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EIS



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# Traffic Noise and Vibration Impact Assessment Addendum

**August 2011**

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Federal Highway Administration  
Colorado Department of Transportation

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## 1.0 INTRODUCTION

The Colorado Department of Transportation (CDOT) is evaluating alternative sets of improvements to the transportation system in north-central Colorado through the North I-25 Environmental Impact Statement (EIS). The general region covered in the EIS (**Figure 1-1**) encompasses approximately 1,300 square miles. This regional study area generally is bounded by and includes U.S. Highway (US) 287, US 85, State Highway (SH) 1 and US 36. The distance from SH 1 to US 36 is approximately 60 miles and from US 287 to US 85 is approximately 20 miles.

The overall purpose for the EIS is to improve connectivity, functionality and capacity of transportation modes in the regional study area. The existing highways are becoming inadequate and will underserve the expected future traffic demand in the region. CDOT Project IM0253 179 is the EIS and is examining several alternatives that would upgrade transportation infrastructure in this regional study area.

The overall purpose of this analysis was to conclude whether noise or vibration levels at any receptors near potential project roadway improvements may exceed applicable impact thresholds (CDOT, Federal Highway Administration [FHWA] or Federal Transit Administration [FTA] guidelines). If so, mitigation actions for the impacted receptors are considered for the project design. This is important because many properties are along the several study corridors and may be impacted by noise or vibration from the alternatives. The primary concern for traffic noise for the project is the I-25 corridor, but also of concern are new or expanded parking lots that would support the proposed bus transit.

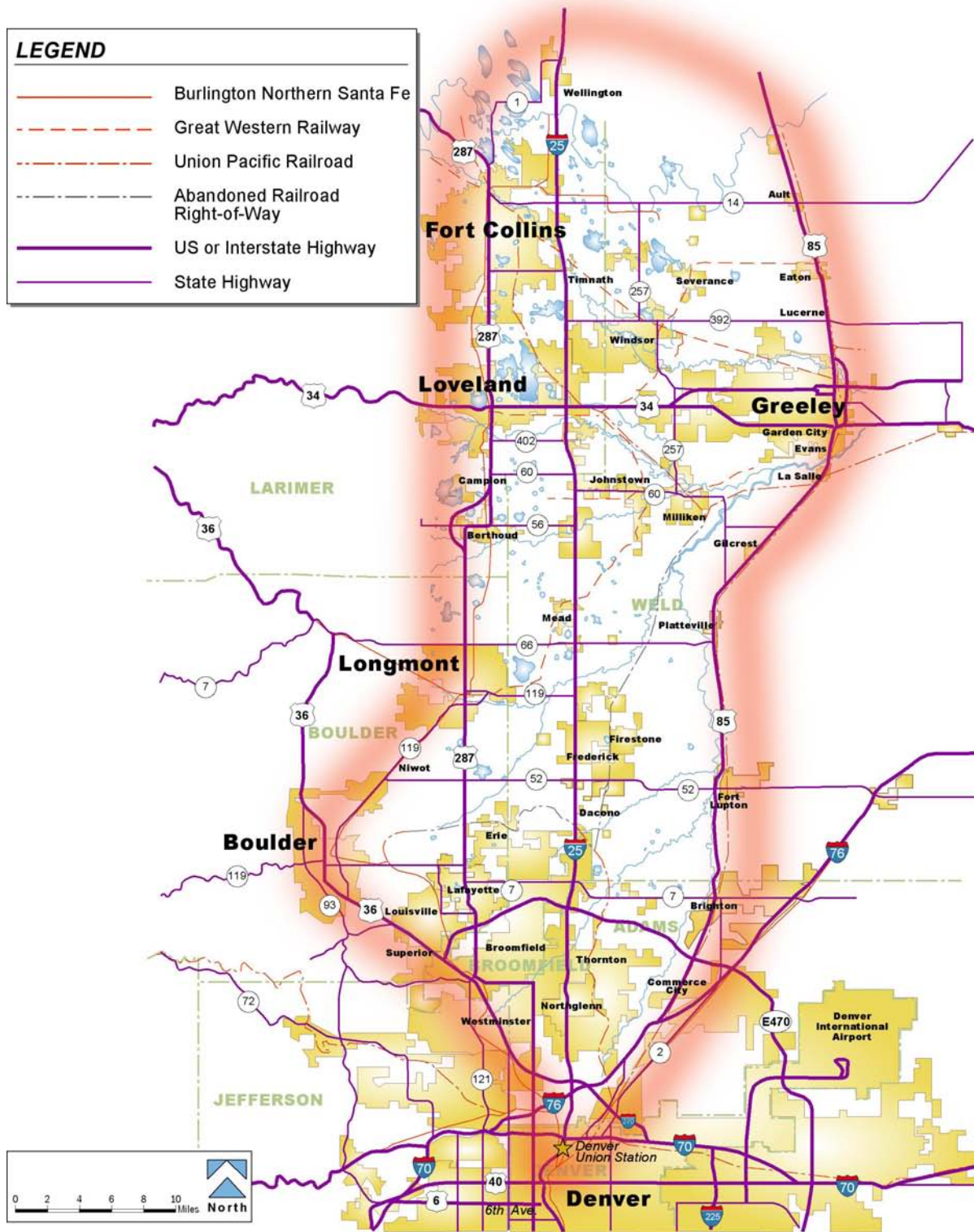
The Draft EIS (CDOT/FHWA,/FTA 2008) examined three alternatives: the No-Action Alternative and Packages A and B. The traffic noise impact results for these alternatives were discussed in the Draft EIS. From comments and discussions after the Draft EIS, a new Preferred Alternative has been developed. Detailed descriptions of these alternatives can be found in the Final EIS (CDOT/FHWA, FTA 2011).

The remainder of this addendum describes follow-up traffic noise impact analyses that supplement the Traffic Noise and Vibration Impact Assessment (FHU, 2008) originally submitted as part of the Draft EIS. The follow-up analyses were performed for the Final EIS for two primary reasons:

- ▶ The horizon years for the two current regional transportation models have changed from 2030 to 2035; consequently the project design year has changed.
- ▶ A new Preferred Alternative for the project has been developed that is a blend of other alternatives and was not analyzed in the Draft EIS. As a result, the proposed typical sections for I-25 have changed throughout the regional study area and design changes are being proposed for some of the supplemental facilities, such as transit parking lots.

The information provided below is an addendum to the previous technical report prepared for the Draft EIS and focuses on methods or results that are new or changed since the Draft EIS. The noise topics that are unchanged can be found in the previous technical report (FHU, 2008). Information on noise and vibration from the proposed rail transit facilities can be found in a separate report (Harris, Miller, Miller and Hanson, 2010).

Figure 1-1 Regional Study Area



## 1.1 PREFERRED ALTERNATIVE

Comments and discussions occurring for the project after the Draft EIS was published lead to a consensus that both Packages A and B could be improved to better meet the overall EIS purpose. Therefore, the Preferred Alternative was developed that is a combination of Package A and Package B components, with some refined features. This means that the Preferred Alternative was not evaluated in the Draft EIS.

The Preferred Alternative is a multi-modal solution with highway, rail and bus improvements. The Preferred Alternative includes:

- ▶ I-25 interchange reconstructions
- ▶ addition of general purpose lanes and tolled express lanes on I-25
- ▶ commuter rail along the Burlington Northern Santa Fe Railway tracks between Fort Collins and the FasTracks North Metro end-of-line station in Thornton
- ▶ express bus service along I-25 between Fort Collins and downtown Denver
- ▶ commuter bus service along US 85 between Greeley and downtown Denver

## 1.2 ANALYSIS APPROACH

On July 13, 2010, FHWA issued a new final traffic noise rule that affects Federal and Federal-aid projects (Code of Federal Regulations Title 23 Part 772); however, the new requirements are not effective until July 13, 2011. CDOT's current guidance (CDOT, 2002) is still in force and still the most restrictive of the applicable regulations for highway traffic noise. Separately, the new highway commuter bus services (e.g., bus stations and parking lots) were examined following FTA guidelines, as was done for the Draft EIS. Therefore, the same methods of analysis were used for both the Final EIS as the Draft EIS (CDOT/FHWA/FTA, 2008).

The primary impact thresholds of concern for this analysis are the CDOT Noise Abatement Criteria (NAC) (**Table 1-1**) and the FTA impact levels (FTA, 2006). Under CDOT's guidelines, equaling or exceeding the NAC is viewed as a noise impact and triggers an investigation of noise mitigation measures. A "substantial" noise increase is also a noise impact and leads to evaluation of traffic noise mitigation actions. A "substantial" noise increase is defined as the future noise level increasing by 10 dBA or more over existing levels. For the CDOT analyses, the one-hour equivalent noise level ( $L_{eq}$ ) was used.

For the technical work under the Draft EIS, the regional transportation plans for the regional study area had planned through year 2030. Since the Draft EIS, the regional plans have been updated through year 2035. Therefore, the components of the Preferred Alternative were designed for predicted 2035 traffic to be consistent with the latest regional plans. However, this meant the Preferred Alternative results would not be consistent with the 2030 results for the other alternatives in the Draft EIS. Because all four alternatives are being included in the Final EIS, a decision was made to update the Draft EIS traffic noise impact analyses to year 2035 to maintain comparability.

Traffic Noise Model (TNM) Version 2.5 software models of the alternatives were developed to assess impacts. A new model for 2035 for the Preferred Alternative was developed for the Final EIS. To enable comparisons of impacts to be made, the previous TNM models for the No-Action, Package A and Package B Alternatives were updated from 2030 traffic to 2035 traffic.

**Table 1-1 CDOT Noise Abatement Criteria**

Land Use Category	CDOT NAC (L <sub>eq</sub> )	Description of Land Use Category
A	56 dBA (Exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is to continue to serve its intended purpose. Such areas could include amphitheatres, particular parks, or open spaces which are recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	66 dBA (Exterior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, playgrounds, active sports areas, and parks.
C	71 dBA (Exterior)	Developed lands, properties or activities not included in categories A and B above.
D	None	Undeveloped lands.
E	51 dBA (Interior)	Residences, motels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Traffic noise results for the No-Action, Package A and Package B alternatives for 2030 are part of the Draft EIS (CDOT/FHWA/FTA, 2008), and for 2035 are described below. Only 2035 traffic noise results have been developed for the Preferred Alternative and those are also described below.

Impact criteria under the FTA guidelines are more complex than those for CDOT and are described in other documents (FTA, 2006; HMMH, 2010). FTA screening analyses were performed for each of the proposed highway bus/commuter facilities, and where necessary, an FTA General Assessment was performed. The commuter rail analyses are presented in a separate report (HMMH, 2010).



## 2.0 AFFECTED ENVIRONMENT

The affected environment has not changed dramatically since the Draft EIS. At the south end of the project area between 128th Avenue and US 36, there are numerous densely populated residential and business areas along both the east and west sides of I-25. Along I-25 between SH 1 and 128th Avenue, there are mostly dispersed residential and business properties, though there are clusters of developed properties. There are several existing noise barriers along I-25 that were included in the models.

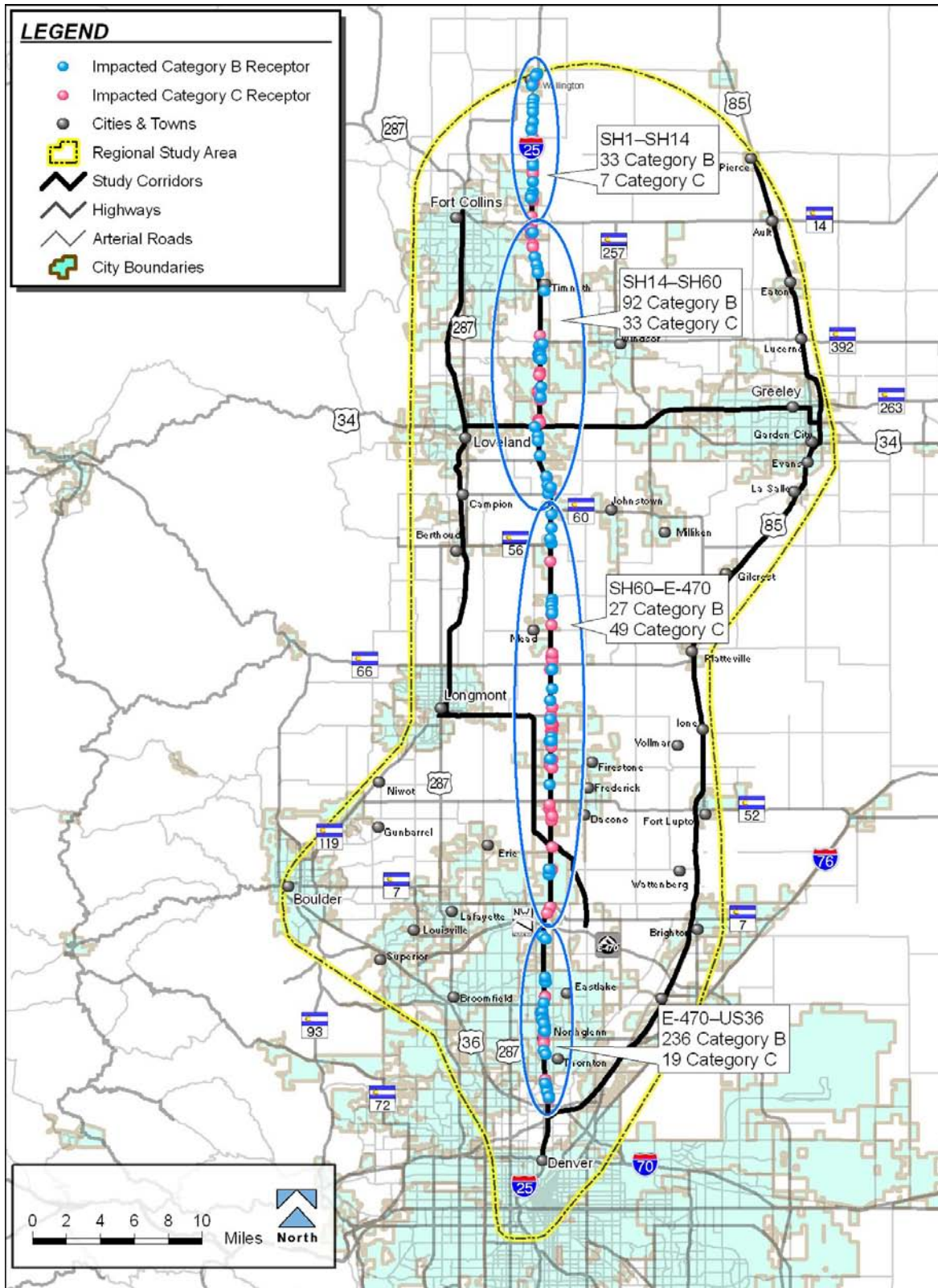
However, some corridor properties have been repurposed and/or structures have been demolished since the Draft EIS. Primarily, this includes a handful of isolated homes along I-25. Also, some new buildings have been built along I-25; these include some sizeable residential and commercial developments. In total, the changes still represent a relatively small fraction of the developed properties identified in the analysis for the Draft EIS.

Traffic data for 2005 were used for the TNM modeling to maintain consistency with the Draft EIS, but the model receptors were adjusted to reflect current (early 2010) conditions. More than 600 points were modeled for traffic noise (**Appendix A**).

The calculated result for each model point is presented in **Appendix A**. Modeled points that represent 496 discrete receptors are calculated to have existing traffic noise levels above the respective NAC during the afternoon peak hour. Of these, 388 are Category B properties (residential) and 108 are Category C properties (commercial). The impacted locations are summarized in **Figure 2-1**.

I-25 traffic is the predominant noise source for the highway corridor. The distance from I-25 to the locations where traffic noise levels reach the CDOT NACs varies along the length of the 60-mile-long I-25 corridor, mostly dependent on the terrain and I-25 traffic volumes. Generally, receptors within approximately 350 feet of I-25 are at least 66 dBA and those within approximately 200 feet of I-25 are at least 71 dBA.

Figure 2-1 Impacted Receptors from Existing Conditions Traffic Noise Model



### 3.0 ENVIRONMENTAL CONSEQUENCES

Details on the noise analysis procedures were presented in the technical report prepared for the Draft EIS (FHU, 2008). To summarize, traffic noise levels from project roads were evaluated through a combination of measurements and computer modeling. Impacts from traffic noise were assessed on the basis of the predicted noise levels' relationship to the CDOT NAC (**Table 1-1**) and the magnitude of the predicted traffic noise level change from existing conditions (**Section 1.2**). If a receptor was predicted to be impacted by traffic noise, noise mitigation measures were evaluated (**Section 4.0**).

Updated traffic noise models were developed using TNM as described in **Section 1.2** for the three Draft EIS alternatives (No-Action, Package A and Package B) and new models were developed for the Preferred Alternative. The models included the major project roads using predicted future (2035) traffic volumes and road layouts. The only road data changes from the Draft EIS TNM models were revised traffic volumes—no road alignment, width or elevation changes were needed for these alternatives. Refinements and updates to receptors were incorporated to reflect new residences, new parks, etc. since the Draft EIS analyses.

The updated traffic noise impacts are summarized in **Table 3-1** and described below for each alternative. Detailed results from the models are presented in **Appendix A**.

**Table 3-1 Summary of I-25 Traffic Noise Impacts**

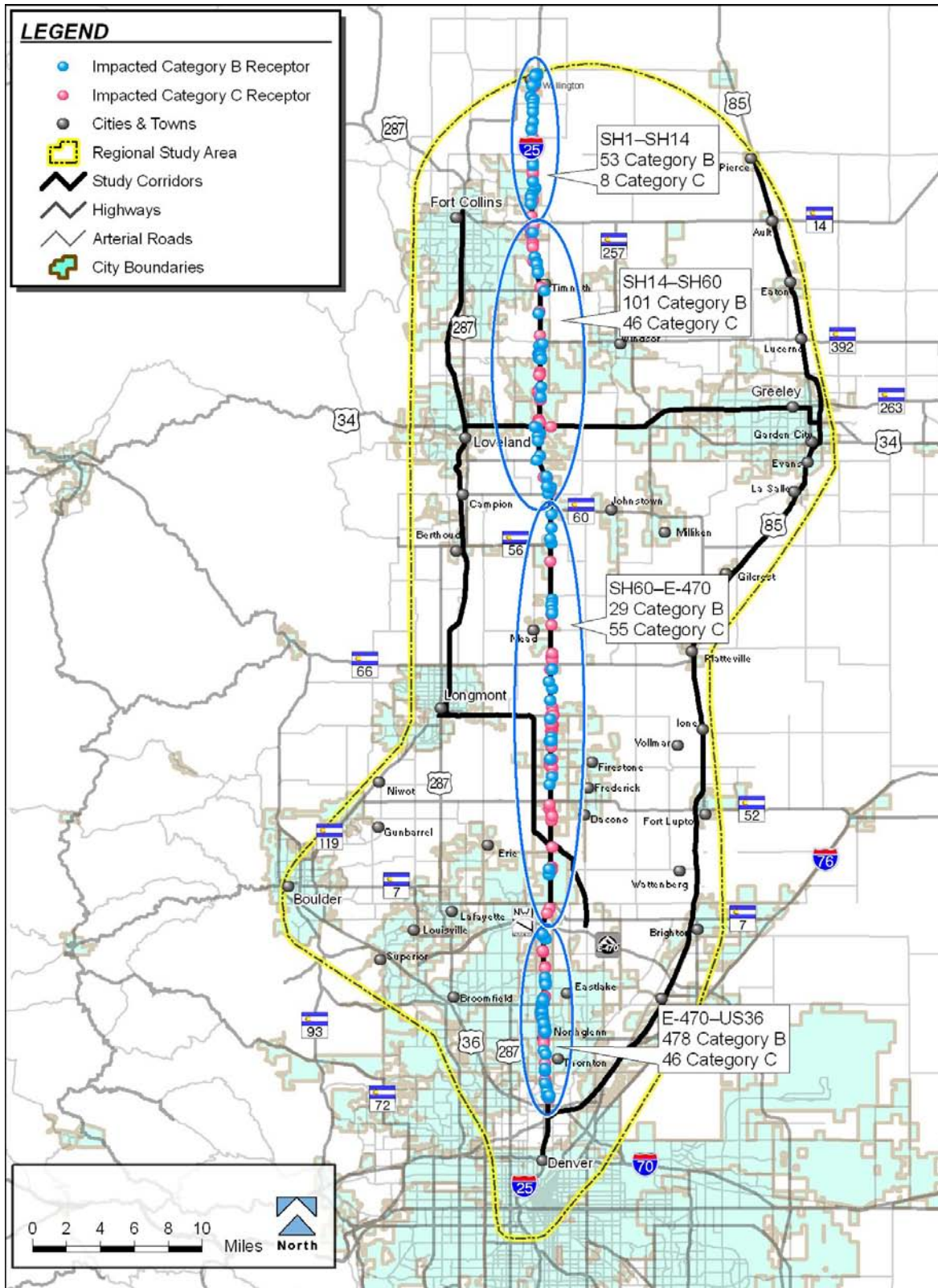
I-25 Segment	Number of 2035 Noise-Impacted Receptors (Category B / Category C)				
	Existing (2005)	No-Action	Package A	Package B	Preferred Alternative
SH 1 to SH 14	33 / 7	53 / 8	61 / 8	61 / 8	61 / 8
SH 14 to SH 60	92 / 33	101 / 46	103 / 44	103 / 44	101 / 44
SH 60 to E-470	27 / 49	29 / 55	31 / 55	30 / 56	29 / 55
E-470 to US 36	236 / 19	478 / 46	478 / 46	491 / 55	488 / 54
<b>Total</b>	<b>388 / 108</b>	<b>661 / 155</b>	<b>673 / 153</b>	<b>685 / 163</b>	<b>679 / 161</b>

### 3.1 UPDATED NO-ACTION ALTERNATIVE RESULTS

Results for the No-Action Alternative have been updated from 2030 to 2035 (**Figure 3-1** and **Table 3-1**). The larger residential areas (Category B) predicted to be impacted were:

- ▶ Wellington East (Wellington) – 20 receptors
- ▶ Waterglen (Fort Collins) – 12 receptors
- ▶ Mountain Range Shadows (Larimer County) – 69 receptors
- ▶ Isolated/scattered homes along I-25 in CDOT Region 4 (Larimer and Weld Counties) – 82 receptors
- ▶ Numerous neighborhoods abutting I-25 in CDOT Region 6 (Broomfield, Thornton, Westminster, Northglenn and Adams County) – 478 receptors

Figure 3-1 Impacted Receptors for 2035 No-Action Alternative



In addition, parts of Archery Range Natural Area, Arapahoe Bend Natural Area, Big Thompson Ponds State Wildlife Area, St. Vrain State Park, Willowbrook Park, Niver Creek Open Space, Civic Center Park and Thorncreek Golf Course were predicted to have traffic noise levels above the CDOT NAC for Category B. No receptors were expected to experience a 10-dBA increase; the largest increase was predicted to be approximately 6 dBA.

## 3.2 UPDATED PACKAGE A RESULTS

Results for Package A have been updated from 2030 to 2035 (**Figure 3-2** and **Table 3-1**). In terms of highway noise, the larger residential areas (Category B) predicted to be impacted were:

- ▶ Wellington East (Wellington) – 20 receptors (same as No-Action Alternative)
- ▶ Waterglen (Fort Collins) – 20 receptors (more than No-Action Alternative)
- ▶ Mountain Range Shadows (Larimer County) – 69 receptors (same as No-Action Alternative)
- ▶ Margil Farms (Mead) – 7 receptors (more than No-Action Alternative)
- ▶ Singletree Estates – 2 receptors (more than No-Action Alternative)
- ▶ Isolated/scattered homes along I-25 in CDOT Region 4 (Larimer and Weld Counties) – 77 receptors (fewer than No-Action Alternative)
- ▶ Numerous neighborhoods abutting I-25 in CDOT Region 6 (Broomfield, Thornton, Westminster, Northglenn and Adams County) – 478 receptors (same as No-Action Alternative)

In addition, parts of Archery Range Natural Area, Arapahoe Bend Natural Area, Big Thompson Ponds State Wildlife Area, St. Vrain State Park, Willowbrook Park, Niver Creek Open Space, Civic Center Park and Thorncreek Golf Course were predicted to have traffic noise levels above the CDOT NAC for Category B. No receptors were expected to experience a 10-dBA increase; the largest increase was predicted to be approximately 6 dBA.

In terms of bus transit noise, five commuter bus stations/parking lots, six carpool parking lots and one bus maintenance site are proposed as new facilities (**Figure 3-3**). Screening analyses showed that there would be no noise impacts from these sites, with the possible exception of three commuter bus stations (South Greeley, Evans and Platteville). These three sites required further analysis with an FTA General Assessment, and the results were that none of the three stations would create a noise impact to the neighboring properties. Therefore, none of the proposed bus/carpool facilities were found to cause noise impacts.

Figure 3-2 Impacted Receptors for 2035 Package A Alternative

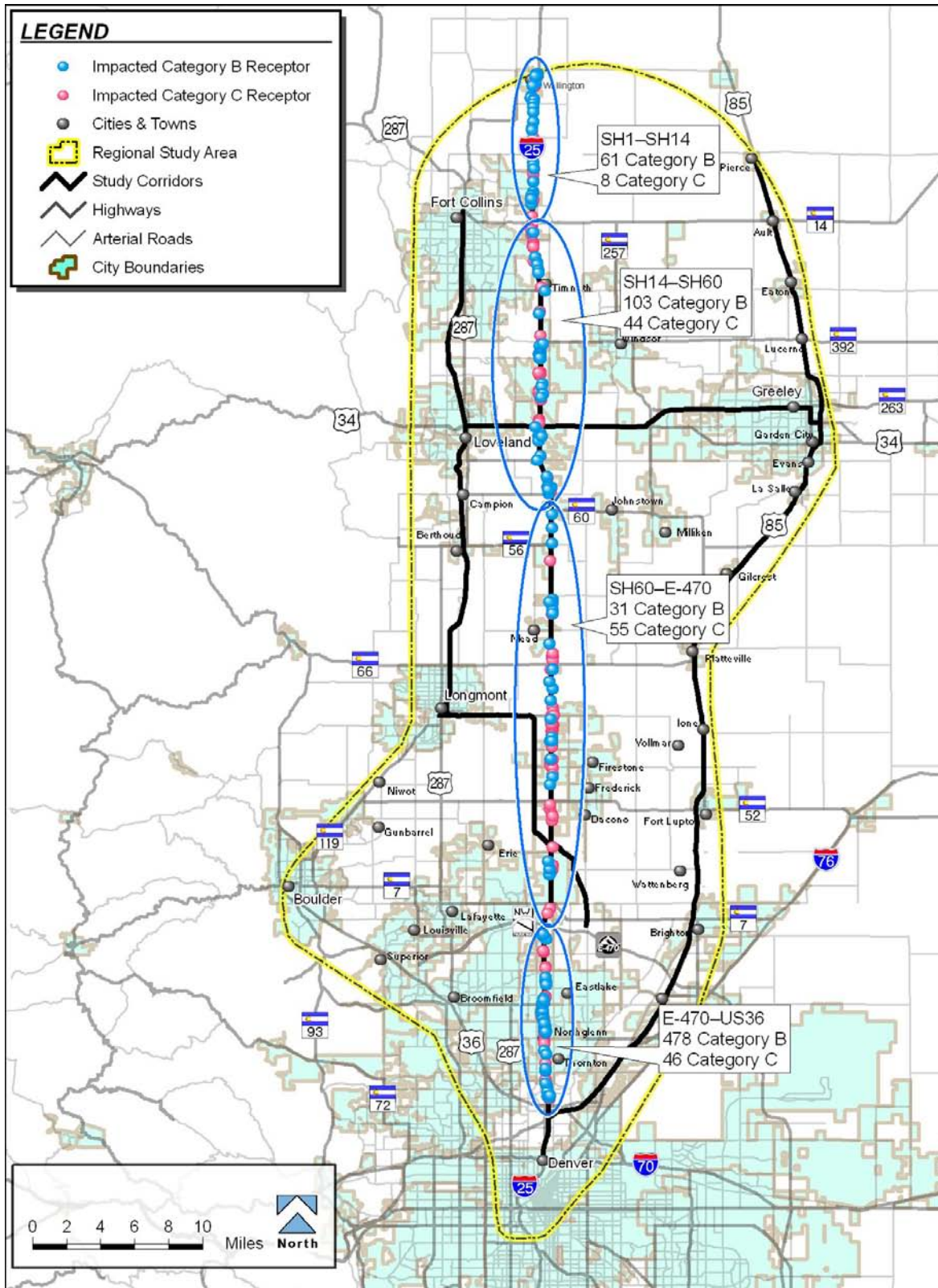


Figure 3-3 Proposed New Transit Facilities Examined for Noise Impacts

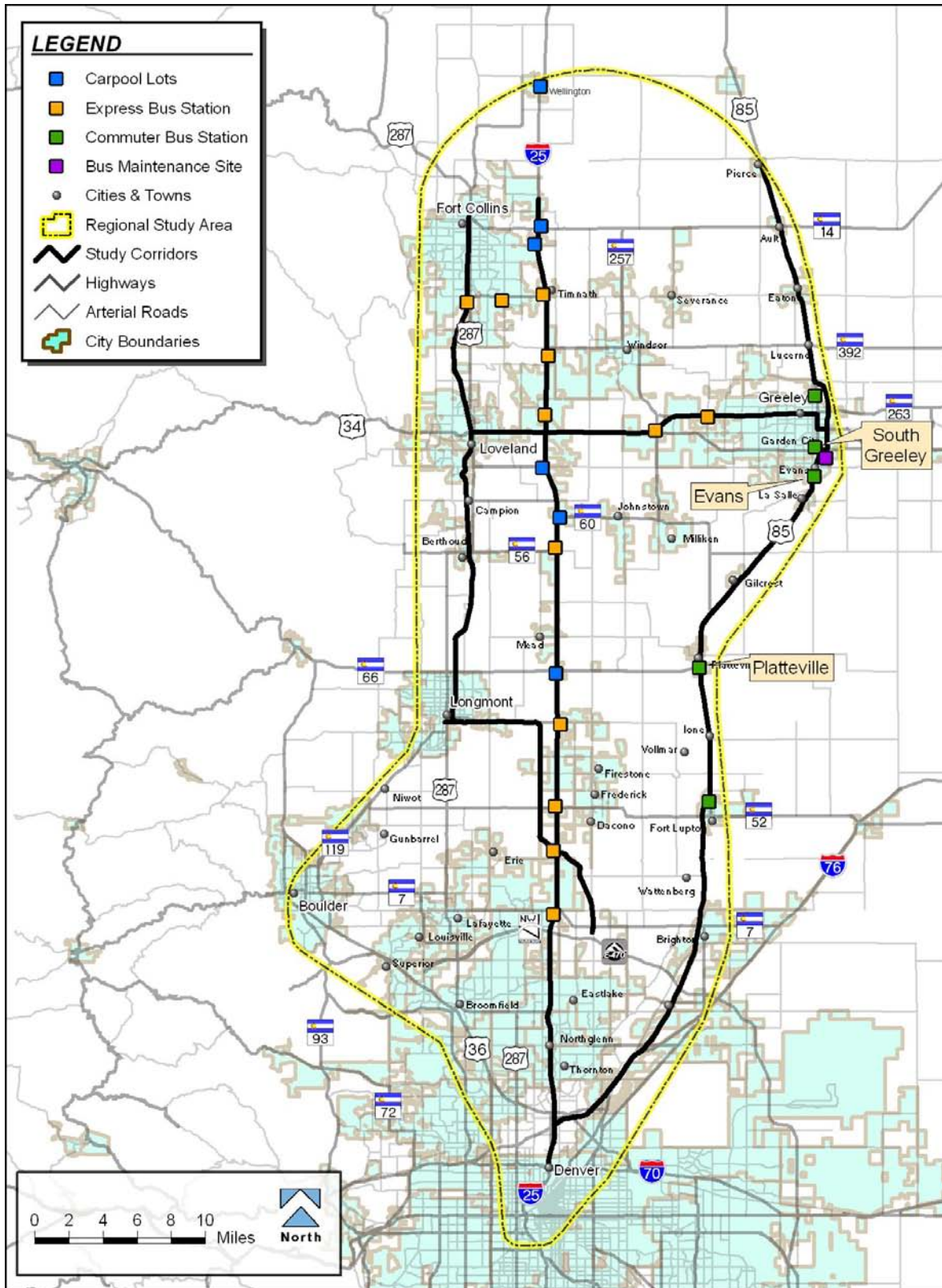
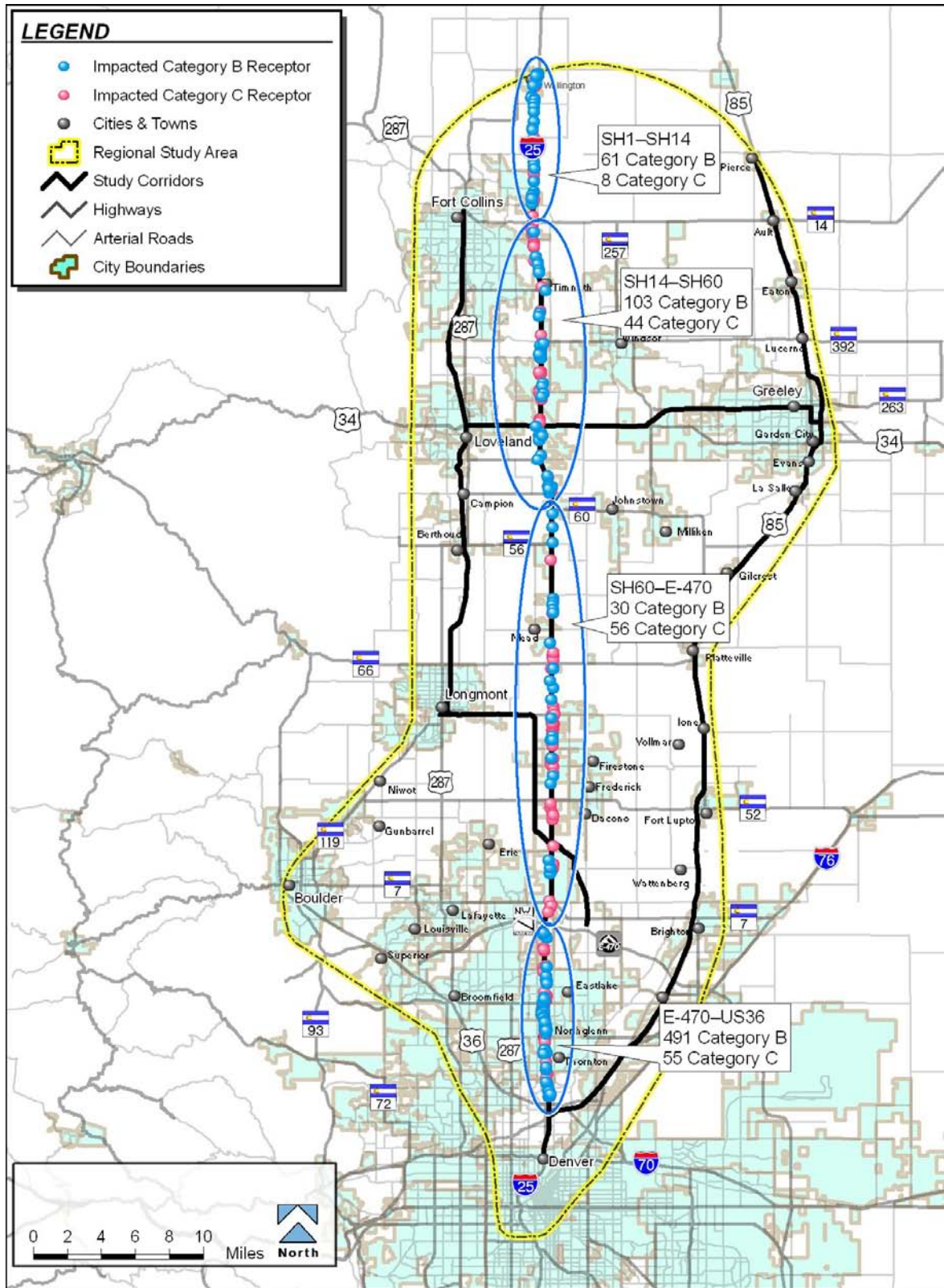


Figure 3-4 Impacted Receptors for 2035 Package B Alternative





### 3.3 UPDATED PACKAGE B RESULTS

Results for Package B have been updated from 2030 to 2035 (**Figure 3-4** and **Table 3-1**). In terms of highway noise, the larger residential areas (Category B) predicted to be impacted were:

- ▶ Wellington East (Wellington) – 20 receptors (same as No-Action Alternative)
- ▶ Waterglen (Fort Collins) – 20 receptors (more than No-Action Alternative)
- ▶ Mountain Range Shadows (Larimer County) – 69 receptors (same as No-Action Alternative)
- ▶ Singletree Estates – 2 receptors (more than No-Action Alternative)
- ▶ Isolated/scattered homes along I-25 in CDOT Region 4 (Larimer and Weld Counties) – 83 receptors (same as No-Action Alternative)
- ▶ Numerous neighborhoods abutting I-25 in Broomfield, Thornton, Westminster, Northglenn and Adams County – 491 receptors (more than No-Action Alternative)

In addition, parts of Archery Range Natural Area, Arapahoe Bend Natural Area, Big Thompson Ponds State Wildlife Area, St. Vrain State Park, Willowbrook Park, Niver Creek Open Space, Civic Center Park, Adams 12 North Stadium and Thorncreek Golf Course were predicted to have traffic noise levels above the CDOT NAC for Category B. No receptors were expected to experience a 10-dBA increase; the largest increase was predicted to be approximately 6 dBA.

