U.S. 50 Corridor East

Partnering for Progress

U.S. 50 Corridor East
Tier 1 Draft Environmental Impact Statement

Agricultural Resources Technical Memorandum

June 2016

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1. Project Overview

The U.S. 50 Corridor East Tier 1 Environmental Impact Statement (U.S. 50 Tier 1 EIS) was initiated by the project's lead agencies, the Colorado Department of Transportation (CDOT) and the Federal Highway Administration (FHWA). The purpose of the U.S. 50 Tier 1 EIS is to provide, within the framework of the National Environmental Policy Act of 1969 (NEPA), a corridor location decision for U.S. Highway 50 (U.S. 50) from Pueblo to the vicinity of the Colorado-Kansas state line that CDOT and the communities can use to plan and program future improvements, preserve right-of-way, pursue funding opportunities, and allow for resource planning efforts.

The U.S. 50 Tier 1 EIS officially began in January 2006 when the Notice of Intent was published in the *Federal Register*. The U.S. 50 Tier 1 EIS project area (Figure 1-1) is the area in which U.S. 50 Tier 1 EIS alternatives were assessed. This area traverses nine municipalities and four counties in the Lower Arkansas Valley of Colorado. The nine municipalities include (from west to east) the city of Pueblo, town of Fowler, town of Manzanola, city of Rocky Ford, town of Swink, city of La Junta, city of Las Animas, town of Granada, and town of Holly. The four counties that fall within this project area are Pueblo, Otero, Bent, and Prowers counties.

The project area does not include the city of Lamar. A separate Environmental Assessment (EA), the *U.S. 287 at Lamar Reliever Route Environmental Assessment*, includes both U.S. 50 and U.S. Highway 287 (U.S. 287) in its project area, since they share the same alignment. The Finding of No Significant Impact (FONSI) for the project was signed November 10, 2014. The EA/FONSI identified a proposed action that bypasses the city of Lamar to the east. The proposed action of the *U.S. 287 at Lamar Reliever Route Environmental Assessment* begins at the southern end of U.S. 287 near County Road (CR) C-C and extends nine miles to State Highway (SH) 196. Therefore, alternatives at Lamar are not considered in this U.S. 50 Tier 1 EIS.

Figure 1-1. U.S. 50 Tier 1 EIS Project Area

2. Resource Definition

Important farmlands are defined as part of the Farmland Protection Policy Act of 1981 (FPPA) (7 CFR 658). The purpose of the FPPA is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. As part of the NEPA process, agencies are required to identify prime and unique farmland that will be impacted by federally funded transportation projects. The Natural Resources Conservation Service (NRCS) identifies important farmlands in each county based on national regulations and state guidance.

The FPPA defines four types of important farmlands: prime farmland, unique farmland, farmland of statewide importance, and farmland of local importance.

- Prime farmland is land that has the combination of physical and chemical characteristics for production of food, feed, and other agricultural crops.
- Unique farmland is land other than prime farmland that is used for production of specific high-value agricultural products.
- Farmland of statewide importance has been determined by the Colorado State Experiment Station, the Colorado State Department of Agriculture, and the Colorado State Soil Conservation Board.
- Farmland of local importance is identified by a local agency or agencies as certain additional lands that are important to the local community, but do not qualify as prime, unique, or of statewide importance.

In the project area, agricultural resources generally are defined as:

- Prime and unique farmland, as identified by the U.S. Department of Agriculture's NRCS (FPPA 1984)
- Farmland of statewide importance in Colorado, as defined by the Colorado Department of Agriculture (FPPA 1984)

Data from the NRCS identified the majority of the land within the project area as prime and unique farmland. To differentiate between these types of land, additional analysis was conducted to categorize them based on their agricultural use. More information about this categorization process is presented in Section 4.3. It should be noted that no farmland of local importance was identified within the project area, so this type will not be discussed further.

The Lower Arkansas Valley has a long history of agricultural activities that dates back to the arrival of the first settlers in the area in the late 1800s. These activities have been, and continue to be, the foundation of the region's economy. For this reason, this analysis considered more than just farmland. The agricultural resources evaluated for the U.S. 50 Tier 1 EIS include the following:

- Farmland—land used for crop production
- Ranch lands—land used for ranching and grazing activities
- Feedlots—confined areas where livestock is prepared for market
- Irrigation canals and ditches—man-made channels that allow water from the Arkansas River to reach non-adjacent farmland
- Permanent roadside produce markets—facilities that sell agricultural products from nearby farms, such as produce, directly to consumers
- Agricultural product storage facilities—facilities that store products produced on nearby farms, such as grain, before it is sold
- Livestock sales facilities—operations that facilitate the transfer of livestock from one owner to another

All of these resources were evaluated because of their importance to the agricultural-based economy of the Lower Arkansas Valley. Removing farmland or ranch lands from production does not simply affect the land, but it also affects the people and other businesses that derive their livelihoods from it. Farms, ranches, feedlots, and other agricultural businesses provide employment directly for producers and owners, but they

also provide jobs for other local businesses. For example, farmers make annual purchases for items such as seeds and fertilizer, and they also make capital investments in farm equipment and irrigation systems. The local businesses that provide these goods and services depend on the primary businesses for their continued operation.

The system of irrigation canals and ditches that were excavated by the earliest settlers of the Lower Arkansas Valley are still in use today. It is important to identify possible effects to them because there may be resulting effects on the farmland drawing water from them.

Permanent roadside produce markets, agricultural storage facilities, and livestock sales facilities are important businesses in the Lower Arkansas Valley for more than just the money they add to the local economy. They all serve very specific, but important, roles in the delivery of agricultural products to markets within and outside the area.

3. Applicable Laws, Regulations, and Guidance

In addition to adhering to NEPA and its regulations (23 CFR 771), the Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500–1508), and the Moving Ahead for Progress in the 21st Century Act of 2012 (MAP-21), the following laws, regulations, and guidance were adhered to during this analysis of agricultural resources. They are described in more detail below.

- Farmland Protection Policy Act of 1981
- FHWA Technical Advisory T6640.8A

3.1. Farmland Protection Policy Act of 1981

According to the FPPA, the purpose of the Act is to "... minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses" (1984, Sect 2(b)). In addition to defining how farmland should be identified, the Act requires federal agencies to:

- "... take into account the adverse effects of their programs on the preservation of farmland
- consider the alternative actions, as appropriate, that could lessen adverse effects
- ensure that their programs, to the extent practicable, are compatible with State and units of local government and private programs and policies to protect farmland" (FPPA 1984, Sect 3(b))

The regulations outlined in 7 CFR 658 provide guidance regarding implementing the requirements of the Act.

3.2. FHWA Technical Advisory T6640.8A

FHWA Technical Advisory T6640.8A provides the following guidance about how an environmental impact statement should consider farmland issues (FHWA 1987, Sect V(G)):

- Farmland includes prime and unique farmland, as well as farmland of state and local importance.
- The draft EIS should include results of consultations with the NRCS and state and local agriculture agencies, as appropriate.
- The draft EIS should discuss farmland affected by the Build Alternatives under consideration, show those impacts on maps, and identify measures to avoid or reduce these impacts.
- If it is not possible to avoid impacts to farmland, efforts to minimize them should be considered.

