not been fully developed. When this is the case, 40 CFR 1502.22(b) requires FHWA to address four provisions: 1) A statement that such information is incomplete or unavailable; 2) A statement of the relevance of the incomplete or unavailable information to

evaluating reasonably foreseeable significant adverse impacts on the human environment; 3) A summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and 4) The agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. These provisions are addressed as follows:

1. Project specific MSAT analysis is an emerging field and the science has not been fully developed and is therefore unavailable. FHWA is aware that MSAT releases to the environment may cause some level of pollution. What is not scientifically definable is an accurate level of human health or environmental impacts that will result from the construction of new transportation facilities or modification of existing facilities. Project-level MSAT risk assessment involves four major steps: emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is currently encumbered by technical shortcomings that prevent a formal determination of the MSAT impacts of this project. The emissions model (MOBILE 6.2) is based on limited data raising concerns over the accuracy of the final estimates. Further the particulate emissions rates from MOBILE6.2 are not sensitive to vehicle speed, which is an important determinant of emissions rates (this is a shortcoming for diesel particulate matter, but not the remaining priority MSATs) or acceleration. Given uncertainties in the emissions estimation process, subsequent calculated concentrations would be equally uncertain. But beyond this, the available dispersion models have not been successfully validated for estimating ambient concentrations of particulate matter or reactive organic MSATs. Available exposure models are not well designed to simulate roadside environments. Finally, the toxicity value of at least one of the priority MSATs, that of diesel particulate matter, has not been nationally established, which would prevent the determination of health impacts of this pollutant even if the other necessary tools were available. Thus, current scientific techniques, tools, and data make it impossible to accurately estimate actual human health or environmental impacts from MSATs that would result from a transportation project.
2. Without this project specific MSATs analysis, it is impossible to quantitatively evaluate the air toxic impacts at the project level. Therefore, this unavailable or incomplete information is very relevant to understanding the "significant adverse impacts on the human environment," since the significance of the likely MSAT levels cannot be assessed.
3. Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with negative health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate negative health outcomes when exposed to large doses. There have been other studies and papers that suggest MSATs have health impacts. However, noting that unresolved issues still remain, the Health Effects Institute, a non-profit organization jointly funded by EPA and industry, has undertaken a major series of studies to determine whether MSAT hot spots exist and what the health implications are if they do. The final summary of these studies is not expected to be completed for several more years.

Recent studies have been reported to show that close proximity to roadways is related to negative health outcomes -- particularly respiratory problems[2]. Yet these studies are often not specific to MSATs. Instead they have encompassed the full spectrum of both criteria pollutants and other pollutants. Thus it is impossible to determine whether MSATs are responsible for the health outcomes or the criteria pollutants.

There is also considerable literature on the uncertainties associated with the emissions modeling process. The most significant of these is an assessment conducted by the National Research Council of the National Academy of Sciences, entitled "Modeling Mobile-Source Emissions" (2000). This review noted numerous problems associated with then current models, including the predecessor to the current MOBILE 6.2 model. The review found that, "significant resources will be needed to improve mobile source emissions modeling." The improvements cited include model evaluation and validation, and uncertainty analysis to raise confidence in the model's output. While the release of MOBILE 6.2 represents an improvement over its predecessor, the MSAT emission factors have not been fully validated due to limits on dispersion modeling and monitoring data. The MOBILE 6.2 model is currently being updated and its results will not be evaluated and validated for several years.

4. 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. FHWA believes that these projections are credible, because the control programs are required by statute and regulation. Also, since all of the Action Alternatives result in reduced congestion in the project area relative to the No Action Alternative, FHWA is confident that MSAT emissions will also be lower in the project area in the design year under those alternatives. Because MSAT emissions on a per VMT basis are expected to decline due to EPA's control program, and because each of the Action Alternatives would result in a nearly equal reduction in VMT relative to the No Action Alternative, FHWA does not believe that there will be significant adverse impacts on the human environment.

3.10.5 MITIGATION

Construction PM10 Levels

The contractor will be required to minimize airborne dust during construction through construction phasing (prevents exposing bare dirt on the whole site at once), soil stabilization (seeding and mulching), dust suppression (regular watering), washing construction vehicle tires, reducing construction vehicle speeds, and limiting excessive idling of construction equipment.

3.11 NOISE

A noise study was conducted to identify potential traffic noise impacts and to determine potential noise abatement in the project area. The assessment identified noise-sensitive receptors based on existing and predicted noise levels and was prepared in accordance with 23 CFR 772, and

[2] South Coast Air Quality Management District, Multiple Air Toxic Exposure Study-II (2000); Highway Health Hazards, The Sierra Club (2004) summarizing 24 Studies on the relationship between health and air quality); NEPA's Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles, Environmental Law Institute, 35 ELR 10273 (2005) with health studies cited therein.[2]

CDOT's Noise Analysis and Abatement Guidelines (December 2002). The study included the following tasks:

- Identifying noise-sensitive sites
- Predicting existing (2004), future (2030), and no-build (2030) noise levels (STAMINA 2.0 Noise Prediction Model)
- Evaluating noise impacts to noise-sensitive land uses
- Analyzing feasible and reasonable noise abatement

3.11.1 Existing Conditions

FHWA and CDOT have established guidelines defining noise abatement criteria (NAC) for acceptable traffic noise levels (see Table 3.4) based on land use, which identifies noise levels at which a traffic noise impact occurs. These levels represent a balance between a desirable noise level and an achievable noise level. Noise levels are measured in decibels (dB) on the "A" weighted scale (dBA), which most closely approximates the response characteristics of the human ear for low-level sound. Noise levels are reported in Leq(h), which describes the average noise energy level over one hour. FHWA and CDOT use Leq(h) as the acceptable noise descriptor used on highway transportation projects. Noise impacts occur when the predicted noise levels approach or exceed the acceptable NAC established in the FHWA's 23 CFR 772 (66 dBA for residences and 71 dBA for businesses) or when there is a substantial increase of noise. CDOT has established approach as one dBA and a substantial increase of noise as ten dBA in CDOT's Noise Analysis and Abatement Guidelines. Thus, a traffic noise impact occurs at 66 dBA for residences and 71 dBA for businesses.

Table 3.4
CDOT Noise Abatement Criteria

Activity Category	Leq(h)	Description of Activity Category
A	56 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	66 (Exterior)	Picnic areas, recreational areas, hospitals, residences, playgrounds, active sports areas, parks, motels, hotels, schools, churches, and libraries.
C	71 (Exterior)	Developed lands, properties, or activities not included in Categories A or B.
D	--	Undeveloped lands.
E	51 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: CDOT Noise and Abatement Guidelines, 2002

Noise predictions for existing conditions, the No-Action Alternative, and Alternatives B-1 and C-1 were developed with the STAMINA 2.0 (Colorado Emissions) computer model. This model is based on the FHWA method for predicting noise generated by constant speed highway traffic. Noise measurements made with a Larson Davis (Model 712) were used to validate the STAMINA 2.0 noise model. Validation occurs when field measurements and computer predicted noise levels are within three dBA of each other. A validation location was taken on the south side of US Business 34 at 101st Avenue. Winds were less than five miles per hour from the

east northeast. The noise meter was placed 40 feet from the edge of the eastbound through lane. Two noise readings were taken for 15 minutes at this location and both measured 72.1 dBA. This value is within three dBA of the model level of 69.8. Table 3.5 provides measured and modeled values and demonstrates validation.

Table 3.5
Noise Model Validation

Receiver #	Distance from Near Travel Lane (feet)	Measured Level (dBA)	Modeled Level (dBA)	Measured-Modeled (dBA)
Calibration 1	40	72.1	69.8	-2.3

CDOT analyzed 44 noise sensitive receivers (all single-family homes) using STAMINA 2.0 for the existing condition (2004). The primary noise source was US Business 34. Table 3.6 identifies the predicted existing noise levels for each of the 44 receivers. It should be noted that R15 and R16 each have two noise levels reflected in the table. These noise levels correlate to an approximately 50 foot alignment shift north and south, Alternatives B-1 and C-1, along a 3000 foot long section of roadway between 101st and 83rd. These shifts did not affect any other receptors.

Table 3.6
Predicted Existing Noise Levels

General Area/Receptor No/NAC Category		Modeled Noise Levels (dBA)						
		Existing (2004)	No-Action (2030)	Build (2030)	Build level over existing	FHWA/CDOT Criteria		Abatement Considered
						NAC Limits (approach or exceed)	Substantial Increase	
				Alt. B-1/C-1	Alt. B-1/C-1	Alt. B-1/C-1	Alt. B-1/C-1	Alt. B-1/C-1
Prairie Dog Colony (North Side)								
R1	B	58.8	59.0	61.6	2.8	No	No	No
R2	B	60.1	60.3	62.9	2.8	No	No	No
R3	B	58.6	58.9	61.6	3.0	No	No	No
R4	B	57.3	57.5	60.4	3.1	No	No	No
R5	B	57.9	58.2	61.0	3.1	No	No	No
R6	B	59.0	59.3	62.0	3.0	No	No	No
R7	B	60.4	60.7	63.4	3.0	No	No	No
Between 101st and 95th (North Side)								
R10	B	69.7	70.0	70.8	1.1	Yes	No	Yes
R11	B	69.7	69.9	69.1	-0.6	Yes	No	Yes
R12	B	70.3	70.6	70.1	-0.2	Yes	No	Yes
R13	B	69.8	70.1	68.9	-0.9	Yes	No	Yes
West of 77th (South Side)								
R21	B	61.6	61.8	64.4	2.8	No	No	No
R22	B	63.1	63.3	66.2	3.1	Yes	No	Yes
R24	B	64.3	64.6	68.1	3.8	Yes	No	Yes
Between 77th & 71st (South Side)								
R25	B	65.0	65.3	N/A	N/A	N/A	N/A	N/A

General Area/Receptor No/NAC Category		Modeled Noise Levels (dBA)						
		Existing (2004)	No-Action (2030)	Build (2030)	Build level over existing	FHWA/CDOT Criteria		Abatement Considered
						NAC Limits (approach or exceed)	Substantial Increase	
				Alt. B-1/C-1	Alt. B-1/C-1	Alt. B-1/C-1	Alt. B-1/C-1	Alt. B-1/C-1
R26	B	70.4	70.6	N/A	N/A	N/A	N/A	N/A
R26A	B	64.1	64.3	67.8	3.7	Yes	No	Yes
R27	B	65.8	66.0	69.3	3.5	Yes	No	Yes
R28	B	63.8	64.0	66.4	2.6	Yes	No	Yes
R29	B	63.4	63.6	66.0	2.6	Yes	No	Yes
R30	B	62.2	62.4	64.8	2.6	No	No	Yes
R31	B	65.1	65.4	68.7	3.6	Yes	No	Yes
R32	B	63.3	63.5	65.2	1.9	No	No	Yes
R33	B	65.4	65.7	67.0	1.6	Yes	No	Yes
R34	B	62.9	63.2	65.7	2.8	No	No	Yes
R35	B	63.4	63.7	66.3	2.9	Yes	No	Yes
R36	B	62.9	63.2	64.9	2.0	No	No	Yes
R37	B	62.5	62.8	64.0	1.5	No	No	Yes
R38	B	57.8	58.1	60.7	2.9	No	No	No
R39	B	62.3	62.6	65.0	2.7	No	No	Yes
R41	B	57.7	58.0	60.8	3.1	No	No	No
R42	B	57.3	57.5	60.4	3.1	No	No	No
Individual Receptors (Various)								
R8	B	56.2	56.5	59.7	3.5	No	No	No
R9	B	61.1	61.4	63.6	2.5	No	No	No
R14	B	70.9	71.2	N/A	N/A	N/A	N/A	N/A
R15	B	65.9	66.2	N/A / 71.0	N/A / 5.1	N/A / Yes	No	N/A / Yes
R16	B	64.9	65.2	67.2 / N/A	2.3 / N/A	Yes / N/A	No	Yes / N/A
R17	B	64.5	64.8	66.0	1.5	Yes	No	Yes
R17A	B	64.1	64.3	68.3	4.2	Yes	No	Yes
R18	B	62.9	63.2	68.4	5.5	Yes	No	Yes
R19	B	64.5	64.8	65.8	1.3	No	No	Yes
R20	B	66.6	66.8	N/A	N/A	N/A	N/A	N/A
R23	B	63.4	63.6	66.5	3.1	Yes	No	Yes
R40	B	63.6	63.9	68.6	5.0	Yes	No	Yes

N/A - receptor location in proposed right-of-way. Mitigation will not be reviewed

Figures 3.1, 3.2, and 3.3 show the location of the sensitive noise receivers and the location where the noise measurements were taken.

3.11.2 No-Action Alternative

CDOT analyzed 44 noise sensitive receivers (all single-family homes) using STAMINA 2.0 for the No-Action Alternative (2030). The primary noise source is US Business 34. Traffic values used in this analysis are provided in Section 2. Worst-case noise conditions include the highest volume of traffic traveling at free flow speeds, reflecting LOS C/D conditions. LOS C/D volumes are used in the STAMINA 2.0 model whenever predicted volumes reach or exceed LOS D. Table 3.6 illustrates the predicted noise levels for each of the 44 receivers. Various receivers are predicted to exceed CDOT's NAC of 66 dBA.

3.11.3 2030 Build Noise Levels for Alternatives B-1 and C-1

CDOT analyzed 44 noise sensitive receivers (all single-family homes) using STAMINA 2.0 for the Build condition (2030). The primary noise source is US Business 34. The 2030 build condition assumes a four-lane typical section on US Business 34. Worst-case noise conditions include the highest volume of traffic traveling at free flow speeds, reflecting LOS C/D conditions. LOS C/D volumes are used in the STAMINA 2.0 model whenever predicted volumes reach or exceed LOS D. Various receivers are predicted to exceed CDOT's NAC of 66 dBA.

3.11.4 Mitigation and Conclusions

CDOT must consider noise mitigation for land use categories exceeding NAC. Mitigation options include: traffic management measures (speed limit reductions, designated truck routes, lane-use restrictions), alignment shifts, acquisition of undeveloped lands for buffer zones, noise insulation (mainly for public or non-profit institutional structures), and noise barriers. After reviewing all the possible mitigation options, noise barriers were the only feasible option evaluated for this project.

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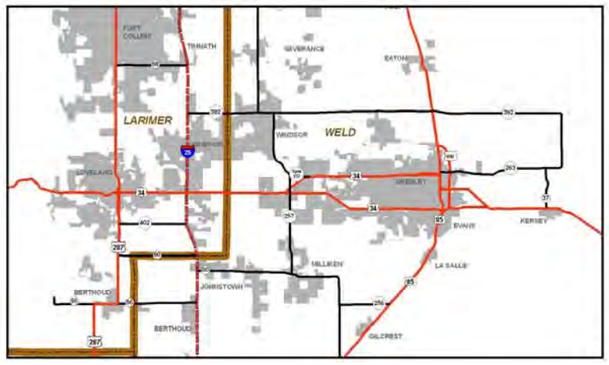
Figure 3.1
Noise 66 dBA Contours and Receiver Locations



Noise Receiver Location

Alternative B-1
Right of Way
66dbA Contour for 2030 Build

Alternative C-1
Right of Way
66dbA Contour for 2030 Build

DOT
DEPARTMENT OF TRANSPORTATION

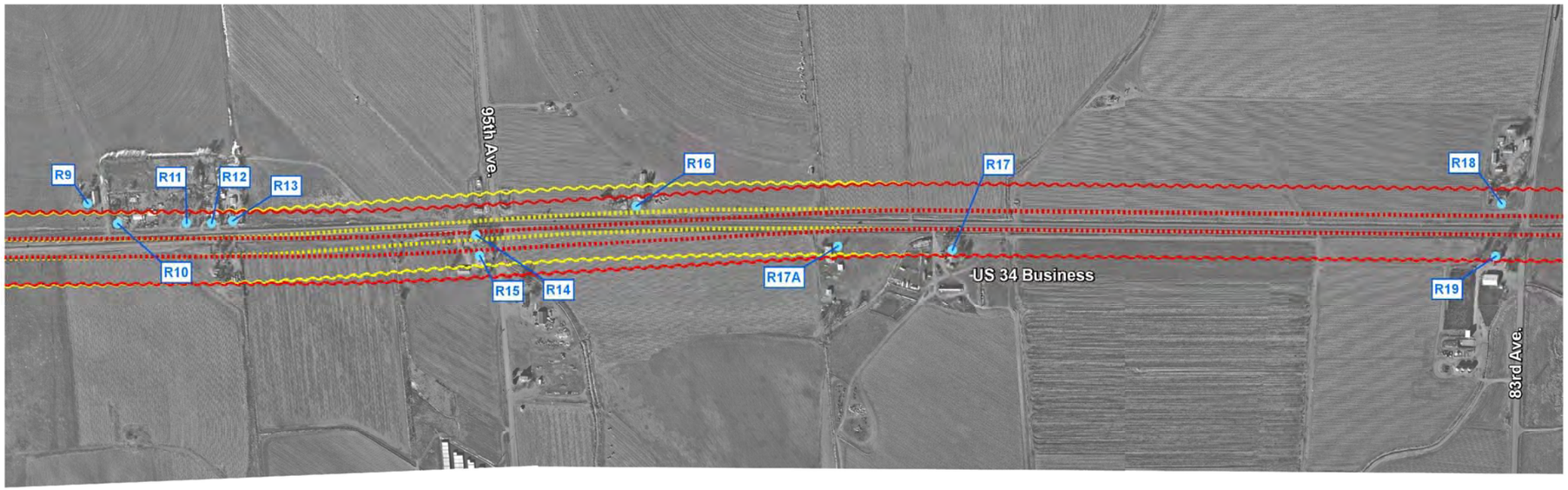
Figure 3.1
U.S. Business 34
71st Avenue to
83rd Avenue

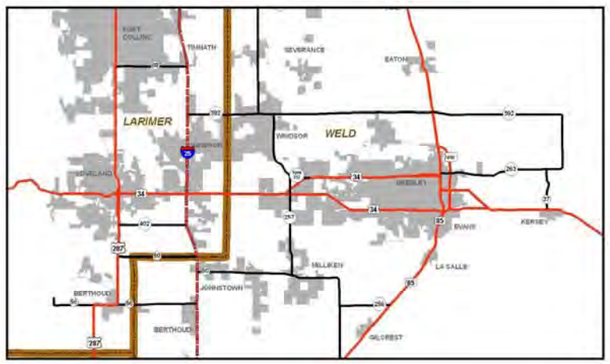
N

0 500 1,000 Feet

1:6,000

Figure 3.2
Noise 66 dBA contours and Receiver Locations





Noise Receiver Location

Alternative B-1
Right of Way
66dbA Contour for 2030 Build

Alternative C-1
Right of Way
66dbA Contour for 2030 Build

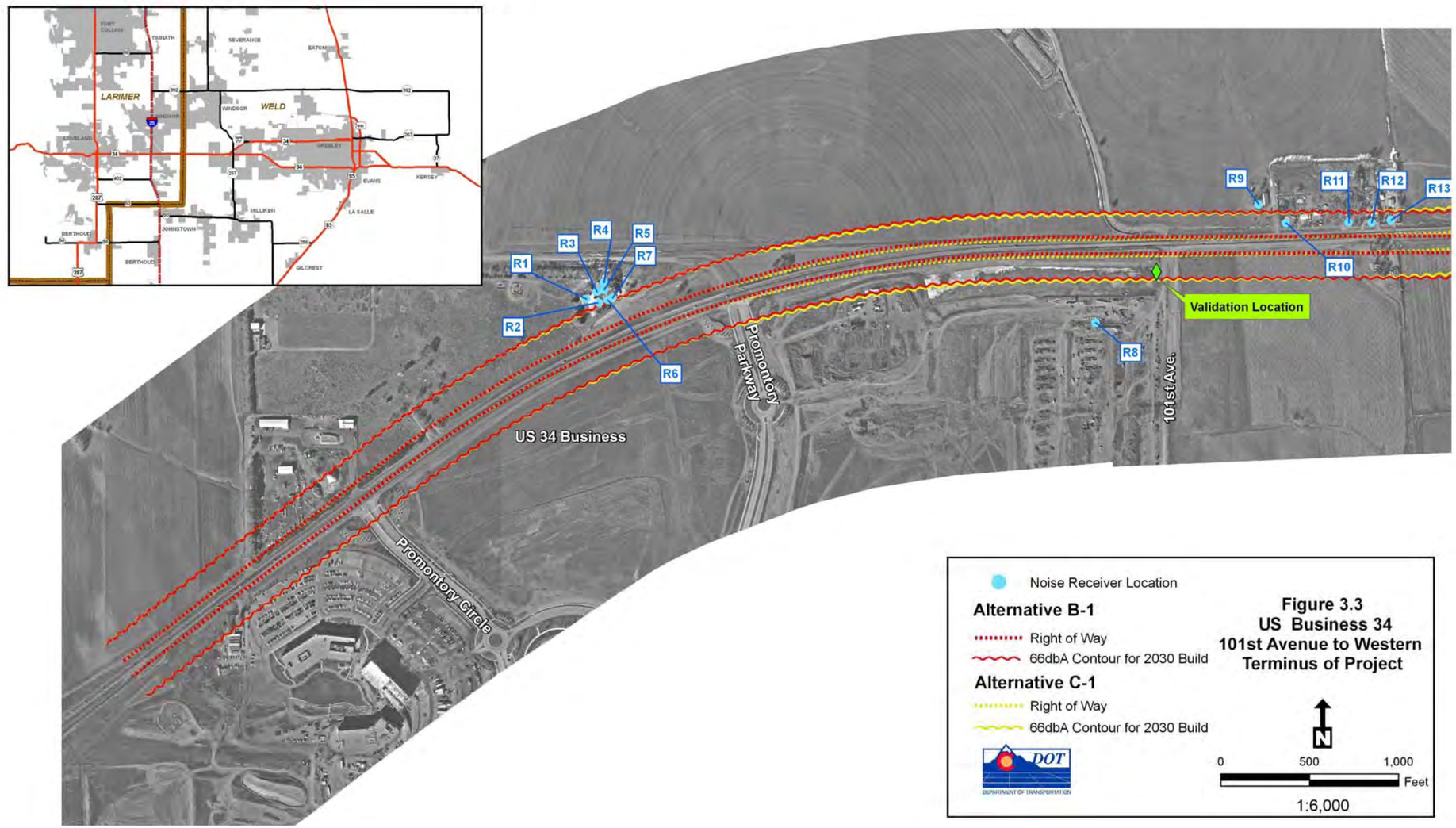
Figure 3.2
US Business 34
83rd Avenue to
95th Avenue

N

0 500 1,000
Feet

1:6,000

Figure 3.3
Noise 66 dBA Contours and Receiver Locations



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Noise barriers are considered only if they are reasonable and feasible to implement and are effective in sufficiently reducing the noise levels. Some factors used to determine reasonable and feasible barriers include the following:

- Noise barriers should have a continuous length with no breaks or gaps for driveways or walkways.
- Effective noise mitigation should create an insertion loss (the difference in noise levels after mitigation and before mitigation) of five dBA or greater for at least one front right-of-way receiver.
- Wherever noise abatement is warranted and determined feasible and reasonable, the property owner must be willing to accept the noise abatement measure.
- Economic analysis of the barrier should show cost effectiveness. A reasonable cost benefit expectation for a barrier is $3,000-$3,750 per receiver, per decibel reduction. A cost of more than $4,000 per receiver, per decibel reduction is considered unreasonable and is generally not carried through to construction. These costs are based on a construction cost of $30.00 per square foot of wall.
- Antiquity, impacted persons' desires, and noise build levels versus existing levels are also given consideration when recommending reasonable and feasible noise barriers.

After consideration of all five noise abatement options, noise barriers were analyzed for several receivers.

No receivers in the study area experienced a substantial increase in the build alternative versus the existing conditions. However, various receivers located in the outdoor use areas of single-family homes along both the north and the south sides of US Business 34 did exceed the NAC B criteria of 66 dBA as presented in and were reviewed for potential noise abatement. Other receivers that did not exceed the 66 dBA threshold were not considered impacted and mitigation was not reviewed.

101st to 95th

Receivers 10, 11, 12, and 13 were evaluated for noise barrier feasibility and reasonableness. A barrier was developed, given that existing accesses to US Business 34 would be relocated and a continuous barrier could be constructed, that would provide the minimum five dBA insertion loss and thus was feasible. The 910 foot long by 8 foot high barrier is projected to cost approximately $218,400, using CDOT's 2003 cost data of $30 per square foot, and have a cost benefit index of $9,414. A cost benefit index over $4,000 is considered unreasonable and thus noise mitigation at this location is not recommended.

Table 3.7
Noise Analysis Results

General Area/Receptor No./NAC Category		Model Noise Levels (dBA) Alternative B-1 / C -1(2030)				Mitigation Analysis		
		Build	With Proposed Barriers	Insertion Loss	Avg Insertion Loss	Wall Cost	Cost Benefit Index	Mitigation Recommendation
Between 101st & 95th								
R10	B	70.8	64.4	6.4	5.8	$218,400	$9,414	No
R11	B	69.1	63.7	5.4				
R12	B	70.1	63.8	6.3				
R13	B	68.9	64.0	4.9				
West of 77th & South of US 34								
R21 (2nd row)	Represents 3 B receivers	64.4	60.4	4.0	Four 1st row @ 5.9 Three 2nd row @4.0	$262,500	$7,374	No
R22	Represents 2 B receivers	66.2	60.9	5.9				
R24	Represents 2 B receivers	68.1	61.5					
Between 77th & 71st								
R26A	B	67.8	61.3	6.5	6.0	$760,500	$6,264	No
R27	B	69.3	61.7	7.6				
R28	B	66.4	60.9	5.5				
R29	B	66.0	60.7	5.3				
R30	B	64.8	60.0	4.8				
R32	B	65.2	58.4	6.8				
R33	B	67.0	59.0	8.0				
R34	B	65.7	60.5	5.2				
R35	B	66.3	60.8	5.5				
R36	B	64.9	58.8	6.1				
R37	B	64.0	57.3	6.7				
R39	B	65.0	60.6	4.4				
R38 (2nd row)	Represents 3 B receivers	60.7	57.1	3.6	3.8			
R41 (2nd row)	Represents 5 B receivers	60.8	57.0	3.8				
R42 (2nd row)	Represents 5 B receivers	60.4	56.6	3.8				
Individual Receptors								
R9	B	63.6	58.5	5.1	5.1	$158,400	$31,058	No
R15	B	71.0	66.0	5.0	N/A	$126,000	$25,000	No
R16	B	67.2	61.3	5.9		$66,000	$11,186	No
R17	B	66.0	60.9	5.1		$144,900	$28,411	No
R17A	B	68.3	63.3	5.0		$277,200	$55,440	No
R18	B	68.4	63.2	5.2		$27,000	$5,192	No
R19	B	65.8	60.5	5.3		$117,600	$22,188	No
R23	B	66.5	61.5	5.0		$66,000	$13,200	No

West of 77th

Receivers 21, 22, and 24 were evaluated for noise barrier feasibility and reasonableness. A barrier was developed that would provide the minimum five dBA insertion loss and thus was feasible. The 875 foot long by 10 foot high barrier is projected to cost approximately $262,500, using CDOT's 2003 cost data of $30 per square foot. This site, Boomerang Ranch, is currently under construction. The approximate number of potential benefited receivers at the time of construction was estimated to be four front row receivers with a 5.9 dBA average insertion loss and three second row receivers with a four dBA average insertion loss. The estimate provided a cost benefit index of $7,374. A cost benefit index over $4,000 is considered unreasonable and thus noise mitigation at this location is not recommended.

77th to 71st

Receivers 26a, 27, 28, 29, 30, 32, 33, 34, 35, 36, 38, 39, 41, and 42 were evaluated for noise barrier feasibility and reasonableness. Receivers 38, 41 and 42 are second row receivers and represent the second row of homes. A barrier was developed that would provide the minimum five dBA insertion loss for front row receivers and three dBA for second row receivers and thus was feasible. The 2535 foot long by 10 foot high barrier is projected to cost approximately $760,500, using CDOT's 2003 cost data of $30 per square foot, and has a cost benefit index of $6,264. A cost benefit index over $4,000 is considered unreasonable and thus noise mitigation at this location is not recommended.

Individual Receivers Along the Corridor

Receivers 9 (440 feet by 12 foot), 15 (350 foot by 12 foot), 16 (200 foot by 11 foot), 17 (345 foot by 14 foot), 17A (420 foot by 22 foot), 18 (100 foot by 9 foot), 19 (280 foot by 14 foot), and 23 (200 foot by 11 foot) were evaluated for noise barrier feasibility and reasonableness. Barriers were developed that would provide the minimum five dBA insertion loss and thus was feasible. The barriers were projected to cost between $27,000 and $277,000, using CDOT's 2003 cost data of $30 per square foot, and being single receivers their cost benefit indexes were the same. With all of the cost benefit indexes over $4,000, noise mitigation at these locations is considered unreasonable and thus is not recommended.

Receiver 40, which is located on the corner of 71st and US 34, was evaluated for noise. However, at the time of this report the structure had been demolished and thus was not evaluated further for noise barriers.

Receiver 31 was not reviewed for noise mitigation. This receiver represents the edge of the golf course. Noise abatement was considered, but not found to be reasonable for the following reasons:

- A golfer's time at the tees closest to US Business 34 is generally passive and intermittent, without any fixed facilities such as a clubhouse or veranda where people would tend to congregate after a round of golf.
- A noise barrier for the golf course would not likely provide any benefit to any of holes located away from US Business 34 or the clubhouse that is located more than 500 feet away from US Business 34.

3.11.5 Local Agency Coordination

Local government officials can promote compatibility between land development and highways. A noise contour map showing the areas of noise impact will be provided to Greeley and Weld County officials in order to show areas where future development is likely to be incompatible with future highway traffic noise levels. This impact zone can be used to restrict development of exterior land uses associated with residences, motels, schools, churches, and recreational facilities that would be considered incompatible with traffic noise. Local officials can use the noise contour data to establish compatible development of currently undeveloped parcels or compatible redevelopment in areas where land use changes.

3.11.6 Construction Noise

The following are measures that may be employed, where practical, to reduce construction related noise:

- Where possible, enforce more restrictive work hours in residential areas.
- Discourage weekend work, with the exception of activities best suited for off-peak hours.
- Combine noisy operations to occur in the same time period.
- Use noise blankets or other muffling devices on equipment and quiet use generators.
- The contractor shall use well-maintained equipment, especially with respect to mufflers.
- Conduct noise inspections and monitor blasting activities on seismographs.

3.12 SOILS

This section discusses the major soil types located within the project area and the characteristics of these units.

3.12.1 Existing Conditions

Table 3.8 lists the major soil types found within the project area and their characteristics. The soils in the project area are primarily characterized by low erosion hazard and moderate to rapid permeability.

3.12.2 Impacts

No-Action

No impacts to soils.

Alternative B-1

Construction activities associated with project implementation would result in temporary and permanent impacts to soils within the project area. Impacts to soils would mostly result from removing existing vegetation and compaction from heavy construction equipment. These activities have the potential to expose soil to accelerated wind and water erosion. In addition, such activities have the potential to expose the soil to noxious and invasive weed infestations. Proper construction and reclamation techniques will ensure overall impacts to soil resources are minimal.

Alternative C-1

The soil impacts would be the same as identified for Alternative B-1.

3.12.3 Mitigation

The following mitigation measures will be implemented to prevent significant impacts to project area soils:

- Implement erosion and sediment control BMPs such as mulching, temporary seeding, silt fences, straw-bale barriers, and erosion control blankets.
- Till soils that have been compacted by heavy construction equipment to allow for quicker establishment of grass after reseeding.
- Sequence clearing so that entire site is not disturbed; stabilization would occur as soon as activity is complete. The surface area of exposed earth at one time shall not exceed 17 acres for clearing and grubbing and 17 acres for earthwork operations (34 acre total). The contractor must stabilize these areas immediately upon completion of the grading of these sections.
- All areas of exposed soil will be seeded and/or planted, and mulched throughout construction. This will help prevent noxious and invasive weed infestation from occurring.
- Utilize a central staging area for all equipment.

3.13 LAND USE

3.13.1 Existing Conditions

Greeley's residential and commercial development has continued to expand to the west and has changed the character of the area. Once predominantly agriculture, the project area is undergoing a change that is replacing farm fields with residential housing and commercial complexes.

Based on the City of Greeley's 2020 Comprehensive Plan, the project area is zoned for residential low density, residential high density, and planned unit development (which permits mixed land uses) (City of Greeley 2004). This residential development includes a variety of types such as single-family, two-family, multi-family, and town homes. Some of this development is currently built, while other development is still being built and planned in the project area. Figure 3.4 shows the land use zoning for the project area.

With a growing residential community along the western edge of town, commercial development is also being built and planned within the project area. Parts of the project area are zoned for planned unit development that allows mixed use and commercial high density development.

Table 3.8
Major Soil Types and Characteristics within the Project Area

Map Unit #	Map Unit Name	Slope	Soil Parent Material	Drainage Class	Surface Runoff	Permeability	Available Water Capacity	Erosion Hazard
32	Kim Loam	1 to 3%	Mixed Eolian Deposit	Deep, well drained soil	Medium	Moderate	High	Low
37	Nelson Fine Sandy Loam	0 to 3%	Formed in Residuum from Soft Sandstone	Moderately deep, well drained soil	Slow to Medium	Moderately rapid	Moderate	Low
38	Nelson Fine Sandy Loam	3 to 9%	Formed in Residuum from Soft Sandstone	Moderately deep, well drained soil	Medium to Rapid	Moderately rapid	Moderate	Moderate
47	Olney Fine Sandy Loam	1 to 3%	Formed in Mixed Outwash Deposits	Deep, well drained soil	Medium	Moderate	Moderate	Low
51	Otero Sandy Loam	1 to 3%	Formed in Mixed Outwash and Eolian Deposits	Deep, well drained soil	Slow	Rapid	Moderate	Low
52	Otero Sandy Loam	3 to 5%	Formed in Mixed Outwash and Eolian Deposits	Deep, well drained soil	Medium	Rapid	Moderate	Low
73	Vona Sandy Loam	3 to 5%	Formed in Eolian or Alluvian Deposits	Deep, somewhat excessively drained soil	Slow	Moderately rapid	Moderate	Low
76	Vona Sandy Loam	1 to 3%	Eolian and Alluvial Deposits	Deep, well drained soil	Slow	Moderately rapid	Moderate	Low
77	Vona Sandy Loam	3 to 5%	Eolian Deposits	Deep, well drained soil	Medium	Moderately rapid	Moderate	Low
79	Weld Loam	1 to 3%	Eolian Deposits	Deep, well drained soil	Slow	Slow	High	Low

Source: US Department of Agriculture (USDA) 1980

The following developments are currently being developed or are planned within the project area:

- Just south of US Business 34 is the Promontory Development from the west end of the project to 101st Avenue. This project is 670 acres of mixed use development that is home to State Farm Insurance and Swift and Company. It is planned for office, industrial, retail, and residential uses over a 20 plus year build-out. State Farm has developed the western part of this area that includes several large multiple floor buildings. The eastern part of the development also includes plats for 624 residential lots.
- Boomerang Ranch residential development on the southwest corner of 77th Avenue.
- Some commercial development is planned at 77th Avenue.
- Moody Farm is located directly east of 83rd Avenue and is zoned for single family residential.
- Wheeler Management Group is developing commercial land on the north side of Promontory Circle.
- Our Savior Lutheran Church is planning 16.8 acres of development east of 95th Avenue.

Additionally, the agricultural economy is still present within the project area and is noticeable along this segment of US Business 34. To protect this farmland from development, the City zoned some farmlands as holding agriculture. This zoning protects the agricultural land from residential and commercial development.

3.13.2 Impacts

No-Action

No impacts to land use within the project area. The planned development will continue and the highway would continue to have two lanes. Without this upgrade, the development planned along this highway would continue to add more cars and result in a decline in the LOS Alternative B-1

The planned road improvements are in response to projected growth in the corridor and based on existing approved and adopted plans. Traffic conditions would improve along the highway and make the project area more attractive for commercial development. Improvements in traffic conditions would also make this portion of the highway more functional for the residents moving into residential developments on the western edge of Greeley.

Alternative C-1

The land use impacts would be the same as identified for Alternative B-1.

3.13.3 Mitigation

No mitigation for land use impacts.

3.14 FARMLAND SOILS

US Congressional Public Law 95-87 (Federal Register January 31, 1978: Part 657) requires the US Department of Agriculture, Natural Resources Conservation Service (NRCS) to identify and locate prime and unique farmlands. These farmlands are protected in accordance with the Farmland Protection Act of 1981.

3.14.1 Existing Conditions

Information on soils was obtained from the NRCS, Soil Map for Weld County (southern portion) (USDA 1980). According to the NRCS, out of the eight major soils units identified within the project area, six are classified as prime farmland (if irrigated with an adequate supply of water).

The following six major soil map unit types occurring within the project area are considered prime farmland:

- 79-Weld Loam (1 to 3 percent slopes)
- 47-Olney Fine Sand Loam (1 to 3 percent slopes)
- 76-Vona Sandy Loam (1 to 3 percent slopes)
- 77-Vona Sandy Loam (3 to 5 percent slopes)
- 51-Otero Sandy Loam (1 to 3 percent slopes)
- 32-Kim Loam (1 to 3 percent slopes)

Olney fine sandy loam represents the largest prime farmland soil unit within the project area. In addition, these soils are irrigated and producing several types of crops.

3.14.2 Impacts

No-Action

No prime farmland will be impacted.

Alternative B-1

Approximately 11 acres of prime farmland would be impacted by the alignment.

Alternative C-1

Approximately 11 acres of prime farmland would be impacted by the alignment.

3.14.3 Mitigation

A copy of the Farmlands Conversion Form (NRCS-CPA-106) has been sent to the NRCS Field Office in Weld County. No mitigation is required for this resource.