In terms of bus transit noise, 12 express bus stations/parking lots, six carpool parking lots and one bus maintenance site are proposed as new facilities (**Figure 3-3**). The results from the screening analyses showed that none of the proposed bus/carpool facilities were found to cause noise impacts.

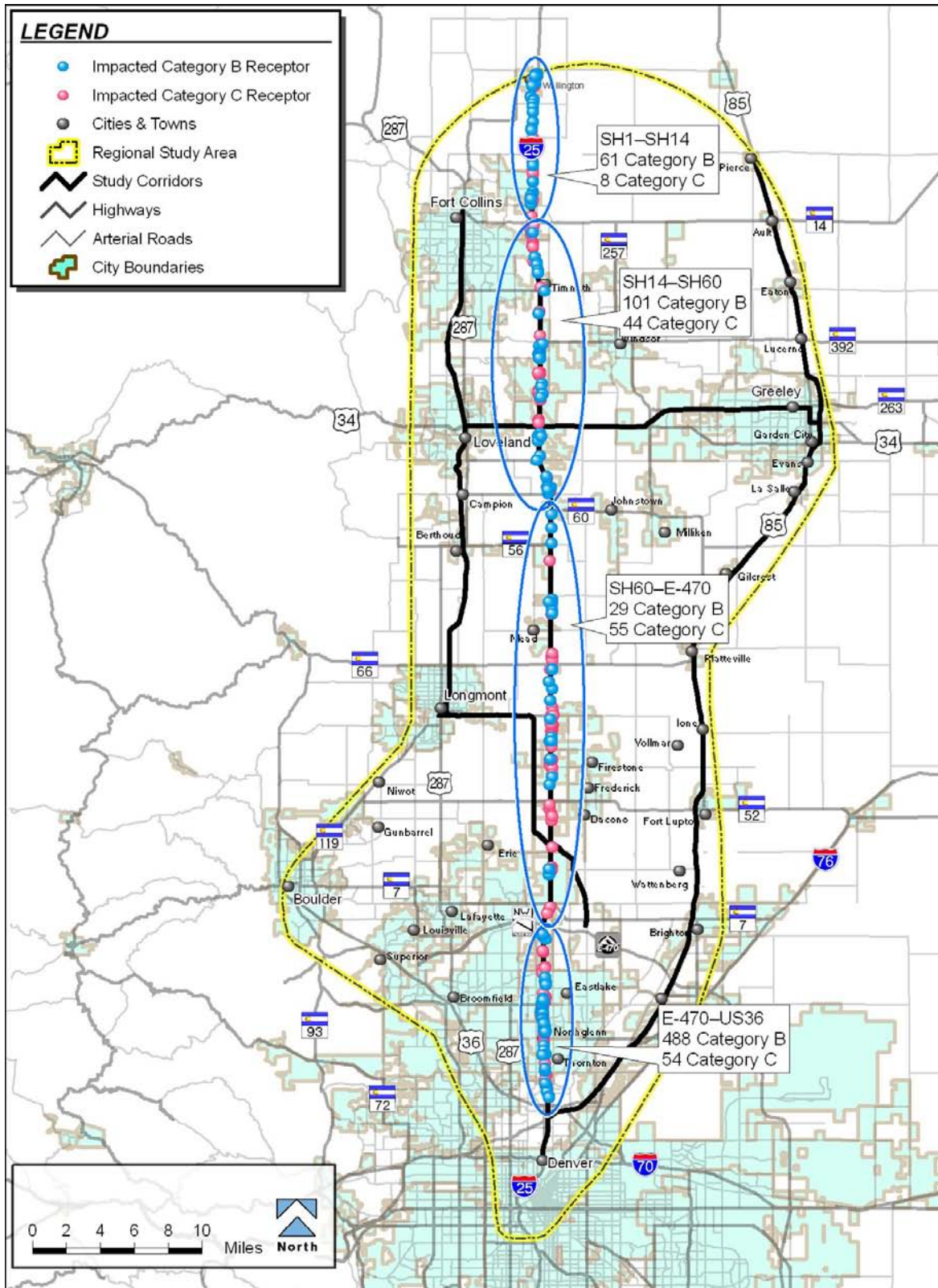
### 3.4 PREFERRED ALTERNATIVE NOISE IMPACTS

Traffic noise model runs were completed for I-25 and the other major project roads using 2035 traffic volumes and proposed road layouts using the same procedures as for the other alternatives (FHU, 2008). Results for the Preferred Alternative are summarized in **Table 3-1** and **Figure 3-5** and detailed in **Appendix A**. The potential noise impacts from new bus services were also examined.

#### 3.4.1 Highway Noise Results

The Preferred Alternative results showed that 679 Category B receptors and 161 Category C receptors in the project area would be impacted by traffic noise (**Table 3-1**), which represents 24 more receptors than the No-Action Alternative. All of the impacted receptors were predicted to equal or exceed the relevant NAC; none were predicted to increase by 10 dBA or more over existing conditions.

Figure 3-5 Impacted Receptors for 2035 Preferred Alternative



Results for the Preferred Alternative share many similarities with the No-Action Alternative results for 2035. Even with the proposed roadway changes, most of the same receptors were predicted to be impacted. A few of the receptors impacted under the No-Action Alternative would be removed under the Preferred Alternative, thereby reducing the number of impacted receptors in a few areas, but increased capacity on I-25 would mean greater traffic noise. The larger residential areas predicted to be impacted were:

- ▶ Wellington East (Wellington) – 20 receptors
- ▶ Waterglen (Fort Collins) – 20 receptors
- ▶ Mountain Range Shadows (Larimer County) – 69 receptors
- ▶ Isolated/scattered homes along I-25 in CDOT Region 4 (Larimer and Weld Counties) – 82 receptors
- ▶ Numerous neighborhoods abutting I-25 in CDOT Region 6 (Broomfield, Thornton, Westminster, Northglenn and Adams County) – 488 receptors

These include parts of Archery Range Natural Area, Arapahoe Bend Natural Area, Big Thompson Ponds State Wildlife Area, St. Vrain State Park, Willowbrook Park, Niver Creek Open Space, Civic Center Park, Adams 12 North Stadium, and Thorncreek Golf Course that were predicted to have traffic noise levels above the CDOT NAC for Category B.

### 3.4.2 Bus Transit Noise Results

For the Preferred Alternative, 12 express bus stations/parking lots, five commuter bus stations/parking lots, six carpool parking lots and one bus maintenance site are proposed as new facilities (**Figure 3-3**). These were evaluated for noise impacts as described in **Section 1.2**.

Screening analyses showed that there would be no noise impacts from these sites, with the possible exception of three commuter bus stations (South Greeley, Evans and Platteville). These three sites required further analysis with an FTA General Assessment, and these results were that none of the three stations would create a noise impact to the neighboring properties. Therefore, none of the proposed bus/carpool facilities were found to cause noise impacts.

## 3.5 SUMMARY OF TRAFFIC NOISE IMPACTS

A number of traffic noise impacts were predicted for each of the alternatives for 2035. The predicted impacts (without mitigation) are summarized in **Table 3-1**. The bus transit and carpool components were found not to cause noise impacts.

From field observations and modeling, Category B properties within approximately 500 feet of I-25 and Category C properties within approximately 200 feet in 2035 are likely to exceed their respective NAC and thereby be impacted by traffic noise. Future development plans along the I-25 corridor should bear this in mind so as to minimize future incompatibilities.

It should be noted that Park Meadows, a neighborhood along I-25 in Wellington, has not reached full build out and is not impacted as it currently exists. However, full build out will

add many homes close to I-25 that may be impacted in the future by all the alternatives, which may affect the traffic noise results at the time of construction of an alternative.

It should also be noted that the major road corridors and pavement designs for all of the future alternatives are very similar in noise terms, with relatively minor profile and traffic volume differences between them. Therefore, noise levels and impacts predicted for the Preferred Alternative are very similar to those predicted for the other alternatives (**Table3-1**).

The order from fewest traffic noise impacts to most impacts would be the No-Action Alternative, Package A, the Preferred Alternative and Package B, but the differences between the alternatives are rather trivial. The overall project noise and vibration impacts must also consider the rail transit components for Package A and the Preferred Alternative, which are discussed in a separate report (HMMH, 2010).

### 3.6 CONSTRUCTION NOISE

Adjoining properties in the project area would be exposed to noise from construction activities when the Preferred Alternative is built. Construction noise differs from traffic noise in several ways:

- ▶ Construction noise lasts only for the duration of the construction event, with most construction activities in noise-sensitive areas being conducted during hours that are less disturbing to adjacent and nearby residents;
- ▶ Construction activities generally are short-term, and depending on the nature of the construction operations, could last from seconds (e.g., a truck passing by) to months (e.g., constructing a bridge); and
- ▶ Construction noise also is intermittent and depends on the type of operation, location, and function of the equipment, and the equipment usage cycle. Traffic noise, on the other hand, is present in a more continuous fashion after construction activities are completed.

Construction noise impacts will be avoided somewhat by the fact that relatively little of the project abuts residential areas. To address the temporary elevated noise levels that may be experienced during construction, standard mitigation measures should be incorporated into construction contracts. These would include:

- ▶ Exhaust systems on equipment will be in good working order. Equipment will be maintained on a regular basis, and equipment may be subject to inspection by the project manager to ensure maintenance.
- ▶ Properly designed engine enclosures and intake silencers will be used where appropriate.
- ▶ New equipment will be subject to new product noise emission standards.
- ▶ Stationary equipment will be located as far from sensitive receptors as feasible.
- ▶ Most construction activities in noise sensitive areas will be conducted during hours that are less disturbing to adjacent and nearby residents.

Construction noise from future project activities must comply with any applicable local noise regulations. Construction noise that complies with such noise regulations is viewed as not having an impact on neighboring properties.

Given the size, complexity and length of time in constructing the Preferred Alternative, it is not possible now to know every potential construction noise conflict or what new conflicts may arise due to future development. When construction of the project is imminent, the selected construction methods will be better known and potential conflicts due to construction noise can be better determined. Individualized construction noise mitigation strategies, where needed, will then be developed to address specific construction noise issues.

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## 4.0 MITIGATION EVALUATION

Noise mitigation evaluations for the No-Action Alternative, Package A and Package B were presented in the previous technical report (FHU, 2008), and the results of these evaluations have been reviewed (see **Section 4.2**) in light of the noise impact results based on 2035 traffic (**Sections 3.2 and 3.3**). Mitigation evaluations for the Preferred Alternative (see **Section 4.2**) were performed because areas along the project corridor are predicted to be above the applicable CDOT NAC (**Section 3.4**). This includes multiple geographic areas and multiple land uses.

Impacted areas are not guaranteed mitigation measures under CDOT's policies, but mitigation measures need to be evaluated. Typically, noise barriers are the primary mitigation action evaluated but other kinds of mitigation were also considered. For reasons described below, barriers appeared to be the only viable mitigation action and were the only mitigation evaluated in detail. CDOT's goal for noise barriers is a reduction of 10 dBA with a minimum of 5 dBA.

Numerous locations were evaluated for barrier placement (**Appendix B**). For each evaluation, hypothetical barriers protecting the impacted areas were added to the Preferred Alternative TNM model and the model was re-run to assess and optimize barrier effectiveness. After the minimum parameters for a feasible barrier were established in a given area (if possible), each barrier was optimized and assessed for reasonability according to CDOT guidance (**Appendix C**; FHU, 2008). The overall feasibility and reasonableness of each barrier determined whether the barrier was then recommended for construction.

The topography of the project corridor plays a very important role in the overall noise environment. Any significant topographic changes from I-25 to the adjoining areas will affect the traffic noise levels and also has a major impact on the constructability of noise barriers. Barriers can easily be put into a computer model, but actually placing these barriers in the real world may not always be possible. Because of topographic changes, a barrier may not be a constant height throughout its length even if the top elevation may be constant. These factors contribute to complication of the barrier evaluations.

### 4.1 NON-BARRIER MITIGATION EVALUATION

These items were discussed in the previous technical report (FHU, 2008) and have not been updated for the Final EIS. The previous conclusions hold true—these kinds of mitigation measures do not appear to be feasible and reasonable along the study corridor.

### 4.2 REVIEW OF MITIGATION RECOMMENDATIONS

The overall traffic noise impacts documented for the Final EIS are similar to those reported for the Draft EIS (CDOT/FHWA/FTA, 2008). The same established neighborhoods were calculated to be impacted in both cases (with the addition of Waterglen for the Final EIS [**Section 3.0**]), so the recommended traffic noise solutions are similar as well.

Numerous noise barriers were evaluated for the Final EIS, some of which are recommended for construction. The barriers evaluated were:

- ▶ Wellington East
- ▶ Waterglen
- ▶ Mountain Range Shadows
- ▶ Larimer County Road 20E
- ▶ Johnsons Corner Campground
- ▶ Margil Farms
- ▶ Singletree Estates
- ▶ St.Vrain State Park
- ▶ Weld County Road 22
- ▶ Weld County Road 20.5
- ▶ Thorncreek Village
- ▶ Stone Mountain Apartments
- ▶ Greens of Northglenn
- ▶ Badding Reservoir Extension
- ▶ Brittany Ridge Extension
- ▶ Various Isolated Receptors

For Packages A and B for 2035 traffic, the findings reported in the Draft EIS for these barriers are still correct and the barrier recommendations are therefore unchanged for these two alternatives in the Final EIS (**Table 4-1**). The findings for the Preferred Alternative mirrored those for Package B. Therefore, the overall conclusions and recommendations from the Draft EIS for highway noise barriers are unchanged in the Final EIS and the following barriers are recommended for construction, as appropriate for the alternative finally identified (**Table 4-1; Appendix B**):

- ▶ Wellington East
- ▶ Mountain Range Shadows
- ▶ Thorncreek Village
- ▶ Stone Mountain apartments
- ▶ Greens of Northglenn apartments
- ▶ Badding Reservoir barrier extension
- ▶ Brittany Ridge barrier extension



**Table 4-1 Traffic Noise Mitigation Barrier Summary**

Noise Impacted Category B Area	Barrier Height (feet)	Barrier Length (feet)	Cost Analysis (\$/receptor/dB)	Reduction (dBA)	Feasible?	Reasonable?	Recommended?	Comment
<b>SH 1 to SH 14</b>								
Wellington East	10-12	1000	1,900	3-12	Yes	Yes	Yes	Recommended for all build alternatives.
Waterglen	10-18	2400	4,200	3-9	Yes	No	No	Cost-benefit and recent construction of homes were found to be unreasonable.
<b>SH 14 to SH 60</b>								
Mountain Range Shadows	12	2500	2,400	3-7	Yes	Yes	Yes	Recommended for all build alternatives.
Near LCR 20E	14	470	18,000	0-11	Yes	No	No	Cost-benefit was calculated to be prohibitive.
Johnsons Corner Camp.	10	675	8,300	8	Yes	No	No	Cost-benefit was calculated to be prohibitive.
<b>SH 60 to E-470</b>								
Margil Farms	16	2200	7,500	3-5	Yes	No	No	Cost-benefit was calculated to be prohibitive.
Singletree Estates	16	3200	41,000	3-5	Yes	No	No	Cost-benefit was calculated to be prohibitive.
St.Vrain State Park	14	2700	75,000	5	Yes	No	No	Cost-benefit was calculated to be prohibitive.
Near WCR 22	12	550	16,500	6	Yes	No	No	Cost-benefit was calculated to be prohibitive.
Near WCR 20.5	16	675	27,000	6	Yes	No	No	Cost-benefit was calculated to be prohibitive.
<b>E-470 to US 36</b>								
Thorncreek Village	14	1850	3,800	4-7	Yes	Yes	Yes	Recommended for Pkg. B and Preferred Alternative.
Stone Mountain Apts.	14	1300	1,300	3-10	Yes	Yes	Yes	Recommended for Pkg. B and Preferred Alternative.
Greens of Northglenn	10-12	600	1,100	3-8	Yes	Yes	Yes	Recommended for Pkg. B and Preferred Alternative.
Badding Reservoir extension	12	900	4,100	3-8	Yes	Yes	Yes	Recommended for Pkg. B and Preferred Alternative.
Brittany Ridge extension	12	1000	3,000	3-7	Yes	Yes	Yes	Recommended for Pkg. B and Preferred Alternative.
Isolated receptor #1 (Wellington)	10	720	31,000	7	Yes	No	No	An example of an isolated receptor. Cost-benefit was calculated to be prohibitive.
Isolated receptor #2 (SH 7)	8-12	550	24,000	7	Yes	No	No	An example of an isolated receptor. Cost-benefit was calculated to be prohibitive.



Finally, four Category B receptors have been identified – B-111, B-112, B-132, B-133 (**Appendix A**)—that are predicted to be “severely” impacted (above 75 dBA), but barriers for them were found to be not feasible and reasonable. These receptors, and others that fit this description, may qualify for supplemental building insulation for interior noise for NAC Category E (**Table 1-1**). These receptors should be re-examined for supplemental building insulation during final design for the identified alternative.

### 4.3 IMPACTED RECEPTORS AFTER RECOMMENDED MITIGATION

For a noise or vibration mitigation action to be recommended, it must be both feasible and reasonable according to the evaluation guidelines. In many of the areas with traffic noise impacts, effective noise barriers were not feasible or the cost-benefit value for an effective barrier was prohibitive (**Table 4-1**). Therefore, not all impacted areas have been recommended for noise mitigation.

Overall, the recommended mitigation actions would serve to reduce traffic noise impacts for each of the Final EIS build alternatives. The recommendations differ between the alternatives for a number of reasons, including:

- ▶ Different road designs within the same alignment
- ▶ Different traffic volumes and speeds
- ▶ Different vertical road profiles

The recommended mitigation actions would not eliminate all of the calculated noise impacts. These remnant noise impacts are described below for each of the EIS alternatives.

#### 4.3.1 No-Action Alternative

The No-Action Alternative does not include any new noise mitigation actions, so there would be no change in the traffic noise impacts (**Section 3.1**). The same 661 Category B receptors and 155 Category C receptors would still be impacted by traffic noise.

#### 4.3.2 Package A

Package A would include several recommended noise mitigation actions north of SH 7 within CDOT Region 4. The recommended mitigation measures would reduce the traffic noise levels below the NAC for these receptors:

- ▶ Wellington East – 20 Category B receptors
- ▶ Mountain Range Shadows – 30 Category B receptors

An estimated 623 Category B receptors and 153 Category C receptors would still be impacted by traffic noise. The added results for impacts from rail transit can be found in the rail technical report addendum (HMMH, 2010).

### 4.3.3 Package B

Package B would include several recommended noise mitigation actions. The recommended mitigation measures would reduce the traffic noise levels below the NAC for these receptors:

- ▶ Wellington East – 20 Category B receptors
- ▶ Mountain Range Shadows – 30 Category B receptors
- ▶ Thorncreek Village – 30 Category B receptors
- ▶ Stone Mountain apartments – 56 Category B receptors
- ▶ Greens of Northglenn – 24 receptors
- ▶ Badding Reservoir extension – 9 Category B receptors
- ▶ Brittany Ridge extension – 12 Category B receptors

An estimated 504 Category B receptors and 163 Category C receptors would still be impacted by traffic noise.

### 4.3.4 Preferred Alternative

The Preferred Alternative would include several recommended noise mitigation actions. The recommended mitigation measures would reduce the traffic noise levels below the NAC for these receptors:

- ▶ Wellington East – 20 Category B receptors
- ▶ Mountain Range Shadows – 30 Category B receptors
- ▶ Thorncreek Village – 30 Category B receptors
- ▶ Stone Mountain Apartments – 56 Category B receptors
- ▶ Greens of Northglenn – 24 receptors
- ▶ Badding Reservoir extension – 9 Category B receptors
- ▶ Brittany Ridge extension – 12 Category B receptors

An estimated 498 Category B receptors and 161 Category C receptors would still be impacted by traffic noise. The added results for impacts from rail transit can be found in the rail technical report addendum (HMMH, 2010).

## 5.0 VIBRATION

There are no federal or state requirements directed specifically to traffic-induced vibration. The studies that have been done to assess the impact of operational traffic-induced vibrations have shown that both measured and predicted traffic vibration levels are less than any known criteria for structural damage to buildings (FHWA, 1995). Often, normal indoor activities like closing doors have been shown to create greater levels of vibration in homes than highway traffic. Therefore, vibration from highway traffic is not a concern within the EIS. The results for rail transit vibration can be found in the rail technical report addendum (HMMH, 2010).

Vibration from road construction could be a concern, if specific construction techniques such as pile driving or blasting are used. Issues with construction-generated vibrations would depend on these types of activities occurring close to vibration-sensitive locations. At present, it is not expected that these types of construction techniques would be necessary for the EIS alternatives, let alone occurring near sensitive properties. But, if such construction techniques are necessary at a specific location, the vibration concerns will be addressed during construction planning on a case-by-case basis and appropriate mitigation action taken for the specific situation. Therefore, vibration from road construction will not be examined further in this analysis.

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## 6.0 REFERENCES

- Colorado Department of Transportation. 2002. Noise Analysis and Abatement Guidelines, December.
- Colorado Department of Transportation/Federal Highway Administration/ Federal Transit Administration. 2008. North I-25 Draft Environmental Impact Statement, October.
- Colorado Department of Transportation/Federal Highway Administration/ Federal Transit Administration. 2011. North I-25 Final Environmental Impact Statement, January.
- Federal Highway Administration. 1995. Highway Traffic Noise Analysis and Abatement Policy and Guidance, June.
- Federal Highway Administration. 2010. Code of Federal Regulations, Title 23, Section 772, July.
- Federal Railroad Administration. 2006. Code of Federal Regulations, Title 49, Sections 222 and 229, August.
- Federal Transit Administration. 2006. Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06, May.
- Felsburg Holt & Ullevig. 2008. North I-25 Environmental Impact Statement Traffic Noise and Vibration Technical Report, October.
- Harris, Miller, Miller & Hanson (HMMH), 2010. North I-25 Environmental Impact Statement Rail Transit Noise and Vibration Addendum. December.

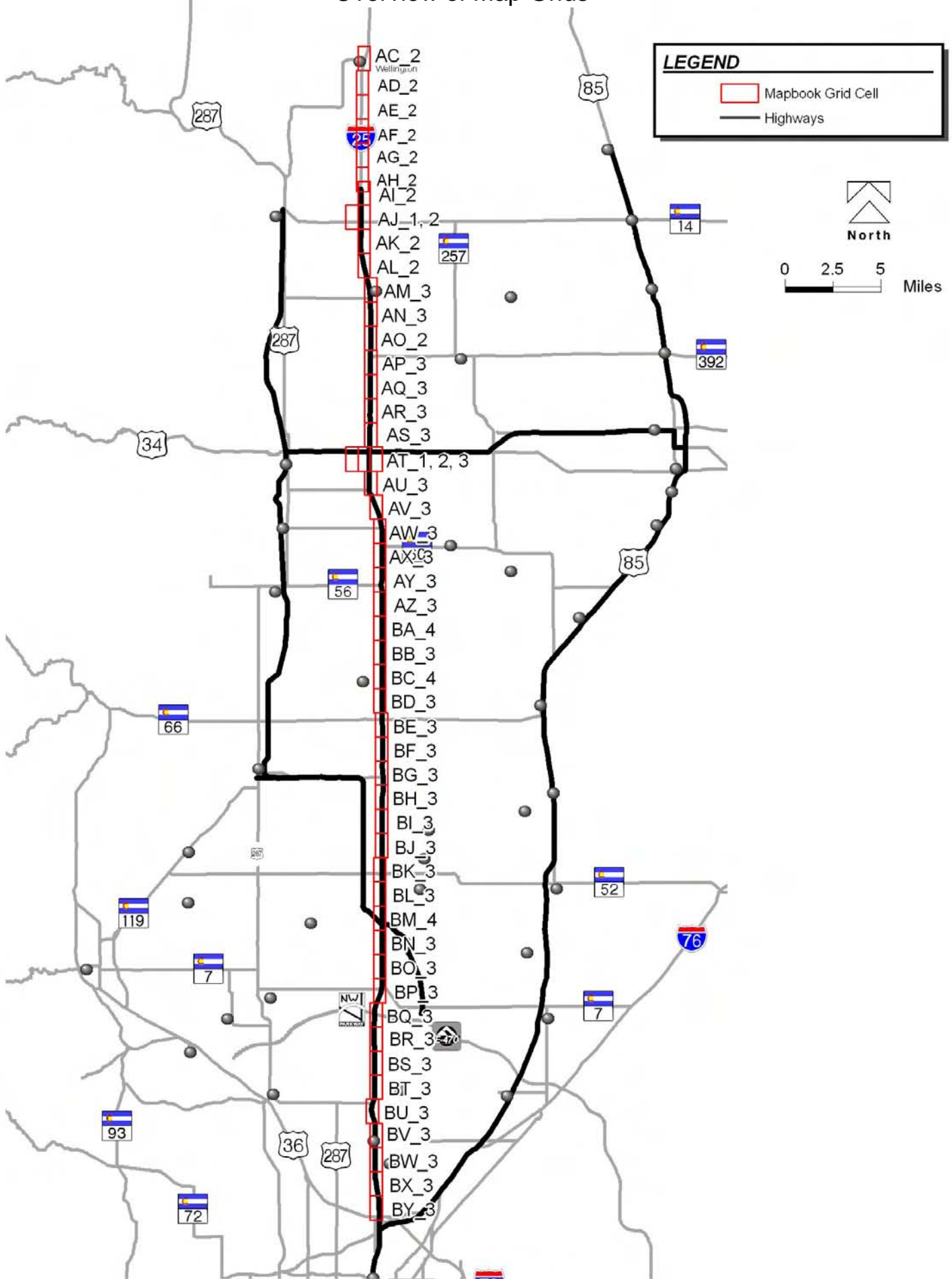
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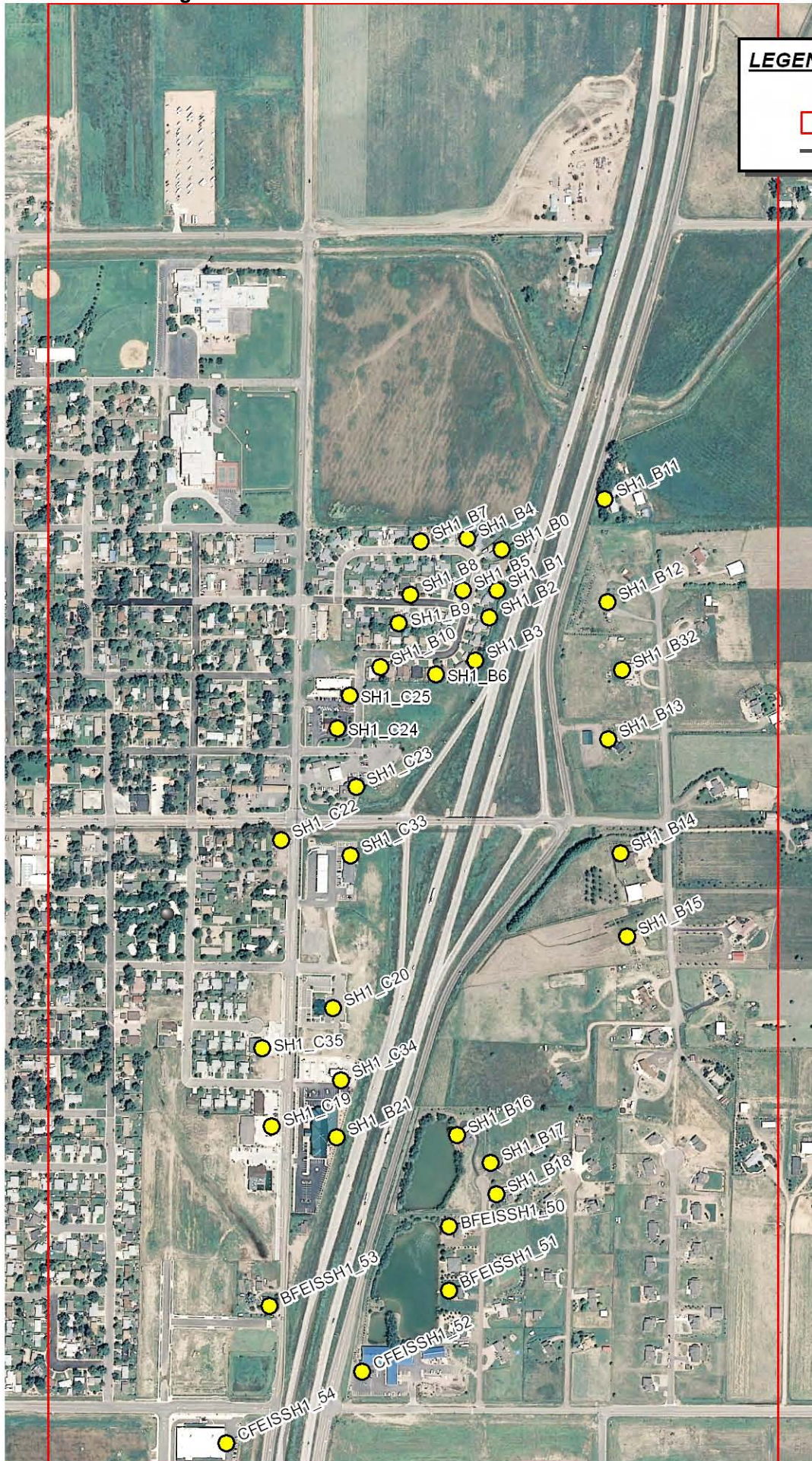