4. Methodology

The U.S. 50 Corridor East project is a Tier 1 EIS. “Tiering” for this process means that the work involved will be conducted in two phases, or tiers, as follows:

- Tier 1—A broad-based (i.e., corridor level) NEPA analysis and data collection effort. The goal of Tier 1 is to determine a general corridor location (not a roadway footprint). Data sources will include existing quantitative data, qualitative information, or both. Mitigation strategies (not necessarily specific mitigation activities) and corridor-wide mitigation opportunities will be identified. Additionally, the Tier 1 EIS will identify sections of independent utility (SIUs) and provide strategies for access management and corridor preservation.
- Tier 2—A detailed (i.e., project level) NEPA analysis and data collection effort. The goal of Tier 2 studies will be to determine an alignment location for each SIU identified in Tier 1. Data sources will include project-level data, including field data collection when appropriate. Tier 2 studies will provide project-specific impacts, mitigation, and permitting for each proposed project.

Resource methodology overviews were developed to identify and document which resource evaluation activities would be completed during the Tier 1 EIS, and which would be completed during Tier 2 studies. These overviews are intended to be guidelines to ensure that the Tier 1 EIS remains a broad-based analysis, while clarifying (to the public and resource agencies) when particular data and decisions would be addressed in the tiered process.

These overviews were approved by FHWA and CDOT in 2005, and they were agreed upon by the resource agencies during the project’s scoping process between February and April of 2006.

Each overview summarizes the following information for the given resource:

- Relevant data or information sources—the types of corridor-level data that will be collected and the sources of those data
- Data collection and analysis methodology—how the data collection and analysis will be completed
- Project area—defined as one to four miles wide surrounding the existing U.S. 50 facility beginning at Pueblo, Colorado, at Interstate 25 (I-25) and extending to the Colorado-Kansas state line (resources will be reviewed within this band, and it is the same for all resources)
- Effects—the type(s) of effect(s) to be identified
- Mitigation options—how mitigation will be addressed
- Deliverables—how the activities above will be documented
- Regulatory guidance/requirements—a list of applicable laws, regulations, agreements, and guidance that will be followed during the review of the resources

These overviews were used by the project’s resource specialists as guidelines to ensure that their activities were relevant to the Tier 1 decision (i.e., corridor location). As the resource specialists conducted their work, data sources or analysis factors were added or removed. The final actions of the resource specialists are described below. The resource methodology overview for agricultural resources is attached to this technical memorandum as Appendix A for reference only. Additionally, abbreviations and acronyms used in this report are listed in Appendix B.

4.1. Relevant Data or Information Sources

The following sources of data and information were used to identify agricultural resources for the U.S. 50 Tier 1 EIS:

- NRCS soil surveys and farmland reports for the counties in the project area

- An agricultural economist with 20 years of experience working in the Lower Arkansas Valley provided information about the agricultural use of the non-urbanized land within the project area and the productivity of that land (productivity data came from enterprise budgets focused on crops grown in the project area)
- A guide listing farmers' markets in Colorado produced by the Colorado Department of Agriculture
- A list of livestock sales facilities from the Colorado State Board of Stock Inspection Commissioners
- U.S. Department of Agriculture aerials covering the project area

In addition to these sources, consultations were held with federal, state, and local agencies and communities to obtain information about agricultural resources within their jurisdictions. NRCS staff located in the following U.S. Department of Agriculture field offices were consulted between July 10 and August 9, 2006:

- Southeast Colorado Resource Conservation and Development Office
- Rocky Ford Field Service Center
- Las Animas Field Service Center
- Lamar Field Service Center
- Northeast Prowers Conservation District
- Pueblo Field Service Center

During these consultations, NRCS staff members were asked to provide information regarding farmland, unique crops, and important farming methods in use in the Lower Arkansas Valley. These individuals also were asked to provide any other agricultural-related information they felt the resource specialist should be aware of for this analysis of agricultural resources.

Individuals working for the Colorado Department of Agriculture were consulted between December 2006 and January 2007. These consultations included interviews with department staff and local U.S. 50 residents who volunteer for the department within their own communities. The following conservation districts were contacted and asked to provide information regarding unique crops and farming practices within the U.S. 50 project area:

- Central Colorado
- Turkey Creek
- South Pueblo County
- Olney-Boone
- West Otero
- East Otero
- Bent
- Prowers
- Northeast Prowers

Consultations with local farmers occurred during the following meetings held along the corridor:

- Public scoping meetings held in each of the cities and towns along U.S. 50 (10 meetings total) between February 27 and March 7, 2006
- Community workshops held in each of the cities and towns along U.S. 50, except Pueblo (9 meetings total), between August 7 and August 16, 2006

4.2. Data Collection and Analysis Methodology

The methodologies used to identify and evaluate agricultural resources for the U.S. 50 Tier 1 EIS are discussed below by the type of resource. These include farmland and ranch lands, feedlots, irrigation canals and ditches, permanent roadside produce markets, agricultural product storage facilities, and livestock sales facilities.

4.2.1. Farmland and Ranch Lands

Prime and unique farmland was mapped originally using NRCS data in consultation with NRCS staff. The FPPA enables federal agencies to identify farmland in one of two ways, by using the criteria established in Section 5 of the Act, or by requesting that the NRCS make that determination. For the U.S. 50 Tier 1 EIS, the NRCS was asked to identify farmland in the project area. In consultation with the agency's staff, relevant farmland was identified using a geographic information system (GIS) overlay process, which involved the following steps:

1. NRCS soil survey data were downloaded (in GIS format) from the agency's online data service, the Soils Data Mart, in August 2006. Soil survey data identify and locate existing soil types in an area. Soil survey data were collected on a county-wide basis for all four counties within the project area (i.e., Pueblo, Otero, Bent, and Prowers counties).
2. NRCS *Prime and Other Important Farmlands Reports* were downloaded from the agency's website in August 2006. These reports detail the soils that the NRCS has identified as prime and unique farmland soils. The data are provided on a county-wide basis, and reports were collected for all four counties in the project area.
3. These two datasets were overlaid to identify and locate the prime and unique farmland soils that exist within the four counties in the Build Alternatives.
4. It is worth noting that some of the soils that the NRCS identifies as prime and unique farmland soils only qualify for that designation if certain conditions exist, such as if the land is irrigated. For the purposes of the Tier 1 EIS, all lands containing prime and unique farmland soils were considered prime and unique farmland, regardless of the condition of those lands. This decision was made to ensure that the analysis remained within the Tier 1 level of effort (as outlined in the resource methodology overview located in Appendix A).
5. The project area boundaries then were compared to this county-wide dataset of prime and unique farmland soil locations to identify the prime and unique farmland soils located within the project area.

Prime farmland and farmland of statewide importance was calculated for each of the project counties within the 1,000-foot-wide Build Alternatives. There is a total of 2,343,000 acres of prime and unique farmland within the four project counties (NRCS 2005). As shown in Table 4-1, Prowers County has the second largest number of acres of prime farmland and is the only county in the project area to have impacts to farmland of statewide importance. Maps showing the location of these lands within the project area (by county) are presented in Appendix C (Figure C-1 through Figure C-4).

Table 4-1. Prime Farmland and Farmland of Statewide Importance

County	Prime Farmland (Acres)	Farmland of Statewide Importance (Acres)	Total (Acres)
Pueblo	705,357	—	705,357
Bent	444,525	—	444,525
Otero	371,707	—	371,707
Prowers	675,030	146,296	821,326
Total	2,196,619	146,296	2,342,915

Source: NRCS 2005

To further differentiate between impacts to farmland resources, an additional level of analysis was performed to identify the relative productivity of the agricultural land in the project area. This effort was completed with the assistance of Jeffrey E. Tranel, an agricultural economist who has been researching agricultural issues in the Lower Arkansas Valley for Colorado State University for 20 years. The productivity of both farmland and ranch lands was considered, since both are important parts of the Lower Arkansas Valley's agricultural-based economy. Effects to farmland and ranch lands were evaluated based on the number of acres affected and the loss in productive value of those acres. The productive value of farmland and ranch lands was calculated by estimating the potential profit that could be generated from one growing season of farming or

one year of grazing. Profitability was estimated differently for farmland and ranch lands due to the way each type of land is used.

