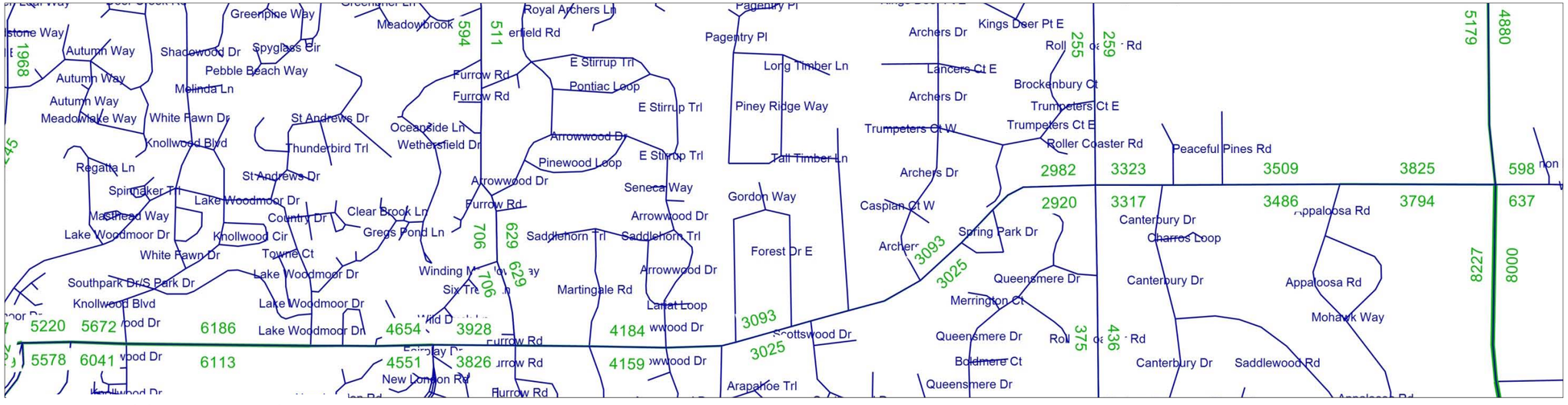
The differences in year 2005 traffic counts as compared to the base year model outputs were then applied to the PPACG planning horizon (2035) forecast model outputs as part of the smoothing process.

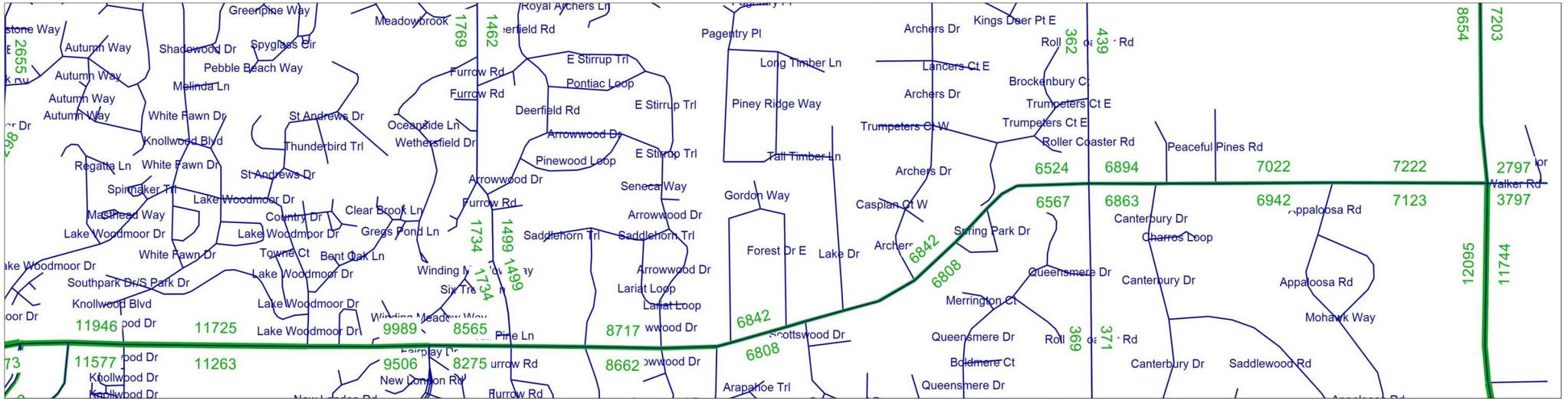
4. Resulting Volumes Checked for Reasonableness
As a validity check, resulting volume growth rates (2005 model base year vs. 2035 model forecast year) were compared to historic growth rates along the study corridor.

5. Resulting Volumes Checked for Reasonableness
The final adjusted 2035 volumes were then factored to the 2040 planning horizon using five-year growth factors based on historic trends for the corridor and similar regional facilities (see *Table 4.4*)

Figure 4.1: PPACG Travel Model Assignment – 2010 & 2035 Baseline Volumes



2010 ADT Model Assignment Volumes



2035 ADT Model Assignment Volumes

EL PASO COUNTY COLORADO

HDR Engineering, Inc.

Table 4.4: Highway 105 ADT Traffic Volumes Analysis										
Highway 105 Segment	**2005 Count**	**2005 Model**	**2010 CDOT**	**2010 Model**	**2035 CDOT**	**2035 Model**	**2040 CDOT**	**2040 Model**	**2010 to 2035 Factor**	**2010 to 2040 Factor**
West of Knollwood Drive	13930		15000		23063	14449	24675	15460	1.49	1.64
East of Knollwood Drive	11148	11080	15000	12693	23063	18911	24675	20235		
West of Fairplay Drive	11148	11043	15000	9406	23063	16136	24675	17266		
East of Fairplay Drive	9700	7162		8663		14854		15894		
East of Furrow Road	6806	7733		9094		13941		14917		
West of Roller Coaster Road	4300	5656		6708		11366		12162		
East of Roller Coaster Road	4669	6516		7248		12056		12900		
West of Highway 83	4669	7404		8683		13326		14259		
SH 83 Segment	**2005 Count**	**2005 Model**	**2010 CDOT**	**2010 Model**	**2035 CDOT**	**2035 Model**	**2040 CDOT**			
North of Highway 105	8477	9669	4900	10765	9310	20793	10192	22249		
South of Highway 105	7955	15121	6700	17100	14070	27696	15544	29635		
Knollwood Drive	**2005 Count**	**2005 Model**	**2010 CDOT**	**2010 Model**	**2035 CDOT**	**2035 Model**	**2040 CDOT**			
South of Highway 105		6217		8907		13196				
Fairplay Drive	**2005 Count**	**2005 Model**	**2010 CDOT**	**2010 Model**	**2035 CDOT**	**2035 Model**	**2040 CDOT**			
South of Highway 105				1529		3629		3883		
Furrow Road	**2005 Count**	**2005 Model**	**2010 CDOT**	**2010 Model**	**2035 CDOT**	**2035 Model**	**2040 CDOT**			
North of Highway 105		944		1316		3345		3579		
Roller Coaster Road	**2005 Count**	**2005 Model**	**2010 CDOT**	**2010 Model**	**2035 CDOT**	**2035 Model**	**2040 CDOT**			
North of Highway 105		629		624		1208		1293		
South of Highway 105		1387		914		956		1023		
AM Peak Hour Factor	0.079						**2035 to 2040 Factor**	1.07		
PM Peak Hour Factor	0.092									

4.3.3.2 Preparation of 2040 Peak Hour Turn Volumes

Adjusted 2040 ADT approach volumes were used to develop 2040 AM and PM peak hour intersection turning movement volumes for the corridor. Calculated peak hour factors were applied to the ADT approach volumes and the results were checked against raw time-of-day peak hour assignment volumes for the PPACG Travel Model. Modeled and counted turn splits were then applied to the approach volumes to calculate initial intersection turn movement volume sets. The resulting 2040 AM and PM peak hour turn movement volumes for the twenty-eight intersections were then balanced between intersections, such that the adjusted traffic volume sent from the upstream intersection matched adjusted traffic volume arriving at the downstream intersection. Final baseline balanced 2040 AM peak hour and PM peak hour intersection turning movement volumes are shown in *Section 4.4: Baseline Traffic Operations Analysis*, together with 2040 AM and PM peak hour levels of service for each intersection with no improvements (see *Figure 4.2* through *Figure 4.6*).

4.4 Baseline Traffic Operations Analysis

Baseline traffic operations analysis findings for existing traffic volumes and for 2040 traffic volumes with no improvements are detailed, by intersection, in *Figure 4.2* through *Figure 4.6*. As shown by the summary table included in *Figure 4.6*, Levels of Service (LOS) of E and F are currently experienced during the peak periods at the Gold Canyon Road, Lake Woodmoor Drive, Furrow Road and State Highway 83 intersections. With no improvements and increased 2040 traffic flows, the baseline traffic operations analysis findings show that LOS E and F conditions will be experienced at additional locations including: the Briarhaven Court, Winding Meadows Way, Fairplay Drive, Martingale Road, and Roller Coaster Road intersections.

4.4.1 Gold Canyon Road or Lake Woodmoor Drive

The Gold Canyon Road and Lake Woodmoor Drive intersections are existing stop-controlled intersections located in the western segment of the project corridor. In this segment, existing peak hour through traffic volumes are high enough to create limitations in the available gaps for traffic to enter/exit Highway 105 to/from the side street. Upgrade of one of these intersections as a signalized intersection or a roundabout configuration would improve operations of the upgraded intersection to a LOS B (for forecast 2040 traffic volumes or better (for existing traffic volumes). Upgrade of either intersection would also create adequate gaps in traffic at the unimproved intersection to also bring level of service at that intersection for both the existing and future 2040 condition.

Signal traffic volume warrants must be met for a signal to be installed at either location. However, a roundabout intersection upgrade could be implemented prior to meeting volume warrants for signalization. Although signal warrants analysis has not been completed, higher traffic volumes in the western project corridor favor meeting signal warrants in the segment of the corridor. Both signalized and roundabout will be further evaluated during preliminary and final design development. Other considerations will include signal progression and adequacy of spacing (for speed transition) between signals, between roundabouts and between signals and roundabouts.

4.4.2 Fairplay Intersection

The Fairplay Drive intersection is an existing stop-controlled T-intersection that operates at a LOS C. Future increases in through traffic volumes at this location will reduce the availability of traffic gaps, resulting in a 2040 unimproved LOS of F during both the AM and PM peak hour periods. Vertical curvature of the roadway also affects sight distance and safety of egress/access at this location. The baseline traffic operations analysis for the 2040 unimproved condition shows that left turn from Fariplay Drive to Highway 105 will be most affected. Possible solutions include signalization of this intersection, conversion to a roundabout, or creation of a left-turn acceleration lane configuration that would allow phased entry of left turns from Fairplay Drive into the westbound Highway 105 thru lanes.

4.4.3 Furrow Road Intersection

The Furrow Road intersection is an existing stop-controlled intersection that provides the primary, or only access for a large travel shed of neighborhoods located both to the north and south of Highway 105. Baseline traffic operations analysis shows that this intersection operates at a LOS F under both existing and future unimproved baselines conditions. This is indicative of the need for a higher capacity intersection configuration at this location, either an expanded signalized intersection, or perhaps a roundabout intersection.

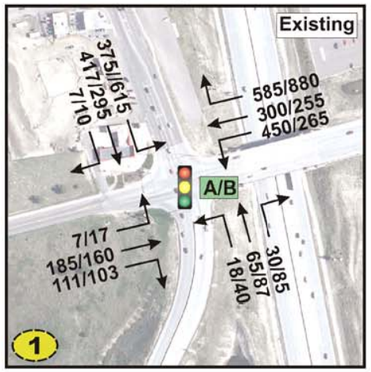
4.4.4 Roller Coaster Road Intersection

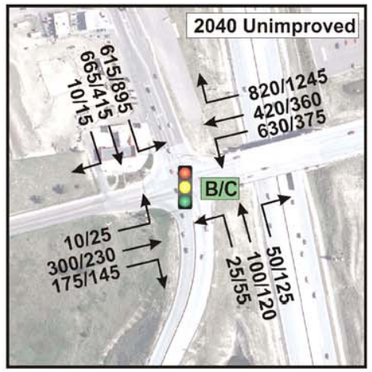
The Roller Coaster Road intersection is an existing stop-controlled intersection that provides the primary, or only access for a large travel shed of neighborhoods located both to the north and south of Highway 105. Baseline traffic operations analysis shows that this intersection operates at a LOS C under existing conditions. Vertical curvature of the roadway also affects sight distance and safety of egress/access at this location. Future increases in through traffic volumes at this location will reduce the availability of traffic gaps, resulting in a 2040 unimproved LOS of E during both the AM and PM peak hour periods. Based on these findings, geometric improvements are needed to maximize sight distance and there is a future need intersection upgrade to a signalized intersection or roundabout.

4.4.5 SH 83 Intersection

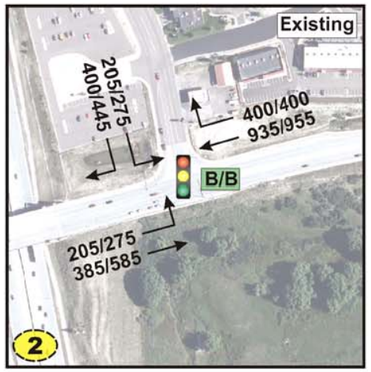
A roundabout configuration, signalization and other options were evaluated by CDOT to address existing safety issues affecting the SH 83 intersection. Although the intersection does not currently meet warrants for a traffic signal, traffic forecasts suggest that signal warrants may be met within the twenty-years planning horizon. Interim improvements approved for this intersection include channelization of the Walker Road approach and flattening of grade on the north approach to maximize sight distance. The intersection may be signalized in the future, when warrants are met.