# APPENDIX A TNM NOISE MODEL RECEIVERS AND RESULTS

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# Overview of Map Grids





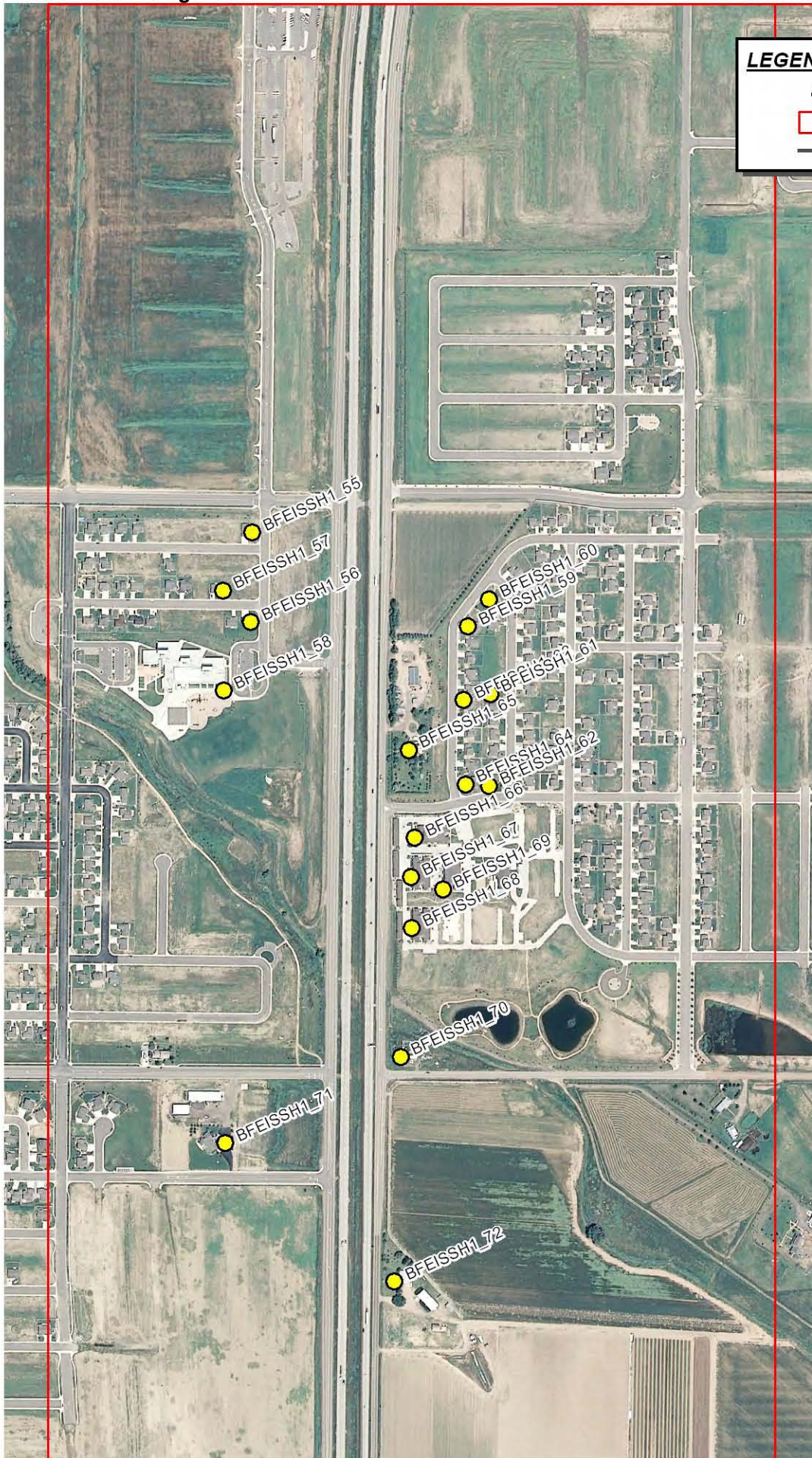
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- Highways

North

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Grid Cell AC\_2



**LEGEND**

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- Highways

North

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Grid Cell AD\_2



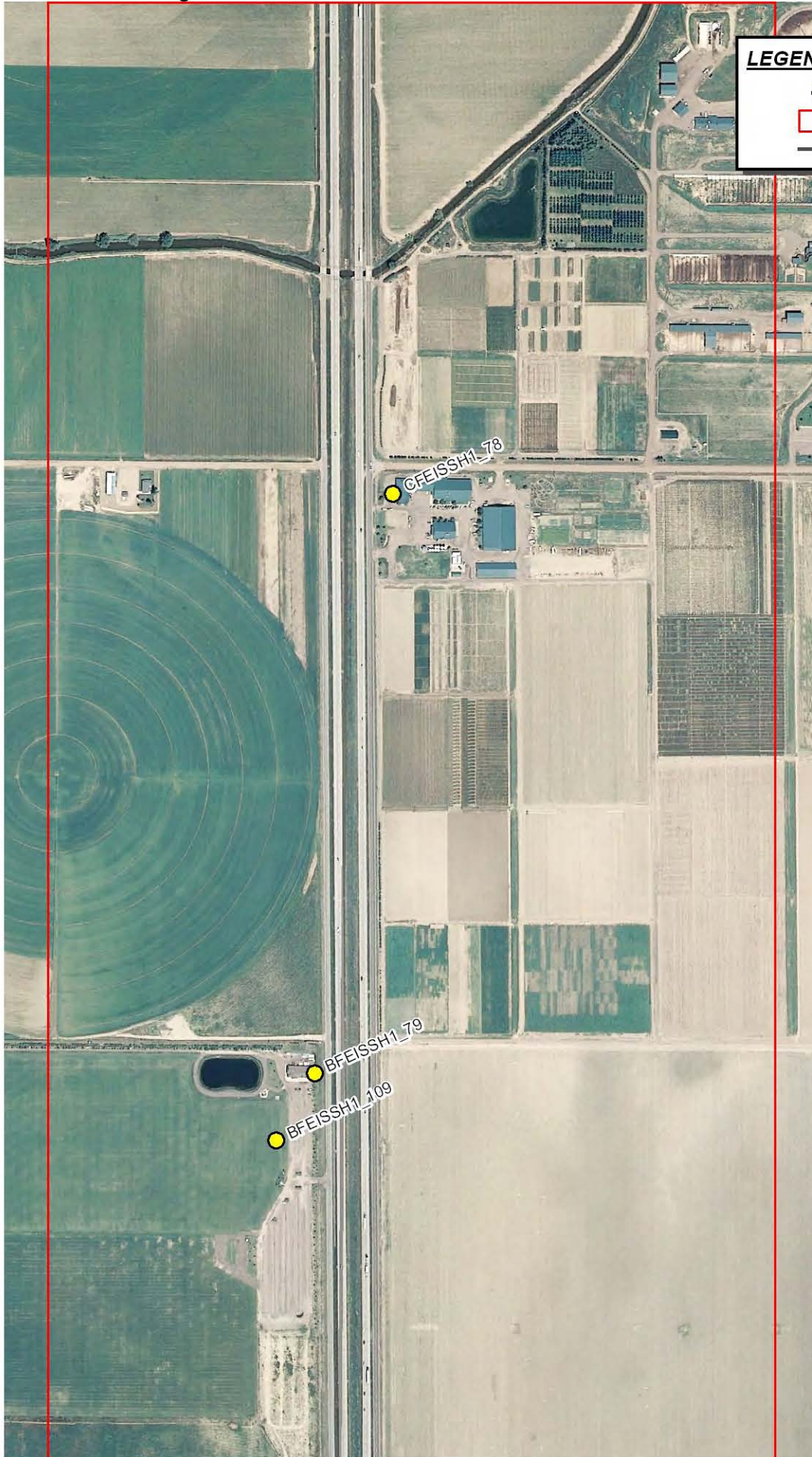
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Grid Cell AE\_2



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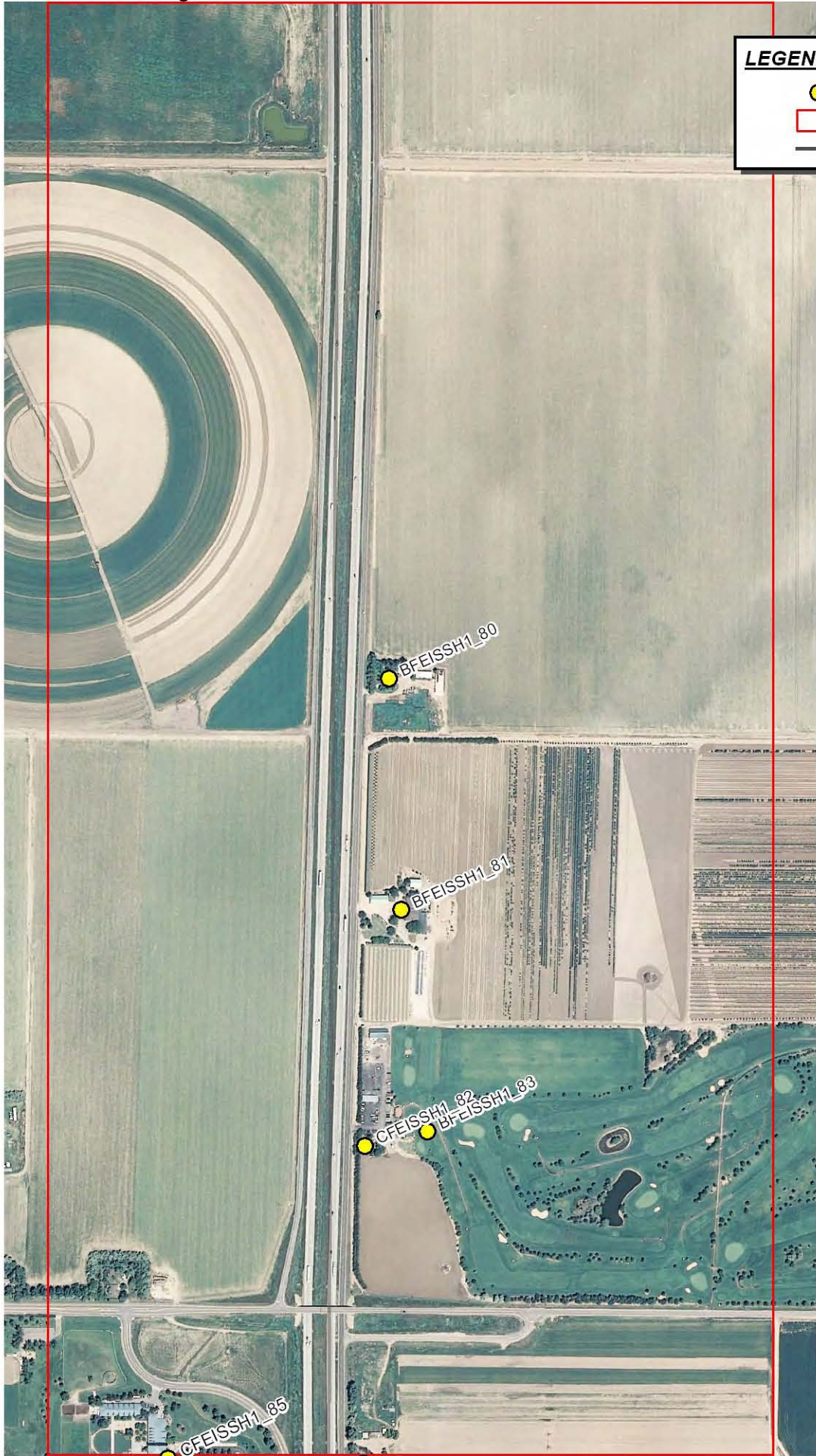
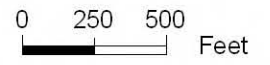
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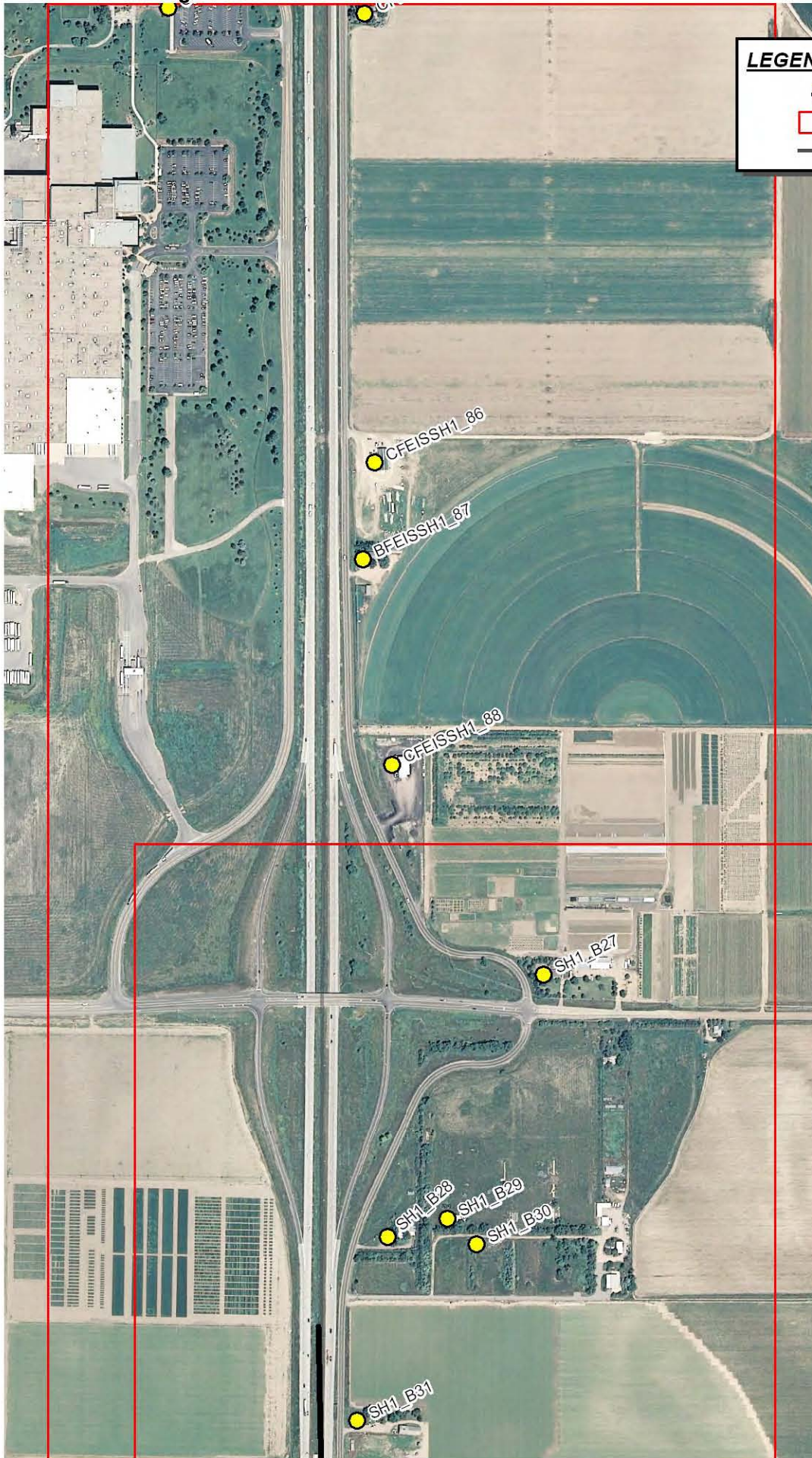
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Grid Cell AG\_2





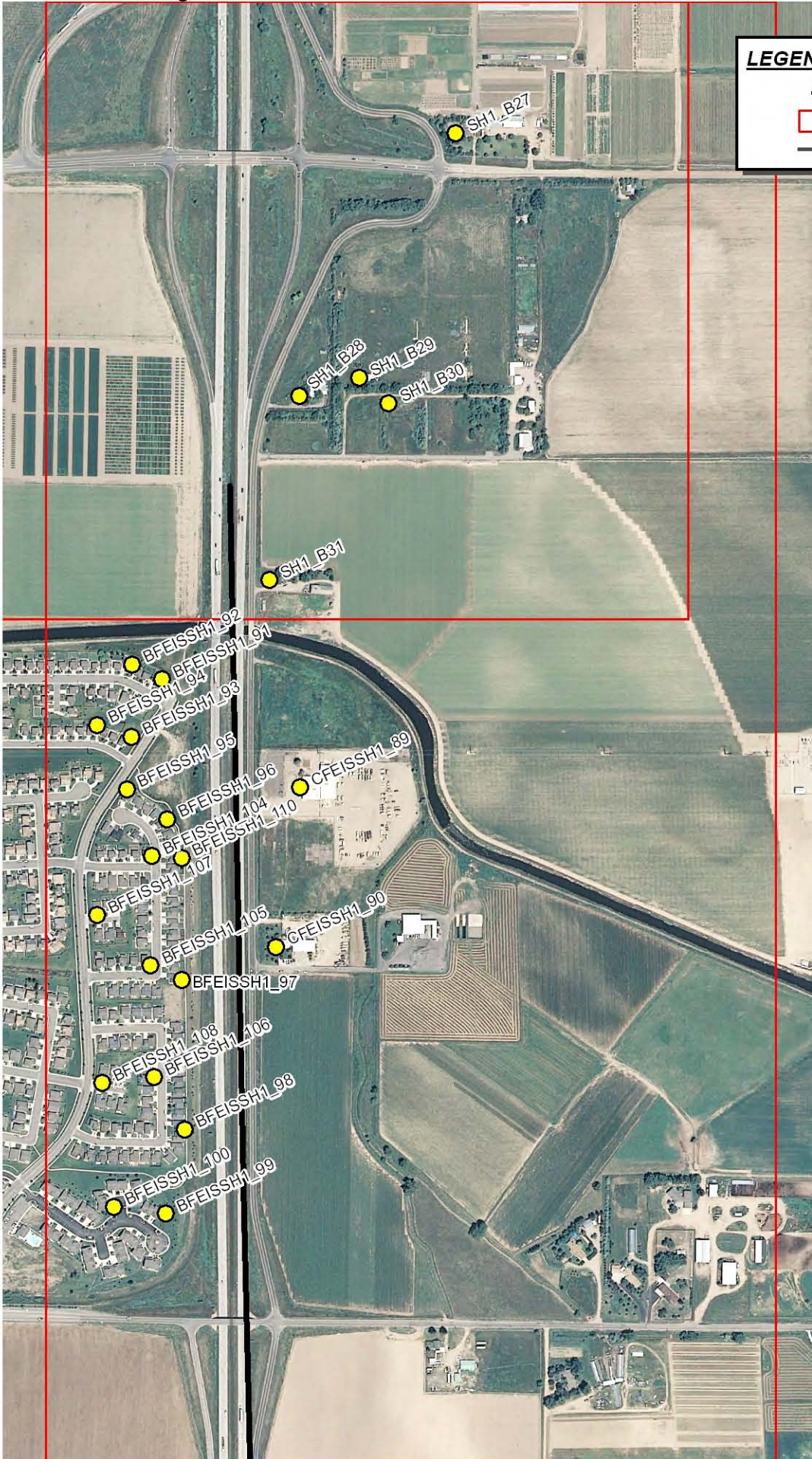
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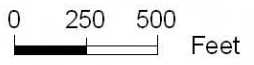


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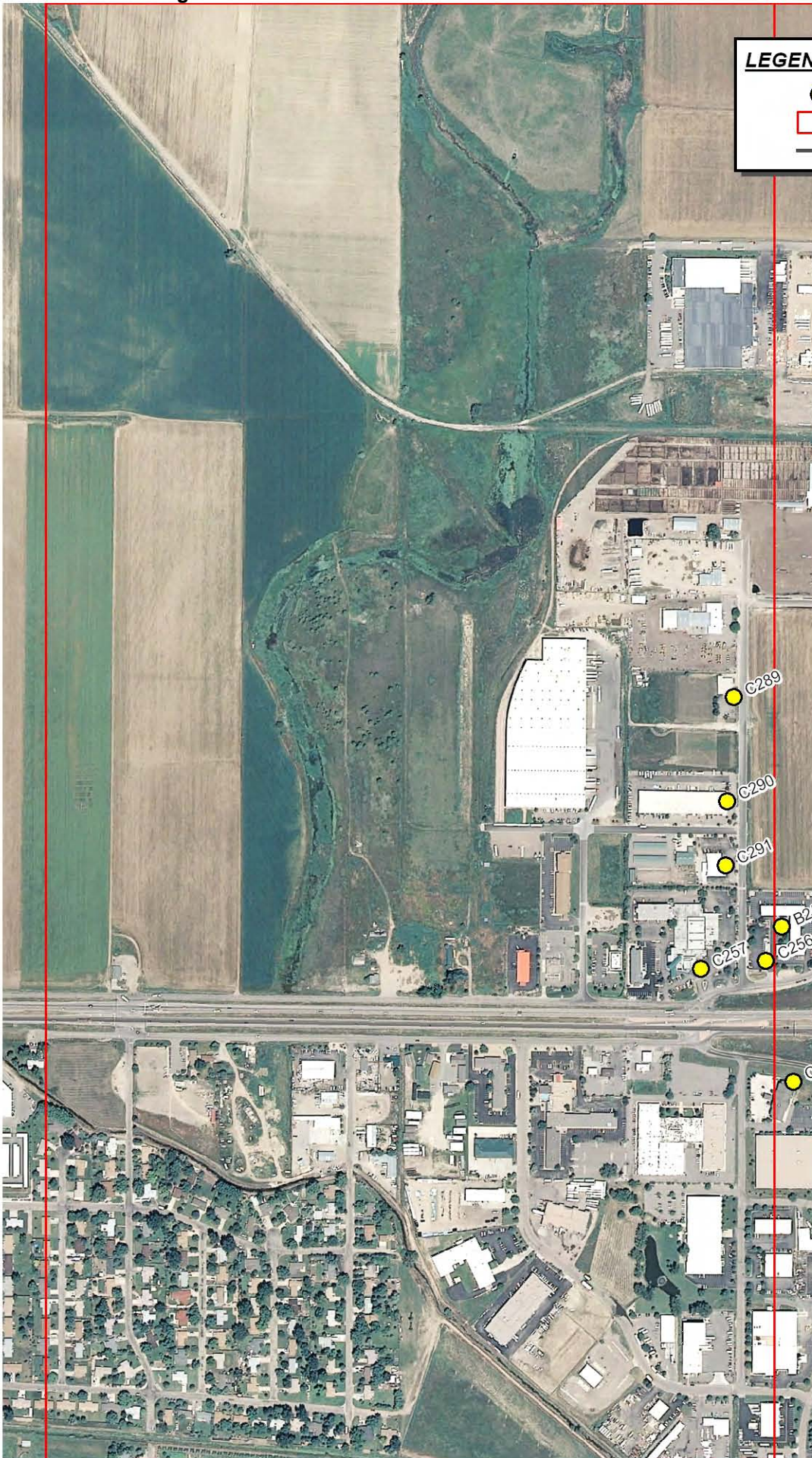
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North



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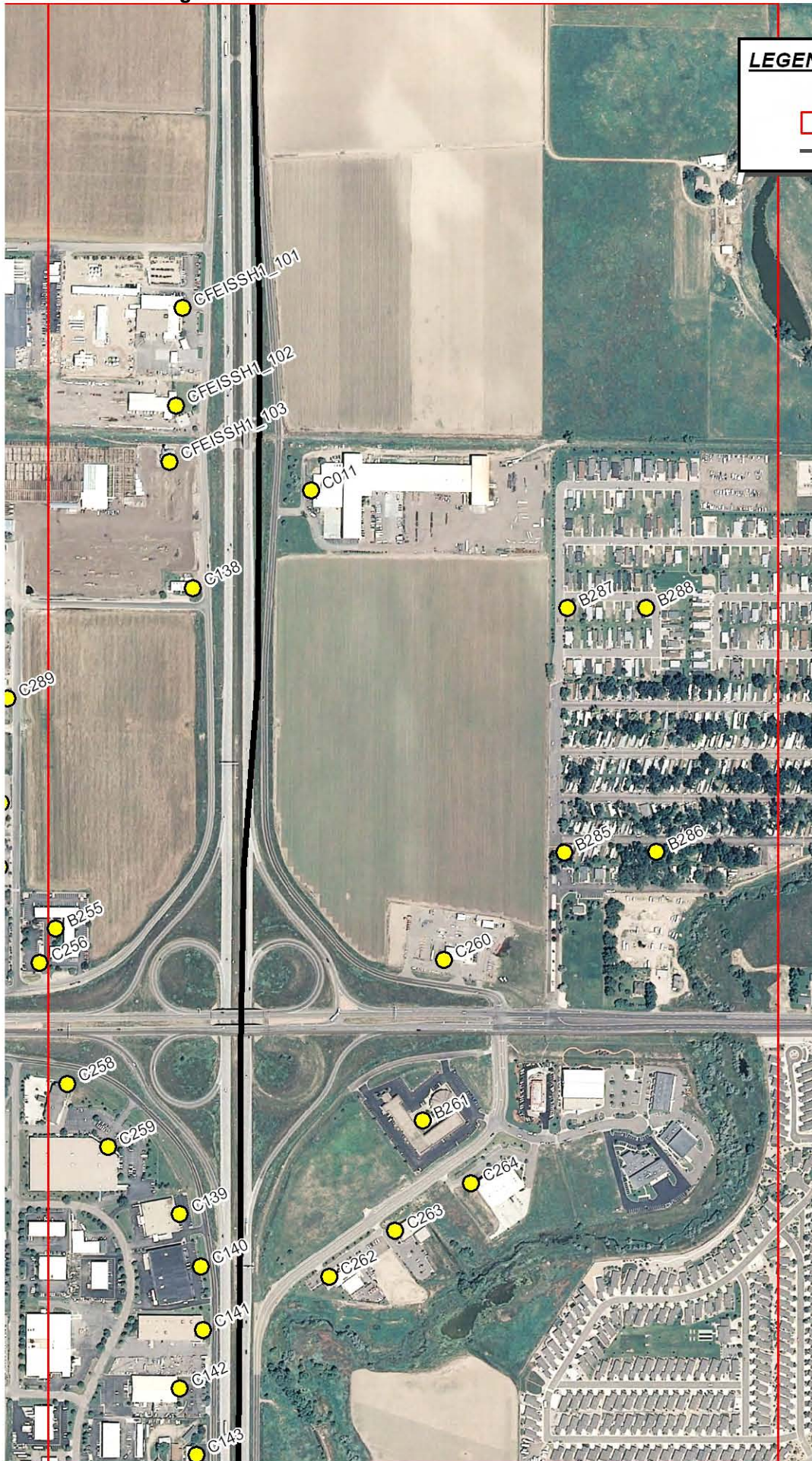
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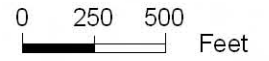


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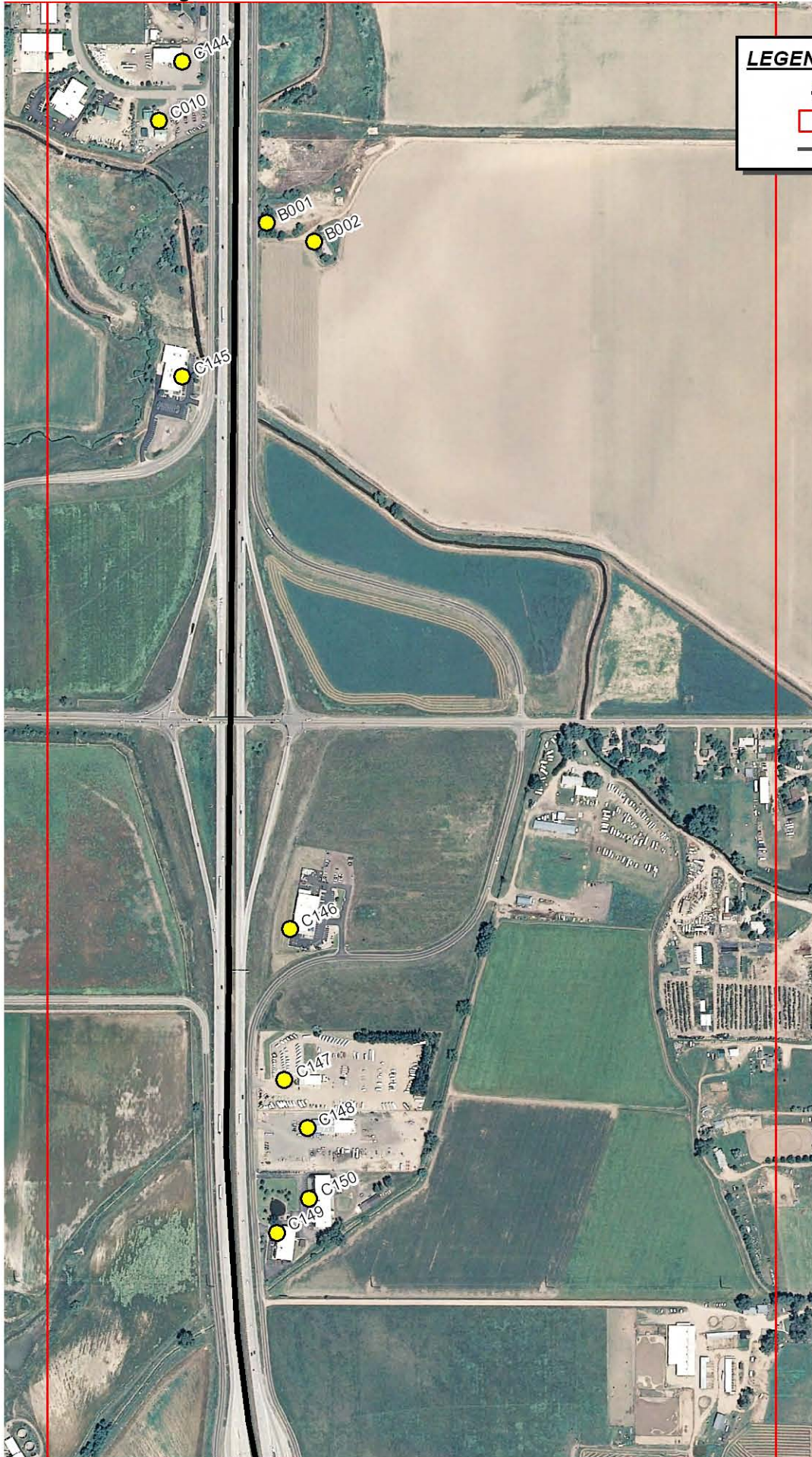
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North



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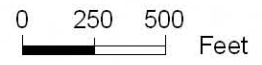


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North



Grid Cell AK\_2



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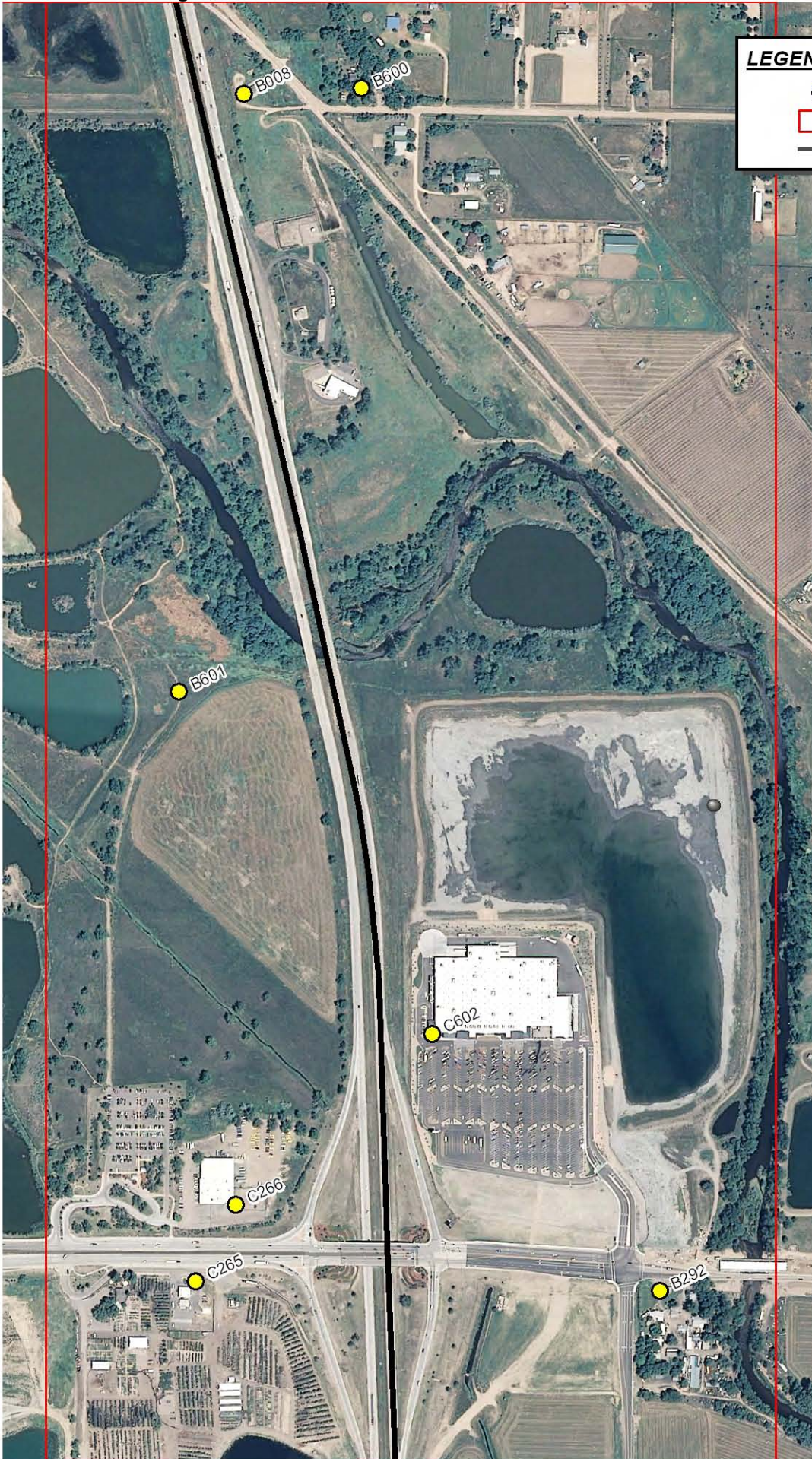
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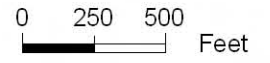
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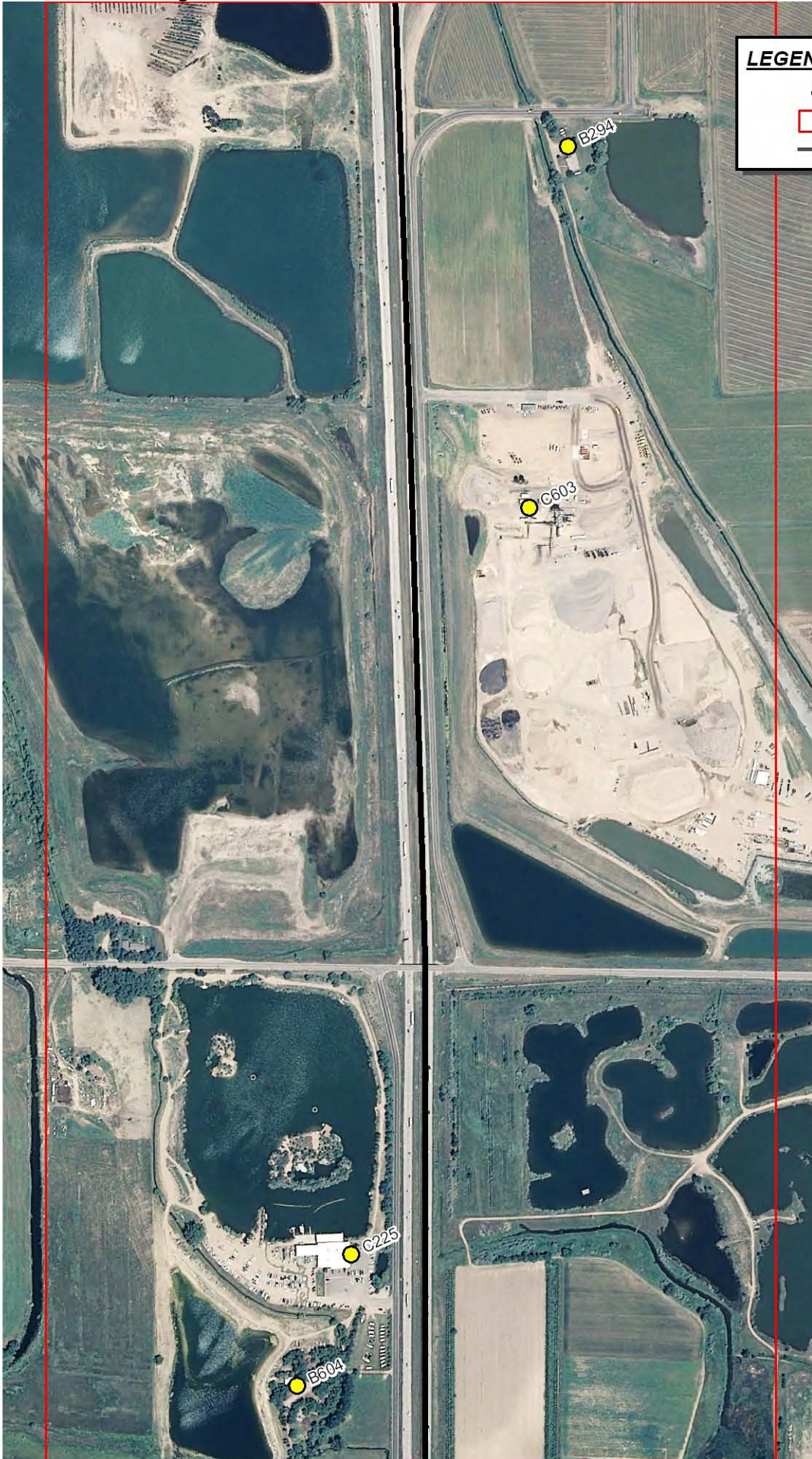