To identify the relative productivity of agricultural lands in the project area, the historic agricultural use of the land was identified, which is the type of agricultural activity that typically has taken place on the land in recent years. The following three categories of agricultural use were developed based on the most prominent agricultural uses that have existed, and currently exist, in the project area.

- Vegetables (farmland)—land used to grow melons, onions, fruit, sod, and other non-grain crops
- Alfalfa/corn (farmland)—land used to grow alfalfa, corn, and other grain crops
- Ranching/grazing (ranch lands)—all other non-urbanized land where ranching or grazing activities could occur

The next step was to rank these categories from most productive (1) to least productive (3) based on the profitability of each agricultural use. The profitability of farmland (vegetables and alfalfa/corn) was estimated based on the income and expenses associated with the production of certain crops grown in the Lower Arkansas Valley in 2007. Enterprise budgets were developed for these crops, which enumerate the income and expenses related to the production of an acre of a particular crop. This information was compared to identify the potential profitability of the land. The enterprise budgets used for this analysis:

- Were completed, in part, using existing information about agricultural expenses and receipts, including but not limited to crop prices, labor rates, equipment maintenance costs, and the cost of agricultural inputs, such as seed, fertilizer, and water
- Do not represent the income or expenses related to any one individual farm operation
- Do not represent a single set of farm management practices
- Involve typical incomes and expenses for each crop
- May not predict future income or expenses due to changing costs, prices, or farming practices
- Include information obtained from certain farmers, researchers, and input suppliers who were interviewed about issues related to their operations
- Do not consider *factor payments*, which are costs such as returns to land, operator's labor, management, and the risk associated with growing the crop

Enterprise budgets were developed for certain crops that have been grown historically in the Lower Arkansas Valley, including watermelon, tomatoes, pumpkins, onions, cantaloupe, sweet corn, chili peppers, alfalfa, and corn. The income (i.e., gross receipts) and expenses (i.e., direct costs) of growing an acre of each crop were calculated. The difference between these figures represents the net income (i.e., profit) that could be expected from producing an acre of that crop.

The net incomes of the vegetable crops were averaged to determine an estimated profitability for that category of agricultural land use. These crops included watermelon, tomatoes, pumpkins, onions, cantaloupe, sweet corn, and chili peppers. Similarly, the net incomes of alfalfa and corn were averaged to determine an estimated profitability for that category of agricultural land use. These calculations are presented in Table 4-2.

Table 4-2. Enterprise Budget Information for Crops Grown in the Lower Arkansas Valley (all figures are per acre)

Crop	Gross Receipts	Pre-Harvest Costs	Harvest Costs	Property and Ownership Costs	Total Direct Costs	Net Profits[d]
Watermelon	$7,500	$1,143	$120	$82	$1,345	$6,155
Tomatoes	$10,000	$1,001	$600	$68	$1,669	$8,331
Pumpkins	$2,400	$880	$120	$74	$1,074	$1,326
Onions	$5,000	$748	$300	$84	$1,132	$3,868
Cantaloupe	$6,175	$1,145	$1,375	$78	$2,597	$3,578
Sweet corn	$4,500	$543	$180	$70	$794	$3,706
Chili peppers	$6,000	$797	$500	$71	$1,368	$4,632
All vegetables[a]	**$5,939**	**$894**	**$456**	**$75**	**$1,426**	**$4,514**
Alfalfa[b]	$720	$190	$96	$115	$304	$416
Corn[b]	$720	$230	$39	$54	$323	$397
Alfalfa/corn[c]	**$720**	**$210**	**$68**	**$84**	**$314**	**$406**

[a]Average of all vegetables listed
[b]Grown under flood irrigation
[c]Average of alfalfa and corn
[d]Before factor payments
Source: Tranel 2008b

The enterprise budgets revealed that the average net income (i.e., profitability) from one acre of alfalfa or corn production is approximately $400 per acre per growing season, while that figure for vegetable crop production is roughly $4,500 (see Table 4-1). Thus, it is approximately 11 times more profitable to grow vegetables than alfalfa/corn crops in the Lower Arkansas Valley. As a result, this analysis afforded an effect to land used for vegetable production as more severe than an effect to land used for alfalfa/corn production. It is important to note that these estimates are intended to show the relative loss in productive value that would occur when farmland is affected by the alternatives. They do not represent actual profits generated by individual farms in the Lower Arkansas Valley. They are estimates derived from available aggregate data.

The profitability of ranch lands was estimated based on the amount of money an owner of an acre of ranch land in southeastern Colorado could earn from grazing livestock on it. The estimate involved identifying how much livestock could be grazed on an acre of ranch land and how much money a rancher could earn from that activity in one year. The number of acres required to graze one unit of livestock (i.e., one cow-calf pair) depends on many factors, including the type of animal, what months the grazing takes place, and pasture conditions. This analysis did not identify these factors for each ranching operation in the 150-mile-long project area. Instead, several estimates were obtained and averaged. This process resulted in a determination that 45 acres of ranch land is needed to graze one unit of livestock in southeastern Colorado (Baker 2009, Fankhauser 2009, Stulp Farms 2009). This figure assumes that the animals are grazed for 12 months and supplemental feed may be necessary during the winter months.

The next step was to determine how much money a rancher could earn from grazing one cow-calf pair on 45 acres of ranch land. The most common charge for grazing in 2007 ranged from $18.00 to $25.50 per cow-calf pair per month depending on the type of land (Tranel 2008b). Assuming the greatest charge ($25.50), a rancher could expect to earn approximately $306 per cow-calf pair in one year. Since that cow-calf pair would require 45 acres of ranch land, this translates into $306 per year for every 45 acres of ranch land, or approximately $7 per acre per year ($306 divided by 45 acres). Similar to the profitability estimates stated above, this figure does not represent actual profits generated by individual ranches in the Lower Arkansas Valley. It is an estimate based on available aggregate information.

This method for calculating grazing land also makes the assumption that most cattle production operators are not landowners. Calculating the loss in land productivity based upon loss in beef sales revenue, as opposed to the loss in leasing value, would result in higher negative impacts (more than twice the value per acre), yet this difference is negligible when compared to impacts to vegetable production and alfalfa/corn farms. The determination of relative impacts to land is overwhelmingly influenced by the higher quality farmland within the study area.

From the information above, each category of agricultural land use was ranked from highest (1) to lowest (3) productivity as follows. The profitability of an acre of each use is noted in parentheses.