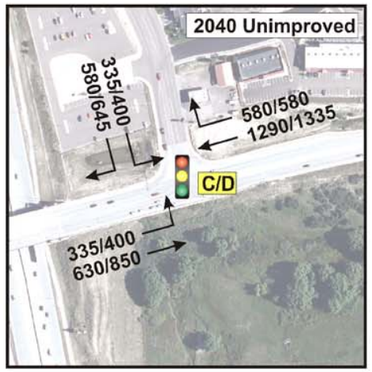
I-25 SB Ramps





Woodmoor Dr





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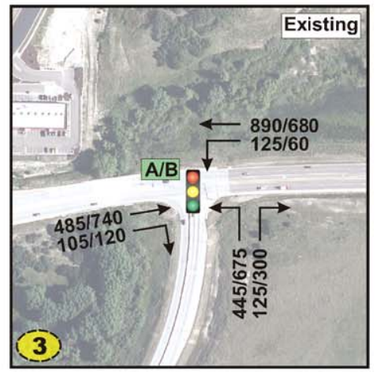

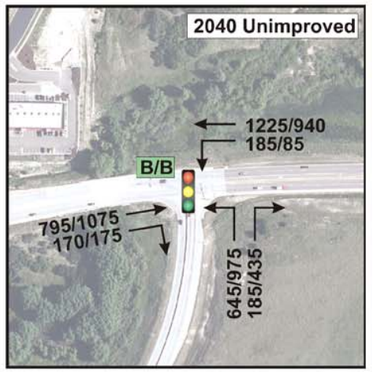

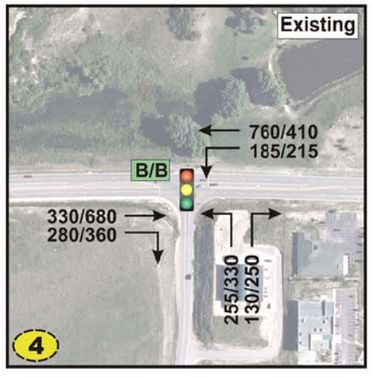

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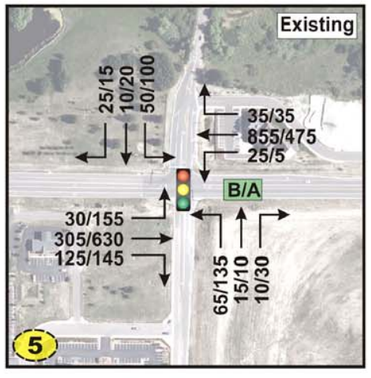

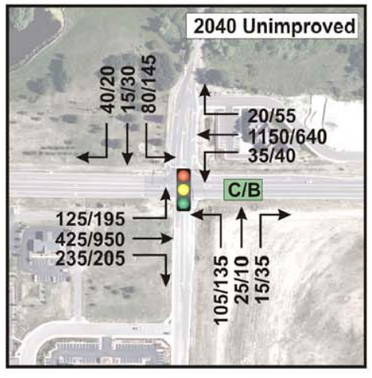

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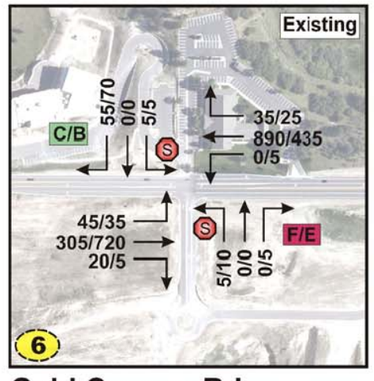

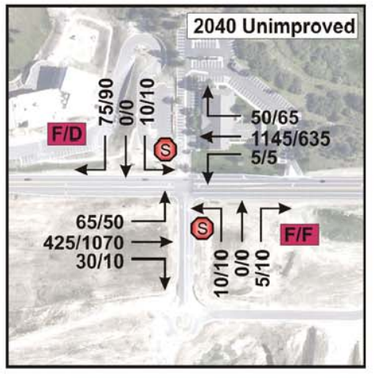

Gold Canyon Rd

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Unit Information / Unit Leader Initials	← AM/PM Turning Movements Volumes	Void:	Task 005
HDR Engineering, Inc. 2060 BRIARGATE PKY, SUITE 120 COLORADO SPRINGS, CO 80920 Phone: 719-272-8800 FAX: 719-272-8801	EL PASO COUNTY COLORADO RW		Sheet Number T01

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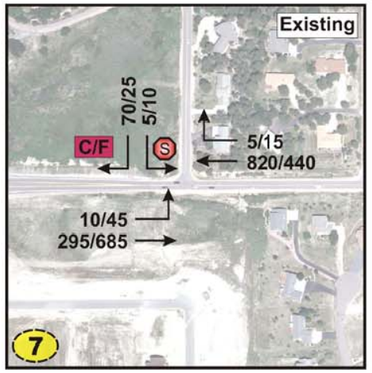

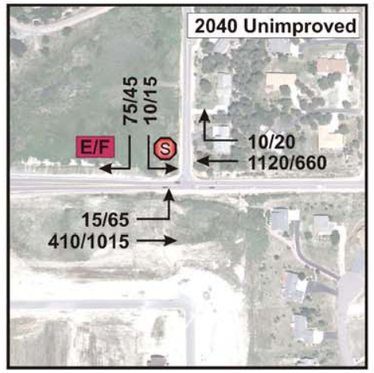

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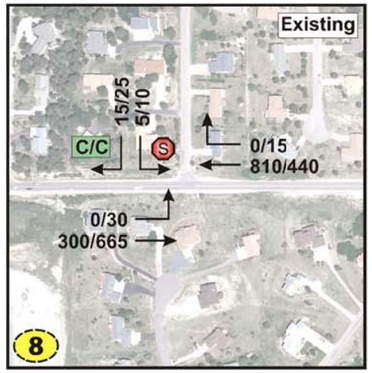

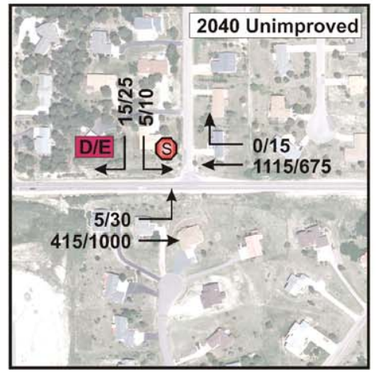

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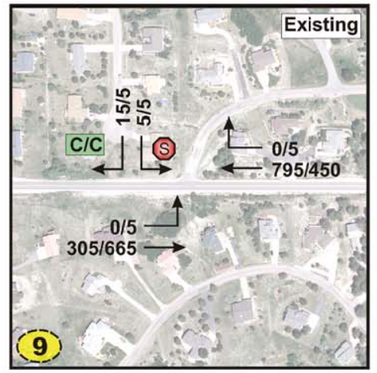

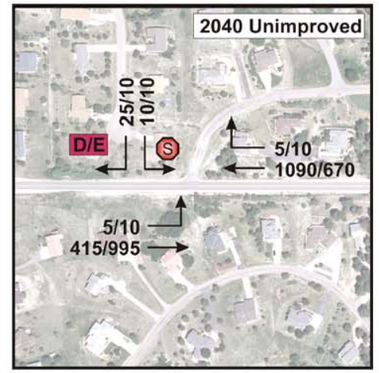

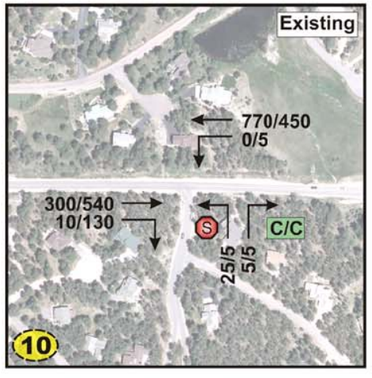

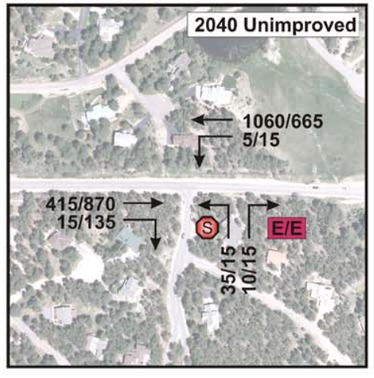

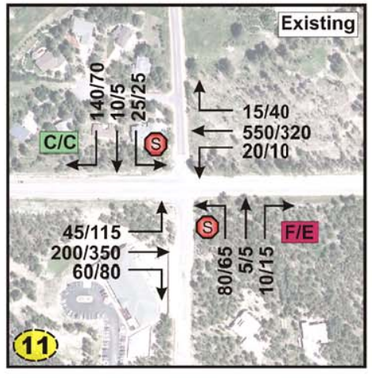

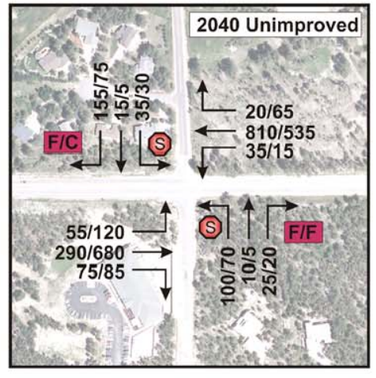

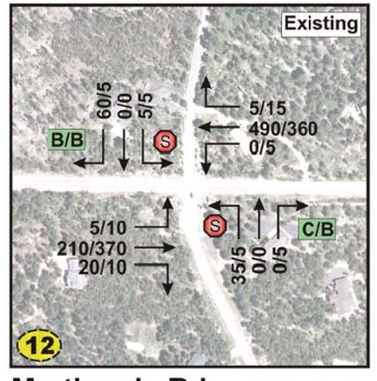

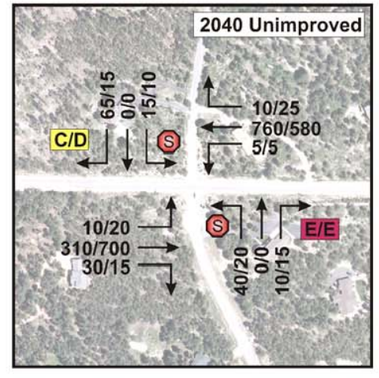

Fairplay Dr

Furrow Rd

Martingale Rd

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Unit Information	Unit Leader Initials

HDR Engineering, Inc. 2060 BRIARGATE PKY, SUITE 120 COLORADO SPRINGS, CO 80920
Phone: 719-272-8800 FAX: 719-272-8801

- (S) Stop Control Intersection
- Signalized Intersection
- X/X AM/PM Level Of Service (LOS)
- ← AM/PM Turning Movements Volumes

EL PASO COUNTY
COLORADO
RW

As Constructed	HIGHWAY 105 CORRIDOR TRAFFIC VOLUMES & LEVEL OF SERVICE	Project No./Code
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Revised:	Designer: M. Paz de Araujo / Detailer: T. Haugh / Structure Numbers	Task 005
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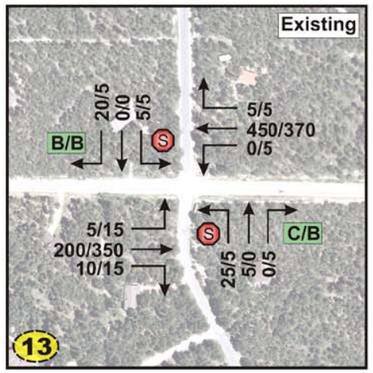
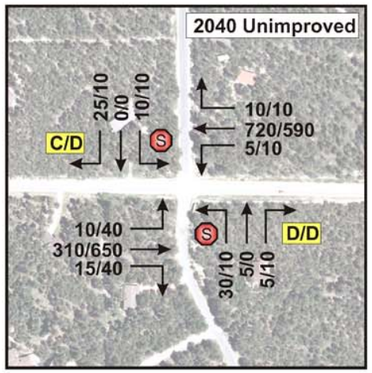
Arrowwood Dr





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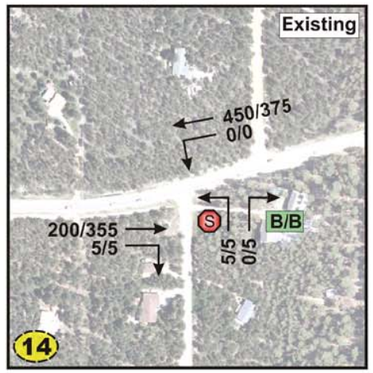

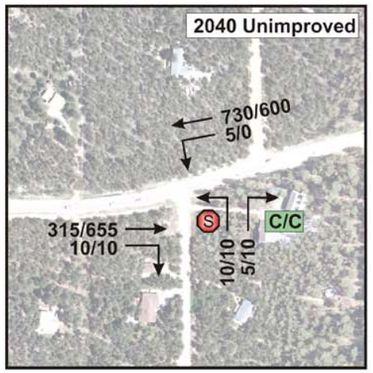

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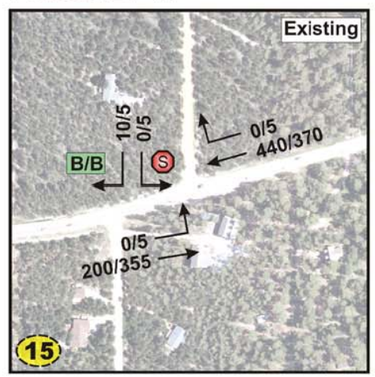

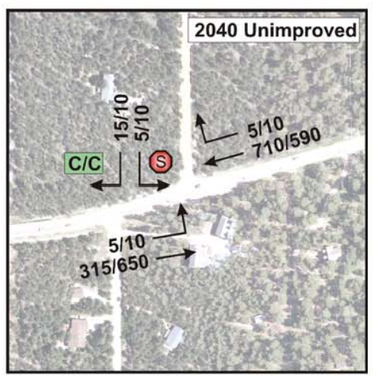

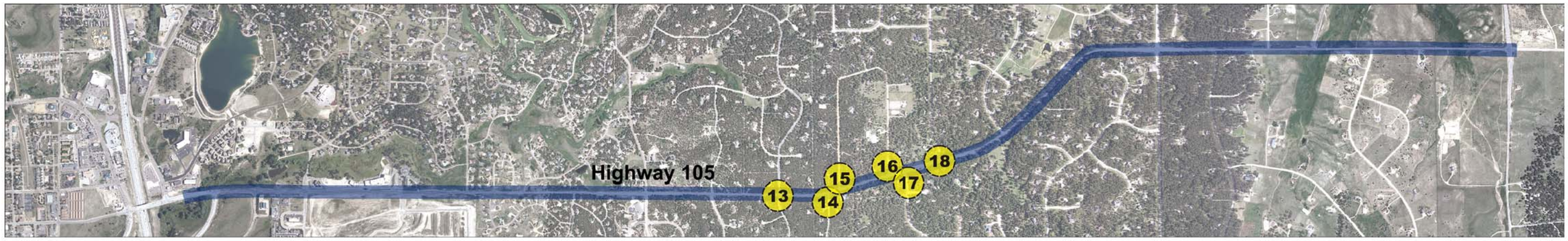

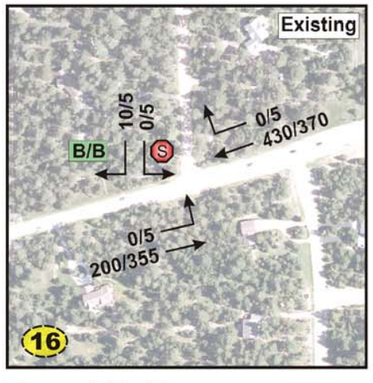

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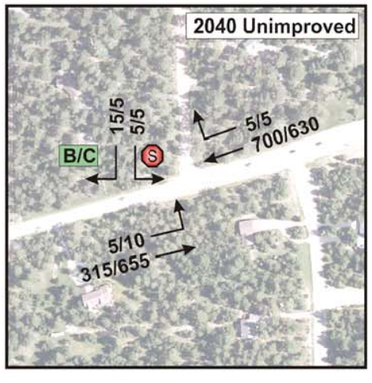