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Grid Cell AM\_3



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- Mapbook Grid Cell
- Highways



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Feet

Grid Cell AN\_3



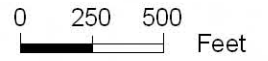


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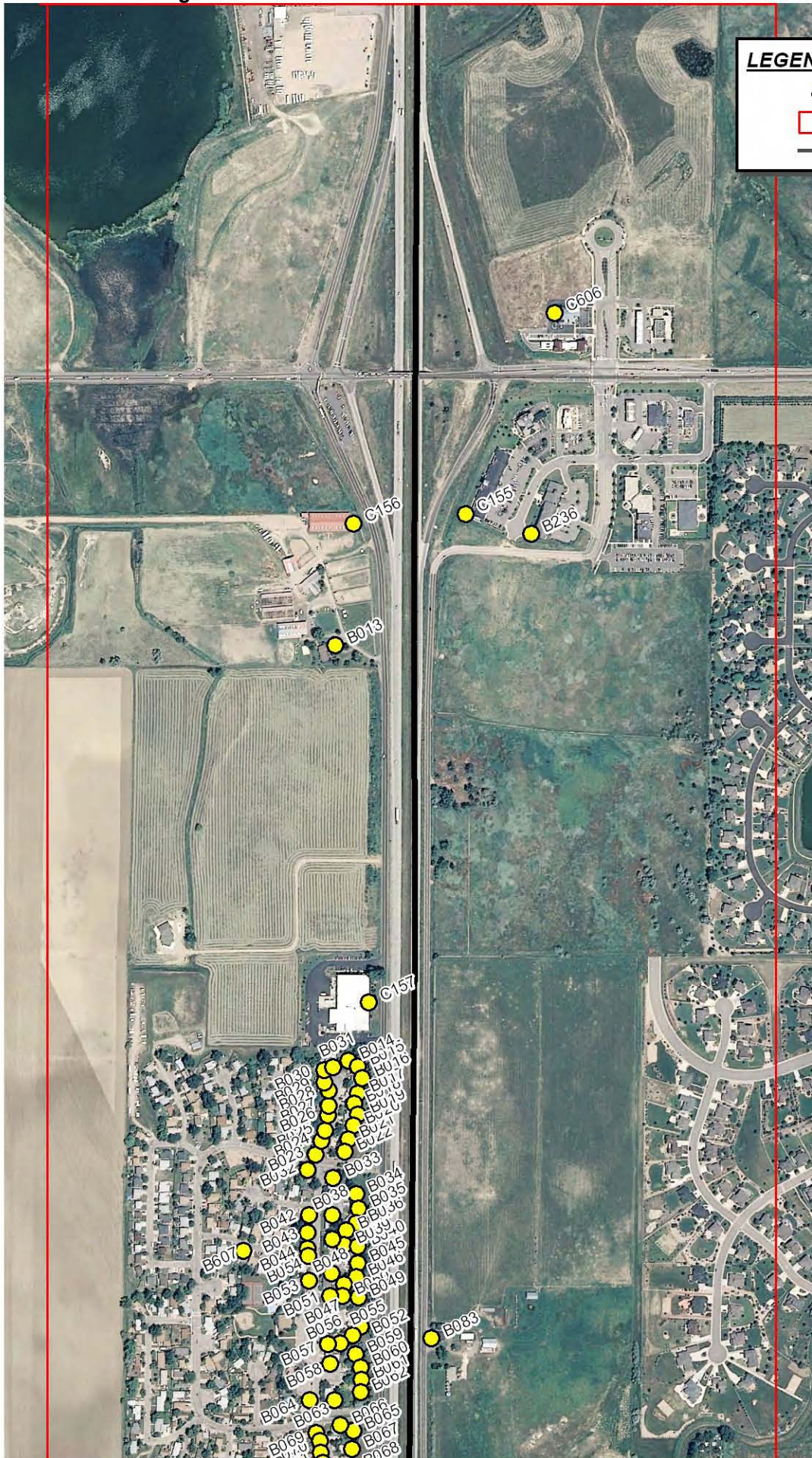
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North



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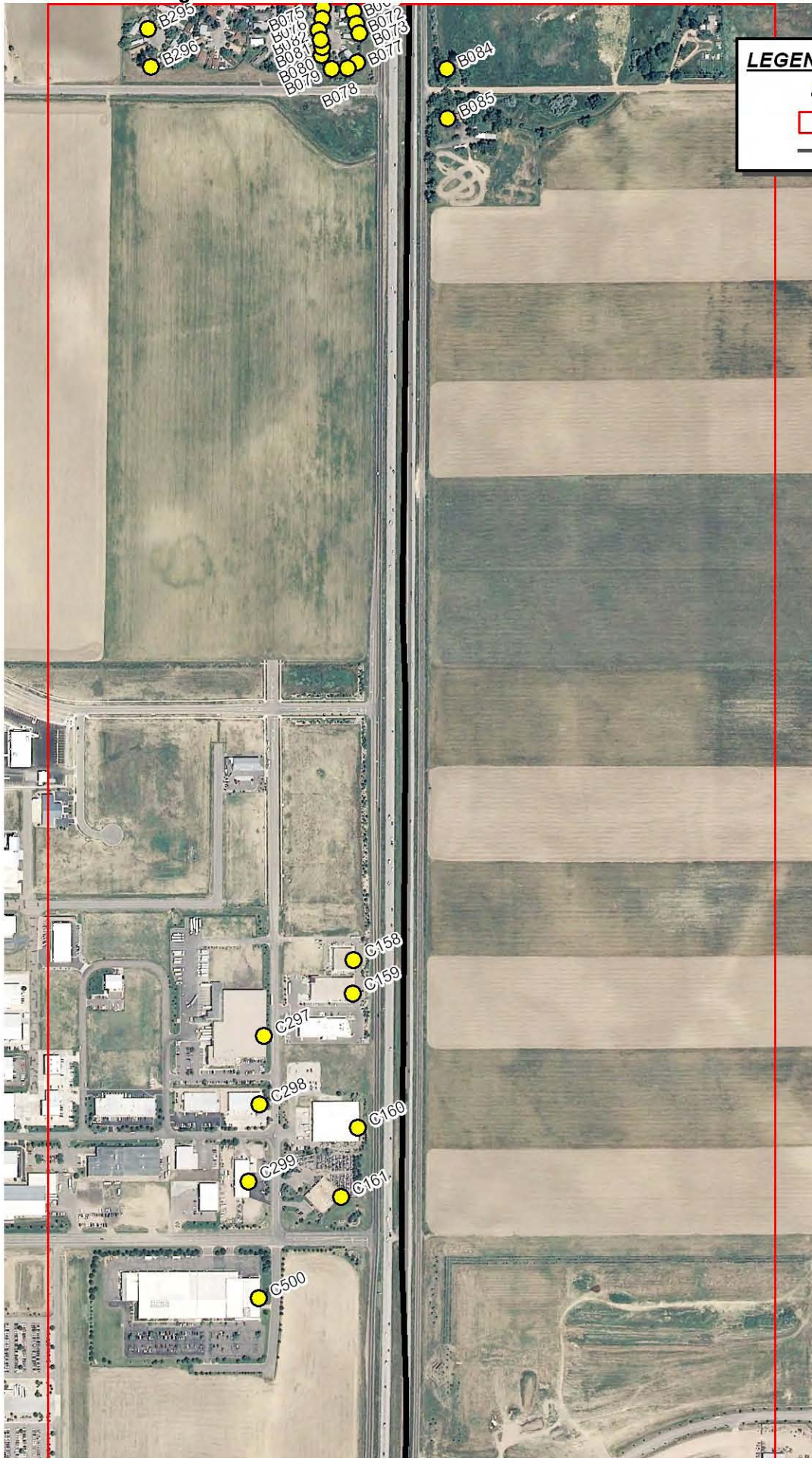
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Grid Cell AP\_3

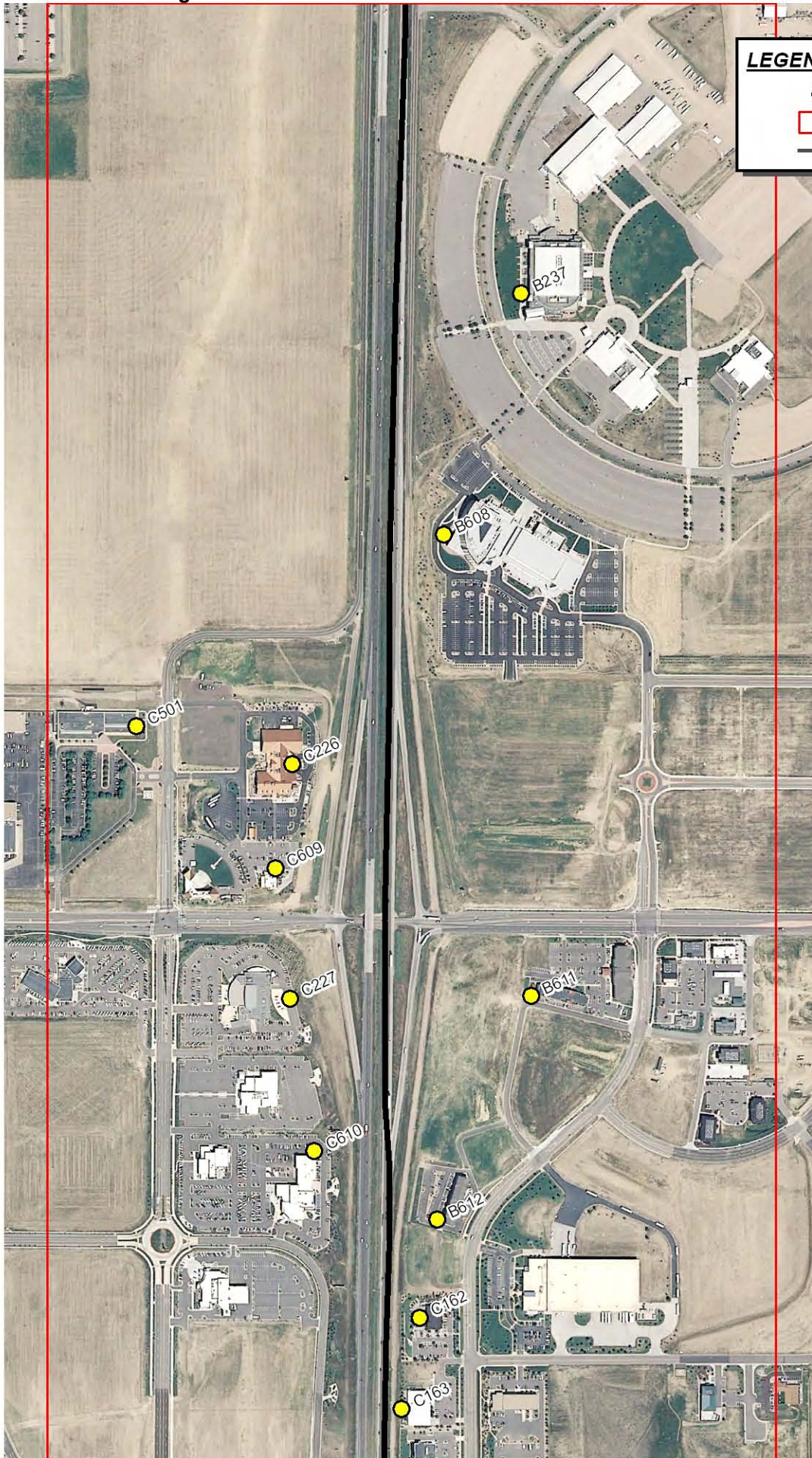


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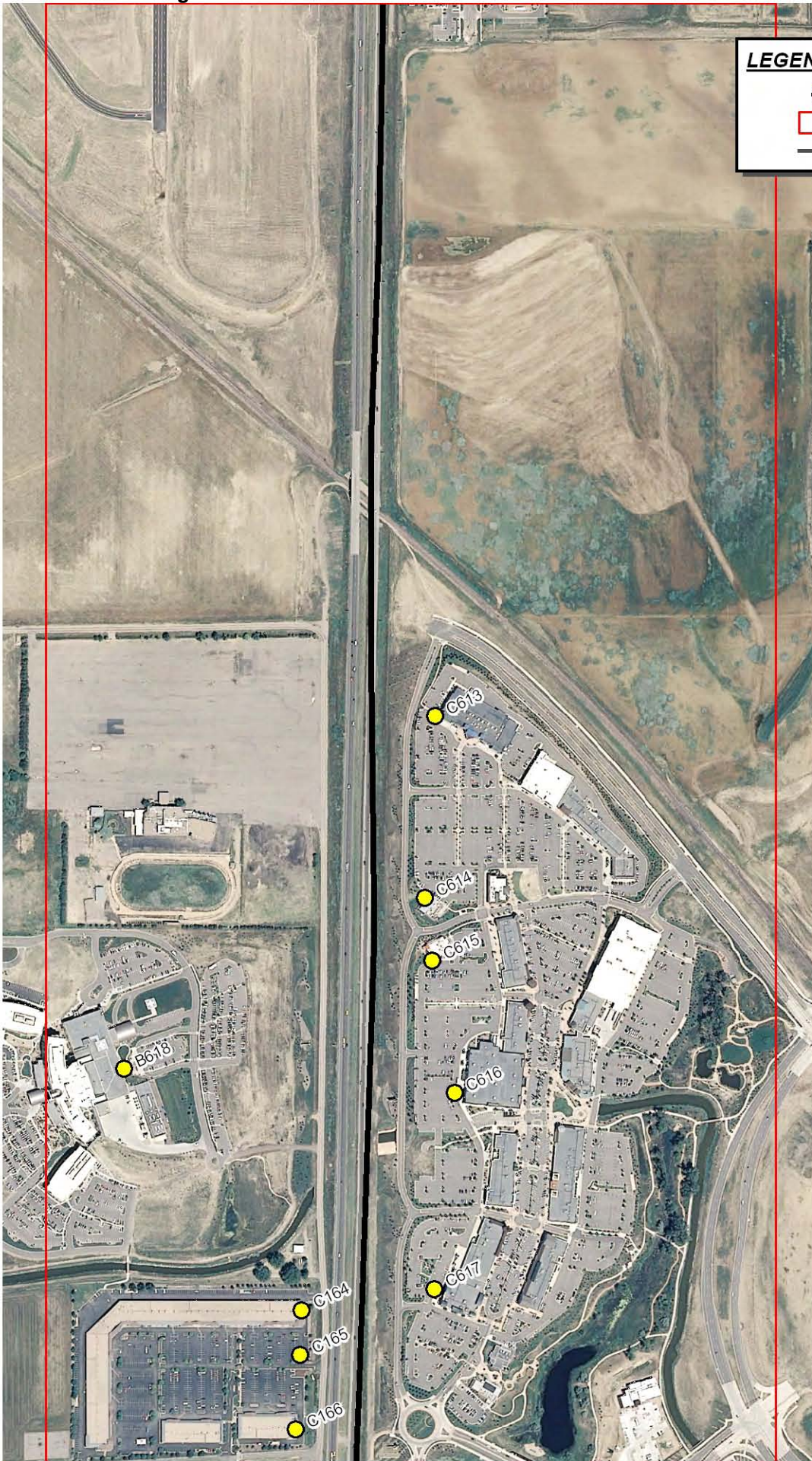
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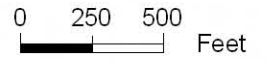
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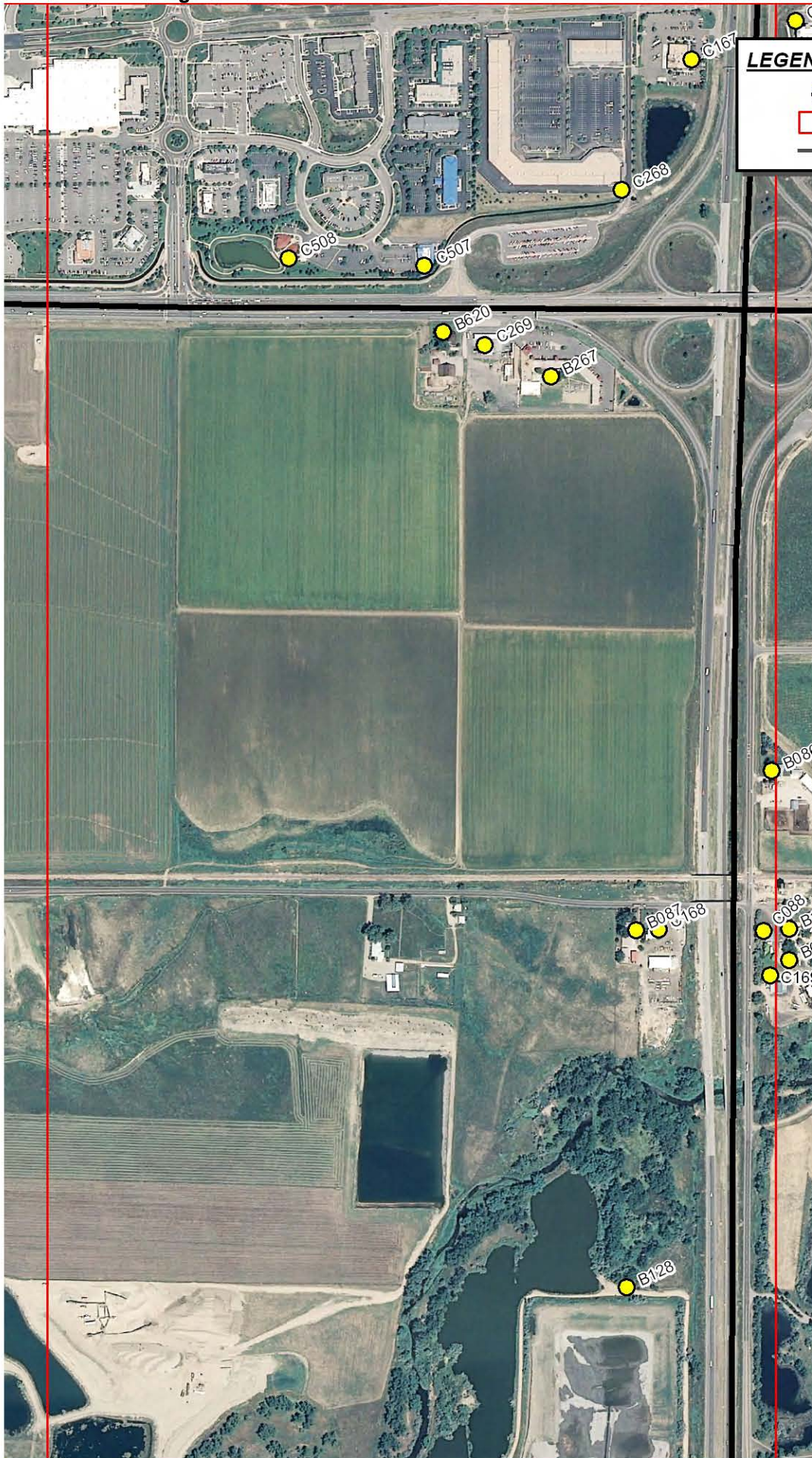
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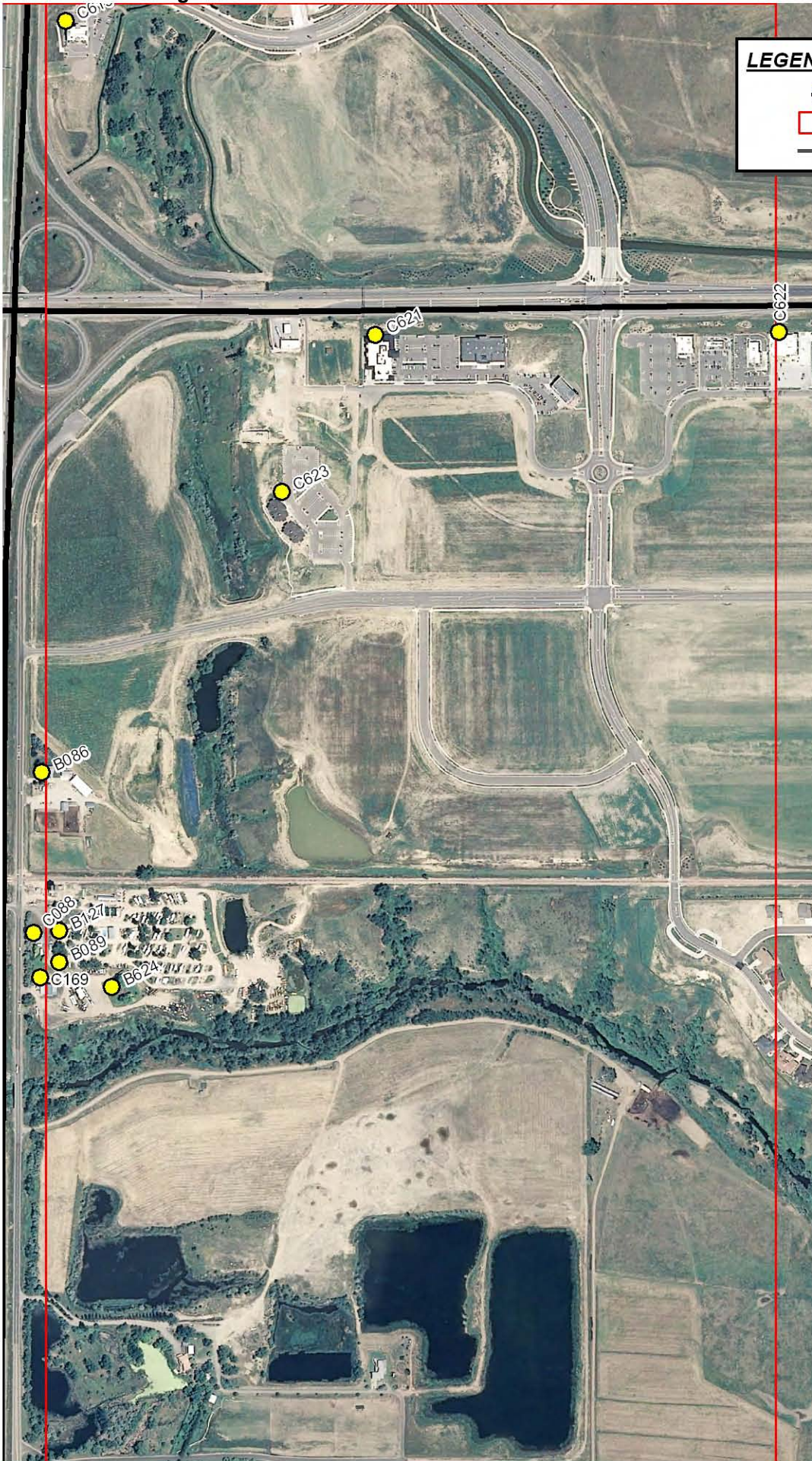
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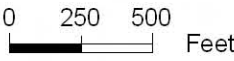


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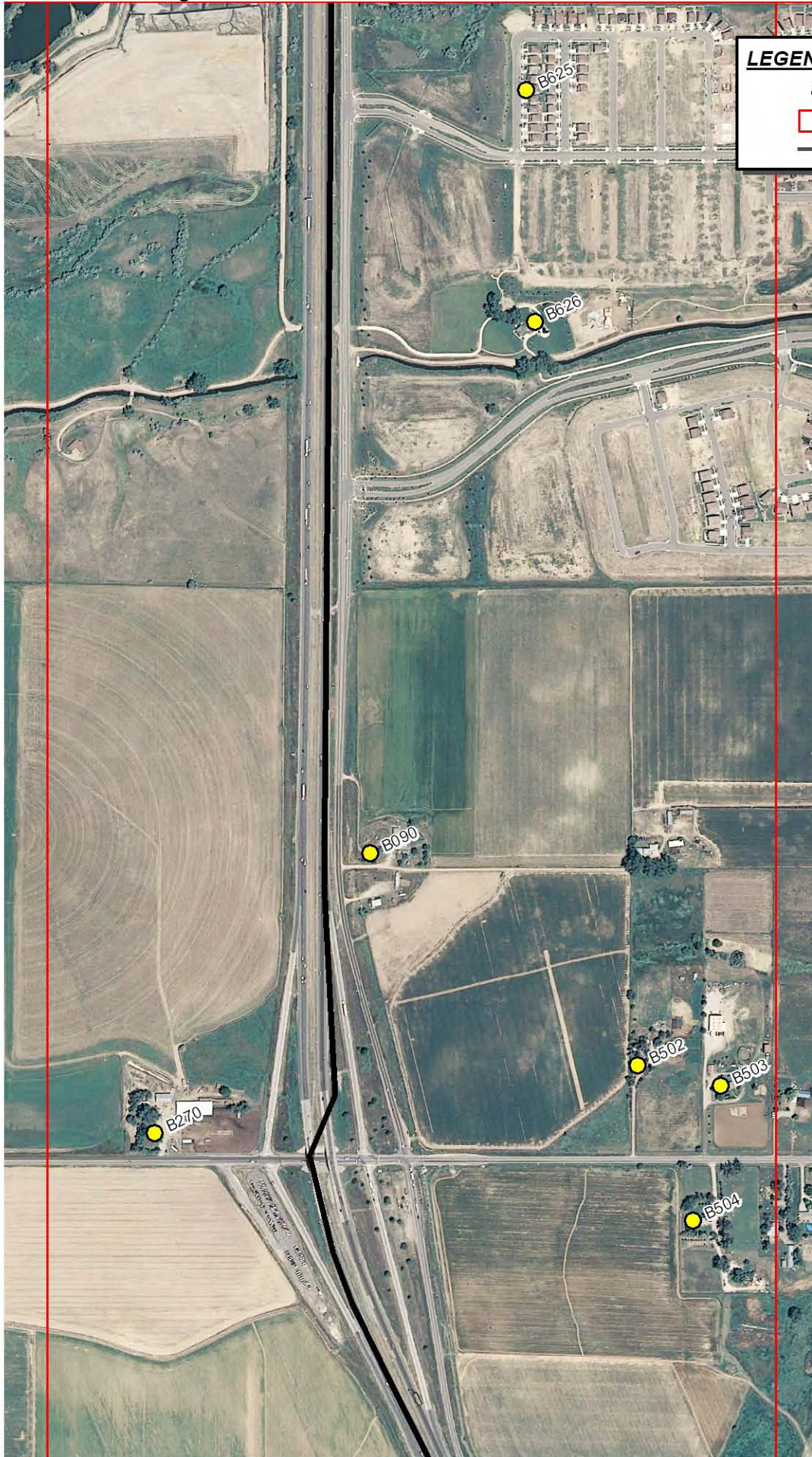


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Grid Cell AT\_3





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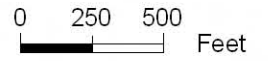
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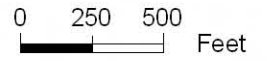


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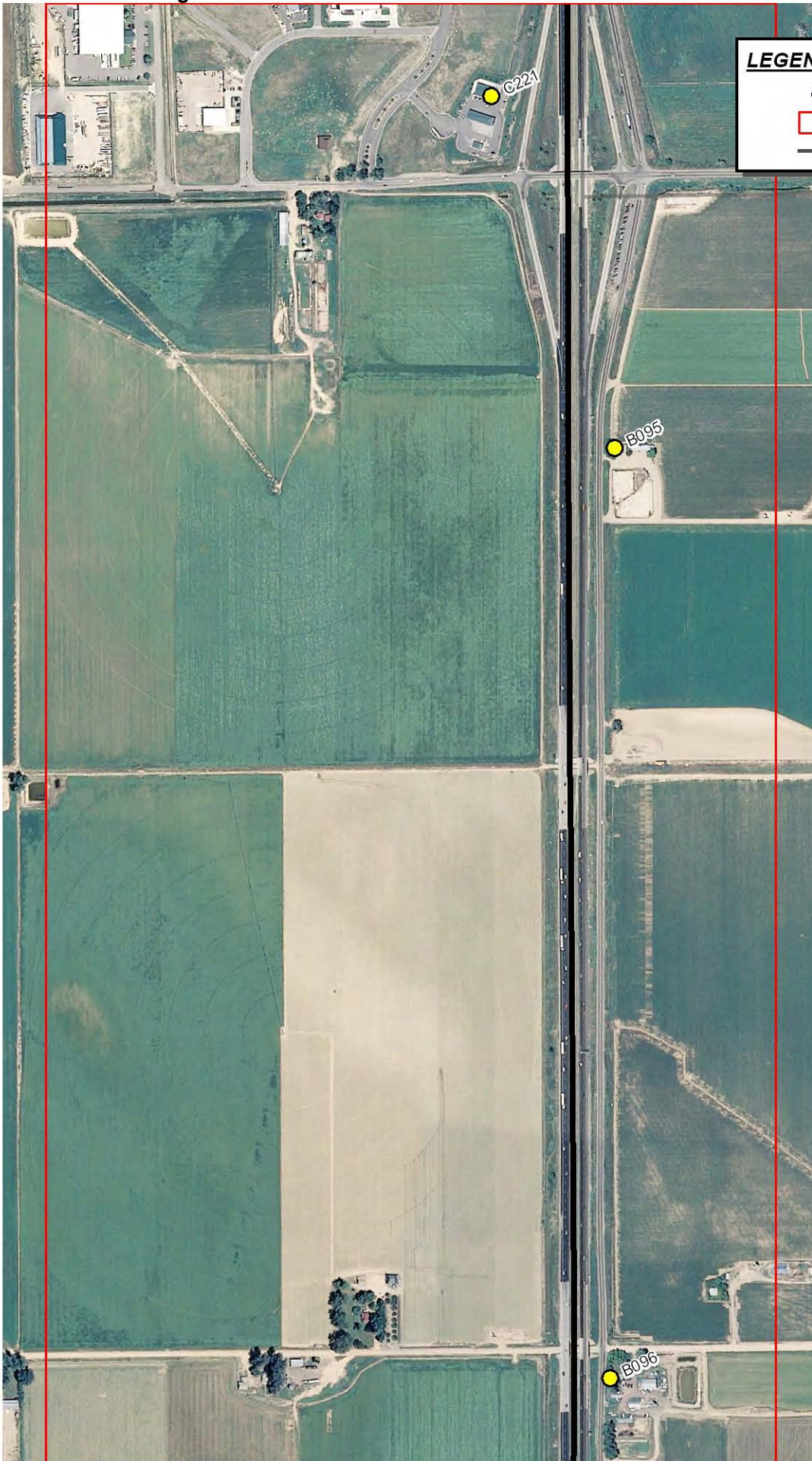
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North