1. Vegetables ($4,500 per acre)
2. Alfalfa/corn ($400 per acre)
3. Ranching/grazing ($7 per acre)

All agricultural land within the project area was placed into one of these three productivity categories. It is important to note that this effort involved a high-level identification of general areas of productivity, not a field-specific identification. Additionally, the following caveats apply to this effort:

- The historic agricultural use of the land was identified using the best available information. This effort did not include speaking to every farm or ranch owner in the 150-mile-long project area to obtain information about production on individual parcels.
- Land was placed in the highest category possible. Areas that were borderline between two categories were placed in the higher (i.e., more productive) category.
- The agricultural use identified for each area represents the historical and reasonably expected future use of that area as of April 2008, given the information known at that time. These data should be considered a “snapshot in time” and not a guarantee of the future use of any specific parcel(s) of land.
- This analysis does not consider water rights. It used historic production (i.e., what crop(s) have been grown on the land) to extrapolate future production (i.e., what crop(s) are likely to be grown on the land in the near future) without considering how changes in water rights may alter this condition.
- The analysis does not consider crop rotation from year to year. The primary use of the land determined the category to which it was assigned. If multiple crops were known to be grown, then the crop grown the majority of the time was used to determine the category. If multiple crops were grown a relatively equal amount of the time, the area was placed in the highest category relative to the crops grown.
- The productivity categories were developed to provide a general understanding of farmland effects associated with the Build Alternatives recommended by the U.S. 50 Tier 1 EIS. This information was not intended to associate a particular monetary value to any particular parcel of land.
- The analysis does not consider new or changing technologies or management practices. New seed varieties, soil amendments, etc. may allow a farmer to grow a higher-value crop on land that has historically been used to produce lower-value crops.

The result of the tasks described above was the assignment of agricultural land in the project area to one of the three agricultural use categories (i.e., vegetables, alfalfa/corn, or ranching/grazing). This information was utilized to calculate the potential loss in productivity to the Lower Arkansas Valley from the Build Alternatives. The number of acres of land affected was multiplied by the estimated productivity (i.e., profitability) of the associated agricultural use to determine the loss in productivity to the area.

4.2.2. Feedlots

Feedlots were identified using the U.S. Environmental Protection Agency’s (EPA) Enforcement and Compliance History Online (ECHO) data query tool. Feedlots that are not currently regulated by the EPA were not included in these results.

4.2.3. Irrigation Canals and Ditches

The irrigation canal and ditch system in the project area was excavated in the late 1800s when the first settlers arrived to the region. For this reason, these features were primarily identified during the historic

resources evaluation for the U.S. 50 Tier 1 EIS. More information about them and how they were identified can be found in the U.S. 50 Tier 1 EIS Historic and Archaeological Resources Technical Memorandum.

4.2.4. Permanent Roadside Produce Markets

Permanent roadside produce markets were defined as markets located along or near U.S. 50 that are housed in permanent structures (i.e., buildings or other non-mobile structures). They were identified primarily using a guide published by the Colorado Department of Agriculture that listed markets operating in Colorado in 2008. In addition to these permanent markets, seasonal markets also operate along U.S. 50 in the Lower Arkansas Valley on a temporary basis. Because it is impossible to know which of these markets will open during any given season, or where they may be located, they were not included in this analysis.

4.2.5. Agricultural Product Storage Facilities

Agricultural storage facilities were identified primarily using U.S. Department of Agriculture aerial photography of the project area.

4.2.6. Livestock Sales Facilities

Livestock sales facilities were identified using a list of existing, operational facilities acquired from the Colorado State Board of Stock Inspection Commissioners. The list includes all facilities operating in Colorado in April 2008.

4.3. Project Area

The project area for the U.S. 50 Tier 1 EIS has been defined as one to four miles wide surrounding the existing U.S. 50 facility and extending from Pueblo, Colorado, at I-25 to the Colorado-Kansas state line (Figure 1-1). The project area encompasses the study area limits, which is where the Tier 1 corridor alternatives considered by this project would be located.

The study area is 1,000 feet wide centered on the corridor alternatives, beginning on or near the existing U.S. 50 at I-25 in Pueblo, Colorado, and extending to just east of Holly, Colorado, in the vicinity of the Colorado-Kansas state line. The limits of the project were approved by the lead agencies and other project stakeholders during the U.S. 50 Tier 1 EIS's scoping activities.

4.4. Effects

The purpose of the U.S. 50 Tier 1 EIS is to identify the 1,000-foot-wide Build Alternatives within which a 250-foot-wide (maximum) roadway footprint (i.e., alignment) would be identified during Tier 2 studies (see Figure 4-1). Direct and indirect effects to agricultural resources were estimated based on the type of resources, as indicated below.

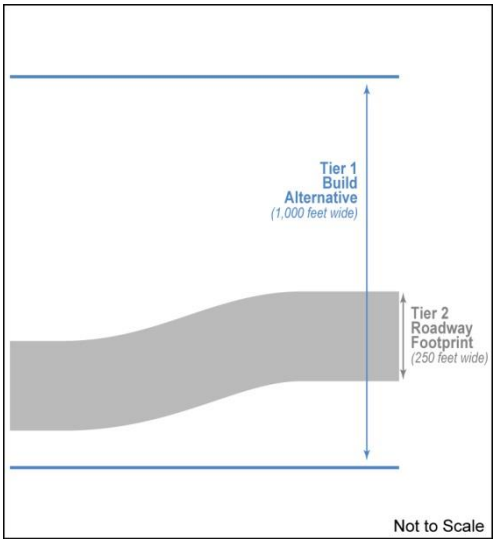

Figure 4-1. Tier 1 vs. Tier 2 Decision

4.4.1. Direct Effects

Direct effects to farmland and ranch lands, feedlots, irrigation canals and ditches, permanent roadside produce markets, agricultural storage facilities, and livestock sales facilities are discussed below by resource type.

Prime Farmland and Farmland of Statewide Importance

Prime and unique farmland and farmland of statewide importance was identified using spatial data from the NRCS National Cooperative Soil Survey (2003). Impacts to prime and unique farmland are the total acres of prime and unique farmland within the Build Alternatives, rounded to the nearest

acre. All farmland identified as having any potential to be prime farmland, depending on irrigation and other land management practices, was considered prime.

Prime farmland area calculations for the Build Alternatives were multiplied by a conversion factor to better estimate impacts of a 250-foot-wide highway footprint. The conversion factor was necessary because the purpose of this document is to determine the location of a 1,000-foot-wide alternative within which a 250-foot-wide (maximum) roadway footprint would be identified during Tier 2 studies. The conversion factor, generally 0.25, reflects that only one-quarter of the alternative width would be needed for highway right of way. This conversion provides a more realistic value for expected effects from the Build Alternatives.

Farmland and Ranch Lands

Effects to farmland and ranch lands were calculated by identifying the total number of acres affected by each segment of the 1,000-foot-wide Build Alternatives and multiplying that total by a conversion factor of 0.25 (i.e., dividing the total by 4). This converted figure provided a more realistic value of the potential direct effect to farmland and ranch lands during Tier 2 studies.

Due to the varied width of certain segments (slightly more or less than 1,000 feet), four segments used different conversion factors (i.e., not 0.25), including Pueblo (1.0), Pueblo to Fowler (0.2), Rocky Ford (0.31), and La Junta to Las Animas (0.19). The number of acres of farmland or ranch lands potentially affected by the Build Alternatives (after applying the conversion factor) was multiplied by the estimated productivity of that land (i.e., $4,500 for acres producing vegetables, $400 for acres producing alfalfa/corn, or $7 for ranch lands) to determine the potential loss in productivity to the agricultural economy of the Lower Arkansas Valley.

Feedlots

Feedlots were considered potentially affected if any part of the property was located within the Build Alternatives. Feedlots require a significant amount of infrastructure investment. Therefore, effects to them not only include the value of the land, but also the value of this infrastructure. This analysis did not identify the specific value of the infrastructure held by feedlot owners in the project area because these figures require facility-specific information about capital expenses. Access to U.S. 50 is also an issue for feedlots. They depend on regional roadways to get their livestock to market. Therefore, it is important for these facilities to maintain some type of connection between their property and the regional roadway network. This access also must accommodate large vehicles that haul feed and are used to transport livestock.