3.15 SECTION 4(f)

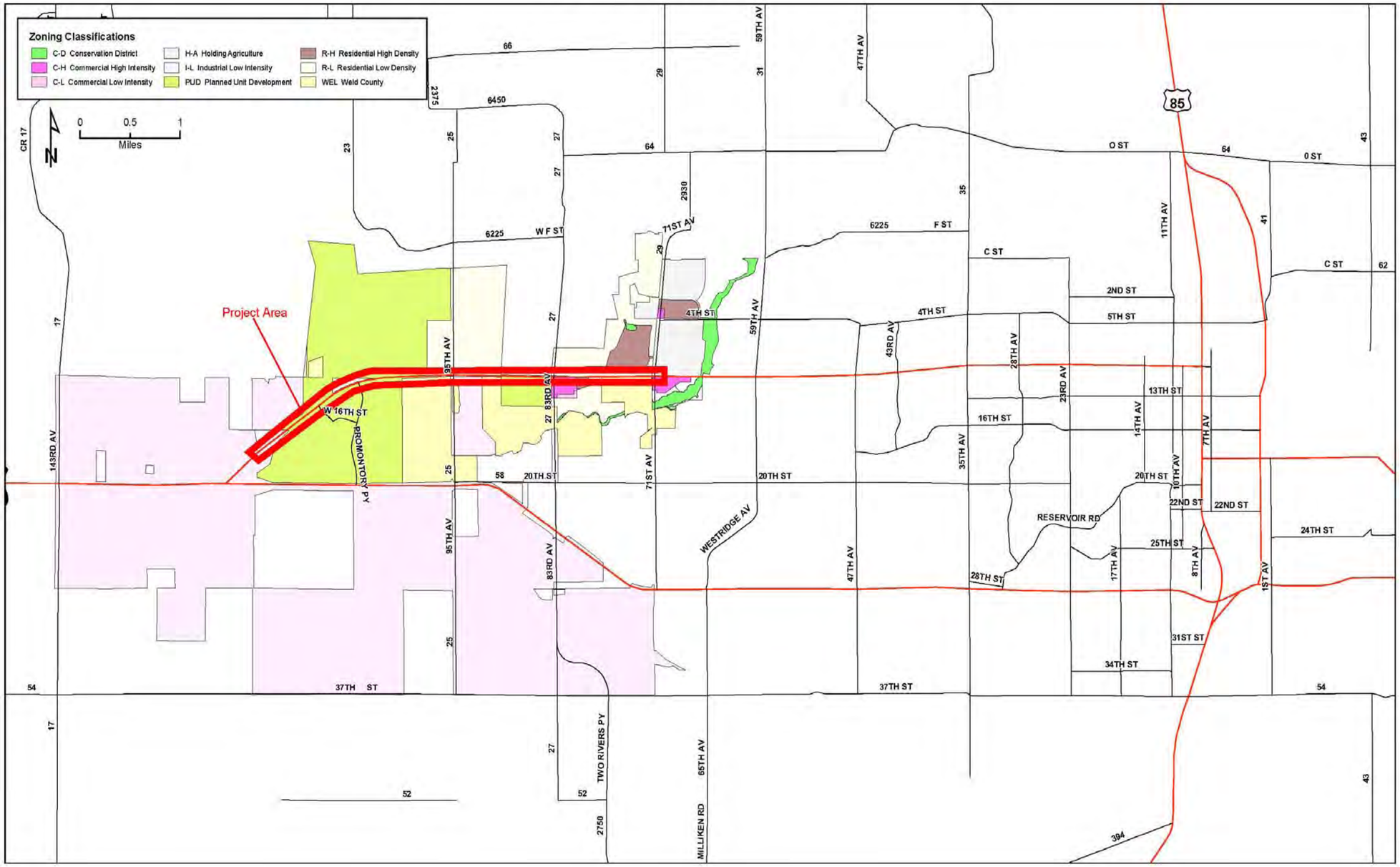
No Section 4(f) properties are located in the project area.

3.16 PUBLIC UTILITIES

3.16.1 Existing Conditions

All known utility owners in the project area were contacted for the location of existing utilities. Additionally, they also provided information on proposed utility additions in the right-of-way. The following utilities currently exist or are proposed for installation in the right-of-way:

Figure 3.4
Project Land Use – US Business 34



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Electrical Utilities – Xcel Energy and Poudre Valley Rural Electric Association (PVREA) have utilities in the project area.

- Xcel Energy – Maintains two transmission line crossings from south to north at 83rd Avenue. Also maintains transmission line from 83rd Avenue to 71st Avenue.
- PVREA – Maintains transmission line from SH 257 to 83rd Avenue.

Gas lines – Continental Pipeline, WYCO (Colorado Interstate Gas), and Duke Energy operate pipelines in the project area.

- Continental Pipeline
- WYCO
- Duke Energy

Telephone Lines – Qwest has buried lines from SH 257 to 71st Ave.

Fiber Optic Lines – AT & T Broadband has buried lines from SH 257 to 71st Avenue.

Water Lines – The City of Greeley and North Weld County Water District has water lines in the ground and planned for installation in the project area.

- City of Greeley – Replacing two 24 inch lines with 36 inch and 16 inch lines.
- North Weld County Water District – Pipeline crossing at 71st, 83rd, and 95th Streets.

Irrigation ditches – The North Boomerang Extension is the only major irrigation canal crossing the highway in the project area.

3.16.2 Impacts

No-Action Alternative

No impacts to public utilities.

Alternative B-1 and C-1

All utilities located in the right-of-way will need to be removed and relocated. The installation location will be determined during the design phase of the project.

3.16.3 Mitigation

Numerous utility relocations are planned for this project. All relocations will be identified and field verified during the final design to avoid disruption of customer service and reduce safety hazards during construction. Close coordination with the individual utility companies during the design phase and throughout construction will ensure that existing and planned utilities are installed with minimal impact.

3.17 SOCIOECONOMICS

3.17.1 Existing Conditions

Weld County is the fourth largest agriculture-producing county in the United States. While the economic base began with agriculture and food processing, the growth of Greeley has diversified the economy over the past decade. The well-educated work force and good transportation systems and routes resulted in a fairly stable economy. This job growth was especially evident in the late 1990s, when Greeley/Weld County had a 4.9 percent increase in jobs (City of Greeley

2004). With economic growth comes population growth, during the 1990s the growth rate has averaged approximately 2.6 percent per year.

3.17.2 Impacts

No-Action

Socioeconomic conditions will remain as they currently exist in the project area.

Alternative B-1

The area population growth or demographics would not change as a result of this highway upgrade. Currently, residential and commercial development are being built and planned for in the project area. The roadway improvements planned for this segment of highway would result in positive accessibility benefits for businesses and improved mobility for motorists using the highway. The commercial development planned for Promontory would benefit from the potential for improved access and greater use of this highway as a gateway to the City of Greeley. Additionally, the residential development planned for at Boomerang Ranch and Moody Farm should benefit from the increased mobility offered by this highway improvement. This highway improvement will facilitate improved access to I-25 and the major Front Range urban centers.

Alternative C-1

The impacts would be the same as identified for Alternative B-1.

3.17.3 Mitigation

No mitigation is required for socioeconomics.

3.18 ENVIRONMENTAL JUSTICE

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations," was signed by President Clinton on February 11, 1994 and published in the Federal Register on February 16, 1994. The EO focuses federal attention on the environmental and human health conditions of minority and/or low-income populations, promotes nondiscrimination in federal programs affecting human health and the environment, and provides minority and/or low-income populations with access to public information and an opportunity to participate in matters relating to the environment. The United States Department of Transportation (USDOT) issued an order on environmental justice in 1997 (DOT Order 5610.2), followed by the FHWA in 1998 (FHWA Order 6640.23). Both orders relate directly to environmental justice activities and responsibilities within USDOT and FHWA.

A minority is defined as an individual belonging to at least one of the following groups: Black, Hispanic, Asian, American Indian or Alaskan native, Hawaiian or Other Pacific Islander, Some Other Race, or Two or More Races. Low-income is defined by FHWA as a household income (or in the case of a community or group, median household income) that is at or below the US Department of Health and Human Services poverty guidelines.

An analysis of environmental justice issues is normally conducted as part of the NEPA process. Two questions form the basis for analysis of environmental justice issues:

- Does the potentially affected area include minority and/or low-income populations?
- If there are minority and/or low-income populations who would be affected, are the adverse environmental impacts likely to be disproportionately high and adverse on either population?

The environmental justice assessment encompasses several aspects of demographics. The following methodology was used to identify minority and/or low-income populations and potential disproportionate high and adverse impacts on these populations:

a) Census tracts and block groups in the project area were identified.
b) Demographic information was identified for each project area block group. Additional research was conducted by block for minority populations (income data is not available at the block level).
c) Community interviews were conducted.
d) Following the guidance from the EPA publication *Community Culture and the Environment, A Guide to Understanding a Sense of Place* (US EPA 2002), the project team also looked for those community areas for which a "sense of Community and place" existed.
e) To discern disproportionately high and adverse effects the project relocations were examined to determine whether they were being predominately born by a minority and/or low-income population. Other considerations such as noise, access, and land use were also evaluated to determine high and adverse effects.

3.18.1 Existing Conditions

Minority and/or Low Income Populations in the Project Area

Minority and/or low-income population designations are based on US Bureau of Census data and environmental justice guidance prepared by the EPA. These designations for the project area were obtained from the EPA Region VII Environmental Justice database. Information from the 2000 Census was used in this analysis. Table 3.9 shows the project area census block population and their percentage of minority populations.

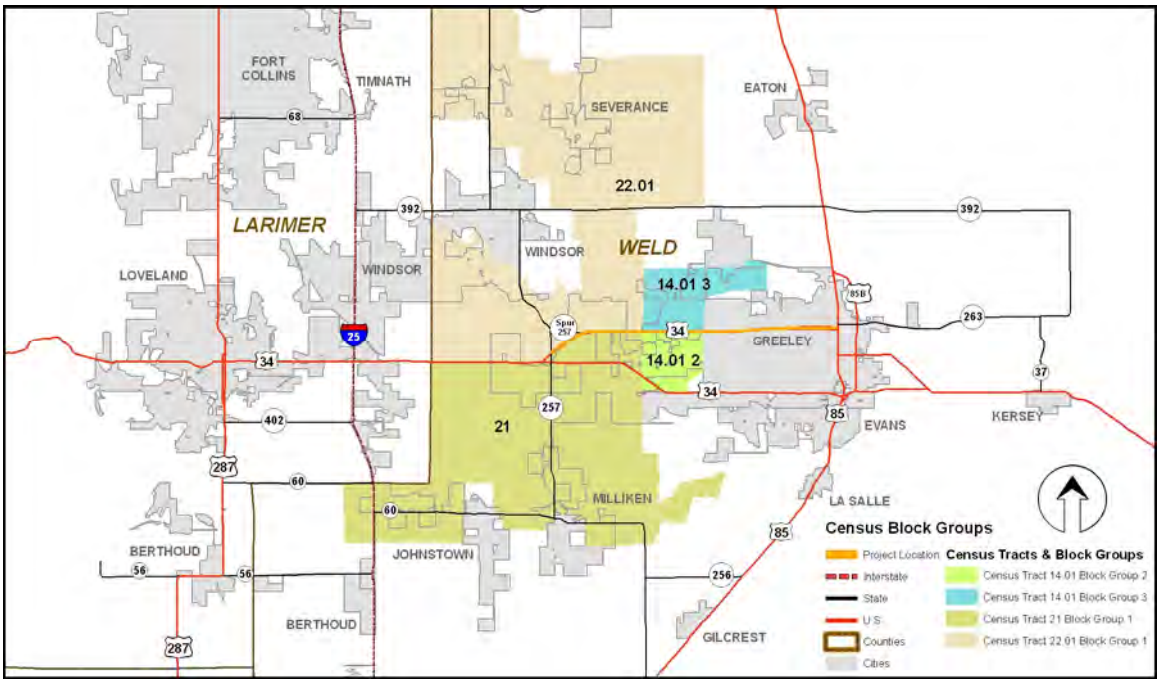
Table 3.9
Minority Population Percentage Comparison

	Total Population	Minority Population	% Minority
Census Tract 14.01 Block Group 2	1069	97	9
Census Tract 14.01 Block Group 3	807	89	11
Census Tract 2100 Block Group 1	1820	129	7
Census 22.01 Block Group 1	2679	145	5
Weld County	180936	33102	18

The federal poverty guideline is a $19,350 annual income for a family of four in 2005 as established by the Department of Health and Human Services is considered low compared to the local cost of living in the project area. FHWA and CDOT determined that it would be more appropriate to use the US Department of Housing and Urban Development (HUD) definition of low-income as identified in the Community Development Block Grant (CDBG) criteria. Because housing makes up the majority of a households income, where housing assistance is provided or available is an indication of low-income households. Therefore, the CDBG value is more inclusive than the Department of Health and Human Services data. Low-income is defined as 50 percent of the area median income (AMI) for a family of four. The Greeley Primary Metropolitan Statistical Area (PMSA) (HUD Data) 2000 Median Family Income is $44,900. Fifty percent of this income is $22,450. Based on the household income data for the project, no identifiable population of low-income and minorities will be affected by the project.

Portions of three census tracts are located within the project area: Census Tract 14.01, Block Groups 2 and 3; Census Tract 21, Block Group 1; and Census Tract 22.01, Block Group 1. The four census block groups within the project area represent approximately three and one half percent of the total population in Weld County. Figure 3.5 provides general information on the location of these census tract block groups.

Figure 3.5
Census Block Groups



Census Tract 14.01, Block Group 2 is located on the south side of US Business 34 between 59th and 83rd Avenues. Interviews with residents within this block group and adjacent to the corridor were conducted either on a one-to-one basis at their residence and/or at one of the Open Houses that were held for the project. This block group has 1.65 percent of the households with incomes below the 50 percent of AMI compared to a Weld County average of 27.6 (Table 3.10) percent.

Census Tract 14.01, Block Group 3 is located on the north side of US Business 34 between 59th and 83rd Avenues. Interviews with residents within this block group and adjacent to the corridor were conducted either on a one-to-one basis at their residence and/or at one of the Open Houses that were held for the project. This block group has approximately 7.2 percent of the total households with incomes below the 50 percent of AMI compared to the Weld County average of 27.6 (Table 3.10) percent.

Census Tract 21, Block Group 1 is located south of US Business 34 between 83rd Avenue and SH 257. Interviews with residents within this block group and adjacent to the corridor were conducted either on a one-to-one basis at their residence and/or at one of the Open Houses that were held for the project. This block group has approximately 9.4 percent of the total households with incomes below the 50 percent of AMI compared to the Weld County average of 27.6 percent (Table 3.10).

Census Tract 22.01, Block Group 1 is located on the north side of US Business 34 between 83rd Avenue and SH 257. Interviews with residents within this block group and adjacent to the corridor were conducted either on a one-to-one basis at their residence and/or at one of the Open Houses held for the project. This block group has approximately 8.3 percent of the total households with income below the 50 percent of AMI compared to the Weld County average of 27.6 percent (Table 3.10).

Table 3.10 shows Census 2000 data and the income level breakdown of the four census tracts located in the project area. The project area households at or below 50 percent AMI are highlighted in yellow.

Table 3.10
Percent of Households by Income Group for each Census Tract

	Weld County	Census Tract 14.01 2	Census Tract 14.01 3	Census Tract 21.00 1	Census Tract 22.01 1
Less than $10,000	8.52	0.00	2.70	3.08	3.33
$10,000 to $14,999	5.95	1.65	0.00	0.59	0.65
$15,000 to $19,999	6.03	0.00	4.50	5.73	4.30
$20,000 to $24,999	7.09	2.47	0.00	4.41	5.38
$25,000 to $29,999	5.97	3.85	4.50	4.26	5.48
$30,000 to $34,999	7.08	7.97	0.00	3.23	4.95
$35,000 to $39,999	6.12	3.02	0.00	4.11	5.27
$40,000 to $44,999	6.37	6.32	8.56	9.40	6.99
$45,000 to $49,999	5.44	4.67	4.05	1.62	3.12
$50,000 to $59,999	9.92	7.69	2.25	20.41	11.08
$60,000 to $74,999	11.40	12.36	11.26	12.48	15.81
$75,000 to $99,999	10.62	21.98	18.47	13.95	15.05
$100,000 to $124,999	4.32	2.47	18.92	6.31	8.17
$125,000 to $149,999	1.99	13.46	9.91	4.11	5.38
$150,000 to $199,999	1.49	5.77	11.26	1.76	1.83
$200,000 or more	1.69	6.32	3.6	4.55	3.23
Total	100.00	100.00	100.00	100.00	100.00

3.18.2 Impacts

Based on the population and income data presented in this section, the probability of disproportionately high and adverse effects on low-income or minority populations in these block groups is very low.

3.19 VISUAL IMPACTS

This section provides a summary of the visual resource inventory of the project area, potential visual impacts that would result from construction of the proposed project, and mitigation measures to reduce the level of impact.

3.19.1 Existing Conditions

Greeley's setting is visually unique, with a location near the western edge of the plains, surrounded by agricultural lands, and wide vistas of the Rocky Mountains to the west. The US Business 34 corridor provides all of these visual attributes, and especially impressive views of the mountains to the west.

The large amount of agricultural land that surrounds Greeley enhances the quality of life. However, the growth of the community has led to a decrease in these farmlands. This is especially noticeable in the project area as residential and commercial development has led to a decrease in farmland.

3.19.2 Impacts

Visual impacts associated with the construction of the proposed project were assessed by determining the potential for decline in the aesthetic quality of the area, especially as it relates to the existing viewers in the project area. The existing viewers included residents along this section of US Business 34, workers at local businesses, and travelers along this segment of the highway.

Impact types defined for visual resources are driven by visibility from sensitive viewers and estimated project/setting contrast. Significant visual impacts would be those that, following the application of recommended mitigation measures, would still result in strong project/setting contrast.

No-Action

There would be no construction activities to create potential visual impacts. The existing landscape character of this setting would be retained under this alternative.

Alternative B-1

The project would primarily result in short-term construction related impacts to visual resources. No significant long-term impacts to views of the Rocky Mountains or agricultural lands along this area of the US Business 34 would occur. The increase to four lanes within this topography would still provide for views of the mountains and farmland.

Short-term construction related visual impacts include:

- Construction equipment and excavated material associated with construction activities.
- Dust and debris associated with construction activities.

- Traffic congestion associated with construction activities.
- Removal of vegetation (trees and/or shrubs).

Long-term visual impacts may include:
- Loss of vegetation, although few trees are located within the project area.

Alternative C-1

The impacts would be the same as identified for Alternative B-1.

3.19.3 Mitigation

Visual design objectives and mitigation for the proposed action include:
- Sensitive grading techniques that blend grading with the natural terrain.
- Integrating new landscape design with the existing landscape in order to maintain the integrity of the surroundings.
- Providing visual continuity between the setting and the proposed action.
- Revegetation of cut and fill slopes with native vegetation, consistent with surrounding vegetation patterns.
- Use of materials that will complement the color and texture of the surrounding natural landscape.

3.20 TRAFFIC

3.20.1 Existing Conditions

Figures 3.6 – 3.8 illustrates 2004 PM peak-hour volumes for the project area. Traffic operations were analyzed for 2004 volumes on US Business 34 between Promontory Circle and 71st Avenue. The analysis of existing traffic operations along US Business 34 are based on two through lanes in each direction and four through lanes at the intersection of US Business 34 and 71st Avenue. At present, there are two signalized intersections along the project area, one at the intersection of US Business 34 and Promontory Circle and the other at the intersection of US Business 34 and 71st Avenue. As illustrated in Figures 3.6 – 3.8, the US Business 34 segment in the project area (in 2004) operates at LOS A at Promontory Circle and LOS B at 71st Avenue.

3.20.2 Future Traffic Conditions

Projected volumes are used to estimate the LOS in the year 2030. There were two scenarios considered for the future year (2030). The first scenario is the No-Action Alternative in which the existing geometry along the project area is maintained. The second scenario is the *Build Alternative* where the existing two-lane section along US Business 34 is expanded to a four-lane section, with some improvements on side streets as well. The future traffic conditions were calculated to determine the worst case conditions, which are PM peak hours.

The sources used to project future traffic volumes are:
- The North Front Range 2030 Regional Transportation Plan (RTP)
- Greeley Comprehensive Transportation Plan Mobility 2020
- 2004 Traffic counts

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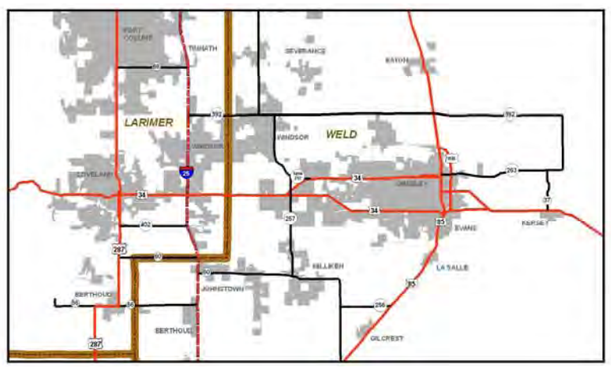
Figure 3.6
US Business 34 71st Avenue to 83rd Avenue
Existing Conditions



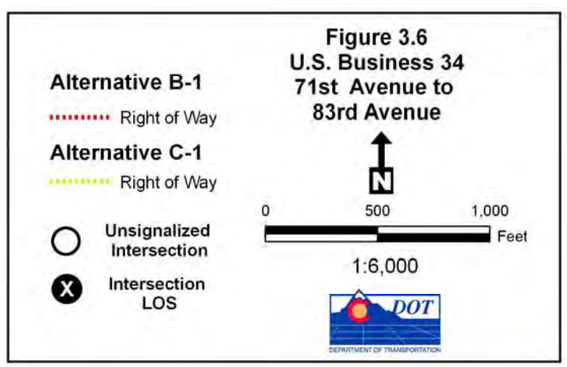
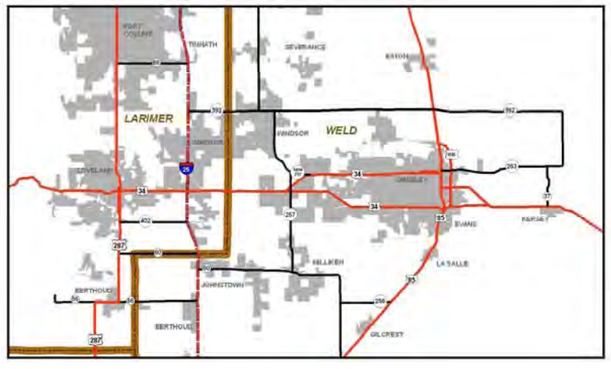


Figure 3.7
US Business 34 83rd Avenue to 95th Avenue
Existing Conditions



Alternative B-1
Right of Way
Alternative C-1
Right of Way
Unsignalized Intersection
Intersection LOS

Figure 3.7
U.S. Business 34
83rd Avenue to
95th Avenue

N

0 500 1,000 Feet

1:6,000

DOT
DEPARTMENT OF TRANSPORTATION

Figure 3.8
US Business 34 101st Avenue to Western Terminus of Project
Existing Conditions

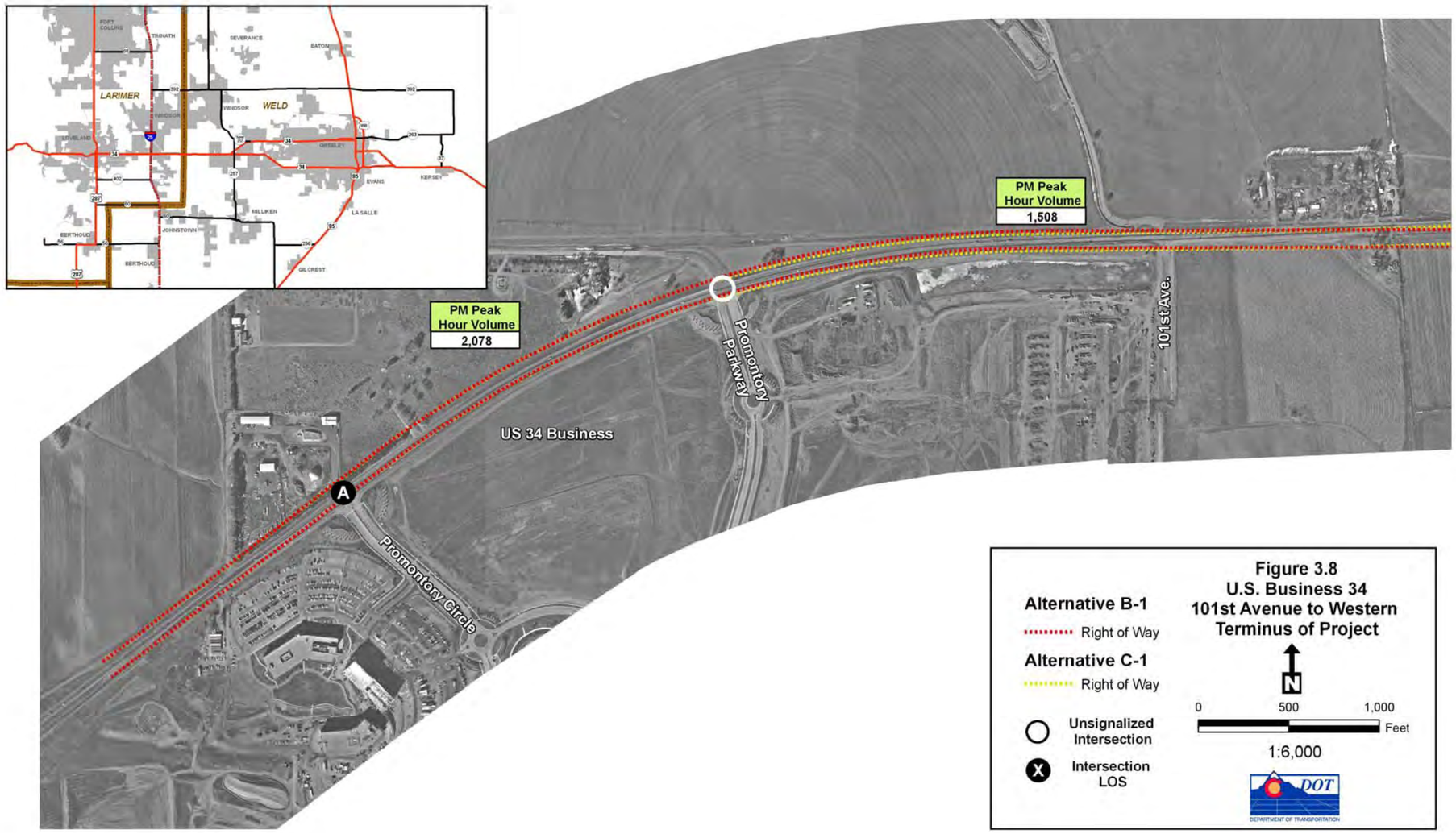
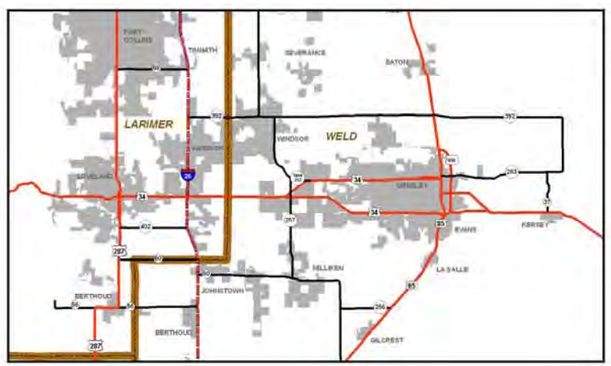


Figure 3.9
US Business 34 71st Avenue to 83rd Avenue
2030 No-Action



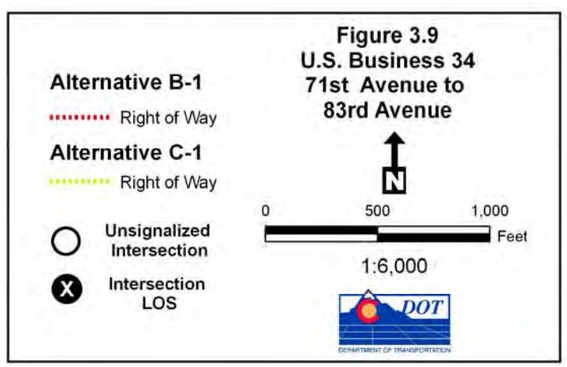
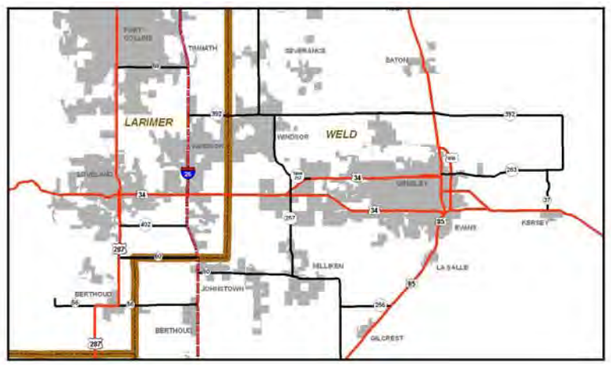


Figure 3.10
US Business 34 83rd Avenue to 95th Avenue
2030 No-Action



Alternative B-1
Right of Way
Alternative C-1
Right of Way
Unsignalized Intersection
Intersection LOS

Figure 3.10
U.S. Business 34
83rd Avenue to
95th Avenue

N

0 500 1,000 Feet

1:6,000

DOT
DEPARTMENT OF TRANSPORTATION

Figure 3.11
US Business 34 101st Avenue to Western Terminus of Project
2030 No-Action

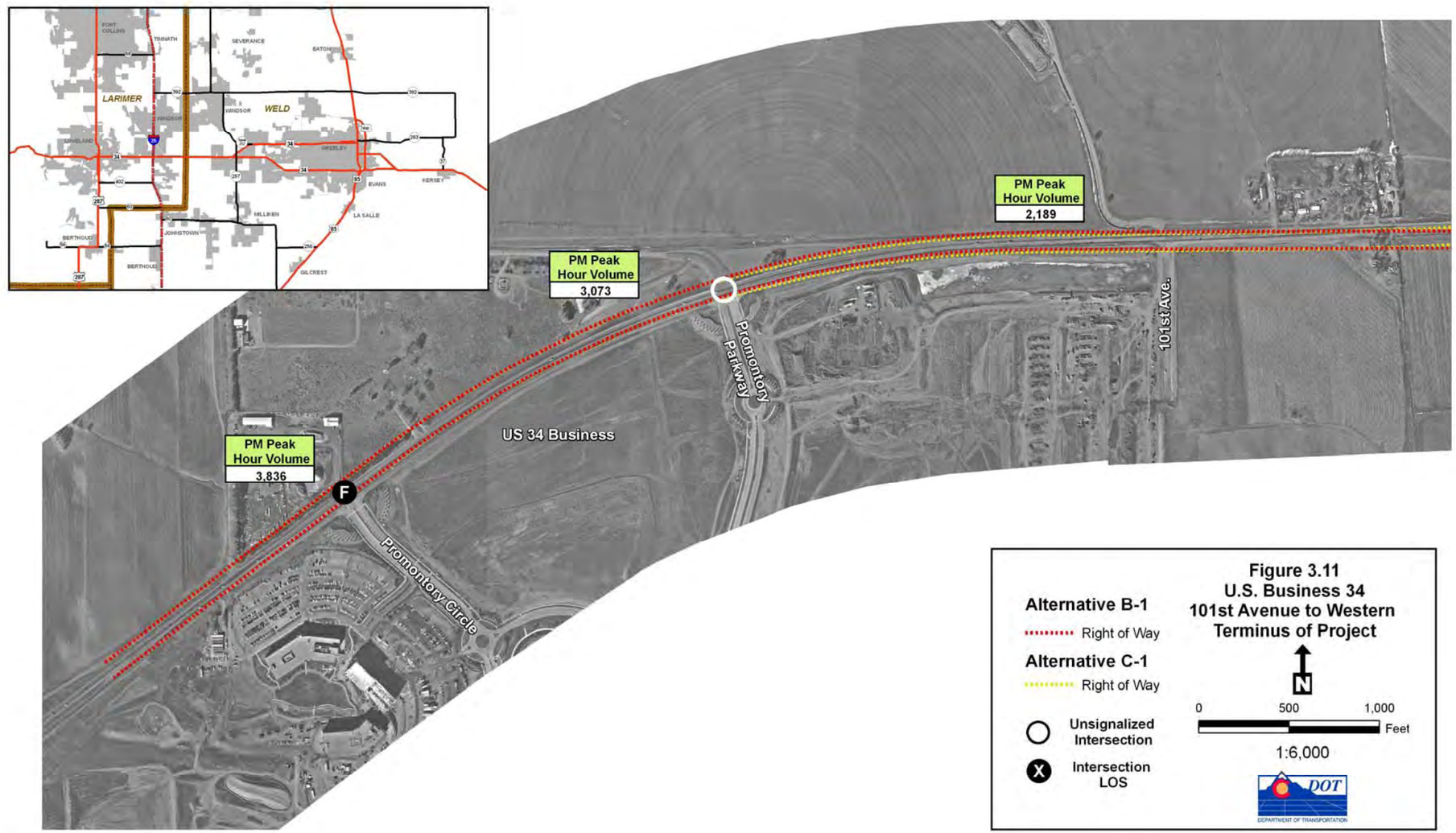
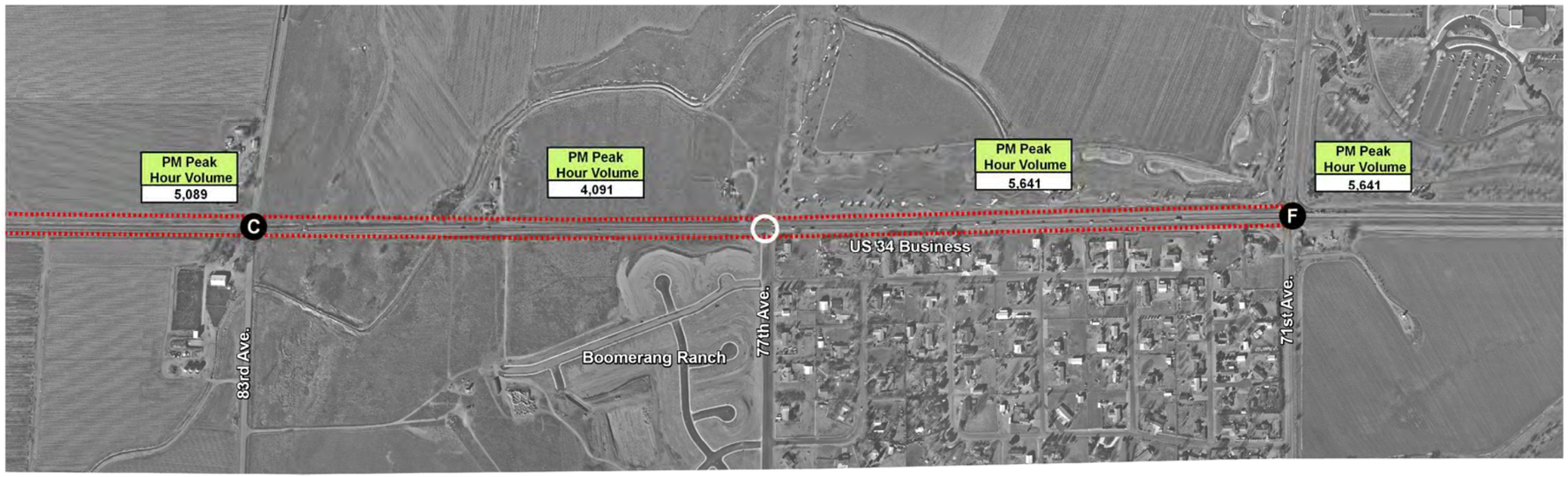
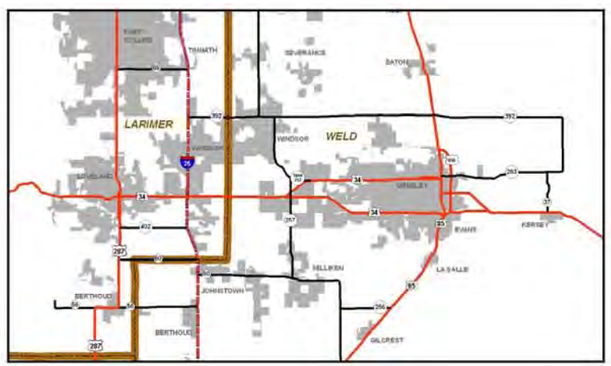


Figure 3.12
US Business 34 71st Avenue to 83rd Avenue
2030 Build





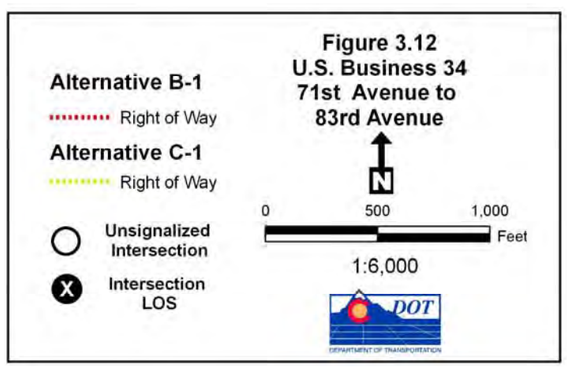
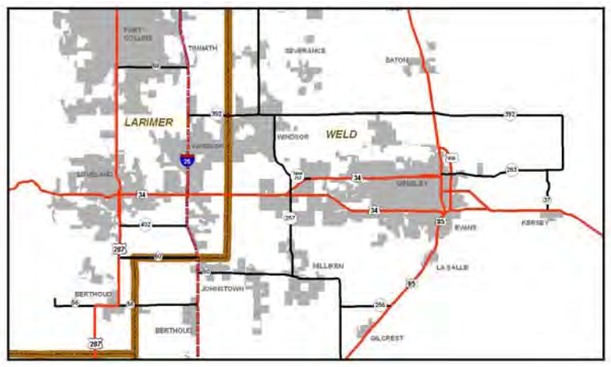


Figure 3.13
US Business 34 83rd Avenue to 95th Avenue
2030 Build



Alternative B-1
Right of Way
Alternative C-1
Right of Way
Unsignalized Intersection
Intersection LOS

Figure 3.13
U.S. Business 34
83rd Avenue to
95th Avenue

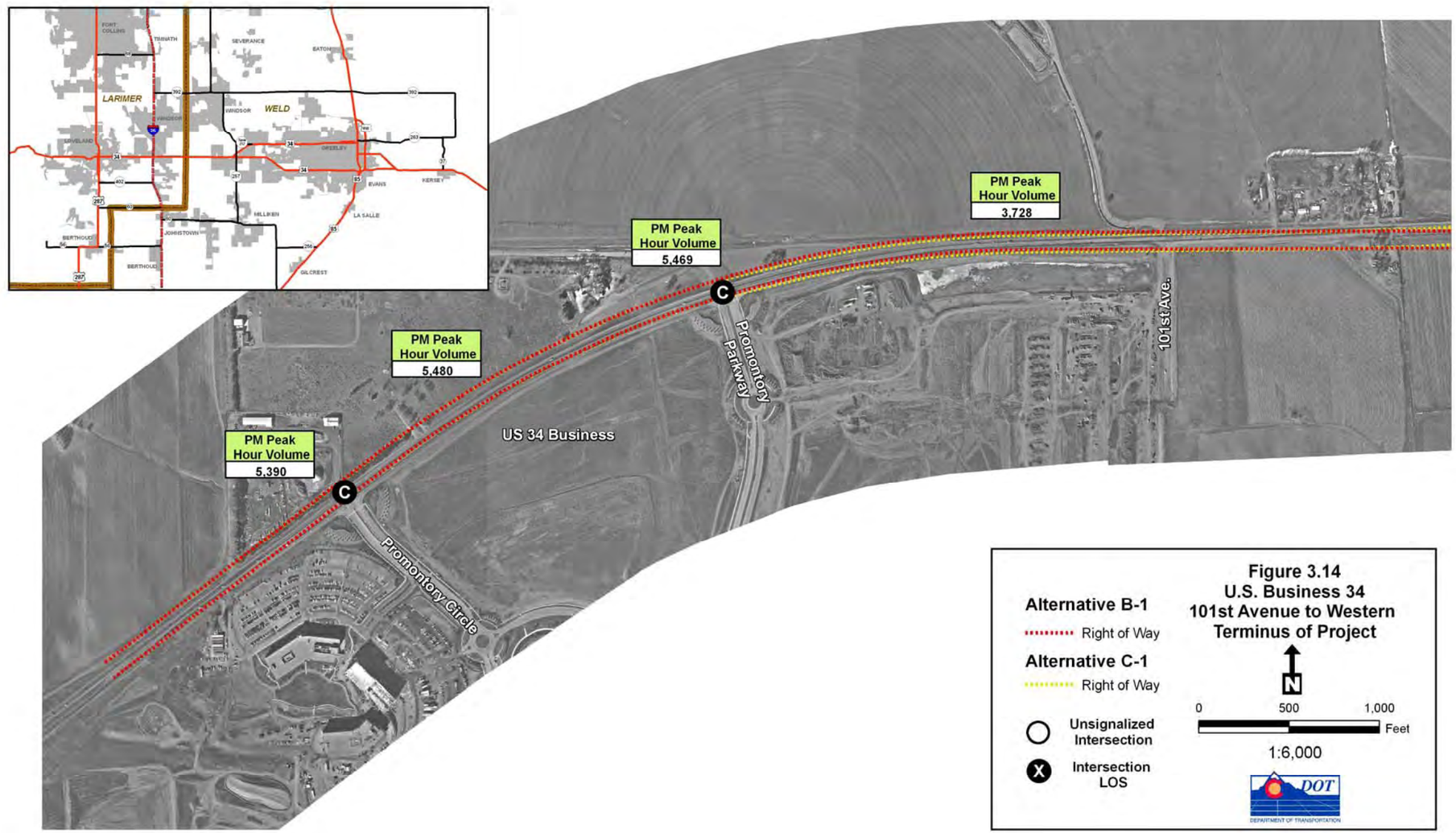
N

0 500 1,000 Feet

1:6,000

DOT
DEPARTMENT OF TRANSPORTATION

Figure 3.14
US Business 34 101st Avenue to Terminus of Project
2030 Build



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3.20.3 2030 No-Action Alternative

Figures 3.9 – 3.11 illustrates 2030 PM peak hour forecasted *No-Action Alternative* volumes for the project area. In this scenario, there is no improvement to the existing geometry within the US Business 34 project area.