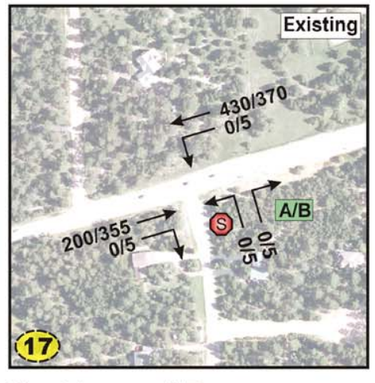

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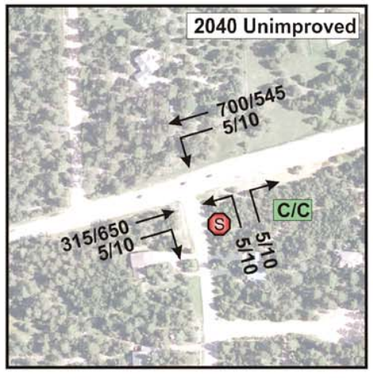

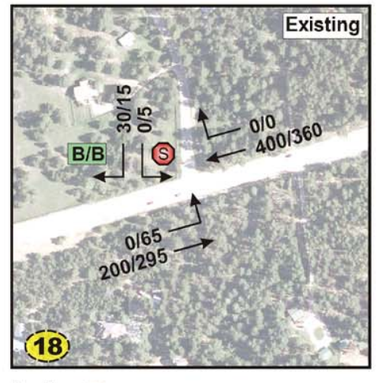

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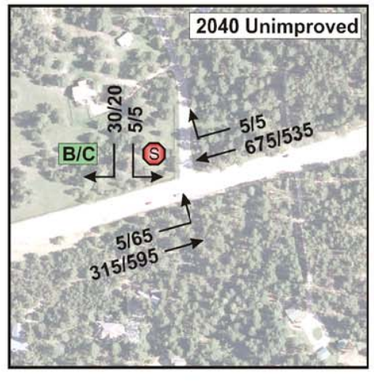

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Unit Information Unit Leader Initials	← AM/PM Turning Movements Volumes		Void:	Detailer: T. Haugh	Sheet Number T03
HDR Engineering, Inc. 2060 BRIARGATE PKY, SUITE 120 COLORADO SPRINGS, CO 80920 Phone: 719-272-6800 FAX: 719-272-6801				Sheet Subset: NOISE Subset Sheets: 3 of 5	

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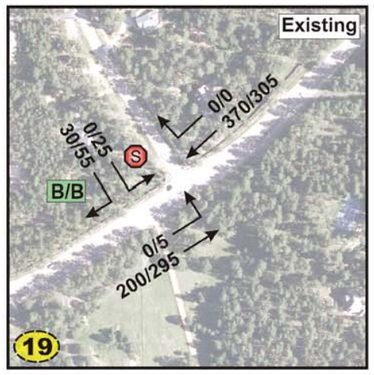
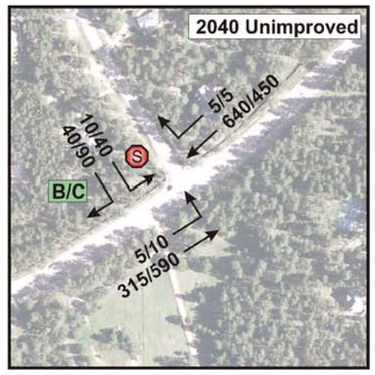
Archers Dr





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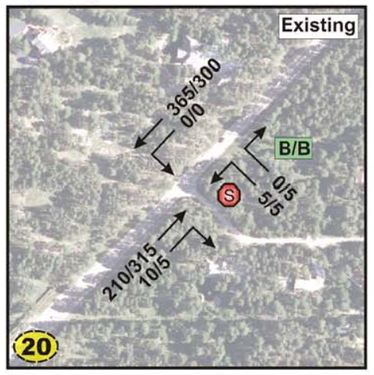

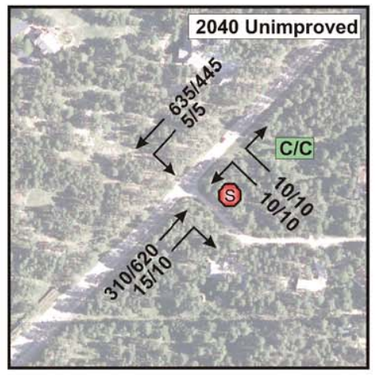

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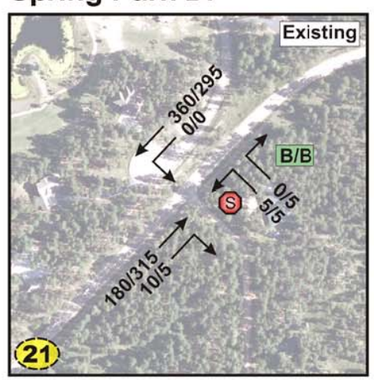

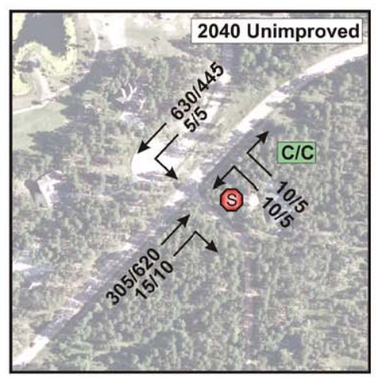

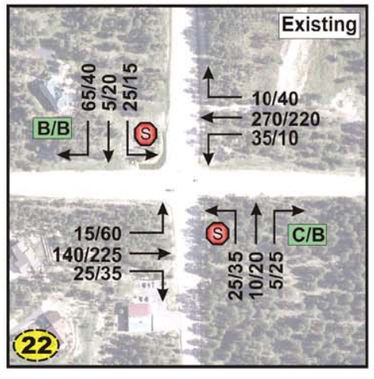

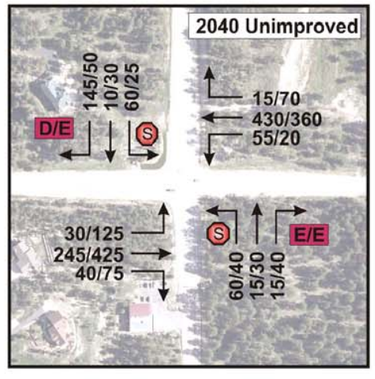

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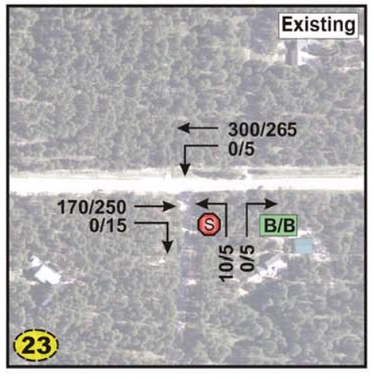

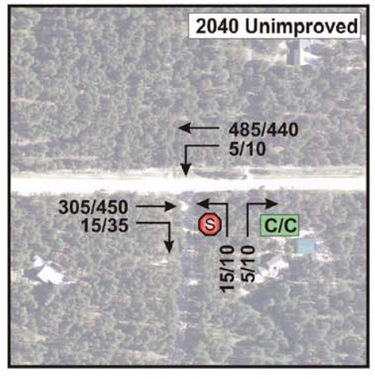

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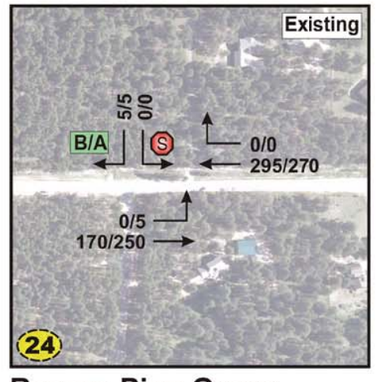

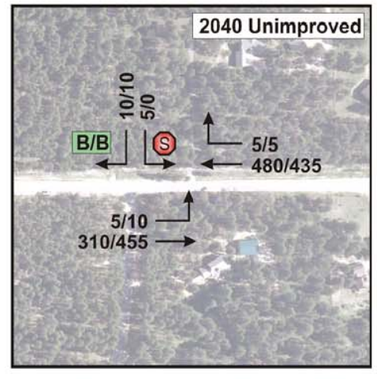

Rogers Pine Grove

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Unit Information / Unit Leader Initials	← AM/PM Turning Movements Volumes	Void:	Sheet Number T04
HDR Engineering, Inc. 2060 BRIARGATE PKY, SUITE 120 COLORADO SPRINGS, CO 80920 Phone: 719-272-6800 FAX: 719-272-6801	EL PASO COUNTY COLORADO RW	Designer: M. Paz de Araujo / Detailer: T. Haugh / Sheet Subset: NOISE / Structure Numbers / Subset Sheets: 4 of 5	

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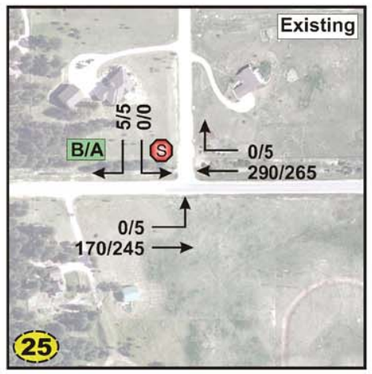

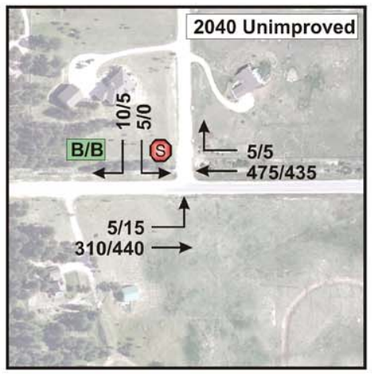

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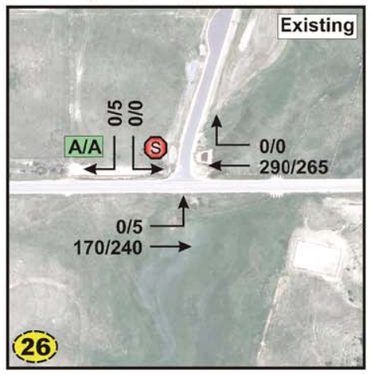

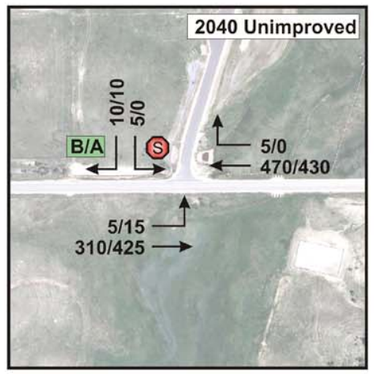

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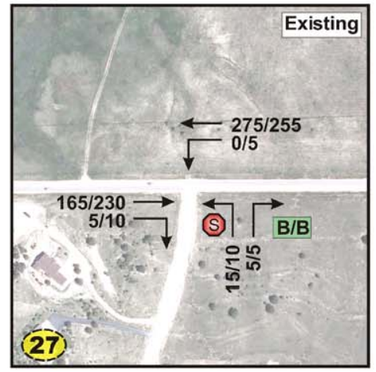