Irrigation Canals and Ditches

Irrigation canals and ditches were considered potentially affected if any part of the canal or ditch was located within the Build Alternatives. The fact that U.S. 50 would cross a canal or ditch does not necessarily result in adverse effects to it. In fact, U.S. 50 crosses many canals and ditches today with no adverse effect to water flows. Canals and ditches would be adversely affected only if their water flows were altered to prevent the water from reaching receiving fields. During Tier 2 studies, improvements to U.S. 50 would be designed to avoid or minimize adverse effects to water flows. Additionally, roadways used to monitor and maintain canals and ditches would be preserved or replaced so that these operations could continue.

Permanent Roadside Produce Markets

Permanent roadside produce markets were considered potentially affected if any part of the market (including associated parking areas) was located within the Build Alternatives. Access to U.S. 50 is also an important issue for these markets. As their name implies, roadside produce markets depend heavily on passing travelers for their customer base. Therefore, it is essential that drivers are able to see the markets from the road and access them at the time they are spotted. Since the U.S. 50 Tier 1 EIS is recommending that access to U.S. 50 be more limited than it is today, it is likely that the Build Alternatives would result in changes in access for some of these markets. Additionally, markets currently located within U.S. 50 communities may be affected by a reduction in pass-by traffic after the new alignment of U.S. 50 (either north or south of town) is constructed.

Agricultural Product Storage Facilities

Agricultural product storage facilities were considered potentially affected if any part of the storage facility was located within the Build Alternatives. Since U.S. 50 is a primary farm-to-market route for farmers in the Lower Arkansas Valley, access to the highway is important for these facilities. Since the U.S. 50 Tier 1 EIS is recommending that access to U.S. 50 be more limited than it is today, it is likely that the Build Alternatives would result in changes in access for some of these facilities.

Livestock Sales Facilities

Livestock sales facilities were considered potentially affected if any part of the property was located within the Build Alternatives. Access to U.S. 50 is also an issue for these facilities. They operate on regional, not local, scales. Therefore, it is important for these facilities to maintain some type of connection to the regional roadway network. This access also must accommodate large trucks used to transport livestock.

4.4.2. Indirect Effects

Indirect loss of farmland cannot be quantified at this Tier 1 level of analysis. These indirect losses, also called uneconomical remainders, are the portions of farm fields rendered unusable due to their small size or an inability of the farmer to get to them or water them. The U.S. 50 Tier 1 EIS identifies a 1,000-foot-wide general corridor location, within which just 250 feet (or possibly less) would be needed for the roadway alignment (this alignment will be identified during Tier 2 studies). Since this analysis cannot determine which specific fields will be affected, it cannot identify indirect losses or uneconomical remainders that might result. However, because this is an important issue for farmers and ranchers in the Lower Arkansas Valley, mitigation strategies for these potential losses have been included in Section 7.

4.5. Mitigation Options

Avoidance or minimization will be the primary mitigation options for handling agricultural resources.

4.6. Deliverables

This technical memorandum is the primary deliverable related to agricultural resources for the U.S. 50 Tier 1 EIS. Farmland Conversion Impact Rating Forms will not be completed during this Tier 1 EIS since no farmland will be converted by the resulting federal action. These forms will be completed during Tier 2 studies when a roadway alignment (i.e., footprint) is identified.

5. Existing Conditions

The presence of the Arkansas River and the man-made irrigation canals running from it allowed the Lower Arkansas Valley to build a strong agricultural industry early in its history, and the industry has been an important part of life in the area for more than 100 years. These activities have provided jobs to local residents, contributed significantly to the development of the region, contributed to both the local and statewide economies, and account for more than half of the land use in the project counties (i.e., Pueblo, Otero, Bent, and Prowers counties) (Agricultural Census 2007a, Agricultural Census 2002b, U.S. Census 2010). Thus, it is important that these lands be recognized as a valuable resource.

The Census of Agriculture defines *farms* (i.e., farmland and ranch lands) as lands primarily used for crops, pasture, or grazing, as well as certain woodlands and wastelands that are part of a farm where at least $1,000 of agricultural products have been produced and sold, or normally would have been sold annually (Agricultural Census 2007a). By 1900, all four counties in the project area reported at least 100,000 acres of farmland and ranch lands, with Pueblo County reporting over 450,000 acres (Historical Census Browser 2007). This land area constituted roughly 11 percent of the total farmland and ranch lands in the state of Colorado during that year (Historical Census Browser 2007).

Since 1982, farming activities along the Arkansas River have decreased due to urban demand for water, pressure from communities downstream (i.e., the state of Kansas), and shifting of water supplies to electric generation (*Pueblo Chieftain* 2007). However, even with this decline, agricultural activities remain the economic foundation of the region. In 2007, 3.5 million acres of land in the project counties were used for farming and ranching (Agricultural Census 2007a).

The sections below discuss the agricultural economy and current resources that exist in the Lower Arkansas Valley.

5.1. Agricultural Economy

Employment data show the importance of agricultural activities to the economic life of the Lower Arkansas Valley. In 2011, the agricultural sector provided nearly 8 percent of all jobs in Otero County, 11 percent of jobs in Prowers County, and more than 26 percent of employment in Bent County (see Table 5-1) (Colorado Economic and Demographic Information System [CEDIS] 2013). In Bent County, the sector is the second largest employer behind government entities (CEDIS 2013).

Table 5-1. Percent of Total (Direct) Employment by Sector and County in 2011 (NAICS Based)

Economic Sector	Colorado	Pueblo County	Otero County	Bent County	Prowers County
Agriculture	1.4%	1.2%	7.8%	26.3%	11.3%
Construction	5.9%	8.0%	3.3%	—	5.0%
Finance, Insurance, and Real Estate	7.6%	5.3%	4.6%	—	6.2%
Government	16.2%	22.8%	23.1%	40.4%	25.8%
Manufacturing	4.8%	7.4%	5.8%	—	5.7%
Mining and Extractive Industries	1.1%	0.1%	—	—	1.8%
Services	33.7%	20.6%	—	—	—
Transportation, Communications, and Utilities	11.6%	14.8%	—	—	10.0%
Wholesale and Retail Trade	13.3%	16.4%	14.5%	7.1%	16.0%
Arts and Education	4.4%	3.3%	—	—	—

Source: CEDIS 2013, (*) = suppressed data
NAICS = North American Industry Classification System

It also should be noted that these data only describe direct employment within the agricultural sector. While this analysis does not include an estimate of the number of jobs indirectly created by the industry, it is fair to say that a certain number of jobs in the Lower Arkansas Valley exist to support agricultural activities. Thus, these jobs can be indirectly attributed to the industry's strong presence there.

Additionally, in 2007, the Colorado Department of Agriculture reported that nearly 3.5 million acres of farmland and ranch lands in the project counties produced over $500 million in agricultural goods. This figure represented roughly 9 percent of the value of all agricultural products produced in the state of Colorado (Agricultural Census 2007b, Agricultural Census 2007a). Of Colorado's 64 counties, the project counties rank 6th (Prowers), 12th (Otero), 17th (Bent), and 24th (Pueblo) for agricultural production in terms of the market value of all products sold (Agricultural Census 2007a). Some of these acres were used to graze cattle and facilitated the sale of approximately 323,000 cattle and calves in 2007, which represented roughly 10 percent of all these animals sold in the state of Colorado in that year (Agricultural Census 2007a).