3.20.4 2030 Alternatives B-1 and C-1

Figure 3.12 – 3.14 illustrates 2030 PM peak hour forecasted *Build Alternative* volumes for the project area. In this scenario, the existing two-lane section along US Business 34 is expanded to a four-lane section. Additional lanes are proposed on some side streets due to heavy volumes in 2030; however, these planned improvements are not part of this project. In this scenario there are four signalized intersections and as illustrated in Figure 3.12, the intersection at 71st Avenue operates at LOS F. All the other signalized intersections operate at LOS C.

3.20.5 Impacts

Alternatives B-1 and C-1 have identical traffic impacts due to the same points of origin and termination, sharing the same typical section, and identical intersection locations and layouts. The following traffic impact analysis describes only those impacts for the No-Action and proposed action alternatives (B-1 and C-1).

Safety

No-Action Alternative

Emergency vehicle response times would decrease if this alternative is chosen. This 4.2 mile two-lane section of highway would continue to be connected to four-lanes on the eastern and western boundary of the project area. This roadway would see a degraded LOS by the year 2030 (LOS F at 71st Avenue intersections). This decline in LOS would increase emergency vehicle response time in the project area.

Alternative B-1 and C-1

Project area safety would improve by maintaining future response time for emergency vehicles. Additionally, the highway would be increased to four-lanes, eliminating the “hour glass” road configuration that currently exists. This would improve traffic flow and safety in the project area.

Maintenance

No-Action

There is no change to existing roadway maintenance in the project area.

Alternative B-1 and C-1

The roadway maintenance requirements for these alternatives are generally the same. These alternatives will increase maintenance requirements and costs above current levels. Roadway maintenance will include asphalt patching and resurfacing, snow removal, and striping.

3.20.6 Mitigation

Maintenance impacts will be partially addressed through the design process and incorporated in the final plans. Roadway design will meet or exceed current American Association of State Highway and Transportation Officials and CDOT design standards. Asphalt surfacing will have a minimum 20-year design. Quality insurance/control inspections will be performed throughout the construction process to ensure compliance with the design and applicable construction specifications and standards.

3.21 RIGHT-OF-WAY AND RELOCATIONS

Relocations described in this document are those in which residents and/or businesses will be relocated due to right-of-way acquisition for road construction. Right-of-way is the estimated land necessary to construct the B-1 or C-1 Alternatives. Figures 3-15 through 3-17 show the location of the relocations for Alternative B-1 and C-1.

3.21.1 Existing Conditions

Right-of-Way

No-Action

There are no issues relating to right-of-way and relocations.

Alternative B-1

This alternative will require the purchase of right-of-way that will involve 29 parcels and approximately 29 acres. Three residences would be relocated.

Alternative C-1

This alternative will require the purchase of right-of-way involving 30 parcels and include approximately 28 acres. The alternative also involves the removal of approximately 64 percent of a front yard on a residential property. Three residences would be relocated.

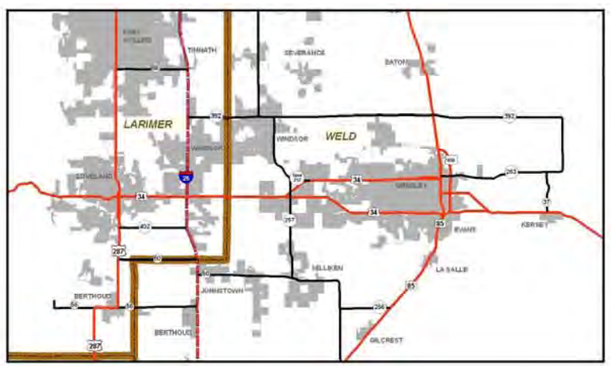
3.21.2 Mitigation

CDOT will comply with 49 CFR, Part 24, ***Uniform Relocation Assistance and Real Property Policies Act of 1970***, as amended. The purpose of the Act is to provide uniform and equitable treatment to people whose property will be acquired, or who will have to move because of programs or projects financed with federal funds or are being moved because of a federal action. This Act also ensures their rights are protected. Owners of property acquired for right-of-way will be compensated fair market value, in accordance with the Act, Code of Federal Regulations, and Colorado statutes, policies, and procedures.

3.22 HAZARDOUS MATERIALS/WASTE

The potential existence of hazardous materials and waste in the project area was evaluated utilizing the Environmental Data Resources (EDR) database. This search identified only one site located in close proximity to the project area.

Figure 3.15
US Business 71st Avenue to 83rd Avenue



Alternative B-1
- Potential Residential Acquisition
- Right of Way

Alternative C-1
- Potential Residential Acquisition
- Right of Way
- Potential Residential Acquisition (Both B & C)

Figure 3.15
US Business 34
71st Avenue to
83rd Avenue

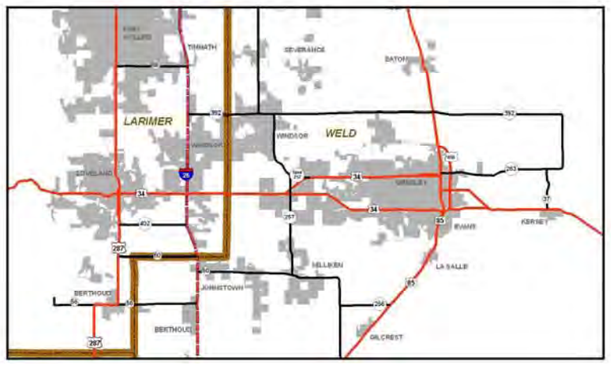
N

0 Feet 500

1:6,000

DOT

Figure 3.16
US Business 34 83rd Avenue to 95th Avenue



Alternative B-1
Potential Residential Acquisition
Right of Way

Alternative C-1
Potential Residential Acquisition
Right of Way

Potential Residential Acquisition (Both B & C)

Figure 3.16
US Business 34
83rd Avenue to
95th Avenue

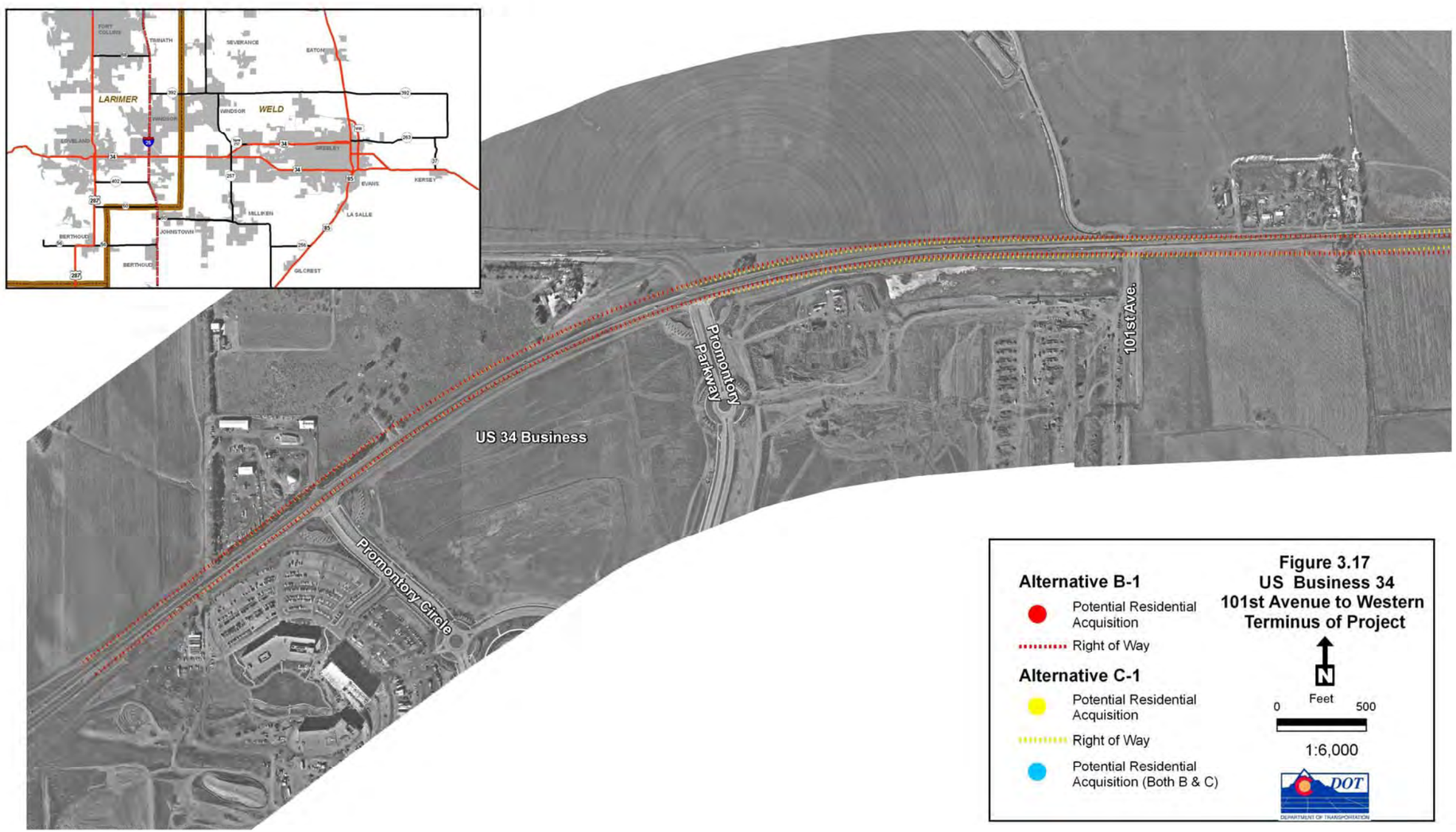
N

0 Feet 500

1:6,000

DOT
DEPARTMENT OF TRANSPORTATION

Figure 3.17
US Business 34 101st Avenue to Western Terminus of Project



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3.22.1 Existing Conditions

The following contaminated property located within or close to the project area was identified in the EDR database search:

CDOT Greeley West Maintenance Facility

This facility is located along US Business 34 west of Greeley. The site is used for storage of CDOT maintenance vehicles, highway painting equipment, and other maintenance equipment and materials. Three underground storage tanks (UST) were removed on October 9, 1991 by CDOT personnel under the supervision of personnel from the Colorado Geological Survey (CDOT 2003). During the excavation, the tank inspection revealed a small hole on the top of one of the 1,000-gallon diesel UST. None of the other tanks had holes, leaks, or cracks. Additionally, a break in the piping was also found during the excavation.

Based on this finding, groundwater sampling studies were initiated in June 2002, September 2002, December 2002, and April 2003 to determine if benzene, toluene, ethyl benzene, and xylenes (BTEX) had contaminated the groundwater. The sampling determined that BTEX was below detection limits at all the monitoring well sites.

Based on this data, CDOT determined the contamination from the UST is not moving off-site, and has likely been degraded by natural attenuation processes. CDOT received a no further action letter for the tank and pipeline from the Division of Oil and Public Safety on October 29, 2003. A copy of this letter is included in Appendix A.

3.22.2 Impacts (Alternative B-1 and C-1)

Alternative B-1 and C-1 would not impact the documented hazardous waste site.

3.23 CONSTRUCTION IMPACTS

The construction activities associated with this project would result in primarily short-term impacts to the environment. If not properly mitigated, some of these impacts may cause some hardship to local residents in the project area. The following construction impacts would occur for both Alternative B-1 and C-1:

- Operation of earth moving machinery, paving equipment, power tools, and trucks would create undesirable noise and vibration.
- Exhaust emissions and fugitive dust would increase due to the operation of heavy equipment.
- Minor detours may be necessary during construction and could be inconvenient to the local residents.
- Stockpiles of fill material, piles of construction materials, and presence of construction equipment could create undesirable visual effects to the residents in the area of the interchange.
- Construction activities, such as tailgate banging, backup alarms, and earthwork activities could disrupt migratory and/or nesting birds.

3.23.1 Mitigation

Construction impacts would be mitigated as follows:

- Dust suppression measures would be employed in accordance with the fugitive dust permit required for the project.
- A suitable construction staging area would be located such that visual impact would be minimized.
- Desirable vegetation and prairie dog habitat would be fenced-off during construction.
- Contractors would be required to practice spill prevention measures and to list these measures in the SWMP. Clean up of spills would be conducted in compliance with the Colorado hazardous waste regulations.
- Traffic control plans would be developed to minimize traffic impacts due to detours. The public would be notified of any closures and detours.
- Detours would be coordinated with an emergency service provider in the area.
- The project area will be surveyed prior to construction advertisement to determine the presence of active migratory bird nesting sites in the project area.
- Minimize idling of construction equipment.
- Minimize speeds of construction equipment.
- Ensure properly maintained vehicles, especially mufflers.

3.24 MITIGATION SUMMARY

CDOT and FHWA are committed to the following mitigation measures for environmental and socioeconomic impacts associated with construction of the proposed action. Table 3.11 identifies mitigation measures required for the project.

Table 3.11
Summary of Mitigation Measures and Commitments

Category	Mitigation Measures and Commitments
Vegetation	• During final design, the grading plan will minimize removal of vegetation where possible. • Topsoil will be salvaged from construction area and stockpiled separately from other topsoil. No importation of topsoil will be allowed on site. • Temporary and permanent erosion control measures will be implemented per the CDOT Erosion Control and Stormwater Management Quality Guide. • Disturbed areas will be reseeded with native grasses and forbs. • During construction, vehicle operation will be limited to the designated construction area.
Noxious Weeds	• Equipment will be cleaned prior to entering the construction site to prevent spread by wind, water, or accidental transport on construction vehicles. • Topsoil shall consist of loose friable loam free of subsoil, refuse, stumps, roots, rocks, brush, noxious weed seed and reproductive vegetative plant parts such as, but not limited to knapweed, purple loosestrife, and Canadian thistle, heavy clay, hard clods, toxic substances, or other material which would be detrimental to its use on the project. • Disturbed areas will be reclaimed in phases throughout construction with native grasses and forbs. • In accordance with the Colorado Weed-Forage Certification Act, mulches or strawbales utilized for erosion control purposes will be certified weed-free. • No fertilizer will be used on site. • Herbicides shall be applied by use of wicks or sponges to avoid off-target injury. • Broadcast herbicide spraying will only be approved through written consent of the Engineer. • Periodic surveys will take place during the design and construction period to identify and treat noxious weeds that have developed. • Contractor's vehicles and equipment will be inspected before they are used for construction to ensure that they are free of soil and debris capable of transporting noxious weed seeds or roots.
Wildlife	• If construction is scheduled to take place during bird nesting season a survey will occur prior to and up to the start of construction. • If raptor nests are located during the survey, seasonal construction restrictions will be implemented.

Category	Mitigation Measures and Commitments
Wetlands	• Mitigation will occur on CDOW property at the Big Thompson River Ponds. • Temporary erosion and sediment control BMPs will be installed prior to ground disturbance activities. Completed areas shall be permanently stabilized within seven days. • Unnecessary temporary impacts will be avoided by fencing the limits of disturbance during construction. • No equipment staging or storage of construction materials will occur in within 50 feet of wetlands. • The use of chemicals, such as soil stabilizers, dust inhibiters, and fertilizers within 50 feet of wetlands will be prohibited. • No discharge of effluent into wetlands will occur. • Temporary fill material will not be stored within wetlands. • All areas of exposed soil will be seeded and/or planted, and mulched throughout construction (following completion of each section). Mulch and mulch tackifier will be placed for temporary erosion control when seeding and/or planting cannot occur due to seasonal constraints. • Wetlands temporarily impacted during construction will be restored.
Threatened, Endangered and Sensitive Species	• Project activities that impact the black-tail prairie dog colony will follow the CDOT policy outlined in the June 1, 2005 memo. A copy of the memo is located in Appendix A. • A burrowing owl survey will be conducted at the prairie dog colony if construction is starting between I March and 31 October • A ferruginous hawk nest survey will be conducted prior to construction to determine if their nests are located within ½ mile of project area
Historic and Archaeological Resources	• Prior to construction, the prisoner of war camp pillars (5WL768) will be relocated to a new site near the present site, and will be positioned such that they are available for public viewing • If buried cultural resources are exposed during any phase of construction, the CDOT Senior Staff Archaeologist will be contacted to evaluate the discovery for listing on the NRHP, in consultation with the SHPO, and local and tribal consulting parties.
Paleontology	• No mitigation measures for paleontological resources have been recommended for the project. However, if these resources are uncovered during construction, Steve Wallace, CDOT Paleontologist, will be notified immediately

Category	Mitigation Measures and Commitments
Water Resources	The project is committed to following CDOT's Erosion Control and Storm Water Quality Guide and CDOT Standard Specifications for Road and Bridge Construction, sections 107.25 and 208. Project would follow the stipulations outlined in CDOT's MS4 Permit entitled "New Development and Redevelopment Process" Mitigation would include some of the following measures: • Implementation of temporary erosion control and stormwater control measures during construction • Implementation of permanent erosion control and stormwater measures to address slope erosion and roadway run-off • Installation and maintenance of existing and new BMPs • Development of a spill prevention and emergency response plan for use during construction to address the storage, handling, and use of chemicals, fuels, and lubricants
Air Quality	• The contractor will minimize airborne dust during construction through construction phasing, soil stabilization, and dust suppression
Noise	• Where possible, enforce more restrictive work hours in residential areas. • Discourage weekend work, with the exception of activities best suited for off-peak hours. • Combine noisy operations to occur in the same time period. • Use noise blankets or other muffling devices on equipment and quiet use generators. • The contractor shall use well-maintained equipment, especially with respect to mufflers. • Conduct noise inspections and monitor blasting activities on seismographs.
Soil	• Implement erosion and sediment control BMPs such as mulching, temporary seeding, silt fences, straw-bale barriers, and erosion control blankets • Till soils that have been compacted by heavy construction equipment to allow for quicker establishment of grass reseeding • Sequence clearing so that entire site in not disturbed; stabilization would occur as soon as activity is complete. The surface area of exposed earth at one time shall not exceed 17 acres for clearing and grubbing and 17 acres for earthwork operations (34 acre total). The contractor must stabilize these areas immediately upon completion of the grading of these sections. • All areas of exposed soil will be seeded and/or planted, and mulched during construction. This will help prevent noxious and invasive weed infestation from occurring. • Use a central staging area for all equipment.

Category	Mitigation Measures and Commitments
Visual Impacts	• Use sensitive grading techniques that blend grading with the natural terrain • Integrate new landscape design with the existing landscape in order to maintain the integrity of the surroundings • Provide visual continuity between the setting and the proposed action • Revegetation of cut and fill slopes with native vegetation, consistent with surrounding vegetation patterns • Use of materials that will complement the color and texture of the surrounding natural landscape
Right-of-Way	• All property access issues will be resolved by CDOT right-of-way staff during the final design phase. During this process, CDOT will comply with the ***Uniform Relocation Assistance and Real Property Policies Act of 1970,*** as amended
Hazardous Materials/Waste	• None required
Construction Impacts	• Dust suppression measures would be employed in accordance with the fugitive dust permit required for the project • A suitable construction staging area would be located such that visual impact would be minimized • Desirable vegetation and prairie dog habitat would be fenced-off during construction • Contractors would be required to practice spill prevention measures and to list these measures in the SWMP. Clean up of spills would be conducted in compliance with the Colorado hazardous waste regulations • Traffic control plans would be developed to minimize traffic impacts due to detours. The public would be notified of any closures and detours • Detours would be coordinated with emergency service providers in the area • The project area will be surveyed prior to construction advertisement to determine the presence of active migratory bird nesting sites in the project area. • Minimize idling of construction equipment • Minimize speeds of construction equipment • Ensure properly maintained vehicles, especially mufflers

4.0 SECONDARY AND CUMULATIVE IMPACTS

4.1 IMPACT ASSESSMENT METHODOLOGY

This section describes secondary and cumulative impacts related to the proposed action under consideration in this EA. The regulations for implementing the NEPA define secondary impacts, or indirect effects, as:

"Indirect effects, which are caused by the action and are later in time or farther removed in distance, but reasonably foreseeable" (40 Code of Federal Regulations, CFR 1508.8b).

CEQ regulations for implementing NEPA define cumulative impacts as:

"The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions and regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

The Council on Environmental Quality (CEQs) guidance limits cumulative impact analysis to "important issues of national, regional, or local significance" (CEQ 1997). Therefore, this chapter only addresses resources that contribute to secondary and cumulative impacts in an area of influence (AOI). Depending on the resource, the AOI could be the project area or it could have a larger area of influence (such as Greeley or Weld County).

The following resources were determined not to result in or contribute to substantial secondary and cumulative impacts:

- Wildlife Habitat and Species
- Historic and Archeological Resources
- Paleontology
- Air Quality
- Noise
- Soils and Geology
- Socioeconomics
- Environmental Justice
- Visual
- Right-of-way
- Hazardous Materials

4.2 ACTIONS CONSIDERED AND OTHER RELATED ACTIONS

General categories of actions and projects that may contribute to significant cumulative impacts in the project area include energy production (natural gas and oil), commercial facilities, residential development, and transportation improvements. Table 4.1 identifies the past, present, and reasonably foreseeable future actions that would potentially contribute to cumulative impacts and have been considered in this analysis.

Table 4.1
Past, Present, and Reasonably Foreseeable Future Actions

Name of Project	Land Use	Status of Action
Boomerang Ranch	Residential	Past, Present, and Reasonably Foreseeable
Boomerang Golf Course	Commercial	Past
Moody Farm	Residential	Reasonably Foreseeable
Natural Gas, Inc.	Energy Production	Past
Promontory Development	Commercial and Residential	Past, Present, and Reasonably Foreseeable
Our Savior Lutheran Church	Commercial	Reasonably Foreseeable

4.3 CUMULATIVE IMPACTS

4.3.1 Noxious Weeds

The AOI for noxious weeds is the project area.

Most noxious weeds specialize in colonizing newly disturbed ground. This project would allow for cumulative increases in noxious weed infestations unless proper prevention and control techniques are implemented during and after construction. Invasive weeds are an environmental problem that has the potential to seriously impact the landscape. Future development can increase noxious weed infestations; however, existing and future housing developments near the project area are likely to eliminate noxious weeds by landscaping and planting competing vegetation.

4.3.2 Threatened, Endangered, and Sensitive Species

The AOI for threatened, endangered, and sensitive species is Weld County.

The project would contribute to cumulative loss of black-tailed prairie dog colonies. The black-tailed prairie dog was recently removed from the USFWS candidate species list; however, it is still listed as a species of special concern by the State of Colorado. This species is an important component of short and mid -grass prairie ecosystems across the Front Range. Habitat fragmentation and degradation continue to isolate and negatively impact black-tailed prairie dog populations. Present and future development is likely to impact black-tailed prairie dogs in Weld County. Secondary impacts are likely to occur to other species (such as raptors) that utilize the black-tailed prairie dog as a prey source and rely on prairie dog burrows and entire colonies for habitat (burrowing owl, mountain plover).

4.3.3 Water Resources and Quality

The AOI for water resources and quality is the project area.

The project area does not contain any perennial or intermittent streams that could provide year long or stormwater flows to the Cache La Poudre River; however, an increase in impervious surface area would directly result from roadway activities, which would increase runoff flow rates and volumes. Additional increases in impervious surface area will also result from present and future development (primarily housing and commercial) near the project area. Increases in impervious cover generates more stormwater runoff, decreases soil moisture and groundwater recharge, and reduces the amount of moisture evaporating from urban areas.

4.3.4 Farmlands

The AOI for farmland is Weld County.

The 1997 Census of Agriculture for the State of Colorado has indicated a decline of 140,000 acres of farmland per year since 1987 (Colorado Department of Agriculture 1987). The loss of farm and ranch land in Colorado is accelerating, between 1978 and 1992; the average annual loss was 90,000 acres per year.

Increasing development in Weld County is resulting in the conversion of agricultural lands to other uses. This project will convert approximately 10.5 acres of prime farmland to highway. The conversion of this farm acreage to other uses adds cumulatively to other ongoing and future loss of farmland in Weld County.

4.3.5 Wetlands

The AOI is the South Platte River Watershed.

The jurisdictional wetland located in the project area has been determined to have a hydrological connection to the Cache La Poudre River. Wetlands in the Cache La Poudre Watershed provide a wide range of natural functions and values. The Cache La Poudre River is a tributary of the larger South Platte River Basin that is being considered as the area of influence for this resource. Development pressures can often result in unavoidable impacts to wetland areas. Approximately 0.2 acres of jurisdictional wetlands within the project area will be impacted. Section 404 of the Clean Water Act established a program to regulate the discharge of dredge or fill material into waters of the US, which includes wetlands. In addition, Section 404 requires that compensation be required for unavoidable impacts to wetlands. The project will contribute to unavoidable wetland impacts in the South Platte River Watershed; however, these impacts will be mitigated by creating wetland acreage at a 1:1 ratio. This mitigation will be created in the Big Thompson River Watershed, which is also a tributary of the South Platte River. As a result, mitigation will prevent the cumulative loss of wetlands in the South Platte River Watershed.

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5.0 PUBLIC INVOLVEMENT

5.1 INTRODUCTION

The purpose of the Public Involvement Program is to solicit the public and provide opportunities for interested parties to participate in the NEPA process. Through public involvement, the community is educated about the future transportation improvements planned for US Business 34. Additionally, CDOT is able to solicit information, ideas, and opinions from the public with regards to the proposed improvements.

5.2 ELEMENTS OF PROGRAM

The Public Involvement Program for the US Business 34 EA included a project mailing list, three public workshops, agency meetings, and meetings with other individuals. The Public Involvement Program will conclude with a formal Public Hearing following the publication of the EA.

5.2.1 Project Initiation

In April of 2003, CDOT in consultation with the FHWA decided to prepare an EA for this project. This determination was made due to the planned relocations, increased capacity from two to four lanes, and environmental impacts resulting from the project.

5.2.2 Mailing List

A project mailing list was initially developed that included property owners located along the corridor and local, state, and federal government agencies. Additional individuals were added to the mailing list from solicited inquiries and from attendance at the public workshop.

5.2.3 Public Workshops

Public Workshop # 1

CDOT hosted a public workshop on October 1, 2002, at the Farr Branch Library located at 1939 61st Avenue in Greeley, Colorado. The purpose of the Public Workshop was to introduce and solicit comments on the following topics concerning the project: project overview and process, potential alternatives, project schedule, and environmental impacts. A project "Fact Sheet" was also provided to attendees. The "Fact Sheet" included a project description, disclosed the purpose of the public workshop, and provided information on how an attendee could provide comment. The "Fact Sheet" noted existing and future traffic volumes, and potential environmental impacts of three alternatives described as "north," "middle," and "south." The "Fact Sheet" displayed pre-construction and post-construction funding from the Statewide TIP for this project.

There were 22 people in attendance at this public meeting. A comment sheet was provided to attendees to solicit public comments. CDOT received three comments following this workshop. One comment was: "Widening needs to occur with the least impacts to people and home relocations." The second comment was that "Widening needs to occur because of right-of-way and west traffic movements." A third comment was received from a property owner who stated they had drainage problems in the front of their house because the culvert is undersized for the volume of flow through the ditch.

Public Workshop # 2

A second public workshop was held on June 18, 2003, at the Farr Branch Library. An advertisement/notice for the public workshop was placed in the Greeley Tribune. CDOT provided notice of the workshop to interested parties on the project mailing list. The purpose of the public workshop was to exchange information with the public and solicit comments about the proposed mobility and safety improvements. Additionally, potential environmental impacts associated with various alternative alignments were also presented at the workshop. Information and data that had been gathered to date were on display in seven sets of boards.

The display boards identified residential acquisitions, right-of-way acquisitions, hazardous materials sites, noise impacts, impacts to wetlands, and impacts to black tailed prairie dog colony sites for all the alternatives being considered for the project.

A comment sheet was provided to all attendees for soliciting comments. The workshop included 36 attendees. Individual public comments from the second public workshop can be found in Appendix E. In general, the public expressed the need for the roadway widening due to safety and capacity. Concern was expressed about increases in noise, issues with drainage, and preserving the prisoner of war camp entrance pillars.

Public Workshop #3

A third public workshop was held on September 23, 2003 at the Farr Branch Library. The announcement for the public workshop included the following information:

COLORADO DEPARTMENT OF TRANSPORTATION

NOTICE OF PUBLIC WORKSHOP

U.S. HIGHWAY 34 BUSINESS
FROM STATE HIGHWAY 257 EAST TO 71ST AVENUE

ENVIRONMENTAL ASSESSMENT

The Federal Highway Administration (FHWA), as the lead agency, and the Region 4 office of the Colorado Department of Transportation (CDOT) have screened potential 4-lane alternatives for US 34 Business from SH 257 East to 71st Avenue. Two of several alternatives that have previously been reviewed at public workshops will be analyzed in detail in the upcoming Environmental Assessment.

The purpose of this workshop is to share with the public the alternatives to be carried forward into the project's Environmental Assessment and to provide the public the opportunity to comment on these alternatives. Information and data that have been gathered to date will be on display. CDOT staff will be available for questions.

Following this workshop, CDOT intends to prepare the Environmental Assessment document and will make it available for public review.

The public workshop sign-in indicated 23 people in attendance. As in the previous workshops, a project comment sheet was provided to attendees.

Four sets of boards were on display at the September 23rd workshop. Issues presented at the workshop included right-of-way and residential acquisitions, threatened and endangered species, prairie dogs, and air quality. The matrices also included a summary of local agency and public comments.

Individual public comments from the third public workshop can be found in Appendix E. In general, the public expressed support for widening due to safety and capacity needs. In addition, concern was raised about noise and property value impacts.

5.3 NEIGHBORHOOD/INDIVIDUAL MEETINGS

Individual meetings were held initially in the fall of 2002 and continued through 2004 with interested parties. A meeting was held on February 18, 2004, at the CDOT Evans office with representatives from Our Savior's Lutheran Church. The purpose of the meeting was to discuss US Business 34 access to the future church site (17 acres) located east of 95th Avenue on the north side of the highway. Up until the meeting, the church property owners had not been contacted about the EA, but were somewhat aware of the project. In a worse case scenario, up to 110 feet of right-of-way may be needed that would impact their property. No permanent access to the property on US Business 34 would be allowed; access will either be off 95th Avenue or a new road to potentially be constructed one-half mile east of 95th Avenue.

5.4 OTHER PUBLIC COMMENTS OBTAINED

CDOT received a letter dated April 9, 2003, from State Farm Insurance Company. The letter stated the company was relocating to the Promontory development. Currently, the facility employs 605 staff members. However, employment was expected to increase in the summer of 2003. State Farm requested that CDOT install the traffic signals at Promontory Circle and US Business 34 as soon as possible.

Historic Greeley, Inc. sent a copy of their August 14th, 2003 newsletter to CDOT. The newsletter included an article and photographs regarding "Preserving the Pillars of the POW Camp 202."

5.5 MEDIA

The project has been identified in the following *Greeley Tribune* articles:

The *Greeley Tribune* published an article entitled "State Highway Department could make stretch of US Business 34 four lanes," on June 1, 2003. The article listed information in order for the public to submit comments by July 18th, 2003.

The *Greeley Tribune* published an article entitled "10th Street Expansion a Must for Future Traffic" on September 23, 2003.

5.6 AGENCY INPUT OBTAINED

A local agency meeting was held on April 18, 2003. Attendees included representatives from the City of Greeley's Public Works Department and Planning Department. A preliminary project matrix and preliminary design layouts were provided. Discussion items at this meeting included future city development for commercial, residential and school areas, project alternatives, and comments from the City of Greeley. The project team learned that the oil and gas wells, on the north side of US Business 34, were being removed. CDOT displayed an aerial with the 18 alternatives. CDOT explained to the City that it would cooperatively work with State Farm on the project in order to establish US Business 34 as a "Gateway to Greeley". The City Public Works Department requested that a 300-foot right-of-way be preserved for future transit. CDOT

explained that the project cross sectional template would not include a raised median because of the posted speed limit. The need to relocate some utilities (water lines) located in the corridor was discussed.

An agency meeting was also held on June 2, 2003. The agenda included items on the project history and context with regards to the Greeley Comprehensive Plan. Attendees at the meeting included representatives from: CDOT, the USACE, the City of Greeley, CDOW, and FHWA. Attendance at the meeting equaled 19 people. The agenda included discussion of alternatives, design, and impacts. In addition, opportunity for agencies to provide comments and concerns was provided.

A Local Agency Coordination Meeting was held on December 23, 2003, with the CDOT project team, the North Front Range Metropolitan Planning Organization, and three representatives from the City of Greeley.

5.7 REMAINING PUBLIC INVOLVEMENT

A public hearing will be hosted following the publication of the EA at the Farr Public Library. A court room reporter will be available to take comments.

The results of the EA could be a Finding of No Significant Impact (FONSI) or if it is determined that significant impacts are incurred an Environmental Impact Statement will be prepared. If the outcome is a FONSI, agency and public comments will be addressed in the document. The FONSI will detail the selected alternative for the EA and will contain mitigation commitments.

6.0 REFERENCES

City of Greeley, 2002. Greeley Comprehensive Transportation Plan Mobility 2020. Greeley, CO.

City of Greeley, 2004. City of Greeley 2020 Comprehensive Plan. Greeley, CO.

Colorado Department of Agriculture. 1987. "Agriculture Census for Colorado."

Colorado Department of Transportation. 2003. Results of April 2003 Groundwater Sampling Event for the Greeley West Maintenance Facility.

Colorado Department of Transportation. 1995. CDOT Noise Analysis and Abatement Guidelines.

Council on Environmental Quality. 1997. "Considering Cumulative Effects Under the National Environmental Quality Act."

Dane, C.H., and W.G. Pierce. 1936. Dawson and Laramie Formations in Southeastern part of the Denver Basin, Colorado. American Association of Petroleum Geologists Bulletin. V. 20, no. 10, p. 1308-1328.

Environmental Data Resources. 2004. EDR Study Report #92202.1r. October 21, 2004.

ERO Resources Corporation. 2003. Prairie Dog Population Estimate Intersection of US Business and Promontory Parkway, Weld County, Colorado. Denver, Colorado.

Federal Register Notice for Greeley's Revised CO Maintenance Plan, http://www.epa.gov/fedrgstr/EPA-AIR/2004/January/Day-05/a083.htm

Fitzgerald, J.P.; C.A. Meaney, D. M. Armstrong. 1994. Mammals of Colorado. University Press of Colorado, Niwot. 467 pp.

Front Range Early Action Compact, http://www.raqc.org/ozone/EAC/ozone-eac.htm

Hammerson, G.A. 1999. Amphibians and Reptiles of Colorado. University Press of Colorado and Colorado Division of Wildlife.