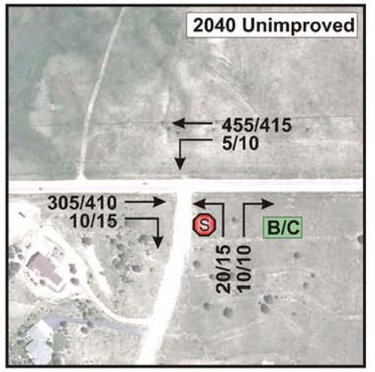

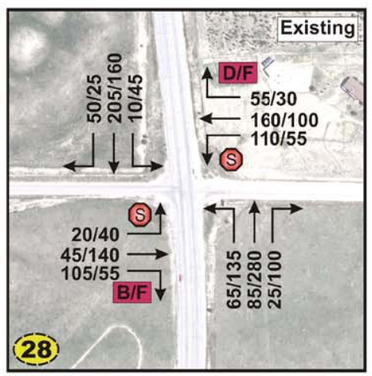

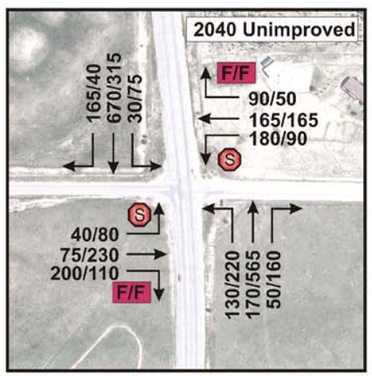

State Highway 83

Baseline Peak Hour Intersection Traffic Operations Summary

Location/Control		2011 Existing AM Peak Hour	2011 Existing PM Peak Hour	2040 Unimproved AM Peak Hour	2040 Unimproved PM Peak Hour	Location/Control		2011 Existing AM Peak Hour	2011 Existing PM Peak Hour	2040 Unimproved AM Peak Hour	2040 Unimproved PM Peak Hour
1. I-25 Southbound Ramps	Signal	LOS = A	LOS = A	LOS = A	LOS=B	15. Forest Drive West	STOP	LOS=B (SB)	LOS=B (SB)	LOS=C (SB)	LOS=C (SB)
2. Woodmoor Drive/Park & Ride	Signal	LOS = B	LOS = B	LOS = D	LOS = D	16. Forest Drive East	STOP	LOS=B (SB)	LOS=B (SB)	LOS=B (SB)	LOS=C (SB)
3. I-25 Northbound Ramps	Signal	LOS = A	LOS = B	LOS = B	LOS = B	17. Scottswood Drive	STOP	LOS=A (NB)	LOS=B (NB)	LOS=C (NB)	LOS=C (NB)
4. Jackson Creek Parkway	Signal	LOS = B	LOS = B	LOS = C	LOS = D	18. Lake Drive	STOP	LOS=B (SB)	LOS=B (SB)	LOS=B (SB)	LOS=C (SB)
5. Knollwood Drive	Signal	LOS = B	LOS = A	LOS = C	LOS = B	19. Archers Drive	STOP	LOS=B (SB)	LOS=B (SB)	LOS=B (SB)	LOS=C (SB)
6. Gold Canyon/Bank Access	STOP	LOS=F (NB)	LOS=E (NB)	LOS=F (NB)	LOS=F (NB/SB)	20. Spring Park Drive West	STOP	LOS=B (NB)	LOS=B (NB)	LOS=C (NB)	LOS=C (NB)
7. Lake Woodmoor Drive	STOP	LOS=C (SB)	LOS=F (SB)	LOS=E (SB)	LOS=F (SB)	21. Spring Park Drive East	STOP	LOS=B (NB)	LOS=B (NB)	LOS=C (NB)	LOS=C (NB)
8. Briarhaven Court	STOP	LOS=C (SB)	LOS=C (SB)	LOS=D (SB)	LOS=E (SB)	22. Roller Coaster Road	STOP	LOS=C (NB)	LOS=C (NB/SB)	LOS=E (NB)	LOS=E (NB/SB)
9. Winding Meadow Way	STOP	LOS=C (SB)	LOS=C (SB)	LOS=D (SB)	LOS=E (SB)	23. Canterbury Drive	STOP	LOS=B (NB)	LOS=B (NB)	LOS=C (NB)	LOS=C (NB)
10. Fairplay Drive	STOP	LOS=C (SB)	LOS=C (NB)	LOS=E (NB)	LOS=E (NB)	24. Rogers Pine Grove	STOP	LOS=B (SB)	LOS=A (SB)	LOS=B (SB)	LOS=B (SB)
11. Furrow Road	STOP	LOS=F (NB)	LOS=E (NB)	LOS=F (NB/SB)	LOS=F (NB/SB)	25. Peaceful Pines Road	STOP	LOS=B (SB)	LOS=A (SB)	LOS=B (SB)	LOS=B (SB)
12. Martingale Road	STOP	LOS=C (NB)	LOS=B (NB/SB)	LOS=E (NB)	LOS=E (NB)	26. Cherry Springs Ranch Road	STOP	LOS=A (SB)	LOS=A (SB)	LOS=B (SB)	LOS=A (SB)
13. Arrowwood Drive	STOP	LOS=C (NB)	LOS=B (NB/SB)	LOS=D (NB)	LOS=D (NB/SB)	27. Appaloosa Road	STOP	LOS=B (NB)	LOS=B (NB)	LOS=B (NB)	LOS=C (NB)
14. Sierra Way	STOP	LOS=B (NB)	LOS=B (NB)	LOS=C (NB)	LOS=C (NB)	28. SH 83/Walker Road	STOP	LOS=D (WB)	LOS=F (EB/WB)	LOS=F (EB/WB)	LOS=F (EB/WB)

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Print Date: 9/21/2012
File Name: 11x17_TRAFVOL_LOS.mxd
Horiz. Scale: None Vert. Scale: None
Unit Information Unit Leader Initials

HDR Engineering, Inc. 2060 BRIARGATE PKY, SUITE 120 COLORADO SPRINGS, CO 80920
Phone: 719-272-8800 FAX: 719-272-8801

S Stop Control Intersection
Signalized Intersection
X/X AM/PM Level Of Service (LOS)
AM/PM Turning Movements Volumes

EL PASO COUNTY
COLORADO
RW

As Constructed
No Revisions:
Revised:
Void:

HIGHWAY 105 CORRIDOR
TRAFFIC VOLUMES & LEVEL OF SERVICE

Designer: M. Paz de Araujo
Detailer: T. Haugh
Sheet Subset: NOISE
Structure Numbers
Subset Sheets: 5 of 5

Project No./Code
163862
Task 005
Sheet Number T05

4.5 Future Build Traffic Operations Analysis

For purposes of future "build" traffic operations analysis, at least two alternatives were evaluated for each of the following intersections: Fairplay Drive, Furrow Road and Roller Coaster Road. Signalized and roundabout alternatives were also evaluated for the Gold Canyon Road, Lake Woodmoor Drive, and Highway 83 intersections. A full-corridor Synchro/SimTraffic simulation model was used for the analysis such that signal progression efficiency could be assessed, together with intersection approach delay and queuing effects. Use of the simulation model also supported determination that 4-lane widening of only the western corridor segment, from Woodmoor Drive to Lake Woodmoor Drive would provide adequate corridor capacity through the 2040 planning horizon. HCS2010 software was used to evaluate stand-alone traffic operations for roundabout alternatives. Analysis results are summarized in *Table 4.5*, below.

4.5.1 Gold Canyon Road/Lake Woodmoor Drive Signalization

Future 2040 "build" traffic operations analysis was conducted for three signalized intersection alternatives: signalization of both intersections, signalization of the Gold Canyon Road intersection only, and signalization of the Lake Woodmoor Drive intersection only. Stand-alone roundabout alternatives were also evaluated for both intersections. Findings for the signalized alternatives demonstrated poor progression with both intersections signalized, with acceptable progression achieved with a single signalized intersection, and best progression (due to spacing) for the signalization of Gold Canyon Road only. HCS2010 analysis for 2-lane roundabout yielded a LOS B for each location; however additional analysis is needed to evaluate the function of roundabouts within the broader study corridor.

4.5.2 Fairplay Drive Intersection

Future 2040 "build" traffic operations analysis was conducted for three alternatives: an expanded signalized intersection, a two-way stop-controlled configuration with an acceleration lane for left turns merging into the onto westbound Highway 105, and a one-lane roundabout. Any of the alternatives would provide an acceptable 2040 level of service; however, signalization is not recommended given the adverse affect on signal progression due to close spacing between this intersection and a signalized intersection at Furrow Road. Both remaining alternatives will be evaluated further.

4.5.3 Furrow Road Intersection

Future 2040 "build" traffic operations analysis was conducted for two alternatives: an expanded signalized intersection, and a roundabout intersection configuration. The roundabout would be configured initially as a one-lane roundabout such that reconstruction would be required for long-term widening of the corridor to 4 lanes. Either alternative would provide acceptable levels of service; however, the roundabout configuration was not favorably received by the public and had the disadvantage of requiring significant reconfiguration should Highway 105 be widened to four lanes at some time in the future during preliminary and final design development.

4.5.4 Roller Coaster Road Intersection

Future 2040 "build" traffic operations analysis was conducted for two alternatives: an expanded signalized intersection, and a roundabout intersection configuration. The roundabout would be configured initially as a one-lane roundabout such that reconstruction would be required for long-term widening of the corridor to 4 lanes. However, based on current forecasts, the two-lane section should provide adequate capacity for the current planning horizon. Either a signalized alternative or a roundabout alternative would provide an acceptable level of service. Additional analysis is needed to evaluate the function of the roundabout alternatives within the broader study corridor.

4.5.5 SH 83 Intersection

CDOT completed a separate study for the SH 83/Highway 105-Walker Road intersection. A signalized alternative was selected for the ultimate improvement. Approved near-term improvements include channelization of the Walker Road approach and flattening of north approach grade.

Table 4.5: Future Build Traffic Operations Analysis

Intersection	T-Intersection	Roundabout	Signal
	AM Peak Hour LOS/Delay [sec/veh] (Critical Movement)		
Gold Canyon Road[1]	---	B/14.54 (WB)	B/12.9
Lake Woodmoor Drive[1]	---	B/10.11 (WB)	A/5.2
Fairplay Drive[1,4]	B/11.6 (NB LT)	B/10.76 (WB)	A/7.7
Furrow Road [1]	---	B/11.80 (SB)	B/15.1
Roller Coaster Road[3]	---	B/12.28 (WB)	B/11.3
	PM Peak Hour LOS/Delay [sec/veh] (Critical Movement)		
Gold Canyon Road[1]	---	A/7.98 (WB)	A/7.0
Lake Woodmoor Drive[1]	---	A/7.26 (WB)	A/8.5
Fairplay Drive[1]	C/19.2 (NB LT)	D/26.29 (EB)	B/17.2
Furrow Road[1]	---	B/12.80 (NB)	B/14.9
Roller Coaster Road[3]	---	B/13.05 (WB)	B/12.4

Notes: 1.A two-lane roundabout was evaluated at this location because this intersection is located within the 4-lane urban corridor segment. 2. A two-lane roundabout was evaluated at this location because a one-lane alternative provides LOS E/F. 3. A one-lane roundabout provided an acceptable LOS at this intersection that is located within the rural corridor segment. 4. The stop-controlled T-intersection alternative at this intersection includes a left-turn acceleration lane. It could be converted to a Continuous Green-T in the future should signalization be warranted.

4.6 Conclusions

Based on future 2040 “build” traffic operations analysis findings, four lane widening is indicated for only the western corridor, between Woodmoor Drive and Lake Woodmoor Drive within the planning horizon. Turn bays are needed at all corridor intersections, and are critical within segments that are anticipated to remain in a two-lane cross section configuration through the 2040 planning horizon. Improvements that maximize available sight distance and major intersection upgrades are recommended at Fairplay Drive, Furrow Road and Roller Coaster Road, and SH 83. Improvements for the SH 83/Highway 105-Walker Road intersection have been designed and will be constructed by CDOT Region 2.

5 Drainage Requirements and Impacts

An overall drainage review was completed for the Highway 105 corridor to identify existing drainage issues. Drainage improvements will be required along with the roadway expansion projects. Local, state and federal criteria will need to be followed when addressing drainage improvements.

5.1 Drainage Criteria

Highway 105 was recently taken over by El Paso County from CDOT. CDOT drainage design criteria differ significantly from El Paso County's criteria. According the CDOT Drainage Design Manual, for a two-lane rural highway, the culverts and ditches are designed to carry the 25-year event below the top of the roadway subgrade. The City of Colorado Springs and El Paso County Drainage Criteria Manual (DCM) requires culverts and ditches carry the 100-year event for arterial streets. This increase in the design year event may require significant increases in the size of many culverts and ditches.

This corridor also has FEMA regulated Zone A and Zone AE floodplains along the Highway 105 Corridor. Floodplains impacted by the improvements shall comply with the National Flood Insurance Program (NFIP). These floodplain delineations within the corridor are shown by four figures that are included at the end of this report section.

The western portion of the corridor is within the urban MS4 permit area and requires water quality treatment by the Colorado Department of Public Health and Environment (CDPHE). The limits of the treatment area extend from the western project boundary to Arrowwood Drive on the north side of Highway 105, and Martingale Road on the south.

5.2 Urban Section

I-25 Northbound Ramps and Knollwood Drive – Sidewalks are the only planned addition to the Highway 105 section. This project would be to connect the existing portions of sidewalk. The additional paved area will be under one-acre for this section of the project, which would not require MS-4 water quality treatment if the sidewalks are a stand-alone project.

Knollwood Drive and Gold Canyon Road – A second through lane in each direction will be added and a sidewalk on the south side of Highway 105. The additional pavement area in between these two intersections is approximately 51,000 square feet. This 1.2 acres requires 0.06 acre-feet of water quality treatment volume. This would result in a pond of approximately 25' x 25' x 4' deep. Property would have to be obtained, as no ROW is available in this segment. Adjacent undeveloped parcels exist that could be identified for the water quality treatment areas

Gold Canyon Road to Lake Woodmoor Drive – The roadway improvements in this section includes two continuous through lanes in each direction, 8-foot shoulders, and sidewalks. The additional impervious area is over 51,000 square feet or 1.2-acres. This area would require the same 0.06 acre-feet for water quality treatment volume. There are possible areas available for water quality treatment on the south side of Highway 105. The addition of curb and gutter in this section of the roadway will also require the installation of a closed storm system.

The FEMA Zone AE floodplain is close to Highway 105 on the north side of the road near Lake Woodmoor Drive. Care must be taken in this area to ensure roadway fill does not extend into the defined floodway. The floodplain should be avoided if feasible.

5.3 Rural Section

The "rural" section of Highway 105 begins at Lake Woodmoor Drive. From this point east, the proposed rural cross section uses roadside ditches, only 1 lane in each direction and 10-foot shoulders. Turning lanes will also be added at intersections as needed. Roadside ditches will be sized to carry the 100-year event below the top of subgrade.

Lake Woodmoor Drive to Fairplay Drive – This segment is approximately 2,000-feet long and sided by private residences. This section of roadway adds almost 72,000 square feet of impervious area to the existing roadway. This area is approximately 1.7 acres and would require 0.09 acre-feet of treatment volume. This section includes roadside ditches, which can be used to treat the water. Additional area may be needed if the ditch volume/grade is not sufficient.

Fairplay Drive to Furrow Road – This relatively short segment is 1,400 feet long and is planned to have significant roadway grade changes at Furrow Road. The segment will have approximately 53,000 square-feet of impervious area. This 1.2 acres area will require 0.06 acre-feet of water quality storage volume. This section includes roadside ditches, which can be used to treat the water. Additional area may be needed if the ditch volume/grade is not sufficient.

The increase in grade will also be used to alleviate an existing drainage issue. A large riprap channel, located one-lot west of Furrow Road, directs runoff from the adjacent residential development towards Highway 105. This riprap channel currently is directed south to a small crushed corrugated metal pipe that drains the runoff to the drainage way on the north side of Highway 105. The new grade will allow for this runoff to be directed through new culverts that will be sized for the 100-year runoff from this riprap channel.

Furrow Road to Martingale Road – This section of the project will add nearly 43,000 square-feet of pavement to the roadway. This one-acre will require 0.05 acre-feet of water quality volume to treat the new paved area. This section includes roadside ditches, which can be used to treat the water. Additional area may be needed if the ditch volume/grade is not sufficient.