5.2. Agricultural Resources

Agricultural resources in the project area are described below by the type of resource. They include prime farmland and farmland of statewide importance, farmland and ranch lands, feedlots, irrigation canals and ditches, permanent roadside produce markets, agricultural product storage facilities, and livestock sales facilities.

5.2.1. Farmland and Ranch Lands

The project area contains approximately 83,000 acres of farmland (Tranel 2008a). These acres generally are located adjacent to the Arkansas River or the system of irrigation canals and ditches associated with it. Major crops grown in the Lower Arkansas Valley include corn for grain, corn for silage, dry edible beans (excluding limas), forage, sorghum for silage, vegetables, and wheat for grain. While the majority of these crops are grown in all four project counties, individual counties stand out as major growers of particular crops on that list. For example, Prowers County ranks sixth in the state for the total dollars in crop sales, earning $82,147,000 per year (Agricultural Census 2007a). Each of the project counties produces at least one crop that ranks it within the top 10 statewide for the number of acres in production (see Table 5-2).

Table 5-2. State Rank (Top 10 Only) for Acres of Crop Production by County

Project County	Crop	State Rank[b]	Universe[a]
Pueblo	Vegetables	10	47
Pueblo	Dry edible beans	8	20
Pueblo	Sorghum for silage	9	19
Pueblo	Haylage, alfalfa	6	39
Otero	Vegetables	8	47
Otero	Sorghum for silage	10	19
Otero	Hay, alfalfa	7	58
Bent	Sorghum for silage	4	19
Bent	Sorghum for grain	10	22
Bent	Hay, alfalfa	5	58
Prowers	Sorghum for silage	5	19
Prowers	Sorghum for grain	3	22
Prowers	Oats	10	32
Prowers	Hay and haylage	3	63
Prowers	Hay, alfalfa	2	58
Prowers	Grain	6	50
Prowers	Corn, silage	9	37

[a]The number of Colorado counties producing this item—out of 64 counties
[b]Vegetables ranked by acres in production per year; grain measured in dollar sales; all other crops ranked by acres harvested per year.
Source: Agricultural Census 2007a

The project area contains approximately 92,000 acres of ranch lands (Tranel 2008a). These lands lie primarily outside the irrigated agricultural areas and areas immediately surrounding the project municipalities.

Table 5-3 shows the location of farmland (i.e., vegetables and alfalfa/corn) and ranch lands within the project area by county. It is important to reiterate that these are acres of farmland or ranch lands within the portions of the counties that are also within the project area (not the entire county); therefore, countywide figures would be higher than those shown.

Table 5-3. Farmland and Ranch Lands in the Project Area by County

County	Vegetables[a] (acres)	Alfalfa/Corn[b] (acres)	Ranching/ Grazing[c] (acres)	Total per County (acres)
Pueblo	24	3,330	30,570	33,924
Otero	17,690	16,191	31,462	65,343
Bent	0	21,748	17,237	38,985
Prowers	343	24,019	12,311	36,673
Total (all counties)	**18,057**	**65,288**	**91,580**	**174,925**

[a]Includes melons, onions, fruit, sod, and other non-grain crops
[b]Includes alfalfa, corn, and other grain crops
[c]Includes all other agricultural (i.e., non-urbanized) land where ranching or grazing activities could occur
Source: Tranel 2008a

The locations of these acres are shown on maps located in Appendix C (Figure C-5 through Figure C-8).

5.2.2. Other Agricultural Resources

The other agricultural resources identified within the project area are listed below. The locations of these resources are shown on maps located in Appendix C (Figure C-9 through Figure C-12).

Feedlots

A total of four facilities were identified at the following locations.

- Rocky Ford Feedyard, northwest of Rocky Ford at U.S. 50 and CR 16
- United Feeders, southeast of Rocky Ford at CR 20.5 and CR Dd
- Ribeye Feeders, north of Rocky Ford on CR 19
- JBS Five Rivers Cattle Feeding, west of Lamar on the south side of U.S. 50 near the junction of U.S. 50 and U.S. 287.

Irrigation Canals and Ditches

A total of 24 irrigation canals or ditches were identified, and they are listed below.

- Amity Canal
- Buffalo Canal
- Catlin Canal
- Consolidated Ditch
- Excelsior Ditch
- Fort Lyon Canal
- Granada Ditch
- Holly Ditch
- Jones Ditch
- Lamar Canal
- Las Animas Town Ditch
- Lubers Drainage Ditch
- Main Leach Canal
- Manvel Canal
- McClave Drainage Ditch
- Miller Ditch
- Otero Canal
- Oxford Farmers Ditch
- Riverview Ditch
- Rocky Ford Canal
- Rock Ford Highline Canal
- Sunflower Ditch
- Vista Del Rio Ditch
- X-Y Canal

Permanent Roadside Produce Markets

The following six markets were identified, and their general locations are listed.

- Mills Brothers Farm Market—located on U.S. 50 west of Rocky Ford
- O'Neal Produce (Arkansas Valley Produce)—located on U.S. 50 west of Rocky Ford
- Knapp's Farm Market—located on SH 71 west of Rocky Ford
- Sackett Farm Market—located on U.S. 50 between Rocky Ford and Swink
- Mary's Farm Market (Hanagan Farms)—located on U.S. 50 just west of Swink
- Lusk Farms (Grasmick's Produce)—located on U.S. 50 just east of Swink

Agricultural Product Storage Facilities

A total of six facilities used to store agricultural products were identified at the following locations.

- In Fowler near Santa Fe Avenue and 7th Street
- In La Junta near 1st Street and Smithland Avenue
- In Granada near North Main Street and East Half Avenue
- West of Holly near CR EE.5 and the BNSF (formerly Atchison, Topeka, and Santa Fe) Railway
- West of Holly near Road 30.5 and the BNSF Railway
- In Holly near Vinson Street and the BNSF Railway

Livestock Sales Facilities

The following three facilities were identified, and their general locations are listed.

- Clark Livestock—on U.S. 50 just west of Fowler
- Winter Livestock—on U.S. 50 in La Junta
- La Junta Livestock Commission—on U.S. 50 in La Junta

5.3. Farmland of Statewide or Local Importance, Unique Crops, and Farming Methods

Consultations were held with the NRCS, the Colorado Department of Agriculture, and local farmers to identify farmland of statewide or local importance, unique crops, and unique farming methods within the project area. A summary of these consultations (i.e., who was consulted with and when) can be found in Section 4.2. The results of those consultations are discussed below.

The FPPA defines farmland of statewide or local importance as “farmland, other than prime or unique farmland, that is of statewide or local importance for the production of food feed, fiber, forage, or oilseed crops, as determined by the appropriate State or unit of local government agency or agencies” (1984, Sect 2(c)(1)(C)). This information is combined with prime and unique land identification. There are acres of land identified as having statewide importance, all of which are located within Prowers County.

It should be noted that the area surrounding Rocky Ford has historically been known for melon and seed production (CDOT 2008). Additionally, an agricultural economist from Colorado State University (Jeffrey Tranel) indicated that the farmland south of Swink, which is currently in use for vegetable production, is some of the highest quality farmland in Colorado and is rivaled in quality by only a few small pockets of land in the Midwestern United States (Tranel 2008a).

Only one individual who was consulted provided feedback regarding farming methods in the project area. An NRCS staff member working out of the Rocky Ford Field Service Center provided the following information (Miller 2006):

- Much of the subsurface drip irrigation in Otero County has been installed in farm fields adjacent to U.S. 50. This type of irrigation system raises the value of that land substantially. It usually costs around $1,300 an acre to install, and it significantly raises the yields on crops planted with the system every year after it is installed.
- There are many irrigation siphons that currently cross U.S. 50 and also cross the railroad right of way. These siphons were engineered to move the water the existing distance; thus, to lengthen their delivery will mandate further engineering.