Kauffman, E.G. 1977. Upper Cretaceous Cyclothems, Biotas, and Environments, Rocky Canyon Anticline, Pueblo, Colorado. Mountain Geologist V. 14, no. 3-4, p. 129-152.

North Front Range 2030 Draft Regional Transportation Plan http://www.dot.state.co.us/StateWidePlanning/PlansStudies/2030Draft RTP.asp

Painter, Mary W. 2003a. Historical Survey of Four Miles of US Highway 34 (Business Route), Weld County, Colorado. Centennial Archaeology, Inc. Fort Collins, Colorado.

Painter, Mary W. 2003b. A Class III Archaeological Survey of 4.3 Miles of US Highway 34 (Business Route), Weld County, Colorado. Centennial Archaeology, Inc. Fort Collins, Colorado.

Stebbins, R.C. 1985. Western Reptiles and Amphibians. Houghton Mifflin Company. Boston. 336 pp.

2001-2006 Transportation Improvement Program, http://www.fcgov.com/transportation/pdf/tip.pdf

US Army Corps of Engineers. 2004. *Regulatory Guidance Letter*. December 3, 2004.

US Environmental Protection Agency. 2002. Community Culture and the Environment, A Guide to Understanding a Sense of Place.

US Environmental Protection Agency. 2000. Taking the Toxics out of the Air.

USDA (US Department of Agriculture). 1980. *Soil Survey of Weld County, Colorado, Southern Part.* Natural Resource Conservation Service (formerly Soil Conservation Service).

US Department of Transportation and Federal Highway Administration. 1987. *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*. October 30.

US Department of Transportation and Federal Highway Administration. 1987. *Section 4(f) Policy Paper*. October 5.

APPENDIX A

Environmental Coordination

Project Agency correspondence is included as followed:

Agency	Date
USFWS, Ecological Services, to CDOT	11-04-2004
CDOT/FHWA to Apache Tribe of Oklahoma	10-06-2004
CDOT/FHWA Section 106 Tribal Consultation Interest Response Form	10-12-2004
CDOT to State Historic Preservation Officer Historic Resources	04-24-2003
CDOT to City of Greeley Historic Preservation Officer	04-24-2003
CDOT to State Historic Preservation Officer Archaeological Resources	07-10-2003
City of Greeley to CDOT – Response to Project	05-13-2003
Colorado Historical Society to CDOT Response to Project	06-09-2003
City of Greeley to CDOT – WWII Pillars	08-12-2004
City of Greeley to CDOT	08-31-2004
Colorado Historical Society to CDOT	09-20-2004
CDOT to Historic Preservation Commission	11-04-2003

CDOT to SHPO	**09-16-2004**
CDOT Meeting Minutes for meeting to discuss Historic resource issues with City of Greeley and Daughters of the American Revolution	**10-27-2004**
PBS&J to Natural Resources Conservation Service	**08-12-2005**
Farmland Conversion Impact Rating for Corridor Type Projects	**08-12-2005**
PBS&J to U.S. Army Corps of Engineers	**10-28-2004**
U.S. Army Corps of Engineers to PBS&J	**12-03-2004**
No Further Action Letter from Division of Oil and Public Safety for Greeley West Maintenance Facility	**10-29-2003**
CDOT Blacktailed Prairie Dog Policy	**06-01-2005**

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
755 Parfet Street, Suite 361
Lakewood, Colorado 80215-5599

IN REPLY REFER TO:
ES/CO: T&E/
MS 65412 LK

NOV - 4 2004

Jeff Peterson
Colorado Department of Transportation
4201 East Arkansas Avenue, Empire Park B-400
Denver, Colorado 80222

Dear Mr. Peterson:

Based on the authority conferred to the U.S. Fish and Wildlife Service (Service) by the Fish and Wildlife Act of 1956 (916 U.S.C. 742(a)-754); Fish and Wildlife Coordination Act (FWCA - 16 U.S.C. 661-667(e)); National Environmental Policy Act of 1969 (NEPA - 42 U.S.C. 4321-4347); Department of Transportation Act (49 U.S.C. 1653(f)), and; Endangered Species Act of 1973, as amended (ESA - 50 CFR §402.14), as well as multiple Executive Orders, policies and guidelines, and interrelated statutes to ensure the conservation and enhancement of fish and wildlife resources (e.g., Migratory Bird Treaty Act (MBTA - 16 U.S.C. 703), and Bald and Golden Eagle Protection Act (BGEPA - 16 U.S.C. 668)), the Service reviewed PBS&J's October 15, 2004, report regarding the effects of reconstruction of **US Highway 34 (US34) Business between 71st and State Highway 257 (SH257) in Weld County**, on the Service's trust resources.

Threatened and Endangered Species

Following is a list of Federal endangered, threatened, proposed and candidate species for Weld County, which may be used as a basis for determining additional listed species potentially present in the project area. While other species could occur at or visit the project area, endangered or threatened species most likely to be affected include:

Birds:	*Whooping crane (*Grus americana*), Endangered
	*Least tern, interior population (*Sterna antillarum*), Endangered
	*Eskimo curlew (*Numenius borealis*), Endangered
	*Piping plover (*Charadrius melodus*), Threatened
	Bald eagle (*Haliaeetus leucocephalus*), Threatened
Mammals:	Black-footed ferret (*Mustela nigripes*), Endangered
	Preble's meadow jumping mouse (*Zapus hudsonius preblei*), Threatened
Fishes:	*Pallid sturgeon (*Scaphirhynchus albus*), Endangered

Plants : Ute ladies'-tresses orchid (*Spiranthes diluvialis*), Threatened
Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*), Threatened
*Western prairie fringed orchid (*Platanthera praeclara*), Threatened

* Since 1978, the Service has consistently taken the position in its section 7 consultations that Federal agency actions resulting in existing or new water depletions to the Platte River system may affect these species as well as designated critical habitat for the whooping crane and piping plover in the central Platte River in Nebraska. Depletions include evaporative losses and/or consumptive use less return flows. Project elements that could be associated with depletions to the Platte River system include, but are not limited to, ponds (detention/recreation/irrigation storage), lakes (recreation/ irrigation storage/municipal storage/power generation), reservoirs (recreation/irrigation storage/municipal storage/power generation), pipelines, and water treatment facilities, dust control, and compaction.

The Service also is interested in the protection of species which are candidates for official listing as threatened or endangered (Federal Register, Vol. 61, No. 40, February 28, 1996). While these species presently have no legal protection under the Act, it is within the spirit of this Act to consider project impacts to potentially sensitive candidate species. It is the intention of the Service to protect these species before human-related activities adversely impact their habitat to a degree that they would need to be listed and, therefore, protected under the Act. Additionally, we wish to make you aware of the presence of Federal candidates should any be proposed or listed prior to the time that all Federal actions related to the project are completed. If any candidate species will be unavoidably impacted, appropriate mitigation should be proposed and discussed with this office. We are not aware of any candidate species in the project area at this time.

Migratory Birds

Under the MBTA construction activities in grassland, wetland, stream, and woodland habitats, and those that occur on bridges (e.g., which may affect swallow nests on bridge girders) that would otherwise result in the take of migratory birds, eggs, young, and/or active nests should be avoided. Although the provisions of MBTA are applicable year-round, most migratory bird nesting activity in eastern Colorado occurs during the period of April 1 to August 15. However, some migratory birds are known to nest outside of the aforementioned primary nesting season period. For example, raptors can be expected to nest in woodland habitats during February 1 through July 15. If the proposed construction project is planned to occur during the primary nesting season or at any other time which may result in the take of nesting migratory birds, the Service recommends that the project proponent (or construction contractor) arrange to have a qualified biologist conduct a field survey of the affected habitats and structures to determine the absence or presence of nesting migratory birds. Surveys should be conducted during the nesting season. In some cases, such as on bridges or other similar structures, nesting can be prevented until construction is complete. It is further recommended that the results of field surveys for nesting birds, along with information regarding the qualifications of the biologist(s) performing the surveys, be thoroughly documented and that such documentation be maintained on file by the project proponent (and/or construction contractor) for potential review by the Service (if requested) until such time as construction on the proposed project has been completed. The Service's Colorado Field Office should be contacted immediately for further guidance if a field

survey identifies the existence of one or more active bird nests that cannot be avoided by the planned construction activities. Adherence to these guidelines will help avoid the unnecessary take of migratory birds and the possible need for law enforcement action.

Wetlands

FWCA provides the basic authority for the Service's involvement in evaluating impacts to fish and wildlife "whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified **for any purpose whatever**...by any department or agency of the United States, or by any public or private agency under Federal permit or license," including water crossings and wetland impacts, whether or not those wetlands are under the jurisdiction of the U.S. Army Corps of Engineers [16 U.S.C. 661(1), emphasis added]. It requires that fish and wildlife resources "receive equal consideration...to other project features...through the effectual and harmonious planning, development, maintenance, and coordination of wildlife conservation and rehabilitation," and requires Federal agencies to consult with the Service during the planning process to help "prevent the loss of or damage to such resources as well as providing for the development and improvement thereof" (16 U.S.C. 661 *et seq*). Full consideration is to be given to Service recommendations.

If the Service can be of further assistance, please contact Alison Deans Michael of my staff at 303 275-2378.

Sincerely,

Susan C. Linner

Susan C. Linner
Colorado Field Supervisor

pc: PBS&J (Francesca Liccione)
Michael

ref: Alison\H:\My Documents\CDOT 2004\Region 4\US34 71 to 257 spplist.wpd

U.S. Department
Of Transportation
Federal Highway
Administration

Colorado Federal Aid Division
12300 W. Dakota Ave., Ste. 180
Lakewood, CO 80228-1040

October 6, 2004

File: 13808

Mr. Alonzo Chalepah, Chairman
Apache Tribe of Oklahoma
P.O. Box 1220
Anadarko, OK 73005

Dear Mr. Chalepah:

SUBJECT: Request for Section 106 Consultation
US Highway 34 Environmental Assessment
Weld County, Colorado

The Federal Highway Administration (FHWA) and Colorado Department of Transportation (CDOT) are preparing an Environmental Assessment (EA) that will address the effects of proposed improvements to a 4.3-mile segment of the US Highway 34 Business Route near the community of Greeley in Weld County, Colorado. The project, located in a largely rural but fast-growing area, will examine alternatives that improve mobility and safety along the corridor. Pursuant to the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality (CEQ) implementing regulations (40 CFR 1500-1508), FHWA and CDOT are documenting the potential social, economic and environmental consequences of this action. Please refer to the enclosed maps for specific locational information.

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 indicated above, the project area traverses a partially developed prairie landscape that includes agricultural fields, residential subdivisions and a portion of a golf course. The Area of Potential Effect (APE) developed for archaeological studies, as defined by 36 CFR 800.16(d), measures approximately 350 feet on either side of the existing highway centerline (designated by the blue line on the enclosed aerial photograph). A comprehensive survey and assessment of historic properties in the APE was

conducted in 2003, resulting in the identification of two isolated flaked stone tools of Native American origin. Both locales were evaluated as not eligible for listing on the National Register of Historic Places; the State Historic Preservation Officer (SHPO) concurred with this assessment in July 2003. However, any information you may have regarding places or sites important to your tribe that are located within the project corridor would assist us in our efforts to comprehensively identify and evaluate cultural resources.

The Greeley area is home to a number of Indian people. If you are aware of members of your tribe living in proximity to the US 34 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 US Highway 34 Business Route project, please complete and return the enclosed Consultation Interest Response Form to CDOT Native American consultation liaison Dan Jepson **within 60 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 60-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,

David A. Nicol
Division Administrator

Enclosures

cc: S. Sands (FHWA)
C. Parr (CDOT Region 4)
D. Jepson (CDOT Env. Prog.)
R. Belford (PBS&J)
File 13808
Reader File

SSands.ama
Tribal Con Doc US 34 Bus Rte EA 13808

FEDERAL HIGHWAY ADMINISTRATION/COLORADO DEPARTMENT OF TRANSPORTATION
SECTION 106 TRIBAL CONSULTATION INTEREST RESPONSE FORM

PROJECT: US Highway 34 Business Route Environmental Assessment

The Comanche Nation 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: [signature] Hattie Thurton
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 or fax to:

Dan Jepson, Section 106 Native American Liaison
Colorado Department of Transportation
Environmental Programs Branch
4201 E. Arkansas Ave.
Denver, CO 80222
FAX: (303)757-9445

F

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs, Project Development Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259
FAX (303) 757-9445

DEPARTMENT OF TRANSPORTATION

April 24, 2003

Ms. Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203

RE: Determinations of Eligibility, CDOT Project STA 0342-037, US 34 Business Loop, State Highway 257 to 71st Street, Weld County, Colorado

Dear Ms. Contiguglia:

This letter and the enclosed survey report constitute the request for concurrence on Determinations of Eligibility for the project referenced above, which involves four-laning US Highway 34 between State Highway 257 and 71st Street in Weld County. CDOT is currently evaluating alignment alternatives associated with this project.

Christian Zier, Mary Painter, and Kelly Stroden of Centennial Archaeology, Inc., under contract to CDOT, conducted the fieldwork in December 2002 and authored the accompanying report. The survey resulted in the documentation and evaluation of fourteen residential and commercial properties, a World War II German prisoner-of-war (POW) camp site, and two irrigation ditch segments. Please see the attached survey report for a comprehensive list of these resources, their descriptions, and CDOT's recommendations for National Register eligibility.

Three previously recorded sites were reevaluated during the survey. The former German POW camp site (5WL768) was evaluated as field not eligible in 1982; for the current project it is also recommended not eligible based on a lack of physical integrity. The Moody Dairy Farm (5WL2048) was found officially not eligible in 1993. Since that time the size of the site has been reduced and the remaining structures have deteriorated; based on this information, CDOT recommends that the original eligibility finding still applies. And finally, the segment of the North Boomerang Extension Ditch (5WL2049.1) was found officially not eligible in 1993 and again in 1998; CDOT recommends that the original eligibility finding still applies to this resource. Fourteen new properties were evaluated as part of this project and are recommended not eligible to the NRHP. Please refer to the attached survey report and site forms for more information about these properties.

Copies of these materials have been sent concurrently to the Greeley Historic Preservation Commission, a certified local government. We will forward a copy of their response letter to your office once we receive it. If necessary, CDOT will coordinate with both you and the Greeley Historic Preservation Commission regarding effects once the preferred alternative for this project has been selected.

We hereby request your concurrence with these determinations of eligibility. Your response is necessary for the Federal Highway Administration's compliance with Section 106 of the National Historic Preservation Act (as amended) and with the Advisory Council on Historic Preservation's regulations.

Thank you in advance for your attention to this matter. If you need further information, please contact CDOT historian Lisa Schoch at (303) 512-4258.

Very truly yours,

Daniel Jepson
Acting Environmental Programs Manager

Enclosures

cc: Carol Parr, CDOT Region 4
File/CF/RF

F

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs, Project Development Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259
FAX (303) 757-9445

DEPARTMENT OF TRANSPORTATION

April 24, 2003

Ms. Betsy Kellums
Historic Preservation Specialist
City of Greeley
651 10th Avenue
Greeley, CO 80631

RE: Determinations of Eligibility, CDOT Project STA 0342-037, US 34 Business Loop, State Highway 257 to 71st Street, Weld County

Dear Ms. Kellums:

Enclosed for your review is the historic resources survey report for the project referenced above, which involves four-laning US Highway 34 between State Highway 257 and 71st Street in Weld County. CDOT is currently evaluating alignment alternatives associated with this project, and requests the input of the Greeley Historic Preservation Commission.

Christian Zier, Mary Painter, and Kelly Stroden of Centennial Archaeology, Inc., under contract to CDOT, conducted the fieldwork in December 2002 and authored the accompanying report. The field survey resulted in the documentation and evaluation of fourteen residential and commercial properties, a World War II German prisoner-of-war (POW) camp site, and two irrigation ditch segments. Please see the attached survey report for the full list of these resources, their descriptions, and CDOT's recommendations for eligibility.

Three previously recorded sites were reevaluated during the survey. The former German POW camp site (5WL768) was evaluated as field not eligible in 1982; for current project it is also recommended not eligible based on a lack of physical integrity. The Moody Dairy Farm (5WL2048) was found officially not eligible in 1993. Since that time the size of the site has been reduced and the remaining structures have deteriorated; based on this information, CDOT recommends that the original eligibility finding still applies. And finally, the segment of the North Boomerang Extension Ditch (5WL2049.1) was found officially not eligible in 1993 and again in 1998; CDOT recommends that the original eligibility finding still applies to this resource.

Fourteen new properties were evaluated as part of this project and are recommended not eligible to the NRHP. Please refer to the attached survey report and site forms for more information about these properties. If necessary, CDOT will coordinate with both your office and the State Historic Preservation Officer (SHPO) regarding effects to these resources once the preferred alternative for the project has been selected. These materials have also been sent to the SHPO for review and concurrence, and a copy of that response letter will be sent to your office once we receive it.

We request your review of the materials enclosed herewith within 30 calendar days of receipt. Your response is necessary for the Federal Highway Administration's compliance with Section 106 of the

National Historic Preservation Act (as amended) and with the Advisory Council on Historic Preservation's regulations.

Thank you in advance for your attention to this matter. If you require additional information, please contact CDOT Staff Historian Lisa Schoch at (303) 512-4258.

Very truly yours,

Dan Jepson
Acting Environmental Programs Manager

Enclosures

cc: Carol Parr, CDOT Region 4
File/CF/RF

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION
Environmental Programs
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259

July 10, 2003

Ms. Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203

SUBJECT: Eligibility and Effects Determinations, CDOT Project STA 0342-037, US 34 Business Route, SH 257 to 71st Street

Enclosed for your review is a copy of the archaeological resources survey report and associated isolated find forms for the CDOT project referenced above. The undertaking proposes to widen a four-mile segment of the US Highway 34 Business Route in Weld County from two lanes to four. Centennial Archaeology, Inc., under contract to the State of Colorado, conducted the survey and authored the report.

The survey resulted in the identification and documentation of two prehistoric isolated finds (5WL4747 and 5WL4748), both of which are comprised of chipped stone artifacts. By definition, neither locality is eligible for listing on the National Register of Historic Places, and no further work is required. No additional historic or prehistoric archaeological resources were documented during the inventory.

Please note that because of the substantial total acreage surveyed for this undertaking, the long report format was utilized. However, we do not expect or anticipate a formal response from your office regarding eligibility, per the terms of the 1989 CDOT/CHS Memorandum of Understanding involving cultural resource investigations as they relate to isolated artifacts. Also, be aware that this determination is specific only to archaeological resources in the study corridor, as a historic resources report for the project was prepared and submitted to your office several months ago.

If you have questions or require additional information, please contact me at (303)757-9631.

Very truly yours,

Dan Jepson, Staff Archaeologist
Acting Environmental Programs Manager

Enclosures (report and IF forms)

cc: RF/CF

HISTORIC PRESERVATION COMMISSION

City of Greeley

919 7th Street, Greeley, Colorado 80631 (970) 350-9222 Fax (970) 350-9570
www.greeleygov.com/hp

May 13, 2003

Dan Jepson
Acting Environmental Programs Manager
Department of Transportation
4201 East Arkansas Avenue
Denver, CO 80222

Re: Determinations of Eligibility, CDOT Project STA 0342-037, US 34 Business Loop, State Highway 257 to 71st Avenue, Weld County

Dear Mr. Jepson:

Thank you for your letter asking for the Greeley Historic Preservation Commission to review and provide input for the survey report for the above-referenced project. The Historic Preservation Commission has reviewed the report and has several comments and recommendations.

We recommend that an archaeological assessment of the Prisoner of War Camp, 5WL768, be done prior to any decisions regarding its eligibility be made. If there is subsurface evidence that the property may yield or may be likely to yield information important in history (National Register criteria D), the site may be eligible for the National Register in spite of lacking architectural integrity. Also there are valuable sources of information which the survey consultants did not consult, including the Municipal Archives and Weld County Clerk and Recorder. Thus we recommend that Centennial Archaeology be asked to do file searches and further research into the property owners and residents for all properties within the survey area to ensure that associations with persons significant in history are not overlooked.

Please let us know if we can be of any further assistance and feel free to contact the Betsy Kellums, Historic Preservation Specialist, at (970)350-9222 if you have any questions or would like to discuss this project further.

Sincerely,

Ron Edgerton
Chair, Historic Preservation Commission

Betsy Kellums
Historic Preservation Specialist

CC: Georgianna Contiguglia, President, Colorado Historical Society & State Historic Preservation Officer

COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

9 June 2003

Dan Jepson
Acting Environmental Program Manager
Colorado Department of Transportation
Project Development Branch
4201 East Arkansas Ave.
Denver, CO 80222

RE: Determinations of Eligibility, CDOT Project STA 0342-037, US 34 Business Loop, State Highway 257 to 71st St., Weld County

Dear Mr. Jepson:

Thank you for your recent correspondence dated 24 April 2003, concerning the proposed widening of US Highway 34. Our office has reviewed the submitted materials. We concur with the conclusions set forth in Centennial Archaeology's report (*Historical Survey of Four Miles of US Highway 34 Business Route, Weld County, Colorado*). None of the seventeen properties surveyed are eligible for listing in the National Register of Historic Places. These include:

5WL.2254.5	5WL.4316	5WL.4323
5WL.4311	5WL.4317	5WL.4324
5WL.4312	5WL.4319	5WL.768
5WL.4313	5WL.4320	5WL.2048
5WL.4314	5WL.4321	5WL.2049.1
5WL.4315	5WL.4322	

If you have any questions, please feel free to contact Joseph Saldibar, Architectural Services Coordinator, at (303) 866-3741. We look forward to hearing from you.

Sincerely,

Mark Wolfe
For Georgianna Contiguglia
State Historic Preservation Officer, and
President, Colorado Historical Society

City of Greeley

HISTORIC PRESERVATION COMMISSION

919 7th Street, Greeley, Colorado 80631 (970) 350-9222 Fax (970) 350-9570
www.greeleygov.com/hp

August 12, 2004

Dan Jepson, Cultural Resources Program Manager
Colorado Department of Transportation
Environmental Programs, Project Development Branch
4201 East Arkansas Avenue
Denver, Colorado 80222

Re: Pillars of the World War II German P.O.W. Camp 202

Dear Mr. Jepson:

This letter is to request an update regarding the proposed road project on U.S. Highway 34 and the Pillars of the World War II German P.O.W. Camp 202. In the midst of some correspondence during the fall of 2003, I believe CDOT indicated you would keep the City of Greeley appraised of the project status.

As you know, the pillars were nominated to Colorado Preservation, Inc.'s (CPI) Endangered Places List last year. Patricia Holcomb of CPI indicated she had spoken with you, and you had indicated that if the pillars were significant, CDOT would preserve them. As the City of Greeley Historic Preservation Specialist, it is my professional opinion that the pillars are significant and eligible for the Greeley Historic Register (GHR).

A property may be eligible for designation on the GHR if it meets at least one criterion in two areas of significance, including historical, architectural or geographical significance (Section 16.60.060 of the Greeley Municipal Code). After research and analysis, I have concluded that the pillars are eligible for historical and architectural significance, as I've described below.

Historical significance - The site, building or property has character, interest, and integrity and reflects the heritage and cultural development of the City, State or nation. The pillars were placed during the construction of the camp in 1943. The pillars are the remainders of the World War II Prisoner of War Camp 202, a nationally significant chapter of Greeley's history. They are the scene of Greeley's and Weld County's interaction with Prisoners of War and their role in assisting with agricultural development

in Greeley and Weld County, which follows the trend in other POW camps in America, a portion of United States history often overlooked but extremely significant.

Architectural significance - The property has visual symbolic meaning or appeal for the community. The Camp 202 pillars symbolize Greeley's role in World War II and the significance of using the prisoners as laborers on the local farms, which needed labor during the war, as farmers' sons and other laborers were fighting the war overseas.

I hope this information assists you and please feel free to contact me at 970.350.9222 or via e-mail at kellumsb@ci.greeley.co.us if you need more information or if I can be of assistance.

Sincerely,

Betsy Kellums

Betsy Kellums
Historic Preservation Specialist

CC: Carol Parr, CDOT, 1420 2nd Street, Greeley, CO 80631
Brad Beckham, Environmental Programs Branch Manager
Patricia Holcomb, Colorado Preservation, Inc.
Historic Greeley, Inc.
Tom Selders, Mayor
Lonnie Cooper, Cultural Affairs Director
Christopher Dill, Museums Superintendent

City of Greeley

HISTORIC PRESERVATION COMMISSION

919 7th Street, Greeley, Colorado 80631 (970) 350-9222 Fax (970) 350-9570
www.greeleygov.com/hp

August 31, 2004

Lisa Schoch
Colorado Department of Transportation
Environmental Programs Branch
4201 E. Arkansas Ave. EP B-400
Denver, CO 80222

Dear Lisa,

Thank you for asking for more information regarding the POW Camp 202 pillars on Highway 34 in Greeley. I have spoken with several people who lived in Greeley during the time the camp was in place (and who still live in Greeley). Annie Glenn, who was born and raised in Greeley and lived in Greeley during World War II, recalls the pillars being there, that they were part of the entrance into the camp, with support posts and an arch over them. I will be speaking with her more regarding this soon.

I have enclosed several copies of articles about the POW camp, including a September 1979 article about a German POW who returned to the camp. You will note in the 1979 photo, that he is standing on one of the pillars, indicating the pillars were in place before the plaques were mounted on the pillars. The articles I've included also indicate the pillars are remaining from the Camp.

Please let me know if you have any questions or if I can be of further assistance. I can be reached at (970) 350-9222 or via email at kellumsb@ci.greeley.co.us .

Sincerely,

Betsy Kellums

Betsy Kellums
Historic Preservation Specialist

Encl.

COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

September 20, 2004

Brad Beckham
Manager, Environmental Programs Branch
Colorado Department of Transportation
Department of Transportation
Environmental Programs Branch
4201 East Arkansas Avenue
Denver, CO 80222

Re: CDOT Project STA 0342-037, US 34 Business Loop; SH 257 to 71st Street, Weld County

Dear Mr. Beckham,

Thank you for your additional information correspondence dated September 16, 2004 and received by our office on September 17, 2004 regarding the above-mentioned project. We appreciate your effort to correct the information provided in the original submission of the survey form for resource 5WL.768/WWII Prisoner of War Camp 202.

After review of the additional information, we concur with your finding that the two stone pillars marking the entrance of the World War II-era German Prison of War Camp are *not eligible* for the National Register of Historic Places. We strongly recommend that you continue your consultation with the Greeley Historic Preservation Commission regarding the re-location of the two stone pillars.

If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Coordinator, at (303) 866-4678.

Sincerely,

for Georgianna Contiguglia
State Historic Preservation Officer

cc: Lisa Schoch/CDOT

F

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259

DEPARTMENT OF TRANSPORTATION

November 4, 2003

Ms. Betsy Kellums
Historic Preservation Commission
919 7th Street
Greeley, CO 80631

SUBJECT: Historical Survey, CDOT Project STA 0342-037, US 34 Business Loop, State Highway 257 to 71st Street, Weld County, Colorado

Dear Ms. Kellums:

Thank you for your correspondence dated May 13, 2003, regarding the historical survey and eligibility findings associated with the project referenced above. I apologize for the delay in responding.

You recommended that an archaeological assessment of the former German Prisoner of War Camp (5WL768) be conducted in order to determine if the site contained any subsurface evidence that might yield additional information and thus qualify it for eligibility under National Register Criterion D. The POW camp was evaluated as part of the intensive archaeological survey completed by Centennial Archaeology, Inc. in July 2003. This survey determined that the buildings on the site where the camp once stood were razed and the ground surface was subsequently converted to a cultivated field where no evidence of building foundations or camp-related debris survived. Much of the site where the camp once stood was outside the Area of Potential Effect (APE) surveyed for this project. For both the historical survey and the archaeological survey, the APE consisted of the highway right-of-way and 300 feet on either side of the roadway edge. A copy of the archaeological survey is enclosed for your review.

You also requested that additional sources be evaluated in order to provide information about the other properties evaluated for the historical survey. More specifically, you requested that CDOT's consultants review sources located in the Municipal Archive and the Weld County Clerk and Recorder's Office, and conduct file searches to obtain additional information about property owners in the project area. However, we believe that sufficient research was conducted for the project. A file search of the project area was conducted on the Office of Archaeology and Historic Preservation's online cultural resources database to determine the existing recorded sites in the study area. Records housed at the Weld County Assessor's office were consulted to determine dates of construction for properties. In addition, a number of secondary sources were consulted and personal interviews (including yourself) were conducted to gather additional information about the properties in the project area. The survey report includes a 3-page reference list that attests to the level of research conducted for the survey. The State Historic Preservation Officer (SHPO) reviewed this survey report in June 2003 and concurred with CDOT's eligibility findings. A copy of the SHPO letter is enclosed for your file.

Although all of the properties in the project area were found to be not eligible for listing on the National Register of Historic Places, we will contact you regarding impacts to the properties when that information becomes available.

stone pillars are the last original features of the camp, and CDOT has again determined that the site does not retain sufficient integrity to qualify for eligibility to the National Register of Historic Places.

Based on the alternatives under consideration for this project, the twin pillars will be impacted. CDOT has agreed to relocate the pillars in consultation with the Greeley Historic Preservation Commission (GHPC), and discussions with that entity are on-going. The GHPC has expressed concerns about the site, and believes that it is eligible for the Greeley Historic Register. The site is evidently also under consideration for Colorado Preservation Inc.'s "Most Endangered Places List."

These materials are provided for your files and to officially address the unfortunate inaccuracies contained in the historic survey report. If you have questions about any information contained herein, please contact CDOT Senior Staff Historian Lisa Schoch at (303) 512-4258.

Very truly yours,

for Brad Beckham, Manager
Environmental Programs Branch

Enclosures

cc: Carol Parr, CDOT Region 4
Monica Pavlik, FHWA
Betsy Kellums, Greeley Historic Preservation Commission
Christopher Dill, Greeley Museum Superintendent
Patricia Holcomb, Colorado Preservation Inc.

F

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259

DEPARTMENT OF TRANSPORTATION

September 16, 2004

Ms. Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203

SUBJECT: Additional Information Regarding Site 5WL768, Project STA 0342-037, US 34 Business Loop, State Highway 257 to 71st Street, Weld County

Dear Ms. Contiguglia:

This letter and the attached materials are provided as additional information related to historic site 5WL768, a World War II-era German Prisoner of War camp, that was evaluated as part of the historic survey report for the project referenced above. The undertaking involves widening US Highway 34 to four lanes between State Highway 257 and 71st Street in Weld County. The historic survey report was completed by consultant Centennial Archaeology, Inc., under contract to CDOT; we initially submitted the report to your office on April 24, 2003, and received concurrence on the determinations of eligibility in correspondence dated June 9, 2003. CDOT also sent the report to the Greeley Historic Preservation Commission in April 2003, and subsequently forwarded their response to your office.

Since that time we have received additional information about the former German POW camp, which is located about eight miles west of Greeley on the north side of US Highway 34. In the survey report, the consultant documented a pair of stone pillars—currently located 26 feet north of US Highway 34—and indicated that they were built in 1993 to memorialize the site of the camp. In consultation with Betsy Kellums of the Greeley Historic Preservation Commission, CDOT has learned that the pillars were apparently part of an original entryway to the camp, which was in use between 1944 and 1946. Only the memorial plaques mounted on the stone pillars were installed in 1993.

The attached information indicates that the camp was dismantled and many of the structures sold after World War II. Some of the buildings were moved to other locations, the concrete foundations were removed in 1976, and the trees in the camp were taken out in 1979. The location of the site is currently a cultivated agricultural field. Based on information gleaned from CDOT construction plans for US 34 from 1966, it is possible that the pillars were moved closer to the highway at some point to accommodate the installation of the irrigation system in the agricultural field where the camp site was located. This information remains tentative, however.

The site was originally recorded as not eligible for National Register listing in 1982, and was reevaluated in 2003 as part of the CDOT historic survey for this project. The camp was also noted in the 2003 archaeological survey report for the undertaking completed separately. Both the history and archaeology reports detailed that 5WL768 is located in a cultivated field with no evidence of building foundations or camp-related debris. Although only a small portion of the entire camp is within the Area of Potential Effects for this project, CDOT determined that the 1982 eligibility finding for the camp was still appropriate, and evaluated the site remains as not eligible. The attached information indicates that the

If you require additional information, please contact our Staff Historian, Lisa Schoch, at (303)512-4258.

Very truly yours,

for Brad Beckham, Manager
Environmental Programs Branch

Enclosures

cc: Georgianna Contiguglia, Colorado SHPO
Carol Parr, CDOT Region 4 Environmental
File/RF/CF

Meeting Minutes
US Highway 34 Business Route Environmental Assessment
Historic Properties Issues
October 27, 2004
CDOT Region 4 Evans Residency

Attendees:

Christopher Dill, City of Greeley Museums
Betsy Kellums, City of Greeley Historic Preservation Specialist
Linde Thompson, City of Greeley Historic Preservation Commission
Tony Clough, Historic Greeley Inc.
Chris Ruth, Daughters of the American Revolution, Centennial State Chapter
Doug Pearson, CDOT Region 4 Resident Engineer
Jim Hoffman, CDOT Region 4 Project Engineer
Carol Parr, CDOT Region 4 Environmental
Sheble McConnellogue, Region 4 Environmental
Dan Jepson, CDOT Environmental Programs Branch
Lisa Schoch, CDOT Environmental Programs Branch

Meeting Purpose
To discuss historic resources issues with, and obtain feedback from, local historical groups that have expressed interest in the US Highway 34 improvement project, in particular the status and disposition of the World War II prisoner-of-war (POW) camp pillars (site 5WL768). Dan Jepson, Senior Archaeologist and Manager of the Cultural Resource Section in CDOT's Environmental Programs Branch, served as meeting facilitator.

Summary of Discussion
Carol Parr provided a brief overview of the National Environmental Policy Act (NEPA) and discussed the status of the Environmental Assessment underway for the US 34 project. The EA is currently in draft form and the project has been narrowed to three alternatives, including No Action. The EA will be made available for public review in 2005, and at that time specific comments on any aspect of the project can be submitted. A public hearing will also be held as part of the public participation component of NEPA.

Using aerial photographs that showed the three alignment alternatives, Jim Hoffman summarized the alternatives currently under review for the project. He explained that there have been three public workshops in the past two years that have assisted in narrowing the list of alternatives from the original eighteen to three.

There were questions from the local representatives regarding the Section 106 process and how this was initiated and completed for the undertaking. Dan Jepson provided an explanation of the Area of Potential Effect (APE) established for the corridor, explained that history and archaeology surveys of the project area were completed in 2002 and 2003, respectively, and provided background on CDOT's formal consultation with the State Historic Preservation Officer (SHPO). Reference was also made to more recent communications between CDOT and the Greeley Historic Preservation Commission.

Chris Dill and other local representatives expressed concerns about the level of effort and quality of work completed for the history survey, given the inaccuracies of the research for the POW pillars. Mr. Dill stated his belief that more work in the form of property title searches could have been done to track down ownership information. He expressed concerns with how all the historic properties in the APE were evaluated. Mr. Jepson and Lisa Schoch explained that title searches are not commonly completed for all

historic properties within CDOT project areas, and that the availability and quality of archival information varies from county to county throughout Colorado. Mr. Jepson further indicated that the private consultant utilized for the survey has generally done outstanding work for CDOT over the past 15 years. Any oversights or missteps committed by the consultant during the US 34 documentation were considered regrettable but highly unusual, and not cause for doubting other aspects of their work on this or other projects.

Mr. Jepson acknowledged that there were errors in the research on the stone pillars and that his office recently corrected these inaccuracies by submitting additional information to the SHPO. Even with the supplemental data, the SHPO agreed that the pillars still do not meet minimum eligibility criteria for listing on the National Register of Historic Places. This led to a more focused discussion of the POW pillars and the site in general, including some debate regarding the merit of conducting test excavations at the POW camp site. Mr. Jepson explained the rationale for CDOT's decision not to conduct evaluative testing: 1) the bulk of the POW site is outside the APE for the project, and therefore only a small sliver of the camp would be subject to test excavations; and 2) based on Mr. Jepson's personal experience with the WWII POW camp site at Fort Carson in Colorado Springs, as well as a published account of test excavations at that site conducted by the National Park Service, he does not believe that testing the fringe of the camp (at and surrounding the supposed entrance) would yield significant information such that the National Register assessment would require revision.

Mr. Hoffman provided an overview of the existing location of the pillars along the highway and how each build alternative (as opposed to the No Build [No Action] alternative) would impact them. He explained that the pillars cannot be avoided because of safety issues related to the highway "clear zone" (the area extending outward from the edge of pavement that must remain free of potential physical hazards), and that the alternatives under consideration were also selected based on more than just historic property issues. Therefore, based on the highway design for both build alternatives (which are identical in the vicinity of the POW camp), the pillars must be relocated or they will be destroyed during construction.

Chris Ruth asked about the ownership of the stone pillars, and also inquired about how they would be protected in the future if they were to be moved. The group unanimously agreed that the present ownership of the pillars is a critical component in this discussion, since it is currently unknown if they are privately-owned or within the CDOT highway right-of-way and therefore under state ownership. Betsy Kellums provided recent engineering survey information about the pillars completed by the City of Greeley, which CDOT will use as a baseline in determining legal ownership. There was additional discussion regarding whether the pillars have already been moved from their original location in order to accommodate the present pivot irrigation facilities.

The group discussed the possibility of moving the pillars further north into the cultivated field, or moving them to another off-highway location within CDOT right-of-way approximately 1,800 feet to the west, where a pull-off could be created and "point of interest" signage provided along US 34. Doug Pearson and Jim Hoffman explained why a pull-off in the current pillar location along US 34 would introduce a safety hazard. Mr. Pearson identified on an aerial photo where the pillars could possibly be relocated. Several representatives of the local preservation community expressed concerns about future maintenance of the pillars subsequent to relocation. Mr. Jepson suggested that perhaps CDOT and the local entities could develop a Memorandum of Agreement that would address these and other concerns. Potential impacts to the pillars as a result of proposed non-highway related commercial and residential development in this area were also discussed.