Martingale Road to Arrowwood Drive – This section of the project will add approximately 20,000 square-feet of pavement to the roadway. This half-acre will require 0.03 acre-feet of water quality volume to treat the new paved area. This section includes roadside ditches, which can be used to treat the water. Additional area may be needed if the ditch volume/grade is not sufficient.

Arrowwood Drive to Cherry Springs Ranch Drive – East of Arrowwood Drive water quality treatment is not required. Roadside ditches will be sized to carry the 100-year event below the top of subgrade. No significant drainage issues were identified in this section of the project.

Cherry Springs Ranch Drive to State Highway 83 – This final segment of Highway 105 will consist of the rural cross section with roadside ditches. Two FEMA Zone A floodplains extend across this segment of Highway 105. Multiple existing culverts carry the runoff north across Highway 105. The culverts will likely be replaced due to age when this portion of the widening project goes to design. They will be sized to carry the full 100-year event.

Zone AE

Zone AE (Floodway)

Zone AE

Zone AE (Floodway)

Zone AE (Floodway)

Zone AE

Zone AE (Floodway)

Zone AE

Zone AE

Zone AE

Zone AE (Floodway)

Woodmoor Dr

Knollwood Blvd

Lake Woodmoor Dr

Briarhaven Ct

Highway 105

Highway 105

Interstate 25

I-25 NB Ramp

Jackson Creek Pkwy

Knollwood Dr

Gold Canyon Rd

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Monument, Colorado
El Paso County

Sheet 1 Sheet 2 Sheet 3 Sheet 4

Print Date:	11/20/2012
File Name:	11x17_DRAINAGE.mxd
Horiz. Scale:	1: 500
Vert. Scale:	
Unit Information	
Unit Leader Initials	

HDR Engineering, Inc. PHONE: 719-272-8800 FAX: 719-272-8801

FEMA Zone A Floodplain
FEMA Zone AE Floodplain
FEMA Zone AE Floodway
MS4 Permit Area
Property Line/ROW
Future EOP

N

0 500 1,000 Feet

EL PASO COUNTY
COLORADO

RW

As Constructed	
No Revisions:	
Revised:	
Void:	

HIGHWAY 105 CORRIDOR DRAINAGE IMPACTS
(WOODMOOR DRIVE TO BRIARHAVEN COURT)

Designer:	E. Staten	Structure Numbers	
Detailer:	T. Haugh		
Sheet Subset:		Subset Sheets:	1 of 4

Project No./Code	
163862	
Task 005	
Sheet Number	D01

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Zone AE (Floodway)
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Zone AE
Arrowwood Dr
Briarhaven Ct
Winding Meadow Way
Highway 105
Highway 105
Forest Dr W
Forest Dr E
Furrow Rd
Martingale Rd
Sierra Way
Fairplay Dr

Monument, Colorado
El Paso County
Sheet 1
Sheet 2
Sheet 3
Sheet 4

Print Date:	10/1/2012
File Name:	11x17_DRAINAGE.mxd
Horiz. Scale:	1 : 500
Vert. Scale:	None
Unit Information	Unit Leader Initials

HDR Engineering, Inc.
2060 BRIARGATE PKY, SUITE 120 COLORADO SPRINGS, CO 80920
Phone: 719-272-8800 FAX: 719-272-8801

FEMA Zone A Floodplain
FEMA Zone AE Floodplain
FEMA Zone AE Floodway
Property Line/ROW

0 500 1,000 Feet

EL PASO COUNTY
COLORADO
RW

As Constructed	
No Revisions:	
Revised:	
Void:	

HIGHWAY 105 CORRIDOR
SHEET NAME

Designer:	E. Staten	Structure Numbers	
Detailer:	T. Haugh		
Sheet Subset:	DRAINAGE	Subset Sheets:	2 of 4

Project No./Code	
163862	
Task 005	
Sheet Number	D02

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File Name:	11x17_DRAINAGE.mxd		
Horiz. Scale:	1: 500	Vert. Scale:	
Unit Information		Unit Leader Initials	

HDR Engineering, Inc. PHONE: 719-272-8800 FAX: 719-272-8801

FEMA Zone A Floodplain
FEMA Zone AE Floodplain
FEMA Zone AE Floodway
MS4 Permit Area
Property Line/ROW
Future EOP

0 500 1,000 Feet

EL PASO COUNTY COLORADO

RW

As Constructed	
No Revisions:	
Revised:	
Void:	

HIGHWAY 105 CORRIDOR DRAINAGE IMPACTS
(W. FOREST DRIVE TO ROLLER COASTER ROAD)

Designer:	E. Staten	Structure Numbers	
Detailer:	T. Haugh		
Sheet Subset:		Subset Sheets:	3 of 4

Project No./Code	
163862	
Task 005	
Sheet Number	D03

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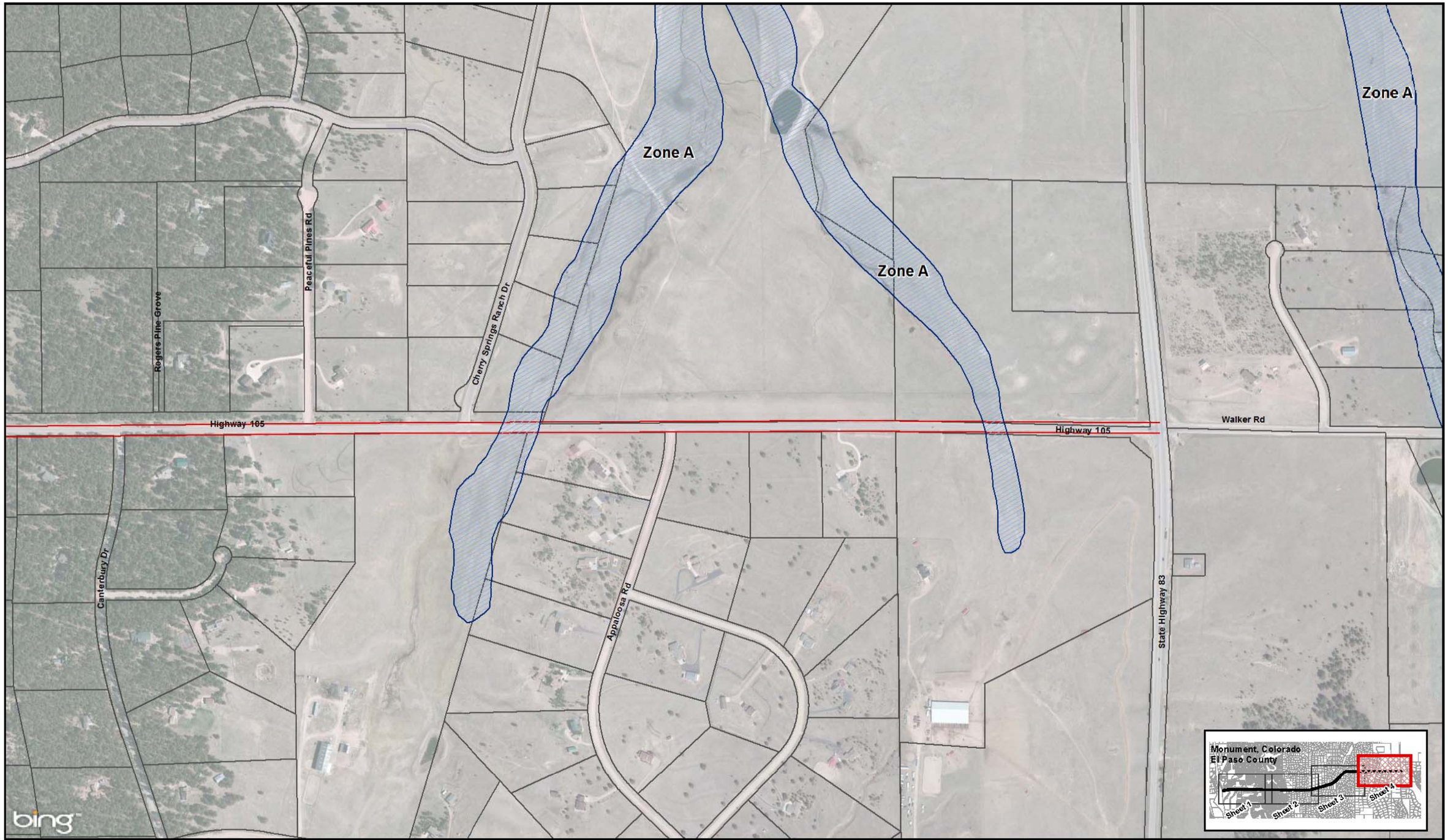

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File Name:	11x17_DRAINAGE.mxd
Horiz. Scale:	1: 500
Vert. Scale:	
Unit Information	
Unit Leader Initials	

HDR Engineering, Inc. PHONE: 719-272-8800 FAX: 719-272-8801

FEMA Zone A Floodplain
FEMA Zone AE Floodplain
FEMA Zone AE Floodway
MS4 Permit Area
Property Line/ROW
Future EOP

0 500 1,000 Feet

EL PASO COUNTY
COLORADO
RW

As Constructed	
No Revisions:	
Revised:	
Void:	

HIGHWAY 105 CORRIDOR DRAINAGE IMPACTS
(CANTERBURY DRIVE TO SH 83)

Designer:	E. Staten	Structure Numbers	
Detailer:	T. Haugh		
Sheet Subset:		Subset Sheets:	4 of 4

Project No./Code	
163862	
Task 005	
Sheet Number	D04

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6 Environmental Resources, Mitigation and Permitting

A review of potential environmental permitting requirements was conducted for the corridor. The review consisted of an initial windshield survey of the project area, discussions with regulatory staff and review of permitting required for other recent projects completed by the County, CDOT and the Town of Monument in northeastern El Paso County.

6.1 Review of Permitting Requirements

It is anticipated that interim and ultimate improvements to the Highway 105 corridor will be financed using a combination of funding sources that may include local, state, federal, RTA, and private (developer) funds. Although, requirements of the National Environmental Policy Act apply for purposes of determining the scope and depth of environmental analysis for this roadway project, no federal action is required at this stage of project. Because of the planned contribution of federal funding for construction of the project, it is anticipated that the scope and depth of analysis for this project will be comparable to that required for similar regional roadway projects. With that understanding, the County has taken selected resource investigations to completion (e.g. noise and wetlands/Waters of the US) with this project, and has initiated threatened and endangered species consultation.

A summary of environmental permits that may apply to this project is provided by *Table 6.1: Environmental Permit Summary*. As noted in the Likelihood of Requirement column, the applicability of some of the permits cannot be determined until both exiting right-of-way and final right-of-way requirements have been delineated. Additional discussion of wetland, water quality, air quality, threatened and endangered species (TES), and noise follows *Table 6.1*.

Table 6.1: Environmental Permit Summary

Permit	Regulatory Agency	Likelihood of Requirement
404 Permit	US Army Corps of Engineers	Unknown. Limited wetlands in the project area can likely be avoided.
Conditional Letter of Map Revision (or Letter of Map Revision	Federal Emergency Management Agency	Unknown. Project is not likely to change the 100-year floodplain. However, the effects on the floodplain will be addressed in subsequent design phases of the project.
El Paso County Air Quality Permit Construction Air Permit	El Paso County Colorado Department of Health and Environment (CDPHE)	Likely. Required for ground disturbance of greater than 25 acres or duration of longer than 6 months.
Construction Dewatering Permit	CDPHE	Likely. Required for any dewatering operations, including caisson drilling and utility trenching.
Demolition permits	El Paso County CDPHE	Unknown. Demolition permits will be required for demolition of structures; this requirement cannot be assessed until right-of-way is established.
Depredation permit	US Fish and Wildlife Service (USFWS)	Unknown. There are a significant number of trees in the project area that could provide nesting habitat. Some trees that are close to the roadway alignment will be removed to accommodate the required clear zone and future widening. Existing box culverts should be inspected for bird nests prior to nesting season (mid-March) and kept clear through the end of nesting (September). Field investigations will be conducted during later phases of the project.
Endangered species consultation	USFWS	Consultation has been initiated and a data base search was conducted. Preble's Meadow Jumping Mouse was identified as a species that was found to present immediately to the west of the study area (I-25/105 Interchange project). Habitat is present within the interchange ramp loops and at the western edge of the study area.
Erosion and Stormwater Quality Control Permit MS4 permit conditions (permanent water quality treatment)	El Paso County CDPHE	Likely.
Stormwater Discharge Permit	CDPHE	Likely.

6.2 Wetlands

HDR subconsultant Smith Environmental and Engineering (SMITH) completed a Waters of the U.S. (WUS) investigation and report (*Waters of the United States, Highway 105 from I-25 to SH 83, El Paso County, Colorado*, September 9, 2011) for the Highway 105 study area in August 2011. The WUS report prepared by SMITH provides a complete and accurate delineation of the WUS located in a potentially impacted corridor along the existing Highway 105 roadway alignment. Jurisdictional wetlands are considered to be WUS and are subject to regulation by the COE under Section 404 of the Clean Water Act and Executive Order 12088. The Executive Order directs federal agencies to consider potential adverse affects on wetlands by avoidance, minimization, and mitigation of adverse impacts for all federal actions. The full WUS report provides data needed by the U.S. Army Corps of Engineers (COE) to complete a WUS determination, should any future project activities impact any WUS.

The WUS investigation tentatively identified seven jurisdictional wetlands (W2, W3, W4, W9, W10, W11, and W12), six non-jurisdictional wetlands (W1, W5, W6, W7, W8, and W13), and two non-jurisdictional washes located within the study. The seven identified jurisdictional wetlands cover 9.27 acres, while six identified non-jurisdictional wetlands cover a total of 1.58 acres. Identified dry washes cover 0.03 acres. The sizes and predominant types of these identified wetland areas are detailed in the summary to the right, *Table 6.2: Acreage and Type of Wetlands in the Study Area*. Mapped locations of these wetland areas are shown in *Figure 6.1* through *Figure 6.4*, immediately following this narrative description.

All identified wetland areas but W5 and W11-W13 are located in the Dirty Woman Creek watershed and the Dirty Woman Creek appears to be perennial in the study area. W11 and W12 are located on the floodplain/terraces of Cherry Creek and W5 and W13 are located in swales that are tributary to Cherry Creek. Cherry Creek is not a perennial stream in the study area. Wetlands within the study area are facilitated by wetland hydrology, which includes surface flow and subsurface seepage into the floodplains and terraces of Dirty Woman Creek and the subsurface seepage into the floodplains and terraces of Cherry Creek and the adjacent uplands.