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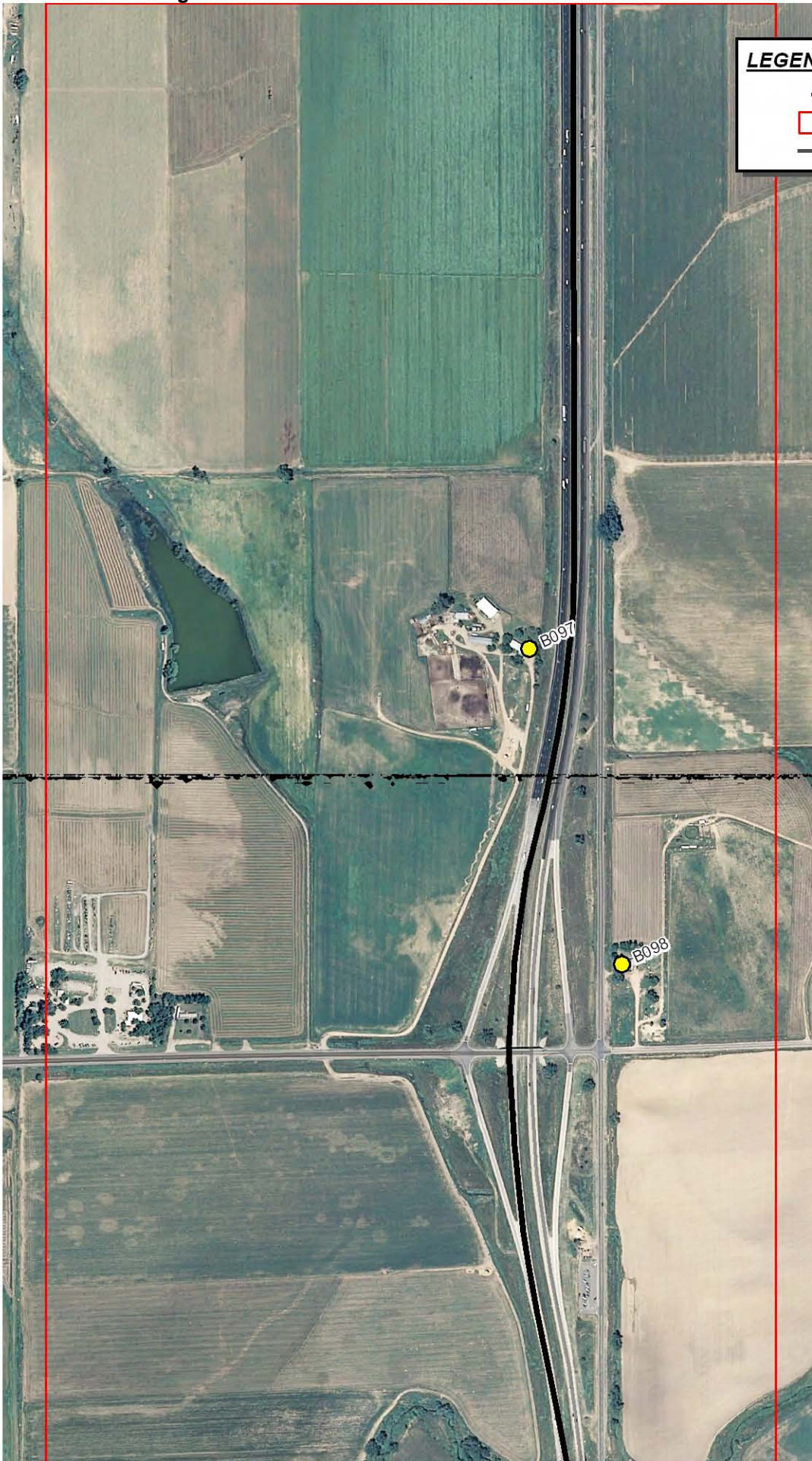
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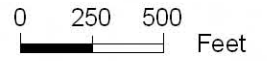


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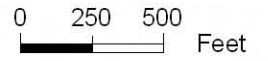


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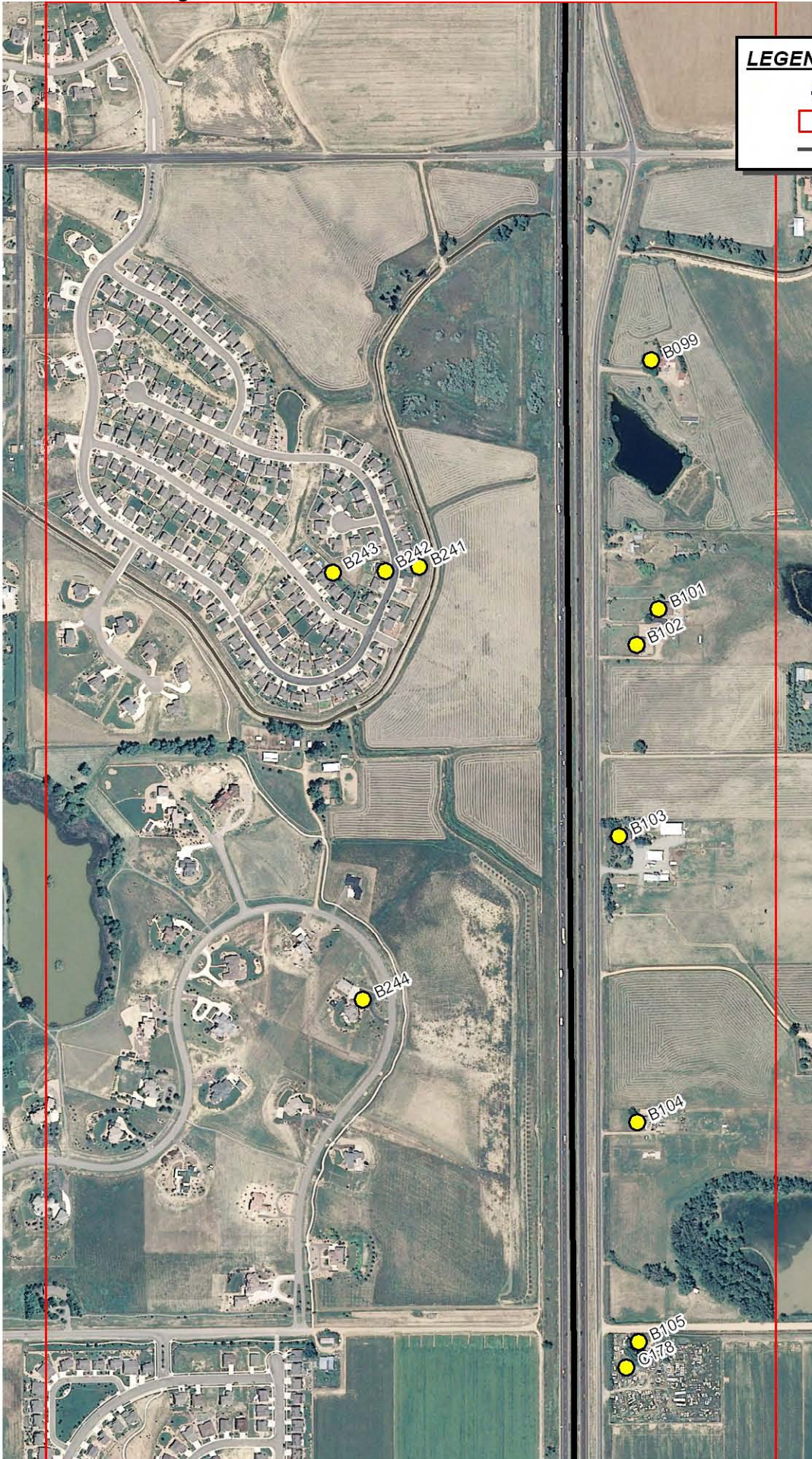


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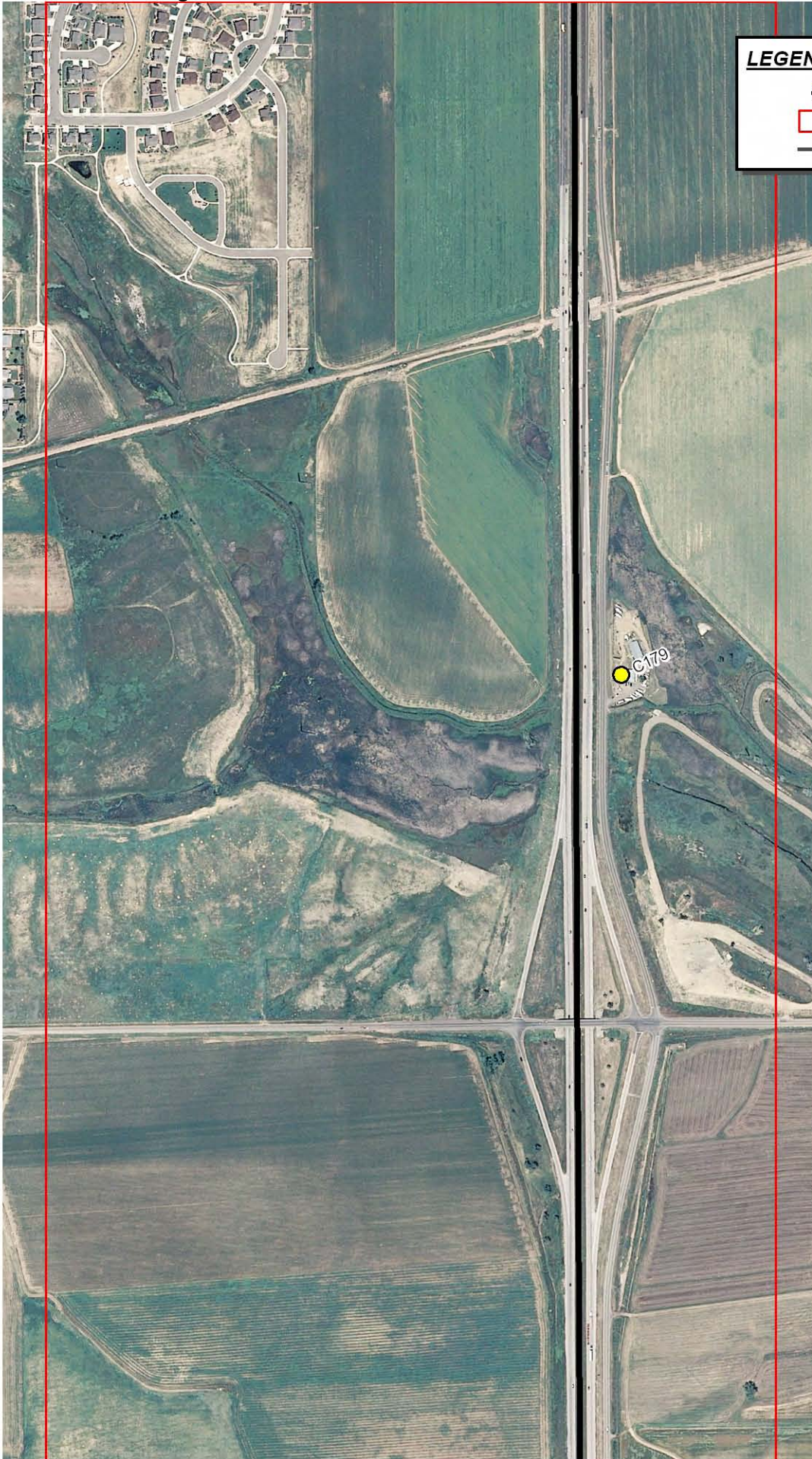
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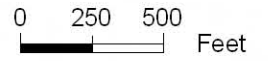


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Grid Cell BC\_4



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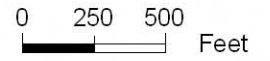
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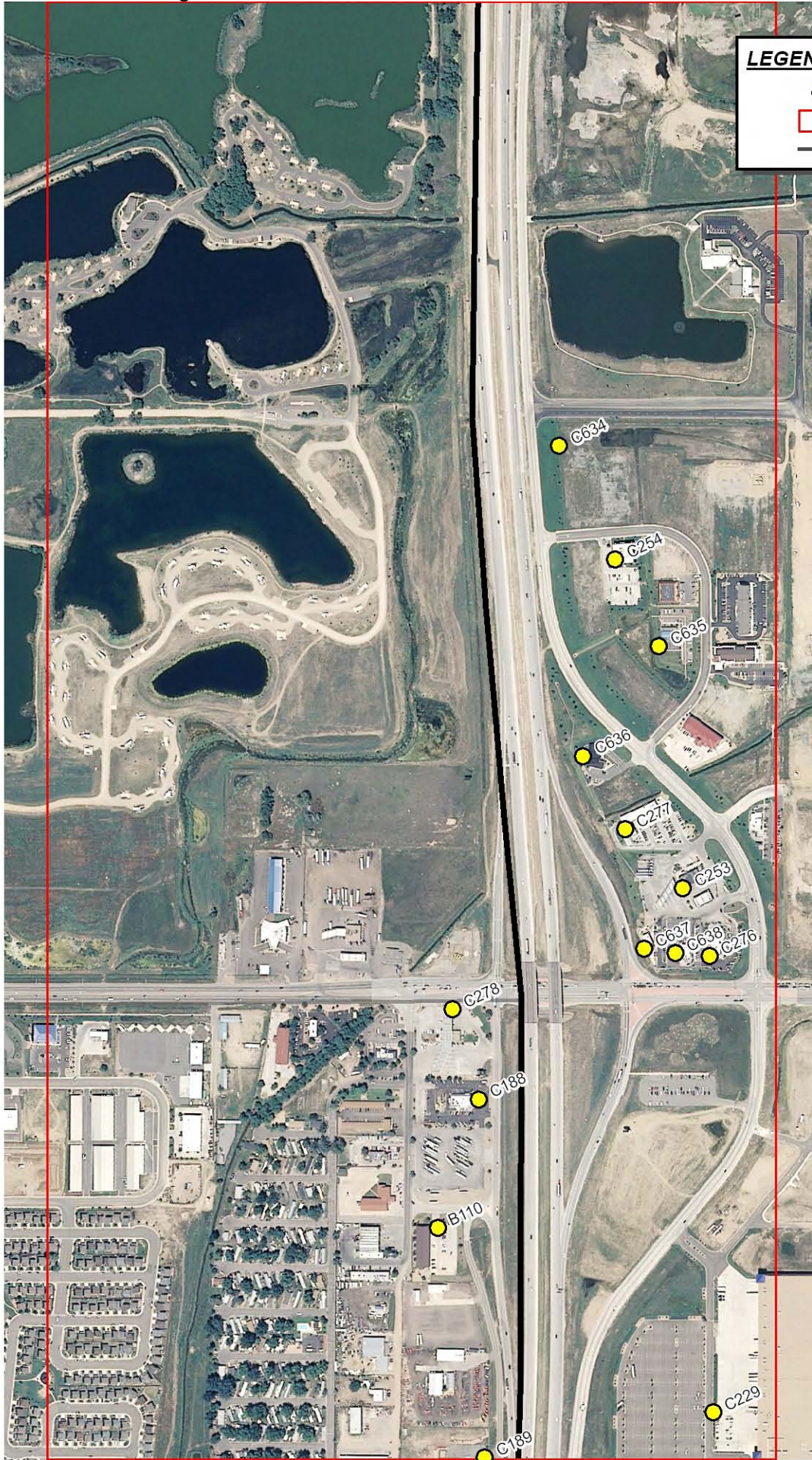
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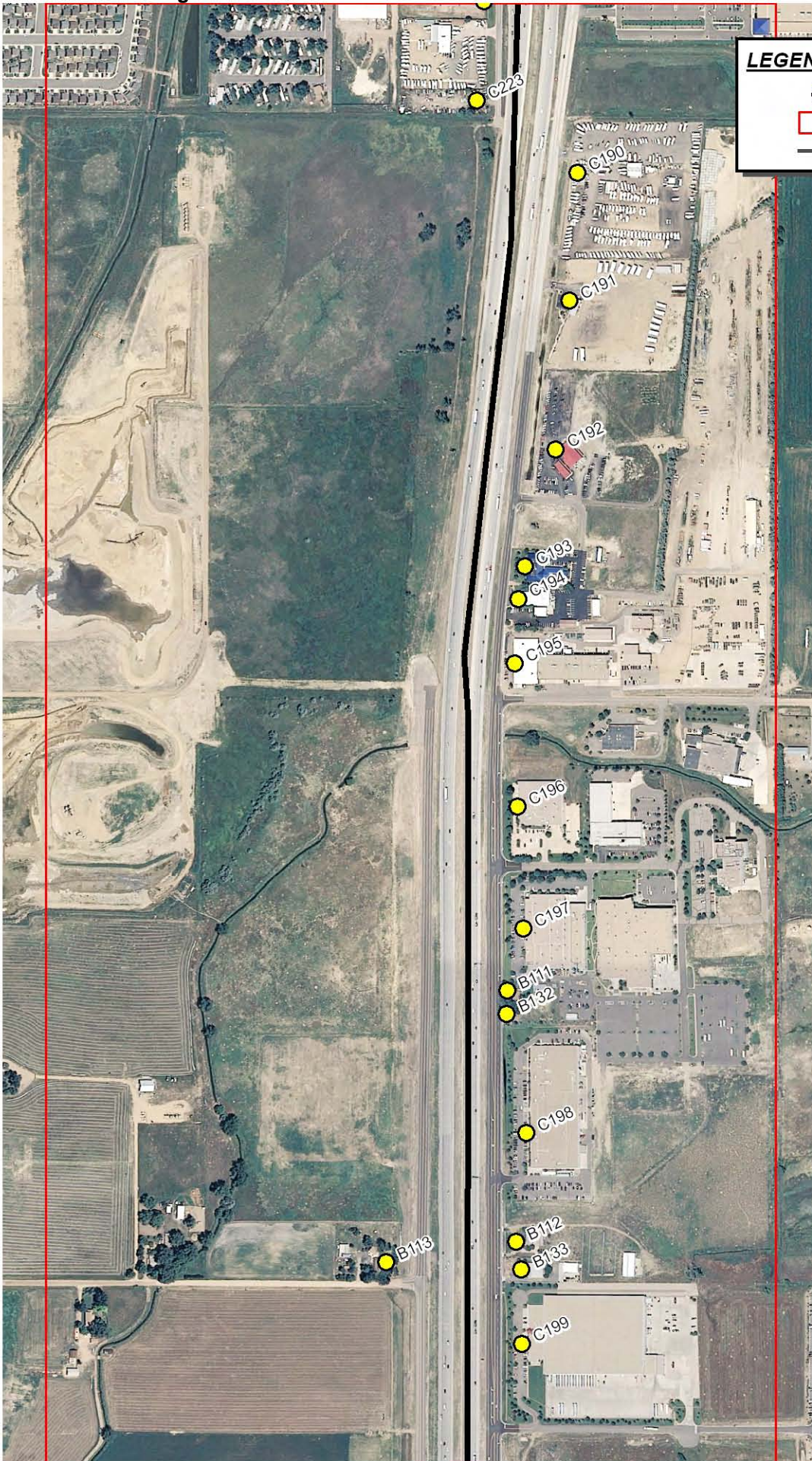
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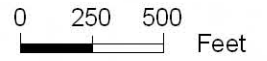


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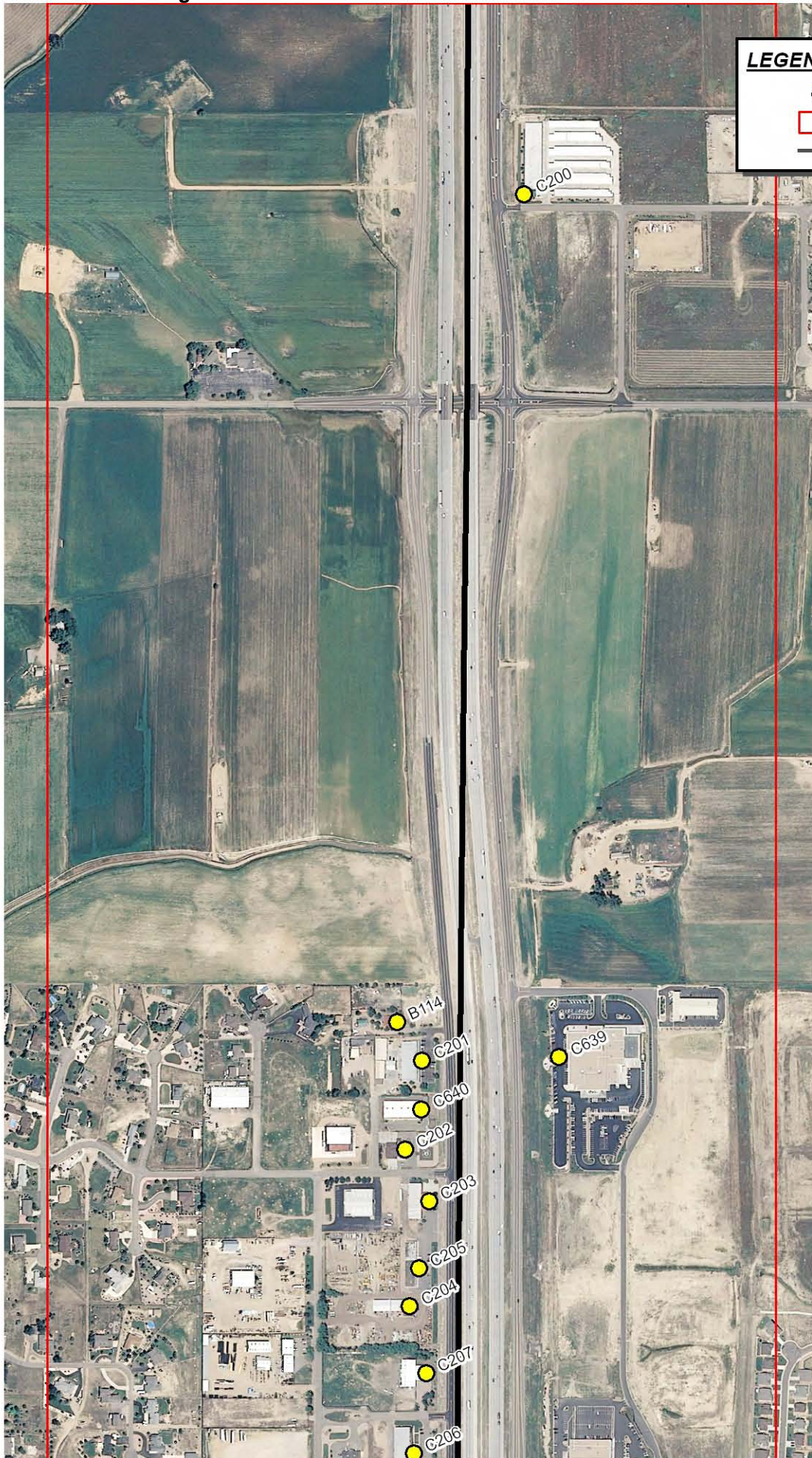
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North



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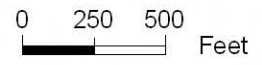


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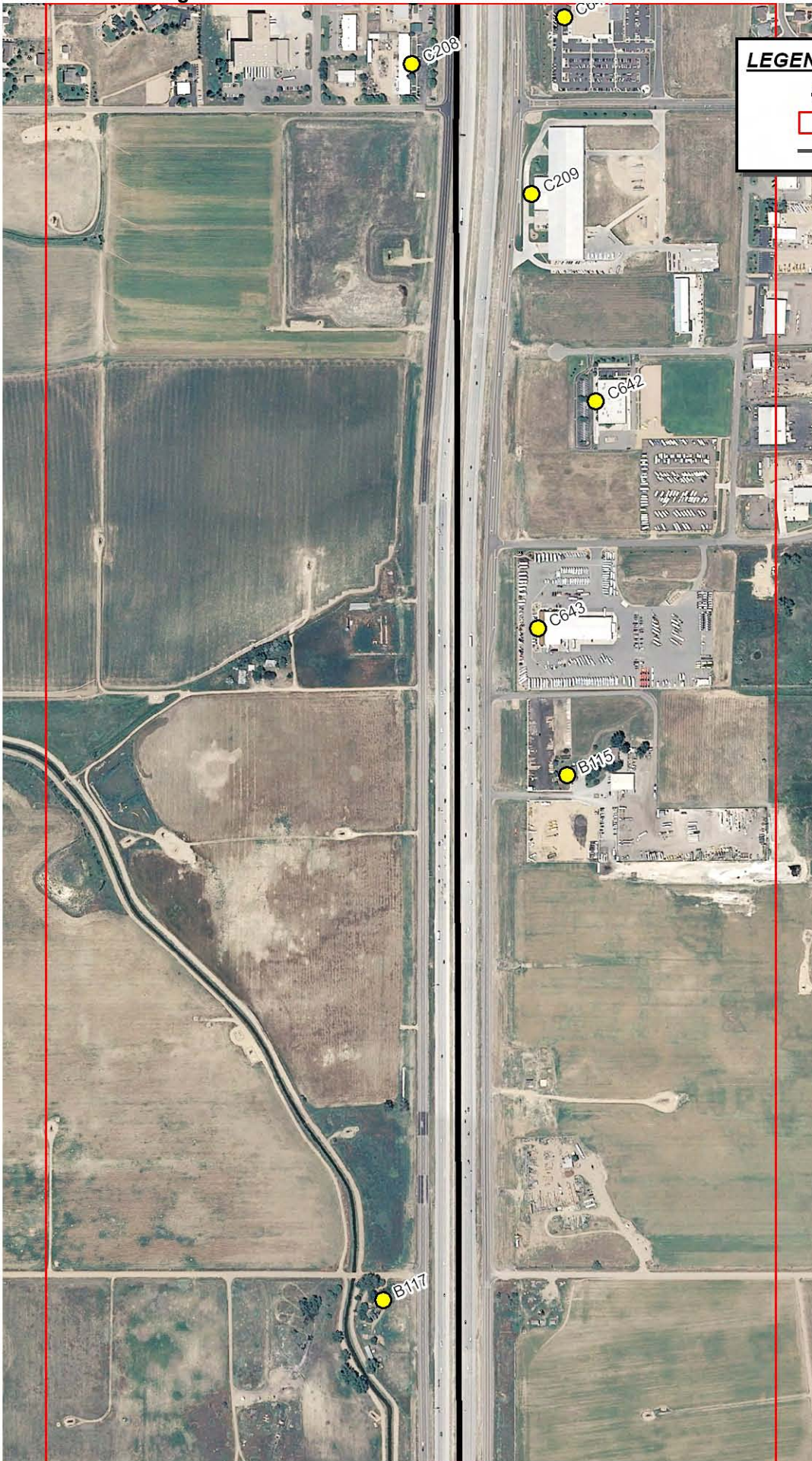
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North

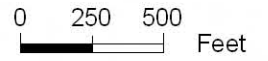


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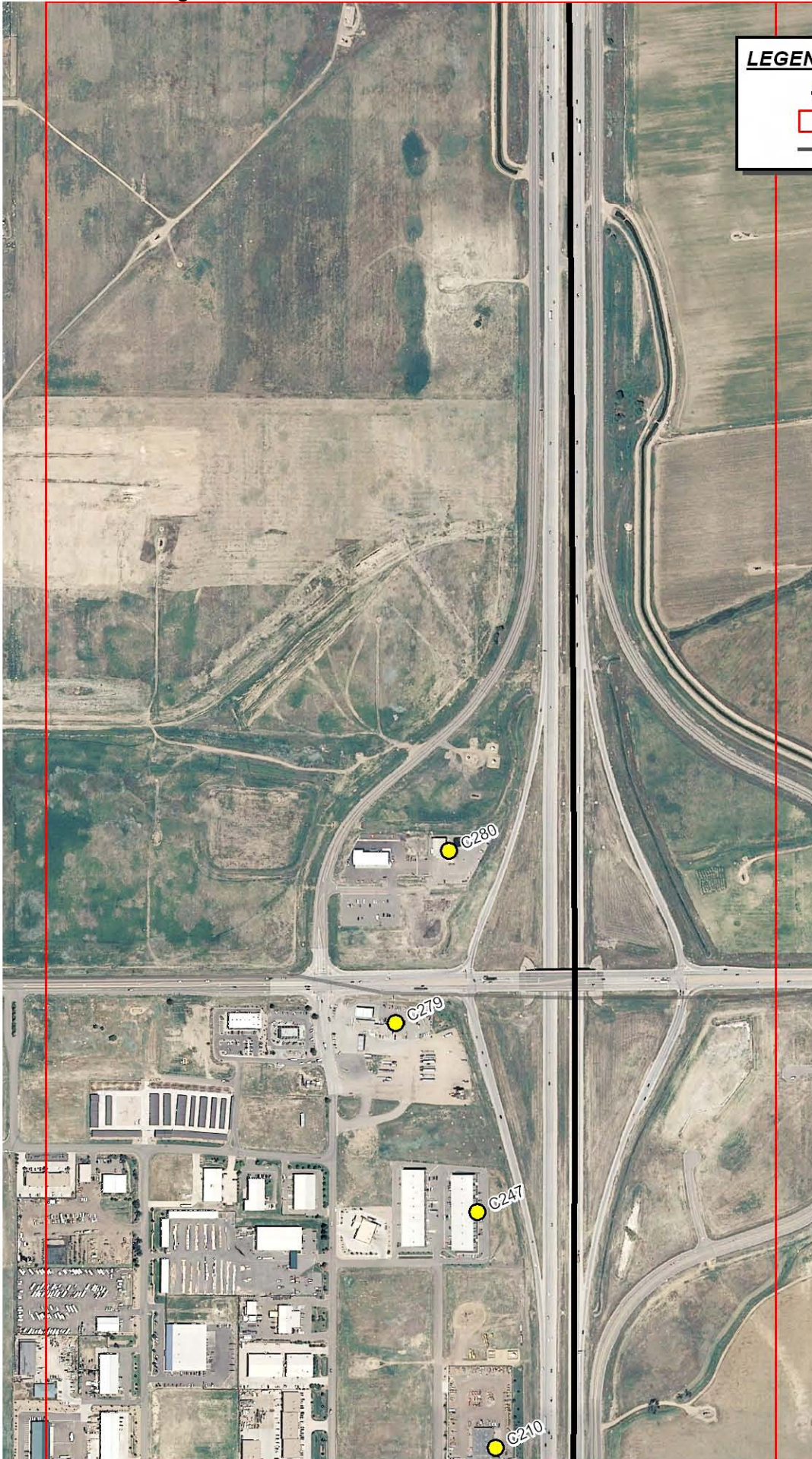
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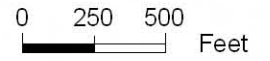
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Grid Cell BK\_3

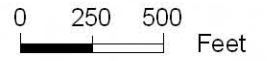


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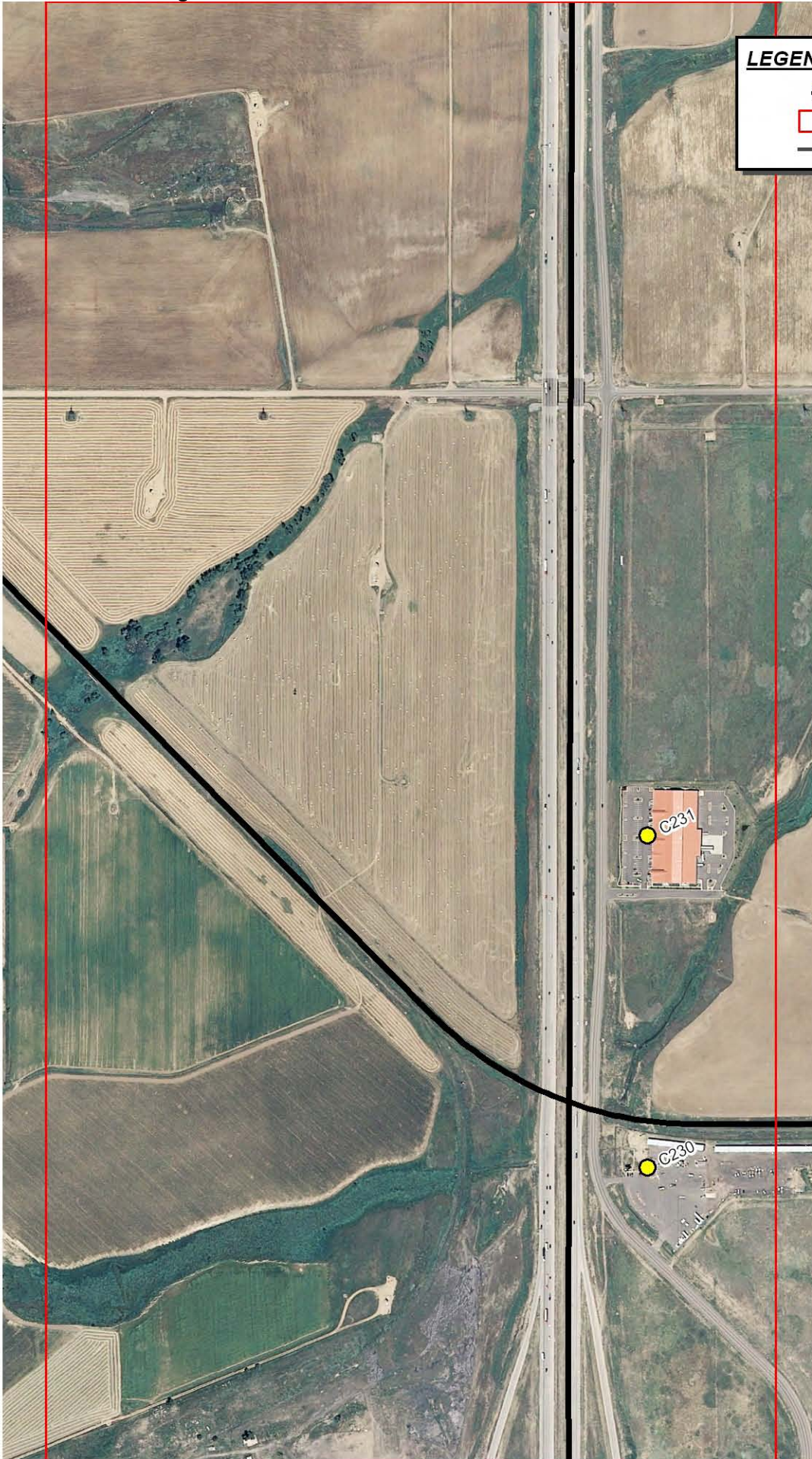
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North