The local preservation representatives discussed the overall significance to the local community of the POW camp site in general and the pillars specifically. Mr. Dill indicated that the museum has recently received an average of three inquiries a week from people interested in the site. Tony Clough stated her

aversion to moving the pillars, explaining that relocation destroys the historic context of structural remains. Ms. Kellums provided some background on the current effort to list the pillars on the local historic register. Linde Thompson inquired about whether CDOT would support the local historic designation of the pillars if they are relocated to CDOT property, and also indicated that the pillars are currently under consideration for Colorado Preservation, Inc.'s "Most Endangered Places" list. Mr. Jepson and Ms. Schoch indicated that CDOT would honor the local historical designation of the pillars if they are moved to state property.

The meeting ended with further discussion of, and general consensus as to the need for, the pillar relocation, but no final decisions were made regarding a relocation site or other specifics (i.e., when and how the features would be moved). The group agreed that discussions about the pillar relocation will continue as preparation of the draft Environmental Assessment proceeds, and one or more additional meetings about this topic will almost certainly be appropriate and necessary in order to finalize the details. Mr. Hoffman committed to pursuing the issue of the pillars' current ownership through CDOT's Region 4 Right-of-Way office. That information will be transmitted to the individuals and groups in attendance at the October 27 meeting as soon as it is obtained.

The meeting was adjourned at approximately 12:00 PM.

PBS&J

ENGINEERING • PLANNING
CONSTRUCTION SERVICES
ENVIRONMENTAL

August 12, 2005

Jon Wicke
District Conservationist
Natural Resources Conservation Service
4302 W. 9th Street Road
Greeley, CO 80634-1317

Subject: U.S. Business 34 Environmental Assessment

Dear: Mr. Wicke

The Federal Highway Administration (FHWA) in conjunction with the Colorado Department of Transportation (CDOT) initiated an Environmental Assessment (EA) for United States (US) Highway 34 Business between 71st Avenue and State Highway (SH) 257 in the City of Greeley, Colorado. The project proposes to reconstruct U.S. 34 between 71st Avenue and SH 257 as a four-lane highway. The project boundaries are located entirely in Weld County. The enclosed map shows the proposed project area. PBS&J has been retained by CDOT to complete the EA.

The U.S. Business 34 project area was evaluated for the presence, location, and extent of Prime, Unique, and Statewide Important Farmland within the area of potential effect (APE). This evaluation was done using the Weld County (southern portion) soil survey for the area. The following six major soil map units occurring within the APE are considered prime farmland:

- 79-Weld Loam (1 to 3 percent slopes)
- 47-Olney Fine Sand Loam (1 to 3 percent slopes)
- 76-Vona Sandy Loam (1 to 3 percent slopes)
- 77-Vona Sandy Loam (3 to 5 percent slopes)
- 51-Otero Sandy Loam (1 to 3 percent slopes)
- 32-Kim Loam (1 to 3 percent slopes)

We have amended the acres of Prime Farmland that exist within the APE from 56 to 11.

The project area can be found on USGS 7.5' Bracewell Quadrangle map and consists of: Township 5 North, Range 67 west, Sections 2, 1, 11, 12, 5, 6, 7, and 8.

Feel free to contact me if you have any additional questions.

Sincerely,

A.J. Ravgiala
Environmental Scientist

4601 DTC Boulevard, Suite 700, Denver, CO 80237 Telephone: (303) 221-7275 Fax: (303) 221-7276

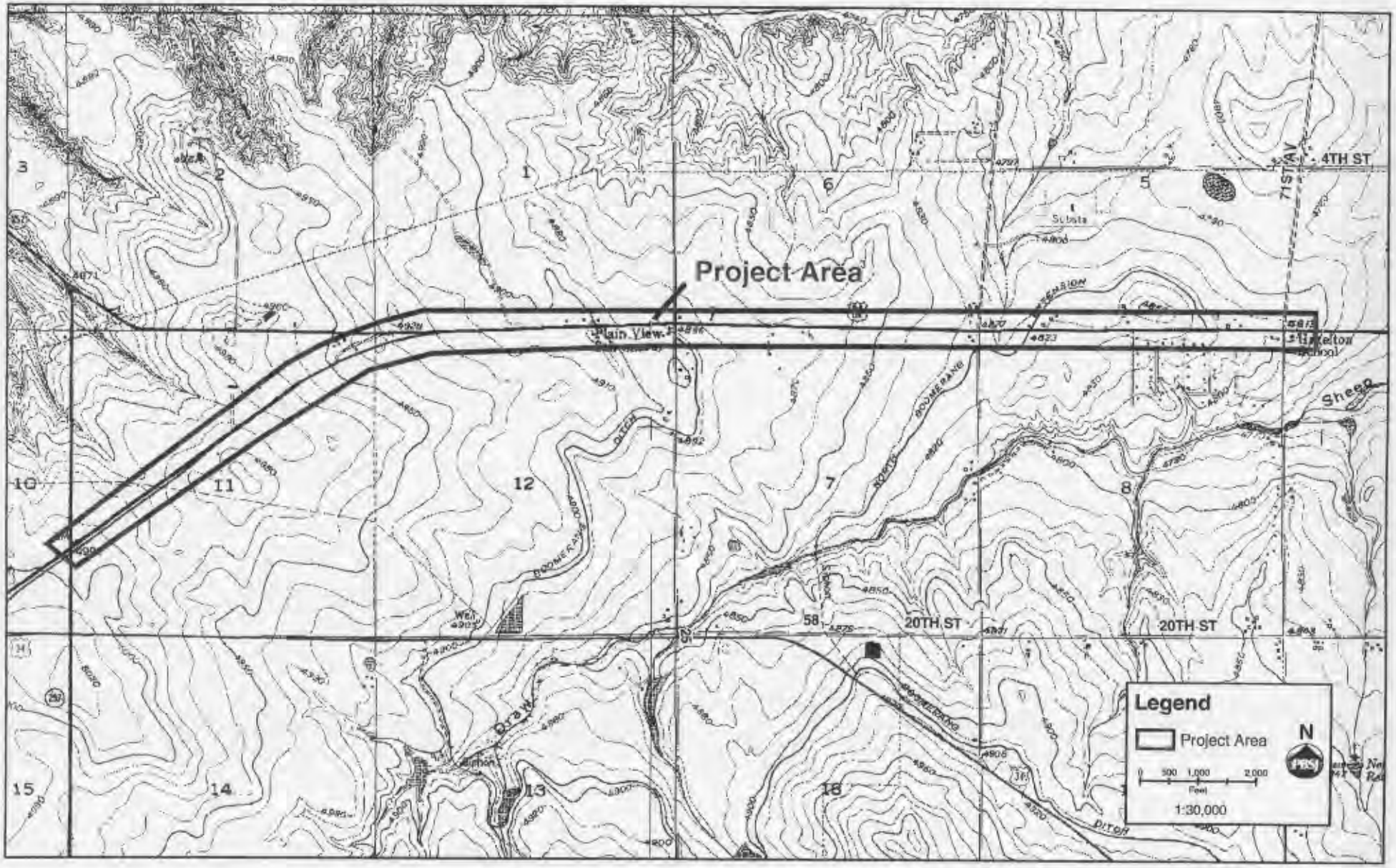
PBS&J

ENGINEERING • PLANNING
CONSTRUCTION SERVICES
ENVIRONMENTAL

Enclosure: Project Map, Farmlands Conversion Form (NRCS-CPA-106)

5500 Greenwood Plaza, Suite 150, Greenwood Village, Colorado 80111 Telephone: (303) 221-7275 Fax: (303) 221-7276

Project Location Map
US Business 34



U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request **11/1/04**	4. Sheet 1 of **1**
1. Name of Project **U.S. Business 34**	5. Federal Agency Involved **Federal Highway Administration (FHWA)**	
2. Type of Project **Transportation Improvement**	6. County and State **Weld County, Colorado**	
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS	2. Person Completing Form
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☐ NO ☐		4. Acres Irrigated | Average Farm Size
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment			
	Corridor A	**Corridor B**	**Corridor C**	**Corridor D**
A. Total Acres To Be Converted Directly	11	11		
B. Total Acres To Be Converted Indirectly, Or To Receive Services				
C. Total Acres In Corridor	11	11	0	0
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*				
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))* — **Maximum Points**				
1. Area in Nonurban Use — 15	7	7		
2. Perimeter in Nonurban Use — 10	7	7		
3. Percent Of Corridor Being Farmed — 20	10	10		
4. Protection Provided By State And Local Government — 20	20	20		
5. Size of Present Farm Unit Compared To Average — 10	5	5		
6. Creation Of Nonfarmable Farmland — 25	0	0		
7. Availablility Of Farm Support Services — 5	5	5		
8. On-Farm Investments — 20	0	0		
9. Effects Of Conversion On Farm Support Services — 25	0	0		
10. Compatibility With Existing Agricultural Use — 10	0	0		
TOTAL CORRIDOR ASSESSMENT POINTS — 160	54	54	0	0
PART VII *(To be completed by Federal Agency)*				
Relative Value Of Farmland (From Part V) — 100				
Total Corridor Assessment (From Part VI above or a local site assessment) — 160	54	54	0	0
TOTAL POINTS *(Total of above 2 lines)* — 260	54	54	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
To Be Determined By Env. Assessment	**11 Acres**		YES ☑ NO ☑

5. Reason For Selection:

a.f. M

Signature of Person Completing this Part:

DATE 8/12/05

NOTE: Complete a form for each segment with more than one Alternate Corridor

PBS&J

ENGINEERING • PLANNING
CONSTRUCTION SERVICES
ENVIRONMENTAL

October 28, 2004

Mr. Terry McKee
U.S. Army Corps of Engineers
Denver Regulatory Office
9307 South Wadsworth Blvd.
Littleton, CO 80128-6901

RE: Non-Jurisdictional Wetland Determination

Dear Mr. McKee:

Per our discussion, PBS&J is requesting your verification of non-jurisdictional determination for wetlands along U.S. Business 34. PBS&J has been retained by the Colorado Department of Transportation (CDOT) to prepare a third-party environmental assessment for upgrades to U.S. Business 34.

The project proposes to reconstruct U.S. Business 34 between 71st Avenue and State Highway 257 as a four lane highway. The project boundaries are entirely in Weld County. This segment of the highway is four miles in length. The project area can be found on the USGS 7.5 Bracewell Quadrangle map and consists of: Township 5 North, Range 67 West, Sections 2, 1, 11, 12, 5, 6, 7, and 8. Additionally, the enclosed map shows the location of the project.

Wetlands
Our wetland biologists have completed a thorough survey of the project and have identified several small wetlands within the CDOT right-of-way. These small, isolated wetlands are typical "ditch" wetlands that are created from road run-off. None of the wetlands are located next to permanent or intermittent drainages. As you can see on the topographic map, no streams occur within the project area. One drainage, Sheep Draw, is located just east of the project area. However, this drainage would not be impacted by the proposed action.

PBS&J is requesting correspondence from your office to verify our determination of these wetlands being non-jurisdictional. However, as you know, CDOT is required to mitigate for non-jurisdictional wetlands per their memorandum of understanding with the Federal Highway Administration. Therefore, we will be identifying mitigation for this loss of wetlands (approximately .7 acres).

I would be happy to answer any other questions you have about the project and can be reached at: (303) 221-7275. Thanks again.

Sincerely,

Robert Belford
Project Manager

Enclosures

5500 Greenwood Plaza, Suite 150, Greenwood Village, Colorado 80111 Telephone: (303) 221-7275 Fax: (303) 221-7276

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
DENVER REGULATORY OFFICE, 9307 SOUTH WADSWORTH BOULEVARD
LITTLETON, COLORADO 80128-6901

December 3, 2004

Mr. Robert Belford
PBS&J
5500 Greenwood Plaza, Suite 150
Greenwood Village, CO 80111

RE: U.S. Business 34, West of Greeley, Jurisdiction Determination
Corps File No. 200480607

Dear Mr. Belford:

Mr. Terry McKee of this office has reviewed this project located in portions of Sections 1, 2, 5, 6, 7, 8, 11and 12, T5N, R67W, Weld County, Colorado. This review was in accordance with Section 404 of the Clean Water Act under which the U.S. Army Corps of Engineers regulates the discharge of dredged and fill material, and any excavation activities associated with a dredged and fill project, into waters of the United States. Waters of the United States include ephemeral, intermittent and perennial streams, their surface connected wetlands and adjacent wetlands and certain lakes, ponds, irrigation and drainage ditches that have a nexus to interstate commerce. Under the authority of the Clean Water Act, an **approved jurisdictional determination** has determined that wetland 2 is waters of the U.S.

If a proposed activity requires work within the above-described waters of the U.S., a proponent of the project should notify this office for Department of the Army permits.

Approved jurisdictional determination: Based upon the ruling by the Supreme Court in the matter of Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 99-1178 (January 9, 2001), the Department of the Army's (DA) regulatory authority over isolated, non-navigable, intrastate waters has been eliminated **if** the sole nexus to interstate commerce was use of the waters by migratory birds. It is apparent under the ruling above that the DA does not have the authority to regulate work in isolated wetlands 1, 3, 4, 5, 6 and 7. These areas are not waters of the U.S. and therefore non-jurisdictional. No permit or other authorization by the DA is required for work in these areas.

This approved jurisdictional determination and delineation is valid for a period of five years from the date of this letter unless new information warrants revision of the determination. My office considers your wetland delineation map and report for this project accurate and acceptable.

The attached **Jurisdictional Determination** form provides the basis jurisdiction for isolated wetlands 1, 3, 4, 5, 6 and 7. If the applicant wishes to appeal this approved jurisdictional determination, the attached **Notification of Administrative Appeal Options** form should be completed and sent to Mr. Mores Bergman at the address noted on the form.

Although a DA permit will not be required for work in wetlands 1, 2, 3 4, 5, 6 and 7 , this does not eliminate the requirement that you obtain any other applicable Federal, state, tribal or local permits as required. Please be aware that if your client proposes to construct a project that impacts jurisdictional wetlands and a Section 404 Individual Permit is required, mitigation for impacts to non-jurisdictional wetlands may also be required.

If you have any questions call **Mr. Terry McKee** at **(303) 979-4120** and reference **Corps File No. 200480607**.

Sincerely,

Timothy T. Carey
Chief, Denver Regulatory Office

tm

JURISDICTIONAL DETERMINATION Revised 8/13/04
U.S. Army Corps of Engineers

DISTRICT OFFICE: **Omaha District Denver Regulatory Office**
FILE NUMBER: 200480607
PROJECT LOCATION INFORMATION:
State: **Colorado**
County: Weld
Center coordinates of site (latitude/longitude): 40 25 18 104 49 38
Approximate size of area (parcel) reviewed, including uplands: 230 acres.
Name of nearest waterway: Sheep Draw
Name of watershed: Cache la Poudre River
JURISDICTIONAL DETERMINATION
Completed: Desktop determination ☐ Date:
Site visit(s) ☒ Date(s): Dec 2, 2004
Jurisdictional Determination (JD):
☐ Preliminary JD - Based on available information, ☐ *there appear to be* (or) ☐ *there appear to be no* "waters of the United States" and/or "navigable waters of the United States" on the project site. A preliminary JD is not appealable (Reference 33 CFR part 331).
☒ Approved JD – An approved JD is an appealable action (Reference 33 CFR part 331).
Check all that apply:
☐ *There are* "navigable waters of the United States" (as defined by 33 CFR part 329 and associated guidance) within the reviewed area. Approximate size of jurisdictional area: _____.
☒ *There are* "waters of the United States" (as defined by 33 CFR part 328 and associated guidance) within the reviewed area. Approximate size of jurisdictional area: _____.
☒ *There are "isolated, non-navigable, intra-state* waters or wetlands" within the reviewed area.
☒ Decision supported by SWANCC/Migratory Bird Rule Information Sheet for Determination of No Jurisdiction.

BASIS OF JURISDICTIONAL DETERMINATION:
A. Waters defined under 33 CFR part 329 as "navigable waters of the United States":
☐ The presence of waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
B. Waters defined under 33 CFR part 328.3(a) as "waters of the United States":
☐ (1) The presence of waters, which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
☐ (2) The presence of interstate waters including interstate wetlands[1].
☐ (3) The presence of other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such waters (check all that apply):
☐ (i) which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ (iii) which are or could be used for industrial purposes by industries in interstate commerce.
☐ (4) Impoundments of waters otherwise defined as waters of the US.
☒ (5) The presence of a tributary to a water identified in (1) – (4) above.
☐ (6) The presence of territorial seas.
☐ (7) The presence of wetlands adjacent[2] to other waters of the US, except for those wetlands adjacent to other wetlands.

Rationale for the Basis of Jurisdictional Determination (applies to any boxes checked above). *If the jurisdictional water or wetland is not itself a navigable water of the United States, describe connection(s) to the downstream navigable waters. If B(1) or B(3) is used as the Basis of Jurisdiction, document navigability and/or interstate commerce connection (i.e., discuss site conditions, including why the waterbody is navigable and/or how the destruction of the waterbody could affect interstate or foreign commerce). If B(2, 4, 5 or 6) is used as the Basis of Jurisdiction, document the rationale used to make the determination. If B(7) is used as the Basis of Jurisdiction, document the rationale used to make adjacency determination:*

Wetland 2 flows to Jones Ditch that flow to the Cache la Poudre River that flows to the South Platte River, which is an interstate waters.

Lateral Extent of Jurisdiction: (Reference: 33 CFR parts 328 and 329)
☐ Ordinary High Water Mark indicated by:
☐ clear, natural line impressed on the bank
☐ the presence of litter and debris
☐ changes in the character of soil
☐ destruction of terrestrial vegetation
☐ shelving
☐ other:
☐ High Tide Line indicated by:
☐ oil or scum line along shore objects
☐ fine shell or debris deposits (foreshore)
☐ physical markings/characteristics
☐ tidal gages
☐ other:
☐ Mean High Water Mark indicated by:
☐ survey to available datum; ☐ physical markings; ☐ vegetation lines/changes in vegetation types.
☒ Wetland boundaries, as shown on the attached wetland delineation map and/or in a delineation report prepared by: Robert Belford

Basis For Not Asserting Jurisdiction:

- ☒ The reviewed area consists entirely of uplands.
- ☐ Unable to confirm the presence of waters in 33 CFR part 328(a)(1, 2, or 4-7).
- ☐ Headquarters declined to approve jurisdiction on the basis of 33 CFR part 328.3(a)(3).
- ☐ The Corps has made a case-specific determination that the following waters present on the site are not Waters of the United States:
  - ☐ Waste treatment systems, including treatment ponds or lagoons, pursuant to 33 CFR part 328.3.
  - ☐ Artificially irrigated areas, which would revert to upland if the irrigation ceased.
  - ☐ Artificial lakes and ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
  - ☐ Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
  - ☐ Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States found at 33 CFR 328.3(a).
  - ☒ Isolated, intrastate wetland with no nexus to interstate commerce.
  - ☐ Prior converted cropland, as determined by the Natural Resources Conservation Service. Explain rationale:
  - ☐ Non-tidal drainage or irrigation ditches excavated on dry land. Explain rationale:
  - ☒ Other (explain): **Wetlands 1, 3, 4, 5, 6 and 7 are neither adjacent to nor surface connected to a waters of the U.S.**

DATA REVIEWED FOR JURSIDICTIONAL DETERMINATION (mark all that apply):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant.
- ☐ Data sheets prepared/submitted by or on behalf of the applicant.
  - ☐ This office concurs with the delineation report, dated _____,prepared by (company):
  - ☐ This office does not concur with the delineation report, dated _____, prepared by (company):
- ☐ Data sheets prepared by the Corps.
- ☐ Corps' navigable waters' studies:
- ☐ U.S. Geological Survey Hydrologic Atlas:
- ☒ U.S. Geological Survey 7.5 Minute Topographic maps:
- ☐ U.S. Geological Survey 7.5 Minute Historic quadrangles:
- ☐ U.S. Geological Survey 15 Minute Historic quadrangles:
- ☐ USDA Natural Resources Conservation Service Soil Survey:
- ☐ National wetlands inventory maps:
- ☐ State/Local wetland inventory maps:
- ☐ FEMA/FIRM maps (Map Name & Date):
- ☐ 100-year Floodplain Elevation is: (NGVD)
- ☒ Aerial Photographs (Name & Date): Nov 2004
- ☐ Other photographs (Date):
- ☐ Advanced Identification Wetland maps:
- ☒ Site visit/determination conducted on: December 2, 2004
- ☐ Applicable/supporting case law:
- ☐ Other information (please specify):

[1]Wetlands are identified and delineated using the methods and criteria established in the Corps Wetland Delineation Manual (87 Manual) (i.e., occurrence of hydrophytic vegetation, hydric soils and wetland hydrology).

[2]The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are also adjacent.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Colorado Department of Transportation	File Number: 200480607	Date: Dec 3, 2004
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Timothy T. Carey
Chief, Denver Regulatory Office
9307 South Wadsworth Boulevard
Littleton, CO 80128
(303) 979-4120

If you only have questions regarding the appeal process you may also contact:

US Army Corps of Engineers
Northwestern Division
Attn: Mores Bergman, Appeal Officer
12565 West Center Road
Omaha, Nebraska 68144-3869
Telephone (402) 697-2533

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

WLDCoL027

BILL OWENS
Governor

JEFFREY M. WELLS
Executive Director

RICHARD O. PIPER
Director of Oil and Public Safety

DEPARTMENT OF LABOR AND EMPLOYMENT
Division of Oil and Public Safety
Remediation Section
Tower 3, Suite 610
1515 Arapahoe Street
Denver, Colorado 80202-2117
(303) 318-8500; Fax (303) 318-8546
Website: http://oil.cdle.state.co.us

FILE COPY

October 29, 2003

TERESA SANTANGELO DREILING
CDOT
15285 SOUTH GOLDEN ROAD BLG 47
GOLDEN CO 80401

Re: Underground Storage Tanks (USTs) at the Greeley West Maintenance Facility, 10601 Business Highway 34, Greeley, Weld County, Colorado. (Event ID 5254)

Dear Ms. Santangelo-Dreiling:

The Division of Oil and Public Safety (OPS) has reviewed the April 2003 Groundwater Sampling report for the referenced site received on June 4, 2003, as well as all other information on file with OPS.

Based solely upon the information submitted it appears you have removed the source of contamination and reduced the potential for endangerment to human health, safety, and the environment as a result of the contamination at this property. In light of the remedial action taken at this site, OPS does not require any further investigation or remedial action at this time. If conditions change, OPS reserves the right to determine if any additional actions are necessary. This no further action (NFA) letter is in reference to the 6,000-gallon gasoline UST, as well as the 1,000-gallon and 2,000-gallon gasoline USTs, removed from the site on October 9, 1991.

OPS cannot release you from any liability that may be associated with any contamination at or from this site.

Please address correspondence regarding this site to me, and if you have any questions call me at (303) 318-8542.

Sincerely,

John R. Gould

John R. Gould
Environmental Protection Specialist
Remediation Section

cc: Marilyn Hajicek, P.G., Remediation Section Manager
Charles Senz, Arcadis G&M, 630 Plaza Drive, Suite 200, Highlands Ranch, CO 80129

MEMORANDUM

DEPARTMENT OF TRANSPORTATION
THOMAS E. NORTON
Executive Director
4201 E. Arkansas Avenue, Room 262
Denver, CO 80222
(303) 757-9201

DEPARTMENT OF TRANSPORTATION

DATE: June 1, 2005

TO: Executive Management Team

FROM: Tom Norton

SUBJECT: Impacted Black-tailed Prairie Dog Policy

Over the winter of 2004-2005 the Chief Engineer, RPEMs, and RTDs agreed upon the following policy for addressing Black-tailed prairie dogs that will be impacted by CDOT projects. These guidelines should be applied to all CDOT activities that affect Black-tailed prairie dogs.

1) CDOT projects will be designed and constructed to avoid and minimize impacts to prairie dog colonies greater than two acres in area;

2) If a colony is less than two acres, but has the potential to expand into areas that are currently inactive (i.e., not constrained), the available and accessible habitat will be the determining size of the area to be considered;

3) In order to foster a heightened sense of CDOT's ecological stewardship by the public, projects involving towns less than two acres in area, will be designed and constructed to avoid and minimize impacts, which may include the relocation of prairie dogs, so long as doing so will not increase the impacts to other resources (e.g. wetlands, historical properties, environmental justice issues, archeological sites, etc.) and is not cost prohibitive;

4) The area of prairie dog towns that will be affected by a project will be calculated before construction begins;

5) Relocation efforts for prairie dog town greater than two acres shall be conducted in accordance with CRS 35-7-203, as well as any other applicable laws or regulations;

6) If a relocation site cannot be located for towns larger than two acres, the prairie dogs will be captured and donated to raptor rehabilitation facilities, or turned over the FWS for the black-footed ferret reintroduction program;

7) At no time will CDOT authorize earth-moving activities that result in the burying of living prairie dogs. If needed, humane techniques for the killing of prairie dogs within a town < 2 acres in size, will be obtained from CDOW;

8) Coordination with the Colorado Division of Wildlife's District Wildlife Manager whose area the project is in, will be initiated before any manipulation of prairie dogs or their colonies begins;

9) Due to the possibility of disease vectoring, until further notice, coordination with the Food and Drug Administration will be initiated if any prairie dogs, dead or alive, are to be transported.

The matrix below outlines the steps and the order they are to be taken based on the preconstruction area of an affected prairie dog town.

Preconstruction area of available prairie dog habitat[1]

	greater than 2 acres	less than two acres
1st	Avoid and minimize impacts	Avoid and minimize impacts
2nd	Relocate	Donate to ferret program and/or raptor rehab program
3rd	Donate to ferret program and/or raptor rehab program	Humanely euthanize[2]
4th	Humanely euthanize[2]	-------

1. Area of land able to be used by prairie dog that may or may not be occupied; calculated before a project begins.
2. Aluminum phosphate capsules, carbon monoxide gas cartridges or carbon dioxide gas cartridges are currently recommended, but not the exclusion of any future technologies that may be developed.

Background

On February 4, 2000 the United States Fish and Wildlife Service (USFWS) classified the black-tailed prairie dog as a candidate species for protection under the Endangered Species Act. In October of that same year the State of Colorado designated the black-tailed prairie dog a Species of Concern.

On January 8, 2002 I signed a memo outlining guidelines for the relocation of black-tailed prairie dogs impacted by CDOT activities. Subsequently, the USFWS has removed the black-tailed prairie dog from the federal candidate species list. However, the State of Colorado has retained it on their list of species of concern.

It is important that CDOT adopt a statewide strategy that will assist in diminishing the negative effects that transportation related activities have on the continued survival and recovery of the species. Adopting a pro-active departmental policy under the authority of CDOT may help minimize the possibility of federal listing of the black-tailed prairie dog in the future and is consistent with State and Transportation Commission policy direction.

Policy Basis

The Transportation Commission has adopted policy statements and policy statements and policy guidance in the 2020 Statewide Transportation Plant adopted November 2000, that direct CDOT activities. These include:

"Statewide Transportation Policy on the Environment:
CDOT will promote a transportation system that is environmentally responsible and encourages preservation of the natural and enhancement of the created environment for current and future generations. We will incorporate social, economic, and environmental concerns into the planning design, construction, maintenance and operations of the states existing and future transportation system. With the active participation of the general public, federal, state and local agencies, we will objectively consider all reasonable alternatives to avoid or minimize adverse impacts."

and:

"Environmental Policy Guidance:
The Transportation Commission supports pro-active techniques to mitigate impacts of the transportation system on the environment by developing creative strategies that:

- Comprehensively address anticipated environmental impacts of the state transportation system.
- Consider project enhancements in affected communities in a cost effective manner consistent with the mission of the Department; and
- Expedite project development."

APPENDIX B

Wetland Finding Report

U.S. Business 34

Wetland Finding Report
CDOT Region 4
September 2005

Prepared for:

Colorado
Department of
Transportation
Region 4

TABLE OF CONTENTS

LIST OF FIGURES

APPENDICES

LIST OF ACRONYMS

C

CDOT	Colorado Department of Transportation
CDOW	Colorado Division of Wildlife

E

EA	Environmental Assessment

F

FHWA	Federal Highway Administration

G

GIS	Geographic Information System

R

ROW	Right- of- Way

U

USACE	United States Army Corps of Engineers

1.0 OVERVIEW

The following is a wetland finding for the Colorado Department of Transportation (CDOT) U.S. Business 34 Environmental Assessment (EA) and has been written in compliance with Executive Order 11990, "Protection of Wetlands," and is in accordance with 23 CFR 771, 23 CFR 777, and the Federal Highway Administration (FHWA) Technical Advisory T6640.8A.

This report discusses the wetlands within and adjacent to the proposed project, as well as avoidance, minimization, and wetland impacts (temporary and permanent) from the proposed construction activity. A wetland scientist from PBS&J prepared this report based on the wetland delineation conducted by CDOT Region 4 staff.

2.0 PROJECT LOCATION

The proposed project is located in Weld County, Colorado. Figure 1 shows the project area. The project area can be found on the USGS 7.5' Bracewell Quadrangle map and consists of: Township 5 North, Range 67 west, Sections 2, 1, 11,12, 5, 6, 7, and 8.

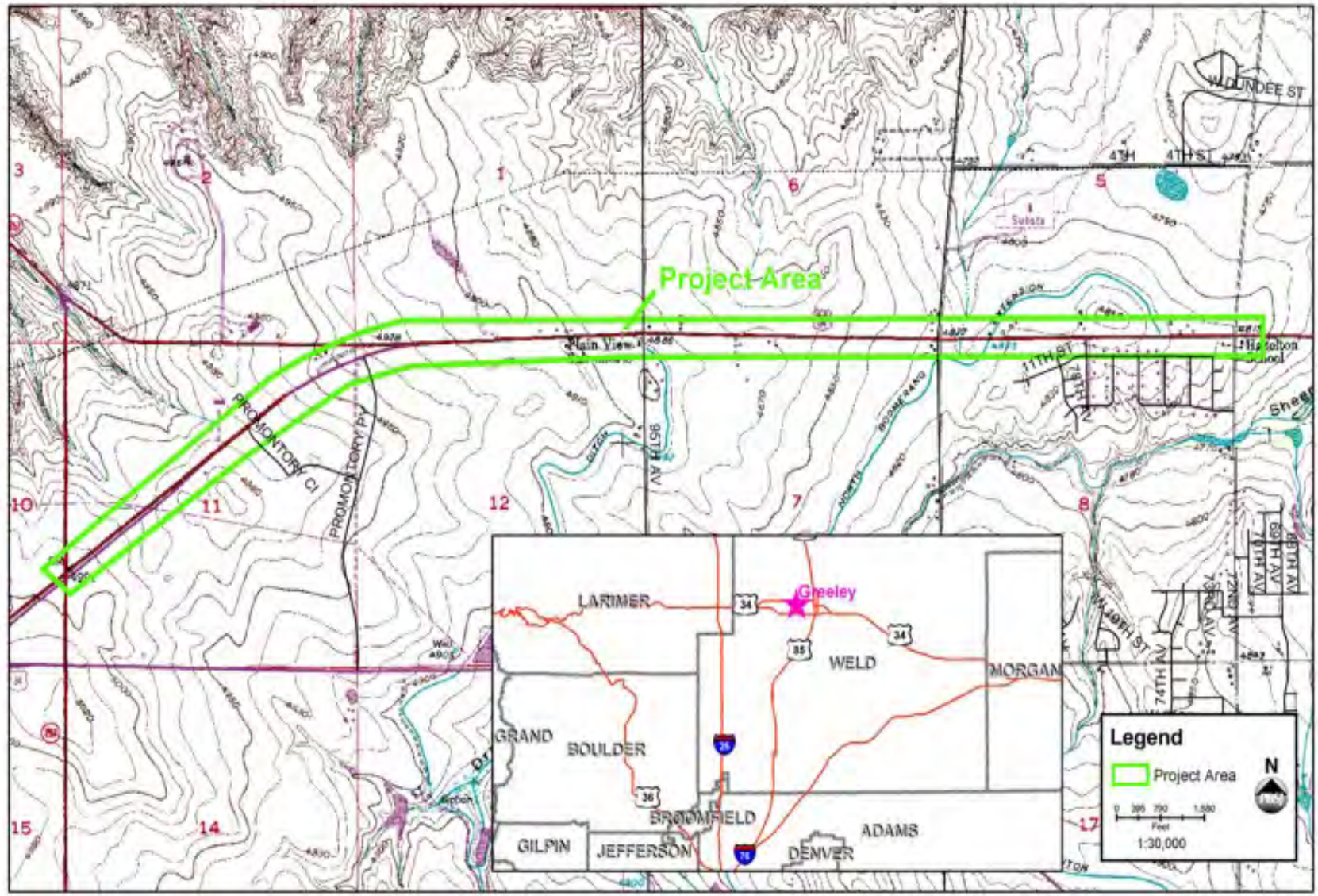
3.0 PROJECT DESCRIPTION

U.S. Business 34 is an east/west highway that leaves U.S. 34 at the eastern edge of Greeley, Colorado and reconnects to U.S. 34 at SH 257 west of Greeley. The project length is approximately 4.2 miles and consists of a two-lane undivided highway with no turn lanes and minimal shoulder widths. Major streets along the highway are 71st Avenue, 83rd Avenue, and 95th Avenue. The project proposes to reconstruct U.S. 34 between 71st Avenue and SH 257 as a four-lane highway. The four-lane improvements include a 16-foot painted median, 10-foot shoulders, and signalization at 71st Avenue, 83rd Avenue, and 95th Avenue. The new right-of-way (ROW) width will be 180 feet.

4.0 PROJECT ALTERNATIVES

A total of 18 alternatives, including the No-Action, were identified for analysis during the alternative screening process for the EA being prepared for the project. From this total, three alternatives, including the No-Action, were brought forward for further study in the EA. The B-1 and C-1 Alternatives represent the two action alternatives being considered for the project. Impacts to wetlands will be avoided and minimized through use of the mitigation measures discussed in Section 7.2.

Figure 1
Project Location Map for U.S. Business 34 Improvements



5.0 STUDY METHODS

The entire project area was surveyed to document wetlands. The survey identified all wetlands occurring 200 feet in both directions of the existing centerline of U.S. Business 34. As required by existing regulations or regional permits, wetlands, as defined by the U.S. Army Corps of Engineers (USACE) 1987 Manual, were evaluated based on the presence of hydrophytic vegetation, wetland hydrology, and hydric soils. All wetlands directly adjacent to the proposed project corridor were delineated in the field, following the guidelines as outlined in the USACE 1987 Wetlands Delineation Manual (USACE 1987).

The presence of wetlands was identified in the field by the appearance of field indicators. During the field review, the dominant plants were identified and recorded, the area was inspected for indicators of wetland hydrology, and the soils were inspected for hydric conditions. The Region 5 National List of Plant Species that Occur in Wetlands (Reed, 1988), was used to determine the wetland indicator status of the dominant plant species. Representative wetland areas were recorded on USACE Routine Wetland Determination forms.

All wetlands observed were classified as to their habitat type and a wetland function/importance assessment was completed in the field. The methods of Cowardin, et al. (1979) were used to complete the classification and type of habitat and function/importance assessment. The function importance assessment is a subjective determination based on ten different criteria: floodwater storage/conveyance, maintenance of biodiversity, setting for cultural activities, groundwater recharge/discharge, streambank stabilization, nutrient/contaminant/sediment removal, production export/fisheries nursery, storm surge buffer, small-scale importance of the wetland, and cumulative importance of the wetland. Each criterion is ranked according to high, medium, low, or non-applicable qualities.

6.0 WETLAND RESOURCES

A wetland survey and delineation were conducted by CDOT Region 4 staff in 2002. PBS&J resurveyed the project area in 2004 to ensure that all of the wetlands identified in the CDOT 2002 survey were still present. Figures 2, 3, and 4 show the location of the wetlands within the project area. The following wetlands were identified within the project area:

6.1 WETLAND AREA 1

This wetland is located less than an eighth of a mile east of 83rd Avenue on the south side of U.S. Business 34. The wetland has been verified by the USACE as jurisdictional waterbody. The reason for this determination is the wetland is connected to Jones Ditch that flows to the Cache la Poudre River. This wetland exhibited saturated soils and appears to be inundated for a significant period during the year. The total wetland acreage is approximately .2 acres.