Three different wetland types were identified, including: Palistrine Emergent (PE), Palustrine Scrub-Shrub (PSS), and Palustrine Forested (PF). PE wetlands dominate, however PSS and PF wetlands also occur within the study area. The dominant vegetation in the PE wetlands includes broadleaf cattail, fowl bluegrass, Baltic rush, foxtail barley, and a variety of other rushes and sedges. The dominant shrub in the PSS wetland is sandbar willow. The PF wetlands are dominated by Narrowleaf cottonwood. Common hydric soils that occur within the study area are classified as Endoaquolls, Fluvaquents, and Endoaquepts, and include Depleted Matrix, depleted below Thick Dark Surface, and Thick Dark Surface types.

Table 6.2: Acreage and Type of Wetlands in the Study Area

Wetland	Predominant Wetland Type	Acres
Jurisdictional Wetlands		
W2	PE	2.63
W3	PE	1.22
W4	PE	0.79
W9	PE	0.52
W10	PE	1.01
W11	PE	1.88
W12	PE	1.22
	Total	**9.27**
Non-Jurisdictional Wetlands		
W1	PE	0.01
W6	PE	0.14
W7	PE	0.03
W5	PE	0.03
W8	PE	0.38
W13	PE	0.99
	Total	**1.58**
Dry Washes		
	Dry Sandy Wash	0.02
	Dry Sandy Wash/Mud Flat	0.01
	Total	**0.03**