6. Effects Analysis

This evaluation of effects uses the worst-case scenario (i.e., the largest number of resources that could possibly be affected). It should be noted that many of the resources identified within the Tier 1 Build Alternatives could be avoided during future Tier 2 studies.

6.1. No-Build Alternative

Under the No-Build Alternative, only minor and isolated construction would occur. Routine maintenance and repairs would be made as necessary to keep U.S. 50 in usable condition, including standard overlays and repairs of weather- or crash-related damage. Additionally, smaller scale improvements may be undertaken, such as short passing lanes and other minor safety improvements.

Since routine maintenance and repairs are conducted on the existing highway, they would not cause permanent effects to agricultural resources. Smaller scale improvements may require acquisition of farmland or ranch land currently being used for agricultural activities. Those acquisitions would occur directly adjacent to the existing highway and are expected to be minimal.

6.2. Build Alternatives

The Build Alternatives consist of constructing a four-lane expressway on or near the existing U.S. 50 from I-25 in Pueblo, Colorado, to approximately one mile east of Holly, Colorado. There are a total of 30 Build Alternatives. In Pueblo, three Build Alternatives are proposed that either improve U.S. 50 on its existing alignment and/or reroute it to the north to utilize SH 47. East of Pueblo, the remaining 27 Build Alternatives are divided into nine between-town alternatives and 18 around-town alternatives. The nine between-town alternatives improve U.S. 50 on its current alignment, with the exception of near Fort Reynolds, where there is an alternative to realign the roadway to the south. The 18 around-town alternatives propose relocating U.S. 50 from its current through-town route at Fowler, Manzanola, Rocky Ford, Swink, La Junta, Las Animas, Granada, and Holly. Figure 6-1 provides an overview of the Build Alternatives as proposed.

The Build Alternatives have the potential to affect agricultural resources. It could affect between 3,600 and 4,588 acres of farmland or ranch lands, depending on which alternatives are chosen at each around-town route. Table 6-1 summarizes these effects.

How was the Productivity of Farmland and Ranch Lands Calculated?

The productivity of farmland and ranch lands was calculated by multiplying the number of acres affected by the Build Alternatives by the estimated profit that could be made from the lands' historic agricultural use. The following levels of profit were estimated for categories of agricultural use:

- Vegetables—$4,500 per acre
- Alfalfa/corn—$400 per acre
- Ranch lands—$7 per acre

More information about how these profit levels were estimated is presented in Section 4.2.

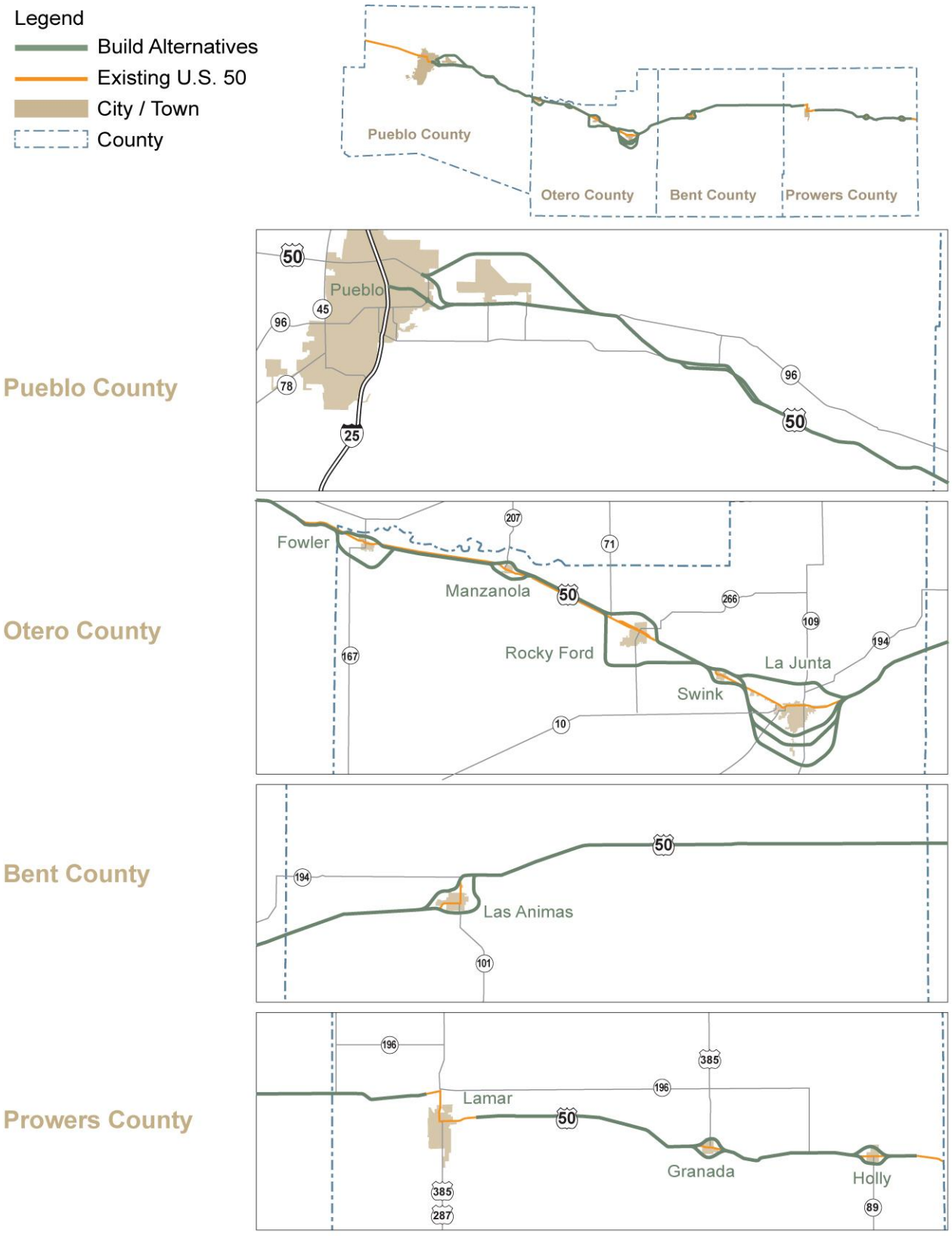

Figure 6-1. Build Alternatives Overview

Table 6-1. Summary of Potentially Affected Agricultural Resources by Section for the Build Alternatives