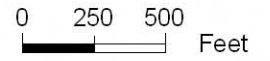


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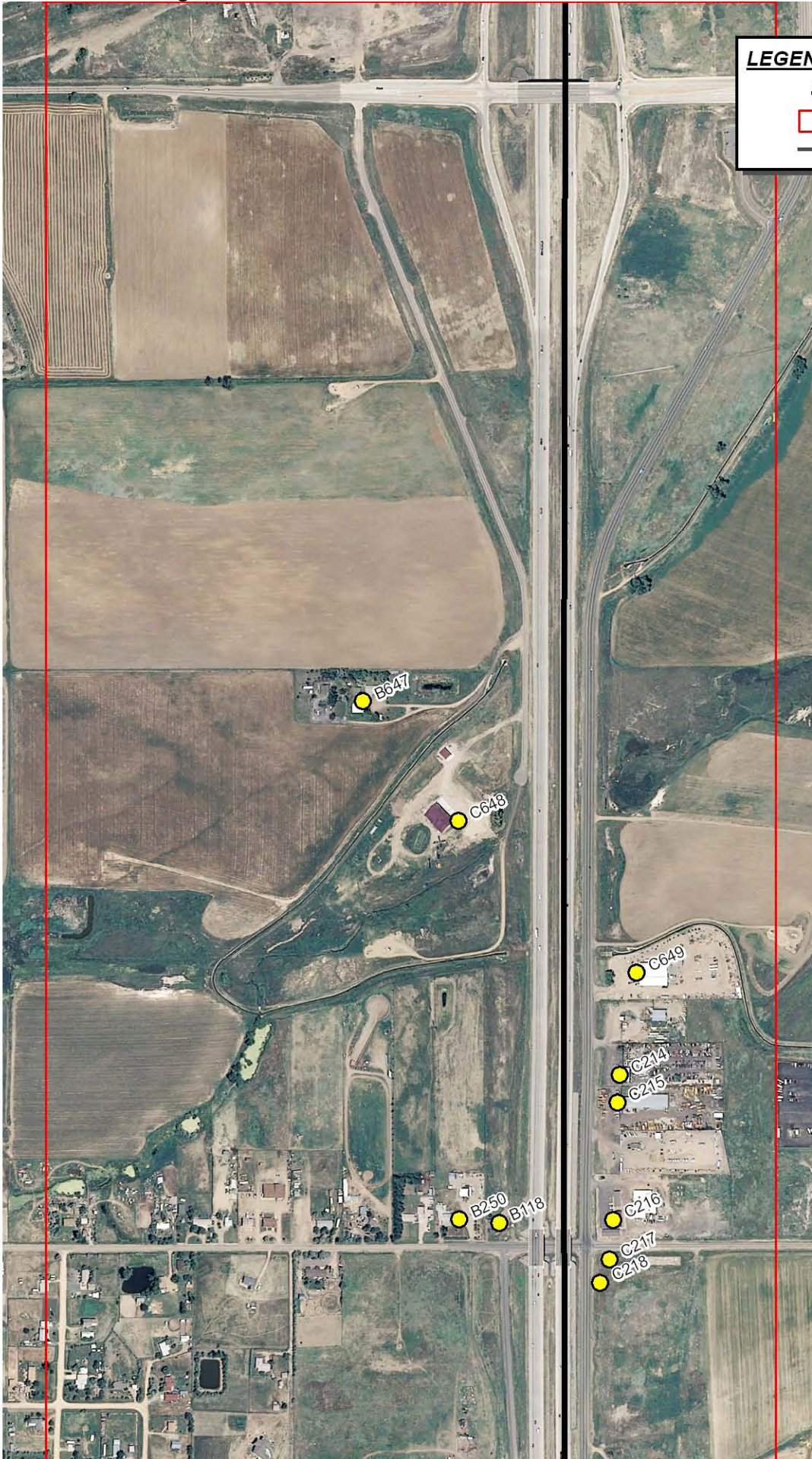


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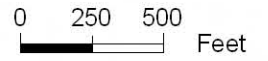


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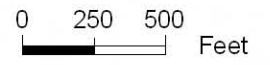


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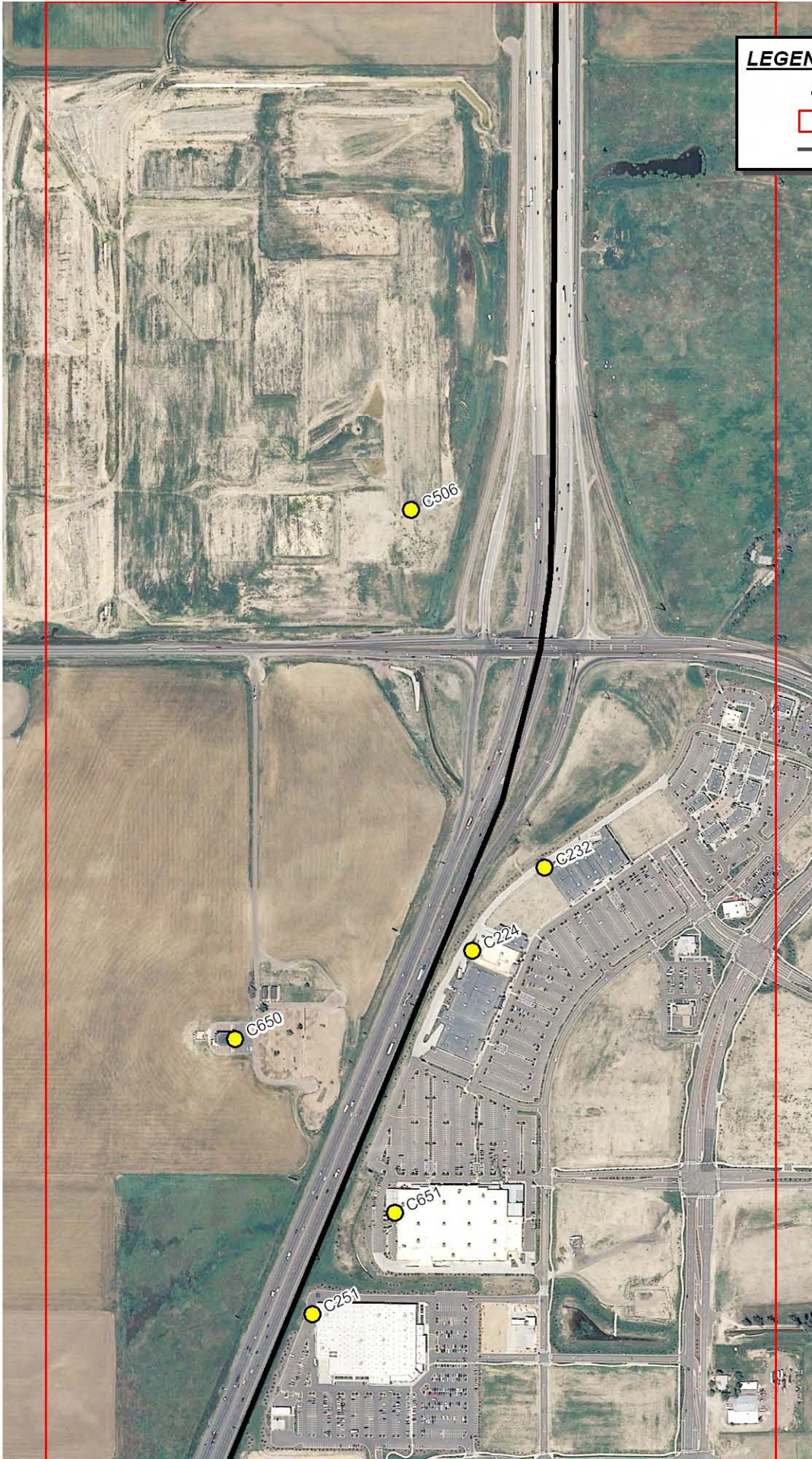


**LEGEND**

- Noise Model Receiver
- Mapbook Grid Cell
- Highways

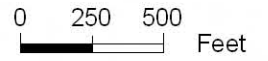


Grid Cell BO\_3



**LEGEND**

- Noise Model Receiver
- Mapbook Grid Cell
- Highways



Grid Cell BP\_3

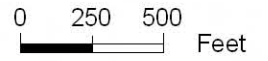


**LEGEND**

- Noise Model Receiver
- Mapbook Grid Cell
- Highways



North



Grid Cell BQ\_3

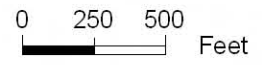


**LEGEND**

- Noise Model Receiver
- Mapbook Grid Cell
- Highways

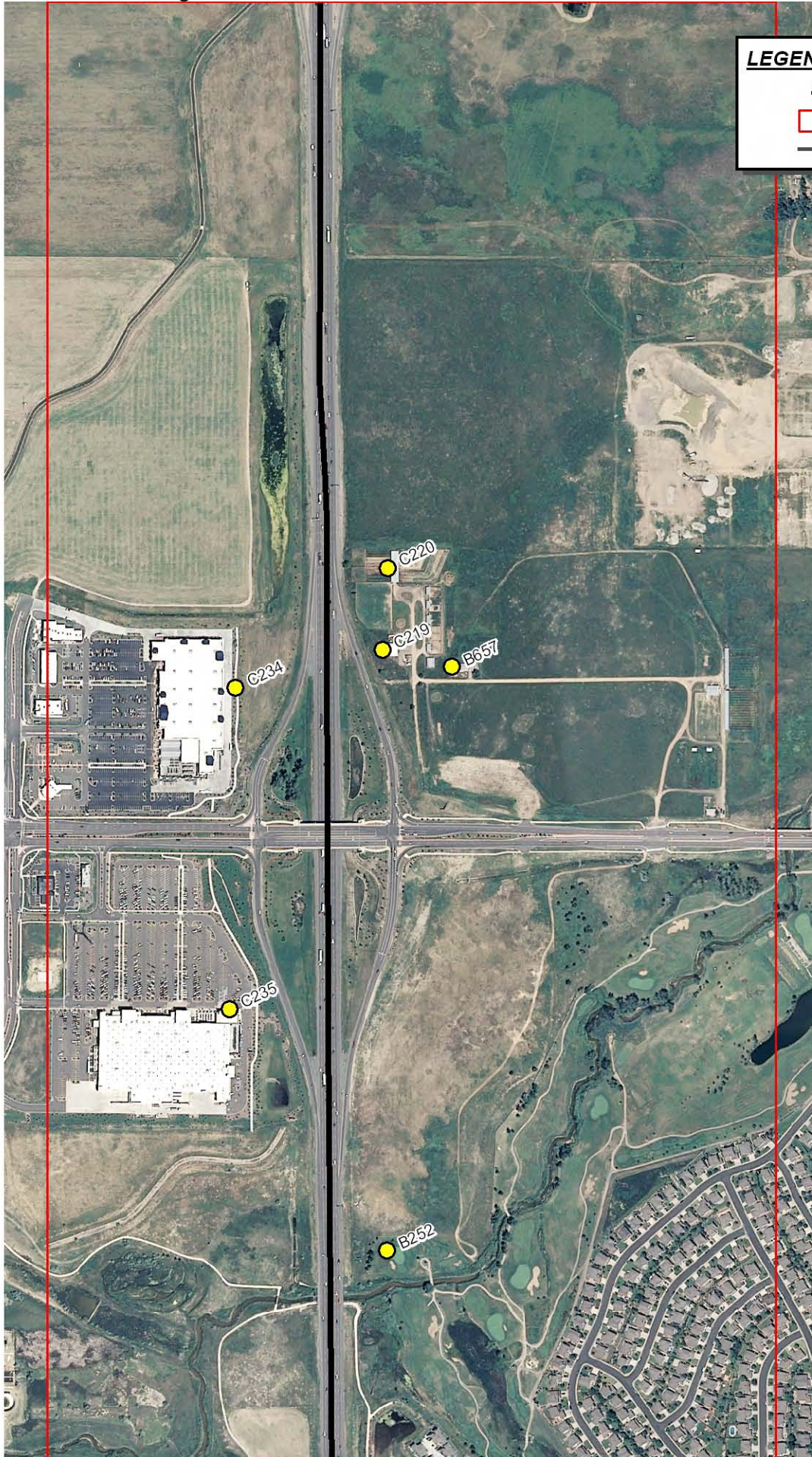


North



Grid Cell BR\_3





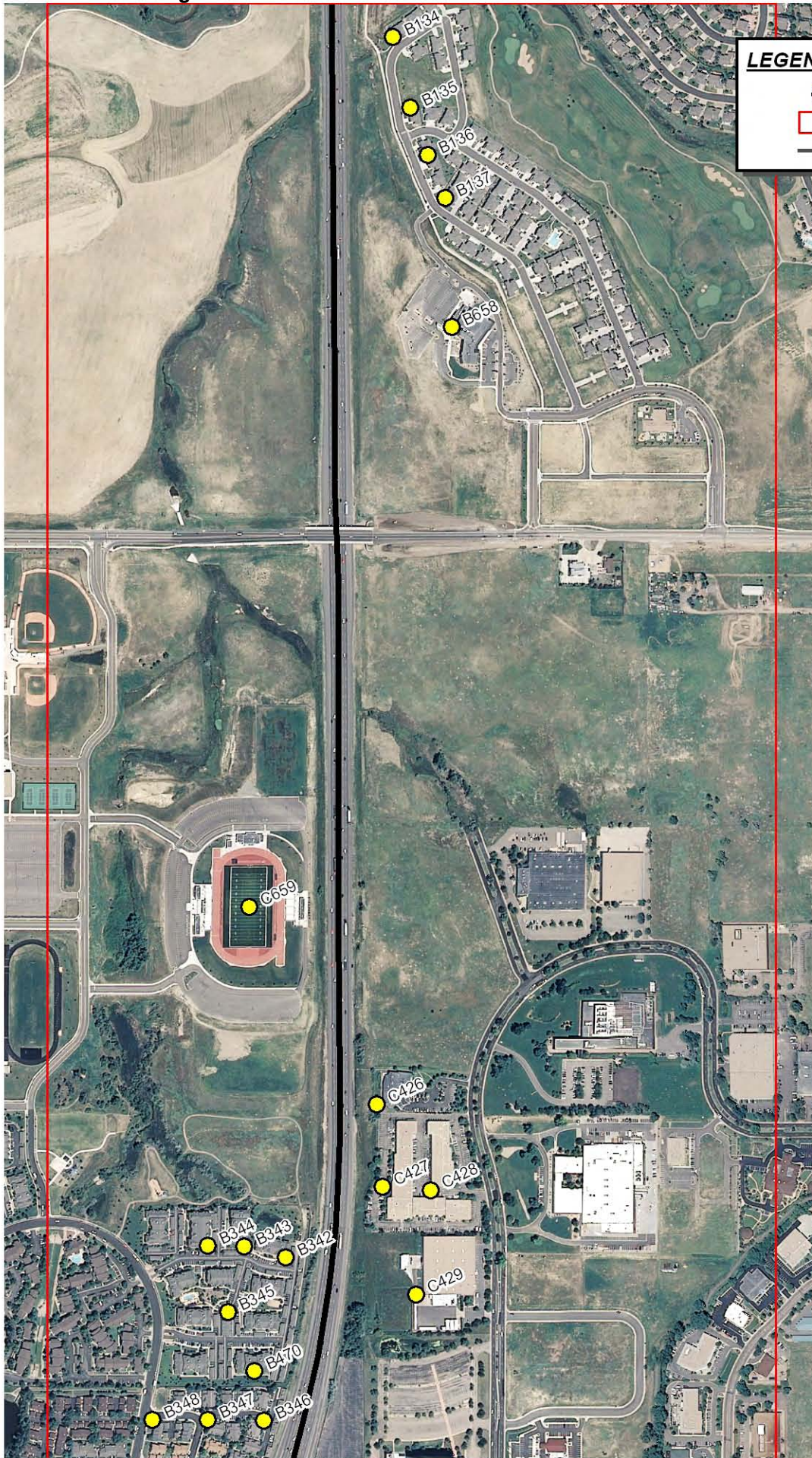
**LEGEND**

- Noise Model Receiver
- ▭ Mapbook Grid Cell
- Highways



0 250 500  
Feet

Grid Cell BS\_3

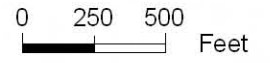


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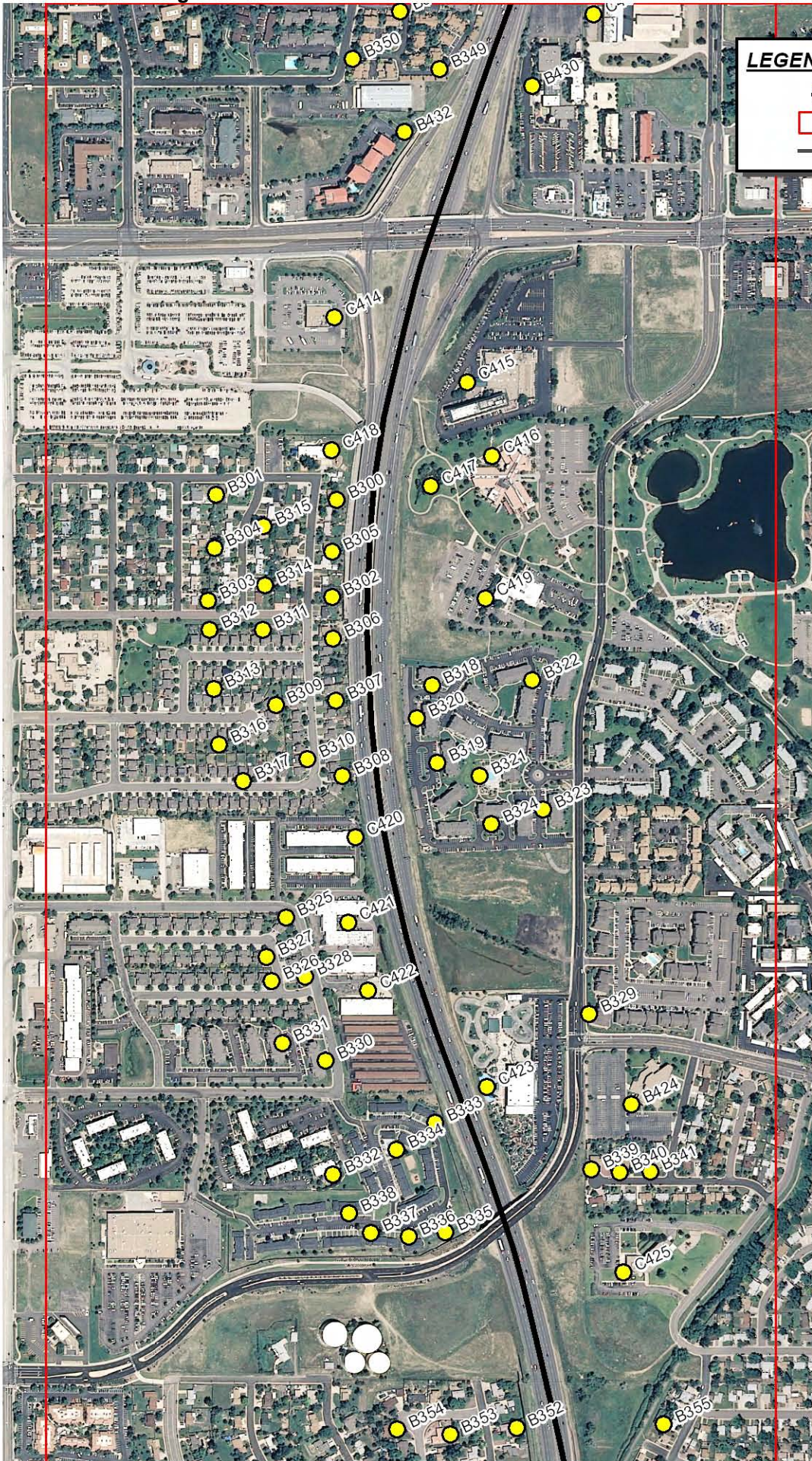
- Noise Model Receiver
- Mapbook Grid Cell
- Highways



North



Grid Cell BT\_3

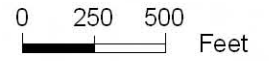


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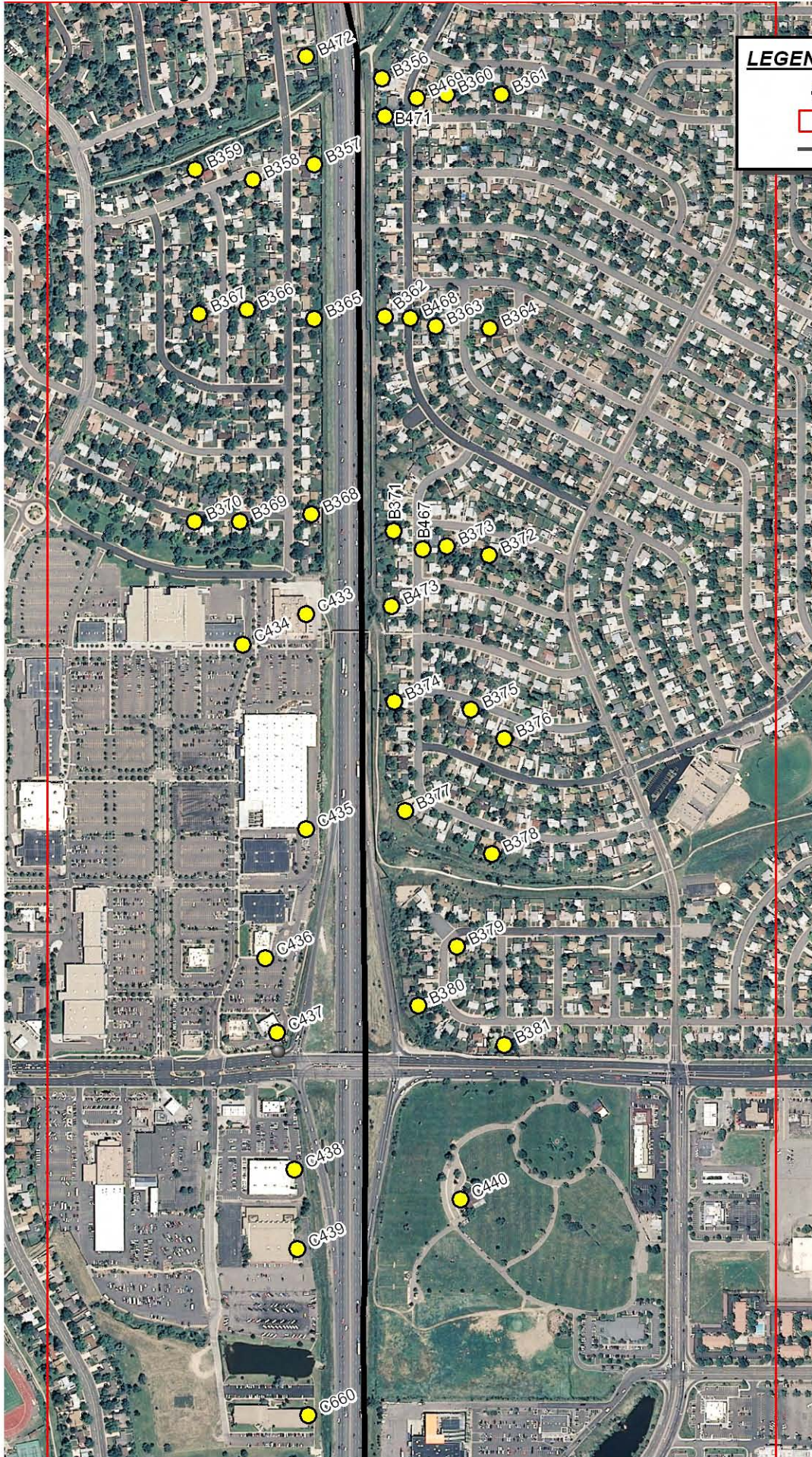
- Noise Model Receiver
- Mapbook Grid Cell
- Highways



North



Grid Cell BU\_3

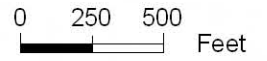


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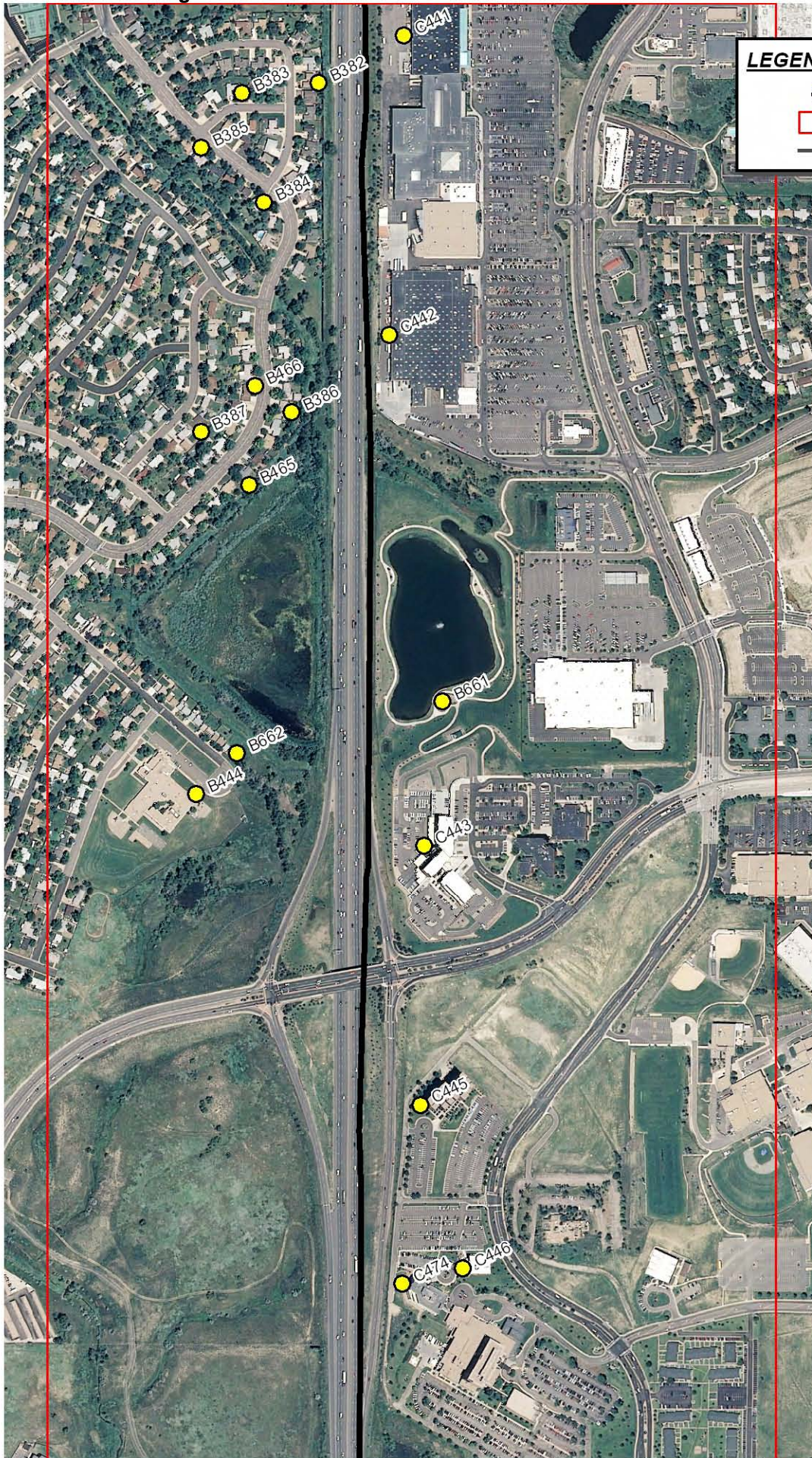
- Noise Model Receiver
- Mapbook Grid Cell
- Highways



North



Grid Cell BV\_3

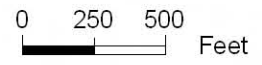


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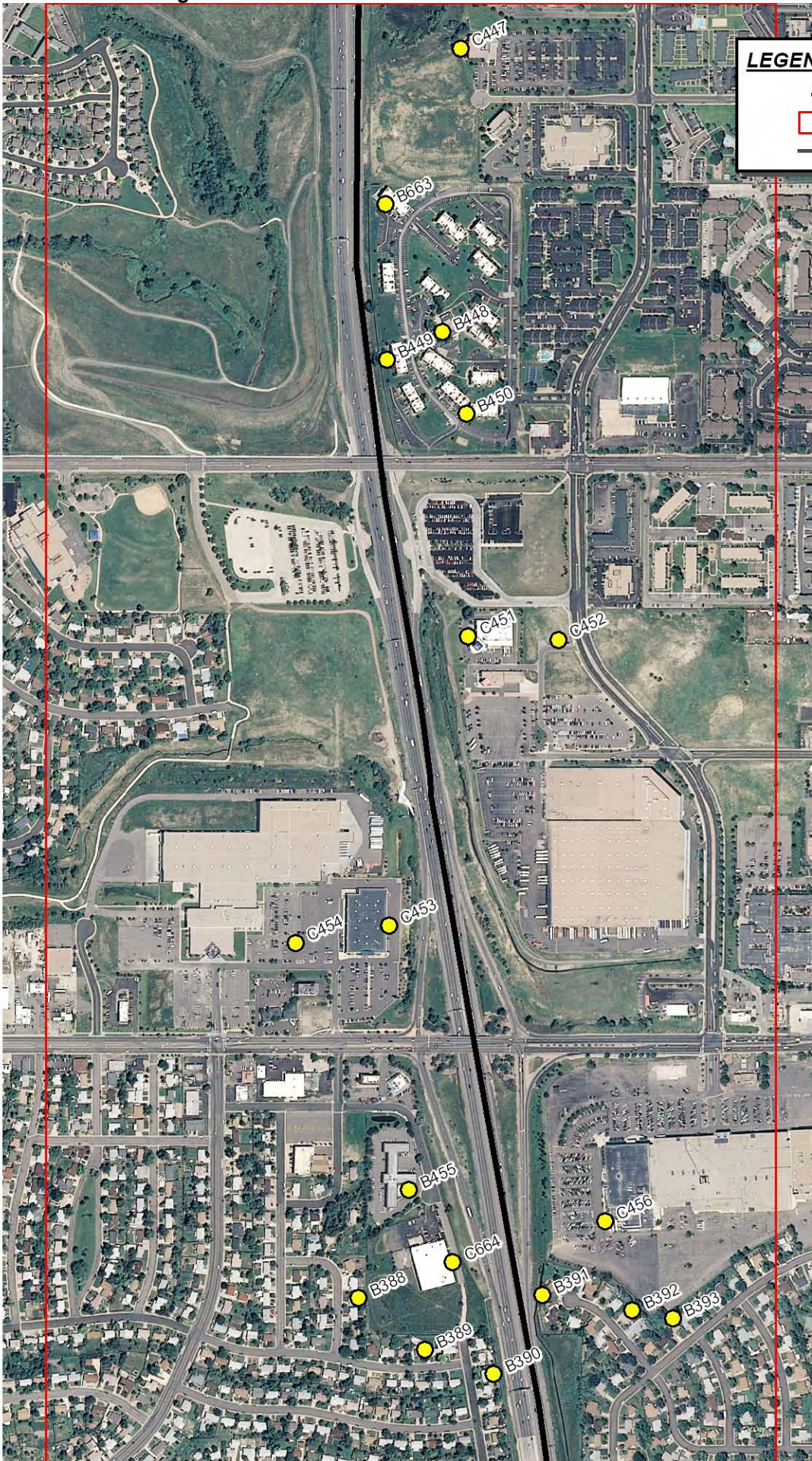
- Noise Model Receiver
- Mapbook Grid Cell
- Highways



North



Grid Cell BW\_3

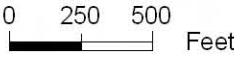


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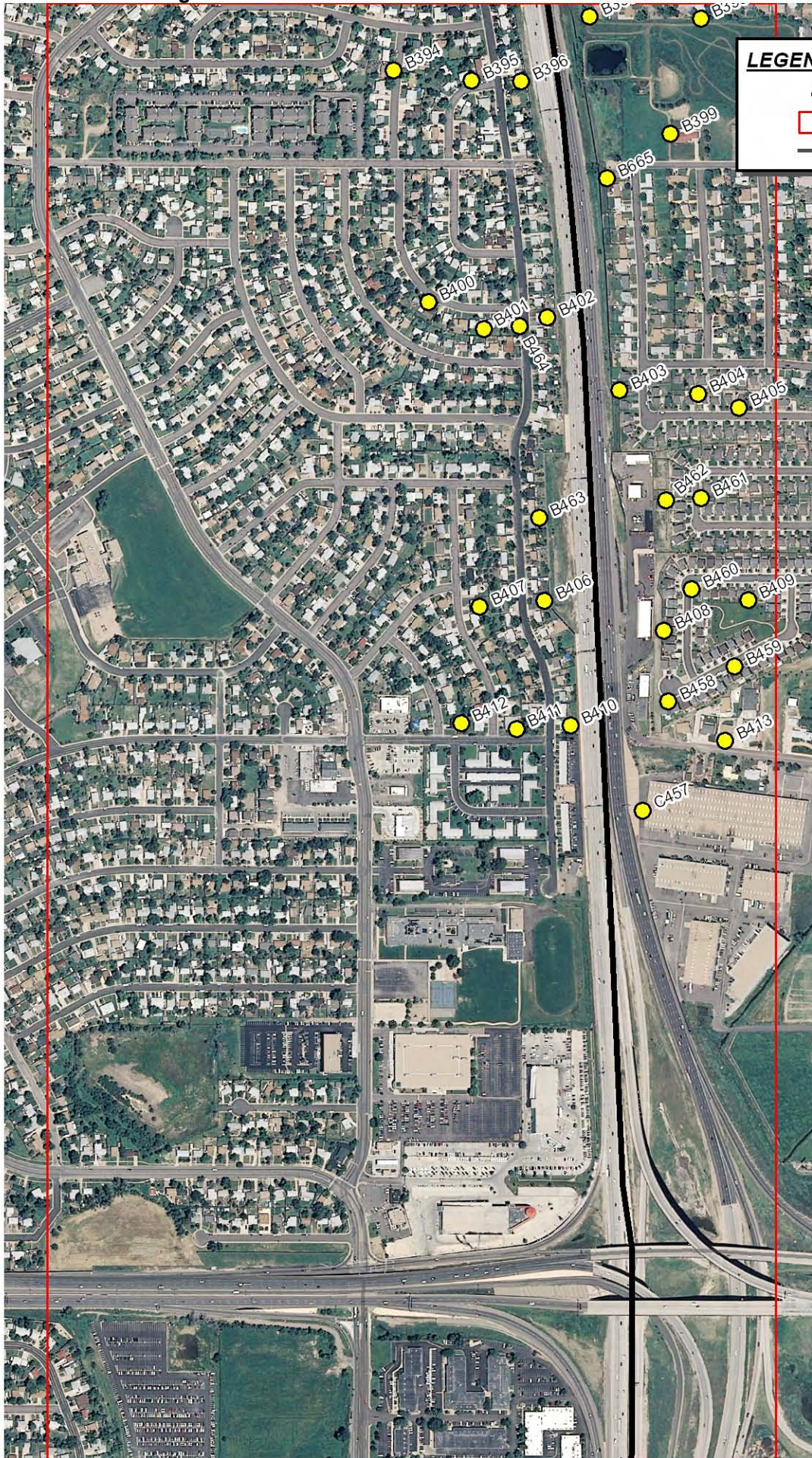
- Noise Model Receiver
- Mapbook Grid Cell
- Highways