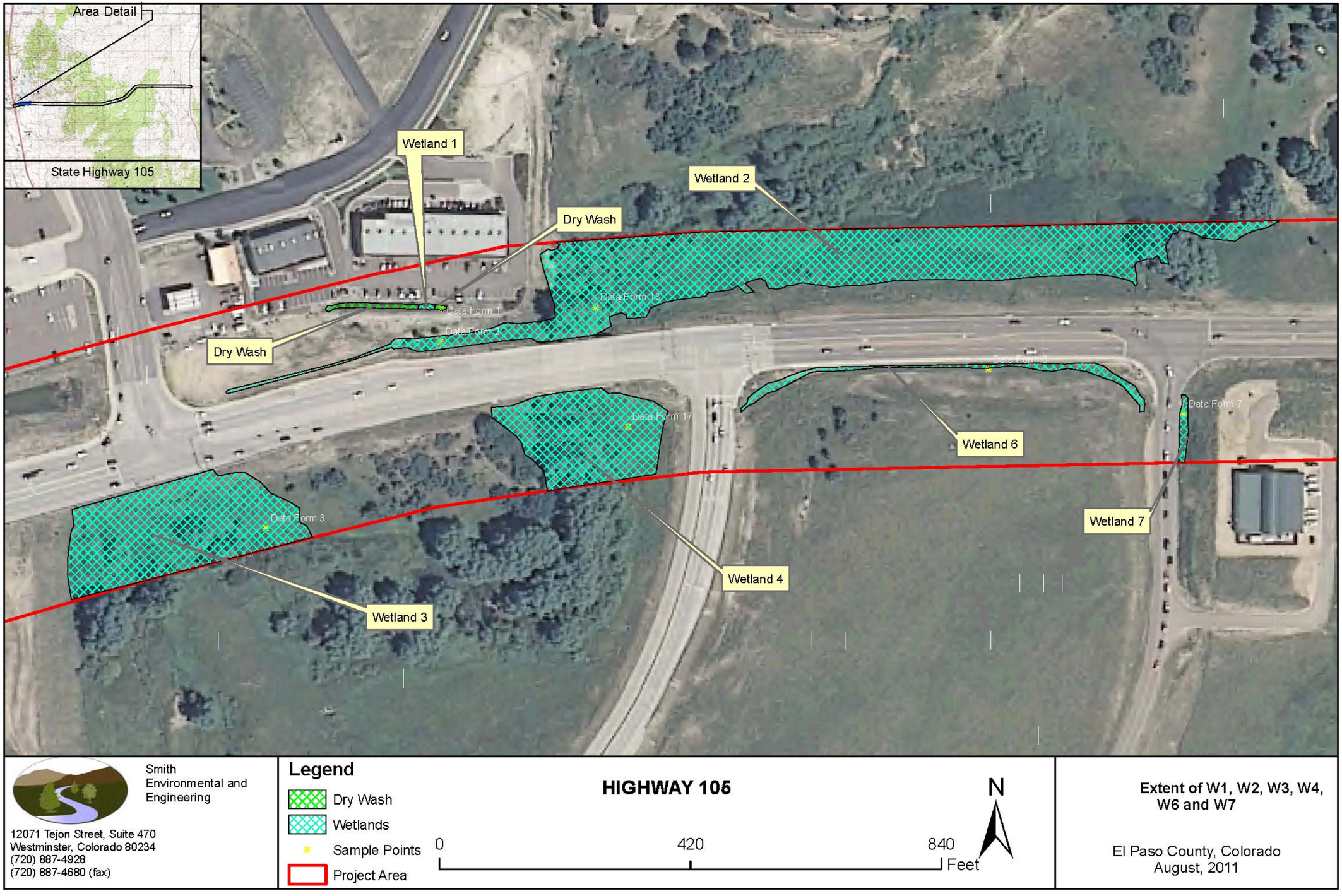


Figure 6.1: Wetland Location Map – Segment 1

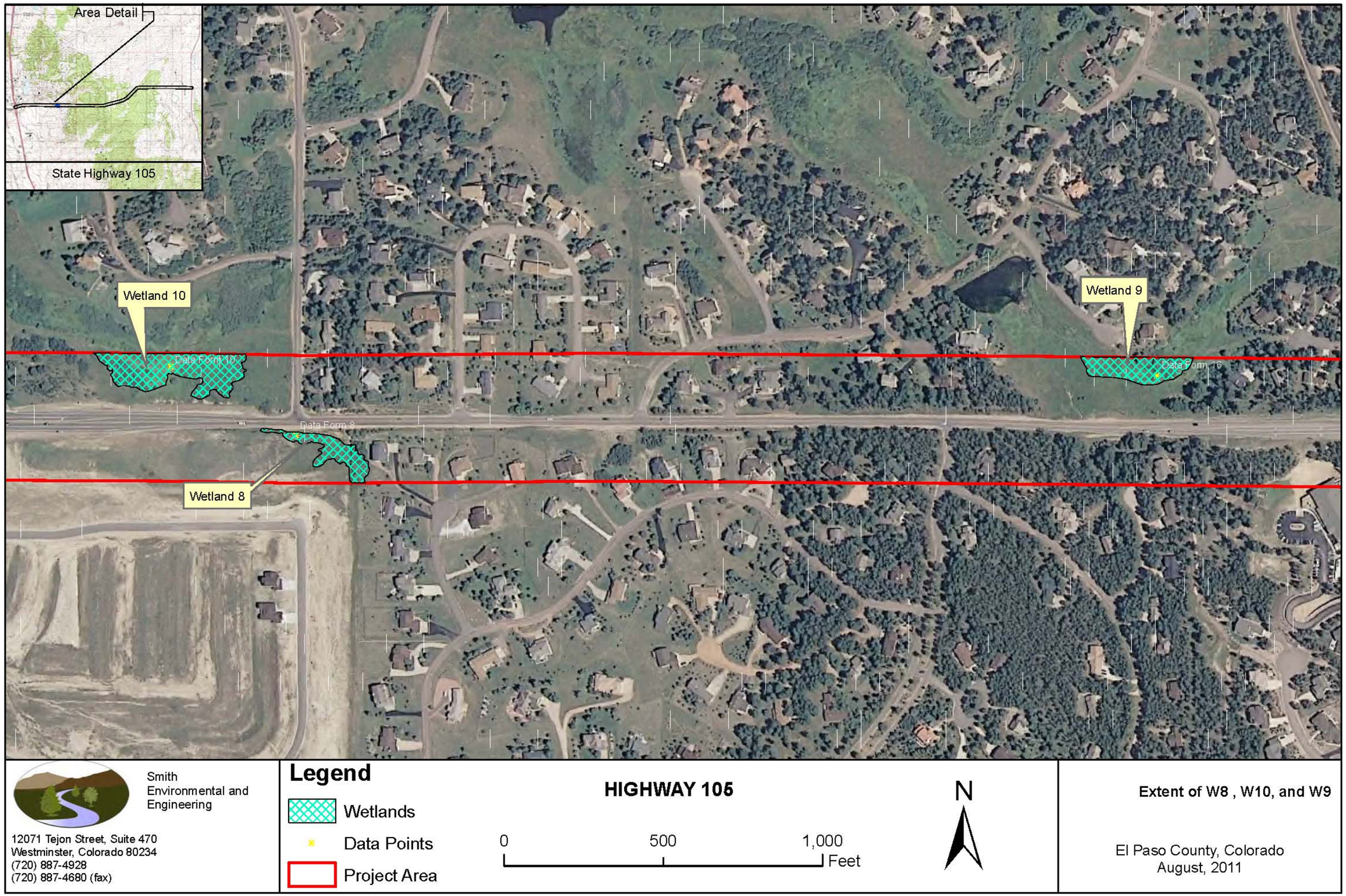


Figure 6.2: Wetland Location Map – Segment 2

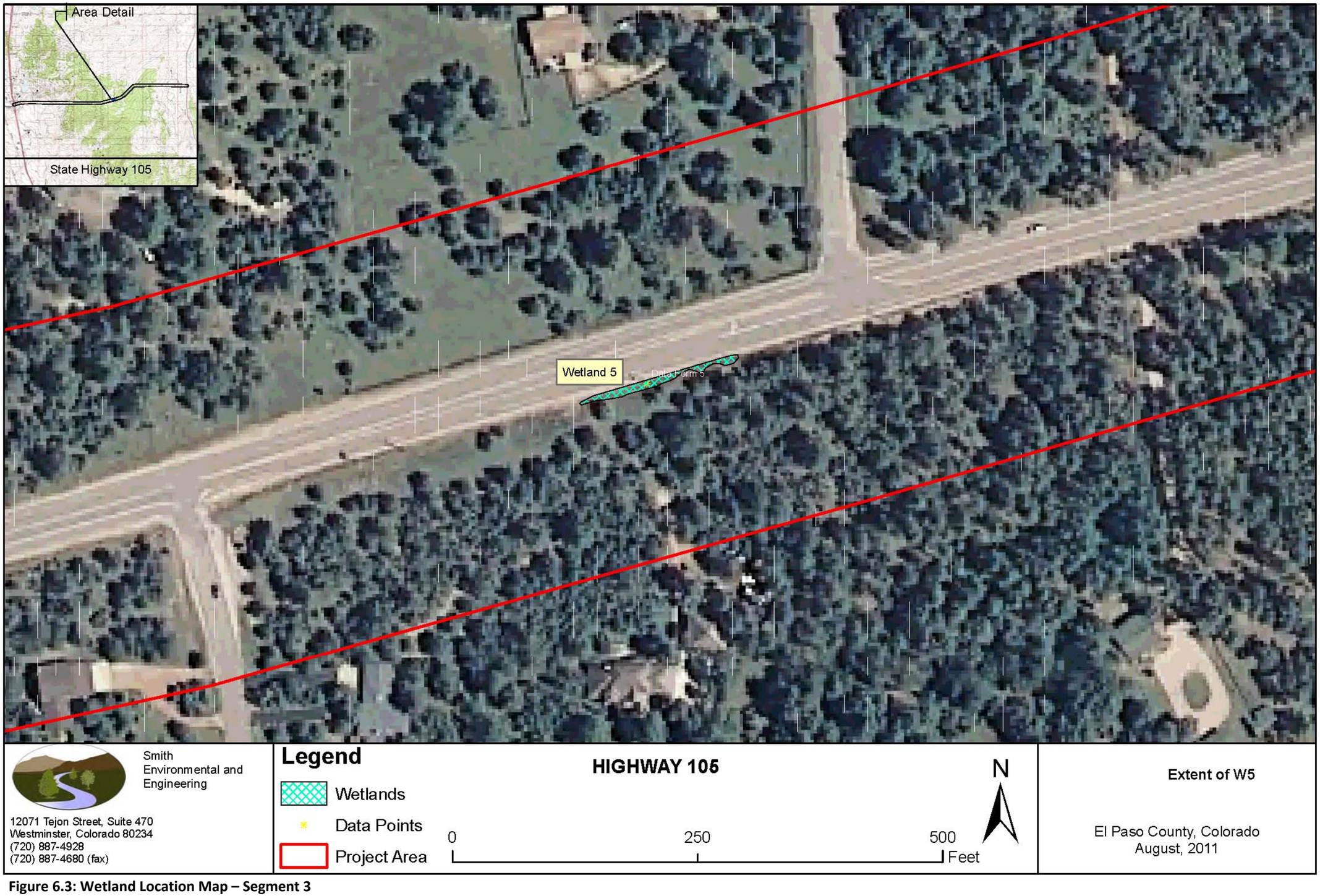


Figure 6.3: Wetland Location Map – Segment 3

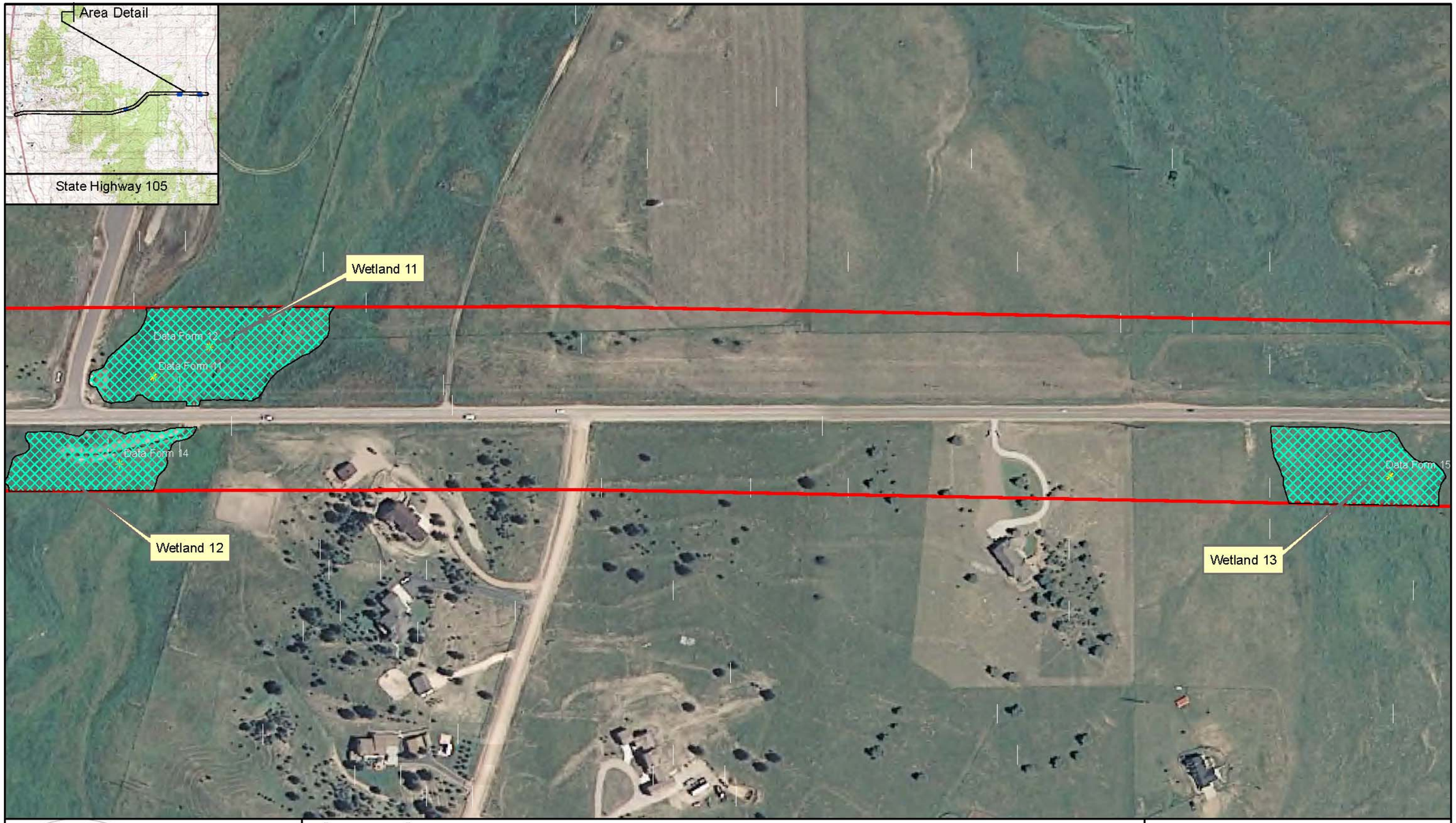


Figure 6.4: Wetland Location Map – Segment 4

6.3 Water Quality

6.3.1 Stormwater Runoff

Development/redevelopment areas in El Paso County of greater than 1 acre are required to incorporate permanent water quality treatment features (e.g. detention ponds) into the design of the development project. The project must treat the water quality capture volume and also may require additional best management practices (BMPs) to protect water quality from stormwater runoff along the impervious roadway surface. Detention basin sizing and design will be addressed in subsequent design phases of the project.

6.3.2 Construction Dewatering

The project will be required to obtain a Construction Dewatering Permit for any pumped water that will be discharged by the project. The permit must be submitted to the CDPHE at least 30 days prior to the anticipated date of discharge. The permit must specify outfalls. After the permit is issued the outfalls must be sampled on a monthly basis.

6.4 Threatened and Endangered Species

HDR project team contacted US Fish and Wildlife Service (USFWS) on September 15, 2011 to discuss the Highway 105 project and any species of concern that could be present in the study area. Because there is no federal action required at this stage of project, it was determined that a review of the USFWS Information, Planning and Conservation (IPAC) database would be sufficient to identify species of concern. USFWS representatives confirmed that the IPAC database was the best source of data for the study area. Once improvements are identified and programmed, an update on species of interest and field surveys as appropriate will be conducted to ensure compliance with the Threatened and Endangered Species Act and National Environmental Policy Act.

The Dirty Women's Creek area was cited by USFWS representatives as potential habitat for the Preble's Meadow Jumping Mouse. USFWS also indicated that sedimentation could be a concern and that the areas both up and downstream were of higher environmental integrity than the area in the project vicinity. A review of the IPAC database confirmed the potential for Preble's Meadow Jumping Mouse habitat in the project area near the western end at the crossing of Dirty Women's Creek, as shown in *Figure 6.6: Preble's Meadow Jumping Mouse Critical Habita*t. This is generally outside of the area in which improvements, including potential roadway widening are expected to occur. Existing mapping was used to delineate potential habitat for the purposes of this study. If specific improvements are recommended in the vicinity of potential habitat as an outcome for preliminary and final design development project phases, field surveys will be conducted and design will be refined to avoid and minimize impacts to the extent possible.

6.5 Air Quality

Before construction begins, an El Paso County Air Quality Permit will be required. The County will also need to file an Air Pollution Emissions Notice (APEN) with the CDPHE that will include an estimate of construction emissions for the project. The APEN evaluates total estimated project air emissions against the applicable air pollutant standard for the region. If the emissions for any regulated criteria pollutant (e.g., PM2.5) are above the applicable standard, a Construction Air Permit will be required. Regardless of whether a permit is required, the project will be required to prepare and implement a Fugitive Dust Control Plan to control fugitive dust emissions.

6.6 Noise

A noise study for the Highway 105 study area was completed in October 2012. The study, detailed in a separate report (*Highway 105 Improvements Noise Study Report, November 2012*), includes a summary of applicable noise standards and criteria and an evaluation of both existing traffic noise impacts and future noise impacts, based on LOS C traffic volumes for conditions with and without the proposed Highway 105 improvements.

Noise impacts associated with the Future Build Alternative were assessed in accordance with current Federal Highway Administration (FHWA)[10] and Colorado Department of Transportation (CDOT) noise assessment regulations and guidelines.[11] According to the CDOT guidance, a traffic noise impact occurs when the predicted traffic noise levels approach or exceed the noise abatement criteria (NAC) or when the predicted future traffic noise levels substantially exceed the existing noise levels. The guidelines define "approaching the NAC" as 1 dBA less than the applicable NAC. The same guidelines interpret substantial increases to be increases of 10.0 dBA or more above existing noise levels.

The FHWA Traffic Noise Model (TNM) version 2.5 was used for this noise study. Coding was completed in accordance with CDOT guidance.[12] The existing Highway 105 roadway geometry was coded for TNM 2.5 using existing roadway edges of pavement. The locations of the twelve measured receiver sites, together with thirteen sites representing noise sensitive receivers/groups of receivers were coded for the model. The TNM 2.5 model validation run was able to replicate the existing noise levels to within an average of 1.5 dBA. For purposes of this analysis, the validated "existing conditions" model results serve as the baseline for analysis of the proposed Highway 105 improvements.

Noise sensitive receptors were modeled using selected measured receivers (MEB-03 and MWB-12) and thirteen modeled-only receivers (REB-01, REB-02, REB-03, REB-04, REB-05, REB-06, RWB-07, RWB-08, RWB-09, RWB-10, RWB-11, RWB-12, and RWB-13).

[10] Federal Highway Noise Standard, Part 722 of Title 23 of the Code of Federal Regulations (23CFR772).
[11] Colorado Department of Transportation Noise Analysis and Abatement Guidelines, Colorado Department of Transportation (CDOT), June, 2011.
[12] Traffic Noise Model User's Guide for Colorado DOT Projects, Colorado Department of Transportation (CDOT), November, 2006.

For the future "No Action" and the future "Build" conditions, none of these modeled receivers, all located at the front of representative residences or type C uses, met the "approach" NAC noise abatement criteria. Ten other measured receivers (MEB01, MEB02, MEB04, MEB05, MEB06, MWB07, MWB08, MWB09, MWB10, and MWB11) do not represent noise sensitive receivers such as residences or outdoor active use areas such as trails or playgrounds. These measured receivers, located adjacent to the existing edge of pavement, were used only to calibrate the existing condition noise model. Existing noise levels are not "substantially exceeded" for either of the future "No Build" condition or the future "Build" condition at any measured or modeled receiver locations.

Although the future noise levels modeled for "noise sensitive receptors" do not meet "approach" NAC noise abatement criteria, a screening-level evaluation of the justification for, and feasibility of noise abatement was conducted. The results of the noise abatement assessment confirm that noise mitigation is neither warranted, nor recommended. Nonetheless, the modeling results provide valuable information that can be used to guide future development/redevelopment within the corridor. Noise contour maps developed based on the model are based on the forecasted LOS C traffic conditions and proposed roadway geometry. Mapping for the future Build conditions locate the noise contour for the most restrictive, land use noise abatement criterion (Category B, 66 dBA) with respective to existing structures. These maps, included as *Figure 6.5* through *Figure 6.9*, should be used to support future land-use planning and decision making for the Highway 105 study corridor, with the intent to minimize future noise impacts. It is recommended that all future development/ redevelopment occur beyond the setback distances indicated by these contours to ensure that noise levels at the applicable NAC threshold values will not affect future residences or businesses.

Table 6.3: Summary of Future Build Noise Impacts

Receiver	Land-Use Category[1]	CDOT NAC (dBA)	Represents	Existing Leq	Future Build Leq	Approach or exceed NAC limit	10 dBA increase
MWB-12	C	66	Edge of fence east of Knollwood Drive – Monument Academy Playground	61.0	63.2	No	No
MEB-03	B	66	Edge of fence – Montessori School Playground west of Furrow Road	58.7	62.3	No	No
RWB-13	B	66	1st row residences, north side - 10 units	64.4	65.2	No	No
RWB-12	B	66	1st row residences, north side - 6 units	64.2	65.8	No	No
REB-01	B	66	1st row residences, north side - 23 units	60.7	65.0	No	No
RWB-11	B	66	1st row residences, north side - 4 units	58.5	61.9	No	No
REB-02	B	66	1st row residences, south side - 10 units	44.4	44.4	No	No
RWB-10	B	66	1st row residences, north side - 11 units	51.6	53.5	No	No
REB-03	B	66	1st row residences, south side - 10 units	55.0	55.1	No	No
RWB-09	B	66	1st row residences, north side - 8 units	50.0	51.5	No	No
RWB-08	B	66	1st row residences, north side - 11 units	53.1	54.6	No	No
REB-04	B	66	1st row residences, south side - 3 units	54.2	56.1	No	No
REB-05	B	66	1st row residences, south side - 3 units	54.0	57.4	No	No
REB-06	B	66	1st row residences, south side - 5 units	51.5	57.1	No	No
RWB-07	B	66	1st row residences, north side - 4 units	50.4	53.2	No	No
Total Exceeding Noise Abatement Criteria				**0**		**0**	**0**

[1] Includes undeveloped lands that are permitted for this activity category.