Figure 2
Wetlands – U.S. Business 34

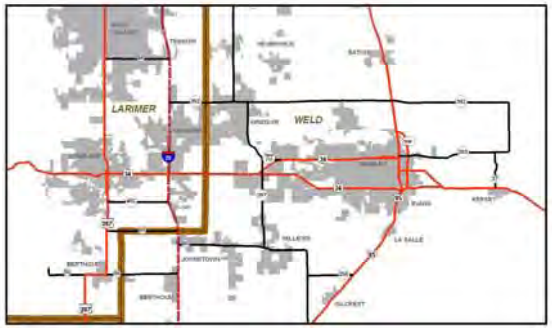


Figure 2
U.S. Business 34
71st Avenue to
83rd Avenue

Wetlands

N

Feet
0 500

1:6,000

Figure 3
Wetlands – U.S. Business 34

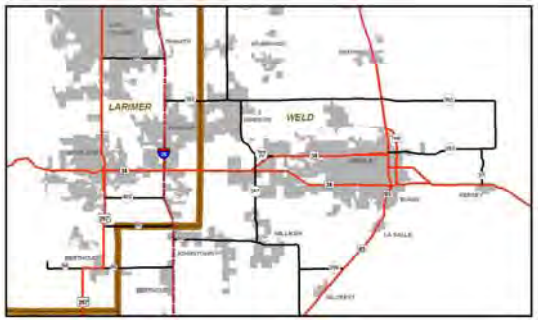


Figure 3
U.S. Business 34
83rd Avenue to
95th Avenue

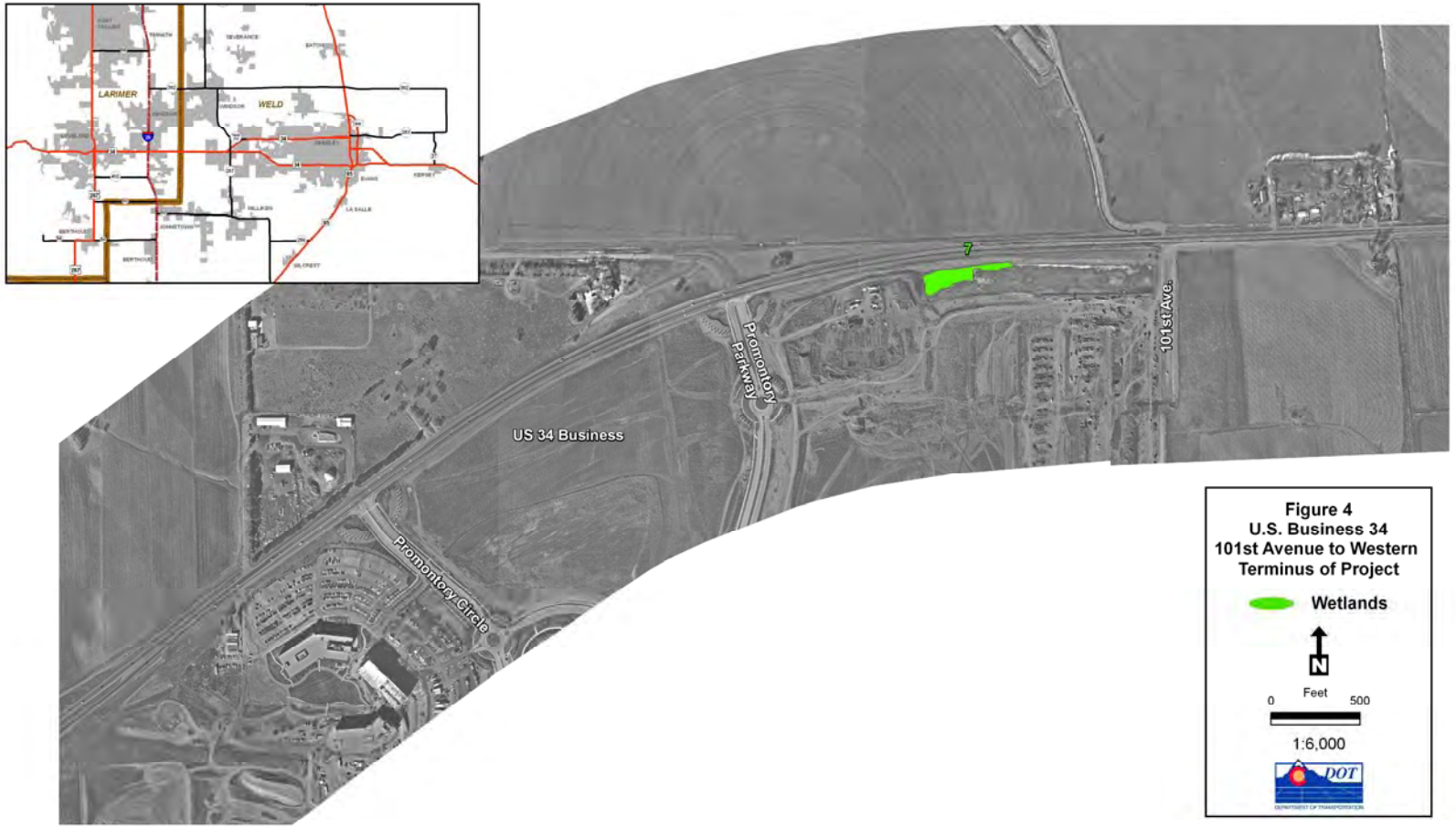
Wetlands

N

0 Feet 500

1:6,000

Figure 4
Wetlands – U.S. Business 34



Class: Palustrine, emergent, persistent, and seasonally flooded (PEM1C) (Cowardian, et al. 1979)

Vegetation:
Sedges *(Carex spp.,* OBL-FACW*)*
Cattail (*Typha latifolia*, OBL)
Foxtail barley (*Hordeum jubatum*, FACW)
Smartweed (*Polygonum pensylvanicum*, FACW+)
Canada thistle (*Cirsium arvense*, FACU)
Reed Canary Grass (*Phalaris arundinacea*, FACW+)
American three-square (*Scirpus pungens*, OBL)

Soils: Sandy clay loam, 0-12 inches sandy clay loam, 12-16 inches clay loam, some vertical streaking with organic matter. There is also a high organic content in the surface layer.

Hydrology: Seasonally flooded, source is road run-off and return flows from irrigation ditches. The wetland is connected to Jones Ditch, which flows into Cache La Poudre River.

Function: Flood flow alteration, sediment, nutrient, toxicant, and pathogen removal, wildlife habitat, and retention.

6.2 WETLAND AREA 2

Wetland Area No. 2 is a low-functioning roadside ditch wetland that is located on the north side of U.S. Business 34 west of 83rd Avenue. The approximate length of the wetland is 127 feet. This wetland is associated with a ditch and roadside drainage along the north side of U.S. Business 34. It was established due to the construction of the road and the collection of water from surface run-off and storm events. This wetland would be classified as non-jurisdictional because surface waters have no connection to external drainages or to navigable waterways. As a result, this wetland is not part of a tributary system to interstate waters or navigable waters and would not qualify as waters of the United States.

Vegetation:
Barnyard grass (*Echinochloa crusgalli*, FACW*)*
Smartweed (*Polygonum pensylvanicum*, FACW+)
Showy milkweed (*Asclepias speciosa*, FAC)
Curly dock (*Rumex crispus*, FACW)
Foxtail barley (*Hordeum jubatum*, FACW*)*
Yellow foxtail (*Setaria glauca*, FAC*)*
Aster (*Aster spp*. OBL-FACU).

Soils: Clay and sandy clay loam. Soils not saturated at time of survey.

Hydrology: Roadside drainage- collection of water from surface run-off and storm events

Function: The function of this wetland is limited due to the location within the landscape; however, functions performed include: sediment, nutrient, toxicant, and pathogen removal. This wetland does not benefit wildlife or fisheries.

6.3 WETLAND AREA 3

This wetland is located on the north side of U.S. Business 34 just west of 88th Avenue. The approximate length of this wetland is 33 feet. This wetland is associated with the roadside ditch and receives run-off from the road. The wetland would be classified as non-jurisdictional because its surface water has no connection to external drainages or navigable waterways.

Vegetation:
Barnyard grass (*Echinochola crusgalli*, FACW)
Smartweed (*Polygonum pensylvanicum*, FACW+)
Yellow foxtail (*Setaria glauca*, FAC)
Aster (*Aster spp*., OBL-FACU)

Soils: Clay and silty loam. Some oxidized root channels were observed.

Hydrology: Roadside drainage, as it collects water from road run-off.

Function: The function of this wetland is limited due to the limited vegetative and hydrological characteristics it exhibits. However, the wetland does perform some limited sediment, nutrient, toxicant, and pathogen removal.

6.4 WETLAND AREA 4

This wetland is located on the south side of U.S. Business 34 just west of 88th Avenue. The wetland is associated with the roadside ditch and receives run-off from the road. This wetland would be classified as non-jurisdictional because its surface water has no connection to external drainages or navigable waterways.

Vegetation:
Barnyard grass (*Echinochola crusgalli*, FACW)
Western wheatgrass (*Agropyron smithii*, FACU)
Aster (*Aster spp*., OBL-FACU**)**
Smartweed (*Polygonum pensylvanicum*, FACW+)

Soils: Clay and silty loam. Some mottles were observed in the soil.

Hydrology: Roadside drainage and some return water from adjacent irrigation of crops.

Function: The wetland does perform some limited sediment, nutrient, toxicant, and pathogen removal.

6.5 WETLAND AREA 5

This wetland is located on the north side of U.S. Business 34 east of 95th Avenue. The wetland is associated with the road ditch and receives run-off from the road and adjacent agricultural fields. This wetland is not jurisdictional.

Vegetation:
Cattail (*Typha latifolia*, OBL)
Smartweed (*Polygonum pensylvanicum*, FACW+)
Canada thistle (*Cirsium arvense*, FACU)
Showy milkweed (*Asclepias speciosa*, FAC)
Yellow Foxtail (*Setaria glauca*, FAC)

Soils: Loamy clay and sandy clay loam. Some mottles were observed in the soil.

Hydrology: Hydrology is created from road and agricultural run-off. Some saturation was noted in the soil.

Function: This wetland performs some limited sediment, nutrient, toxicant, and pathogen removal.

6.6 WETLAND AREA 6

This wetland is located on the south side of U.S. Business 34 just west of 95th Avenue. The wetland is associated with the road ditch and receives run-off from the road and adjacent agricultural fields.

Vegetation:
Barnyard grass (*Echinochola crusgalli*, FACW)
Smartweed (*Polygonum pensylvanicum*, FACW+)
Showy milkweed (*Asclepias speciosa*, FAC)
Yellow Foxtail (*Setaria glauca*, FAC)
Aster (*Aster spp*., OBL-FACU)
Canada thistle (*Cirsium arvense*, FACU)

Soils: Loamy clay and sandy clay loam. Soil is saturated.

Hydrology: Hydrology is present from road and agricultural run-off.

Function: This wetland performs some limited sediment, nutrient, toxicant, and pathogen removal.

6.7 WETLAND AREA 7

This wetland is located on the south side of U.S. Business 34 just west of 101st Avenue. The wetland is associated with a stormwater detention pond. The wetland hydrology is primarily connected to the run-off contained in the stormwater detention facility.

Vegetation:
Cattail (*Typha latifolia*, OBL)
Barnyard grass (*Echinochloa crusgalli*, FACW)
Curly dock (*Rumex crispus*, FACW)
Foxtail barley (*Hordeum jubatum*, FACW)
Canada thistle (*Cirsium arvense*, FACU)
Soft-stem bulrush (*Scirpus validus*, OBL)
Yellow foxtail (*Setaria glauca*, FAC)

Soils: Loamy clay and sandy clay loam. Mottles and oxidized root channel were observed in the soils.

Hydrology: Surface water run-off into stormwater detention facility. Saturated soil is present in some areas of the wetland.

Function: This wetland does perform sediment, nutrient, toxicant, and pathogen removal. Additionally, it does provide some limited benefit to wildlife.

7.0 WETLAND IMPACTS

7.1 PERMANENT IMPACTS

The total amount of wetlands potentially impacted during the widening project is expected to be approximately .70 acres. Of this total, approximately .2 acre will be jurisdictional and would require a USACE permit. It is not known what the exact impacts will be until preliminary conceptual design is completed for the project.

7.2 AVOIDANCE AND MINIMIZATION

CDOT Region 4 environmental staff will work with their design engineers to minimize impacts to wetlands. This coordination will occur during the conceptual design phase of the project. The following mitigation measures will be implemented to minimize adverse impacts to wetlands during project construction:

- Temporary erosion control and sediment control Best Management Practices will be installed prior to ground disturbance activities. Completed areas shall be permanently stabilized within seven days.
- Unnecessary temporary impacts will be avoided by fencing the limits of disturbance during construction.
- No equipment staging or storage of construction materials will occur within 50 feet of wetlands.
- The use of chemicals, such as soil stabilizers, dust inhibitors, and fertilizers within 50 feet of wetlands will be prohibited.
- No discharge of effluent into wetlands will occur.
- Temporary fill material will not be stored within wetlands.

- All areas of exposed soil will be seeded and/or planted, and mulched throughout construction (following completion of each section). Mulch and mulch tackifier will be placed for temporary erosion control when seeding and/or planting cannot occur due to seasonal constraints.
- Wetland temporarily impacted during construction will be restored.
- Noxious weeds will be controlled based on the mitigation prescribed in the Noxious Weed Management Plan.

7.3 WETLAND MITIGATION

CDOT Region 4 has reached an agreement with the Colorado Division of Wildlife (CDOW) to mitigate the loss of wetlands from the planned U.S. Business 34 roadway improvements at the Big Thompson Ponds Wildlife Area. The wetland acreage loss during the project will be replaced on a 1:1 ratio. The mitigation design will be developed with the help of CDOW staff and will involve wetland creation along the ponds present within the state wildlife area.

7.4 WETLAND FINDING

"Based on the above considerations, it is determined that there is no practicable alternative to the proposed new construction in the wetlands and the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use."

8.0 REFERENCES

Cowardin, L.M., V. Carter, E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* US Department of the Interior, US Fish and Wildlife Service, Office of Biologicl Services. FWS/OBS-79/31. December 1979.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual,* Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mississippi.

Reed, P.B. 1988. *National List of Plant Species That Occur in Wetlands: Colorado (Region 5).* U.S. Fish and Wildlife Service, Washington, DC Biology Report 88 (24).

Appendix A

Wetland Data Sheets

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Wetland #1

Project/Site: 83rd Avenue and U.S. Business 34 #1 Applicant/Owner: CDOT Investigator: Carol Parr	Date: 2002 County: Weld State: Colorado
Do Normal Circumstances exist on the site? (Yes) No Is the site significantly disturbed (Atypical Situation)? Yes (No) Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Sedges (Carex sp.)		OBL-FACW
2. Cattail (Typha Angus.)		OBL
3. Smartweed (Polygonum pensylvanicum)		FACW+
4. Reed Canary Grass (Phalaris arundinacea)		FACW+
5. American three-square (Scirpus pungens)		OBL
6. Canada thistle (Cirsium arvense)		FACU
7.		
8.		

Dominant Plant Species	Stratum	Indicator
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). _____

Remarks: Definately wetland species are dominant.

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

✓ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: 1" (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ✓ Saturated in Upper 12 Inches
- ✓ Water Marks
- ✓ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: Definate Hydrology present

@ 3rd Avenue and U.S. Business 34

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10yr 7/3		mottling Abundant	Sandy/Clay loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ✓ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ✓ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: Refinately hydric soil conditions presents

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

(Circle)
Is this Sampling Point Within a Wetland? (Yes) No

Remarks:

Yes this is a wetland.

Approved by HQUSACE 3/92

Wetland #2

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: North Side of U.S. 34 / west of 83rd Ave. Applicant/Owner: CDOT Investigator: Carol Parr	Date: 2002 County: Weld State: Colorado
Do Normal Circumstances exist on the site? (Yes) No Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Barnyard Grass (Echinochloa crusgalli)		FACW
2. Smartweed (Polygonum pensylvanicum)		FACW
3. Foxtail Barley (Hordeum jubatum)		FACW
4. Yellow Foxtail (Setaria glauca)		FAC
5. Curly Dock (Hordeum jubatum)		FACW
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). _____

Remarks: Wetland species present

HYDROLOGY

___ Recorded Data (Describe in Remarks):
___ Stream, Lake, or Tide Gauge
___ Aerial Photographs
___ Other
✓ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
___ Saturated in Upper 12 Inches
✓ Water Marks
___ Drift Lines
___ Sediment Deposits
___ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
✓ Oxidized Root Channels in Upper 12 Inches
✓ Water-Stained Leaves
___ Local Soil Survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks: Ditch bottom show signs of hydrology - road runoff

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ✓ Concretions
- ✓ High Organic Content in Surface Layer in Sandy Soils
- ✓ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:
Marginal to non-existent hydric soils

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

Is this Sampling Point Within a Wetland? (Circle) (Yes) No

Remarks:
This wetland is primarily to totally dependent on road run-off.

Approved by HQUSACE 3/92

#Wetland 3

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Northside U.S. Business 34 West of 88 th Avenue Applicant/Owner: CDOT Investigator: Carol Parr	Date: 2002 County: Weld State: Colorado
Do Normal Circumstances exist on the site? (Yes) No Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Barnyard Grass (Echinochloa crusgalli)		FACW	9.		
2. Smartweed (Polygonum pensylvanicum)		FAC+	10.		
3. Aster (Aster spp.)		OBL-FACW	11.		
4. Yellow Foxtail (Setaria glauca)		FAC	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). _____

Remarks: Marginal occurrence of wetland dependent species

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

✓ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches
- ___ Water Marks
- ✓ Drift Lines
- ✓ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ✓ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: No visible hydrology present

#3

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ✓ High Organic Content in Surface Layer in Sandy Soils
- ✓ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

Soils are marginally hydric

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

Is this Sampling Point Within a Wetland? (Circle) (Yes) No

Remarks:

typically a ditch wetland!

Approved by HQUSACE 3/92

Wetland #4

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: South side of U.S. 34 west of 88th Avenue Applicant/Owner: CDOT Investigator: Carol Par	Date: 2002 County: Weld State: Colorado
Do Normal Circumstances exist on the site? (Yes) No Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Barnyard grass (Echinochloa crusgalli)		FACW
2. Smartweed		FACW+
3. Western wheatgrass (Agropyron smithii)		FACU
4. Aster (Aster spp.)		OBL-FACU
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). _____

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

✓ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____(in.)

Depth to Free Water in Pit: _____(in.)

Depth to Saturated Soil: _____(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches
- ✓ Water Marks
- ___ Drift Lines
- ✓ Sediment Deposits
- ✓ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
Ditch wetland dependent upon road run-off.

Wetland #4

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- 1 Gleyed or Low-Chroma Colors
- ___ Concretions
- 1 High Organic Content in Surface Layer in Sandy Soils
- 1 Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:
Poor hydric soil conditions.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

Is this Sampling Point Within a Wetland? (Circle) (Yes) No

Remarks:
Typical ditch wetland!

Approved by HQUSACE 3/92

Wetland #5

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: U.S. Business East of 95th Ave Applicant/Owner: CDOT Investigator: Carol Parr	Date: 2002 County: Weld State: Colorado
Do Normal Circumstances exist on the site? (Yes) No Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Cattail (Typha exigua)		OBL
2. Curlytwed (Polygonum pensylvanicum)		FACW+
3. Canada Thistle (Cirsium arvense)		FACU
4. Yellow Foxtail (Setaria glauca)		FAC
5. Showy Milkweed (Asclepias speciosa)		FAC
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). _____

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

✓ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: 3 11 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ✓ Saturated in Upper 12 Inches
- ✓ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: Saturation in upper 12 inches of soil exists!

Wetland #5

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
1-12		10yr 5/2		Present	Sandy clay loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

Hydric soils are marginal in this ditch wetland

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No (Circle)		(Circle)
Wetland Hydrology Present?	(Yes) No		
Hydric Soils Present?	(Yes) No	Is this Sampling Point Within a Wetland?	(Yes) No

Remarks:

Ditch wetland dependent upon road run-off

Approved by HQUSACE 3/92

wetland #6

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: U.S. Business 34 west of 95th Avenue Applicant/Owner: CDOT Investigator: Carol Parr	Date: 2002 County: Weld State: Colorado
Do Normal Circumstances exist on the site? (Yes) No Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Barnyard grass (Echinochloa crus-galli)		FACW	9.		
2. Smartweed (Polygonum persicaria)		FACW+	10.		
3. Canada thistle		FAC	11.		
4. Yellow Foxtail		FAC	12.		
5. Showy Milkweed (Asclepias speciosa)		FAC	13.		
6. Aster (Aster spp.)		OBL-FACW	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). _____

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
___ Stream, Lake, or Tide Gauge
___ Aerial Photographs
___ Other
✓ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
___ Saturated in Upper 12 Inches
✓ Water Marks
___ Drift Lines
✓ Sediment Deposits
___ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 Inches
___ Water-Stained Leaves
___ Local Soil Survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks: Shows some evidence of water from road run-off.

Wetland #6

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
1-12		10yr 5/3			loamy Clay / Sandy Clay loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ✓ High Organic Content in Surface Layer in Sandy Soils
- ✓ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:
marginal hydric soil conditions!

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

Is this Sampling Point Within a Wetland? (Circle) (Yes) No

Remarks:
Ditch wetland!

Approved by HQUSACE 3/92

Wetland #7

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: U.S. Business 34 - 10 1st Ave Applicant/Owner: CDOT Investigator: Carol Parr	Date: 2002 County: Weld State: Colorado
Do Normal Circumstances exist on the site? Yes (No) Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Cattail		OBL	9.		
2. Barnyard Grass		FACW	10.		
3. Curly Dock (Rumex crispus)		FACW	11.		
4. Foxtail barley		FACW	12.		
5. Canada thistle		FACU	13.		
6. Soft stem bulrush (Scirpus validus)		OBL	14.		
7. Yellow foxtail		FAC	15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). _____

Remarks: Definately composed of wetland dependant species

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: 2" (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: Hydrology from detention pond!

Wetland #7

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
1-12 inches		10yr 4/2		abundant mottles	loamy clay

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ✓ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:
definately hydric soils

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No (Circle)		(Circle)
Wetland Hydrology Present?	(Yes) No		
Hydric Soils Present?	(Yes) No	Is this Sampling Point Within a Wetland?	(Yes) No

Remarks:

Hydrology dependant upon stormwater detention pond!

Approved by HQUSACE 3/92

Appendix B

Wetland Mitigation Site Selection Form

Wetland Mitigation Site Selection Form
Colorado Department of Transportation
Attachment to Wetland Finding

Project Name/No.: US Business 34 Environmental Assessment	
Sub-account No.: STA 0342-037	**Region: Region 4**
Author: Robert Belford	**Firm: PBS&J**
Date Submitted: August 30, 2005	

Mitigation Options Available	**(1) Mitigation bank available?** (yes/no) **YES**
	(2) Project impacts in 1°, 2° service area? N/A
	(3) HUC units: 10190007 (Project Area) 10190006 (Big Thompson Mitigation Site)
	(4) On-site mitigation available? (yes/no) **YES**
	(5) Off-site mitigation available? (yes/no) **YES**
	(6) In-lieu fee arrangement available? (yes/no) **NO** *In-lieu fee sponsor:*
	(7) Mitigation ratio(s) other than 1:1 involved? (yes/no) **NO** *Ratio(s):*

		Impact Site	Mitigation Site
Site Characteristics	**(8) Geographic location**	**Township 5 N, Range 67 West, Sections 1, 2, 11, 12, 5, 6, 7, and 8**	
	(9) Wetland Community Type, % of each type	**PENP-100 Percent**	**PEP–100 Percent**
	(10) Functions, values	**SR (L), WH (L)**	**GW(M), N(M), WH(H), FH(M)**
	(11) Size of impacts, % of total area	**Approximately .7 acres of wetland impacts**	**Will create approximately .7 acres of wetlands**
Wildlife/Habitat	**(12) T&E species/habitat present?**	**NO**	**NO**
	(13) Species? Status?	**N/A**	**N/A**
	(14) Migratory Bird Treaty Act?	**YES**	**YES, the mitigation site is being created to provide additional habitat for migratory waterfowl using the Big Thompson Ponds Wildlife Area**
	(15) Other wildlife issues?	**NO**	**YES, created wetlands will be used by a variety of wildlife using the state wildlife area**
	(16) Status of aquatic resource?	**N/A**	**Warmwater fishing for bass and bluegill**
	(17) Special aquatic site?	**NO**	**NO, but the mitigation site is a state wildlife area**
	(18) Unique? Quality? Ranking?	**NO**	**The site is a State Wildlife Area, meaning that it does provide some higher quality habitat for birds and mammals**

		Impact Site	Mitigation Site
	(19) Watershed, ecosystem issues?	NO ISSUES	The mitigation site is being created adjacent to the Big Thompson River which is a tributary of the South Platte River. The creation of wetland habitat along this river means the project will result in no net loss of wetlands in the South Platte watershed
Other	(20) Likelihood of success?	N/A	Should have a good chance at success due to the presence of hydrology and oversight from the CDOW
	(21) Interagency agreement?	Yes, a memorandum of agreement between CDOT and the CDOW.	Yes, the mitigation site is located at the Big Thompson Ponds State Wildlife Area. The CDOW will only be responsible for helping identify areas for mitigation on the wildlife area. CDOT will be responsible for creating and/or enhancing the wetland. Additional CDOT responsibility will be monitoring the site for a period of approximately three years to determine if the mitigation is successful.
	(22) Project logistics, size/scope?	The wetlands are generally small roadside ditch wetlands and do not represent a large effort for mitigation	The mitigation is being located at one or two sites at the Big Thompson Ponds State Wildlife Area. Since the mitigation is taking place at one site, this does not prevent a significant challenge
	(23) Cost considerations?	Yes, we are primarily creating mitigation for the loss of ditch wetlands	The CDOW is providing the mitigation site and it has good hydrology to create wetlands. This should hold down the cost of the mitigation
	(24) Buffer used?	N/A	Will be creating some riparian buffers to strengthen banks.

Water Issues	(25) Individual 404 permit condition?	NO	N/A
	(26) 404 (b)(1) Guidelines?	NO	NO
	(27) NWP gen. reg. conditions?	NWP 14	NWP 27
	(28) Regulatory letters?	NO	NO
	(29) S.B. 40?	N/A	N/A
	(30) Water rights issues?	NO	NO
NEPA Issues	(31) Cumulative impact issues?	Will not result in a net loss of wetlands in the South Platte Watershed	N/A
	(32) Agency policy, input?	CDOW will assist and have input the mitigation as it is planned for a state wildlife area	CDOW Property
	(33) Public involvement?	No input has been received from the public regarding wetlands	N/A

(34) Basis for Decision (Describe factors that are instrumental in the selection of the chosen mitigation decision.)

Region 4 has made the decision to use an off-site location due to the lack of available on-site opportunities and the ability to create a higher quality wetland at the Big Thompson Ponds State Wildlife Area. The on-site mitigation opportunities were limited by the lack of hydrology. Through making the selection to use the Big Thompson Ponds State Wildlife Area, this project is creating wetlands in the South Platte Watershed and avoiding cumulative loss of wetlands in this watershed.

(35) Decision

The mitigation option is an off-site location at the Big Thompson Ponds State Wildlife Area.

(36) Contingency Plans

The Big Thompson Ponds State Wildlife Area has several options available for mitigation. We can create wetlands along and adjacent to the ponds and enhance riparian/wetland habitat along the Big Thompson River.

APPENDIX C

Noxious Weed Management Plan

U.S. Business 34

Noxious Weed Management Plan

CDOT Region 4

November 2004

Prepared for:

Colorado
Department of
Transportation
Region 4

Prepared by:

Table of Contents

List of Figures

List of Tables

LIST OF ACRONYMS

C

CDOT	Colorado Department of Transportation
CDOT R4	Colorado Department of Transportation Region 4

F

FHWA	Federal Highway Administration

G

GIS	Geographic Information System

P

ppm	Parts Per Million

R

ROW	Right-of-Way

1.0 INTRODUCTION

This noxious weed management plan has been prepared for the Colorado Department of Transportation Region 4 (CDOT R4). The Noxious Weed Control Plan for the proposed improvements to U.S. Business 34 follows the guidelines of the Federal Highway Administration (FHWA) Guidance on Invasive Species and Executive Order 13112 (FHWA, 1999). The purpose of the plan is to inventory existing noxious weeds within the project area and to recommend control techniques during and after project implementation.

2.0 PROJECT DESCRIPTION

2.1 LOCATION

U.S. Business 34 is an east/west highway that leaves U.S. 34 at the eastern edge of Greeley, Colorado and reconnects to U.S. 34 at SH 257 west of Greeley. The project length is approximately 4.2 miles and consists of a two-lane undivided highway with no turn lanes and minimal shoulder widths. Major streets along the highway are 71st Avenue, 83rd Avenue, and 95th Avenue. The project proposes to reconstruct U.S. 34 between 71st Avenue and SH 257 as a four-lane highway. The four-lane improvements include a 16-foot painted median, 10-foot shoulders, and signalization at 71st Avenue, 83rd Avenue, and 95th Avenue. The new right-of-way (ROW) width will be 180 feet. A map of the project area is shown in Figure 1.

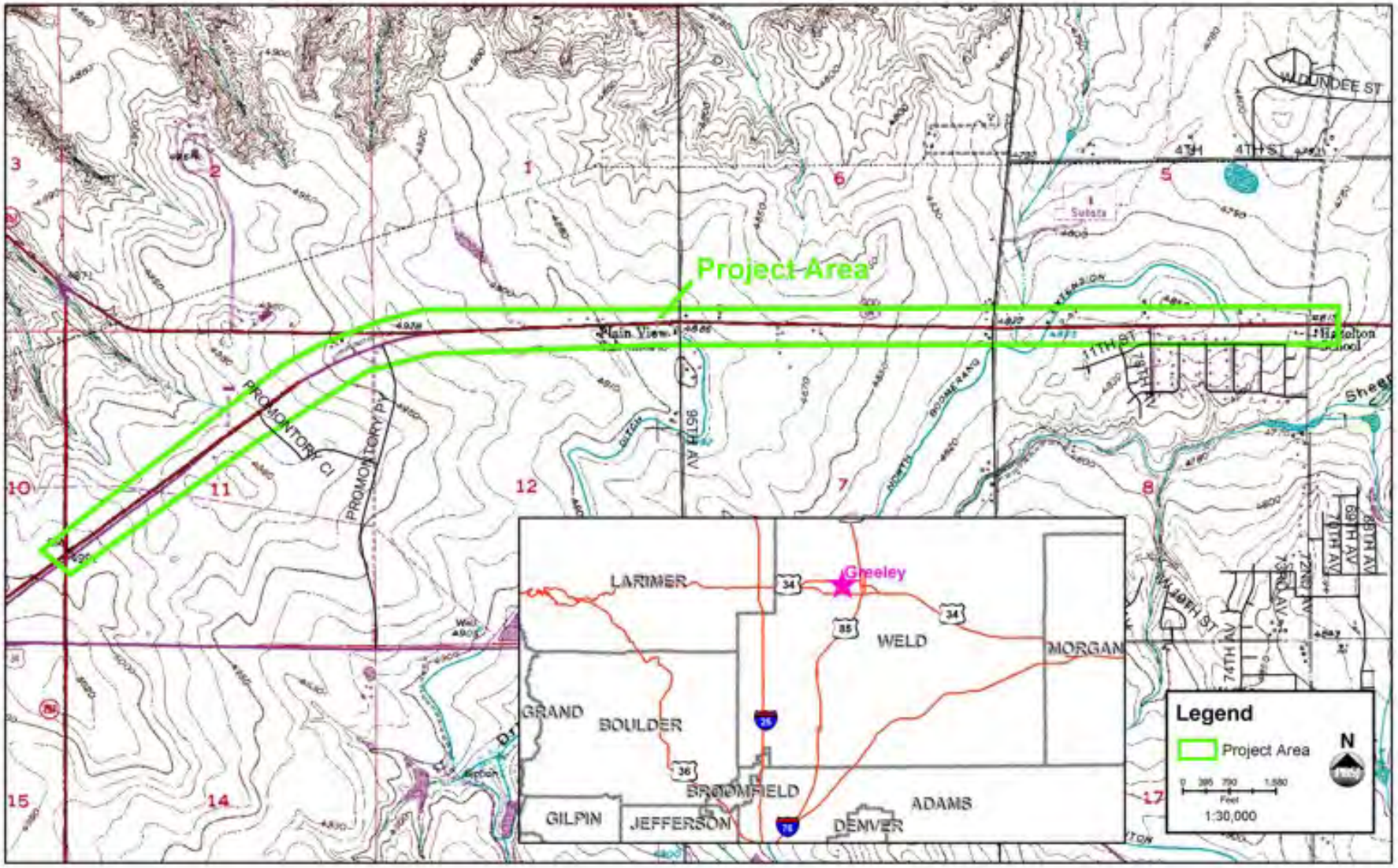
3.0 BACKGROUND

The growth and spread of weeds can alter fire patterns and intensity, resulting in major, often undesirable ecosystem changes. Weeds can affect soil erosion and aquatic habitat in nearby streams and ponds, increasing runoff substantially. Many alien plant species also reduce the quality of habitat for wildlife species and livestock. Weeds create large economic losses for agriculture in both cropland and rangeland situations and can reduce the production of forage for livestock by crowding out palatable species.

Weeds specialize in colonizing highly disturbed ground. Construction activities create ideal opportunities for weed colonization through ground disturbance or the alternation and removal of existing vegetation. Proper control techniques, such as immediate re-seeding or re-planting with native species after the disturbance has ceased, will allow desirable plants to quickly occupy the vacant land.

A single control technique is rarely sufficient to control a particular weed species. The best results in weed control are usually obtained by a combination of different control methods in a coordinated effort, known as ***Integrated Weed Management***. Two or more control actions interact to provide better control than any one of the actions might provide. The additive effects of multiple control actions increase the likelihood that the target weeds species will be successfully managed. The most efficient and effective techniques are provided in this Noxious Weed Control Plan for each weed species surveyed. Techniques include mechanical, chemical, biological, and cultural management recommendations.

Figure 1
Project Location Map



The descriptions of the noxious weeds in this management plan depict both the common and scientific name of the high-priority species, as well as the extent of infestation within the project area.

4.0 REGULATIONS

"Noxious weed" is a legally defined term that refers to a specific plant species that has been designated for mandatory control by branches of local, state or federal government due to the harm, actual or potential, that the species is capable of inflicting upon the resources and values of society.

To be designated as a noxious weed by state or local governments in Colorado, the species must be non-native to the state and meet one or more of these criteria:

(a) Aggressively invades or is detrimental to economic crops or native plant communities;
(b) Is poisonous to livestock;
(c) Is a carrier of detrimental insects, diseases, or parasites; or
(d) The direct or indirect effect of the presence of this plant is detrimental to the environmentally sound management of natural or agricultural ecosystems.

4.1 THE COLORADO NOXIOUS WEED LIST

The state list of plant species that are designated as noxious weeds shall be designated by rule and shall be managed under the provisions of the Colorado Noxious Weed Act (C.R.S. 35-5.5-101). The designated noxious weed list in the State of Colorado is broken down into three categories:

- The **"List A"** species are rare noxious weed species that are subject to eradication wherever detected statewide in order to protect neighboring lands and the state as a whole.
- The **"List B"** noxious weed species are those with discrete statewide distributions that are subject to eradication, containment, or suppression in portions of the state designated by the commissioner in order to stop the continued spread of these species;
- The **"List C"** noxious weed species are those that are widespread and well-established for which control is recommended but not required by the state, although local governing bodies may require management.

The "A", "B", and "C" list of noxious weed species is presented in Table 1.

4.2 WELD COUNTY NOXIOUS WEED LIST

Passage of the 1990 Colorado Noxious Weed Act, (C.R.S. §35-5.5-101, *et seq.)* by the Colorado legislature places all public and private lands in Colorado under the jurisdiction of local governments to manage noxious weeds. The Act directs the Board of County Commissioners to appoint a local advisory board, whose power and duties are threefold:

1. Develop recommended management criteria and integrated weed management plans for managing designated noxious weeds;
2. Declare noxious weeds and any state noxious weeds designated by rule to be subject to integrated management; and
3. Recommend to the Board of County Commissioners that certain landowners be required to submit integrated weed management plans for managing designated noxious weeds on their properties.

4.2.1 Colorado Department of Transportation Statewide Maintenance List

The Colorado Noxious Weed Act notes that, "the spread of noxious weeds can largely be attributed to the movement of seed and plant parts on motor vehicles." Noxious weed seed material can be easily spread by highway construction activities, maintenance activities, and by vehicles traveling along transportation corridors. To respond to this threat, the Colorado Department of Transportation (CDOT) maintains a Noxious Weed List. Table 1 also presents the CDOT designated noxious weed species present in the project area. This list was based on input from individual counties and the Colorado Department of Agriculture.

Table 1
Designated Noxious Weed Species in the State of Colorado
(List "A," "B," and "C," Weld County, and the CDOT Statewide Maintenance List

Common Name	Scientific Name	"A" List	"B" List	"C" List	Weld County	CDOT
African Rue	*Peganum harmala*	X				
Camelthorn	*Alhagie pseudalhagi*	X				
Common Crupina	*Crupina vulgaris*	X				
Cypress Spurge	*Euphorbia cyparissias*	X				
Dyer's woad	*Isatis tinctoria*	X				
Giant salvinia	*Salvinia molesta*	X				
Hydrilla	*Hydrilla verticillata*	X				
Meadow Knapweed	*Centaurea pratensis*	X				
Mediterranean Sage	*Salvia aethiopis*	X				
Medusahead	*Taeniatherum caput-medusae*	X				
Myrtle Spurge	*Euphorbia myrsinites*	X				
Purple Loosestrife	*Lythrum salicaria*	X				X
Rush Skeletonweed	*Chondrilla juncea*	X				
Sericea Lespedeza	*Lespedeza cuneata*	X				
Squarrose Knapweed	*Centaurea virgata*	X				
Tansy Ragwort	*Senecio jacobaea*	X				
Yellow Starthistle	*Centaurea solstitialis*	X				X
Absinth Wormwood	*Artemisia absinthium*		X			
Black Henbane	*Hyoscyamus niger*		X			X
Bouncingbet	*Saponaria officinalis*		X			
Bull Thistle	*Cirsium vulgare*		X			X
Canada Thistle	*Cirsium arvense*		X		X	X

Common Name	Scientific Name	"A" List	"B" List	"C" List	Weld County	CDOT
Chinese Clematis	*Clematis orientalis*		X			X
Common Tansy	*Tanacetum vulgare*		X			
Common Teasel	*Dipsacus fullonum*		X			
Corn Chamomile	*Anthemis arvensis*		X			
Cutleaf teasel	*Dipsacus laciniatus*		X			
Dalmatian Toadflax, broad-leaved	*Linaria dalmatica*		X		X	X
Dalmatian Toadflax, narrow leaved	*Linaria genistifolia*		X			
Dame's Rocket	*Hesperis matronalis*		X			X
Diffuse Knapweed	*Centaurea diffusa*		X		X	X
Eurasian Watermilfoil	*Myriophyllum spicatum*		X			
Hoary Cress	*Cardaria draba*		X			X
Houndstongue	*Cynoglossum officinale*		X			X
Leafy Spurge	*Euphorbia esula*		X		X	X
Mayweed Chamomile	*Anthemis cotula*		X			
Moth Mullein	*Verbascum blattaria*		X			
Musk Thistle	*Carduus nutans*		X		X	X
Orange Hawkweed	*Hieracium aurantiacum*		X			X
Oxeye Daisy	*Chrysanthemum leucanthemum*		X			X
Perennial Pepperweed	*Lepidium latifolium*		X			X
Plumeless Thistle	*Carduus acanthoides*		X			X
Quackgrass	*Elytrigia repens*		X			
Redstem Filaree	*Erodium cicutarium*		X			
Russian Knapweed	*Acroptilon repens*		X		X	X
Russian-Olive	*Elaeagnus angustifolia*		X			X
Salt Cedar (Tamarisk)	*Tamarix spp.*		X		X	X
Scentless Chamomile	*Matricaria perforata*		X			
Scotch Thistle	*Onopordum acanthium*		X		X	X
Scotch Thistle	*Onopordum tauricum*		X		X	
Spotted Knapweed	*Centaurea maculosa*		X		X	X
Spurred Anoda	*Anoda cristata*		X			
Sulfur Cinquefoil	*Potentilla recta*		X			
Venice Mallow	*Hibiscus trionum*		X			
Wild Caraway	*Carum carvi*		X			
Yellow Nutsedge	*Cyperus esculentus*		X			
Yellow Toadflax	*Linaria vulgaris*		X			X
Chicory	*Cichorium intybus*			X		
Common Burdock	*Arctium minus*			X		
Common Mullein	*Cerbascum thapsus*			X		
Downy Brome/ Cheatgrass	*Bromus tectorum*			X		X
Common St. Johnswort	*Hypericum perforatum*			X		
Field Bindweed	*Convolvulus arvensis*			X		X
Halogeton	*Halogeton glomeratus*			X		
Johnsongrass	*Sorghum halepense*			X		
Jointed Goatgrass	*Aegilops cylindrica*			X		X
Perennial Sowthistle	*Sonchus arvensis*			X		
Poison Hemlock	*Conium maculatum*			X		
Puncturevine	*Tribulus terrestris*			X		
Velvetleaf	*Abutilon theophrasti*			X		

Common Name	Scientific Name	"A" List	"B" List	"C" List	Weld County	CDOT
Wild Proso Millet	*Panicum miliaceum*			X		

X designates that a noxious weed species has been listed in the State, County, or by CDOT (many species occur on multiple lists).