North



Grid Cell BX\_3

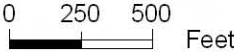


**LEGEND**

- Noise Model Receiver
- Mapbook Grid Cell
- Highways



North



Grid Cell BY\_3

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
B001	66	76	79	80	80	80
B002	66	67	71	72	72	71
B003	66	69	71	71	71	71
B004	66	64	67	66	65	65
B005	66	64	67	66	66	66
B006	66	68	70	72	72	72
B007	66	70	72	75	75	75
B008	66	67	69	69	67	68
B013	66	69	71	68	67	68
B014	66	73	75	75	76	74
B015	66	75	77	77	77	76
B016	66	76	78	77	77	77
B017	66	75	77	77	77	76
B018	66	75	76	76	76	75
B019	66	75	77	77	77	76
B020	66	74	76	76	76	75
B021	66	73	75	75	75	74
B022	66	72	74	74	74	73
B023	66	66	68	69	69	68
B024	66	66	68	68	69	68
B025	66	66	68	69	69	68
B026	66	66	68	68	69	68
B027	66	66	68	69	69	68
B028	66	67	68	69	69	68
B029	66	67	69	69	70	69
B030	66	67	69	70	70	69
B031	66	66	68	68	69	68
B032	66	67	68	69	69	68
B033	66	70	72	73	73	72
B034	66	75	77	76	76	76
B035	66	75	77	76	76	76
B036	66	75	76	76	76	75
B037	66	73	74	75	74	74
B038	66	70	72	73	72	72
B039	66	72	74	75	74	74
B040	66	75	77	76	76	76
B041	66	70	72	73	73	72
B042	66	67	68	69	70	69
B043	66	66	68	69	69	69
B044	66	67	69	71	71	70
B045	66	75	77	76	76	76
B046	66	75	76	76	76	75
B047	66	72	73	74	74	74
B048	66	70	71	72	72	72
B049	66	75	77	76	76	75
B050	66	72	73	74	74	74
B051	66	70	71	72	73	72
B052	66	75	77	75	76	75
B053	66	66	67	68	69	68
B054	66	67	68	70	70	69
B055	66	73	74	74	75	74



North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
B056	66	71	72	73	74	72
B057	66	69	70	71	73	71
B058	66	69	70	71	72	71
B059	66	73	75	75	75	75
B060	66	74	75	76	76	75
B061	66	74	76	76	76	76
B062	66	73	75	75	76	75
B063	66	69	71	72	72	72
B064	66	65	67	67	68	68
B065	66	72	74	75	75	74
B066	66	70	72	72	72	72
B067	66	72	74	73	74	73
B068	66	72	74	73	73	73
B069	66	67	68	68	69	68
B070	66	66	68	68	68	68
B071	66	66	68	68	68	68
B072	66	73	74	73	73	73
B073	66	74	75	73	73	73
B074	66	66	68	68	68	68
B075	66	67	68	68	69	69
B076	66	68	69	69	70	70
B077	66	74	76	73	72	73
B078	66	72	74	72	71	72
B079	66	67	69	70	69	70
B080	66	68	69	70	69	70
B081	66	67	69	69	69	69
B082	66	67	69	69	69	70
B083	66	78	80	Not Analyzed	Not Analyzed	Not Analyzed
B084	66	70	72	Not Analyzed	Not Analyzed	Not Analyzed
B085	66	71	72	Not Analyzed	Not Analyzed	Not Analyzed
B086	66	66	69	68	67	69
B087	66	69	71	76	75	73
B089	66	64	66	71	71	69
B090	66	74	76	76	78	78
B091	66	71	73	70	70	70
B092	66	73	74	76	75	75
B093	66	66	69	71	70	69
B095	66	74	77	70	69	69
B096	66	73	76	77	76	77
B097	66	77	78	Not Analyzed	Not Analyzed	Not Analyzed
B098	66	67	71	78	77	79
B099	66	71	72	73	72	73
B101	66	66	68	68	68	68
B102	66	69	71	70	70	70
B103	66	74	76	75	75	75
B104	66	71	72	73	72	73
B105	66	71	73	74	73	74
B107	66	71	70	70	68	69
B108	66	73	75	76	75	76
B109	66	70	72	72	70	71
B110	66	68	71	71	71	71

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
B111	66	77	79	79	79	79
B112	66	75	78	78	77	78
B113	66	68	71	71	71	71
B114	66	67	71	71	70	71
B115	66	65	68	68	68	69
B116	66	72	76	76	75	75
B117	66	69	75	75	75	75
B118	66	68	70	72	71	71
B119	66	73	75	77	76	76
B120	66	69	72	73	72	72
B121	66	67	70	72	72	71
B123	66	65	67	67	68	68
B124	66	64	66	66	68	67
B125	66	67	69	69	71	69
B126	66	70	71	71	69	70
B127	66	62	66	69	69	68
B128	66	67	69	72	72	71
B129	66	74	75	77	77	77
B130	66	74	76	77	77	77
B131	66	74	76	77	77	77
B132	66	77	79	79	79	79
B133	66	75	77	77	77	77
B134	66	69	74	74	76	73
B135	66	68	71	71	74	72
B136	66	66	69	69	73	68
B137	66	64	68	68	72	70
B236	66	66	71	71	71	70
B237	66	64	62	67	69	67
B239	66	67	69	72	73	72
B241	66	61	63	66	65	66
B242	66	60	61	63	62	64
B243	66	57	58	61	60	61
B244	66	55	57	58	57	58
B245	66	63	64	67	66	65
B246	66	59	60	63	62	62
B249	66	66	68	68	70	69
B250	66	67	69	71	70	70
B252	66	72	75	75	78	77
B255	66	60	63	65	65	66
B261	66	61	65	64	64	65
B267	66	64	67	65	64	62
B270	66	66	69	67	67	66
B285	66	54	57	60	59	60
B286	66	51	55	56	56	56
B287	66	52	55	57	57	58
B288	66	50	53	56	55	56
B292	66	66	70	70	70	70
B294	66	61	64	64	64	64
B295	66	59	60	62	63	62
B296	66	59	60	65	65	65
B300	66	63	64	64	65	64

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
B301	66	55	57	57	58	57
B302	66	65	66	66	66	66
B303	66	54	55	55	56	55
B304	66	54	56	56	56	56
B305	66	64	64	64	65	64
B306	66	65	66	66	67	66
B307	66	66	67	67	68	68
B308	66	66	67	67	68	67
B309	66	58	58	58	58	58
B310	66	61	62	62	62	62
B311	66	58	59	59	60	59
B312	66	54	55	55	56	56
B313	66	54	55	55	55	55
B314	66	58	59	59	60	59
B315	66	58	59	59	60	59
B316	66	57	58	58	57	57
B317	66	58	59	59	62	60
B318	66	69	70	70	73	72
B319	66	71	71	71	74	74
B320	66	75	75	75	76	76
B321	66	65	65	65	68	67
B322	66	61	61	61	64	63
B323	66	61	62	62	64	63
B324	66	64	65	65	67	66
B325	66	63	63	63	65	64
B326	66	60	61	61	62	61
B327	66	60	60	60	61	61
B328	66	64	64	64	66	65
B329	66	61	62	62	63	62
B330	66	64	64	64	65	65
B331	66	60	60	60	62	61
B332	66	59	60	60	62	61
B333	66	76	77	77	78	78
B334	66	67	68	68	71	68
B335	66	71	71	71	73	71
B336	66	66	66	66	65	65
B337	66	63	63	63	65	62
B338	66	61	61	61	63	61
B339	66	65	63	63	65	64
B340	66	63	61	61	63	62
B341	66	61	60	60	61	61
B342	66	63	66	66	68	67
B343	66	63	66	66	68	67
B344	66	61	64	64	65	65
B345	66	61	64	64	65	65
B346	66	66	69	69	70	70
B347	66	60	63	63	65	64
B348	66	56	58	58	60	59
B349	66	62	65	65	66	66
B350	66	58	60	60	61	61
B351	66	59	62	62	63	63

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
B352	66	68	69	69	69	69
B353	66	63	64	64	65	64
B354	66	60	61	61	61	61
B355	66	61	62	62	61	61
B356	66	64	64	64	65	63
B357	66	66	66	66	67	67
B358	66	63	64	64	64	64
B359	66	59	59	59	60	60
B360	66	59	59	59	60	59
B361	66	58	58	58	58	58
B362	66	67	68	68	68	68
B363	66	63	63	63	64	64
B364	66	60	60	60	60	59
B365	66	66	66	66	67	67
B366	66	62	63	63	64	63
B367	66	58	59	59	60	59
B368	66	66	66	66	67	67
B369	66	61	62	62	64	63
B370	66	59	59	59	61	60
B371	66	69	69	69	70	70
B372	66	58	59	59	59	60
B373	66	62	63	63	63	63
B374	66	65	66	66	66	66
B375	66	59	60	60	60	60
B376	66	57	57	57	58	58
B377	66	64	65	65	66	65
B378	66	57	58	58	58	58
B379	66	59	60	60	61	60
B380	66	60	62	62	62	62
B381	66	61	64	64	64	64
B382	66	64	65	65	65	66
B383	66	62	63	63	64	64
B384	66	62	63	63	64	63
B385	66	59	60	60	61	61
B386	66	71	72	72	75	73
B387	66	61	61	61	64	63
B388	66	62	64	64	65	65
B389	66	64	65	65	67	66
B390	66	68	69	69	70	69
B391	66	63	65	65	65	65
B392	66	58	60	60	60	60
B393	66	56	58	58	58	58
B394	66	58	59	59	59	58
B395	66	61	62	62	62	62
B396	66	69	70	70	71	70
B397	66	64	65	65	65	65
B398	66	57	58	58	58	57
B399	66	59	61	61	61	61
B400	66	55	57	57	57	56
B401	66	61	62	62	62	62
B402	66	66	67	67	67	67

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
B403	66	63	64	64	66	65
B404	66	55	56	56	57	56
B405	66	55	56	56	57	56
B406	66	65	66	66	65	65
B407	66	59	61	61	61	60
B408	66	68	70	70	72	71
B409	66	59	61	61	61	60
B410	66	64	66	66	66	65
B411	66	60	61	61	62	61
B412	66	57	58	58	59	58
B413	66	63	64	64	65	64
B424	66	61	60	60	61	61
B430	66	70	72	72	74	74
B432	66	60	66	66	66	66
B444	66	61	61	61	61	62
B448	66	61	62	62	63	62
B449	66	65	66	66	67	67
B450	66	63	64	64	64	63
B455	66	68	70	70	72	71
B458	66	69	70	70	73	72
B459	66	62	63	63	64	63
B460	66	65	66	66	67	64
B461	66	59	60	60	61	58
B462	66	60	61	61	63	61
B463	66	62	64	64	63	63
B464	66	63	64	64	64	63
B465	66	65	65	65	70	65
B466	66	63	63	63	64	64
B467	66	65	66	66	66	66
B468	66	65	66	66	67	66
B469	66	62	62	62	63	61
B470	66	63	66	66	68	67
B471	66	63	64	64	64	63
B472	66	67	68	68	69	67
B473	66	67	68	68	68	68
B502	66	57	59	64	64	64
B503	66	54	56	57	56	57
B504	66	56	58	58	58	59
B510	66	67	71	Not Analyzed	Not Analyzed	Not Analyzed
B600	66	60	61	66	65	65
B601	66	61	63	65	64	65
B604	66	65	67	69	71	69
B605	66	61	63	63	66	64
B607	66	64	65	65	66	64
B608	66	73	72	77	77	78
B611	66	64	65	68	67	68
B612	66	70	72	75	75	76
B618	66	58	60	62	62	63
B620	66	70	74	70	70	64
B624	66	60	61	67	67	66
B625	66	60	57	59	58	59

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
B626	66	59	60	62	62	62
B627	66	64	66	69	70	69
B628	66	64	65	70	70	69
B629	66	63	65	69	70	69
B633	66	62	66	66	66	66
B647	66	62	64	67	66	65
B652	66	65	68	68	69	68
B653	66	62	64	64	66	65
B657	66	62	64	64	66	65
B658	66	63	67	67	70	68
B661	66	67	66	66	70	68
B662	66	64	65	65	66	66
B663	66	65	66	66	66	66
B665	66	63	65	65	65	65
BFEISSH1_100	66	59	62	62	62	63
BFEISSH1_104	66	64	65	66	66	66
BFEISSH1_105	66	61	63	64	64	64
BFEISSH1_106	66	62	64	65	65	65
BFEISSH1_107	66	57	60	60	60	60
BFEISSH1_108	66	57	59	60	60	60
BFEISSH1_109	66	65	67	69	69	68
BFEISSH1_110	66	63	65	65	65	65
BFEISSH1_50	66	61	63	64	64	65
BFEISSH1_51	66	60	62	63	63	64
BFEISSH1_53	66	70	73	73	73	73
BFEISSH1_55	66	63	66	67	67	66
BFEISSH1_56	66	64	66	68	68	66
BFEISSH1_57	66	61	63	65	65	64
BFEISSH1_58	66	62	64	66	66	65
BFEISSH1_59	66	63	65	65	65	65
BFEISSH1_60	66	62	64	63	63	64
BFEISSH1_61	66	62	64	63	63	63
BFEISSH1_62	66	61	63	62	62	62
BFEISSH1_63	66	63	65	65	65	65
BFEISSH1_64	66	63	65	64	64	64
BFEISSH1_65	66	71	73	74	74	74
BFEISSH1_66	66	64	66	68	68	67
BFEISSH1_67	66	61	64	65	65	64
BFEISSH1_68	66	60	63	64	64	63
BFEISSH1_69	66	58	61	62	62	61
BFEISSH1_70	66	71	73	74	74	73
BFEISSH1_71	66	61	63	64	64	63
BFEISSH1_72	66	73	75	76	76	75
BFEISSH1_73	66	73	75	76	76	75
BFEISSH1_74	66	73	76	77	77	76
BFEISSH1_75	66	57	59	60	60	59
BFEISSH1_76	66	71	73	74	74	73
BFEISSH1_77	66	68	70	71	71	70
BFEISSH1_79	66	73	75	76	76	76
BFEISSH1_80	66	71	73	74	74	73
BFEISSH1_81	66	67	69	71	71	70

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
BFEISSH1_83	66	63	65	66	66	65
BFEISSH1_87	66	73	76	76	76	77
BFEISSH1_91	66	67	69	69	69	70
BFEISSH1_92	66	63	65	65	65	66
BFEISSH1_93	66	62	64	65	65	65
BFEISSH1_94	66	59	61	62	62	63
BFEISSH1_95	66	62	64	64	64	65
BFEISSH1_96	66	68	69	70	70	70
BFEISSH1_97	66	62	65	66	66	66
BFEISSH1_98	66	62	64	65	65	65
BFEISSH1_99	66	64	66	67	67	67
C009	71	68	71	75	74	74
C010	71	69	72	73	74	72
C011	71	64	68	70	70	70
C088	71	69	73	75	75	77
C138	71	71	74	71	71	73
C139	71	71	74	71	71	71
C140	71	77	79	78	77	78
C141	71	77	80	81	81	81
C142	71	72	75	76	76	76
C143	71	76	78	79	79	79
C144	71	72	75	77	77	77
C145	71	72	74	76	77	76
C146	71	69	72	73	73	73
C147	71	72	74	76	76	76
C148	71	68	70	72	72	72
C149	71	74	77	78	77	77
C150	71	68	70	72	72	72
C154	71	73	76	76	76	77
C155	71	71	73	80	79	80
C156	71	69	71	Not Analyzed	Not Analyzed	Not Analyzed
C157	71	77	79	78	78	78
C158	71	73	75	74	74	74
C159	71	74	75	75	75	75
C160	71	75	77	76	76	76
C161	71	72	74	74	74	74
C162	71	74	75	76	77	78
C163	71	75	76	80	81	81
C164	71	75	76	73	73	71
C165	71	75	76	73	73	72
C166	71	75	76	73	72	74
C167	71	75	75	76	76	77
C168	71	73	75	78	78	77
C169	71	65	69	74	73	72
C170	71	73	74	72	71	72
C171	71	77	78	77	76	77
C172	71	77	78	78	74	77
C173	71	75	76	76	75	76
C174	71	74	76	76	76	76
C175	71	69	70	74	74	73
C176	71	69	71	73	72	70

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
C177	71	72	74	74	75	75
C178	71	73	75	75	75	76
C179	71	74	76	70	69	70
C180	71	74	75	77	76	77
C181	71	73	75	76	76	77
C182	71	74	75	77	76	77
C183	71	73	75	77	76	76
C184	71	72	73	76	75	76
C185	71	71	73	76	75	76
C186	71	72	75	78	77	78
C187	71	73	79	79	78	79
C188	71	72	74	74	74	73
C189	71	74	78	78	78	78
C190	71	72	76	76	75	76
C191	71	72	76	77	76	76
C192	71	72	76	76	76	76
C193	71	74	77	77	77	77
C194	71	75	78	78	78	78
C195	71	76	79	79	79	79
C196	71	74	77	77	76	77
C197	71	74	77	77	77	77
C198	71	72	76	76	75	75
C199	71	74	77	77	77	77
C200	71	73	75	75	75	75
C201	71	71	74	73	73	74
C202	71	68	70	71	70	71
C203	71	74	76	75	75	75
C204	71	72	74	74	74	74
C205	71	73	75	75	75	75
C206	71	74	76	76	75	76
C207	71	75	77	77	77	77
C208	71	74	76	76	76	76
C209	71	71	76	76	75	76
C210	71	75	77	78	78	77
C211	71	75	77	78	78	77
C212	71	75	78	79	78	78
C214	71	70	73	74	73	73
C215	71	70	73	74	74	73
C216	71	70	73	74	73	73
C217	71	71	73	74	73	73
C218	71	71	74	75	74	74
C219	71	69	71	71	72	71
C220	71	71	73	73	73	73
C221	71	62	65	67	66	67
C222	71	73	74	Not Analyzed	Not Analyzed	Not Analyzed
C223	71	74	78	78	78	78
C224	71	75	78	78	80	79
C225	71	69	72	74	72	74
C226	71	72	72	75	74	75
C227	71	71	72	74	73	74
C229	71	64	64	66	65	65



North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
C230	71	72	74	76	75	74
C231	71	69	69	70	69	68
C232	71	73	69	69	73	72
C233	71	70	73	73	74	74
C234	71	68	70	70	73	72
C235	71	66	70	70	72	71
C238	71	67	68	66	66	66
C240	71	64	66	67	66	67
C247	71	73	75	76	76	75
C248	71	70	72	72	75	73
C251	71	74	75	75	75	75
C253	71	65	69	68	67	68
C254	71	66	70	70	69	70
C256	71	63	67	67	67	68
C257	71	63	67	67	67	67
C258	71	65	69	67	66	67
C259	71	64	67	65	64	65
C260	71	64	69	67	67	67
C262	71	67	71	70	71	72
C263	71	63	69	66	66	69
C264	71	61	66	64	63	67
C265	71	64	67	67	67	67
C266	71	62	65	64	64	65
C268	71	66	68	67	67	67
C269	71	68	72	68	68	66
C271	71	69	71	68	68	68
C272	71	67	67	69	68	69
C273	71	63	63	63	63	63
C274	71	61	62	63	62	63
C275	71	66	67	69	69	70
C276	71	66	70	70	70	70
C277	71	67	71	70	69	70
C278	71	71	75	75	75	74
C279	71	64	66	67	66	66
C280	71	64	67	67	67	67
C289	71	57	60	62	61	63
C290	71	56	60	64	64	65
C291	71	57	60	64	64	65
C297	71	63	64	71	72	71
C298	71	64	65	70	70	70
C299	71	63	64	68	69	68
C414	71	64	66	66	67	66
C415	71	69	70	70	73	72
C416	71	64	65	65	68	66
C417	71	70	70	70	71	70
C418	71	64	65	65	67	66
C419	71	63	64	64	67	64
C420	71	77	77	77	79	78
C421	71	70	71	71	72	71
C422	71	70	71	71	71	71
C423	71	73	74	74	74	74

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
C425	71	65	65	65	66	66
C426	71	76	80	80	81	81
C427	71	75	78	78	79	79
C428	71	66	70	70	74	72
C429	71	67	70	70	74	73
C431	71	67	69	69	72	71
C433	71	73	74	74	76	75
C434	71	65	65	65	68	67
C435	71	71	76	76	77	77
C436	71	64	65	65	68	67
C437	71	65	68	68	68	68
C438	71	69	75	75	76	76
C439	71	73	74	74	75	75
C440	71	65	65	65	67	67
C441	71	69	70	70	69	70
C442	71	70	70	70	69	69
C443	71	67	68	68	70	70
C445	71	64	66	66	66	66
C446	71	64	65	65	67	66
C447	71	65	65	65	67	67
C451	71	69	70	70	73	72
C452	71	62	63	63	65	64
C453	71	72	74	74	75	75
C454	71	62	64	64	66	65
C456	71	58	60	60	60	60
C457	71	71	72	72	70	70
C474	71	70	71	71	72	72
C500	71	63	64	70	70	70
C501	71	60	66	68	67	68
C505	71	63	64	66	66	66
C506	71	63	66	70	71	69
C507	71	68	71	67	67	65
C508	71	67	70	68	68	60
C509	71	66	69	66	66	66
C602	71	68	71	72	72	71
C603	71	64	66	66	65	66
C606	71	61	64	63	64	63
C609	71	71	72	73	72	74
C610	71	72	73	77	77	78
C613	71	65	66	68	68	69
C614	71	68	69	70	70	71
C615	71	67	69	70	69	70
C616	71	65	66	69	68	69
C617	71	67	69	68	68	69
C619	71	73	74	69	68	68
C621	71	65	68	69	69	60
C622	71	69	72	68	68	60
C623	71	56	58	58	58	58
C630	71	61	62	67	68	67
C631	71	67	69	73	73	73
C632	71	72	73	75	74	75

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
C634	71	73	77	77	75	77
C635	71	62	66	66	65	66
C636	71	70	74	74	72	74
C637	71	70	73	73	72	72
C638	71	67	70	70	70	70
C639	71	71	74	74	73	74
C640	71	70	73	73	72	73
C641	71	66	69	70	69	70
C642	71	64	66	66	66	66
C643	71	69	71	71	71	72
C644	71	62	66	66	66	67
C645	71	75	77	78	78	77
C646	71	73	75	76	76	75
C648	71	66	68	70	69	68
C649	71	68	70	72	71	71
C650	71	65	67	67	69	68
C651	71	68	70	70	70	70
C654	71	64	66	66	69	67
C655	71	67	70	70	73	70
C656	71	70	73	73	76	74
C659	71	66	69	69	72	71
C660	71	73	74	74	76	76
C664	71	74	75	75	76	76
CFEISSH1_101	71	68	70	70	70	70
CFEISSH1_102	71	67	69	69	69	69
CFEISSH1_103	71	66	68	69	69	69
CFEISSH1_52	71	69	72	73	73	73
CFEISSH1_54	71	67	69	69	69	69
CFEISSH1_78	71	71	74	75	75	74
CFEISSH1_82	71	73	75	76	76	75
CFEISSH1_84	71	72	74	75	75	74
CFEISSH1_85	71	58	62	63	63	63
CFEISSH1_86	71	70	73	74	74	74
CFEISSH1_88	71	65	68	69	69	70
CFEISSH1_89	71	67	70	70	70	70
CFEISSH1_90	71	72	75	75	75	75
SH1_B0	66	68	71	70	70	71
SH1_B1	66	70	72	72	72	72
SH1_B10	66	59	62	61	61	63
SH1_B11	66	71	74	74	74	74
SH1_B12	66	64	66	67	67	68
SH1_B13	66	59	62	63	63	63
SH1_B14	66	56	59	60	60	59
SH1_B15	66	55	57	59	59	59
SH1_B16	66	64	66	67	67	68
SH1_B17	66	60	63	64	64	64
SH1_B18	66	59	62	63	63	63
SH1_B2	66	71	74	74	74	74
SH1_B21	71	73	76	76	76	76
SH1_B27	66	61	66	65	65	65
SH1_B28	66	67	69	70	70	71

North I-25 FEIS  
TNM Modeling Results (dBA)

Receiver	NAC	Existing	No Action	Package A	Package B	Preferred Alternative
SH1_B29	66	60	63	64	64	65
SH1_B3	66	72	75	74	74	74
SH1_B30	66	58	61	62	62	63
SH1_B31	66	73	76	75	75	76
SH1_B32	66	60	63	63	63	64
SH1_B4	66	63	66	66	66	66
SH1_B5	66	65	68	68	68	68
SH1_B6	66	65	68	68	68	68
SH1_B7	66	59	61	62	62	62
SH1_B8	66	60	62	63	63	64
SH1_B9	66	59	62	62	62	63
SH1_C19	71	62	64	65	65	66
SH1_C20	71	65	67	68	68	68
SH1_C22	71	64	66	66	66	66
SH1_C23	71	59	63	62	62	63
SH1_C24	71	57	60	60	60	61
SH1_C25	71	57	60	60	60	61
SH1_C33	71	59	62	62	62	63
SH1_C34	71	70	73	73	73	73
SH1_C35	71	60	62	63	63	64

**APPENDIX B  
TRAFFIC NOISE MITIGATION BARRIERS  
EVALUATED**

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### Traffic Noise Barriers Evaluated