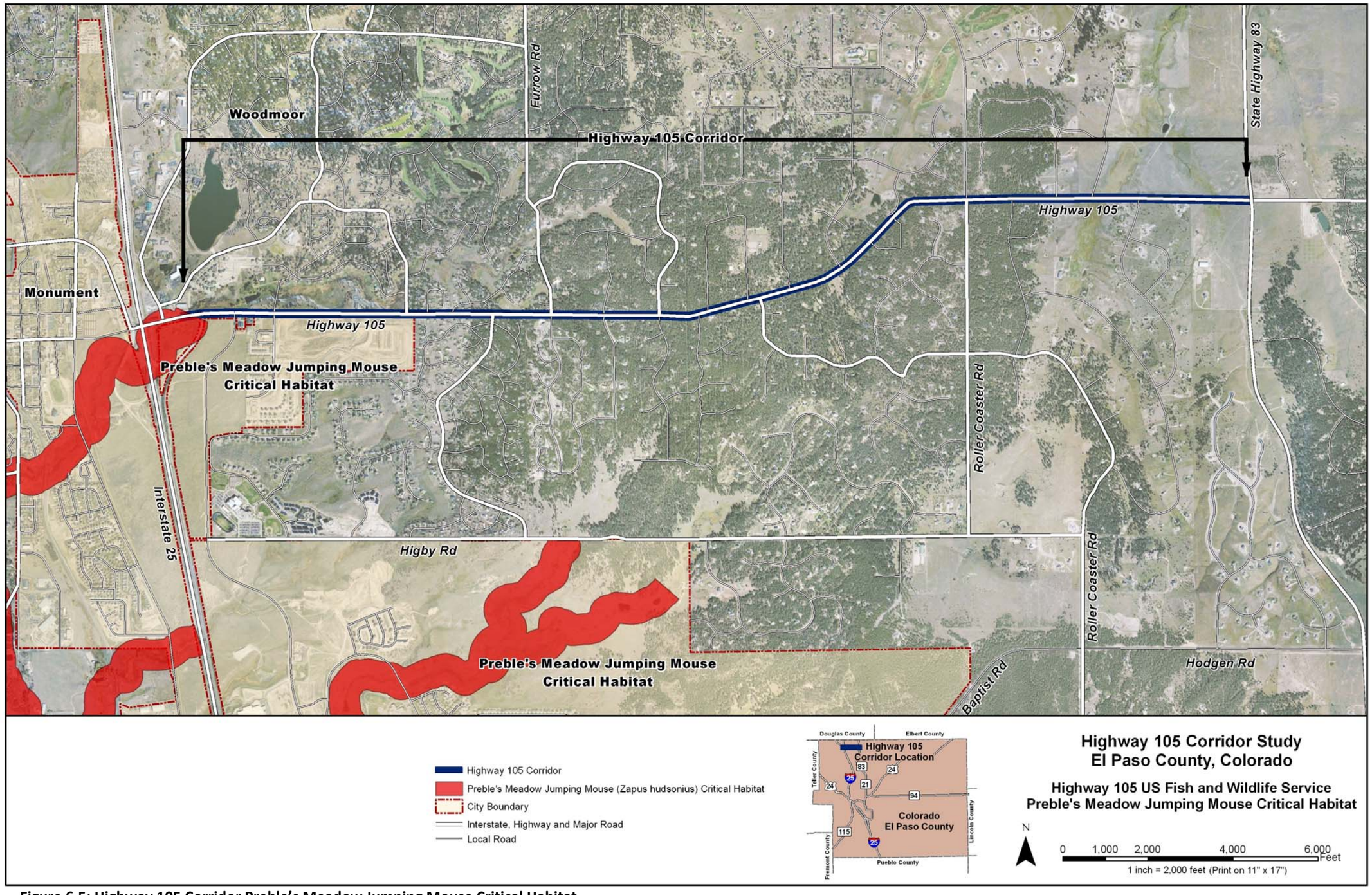
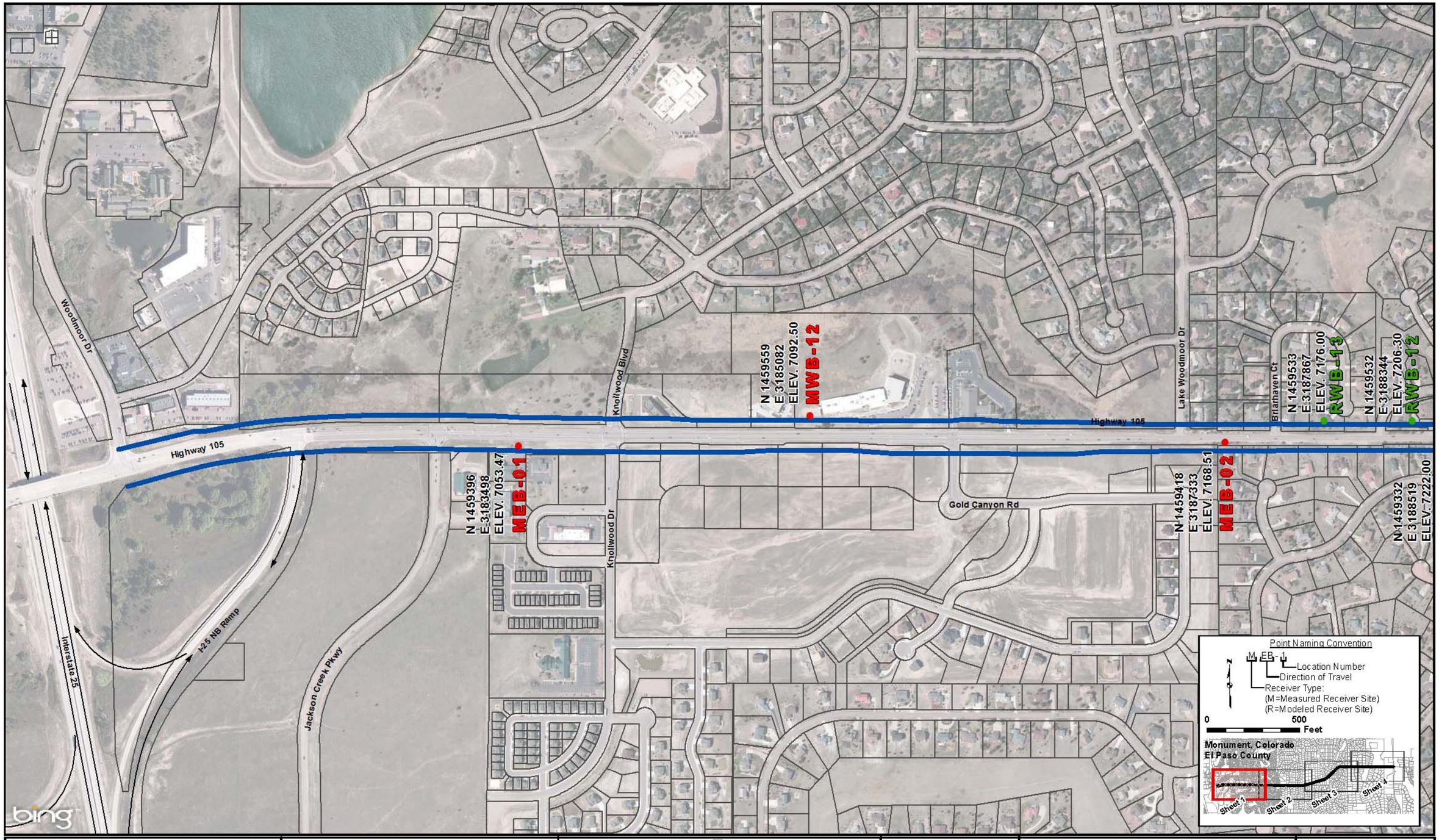


Figure 6.5: Highway 105 Corridor Preble's Meadow Jumping Mouse Critical Habitat



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Unit Information		Unit Leader Initials	

HDR Engineering, Inc.
2060 BRIARGATE PKY, SUITE 120 COLORADO SPRINGS, CO 80920
PHONE: 719-272-8800 FAX: 719-272-8801

- Measured Receiver Site
- Modeled Receiver Site
- 66dB Noise Level Contour
- Property Line/ROW

EL PASO COUNTY
COLORADO

RW

As Constructed	
No Revisions:	
Revised:	
Void:	

HIGHWAY 105 CORRIDOR
FUTURE BUILD NOISE LEVELS
(WOODMOOR DRIVE TO BRIARHAVEN COURT)

Designer:	M. Paz de Araujo	Structure Numbers	
Detailer:	T. Haugh		
Sheet Subset:	NOISE	Subset Sheets:	1 of 4

Project No./Code	
163862	
Task 005	
Sheet Number	N13

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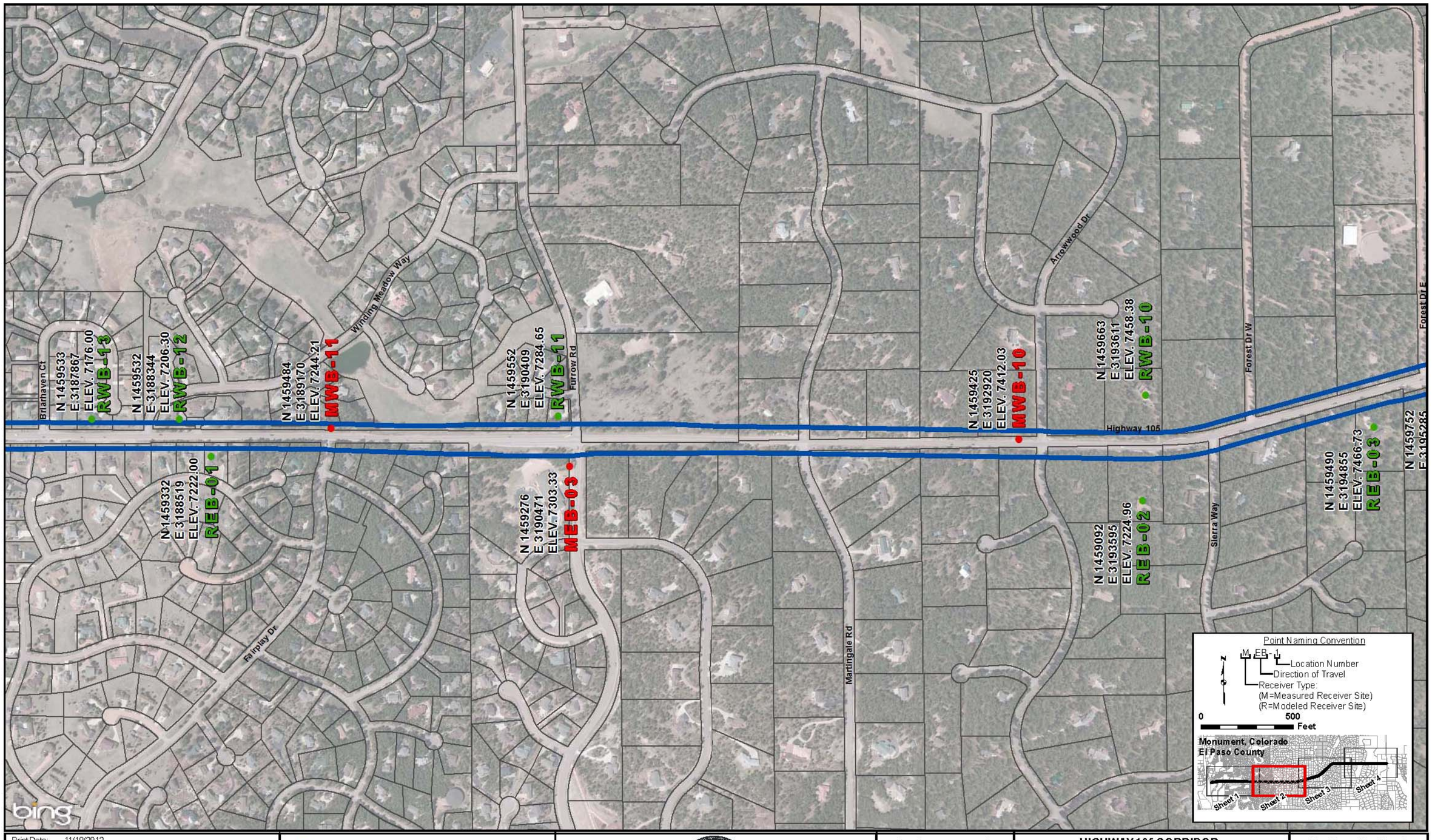

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Unit Information	
Unit Leader Initials	

HDR Engineering, Inc.
2060 BRIARGATE PKY, SUITE 120 COLORADO SPRINGS, CO 80920
PHONE: 719-272-8800 FAX: 719-272-8801

- Measured Receiver Site
- Modeled Receiver Site
- 66dB Noise Level Contour
- Property Line/ROW

EL PASO COUNTY
COLORADO
RW

As Constructed	
No Revisions:	
Revised:	
Void:	

HIGHWAY 105 CORRIDOR
FUTURE BUILD NOISE LEVELS
(WINDING MEADOWS WAY TO SIERRA WAY)

Designer:	M. Paz de Araujo	Structure Numbers	
Detailer:	T. Haugh		
Sheet Subset:	NOISE	Subset Sheets:	2 of 4

Project No./Code	
163862	
Task 005	
Sheet Number	N14

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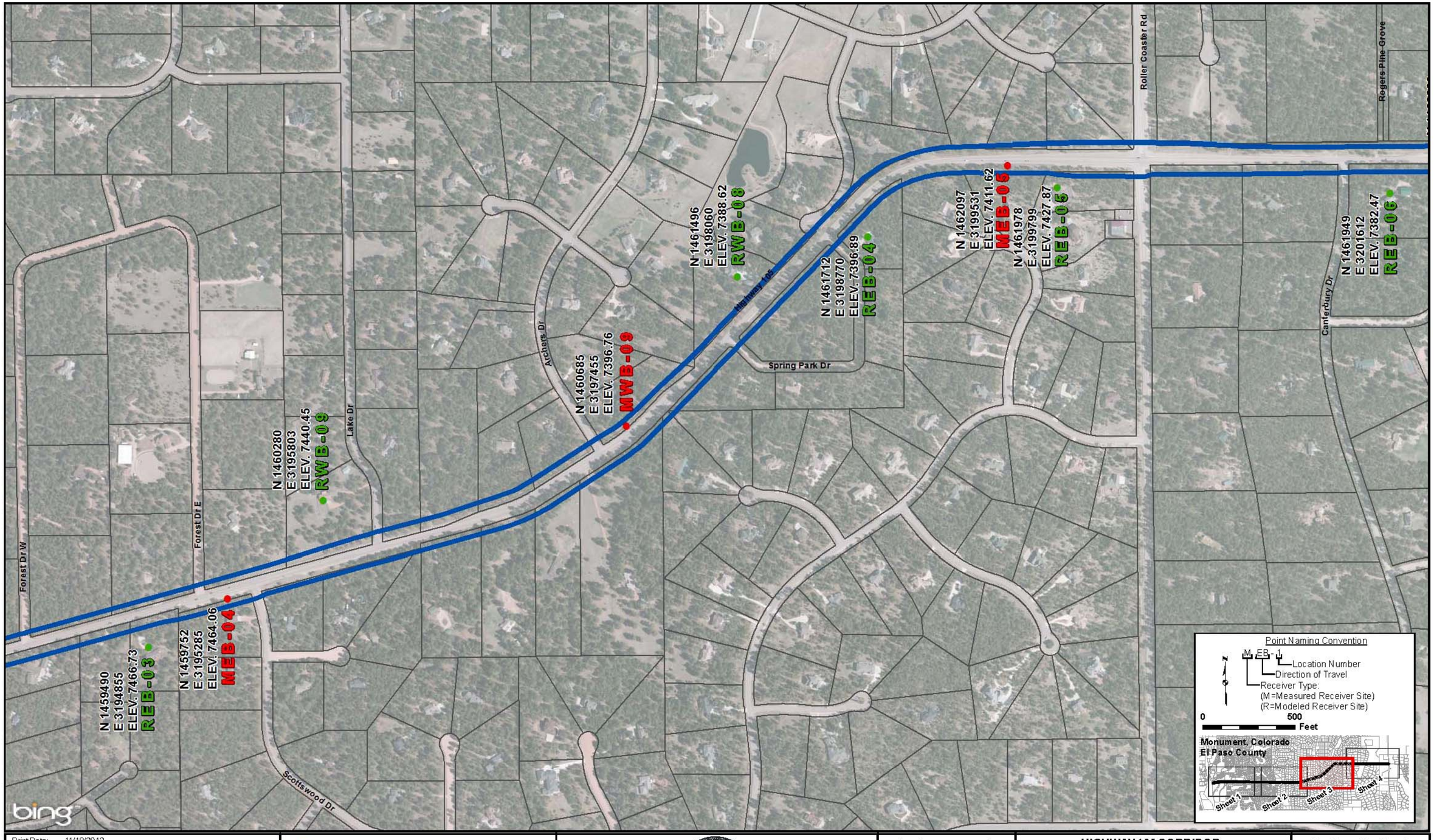

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Unit Information		Unit Leader Initials	

HDR Engineering, Inc.
2060 BRIARGATE PKY, SUITE 120 COLORADO SPRINGS, CO 80920
PHONE: 719-272-8800 FAX: 719-272-8801

- Measured Receiver Site
- Modeled Receiver Site
- 66dB Noise Level Contour
- Property Line/ROW

EL PASO COUNTY
COLORADO
RW

As Constructed
No Revisions:
Revised:
Void:

HIGHWAY 105 CORRIDOR
FUTURE BUILD NOISE LEVELS
(W. FOREST DRIVE TO ROLLER COASTER ROAD)

Designer:	M. Paz de Araujo	Structure Numbers	
Detailer:	T. Haugh		
Sheet Subset:	NOISE	Subset Sheets:	3 of 4

Project No./Code
163862
Task 005
Sheet Number N15

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