5.0 NOXIOUS WEED MANAGEMENT CRITERIA

5.1 EXISTING VEGETATION AND HABITAT

A large portion of habitat within the U.S. Business 34 project area has been disturbed by human activity due to the use of the area for agricultural, residential, and commercial purposes. As a result, existing land cover varies significantly from historic conditions. There is no riparian habitat or streams (intermittent or perennial) within the project area. Habitat in the project area is primarily composed of agricultural lands with small patches of mid or mixed grass prairie.

5.1.1 Mixed Grasses and Vegetation

Major grass species within the project area are composed of native and introduced grasses such as blue grama *(bouteloua gracilis),* side-oats grama *(Bouteloua curtipendula),* buffalo grass *(Buchloe dactyloides),* switch grass *(Panicum virgatum L.),* barnyard grass *(Echinochloa crusgalli),* green foxtail (*Setaria viridis),* yellow foxtail (*Setaria pumila),* foxtail barley *(Hordeum jubatum),* quackgrass *(Elytrigia repens),* smooth brome *(Bromopsis inermis),* western wheatgrass (*Agropyron smithii),* and crested wheat-grass *(Agropyron cristatum).*

5.2 INVENTORY OF WEED SPECIES

A formal field assessment to inventory noxious weed species within the project area was conducted by PBS&J on October 5, 2004. The existing vegetation in the project area was surveyed for the state listed noxious weeds for Colorado, the listed noxious weeds for Weld County, and the noxious weeds that are listed on the CDOT Statewide Maintenance List. Weeds identified in the field assessments were added to a Geographic Information Systems (GIS) database to provide project area noxious weed mapping. Several noxious weed sites were too small to accurately represent on the scale of mapping for the project area. Weed distributions in the project area are illustrated on Figure 2 and 3.

Figure 2
Noxious Weed Inventory

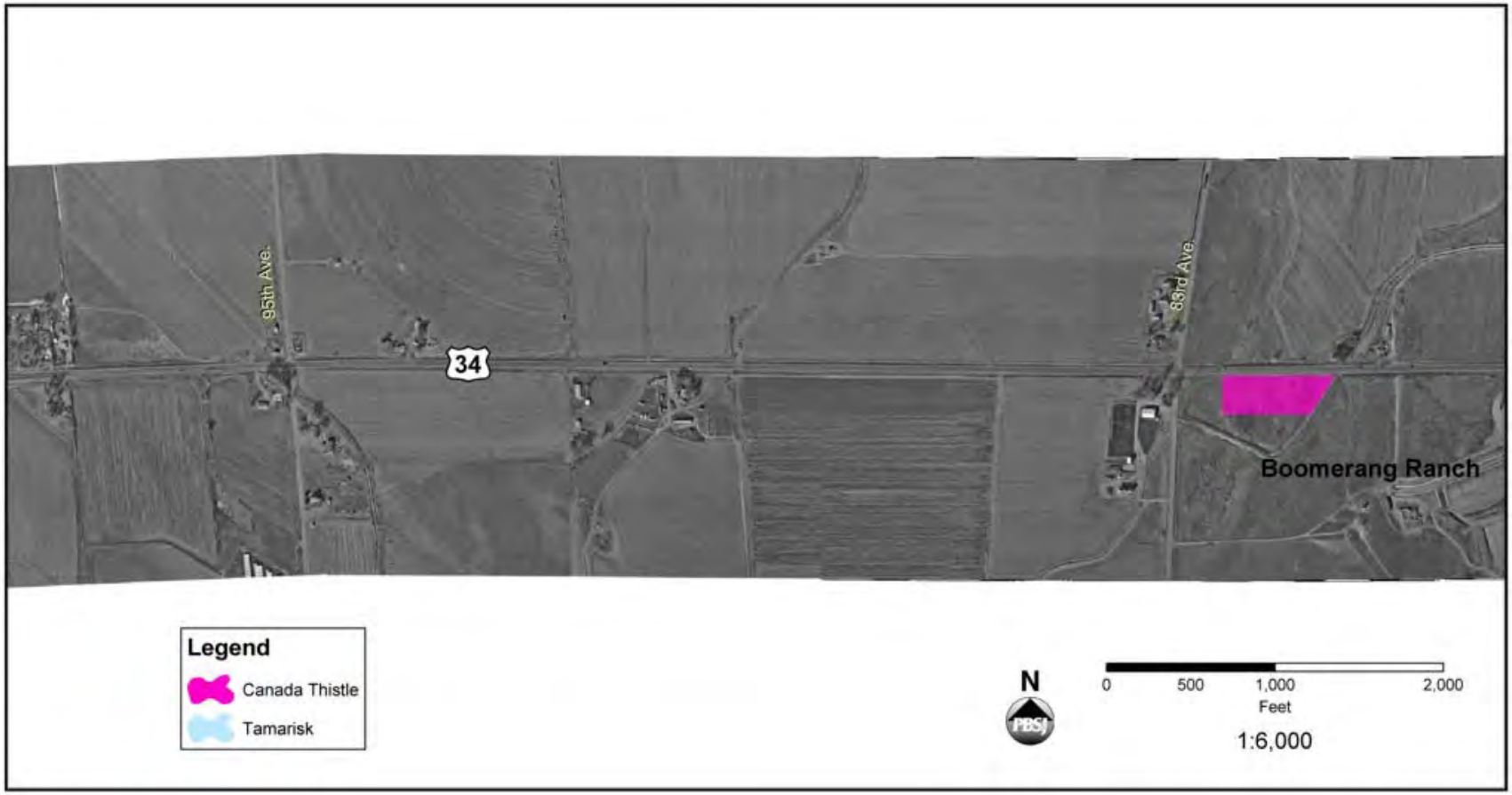
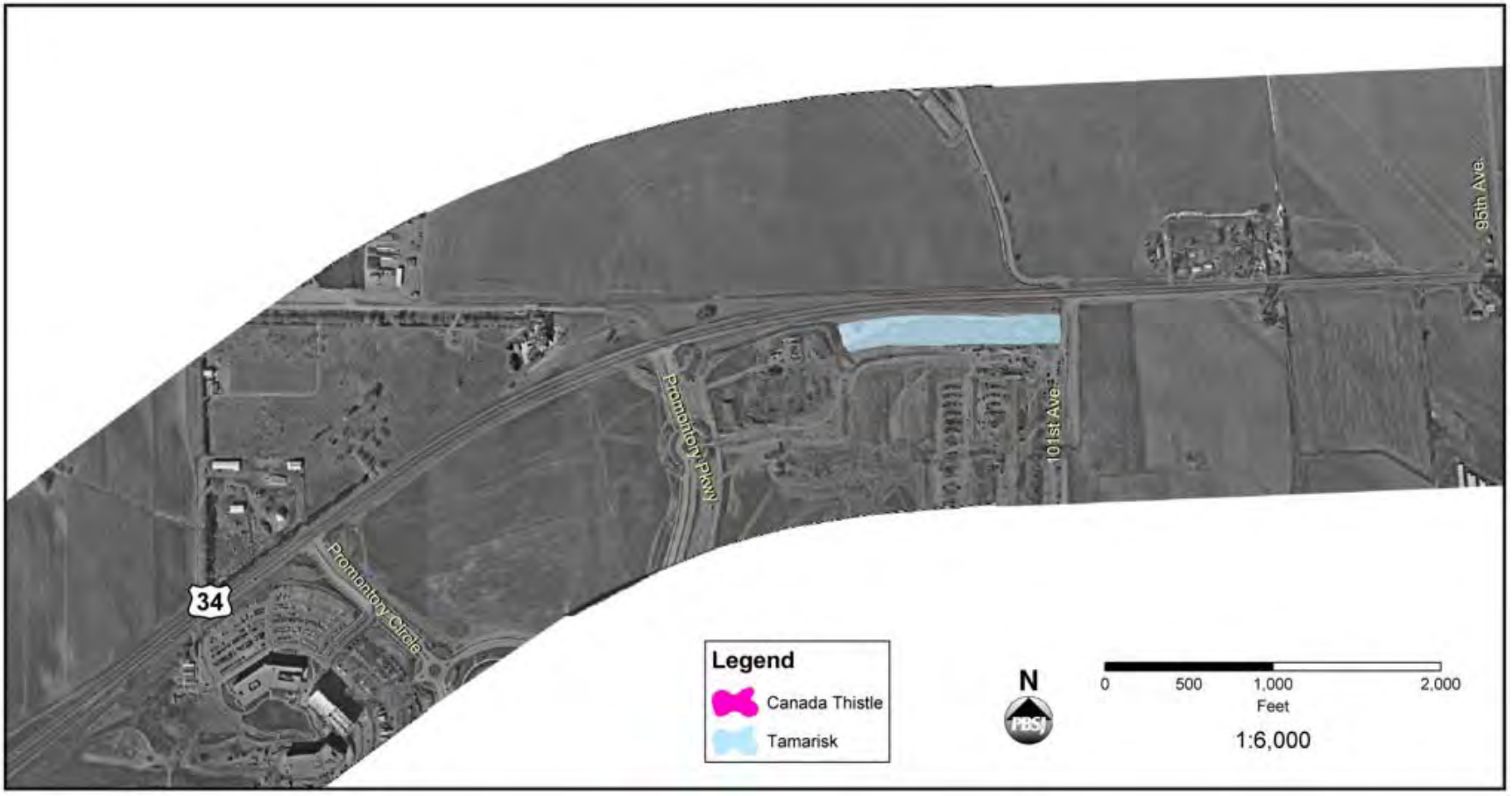


Figure 3
Noxious Weed Inventory



5.3 RESULTS

Five species of noxious weeds, Canada thistle *(Cirsium arvense),* tamarisk *(Tamarix spp.),* field bindweed *(Convolvulus arvensis)*quackgrass *(Elytrigia repens),* and puncturevine (*Tribulus terrestris)* were found within the project area. Canada thistle and tamarisk are listed on the "B" list of noxious weeds for Colorado and field bindweed, quackgrass, and puncturevine are listed on the "C" list. Patches of these weeds were scattered along the U.S. Business 34 ROW, located within a large detention pond, and adjacent to a wetland. Other non-native weedy species within the project area include: kochia *(Kochia scoparia)* and rough pigweed (*Amaranthus retroflexus).*

6.0 MAPPING

The project area map in Figure 2 and 3 shows the identity and type of noxious weed infestation in the project area.

The prime non-native species requiring management actions are Canada thistle, tamarisk/salt cedar, and field bindweed. Patches of field bindweed were too small to accurately represent on the scale of mapping for the project area.

7.0 INTEGRATED WEED MANAGEMENT

Successful weed management combines the most effective means of control for a noxious weed species and typically utilizes two or more methods of control whether mechanical, cultural, chemical, or biological (Beck, 2001). Regardless of the degree of infestation, effective control depends on a sound monitoring program, consistently over multiple growing seasons. A summary of integrated weed management practices for each of the major species in the project area follows.

The extent of each species in the project area and the method of control are provided for each weed species below.

7.1 FIELD BINDWEED *(Convolvulus arvensis)*

DESCRIPTION: Field bindweed is a long-taprooted herbaceous forb with prostrate twining stems that typically grows in dense mats in fields or climbing along fencelines (Whitson et al., 1996; CNAP, 2000). While it is favored by some wildlife species, it is considered one of the world's worst weeds and difficult to control due to its lengthy taproots (FEIS, 1996).

PHENOLOGY: Flowers occur from June to September and occasionally to the first fall frost. Seeds mature within two weeks after pollination during hot summer days. Germination can occur in the fall or spring, over a wide range of temperatures (FEIS, 1996). Field bindweed can reproduce both by seed and vegetatively.

CONTROL: Successfully controlled using a combination of biological (fungal pathogens and insects) and herbicidal methods.

Chemical: Applications of Clarity, Tordon 22K, Roundup Pro, Paramount, and 2, 4-D. Herbicides should be applied during early flowering and when soil moisture is low. Herbicide can also be used in the fall just before a hard freeze. Repeated applications are recommended (CNAP, 2000). Herbicides are to be sprayed at the rate recommended by the manufacturer's label.

Mechanical: Hand-pull at 1st appearance.

Biological/Cultural: The field bindweed mite *(Aceria malherbae)* is a microscopic mite from southern Europe that is used in the biological control of field bindweed. This mite can aid in the suppression or control of field bindweed. Cultural control techniques typically include planting competing grasses.

TIMING OF ACTION: Early cool season grass planting will out-compete bindweed at early stage of growth. Mites are typically applied in the summer. Only herbicides rated to be used in water will be used where wetlands, waters of the U.S., and groundwater table are present.

EXTENT OF INFESTATION: >10%
Field bindweed is located primarily along the ROW and in empty fields adjacent to U.S. Business 34.

WEED LIST: Colorado List C; Weld County; CDOT Statewide Maintenance List

7.2 CANADA THISTLE (*Cirsium arvense*)

Canada thistle is one of the most feared noxious weeds in the United States as it can infest many land types, from roadsides, ditchbanks, riparian zones, pastures, irrigated crop land, to the most productive dry cropland. Canada thistle is the most widespread noxious weed in Weld County.

DESCRIPTION: Canada thistle is a deep-rooted perennial that spreads by seeds and aggressive, creeping, horizontal root stocks (rhizomes). The seeds have a tuft of hairs attached to their tips that greatly assists in dispersal by wind. Stems are 1 to 4 feet tall, erect, rigid, and only slightly hairy. Leaves are alternate on the stems, oblong or lance-shaped, and deeply cut into spiny-tipped, irregular lobes. They are a bright green and only slightly hairy on the undersurface. Flowers are small, bristly, (but bracts are spineless) clusters varying in color from light lavender to a bright rose-purple. The heads are about one-half inch across, tubular-shaped, and arranged in a flat-top inflorescence.

PHENOLOGY: Canada thistle develops from seed or vegetative buds in its root systems. Horizontal rots may extend 15 feet or more and vertical roots may grow 6 to 15 feet deep. Canada thistle emerges from its root system in middle to late spring (late April through May) and forms rosettes.

CONTROL: The key to successful control is the development of a sound management plan. Canada thistle is best controlled by a combination of monthly mowing and herbicides (clopyralid, 2,4-D, or a combination of these). Herbicides are best applied in the late spring as plants are entering the bud stage or in the fall when roots are actively growing. Herbicides are

ineffective under dry soil conditions. Treatment should be repeated for two or more years (CNAP, 2000).

Chemical: The following herbicides have all shown to provide good control: 2,4-D, Tordon, Curtail, Clarity, Tordon 22K, and Banvel. Areas can also be spot treated with glyphosate in mid July during active growing or bud stage. Herbicides are to be sprayed at the rate recommended by the manufacturer's label. In addition, only herbicides rated to be used in water shall be used where wetlands, waters of the U.S, and groundwater table are present.

Mechanical: Hand-pull at 1st appearance.

Biological/Cultural: Tortoise beetle, stem weevil, and stem gallfly (*Cassida rubiginosa, Coutorhynucus litura,* and *Urophora cardui*) larvae are effective insects that have been used for biological control against Canada thistle. In addition, planting competing grasses or grazing goats can also be utilized as biological/cultural control.

TIMING OF ACTION: Apply herbicide from rosette to bud stage (fallow up with a fall application if needed); only herbicides rated to be used in water will be used where wetlands, waters of the U.S., and groundwater table are present.

EXTENT OF INFESTATION: >5% Canada thistle is primarily located adjacent to a natural wetland/drainage area near U.S. Business 34 and 81st Ave (the infestation in this area is relatively heavy).

WEED LIST: List B; Weld County; CDOT Statewide Maintenance List.

7.3 TAMARISK/SALT CEDAR (*Tamarix spp.)*

Tamarisk is a native of Eurasia and Africa. It is extremely adaptable and has very aggressive survival techniques.

DESCRIPTION: Tamarisk is a deciduous shrub or small tree that grows 5 to 20 feet tall. The bark on saplings is reddish-brown. Leaves are small and scale-like and the flowers are pink to white and 5-petalled. Tamarisk establishes in disturbed and undisturbed streams, waterways, bottomlands, banks, and drainage washes of natural or artificial waterbodies, moist rangelands, pastures, and other areas where seedlings can be exposed to extended periods of saturated soil for establishment.

PHENOLOGY: Tamarisk reproduces by seeds as well as vegetatively. Tamarisk sprouts from the root crown and rhizomes, and adventitious roots sprout from submerged or buried stems. This allows it to produce new plants vegetatively following floods. Tamarisk can grow on highly saline soils containing up to 15,000 ppm soluble salt and can tolerate alkali conditions. Every year a mature tamarisk produces up to 500,000 seeds, which are disbursed by wind and water. Plants grow rapidly, maturing from a seedling in just one year.

CONTROL: Appropriate control measures should be based on the size of the area and other environmental or cultural considerations. Areas should be reseeded with desirable vegetation to prevent or delay the reinvasion of tamarisk.

Chemical: Two herbicides are effective for killing tamarisk: imazapyr and triclopyr (CNAP, 2000). Cutting the stump and applying herbicide (known as the cut stump method) is most often employed where native woody plants are present. Young sprouts can be sprayed using a backpack or hand sprayer. All herbicides are to be sprayed at the rate recommended by the manufacturer's label.

Mechanical: Mechanical methods (hand removal, ripping, or cutting) is usually not enough to prevent sprouts from emerging from underground roots. Sprouts usually need to be treated with a herbicide. Individual plants should be cut as close to the ground as possible. Herbicides should be applied immediately to the cut.

Biological: Research is still ongoing is find a suitable biological control for tamarisk.

TIMING OF ACTION: The "cut stump method" appears to be the most effective in the fall when plants are translocating materials to their roots.

EXTENT OF INFESTATION: >5% Tamarisk is primarily located in a large detention pond on the west end of the project.

WEED LIST: Colorado List B, Weld County, and CDOT Statewide Maintenance List.

8.0 RECOMMENDATIONS

The degree of infestation by noxious weeds in the project area is relatively light and manageable through integrated weed management, which includes prevention of additional infestations during construction. Prevention measures will include cleaning equipment prior to entering the construction site to prevent spread by wind, water, or accidental transport on construction vehicles.

Strict topsoil management in the project area is important to prevent further infestation. It is recommended that no topsoil will be imported to the project site.

Revegetation of disturbed work areas will include replacing exotic trees with native cottonwoods, or species appropriate to shortgrass prairie and with native herbaceous grass seed mixes.

Noxious weed management and monitoring in the project area coincidental with land clearing and impacts associated with roadway construction will greatly enhance the existing habitat conditions associated with the area. Reseeding efforts (with native species) will be phased throughout construction. Specific mitigation measures and commitments for the project include:

- Equipment will be cleaned prior to entering the construction site to prevent weed spread by wind, water, or accidental transport on construction vehicles

- Strict topsoil management in the project area is important to prevent further infestation. No topsoil will be imported to the project site
- Topsoil will be removed from site if it is heavily infested with noxious weeds
- In accordance with the Colorado Weed-Forage Certification Act[1], mulches or erosion bales utilized for erosion control purposes will be certified weed-free[1]
- All seed mixes, soil, and nursery material used for reclamation will be free of noxious weed seeds, roots, and rhizomes.
- The project area will be surveyed for noxious weeds during design and throughout the construction phase to identify and treat weeds
- Reseeding efforts will consist of native grasses and forbs. Seeding should be phased throughout construction
- No fertilizer will be used on site
- Herbicides shall be applied by use of wicks or sponges to avoid off-target injury
- Broadcast herbicide spraying will only be approved through written consent of the Engineer
- All herbicides will be applied in accordance to label instructions. In addition, only herbicides rated to be used in water will be used where wetlands, waters of the U.S. and groundwater table are present

[1] In 1993, the Colorado Legislature passed the Weed Free Forage Crop Certification Act (C.R.S. §35-27.5-103, 1993 Supp.). This law provides a mechanism to prevent weed seed dissemination in hay, forage, and mulch. "Weed free" is defined as to be free from propagative plant parts and free from weed seed from plants set forth on state or regional lists. "Weed free certification" is defined as crop inspected and certified as free of noxious weeds by the commissioner pursuant to this article.

9.0 REFERENCES

CNAP. 1998. Native Plant Revegetation Guide for Colorado. *Caring for the Land Series. Vol iii.* Colorado Natural Areas Program, Colorado State Parks, Colorado Department of Natural Resources. Denver, Colorado. 269 pages.

CNAP. 2000. *Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values.* Colorado Natural Areas Program, Colorado State Parks, Colorado Department of Natural Resources; and Division of Plant Industry, Colorado Department of Agriculture. Denver, Colorado. 349 pages.

Colorado Weed Management Association, 1999 and 2000. http://www.cwma.org/kochia.html

DPI. 1998. Colorado Department of Agriculture. Division of Plant Industry. Rules and Regulations Pertaining to the Weed Free Forage Crop Certification Act Effective October 30, 1998. http://www.ag.state.co.us/DPI/rules/weedffree.html#5.00. Accessed April 9, 2002.

DPI. 2002. Colorado Noxious Weed Act, Title 35, Article 5.5, Colorado Department of Agriculture Division of Plant Industry Online Noxious Weed Management Program. http://www.ag.state.co.us/DPI/rules/weedlaw.PDF. Accessed April 9, 2002.

FEIS. 1996. Fire Effects Information System. Prescribed Fire and Fire Effects Research Unit, Rocky Mountain Research Station. U.S. Forest Service. http://www.fs.fed.us/database/feis/plants/forb/kocsco/value_and_use.html. Accessed April 9, 2002.

FHWA 1999. Federal Highway Administration Guidance on Invasive Species. August 10, 1999. http://www.fhwa.dot.gov/environment/inv_guid.htm Accessed April 9, 2002.

IDS. 2002. Invaders Database System. USDA Agricultural Research Service. Noxious Weeds in the US and Canada. http://invader.dbs.umt.edu/Noxious_Weeds/state. Accessed April 14, 2002.

Jeffco. 2002. Jefferson County, Colorado Weed and Pest. Noxious Weeds Website. http://206.247.49.21/ext/dpt/comm_res/openspac/weed/nox/wp_nw.htm Accessed April 9, 2002.

K.G. Beck. 2001. Natural Resources Online Fact Sheets. No. 3.105. Range and Pasture Weed Management. Colorado State University Cooperative Extension. http://www.ext.colostate.edu/pubs/natres/03105.htm Accessed April 9, 2002.

USDA Symposium, 1994. www.team.ars.usda.gov/symposium/1994/one.html Accessed September 12, 2004.

Whitson, T.D. (Ed.) et al. 1996. Weeds of the West. Western Society of Weed Science in cooperation with Cooperative Extension Services, University of Wyoming. Laramie, Wyoming. 630 pp.

Weiland Sugnet, Inc., June 2002. Noxious Weed Control Plan I-70/SH85 Interchange, Jefferson County Colorado. 22 pp.

Appendix D

Noise Abatement Determination

COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

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

Project #	Project code (SA#)	STIP #	Project Location: West of 77th South of US 34

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. REASONABLENESS:

	EXTREMELY REASONABLE	REASONABLE	MARGINALLY REASONABLE	UNREASONABLE
1. Cost Benefit Index (per receiver per dBA)	☐ Less than $3000	☐ $3000-$3750	☐ $3750-$4000	☑ More than $4000
2. Average Build Noise Level	☐ 70 dBA or More	☑ 66 - 70 dBA	☐ 63 - 66 dBA	☐ Less than 63 dBA
3. Impacted persons' desires	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
4. Development Type (Category B*)	☑ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
5. Development Existence (15 years or more)	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
6. Build Noise Level vs. Existing Noise Level	☐ Greater than 10 dBA	☐ 5 - 10 dBA	☑ 0 - 5 dBA	☐ Noise Level Decrease

***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. a. Does this project have noise impacts to public or non-profit buildings? ☐ YES ☑ NO
   b. If yes, is it reasonable and feasible to provide insulation for these buildings? ☐ YES ☐ NO
3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? ☐ YES ☑ NO
   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

Receivers will experience a 3.2 dBA increase over existing. However, the cost per receiver per dBA is $6,981. Well above the $4000 level for unreasonable

Completed by:	Date:
[signature]	1/10/05

COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

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

Project #	Project code (SA#)	STIP #	Project Location: Between 101st & 95th

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. REASONABLENESS:

	EXTREMELY REASONABLE	REASONABLE	MARGINALLY REASONABLE	UNREASONABLE
1. Cost Benefit Index (per receiver per dBA)	☐ Less than $3000	☐ $3000-$3750	☐ $3750-$4000	☑ More than $4000
2. Average Build Noise Level	☐ 70 dBA or More	☑ 66 - 70 dBA	☐ 63 - 66 dBA	☐ Less than 63 dBA
3. Impacted persons' desires	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
4. Development Type (Category B*)	☑ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
5. Development Existence (15 years or more)	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
6. Build Noise Level vs. Existing Noise Level	☐ Greater than 10 dBA	☐ 5 - 10 dBA	☑ 0 - 5 dBA (1 rec.)	☑ Noise Level Decrease (3 rec.)

***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. a. Does this project have noise impacts to public or non-profit buildings? ☐ YES ☑ NO
   b. If yes, is it reasonable and feasible to provide insulation for these buildings? ☐ YES ☐ NO
3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? ☐ YES ☑ NO
   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

Three of the four receivers will have a decrease in noise levels for the build alternative over existing. The one receiver with an increase went up 1.1 dBA. Cost per receiver per dBA equals $7,597. Well over the $4,000 range for unreasonable.

Completed by: [signature] Date: 1/10/05

CDOT Form #1209 12/02

COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

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

Project #	Project code (SA#)	STIP #	Project Location: 72nd to 75th

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. REASONABLENESS:

	EXTREMELY REASONABLE	REASONABLE	MARGINALLY REASONABLE	UNREASONABLE
1. Cost Benefit Index (per receiver per dBA)	☐ Less than $3000	☐ $3000-$3750	☐ $3750-$4000	☑ More than $4000
2. Average Build Noise Level	☐ 70 dBA or More	☐ 66 - 70 dBA	☑ 63 - 66 dBA	☐ Less than 63 dBA
3. Impacted persons' desires	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
4. Development Type (Category B*)	☑ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
5. Development Existence (15 years or more)	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
6. Build Noise Level vs. Existing Noise Level	☐ Greater than 10 dBA	☐ 5 - 10 dBA	☑ 0 - 5 dBA	☐ Noise Level Decrease

***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. a. Does this project have noise impacts to public or non-profit buildings? ☐ YES ☑ NO
   b. If yes, is it reasonable and feasible to provide insulation for these buildings? ☐ YES ☐ NO
3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? ☐ YES ☑ NO
   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

These large lot receivers will experience a 2.5 dBA increase over existing with the average dBA build level of

Completed by: [signature] Date: 1/10/05

CDOT Form #1209 12/02

COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

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

Project #	Project code (SA#)	STIP #	Project Location: R15

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. REASONABLENESS:

	EXTREMELY REASONABLE	REASONABLE	MARGINALLY REASONABLE	UNREASONABLE
1. Cost Benefit Index (per receiver per dBA)	☐ Less than $3000	☐ $3000-$3750	☐ $3750-$4000	☑ More than $4000
2. Average Build Noise Level	☐ 70 dBA or More	☑ 66 - 70 dBA	☐ 63 - 66 dBA	☐ Less than 63 dBA
3. Impacted persons' desires	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
4. Development Type (Category B*)	☑ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
5. Development Existence (15 years or more)	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
6. Build Noise Level vs. Existing Noise Level	☐ Greater than 10 dBA	☑ 5 - 10 dBA	☐ 0 - 5 dBA	☐ Noise Level Decrease

***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. a. Does this project have noise impacts to public or non-profit buildings? ☐ YES ☑ NO
   b. If yes, is it reasonable and feasible to provide insulation for these buildings? ☐ YES ☐ NO
3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? ☐ YES ☑ NO
   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

Cost per receiver per dBA is $ 25,200. This is a single isolated residence

Completed by: [signature] Date: 1/10/05

CDOT Form #1209 12/02

COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

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

Project #	Project code (SA#)	STIP #	Project Location: R16

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. REASONABLENESS:

	EXTREMELY REASONABLE	REASONABLE	MARGINALLY REASONABLE	UNREASONABLE
1. Cost Benefit Index (per receiver per dBA)	☐ Less than $3000	☐ $3000-$3750	☐ $3750-$4000	☑ More than $4000
2. Average Build Noise Level	☐ 70 dBA or More	☑ 66 - 70 dBA	☐ 63 - 66 dBA	☐ Less than 63 dBA
3. Impacted persons' desires	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
4. Development Type (Category B*)	☑ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
5. Development Existence (15 years or more)	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
6. Build Noise Level vs. Existing Noise Level	☐ Greater than 10 dBA	☐ 5 - 10 dBA	☑ 0 - 5 dBA	☐ Noise Level Decrease

***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. a. Does this project have noise impacts to public or non-profit buildings? ☐ YES ☑ NO
   b. If yes, is it reasonable and feasible to provide insulation for these buildings? ☐ YES ☐ NO
3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? ☐ YES ☑ NO
   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

Cost per receiver per dBA is $11,186. This is a single isolated residence.

Completed by: [signature] Date: 1/10/05

COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

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

Project #	Project code (SA#)	STIP #	Project Location: R17

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. REASONABLENESS:

	EXTREMELY REASONABLE	REASONABLE	MARGINALLY REASONABLE	UNREASONABLE
1. Cost Benefit Index (per receiver per dBA)	☐ Less than $3000	☐ $3000-$3750	☐ $3750-$4000	☑ More than $4000
2. Average Build Noise Level	☐ 70 dBA or More	☐ 66 - 70 dBA	☑ 63 - 66 dBA	☐ Less than 63 dBA
3. Impacted persons' desires	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
4. Development Type (Category B*)	☑ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
5. Development Existence (15 years or more)	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
6. Build Noise Level vs. Existing Noise Level	☐ Greater than 10 dBA	☐ 5 - 10 dBA	☑ 0 - 5 dBA	☐ Noise Level Decrease

***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. a. Does this project have noise impacts to public or non-profit buildings? ☐ YES ☑ NO
   b. If yes, is it reasonable and feasible to provide insulation for these buildings? ☐ YES ☐ NO
3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? ☐ YES ☑ NO
   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

Single isolated residence with a cost per receiver per dBA of $28,411.

Completed by: [signature] Date: 11/10/05

CDOT Form #1209 12/02

COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

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

Project #	Project code (SA#)	STIP #	Project Location: RTA

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. REASONABLENESS:

	EXTREMELY REASONABLE	REASONABLE	MARGINALLY REASONABLE	UNREASONABLE
1. Cost Benefit Index (per receiver per dBA)	☐ Less than $3000	☐ $3000-$3750	☐ $3750-$4000	☑ More than $4000
2. Average Build Noise Level	☐ 70 dBA or More	☑ 66 - 70 dBA	☐ 63 - 66 dBA	☐ Less than 63 dBA
3. Impacted persons' desires	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
4. Development Type (Category B*)	☑ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
5. Development Existence (15 years or more)	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
6. Build Noise Level vs. Existing Noise Level	☐ Greater than 10 dBA	☐ 5 - 10 dBA	☑ 0 - 5 dBA	☐ Noise Level Decrease

***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. a. Does this project have noise impacts to public or non-profit buildings? ☐ YES ☑ NO
   b. If yes, is it reasonable and feasible to provide insulation for these buildings? ☐ YES ☐ NO
3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? ☐ YES ☑ NO
   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

Single isolated residence with a cost per receiver per dBA of $55,440

Completed by: [signature] Date: 1/10/05

CDOT Form #1209 12/02

COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

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

Project #	Project code (SA#)	STIP #	Project Location: R1B

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. REASONABLENESS:

	EXTREMELY REASONABLE	REASONABLE	MARGINALLY REASONABLE	UNREASONABLE
1. Cost Benefit Index (per receiver per dBA)	☐ Less than $3000	☐ $3000-$3750	☐ $3750-$4000	☑ More than $4000
2. Average Build Noise Level	☐ 70 dBA or More	☑ 66 - 70 dBA	☐ 63 - 66 dBA	☐ Less than 63 dBA
3. Impacted persons' desires	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
4. Development Type (Category B*)	☑ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
5. Development Existence (15 years or more)	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
6. Build Noise Level vs. Existing Noise Level	☐ Greater than 10 dBA	☑ 5 - 10 dBA	☐ 0 - 5 dBA	☐ Noise Level Decrease

***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. a. Does this project have noise impacts to public or non-profit buildings? ☐ YES ☑ NO
   b. If yes, is it reasonable and feasible to provide insulation for these buildings? ☐ YES ☐ NO
3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? ☐ YES ☑ NO
   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

Single isolated residence with a cost per receiver per dBA of $5,192.

Completed by: [signature] Date: 1/10/05

CDOT Form #1209 12/02

COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

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

Project #	Project code (SA#)	STIP #	Project Location: R19

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. REASONABLENESS:

	EXTREMELY REASONABLE	REASONABLE	MARGINALLY REASONABLE	UNREASONABLE
1. Cost Benefit Index (per receiver per dBA)	☐ Less than $3000	☐ $3000-$3750	☐ $3750-$4000	☑ More than $4000
2. Average Build Noise Level	☐ 70 dBA or More	☐ 66 - 70 dBA	☑ 63 - 66 dBA	☐ Less than 63 dBA
3. Impacted persons' desires	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
4. Development Type (Category B*)	☑ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
5. Development Existence (15 years or more)	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
6. Build Noise Level vs. Existing Noise Level	☐ Greater than 10 dBA	☐ 5 - 10 dBA	☑ 0 - 5 dBA	☐ Noise Level Decrease

***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. a. Does this project have noise impacts to public or non-profit buildings? ☐ YES ☑ NO
   b. If yes, is it reasonable and feasible to provide insulation for these buildings? ☐ YES ☐ NO
3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? ☐ YES ☑ NO
   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

Single isolated residence with a cost per receiver per dBA of #22,188.

Completed by: [signature]

Date: 1/10/05

CDOT Form #1209 12/02

COLORADO DEPARTMENT OF TRANSPORTATION
NOISE ABATEMENT DETERMINATION

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

Project #	Project code (SA#)	STIP #	Project Location: 223

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. REASONABLENESS:

	EXTREMELY REASONABLE	REASONABLE	MARGINALLY REASONABLE	UNREASONABLE
1. Cost Benefit Index (per receiver per dBA)	☐ Less than $3000	☐ $3000-$3750	☐ $3750-$4000	☑ More than $4000
2. Average Build Noise Level	☐ 70 dBA or More	☑ 66 - 70 dBA	☐ 63 - 66 dBA	☐ Less than 63 dBA
3. Impacted persons' desires	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
4. Development Type (Category B*)	☑ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
5. Development Existence (15 years or more)	☐ More than 75%	☐ 50% - 75%	☐ 25% - 50%	☐ Less than 25%
6. Build Noise Level vs. Existing Noise Level	☐ Greater than 10 dBA	☐ 5 - 10 dBA	☑ 0 - 5 dBA	☐ Noise Level Decrease

***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. a. Does this project have noise impacts to public or non-profit buildings? ☐ YES ☑ NO
   b. If yes, is it reasonable and feasible to provide insulation for these buildings? ☐ YES ☐ NO
3. a. Is private residential property affected by a 30 dB(A) or more noise level increase? ☐ YES ☑ NO
   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

Single isolated residence with a cost per receiver per dBA of $ 13,200.

Completed by: [signature] Date: 1/10/05

CDOT Form #1209 12/02

Appendix E

Public Involvement

US 34 BUSINESS FROM SH 257 EAST TO 71ST AVENUE
ENVIRONMENTAL STUDY

Public Workshop Number 1 | Colorado Department of Transportation | October 1, 2002

FACT SHEET

PROJECT DESCRIPTION

The Colorado Department of Transportation (CDOT) is proposing the widening of U.S. 34 to four lanes from State Highway (SH) 257 to 71st Street. Several alternatives are being presented today at the workshop.

PURPOSE OF PUBLIC WORKSHOP

The purpose of this Public Workshop is to receive public input on the widening of U.S. 34 Business from SH 257 to 71st Street. Your participation and comments are appreciated and will assist us in evaluating the alternatives. The workshop will be informal where the public may speak with CDOT representatives, review the presentation displays that are on hand and make comments.

OPPORTUNITIES TO COMMENT

Thank you for your interest and participation. Please identify any significant issues that you believe should be analyzed during the environmental study process. In a few months CDOT will schedule a second public workshop that will be announced in the local newspaper.

Representatives from CDOT will be available to provide information regarding the project and to answer questions. Pre-addressed comment sheets are provided for those who wish to submit comments. The comment sheet may be left in the comment box provided, mailed or faxed to our office. The deadline for comments is October 15, 2002, close of business. For further information contact:

Jeff Manuel
Colorado Department of Transportation
1420 2nd Street
Greeley, Colorado 80631
Phone: 970.350.2170
Fax: 970.350.2179

US 34 BUSINESS FROM SH 257 EAST TO 71ST AVENUE
ENVIRONMENTAL STUDY

Public Workshop Number 1 Colorado Department of Transportation October 1, 2002

COMMENT SHEET

Jeff Manuel
Fax: 970.350.2179

LOCATION: Farr Library
1939 61st Avenue
Greeley, CO

The deadline for comments is October 15, 2002 close of business. Your comments are appreciated and will assist us in evaluating the needs of this project. Please write your comments below and either drop into the comment box provided, mail to the address preprinted on the back of this page, or fax to the number listed above. To mail, fold sheet in half, tape and include postage before mailing. Thank you.