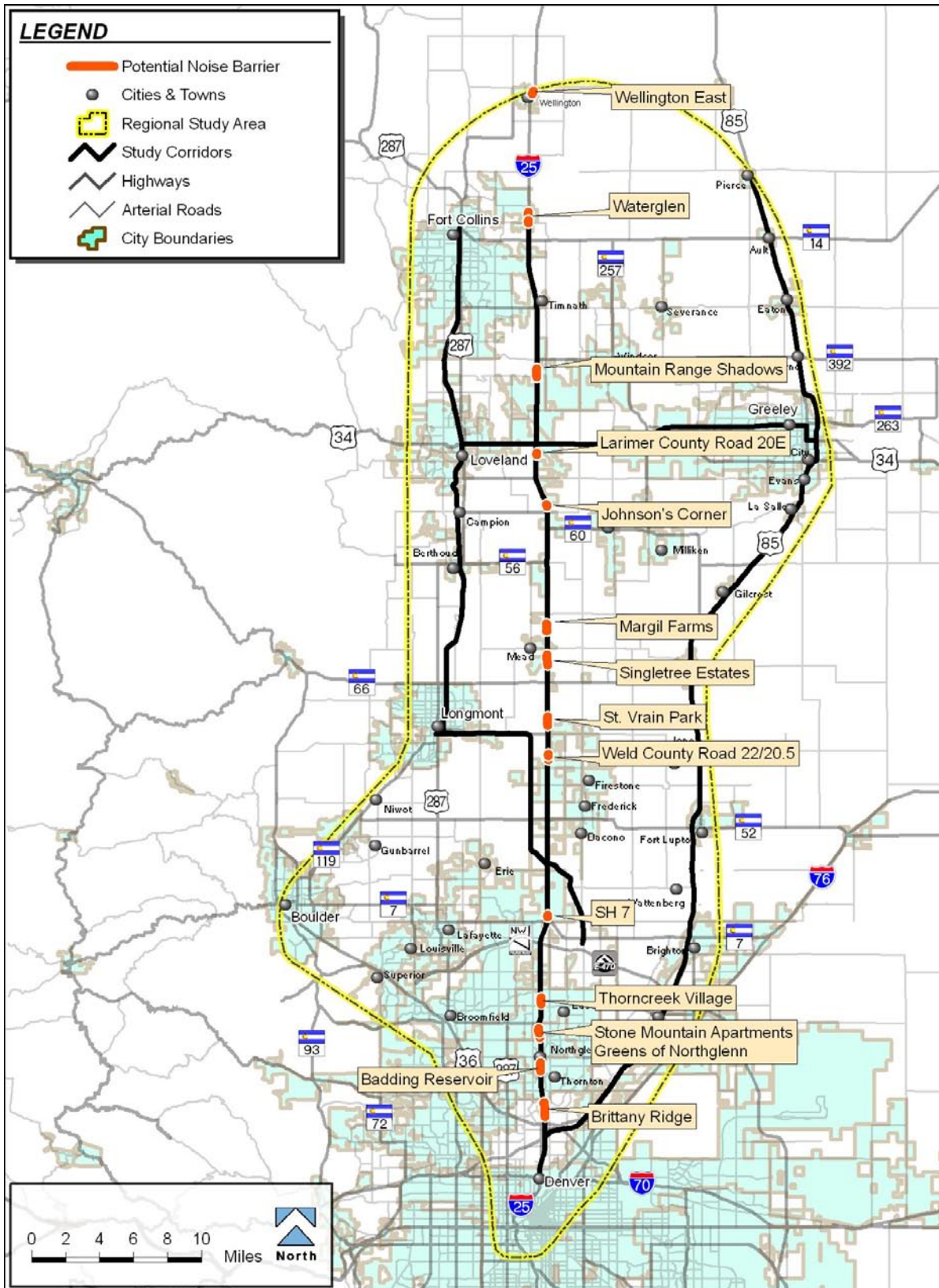


Figure B-1. Barriers at Wellington

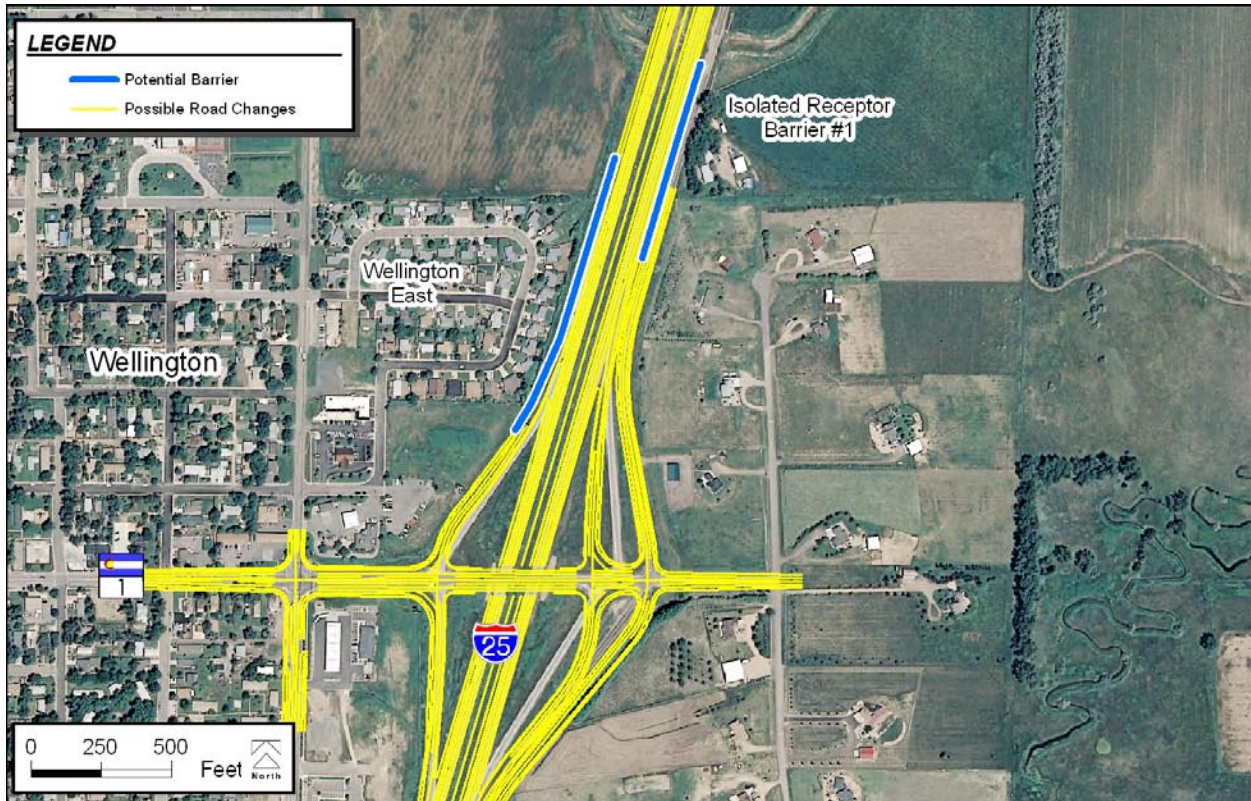


Figure B-2. Barrier at Waterglen





Figure B-3. Barriers at Mountain Range Shadows

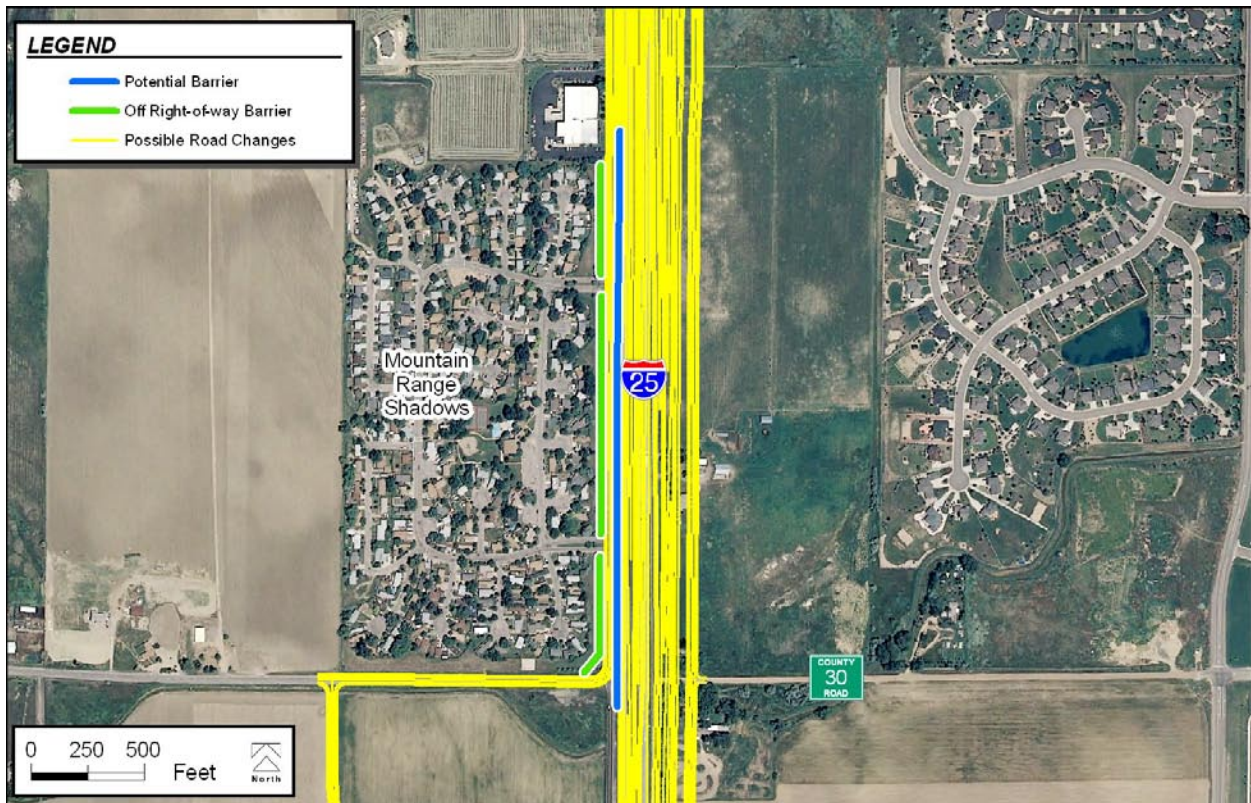


Figure B-4. Barrier at Larimer County Road 20E

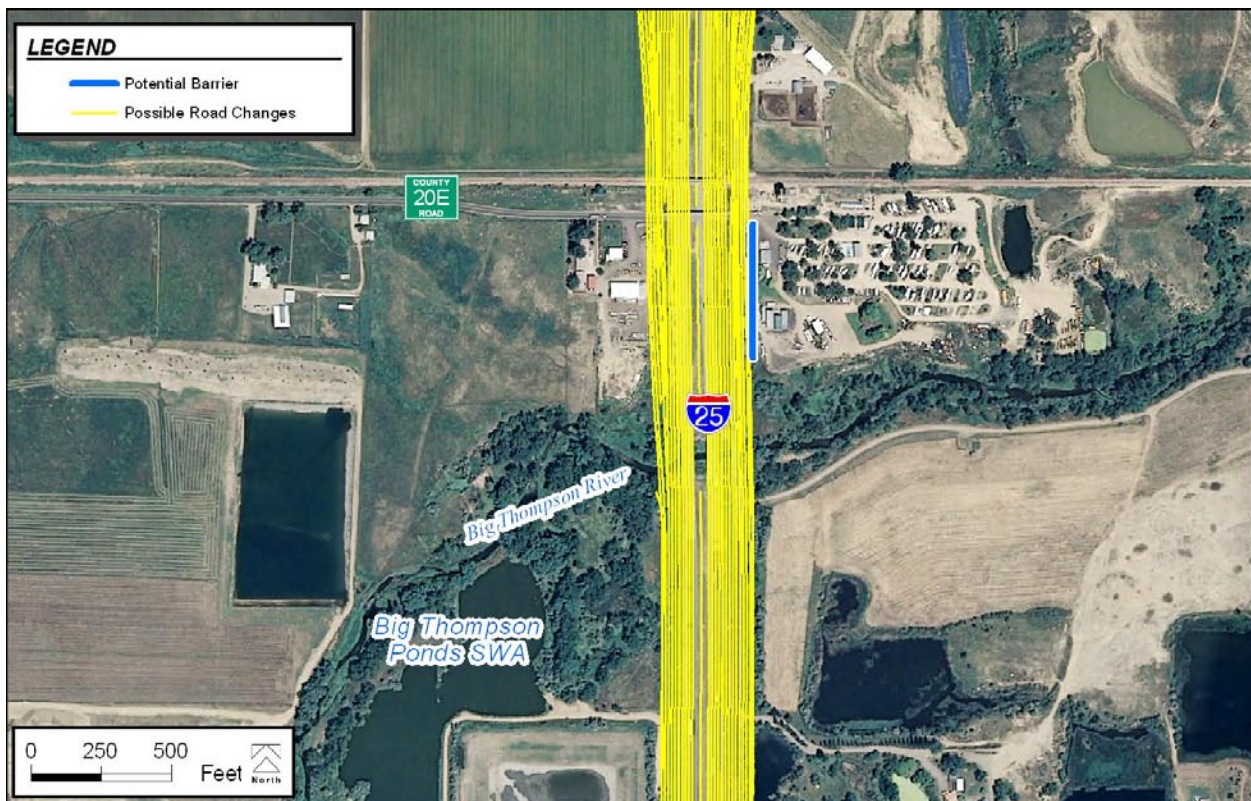


Figure B-5. Barrier at Johnson's Corner



Figure B-6. Barrier at Margil Farms



Figure B-7. Barrier at Singletree Estates

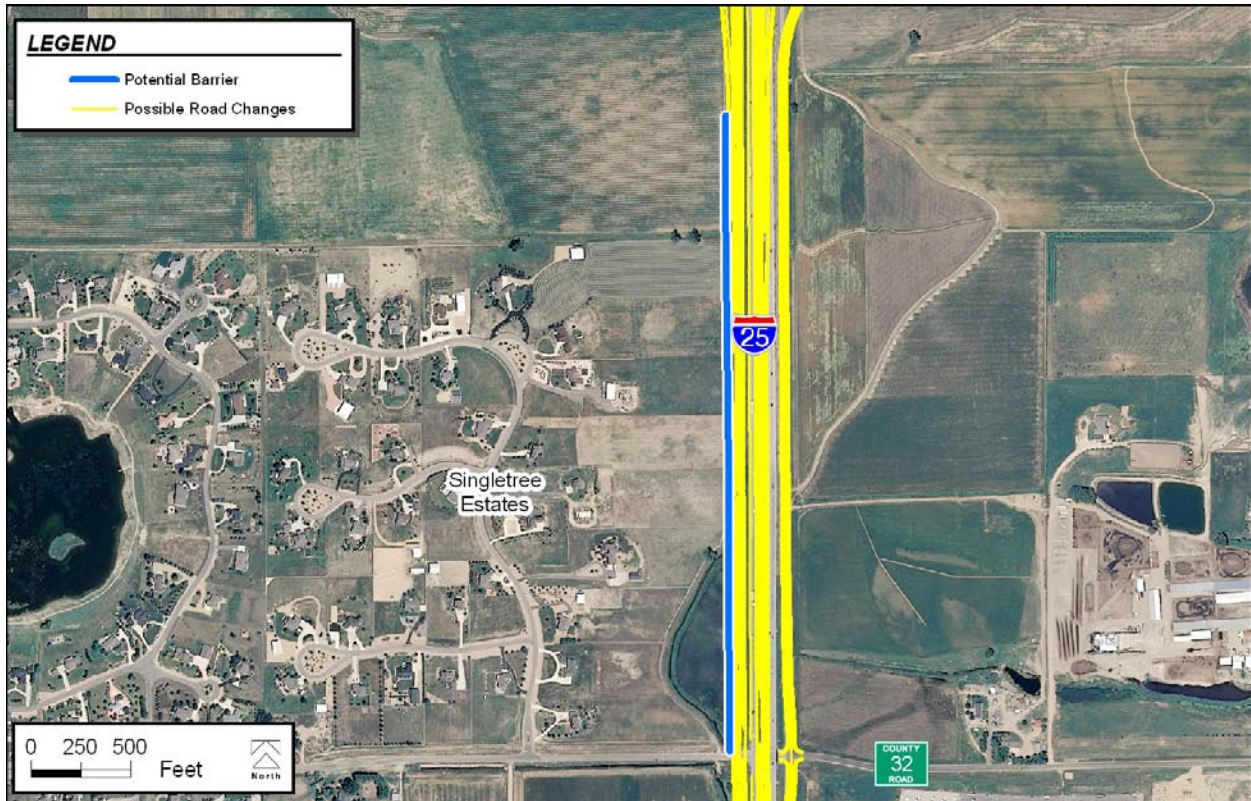


Figure B-8. Barrier at St. Vrain State Park

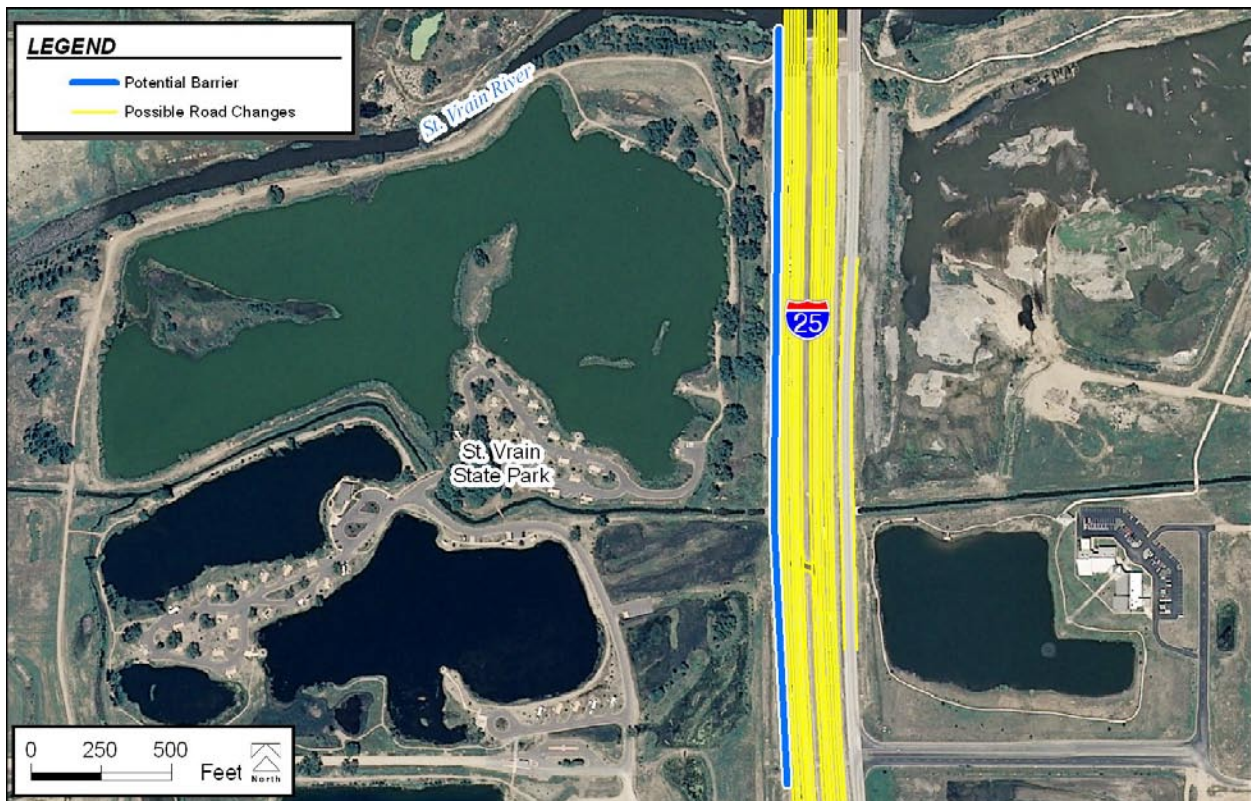


Figure B-9. Barriers Near Weld County Road 22/20.5

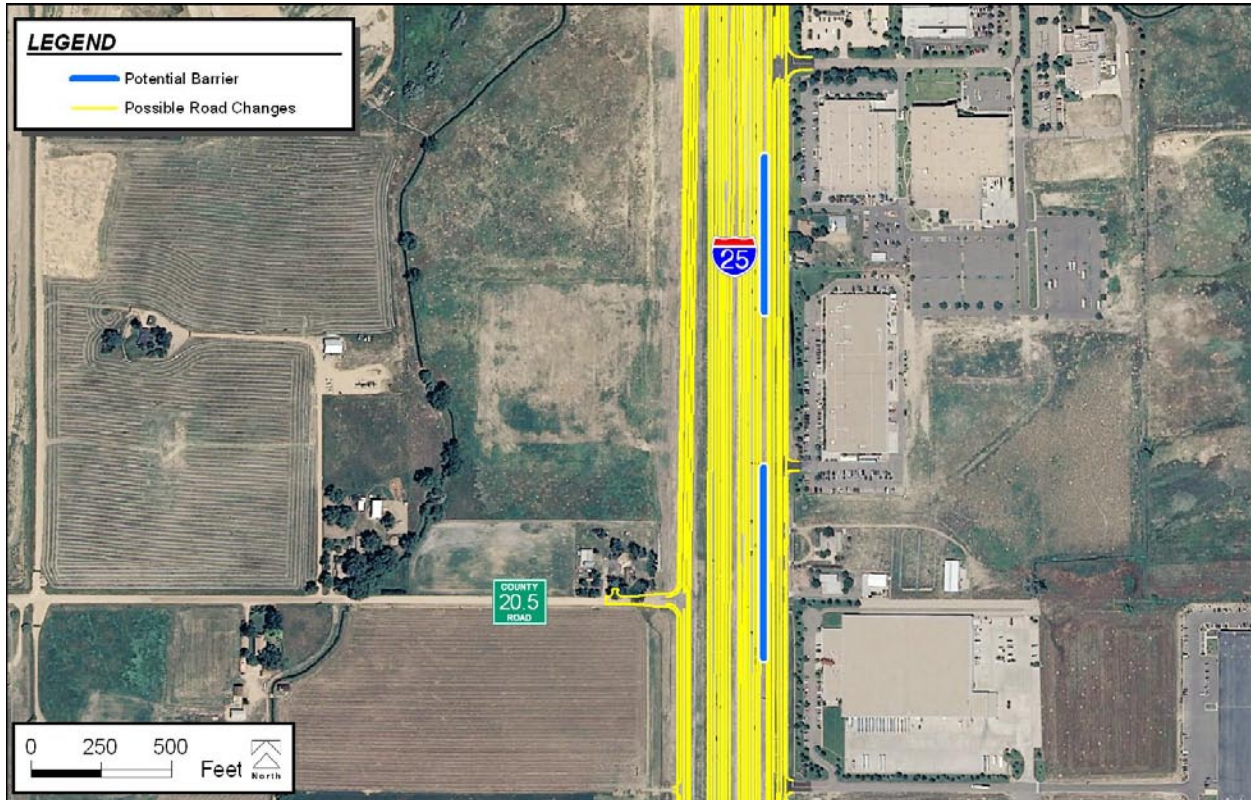


Figure B-10. Barrier Near State Highway 7



Figure B-11. Barrier at Thorncreek Village



Figure B-12. Barrier at Stone Mountain Apartments



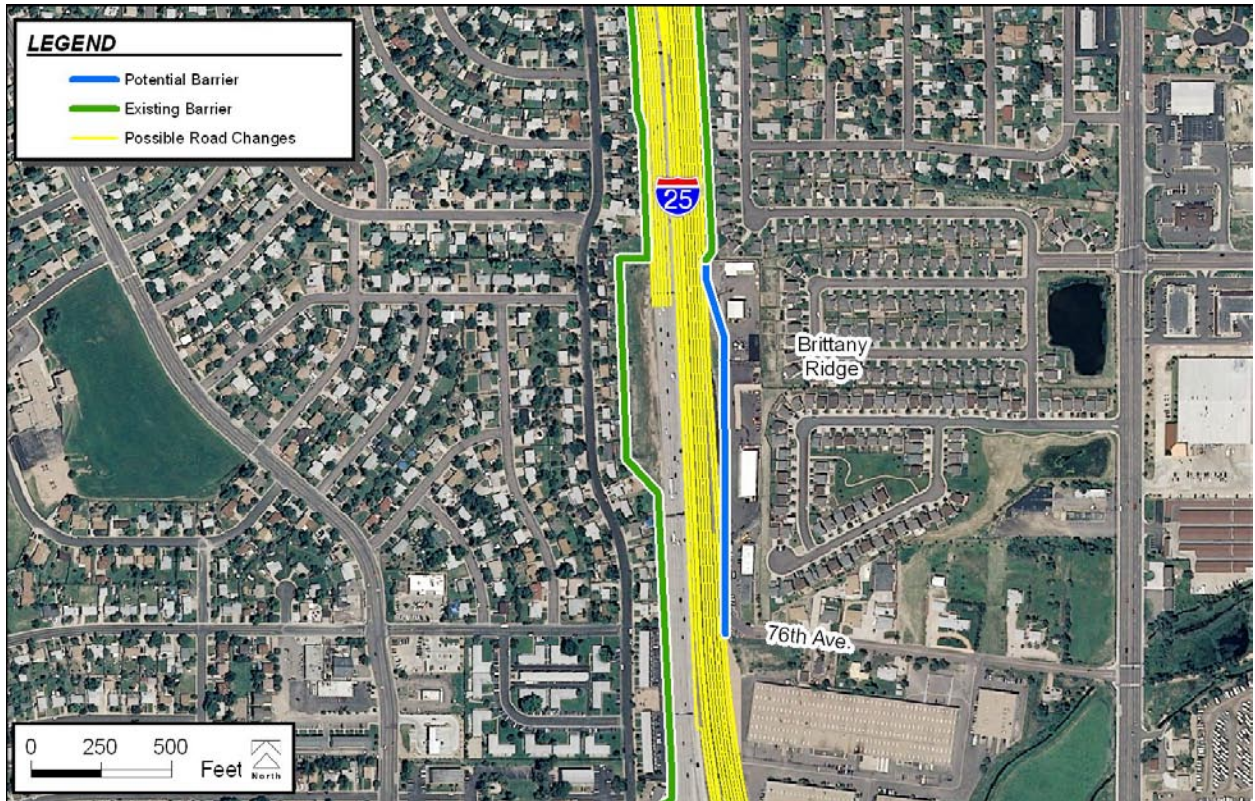
Figure B-13. Barrier at Greens of Northglenn



Figure B-14. Barrier Extension at Badding Reservoir



Figure B-15. Barrier Extension at Brittany Ridge



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## APPENDIX C CDOT BARRIER EVALUATION FORMS

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**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # <u>IM0253-179</u>	Project code (SA#)	STIP #	Project Location: <u>Wellington East</u>
-----------------------------	--------------------	--------	--

**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:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input checked="" type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> 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:**

None

**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**

This looks to be a good candidate for a noise barrier 1000 ft by 10-12 ft. This barrier is recommended.

Completed by:

Jake Trichum

Date:

8/31/10

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # IM 0253-179 Project code (SA#) \_\_\_\_\_ STIP # \_\_\_\_\_ Project Location: Wellington Isolated Receiver #1

- A. FEASIBILITY:**
- Can a continuous noise barrier or berm be constructed?  YES  NO
  - 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
  - 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) . . . . .	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input checked="" type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> Noise Level Decrease

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

- C. INSULATION CONSIDERATION:**
- Are normal noise abatement measures physically infeasible or economically unreasonable?  YES  NO  
If the answer to 1 is YES, then:
  - 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
  - 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:**  
*For 4601 E. CR 64 in Wellington. A 10x 720ft barrier for a single home would provide ~ 7dBA reduction. Cost would be about \$31,000 per.*

- E. DECISION:**
- Are noise mitigation measures feasible?  YES  NO
  - Are noise mitigation measures reasonable?  YES  NO
  - Is insulation of buildings both feasible and reasonable?  YES  NO
  - Shall noise mitigation measures be provided?  YES  NO

**F. DECISION DESCRIPTION AND JUSTIFICATION**  
*This was an example case for an isolated receptor/farmhouse. The barrier is not reasonable and is not recommended. This example applies to other isolated receptors.*

Completed by: *John T. [Signature]* Date: *9-20-10*

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # IM0253-179 Project code (SA#) \_\_\_\_\_ STIP # \_\_\_\_\_ Project Location: Wotenglen

**A. FEASIBILITY:**

- Can a continuous noise barrier or berm be constructed?  YES  NO
- 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
- Are there any "fatal flaw" safety or maintenance issues involving the proposed noise barrier or berm?  YES  NO

**B. REASONABLENESS:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input checked="" type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input checked="" type="checkbox"/> 70 dBA or More	<input checked="" type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input checked="" type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> Noise Level Decrease

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

**C. INSULATION CONSIDERATION:**

- Are normal noise abatement measures physically infeasible or economically unreasonable?  YES  NO  
If the answer to 1 is YES, then:
- 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
- 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:**

*Cost came out @ at \$4200 per, so it was just above the marginally reasonable range. Barrier is in two sections totaling 2400 ft and 10-18 ft tall.*

**E. DECISION:**

- Are noise mitigation measures feasible?  YES  NO
- Are noise mitigation measures reasonable?  YES  NO
- Is insulation of buildings both feasible and reasonable?  YES  NO
- Shall noise mitigation measures be provided?  YES  NO

**F. DECISION DESCRIPTION AND JUSTIFICATION**

*At this time, a barrier is not being recommended. The homes have been built since 2001. The cost/benefit is too high. The barriers must be rather tall to get a 7 dB reduction. If a berm could be used to lower the cost, this barrier could be recommended.*

Completed by: Dale Trishank Date: 8/31/10

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # <u>IM 0253-179</u>	Project code (SA#)	STIP #	Project Location <u>Mountain Range Shadows</u>
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**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:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input checked="" type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> 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:**  
*The barrier tested was between I-25 and the frontage road. (A barrier between the frontage road and the homes would also work.) A barrier 12 x 2500 ft gave about 375 dBA of total benefit. Cost was \$2400 per.*

**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**  
*I-25 is very loud at this neighborhood and homes are close together. A barrier is recommended for the build alternatives.*

Completed by: <u>[Signature]</u>	Date: <u>9-20-10</u>
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*North I-25 FEIS*

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # <i>IM0253-179</i>	Project code (SA#)	STIP #	Project Location: <i>LCR JOE</i>
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**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>B. REASONABLENESS:</b>	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input checked="" type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input type="checkbox"/> 70 dBA or More	<input checked="" type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input checked="" type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input checked="" type="checkbox"/> 5 - 10 dBA	<input type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> 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:** *this is for 648 N.E. Frontage Road @ Loveland. It is a house and compound behind a garage. A 14 x 470 ft wall provided 12 dBA benefit to the garage but less than 2 dBA to the house + compound. The barrier was not effective even with favorable terrain.*

**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 was about \$18,000 per and did not help the Category B uses. The barrier is not recommended.*

Completed by: <i>Sally T. [Signature]</i>	Date: <i>9-20-10</i>
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**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # IM0253-179 Project code (SA#) \_\_\_\_\_ STIP # \_\_\_\_\_ Project Location: Johnson Corner Campground

**A. FEASIBILITY:**

- Can a continuous noise barrier or berm be constructed?  YES  NO
- 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
- Are there any "fatal flaw" safety or maintenance issues involving the proposed noise barrier or berm?  YES  NO

**B. REASONABLENESS:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input checked="" type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) <input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%	
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> Noise Level Decrease

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

**C. INSULATION CONSIDERATION:**

- Are normal noise abatement measures physically infeasible or economically unreasonable?  YES  NO  
If the answer to 1 is YES, then:
- 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
- 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:** For the JC RV Park in Johnstonen. Front row sites are very loud. A 10 x 675 ft would provide 8 dBA benefit to front row sites. Site was treated as a motel and assigned 3 receptors. Cost was about \$8,300 per.

**E. DECISION:**

- Are noise mitigation measures feasible?  YES  NO
- Are noise mitigation measures reasonable?  YES  NO
- Is insulation of buildings both feasible and reasonable?  YES  NO
- Shall noise mitigation measures be provided?  YES  NO

**F. DECISION DESCRIPTION AND JUSTIFICATION**

The barrier was for the campground only. The barrier could substantially reduce noise to front row camp sites, but the cost was high. This barrier is not being recommended.

Completed by: John T. [Signature] Date: 9-20-10



**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # IM0253-17A Project code (SA#) \_\_\_\_\_ STIP # \_\_\_\_\_ Project Location: Margil Farms

**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:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input checked="" type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input type="checkbox"/> 70 dBA or More	<input checked="" type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input checked="" type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> 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:** these homes were built ~ 2004. A 16 x 2200 ft barrier was calculated to provide about 140 dBA of total benefit. Cost was calculated to be ~ \$7,500 per. The wall is far from homes.

**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**

Homes are very recent and the cost-benefit is too high. Barrier is not recommended.

Completed by: [Signature] Date: 9-20-10

North I-25 FEIS

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # JM0253-179 Project code (SA#) \_\_\_\_\_ STIP # \_\_\_\_\_ Project Location: Singletree Estates

**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:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input checked="" type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input checked="" type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input checked="" type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> 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:**

Homes are spread out and built ~1999. A 16x3200 ft wall would provide ~40 dBA of total benefit. Cost was about \$41,000 per.

**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**

Barrier is too costly and ineffectine. Barrier is not recommended.

Completed by: [Signature]

Date: 9-20-10

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # <b>IM 0253-17A</b>	Project code (SA#)	STIP #	Project Location: <b>St. Vrain Park</b>
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**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>B. REASONABLENESS:</b>	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) ..	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input checked="" type="checkbox"/> More than \$4000
2. Average Build Noise Level .....	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires .....	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) .....	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) ..	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> 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:**

*Park was treated as Category B. Campsites close to I-25 are very loud. Counted as 3 receptors. A 14 x 2700 ft barrier provided about 15 dBA total benefit. Cost was about \$75,000 per.*

**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**

*An enormous wall would be needed relative to the benefit provided. Barrier is not recommended.*

Completed by: <i>Dale T. [Signature]</i>	Date: <i>9-20-10</i>
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North I-25 FEIS

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # IM0253-179 Project code (SA#) \_\_\_\_\_ STIP # \_\_\_\_\_ Project Location: 2 homes near WCR 22

**A. FEASIBILITY:**

- Can a continuous noise barrier or berm be constructed?  YES  NO
- 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
- Are there any "fatal flaw" safety or maintenance issues involving the proposed noise barrier or berm?  YES  NO

**B. REASONABLENESS:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input checked="" type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> Noise Level Decrease

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

**C. INSULATION CONSIDERATION:**

- Are normal noise abatement measures physically infeasible or economically unreasonable?  YES  NO  
If the answer to 1 is YES, then:
- 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
- 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:** Barrier was between I-25 and frontage road for 2 homes in a commercial area. Noise levels could be more than 75 dBA. A 12x550 ft wall would provide 12 dBA total benefit. Cost would be about \$16,500 per.

**E. DECISION:**

- Are noise mitigation measures feasible?  YES  NO
- Are noise mitigation measures reasonable?  YES  NO
- Is insulation of buildings both feasible and reasonable?  YES  NO
- Shall noise mitigation measures be provided?  YES  NO

**F. DECISION DESCRIPTION AND JUSTIFICATION** The barrier is too costly for the benefit provided. The barrier is not recommended. However, the predicted noise levels exceed 75 dBA, so it is recommended that these 2 homes (9748 and 9762 Frontage Road) be evaluated for insulation upgrading during final design.

Completed by: [Signature] Date: 9-20-10

North I-25 FEIS

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # IM053-179 Project code (SA#) \_\_\_\_\_ STIP # \_\_\_\_\_ Project Location 2 homes near WCR 2050

**A. FEASIBILITY:**

- Can a continuous noise barrier or berm be constructed?  YES  NO
- 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
- Are there any "fatal flaw" safety or maintenance issues involving the proposed noise barrier or berm?  YES  NO

**B. REASONABLENESS:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input checked="" type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) <input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%	<input type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> Noise Level Decrease

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

**C. INSULATION CONSIDERATION:**

- Are normal noise abatement measures physically infeasible or economically unreasonable?  YES  NO  
If the answer to 1 is YES, then:
- 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
- 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:** *Barrier was between I-25 and frontage road for 2 homes in a commercial area. Noise levels could be above 75 dBA. A 16 x 675 ft wall would provide 12 dBA of total benefit. Cost would be about \$27,000 per.*

**E. DECISION:**

- Are noise mitigation measures feasible?  YES  NO
- Are noise mitigation measures reasonable?  YES  NO
- Is insulation of buildings both feasible and reasonable?  YES  NO
- Shall noise mitigation measures be provided?  YES  NO

**F. DECISION DESCRIPTION AND JUSTIFICATION**

*The barrier is too costly for the benefit provided. The barrier is not recommended. However, the predicted noise levels exceed 75 dBA, so it is recommended that these 2 homes (9518 and 9536 Frontage Road) be evaluated for insulation upgrading during final design.*

Completed by:

*Dale T. [Signature]*

Date:

*9-20-10*

North I-25 FEIS

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # <b>IM0253-179</b>	Project code (SA#)	STIP #	Project Location: <b>SH7</b>
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**A. FEASIBILITY:**

- Can a continuous noise barrier or berm be constructed?  YES  NO
- 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
- Are there any "fatal flaw" safety or maintenance issues involving the proposed noise barrier or berm?  YES  NO

**B. REASONABLENESS:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input checked="" type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) <input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%	
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> Noise Level Decrease

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

**C. INSULATION CONSIDERATION:**

- Are normal noise abatement measures physically infeasible or economically unreasonable?  YES  NO  
If the answer to 1 is YES, then:
- 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
- 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:**  
*An 8-12 x 550-ft barrier for a single home would provide ~7 dBA noise reduction. Cost would be about \$24,000 per.*

**E. DECISION:**

- Are noise mitigation measures feasible?  YES  NO
- Are noise mitigation measures reasonable?  YES  NO
- Is insulation of buildings both feasible and reasonable?  YES  NO
- Shall noise mitigation measures be provided?  YES  NO

**F. DECISION DESCRIPTION AND JUSTIFICATION**  
*this was a project example for an isolated receiver/farmhouse. The barrier is not reasonable and is not recommended. This example applies to other isolated receivers.*

Completed by: <i>Dale T. Wickham</i>	Date: <i>9-20-10</i>
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North I-25 FEIS

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # IM0253-179 Project code (SA#) \_\_\_\_\_ STIP # \_\_\_\_\_ Project Location: Thorn Creek Village

**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:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input checked="" type="checkbox"/> \$3750-\$4000	<input type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input checked="" type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> 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:**  
*these are recent triplexes in thorn creek. A 14 x 1850 ft barrier was calculated to provide about 200 dBA of total benefit. Cost was about \$3,800 per.*

**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 are new homes built adjacent to I-25. Even so, this barrier is recommended for Package B and Preferred Alternative.*

Completed by: [Signature] Date: 9-20-10

North I-25 FEIS

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # IM0253-179 Project code (SA#) \_\_\_\_\_ STIP # \_\_\_\_\_ Project Location: Stone Mountain

**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:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) ..	<input checked="" type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input type="checkbox"/> More than \$4000
2. Average Build Noise Level .....	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires .....	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) .....	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) ..	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input checked="" type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level ..	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> 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:**  
*These apartments were built ~ 2000. A 14 x 1300 ft wall was calculated to provide about 470 dBA of benefit. Cost was about \$1,300 per.*

**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**  
*This barrier is recommended for Package B and Preferred Alternative.*

Completed by: Jim Tasechuk Date: 4-20-10



North I-25 FEIS

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # <b>IM0253-179</b>	Project code (SA#)	STIP #	Project Location: <b>Greens of Northglenn</b>
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**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:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) . . . . .	<input checked="" type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input checked="" type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> 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:**  
*these apartments were built in 1997. A 10-12 x 600 ft wall was calculated to provide 170 dBA of total benefit. Cost was about \$1,100 per.*

**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**  
*This barrier is recommended for Package B and Preferred Alternative.*

Completed by: <i>John Trechman</i>	Date: <i>9-20-10</i>
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North I-25 FEIS

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # <u>IM0253-179</u>	Project code (SA#)	STIP #	Project Location <u>Baddling Reservoir</u>
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**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:**

	<u>EXTREMELY REASONABLE</u>	<u>REASONABLE</u>	<u>MARGINALLY REASONABLE</u>	<u>UNREASONABLE</u>
1. Cost Benefit Index (per receiver per dBA) ..	<input type="checkbox"/> Less than \$3000	<input type="checkbox"/> \$3000-\$3750	<input checked="" type="checkbox"/> \$3750-\$4000	<input type="checkbox"/> More than \$4000
2. Average Build Noise Level .....	<input checked="" type="checkbox"/> 70 dBA or More	<input type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires .....	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) .....	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more)	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> 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:**  
 This would be a southern extension to an existing barrier west of I-25 near Baddling Reservoir (98th Ave). A 12 x 900 ft extension would provide about 80 dBA of total benefit. Cost would be about \$4,100 per.

**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**  
 This barrier extension is recommended for Package B and Preferred Alternative.

Completed by: <u>Dale T. Trachsel</u>	Date: <u>9-20-10</u>
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North I-25 FEIS

**COLORADO DEPARTMENT OF TRANSPORTATION  
NOISE ABATEMENT DETERMINATION**

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

Project # <u>IM0253-174</u>	Project code (SA#)	STIP #	Project Location: <u>Brittany Ridge</u>
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**A. FEASIBILITY:**

- Can a continuous noise barrier or berm be constructed?  YES  NO
- 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
- 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) . . . . .	<input type="checkbox"/> Less than \$3000	<input checked="" type="checkbox"/> \$3000-\$3750	<input type="checkbox"/> \$3750-\$4000	<input type="checkbox"/> More than \$4000
2. Average Build Noise Level . . . . .	<input type="checkbox"/> 70 dBA or More	<input checked="" type="checkbox"/> 66 - 70 dBA	<input type="checkbox"/> 63 - 66 dBA	<input type="checkbox"/> Less than 63 dBA
3. Impacted persons' desires . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
4. Development Type (Category B*) . . . . .	<input checked="" type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input type="checkbox"/> Less than 25%
5. Development Existence (15 years or more) . . . . .	<input type="checkbox"/> More than 75%	<input type="checkbox"/> 50% - 75%	<input type="checkbox"/> 25% - 50%	<input checked="" type="checkbox"/> Less than 25%
6. Build Noise Level vs. Existing Noise Level . . . . .	<input type="checkbox"/> Greater than 10 dBA	<input type="checkbox"/> 5 - 10 dBA	<input checked="" type="checkbox"/> 0 - 5 dBA	<input type="checkbox"/> Noise Level Decrease

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

**C. INSULATION CONSIDERATION:**

- Are normal noise abatement measures physically infeasible or economically unreasonable?  YES  NO  
If the answer to 1 is YES, then:
- 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
- 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:**  
*These homes have been built since 2000. This would be a southern extension of an existing barrier east of I-25 near 76<sup>th</sup> Ave. A 12 x ~~1000~~<sup>1000</sup> ft barrier extension would provide about 150 dBA of total benefit. Cost would be about \$3,000 per.*

**E. DECISION:**

- Are noise mitigation measures feasible?  YES  NO
- Are noise mitigation measures reasonable?  YES  NO
- Is insulation of buildings both feasible and reasonable?  YES  NO
- Shall noise mitigation measures be provided?  YES  NO

**F. DECISION DESCRIPTION AND JUSTIFICATION**  
*This barrier extension is recommended for Package B and Preferred Alternative.*

Completed by: <u>Dale T. Winkler</u>	Date: <u>9-20-10</u>
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