Are you a: Resident ☐ Business Owner ☐ Commuter ☐ in the project area?

US 34 BUSINESS FROM SH 257 EAST TO 71ST AVENUE ALTERNATIVES

WEST ALIGNMENTS	EAST ALIGNMENTS
	A
	B
1	C
2	D
3	E
	F

One alternative from the West Alignments will be combined with one alternative from the East Alignments to complete a Preferred Alignment.

DEPARTMENT OF TRANSPORTATION

COLORADO DEPARTMENT OF TRANSPORTATION
NOTICE OF PUBLIC WORKSHOP

U.S. 34 BUSINESS FROM SH 257 EAST TO 71ST AVENUE
ENVIRONMENTAL ASSESSMENT

Date
June 18, 2003
Hours: 4:00 – 7:00 PM

Location
Farr Library
1939 61st Avenue, Greeley

The Federal Highway Administration (FHWA), as the lead agency, and the Colorado Department of Transportation (CDOT), Region 4 have initiated an Environmental Assessment to evaluate potential four-lane improvements along US 34 Business from SH 257 East to 71st Avenue. CDOT in cooperation with federal and local agencies will analyze alternatives for mobility and safety improvements on this two-lane, four mile stretch of US 34 Business.

The purpose of the Public Workshop is to exchange information with the public and solicit comments about the proposed improvements and the potential environmental impacts associated with various alternative alignments. Information and data that have been gathered to date will be on display. CDOT staff will be available for questions.

For additional information or to be added to the mailing list, please contact:

Carol Parr
Colorado Dept. of Transportation
1420 2nd Street, Greeley, CO 80631
Phone: 970.350.2168
Fax: 970.350.2181
E-mail: Carol.Parr@dot.state.co.us

(The building is handicap accessible. In compliance with the Americans with Disabilities Act, call Carol Parr 970.350.2168 for any special accommodations.)

Sign -In Sheet

US 34 Business Public Workshop

US 34 Business from SH 257 East to 71st Avenue

Wednesday, June 18, 2003

Name (please print)		Organization (if applicable)
Mailing Address		
City, State, ZIP	Phone	E-Mail

Name (please print)		Organization (if applicable)
Mailing Address		
City, State, ZIP	Phone	E-Mail

Name (please print)		Organization (if applicable)
Mailing Address		
City, State, ZIP	Phone	E-Mail

Name (please print)		Organization (if applicable)
Mailing Address		
City, State, ZIP	Phone	E-Mail

Name (please print)		Organization (if applicable)
Mailing Address		
City, State, ZIP	Phone	E-Mail

Name (please print)		Organization (if applicable)
Mailing Address		
City, State, ZIP	Phone	E-Mail

Name (please print)		Organization (if applicable)
Mailing Address		
City, State, ZIP	Phone	E-Mail

Name (please print)		Organization (if applicable)
Mailing Address		
City, State, ZIP	Phone	E-Mail

COLORADO DEPARTMENT OF TRANSPORTATION
NOTICE OF PUBLIC WORKSHOP

U.S. HIGHWAY 34 BUSINESS
FROM STATE HIGHWAY 257 EAST TO 71ST AVENUE
GREELEY

ENVIRONMENTAL ASSESSMENT

Date
September 23, 2003
Hours: 400 – 7:00 PM

Location
Farr Library
1939 61st Avenue

The Federal Highway Administration (FHWA), as the lead agency, and the Region 4 office of the Colorado Department of Transportation (CDOT) have screened potential 4-lane alternatives for US 34 Business from SH 257 East to 71st Avenue. Two of several alternatives that have previously been reviewed at public workshops will be analyzed in detail in the upcoming Environmental Assessment.

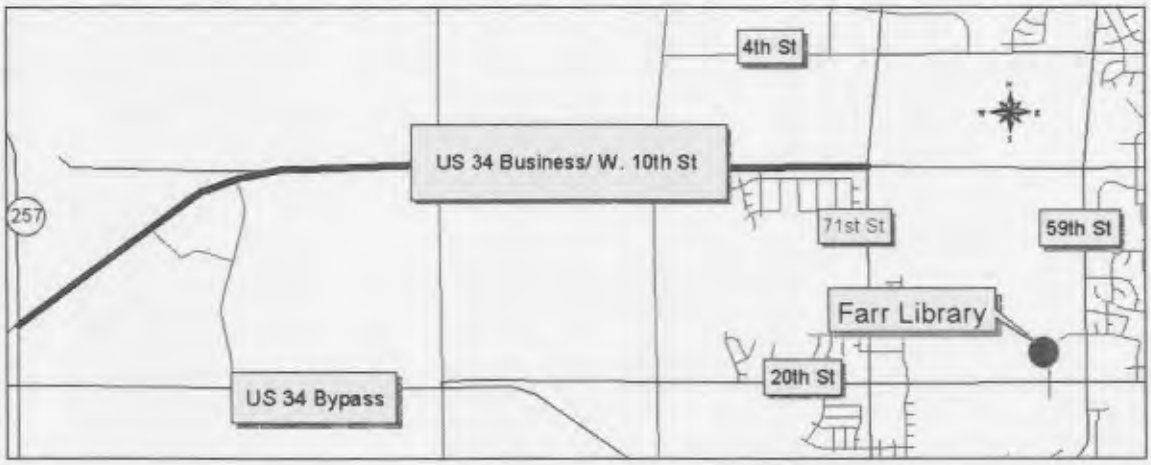
The purpose of this workshop is to share with the public the alternatives to be carried forward into the project's Environmental Assessment and to provide the public the opportunity to comment on these alternatives. Information and data that have been gathered to date will be on display. CDOT staff will be available for questions.

Following this workshop, CDOT intends to prepare the Environmental Assessment document and will make it available for public review.

For additional information or to be added to the mailing list, please contact:

Carol Parr
Colorado Dept. of Transportation
1420 2nd Street, Greeley, CO 80631
Phone: 970.350.2168
Fax: 970.350.2181
E-mail: Carol.Parr@dot.state.co.us

(The building is handicap accessible. In compliance with the Americans with Disabilities Act, call Carol Parr 970.350.2168 for any special accommodations.)



US 34 BUSINESS FROM SH 257 EAST TO 71ST AVENUE
ENVIRONMENTAL ASSESMENT

Public Workshop Number 2 Colorado Department of Transportation September 23 2003

COMMENT SHEET

Carol Parr
Fax: 970.350.2181

LOCATION: Farr Library
1939 61st Avenue
Greeley, CO

The deadline for comments is October 21, 2003 close of business. Your comments are appreciated and will assist us in evaluating the needs of this project. Please write your comments below and either drop into the comment box provided, mail to the address preprinted on the back of this page, or fax to the number listed above. To mail, fold sheet in half, tape and include postage before mailing. Thank you.

Are you a: Resident ☐ Business Owner ☐ Commuter ☐ in the project area?

OPEN HOUSE STATISTICS AND COMMENT SUMMARY

October 1, 2002 - 22 attendees (not including CDOT personnel) with 3 comments.

Widening needs to occur:
- With the least impacts to people and home relocations. (1)
- Because of growth and west traffic movements. (1)

Property owner on SW corner of 71st and U.S. 34:
- Drainage problems in front of his house (1)

June 2, 2003 – 36 attendees (not including CDOT personnel) with 10 comments

Widening needs to occur:
- 20th needs to be a "main feeder" – into a 4-lane expressway. (1)
- Prefer Alternatives E and F since Alternative A has too many curves and impacts commenter's property (1)
- Prefer Alternative B with middle left-turn lane with Alt. C as second choice. (1)
- Prefer Alt. A with second through fourth choices being D, B and C. (1)

Choose an alternative that keeps highway away from the prisoner of war camp entrance pillars. Stay in contact with City of Greeley Historic Preservation Officer and Historic Preservation Commission during process. (1)

Request a landscaped median because of the aesthetic value and impression visitors get when entering my community. (1)

Home located at 1010 77th Avenue was not designated as part of the improvements. Additional 2 sheets of questions are included in this packet. Homeowner concerned about (see attachment)
- Safety due to vehicles coming off the highway. (1)

Homeowner located at 7515 U.S. 34 concerned about noise. (1)

State Farm prefers Alternative 1 since their on-site utilities could be impacted. (1) (see attachment)

Westfield Development states that any south-widening alternative effects much of what they planned. (1) (see attachment)

City of Greeley prefers that the alignment does not impact State Farm since the City sees this area as being the entryway into the City (see attachment)

Colorado Division of Wildlife interest is in the BTPD colony and the possibility that burrowing owls (state threatened) may exist within the colony

Army Corps of Engineers stated that the wetlands need to be checked for jurisdiction

US 34 Business from SH 257 East to 71st Avenue
Agency Meeting
June 2, 2003

Agenda

1. Introductions

2. Project History

   a. ROW

   b. Greeley Comprehensive Plan

3. Tentative Schedule

   a. EA – Fall 2003
   b. Public Hearing – Winter 2004
   c. FONSI – Winter 2004
   d. Design – Spring 2004
   e. Construction – 2006/2007

4. Alternatives/Design

5. Impacts

6. Comments and Concerns

MEETING MINUTES

DEPARTMENT OF TRANSPORTATION

Planning/Environmental Section
1420 2nd Street
Greeley, Colorado 80631
(970) 350-2168
FAX (970) 350-2179

DATE: July 7, 2003

TO:

DAVE DAVIS	CDOT-R4 - PROGRAM ENGINEER
DOUG PEARSON	CDOT-R4 – REGION ENGINEER
BOB GRUBE	CDOT-R4 – SPECIALTY UNITS
ROBIN STONEMAN	CDOT-R4 – ENGINEER
JAMES HOFFMAN	CDOT-R4 – ENGINEER
STAN ELMQUIST	CDOT-R4 – RPEM
JEFF MANUEL	CDOT-R4 – ENVIRONMENTAL MANAGER
BILL STERLING	CITY OF GREELEY PUBLIC WORKS
BECKY SAFARIK	CITY OF GREELEY PLANNING
GREG THOMPSON	CITY OF GREELEY PLANNING

FROM: CAROL PARR

SUBJECT: **STA 0342-037 13808**
US 34 Business/SH 257 to 71st Avenue

A meeting was held for the above captioned project on April 18, 2003 at the City of Greeley Annex Building. A preliminary project matrix and preliminary design layouts were provided.

IN ATTENDANCE:

Dave Davis	Dave.Davis@dot.state.co.us	970.350.2168
Doug Pearson	Doug.Pearson@dot.state.co.us	970.506.4940
Robin Stoneman	Robin.Stoneman@dot.state.co.us	970.506.4952
Jim Hoffman	James.Hoffman@dot.state.co.us	970.506.4941
Bob Grube	Bob.Grube@dot.state.co.us	970.350.2152
Carol Parr	Carol.Parr@dot.state.co.us	970.350.2168
Bill Sterling		
Becky Safarik		
Greg Thompson		

1. City Development
   a. Robin Stoneman requested that the City walk us through the project corridor and any recent zone changes and new development.
      i. North of 34 Bypass next to Promontory 15 acres are reserved for commercial use. Promontory plans call for a school, 500 single family homes – 1500 units total. Promontory Road is owned by State Farm. There is a 10-acre park in Promontory. Promontory doesn't own anything north of US 34 Business. South of ConAgra there is 35 acres currently zoned agriculture. State Farm has a land bank right now. The State Farm complex was discussed. Bill Sterling explained the setback and landscaping requirements for the complex. Promontory dedicated 25 feet. The City sees Promontory as an entryway into the City.
      ii. The oil and gas wells on the north side of Business US 34 within the BTPD coterie are being removed.
      iii. There are plans for a church on the north side around 95th and US 34 Business.

iiii. Boomerang Ranch just beginning on southwest corner of 77th and US 34 Business. There are also plans for commercial at 77th .
iv. 83rd Avenue - Two Rivers Parkway.
vi. Directly East of 83rd Avenue land use is zoned for single family residential.
vii. Pebble Brook is located at 95th Avenue and 20th Street on the bypass.

2. Project Alternatives
   a. CDOT displayed the aerial with the 6 alternatives. Bill Sterling was concerned that CDOT would consider an alignment that would impact State Farm. The City emphasized that the complex was a "Gateway" to Greeley. Bill Sterling stated that the City and State Farm worked cooperatively to establish the "Gateway to Greeley".

3. Comments
   a. Bill Sterling mentioned that he would like to see a 300' right of way preserved for future transit. Robin explained that we would not design the road with a raised median because of the posted speed limit
   b. Water, sewer and transmission lines are within the corridor. The water lines will have to be relocated.
   c. City personnel CDOT may want to contact for information in drafting the EA would be Betsy Collins at 353.9222 and Karen Scopel at 350.9783.

Action Items:

1. Carol to obtain land use maps.
2. CDOT will meet with State Farm representatives nearer to the Open House date.

Table 2.2
Screening Criteria for the East Alternatives Considered for the Project

	No-Action	A (Meander)	B (Meander)	C (Meander)	D (North)	E (Center)	F (South)
Transportation Issues							
Traffic operations (LOS) years-2002 and 2030	2002-B/ 2030-D	2002-B/ 2030-B	2002-B/ 2030-B	2002-B/ 2030-B	2002-B/ 2030-B	2002-B/ 2030-B	2002-B/ 2030-B
Environmental Issues							
Potential residential relocations	None	2	3	3	7	7	4
Non-jurisdictional wetlands (acres)	None	0.7	0.6	0.7	0.7	0.8	0.9
Jurisdictional wetlands (acres)	None	None	None	None	None	None	None
Threatened and endangered species	None	None	None	None	None	None	None
Prairie dog (acres)	None	2>	2>	2>	2>	<2	<1
Hazardous material	None	None	None	None	None	None	None
Historic resources	None	None	None	None	None	None	None
Archaeology	None	None	None	None	None	None	None
Paleontology	None	None	None	None	None	None	None
Air quality	None	None	None	None	None	None	None
Noise	None	26	27	26	24	24	25
Prime farmland (acres)	None	1.5 >	1 >	< 1	1 >	1 >	1 >
Environmental justice	None	None	None	None	None	None	None
4(f)	None	None	None	None	None	None	None
Construction/Maintenance Issues							
Constructability	Roadway deterioration	Three crossovers	Two crossovers	Two crossovers	Best geometrics zero crossovers	Centerline construction, zero crossovers	One crossover, powerline conflict
Maintenance	Continued roadway deterioration	Improved	Improved	Improved	Improved	Improved	Improved
Comments							
Local agency	Undesirable	No comment	No comment	No comment	No comment	No comment	No comment
Public	No consensus	No consensus	No consensus	No consensus	No consensus	No consensus	No consensus

Table 2.3
Screening Criteria for West Segment Alternatives – 101st Avenue to SH 257

	No-Action	1 (North)	2 (Center)	3 (South)
Transportation Issues				
Traffic operations (LOS) years - 2002 and 2030	2002–B/2030-D	2002–B/2030-B	2002-B/2030-B	2002-B/2030-B
Environmental Issues				
Potential residential relocations	None	None	None	None
Non-jurisdictional wetlands (acres)	None	None	None	0.3
Jurisdictional wetlands (acres)	None	None	None	None
Threatened and endangered species	Potential	Potential	Potential	Potential
Prairie dogs (acres)	None	2.4	1.9	0.5
Hazardous materials (acres)	None	None	None	None
Historic resources	None	None	None	None
Archaeology	None	None	None	None
Paleontology	None	None	None	None
Air quality	No improvement	Slight improvement	Slight improvement	Slight improvement
Noise (sensitive noise receptors)	None	None	None	None
Prime farmland	None	None	None	None
Environmental justice	None	None	None	None
4(f)	None	None	None	None
Construction/Maintenance Issues				
Constructability	No issue	Best geometrics	Development, hydraulic issues	Development, hydraulic issues
Maintenance	Continued roadway deterioration	Improved	Improved	Improved
Comments				
Local agency	No comment	Preferred – consistent with City Comprehensive Plan	Undesirable	Undesirable
Public	No comment	Preferred	Undesirable	Undesirable

Appendix F

Air Quality Modeling Data

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated
95221 PAGE 1

JOB: US Bus. 34 and 71st Ave 2030 RUN: CAL3QHC RUN

DATE : 6/ 9/ 5
TIME : 8: 3:29

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

	LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
		*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1.	Link_1	*	20.0	-1000.0	20.0	-20.0	*	980.	360.	AG	423.	11.4	0.0	32.0		
2.	Link_2	*	20.0	-40.0	20.0	-673.1	*	633.	180.	AG	286.	100.0	0.0	12.0	1.38	32.2
3.	Link_4	*	35.0	-100.0	35.0	-190.2	*	90.	180.	AG	244.	100.0	0.0	12.0	0.65	4.6
4.	Link_5	*	20.0	-20.0	20.0	1000.0	*	1020.	360.	AG	176.	11.4	0.0	32.0		
5.	Link_6	*	-25.0	1000.0	-25.0	30.0	*	970.	180.	AG	620.	11.4	0.0	32.0		
6.	Link_7	*	-25.0	40.0	-25.0	915.2	*	875.	360.	AG	280.	100.0	0.0	12.0	1.43	44.5
7.	Link_8	*	-45.0	100.0	-45.0	150.0	*	50.	360.	AG	244.	100.0	0.0	12.0	0.36	2.5
8.	Link_9	*	-10.0	40.0	-10.0	1343.2	*	1303.	360.	AG	280.	100.0	0.0	12.0	1.68	66.2
9.	Link_10	*	-25.0	30.0	-25.0	1000.0	*	970.	360.	AG	229.	11.4	0.0	32.0		
10.	Link_11	*	-1000.0	-25.0	0.0	-25.0	*	1000.	90.	AG	2602.	11.4	0.0	44.0		
11.	Link_12	*	-40.0	-25.0	-3347.1	-25.0	*	3307.	270.	AG	260.	100.0	0.0	24.0	1.32	168.0
12.	Link_14	*	-50.0	-15.0	-61.8	-15.0	*	12.	270.	AG	130.	100.0	0.0	12.0	0.06	0.6
13.	Link_13	*	-50.0	-35.0	-88.3	-35.0	*	38.	270.	AG	130.	100.0	0.0	12.0	0.20	1.9
14.	Link_15	*	0.0	-25.0	1000.0	-25.0	*	1000.	90.	AG	2373.	11.4	0.0	24.0		
15.	Link_16	*	1000.0	20.0	0.0	20.0	*	1000.	270.	AG	1996.	11.4	0.0	44.0		
16.	Link_17	*	40.0	20.0	7024.3	20.0	*	6984.	90.	AG	560.	100.0	0.0	24.0	5.00	354.8
17.	Link_18	*	40.0	10.0	872.4	10.1	*	832.	90.	AG	280.	100.0	0.0	12.0	1.41	42.3
18.	Link_19	*	40.0	35.0	110.1	35.0	*	70.	90.	AG	244.	100.0	0.0	12.0	0.51	3.6
19.	Link_20	*	0.0	20.0	-1000.0	20.0	*	1000.								

270. AG 1600. 11.4 0.0 44.0
     20. Link_3 * -10.0 -45.0 -10.0 -58.0 * 13.
180. AG 286. 100.0 0.0 12.0 0.21 0.7

DATE : 6/ 9/ 5
TIME : 8: 3:29

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. Link_2	*	100	88	2.0	176	1600	121.30	1	3
3. Link_4	*	100	75	2.0	220	1600	121.30	1	3
6. Link_7	*	100	86	2.0	229	1600	121.30	1	3
7. Link_8	*	100	75	2.0	122	1600	121.30	1	3
8. Link_9	*	100	86	2.0	269	1600	121.30	1	3
11. Link_12	*	100	40	2.0	2373	1600	121.30	1	3
12. Link_14	*	100	40	2.0	54	1600	121.30	1	3
13. Link_13	*	100	40	2.0	175	1600	121.30	1	3
16. Link_17	*	100	86	2.0	1600	1600	121.30	1	3
17. Link_18	*	100	86	2.0	225	1600	121.30	1	3
18. Link_19	*	100	75	2.0	171	1600	121.30	1	3
20. Link_3	*	100	88	2.0	27	1600	121.30	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. Rcpt_1	*	45.5	49.4	6.0	*
2. Rcpt_2	*	-52.3	48.8	6.0	*
3. Rcpt_3	*	-27.0	-48.8	6.0	*
4. Rcpt_4	*	46.6	-42.3	6.0	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) REC1	REC2	REC3	REC4
0.	0.7	1.5	2.9	3.0
10.	0.2	2.0	2.7	2.6
20.	0.0	2.0	2.2	2.7
30.	0.0	1.8	1.8	2.8
40.	0.0	1.5	1.9	2.9
50.	0.0	1.4	2.4	3.1
60.	0.0	1.3	3.3	3.3
70.	0.3	1.5	3.9	3.7
80.	1.7	2.9	4.3	3.8
90.	3.6	4.3	3.6	2.8
100.	4.8	4.7	2.1	1.2
110.	4.8	3.6	1.2	0.3
120.	4.6	2.1	1.0	0.0
130.	4.1	1.7	0.9	0.0
140.	3.8	1.5	0.9	0.0
150.	3.7	1.4	0.9	0.0
160.	3.5	1.7	0.9	0.2
170.	3.7	1.8	0.7	0.6
180.	3.7	1.7	0.4	1.1
190.	3.0	1.5	0.1	1.3
200.	2.3	1.5	0.0	1.2
210.	1.7	1.5	0.0	1.0
220.	1.6	1.5	0.1	0.9
230.	1.7	1.7	0.1	0.8
240.	1.9	1.8	0.1	0.9
250.	2.4	2.0	0.4	1.1
260.	2.6	2.0	1.5	2.0
270.	2.2	1.4	2.6	3.0
280.	1.3	0.5	3.4	3.2
290.	1.1	0.1	3.1	2.7
300.	1.0	0.0	2.7	2.0
310.	1.0	0.0	2.5	1.9
320.	1.1	0.0	2.1	2.0
330.	1.3	0.0	1.8	2.3
340.	1.2	0.2	1.9	2.8
350.	1.1	0.8	2.4	2.9
360.	0.7	1.5	2.9	3.0
MAX	4.8	4.7	4.3	3.8
DEGR.	100	100	80	80

THE HIGHEST CONCENTRATION OF 4.80 PPM OCCURRED AT RECEPTOR REC1 .

DATE : 6/ 9/ 5
TIME : 8: 3:29

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

	*	CO/LINK (PPM) ANGLE (DEGREES)			
	*	REC1	REC2	REC3	REC4
LINK #	*	100	100	80	80
1	*	0.0	0.0	0.1	0.0
2	*	0.0	0.0	0.2	0.0
3	*	0.0	0.0	0.0	0.0
4	*	0.0	0.0	0.0	0.0
5	*	0.0	0.2	0.0	0.0
6	*	0.0	0.4	0.0	0.0
7	*	0.0	0.0	0.0	0.0
8	*	0.0	0.2	0.0	0.0
9	*	0.0	0.1	0.0	0.0
10	*	0.0	0.0	0.4	0.0
11	*	0.0	0.0	0.0	0.0
12	*	0.0	0.0	0.0	0.0
13	*	0.0	0.0	0.0	0.0
14	*	0.4	0.5	1.0	1.5
15	*	1.1	0.8	0.5	0.5
16	*	2.2	1.5	1.3	1.3
17	*	0.6	0.5	0.4	0.5
18	*	0.5	0.2	0.0	0.0
19	*	0.0	0.3	0.0	0.0
20	*	0.0	0.0	0.4	0.0

JOB: US Bus. 34 and 71st Ave RUN: CAL3QHC RUN

DATE : 6/10/ 5
TIME : 8:55:39

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

	LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
		*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1.	Link_1	*	20.0	-1000.0	20.0	-20.0	*	980.	360.	AG	184.	11.4	0.0	32.0		
2.	Link_2	*	20.0	-40.0	20.0	-86.2	*	46.	180.	AG	277.	100.0	0.0	12.0	0.56	2.3
3.	Link_4	*	35.0	-100.0	35.0	-139.5	*	40.	180.	AG	277.	100.0	0.0	12.0	0.48	2.0
4.	Link_5	*	20.0	-20.0	20.0	1000.0	*	1020.	360.	AG	99.	11.4	0.0	32.0		
5.	Link_6	*	-25.0	1000.0	-25.0	30.0	*	970.	180.	AG	270.	11.4	0.0	32.0		
6.	Link_7	*	-25.0	40.0	-25.0	89.4	*	49.	360.	AG	260.	100.0	0.0	12.0	0.44	2.5
7.	Link_8	*	-45.0	100.0	-45.0	123.2	*	23.	360.	AG	260.	100.0	0.0	12.0	0.21	1.2
8.	Link_9	*	-10.0	40.0	-10.0	85.5	*	45.	360.	AG	260.	100.0	0.0	12.0	0.41	2.3
9.	Link_10	*	-25.0	30.0	-25.0	-1000.0	*	1030.	180.	AG	113.	11.4	0.0	32.0		
10.	Link_11	*	-1000.0	-25.0	0.0	-25.0	*	1000.	90.	AG	886.	11.4	0.0	44.0		
11.	Link_12	*	-40.0	-25.0	-147.7	-25.0	*	108.	270.	AG	325.	100.0	0.0	24.0	0.54	5.5
12.	Link_14	*	-50.0	-15.0	-56.3	-15.0	*	6.	270.	AG	163.	100.0	0.0	12.0	0.03	0.3
13.	Link_13	*	-50.0	-35.0	-70.5	-35.0	*	21.	270.	AG	163.	100.0	0.0	12.0	0.10	1.0
14.	Link_15	*	0.0	-25.0	1000.0	-25.0	*	1000.	90.	AG	788.	11.4	0.0	44.0		
15.	Link_16	*	1000.0	20.0	0.0	20.0	*	1000.	270.	AG	682.	11.4	0.0	44.0		
16.	Link_17	*	40.0	20.0	112.7	20.0	*	73.	90.	AG	325.	100.0	0.0	24.0	0.36	3.7
17.	Link_18	*	40.0	10.0	59.5	10.0	*	20.	90.	AG	553.	100.0	0.0	12.0	0.24	1.0
18.	Link_19	*	40.0	35.0	70.2	35.0	*	30.	90.	AG	277.	100.0	0.0	12.0	0.37	1.5
19.	Link_20	*	0.0	20.0	-1000.0	20.0	*	1000.								

270. AG 532. 11.4 0.0 44.0

DATE : 6/10/ 5
TIME : 8:55:39

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. Link_2	*	100	85	2.0	99	1600	121.30	1	3
3. Link_4	*	100	85	2.0	85	1600	121.30	1	3
6. Link_7	*	100	80	2.0	113	1600	121.30	1	3
7. Link_8	*	100	80	2.0	53	1600	121.30	1	3
8. Link_9	*	100	80	2.0	104	1600	121.30	1	3
11. Link_12	*	100	50	2.0	788	1600	121.30	1	3
12. Link_14	*	100	50	2.0	23	1600	121.30	1	3
13. Link_13	*	100	50	2.0	75	1600	121.30	1	3
16. Link_17	*	100	50	2.0	532	1600	121.30	1	3
17. Link_18	*	100	85	2.0	85	1600	121.30	1	3
18. Link_19	*	100	85	2.0	65	1600	121.30	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. Rcpt_1	*	44.4	45.6	6.0	*
2. Rcpt_2	*	-51.0	45.4	6.0	*
3. Rcpt_3	*	-52.3	-50.2	6.0	*
4. Rcpt_4	*	45.0	-49.5	6.0	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum

concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) REC1	REC2	REC3	REC4
0.	0.0	0.2	1.8	1.1
10.	0.0	0.3	1.7	1.2
20.	0.0	0.4	1.3	1.1
30.	0.0	0.5	1.1	1.0
40.	0.0	0.7	1.1	0.7
50.	0.0	0.9	1.0	0.8
60.	0.0	0.9	1.1	0.7
70.	0.1	1.0	1.0	0.7
80.	0.3	1.2	0.9	0.7
90.	0.8	1.6	0.7	0.5
100.	1.4	1.7	0.5	0.2
110.	1.9	1.3	0.3	0.1
120.	2.1	0.8	0.2	0.0
130.	2.4	0.6	0.2	0.0
140.	2.5	0.5	0.1	0.0
150.	2.5	0.6	0.0	0.0
160.	2.6	0.8	0.1	0.1
170.	2.5	0.7	0.1	0.1
180.	2.6	0.8	0.0	0.3
190.	2.0	0.9	0.0	0.4
200.	1.4	0.9	0.0	0.5
210.	1.0	0.9	0.0	0.5
220.	0.8	0.8	0.0	0.5
230.	0.8	0.7	0.0	0.6
240.	0.9	0.7	0.0	0.6
250.	1.0	0.6	0.1	0.8
260.	0.8	0.5	0.3	1.0
270.	0.8	0.4	0.8	1.4
280.	0.6	0.1	1.3	1.6
290.	0.5	0.1	1.5	1.3
300.	0.6	0.0	1.7	1.0
310.	0.5	0.0	1.8	0.8
320.	0.2	0.0	1.7	0.7
330.	0.1	0.0	1.7	0.6
340.	0.2	0.0	1.7	0.9
350.	0.2	0.1	1.7	1.1
360.	0.0	0.2	1.8	1.1
MAX	2.6	1.7	1.8	1.6
DEGR.	160	100	0	280

THE HIGHEST CONCENTRATION OF 2.60 PPM OCCURRED AT RECEPTOR REC1 .

DATE : 6/10/ 5
TIME : 8:55:39

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING
THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

* CO/LINK (PPM)

LINK #	*	ANGLE (DEGREES) REC1 160	REC2 100	REC3 0	REC4 280
1	*	0.0	0.0	0.0	0.1
2	*	0.0	0.0	0.0	0.4
3	*	0.0	0.0	0.0	0.0
4	*	0.0	0.0	0.0	0.0
5	*	0.0	0.1	0.1	0.0
6	*	0.0	0.3	0.1	0.0
7	*	0.0	0.0	0.0	0.0
8	*	0.0	0.2	0.0	0.0
9	*	0.0	0.0	0.0	0.0
10	*	0.0	0.0	0.3	0.4
11	*	0.0	0.0	0.8	0.4
12	*	0.0	0.0	0.1	0.0
13	*	0.0	0.0	0.3	0.0
14	*	0.2	0.2	0.0	0.2
15	*	0.2	0.3	0.0	0.0
16	*	0.8	0.3	0.0	0.0
17	*	0.5	0.1	0.0	0.0
18	*	0.9	0.1	0.0	0.0
19	*	0.0	0.1	0.1	0.1

JOB: US Bus. 34 and 71st Ave No Build 2030 RUN: CAL3QHC RUN

DATE : 8/12/ 5
TIME : 15:25: 2

The MODE flag has been set to C for calculating CO averages.

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES
MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*
LENGTH BRG TYPE VPH EF	H W V/C QUEUE					
	* X1	Y1	X2	Y2		*
(FT) (DEG) (G/MI)	(FT) (FT) (VEH)					
1. Link_1	* 20.0	-1000.0	20.0	-20.0		*
980. 360. AG 422. 11.4	0.0 32.0					
2. Link_2	* 20.0	-40.0	20.0	-219.3		*
179. 180. AG 260. 100.0	0.0 12.0 0.98	9.1				
3. Link_4	* 35.0	-100.0	35.0	-170.4		*
70. 180. AG 260. 100.0	0.0 12.0 0.62	3.6				
4. Link_5	* 20.0	-20.0	20.0	1000.0		*
1020. 360. AG 50. 11.4	0.0 32.0					
5. Link_6	* -25.0	1000.0	-25.0	30.0		*
970. 180. AG 620. 11.4	0.0 32.0					
6. Link_7	* -25.0	40.0	-25.0	727.5		*
688. 360. AG 260. 100.0	0.0 12.0 1.18	34.9				
7. Link_8	* -45.0	100.0	-45.0	152.5		*
52. 360. AG 267. 100.0	0.0 12.0 0.52	2.7				
8. Link_9	* -10.0	40.0	-10.0	160.9		*
121. 360. AG 267. 100.0	0.0 12.0 0.89	6.1				
9. Link_10	* -25.0	30.0	-25.0	-1000.0		*
1030. 180. AG 303. 11.4	0.0 32.0					
10. Link_11	* -1000.0	-25.0	0.0	-25.0		*
1000. 90. AG 1404. 11.4	0.0 44.0					
11. Link_12	* -40.0	-25.0	-236.4	-25.0		*
196. 270. AG 345. 100.0	0.0 24.0 0.87	10.0				
12. Link_14	* -50.0	-15.0	-63.9	-15.0		*
14. 270. AG 172. 100.0	0.0 12.0 0.07	0.7				
13. Link_13	* -50.0	-35.0	-97.2	-35.0		*
47. 270. AG 172. 100.0	0.0 12.0 0.24	2.4				
14. Link_15	* 0.0	-25.0	1000.0	-25.0		*
1000. 90. AG 1193. 11.4	0.0 44.0					
15. Link_16	* 1000.0	20.0	0.0	20.0		*
1000. 270. AG 1088. 11.4	0.0 44.0					
16. Link_17	* 40.0	20.0	2620.5	20.0		*
2581. 90. AG 553. 100.0	0.0 24.0 2.30	131.1				
17. Link_18	* 40.0	10.0	140.3	10.0		*
100. 90. AG 277. 100.0	0.0 12.0 0.89	5.1				
18. Link_19	* 40.0	35.0	102.2	35.0		*
62. 90. AG 277. 100.0	0.0 12.0 0.70	3.2				

19. Link_20 * 0.0 20.0 -1000.0 20.0 *
1000. 270. AG 809. 11.4 0.0 44.0

JOB: US Bus. 34 and 71st Ave No Build 2030 RUN: CAL3QHC RUN

DATE : 8/12/ 5
TIME : 15:25: 2

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. Link_2	*	100	80	2.0	252	1600	121.30	1	3
3. Link_4	*	100	80	2.0	160	1600	121.30	1	3
6. Link_7	*	100	80	2.0	303	1600	121.30	1	3
7. Link_8	*	100	82	2.0	117	1600	121.30	1	3
8. Link_9	*	100	82	2.0	200	1600	121.30	1	3
11. Link_12	*	100	53	2.0	1193	1600	121.30	1	3
12. Link_14	*	100	53	2.0	48	1600	121.30	1	3
13. Link_13	*	100	53	2.0	163	1600	121.30	1	3
16. Link_17	*	100	85	2.0	809	1600	121.30	1	3
17. Link_18	*	100	85	2.0	156	1600	121.30	1	3
18. Link_19	*	100	85	2.0	123	1600	121.30	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z
1. Rcpt_1	*	44.4	45.6	6.0
2. Rcpt_2	*	-51.0	45.4	6.0
3. Rcpt_3	*	-52.3	-50.2	6.0
4. Rcpt_4	*	45.0	-49.5	6.0

JOB: US Bus. 34 and 71st Ave No Build 2030 RUN: CAL3QHC RUN

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 0.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) REC1	REC2	REC3	REC4
0.	0.3	1.1	2.7	1.9
10.	0.1	1.5	2.8	1.8
20.	0.0	1.5	2.0	1.9
30.	0.0	1.5	1.8	1.9
40.	0.0	1.2	1.5	2.0
50.	0.0	1.2	1.6	2.0
60.	0.0	1.1	2.1	2.1
70.	0.4	1.4	2.6	2.2
80.	1.5	2.4	2.6	2.2
90.	3.1	3.3	2.1	1.6
100.	4.3	3.4	1.2	0.7
110.	4.4	2.3	0.8	0.1
120.	4.2	1.6	0.6	0.1
130.	4.2	1.2	0.7	0.0
140.	3.8	1.1	0.7	0.0
150.	3.5	1.1	0.5	0.0
160.	3.3	1.1	0.4	0.1
170.	3.3	1.2	0.3	0.4
180.	3.2	1.5	0.2	0.8
190.	2.7	1.3	0.1	1.1
200.	2.2	1.2	0.0	1.1
210.	1.4	1.2	0.0	1.1
220.	1.2	1.1	0.0	0.9
230.	1.3	1.2	0.0	0.9
240.	1.4	1.2	0.1	0.8
250.	1.5	1.2	0.2	0.9
260.	1.5	1.0	0.6	1.3
270.	1.2	0.6	1.5	2.0
280.	1.0	0.3	2.2	2.2
290.	0.9	0.1	2.5	2.0
300.	0.9	0.0	2.6	1.5
310.	0.9	0.0	2.4	1.2
320.	0.8	0.0	2.3	1.2
330.	0.9	0.0	2.3	1.4
340.	0.7	0.2	2.2	1.6
350.	0.5	0.5	2.5	1.7
360.	0.3	1.1	2.7	1.9
MAX	4.4	3.4	2.8	2.2
DEGR.	110	100	10	80

THE HIGHEST CONCENTRATION OF 4.40 PPM OCCURRED AT RECEPTOR REC1 .

JOB: US Bus. 34 and 71st Ave No Build 2030 RUN: CAL3QHC RUN

DATE : 8/12/ 5
TIME : 15:25: 2

RECEPTOR - LINK MATRIX FOR THE ANGLE PRODUCING THE MAXIMUM CONCENTRATION FOR EACH RECEPTOR

	*	CO/LINK (PPM) ANGLE (DEGREES)			
	*	REC1	REC2	REC3	REC4
LINK #	*	110	100	10	80
1	*	0.0	0.0	0.0	0.0
2	*	0.0	0.0	0.0	0.0
3	*	0.0	0.0	0.0	0.0
4	*	0.0	0.0	0.0	0.0
5	*	0.0	0.2	0.2	0.0
6	*	0.0	0.3	0.5	0.0
7	*	0.0	0.0	0.1	0.0
8	*	0.0	0.2	0.2	0.0
9	*	0.0	0.0	0.1	0.0
10	*	0.0	0.0	0.5	0.0
11	*	0.0	0.0	0.7	0.0
12	*	0.0	0.0	0.1	0.0
13	*	0.0	0.0	0.2	0.0
14	*	0.3	0.3	0.0	0.8
15	*	0.6	0.4	0.0	0.3
16	*	2.2	1.4	0.0	1.1
17	*	0.3	0.2	0.0	0.0
18	*	1.0	0.2	0.0	0.0
19	*	0.0	0.2	0.2	0.0