Section	Build Alternatives (if more than one)	Acres					Productive Value						
		Prime and Unique Farmland[e]	Vegetable (farmland)	Alfalfa/Corn (farmland)	Ranch Lands	Total	Vegetable ($4,500[g])	Alfalfa/ Corn ($400[g])	Ranching/ Grazing ($7)	Estimated Value of Farmland and Ranch Land Production (2007 dollars)	Feedlots[f]	Irrigation Canals and Ditches	Permanent Roadside Produce Markets[g]
Section 1: Pueblo	Alternative 1: Pueblo Airport North	41	0	2	350	352	$0	$755	$2,454	$3,208	0	0	0
	Alternative 2: Pueblo Existing Alignment	12	0	1	130	131	$0	$300	$909	$1,209	0	0	0
	Alternative 3: Pueblo SH 47 Connection	12	0	0	103	103	$0	$75	$721	$796	0	0	0
Section 2: Pueblo to Fowler	Alternative 1: Fort Reynolds Existing Alignment	361	0	86	533	619	$0	$34,412	$3,733	$38,145	0	3	0
	Alternative 2: Fort Reynolds Realignment	377	0	117	499	616	$0	$46,855	$3,490	$50,345	0	3	0
Section 3: Fowler	Alternative 1: Fowler North	76	0	51	38	89	$200	$20,569	$268	$21,037	0	2	0
	Alternative 2: Fowler South	146	0	144	2	146	$0	$57,760	$15	$57,775	0	2	0
Section 4: Fowler to Manzanola	—	170	3	171	12	186	$13,937	$68,412	$82	$82,432	0	2	0
Section 5: Manzanola	Alternative 1: Manzanola North	78	0	56	22	78	$0	$22,242	$152	$22,395	0	2	0
	Alternative 2: Manzanola South	79	14	58	5	77	$62,186	$23,294	$33	$85,512	0	2	0

Section	Build Alternatives (if more than one)	Acres					Productive Value				Feedlots[f]	Irrigation Canals and Ditches	Permanent Roadside Produce Markets[g]
		Prime and Unique Farmland[e]	Vegetable (farmland)	Alfalfa/Corn (farmland)	Ranch Lands	Total	Vegetable ($4,500[g])	Alfalfa/ Corn ($400[g])	Ranching/ Grazing ($7)	Estimated Value of Farmland and Ranch Land Production (2007 dollars)			
Section 6: Manzanola to Rocky Ford	—	163	49	105	10	164	$220,363	$41,917	$69	$262,348	0	1	2
Section 7: Rocky Ford	Alternative 1: Rocky Ford North	223	170	0	66	236	$764,431	$0	$463	$764,894	1	2	2
	Alternative 2: Rocky Ford South	219	164	59	25	248	$738,050	$23,635	$173	$761,857	1	4	2
Section 8: Rocky Ford to Swink	—	24	25	3	3	31	$111,223	$1,087	$23	$112,333	1	0	0
Section 9: Swink	Alternative 1: Swink North	39	23	12	26	61	$102,193	$4,786	$184	$107,164	0	0	1[d]
	Alternative 2: Swink South	71	74	0	2	76	$333,195	$0	$15	$333,210	0	0	1[d]

Section	Build Alternatives (if more than one)	Acres					Productive Value						
		Prime and Unique Farmland[e]	Vegetable (farmland)	Alfalfa/Corn (farmland)	Ranch Lands	Total	Vegetable ($4,500[g])	Alfalfa/ Corn ($400[g])	Ranching/ Grazing ($7)	Estimated Value of Farmland and Ranch Land Production (2007 dollars)	Feedlots[f]	Irrigation Canals and Ditches	Permanent Roadside Produce Markets[g]
Section 10: La Junta	Alternative 1: La Junta North	61	7	16	239	262	$29,925	$6,599	$1,672	$38,196	0	1	0
	Alternative 2: La Junta South	91	39	3	211	253	$175,236	$1,181	$1,480	$177,896	0	1	0
	Alternative 3: La Junta South	89	48	0	246	294	$213,977	$104	$1,722	$215,803	0	1	0
	Alternative 4: La Junta South	79	48	17	294	359	$214,170	$6,625	$2,055	$222,850	0	1	0
Section 11: La Junta to Las Animas	—	230	0	46	281	327	$0	$18,486	$1,970	$20,456	0	2	0
Section 12: Las Animas	Alternative 1: Las Animas North	70	0	33	68	101	$0	$13,142	$475	$13,617	0	2	0
	Alternative 2: Las Animas South	122	0	36	105	141	$0	$14,249	$734	$14,983	0	2	0
Section 13: Las Animas to Lamar[a]	—	690	0	488	245	733	$0	$195,118	$1,717	$196,835	2	7	0
Section 14: Lamar to Granada[a]	—	280	6	279	138	423	$25,494	$111,705	$963	$138,161	0	2	0

Section	Build Alternatives (if more than one)	Acres					Productive Value				Feedlots[f]	Irrigation Canals and Ditches	Permanent Roadside Produce Markets[g]
		Prime and Unique Farmland[e]	Vegetable (farmland)	Alfalfa/Corn (farmland)	Ranch Lands	Total	Vegetable ($4,500[g])	Alfalfa/ Corn ($400[g])	Ranching/ Grazing ($7)	Estimated Value of Farmland and Ranch Land Production (2007 dollars)			
Section 15: Granada	Alternative 1: Granada North	63	3	45	0	48	$14,999	$18,144	$1	$33,145	0	2	0
	Alternative 2: Granada South	18	15	0	47	62	$66,993	$192	$327	$67,513	0	1	0
Section 16: Granada to Holly	—	208	0	148	100	248	$0	$59,337	$701	$60,037	0	2	0
Section 17: Holly	Alternative 1: Holly North	50	0	31	20	51	$0	$12,357	$139	$12,496	0	0	0
	Alternative 2: Holly South	58	0	20	43	63	$0	$7,953	$302	$8,256	0	0	0
Section 18: Holly Transition	—	71	0	44	66	110	$0	$17,392	$465	$17,857	0	2	0
Total[b]		**2,866 to 3,047**	**279 to 403**	**1,531 to 1,805**	**1,790 to 2,380**	**3,600 to 4,588**				**$1.9 million to $2.6 million**	**5**	**49[c]**	**6**

[a] *The Build Alternatives do not include alternatives in Lamar, as discussed in Chapter 3, Alternatives Considered.*
[b] *The total range does not necessarily summarize the same alternatives, but is simply the least and greatest impact by farmland type.*
[c] *The same 24 irrigation canals and ditches would be affected by the Build Alternatives no matter which alternatives are selected as the Preferred Alternative.*
[d] *There is one market located within the Swink north alternative and a different market located within the Swink south alternative; therefore, both of these markets have been included in this total (because it is not known which one may be affected during Tier 2 studies).*
[e] *Source: NRCS 2005*
[f] *Source: EPA ECHO 2013*
[g] *Source: Tranel 2008*

6.2.1. Build Alternatives Effects by Location

The following section describes the agricultural resources by section (i.e., location) and Build Alternative. Table 6-1 summarizes these effects.

Section 1: Pueblo

Alternative 1: Pueblo Airport North. This alignment replaces the existing route south of the airport with a route to the north of airport property and includes a connection to SH 47 at the western end of the alignment. Approximately 41 acres of land identified as prime farmland could be impacted by this alternative. This impact to prime farmland is the greatest effect of the alternative considered at the Pueblo location. No land at this location is classified as having statewide importance by the NRCS (2005). Alternative 1 would affect 352 acres of farmland and ranch lands, which are composed of two acres of alfalfa/corn and 350 acres of ranch lands. Loss of these farmlands and ranch lands would result in an estimated loss of $3,000 in annual productive value. This productive loss is the highest for Section 1, as it primarily involves construction of a new roadway through undeveloped land.

Alternative 2: Pueblo Existing Alignment. Approximately 12 acres of land identified as prime farmland could be impacted by Alternative 2: Pueblo Existing Alignment. No land at this location is classified as having statewide importance by the NRCS (2005). Alternative 2 would affect 131 acres of farmland and ranch lands, which are composed of one percent alfalfa/corn production (one acre) and 99 percent ranch lands (130 acres). Loss of this area for agricultural use would result in an estimated $1,000 loss in annual productive value to the agricultural economy of the Lower Arkansas Valley. This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. This loss in productive value is low relative to most other portions of the Build Alternative because most of the affected areas are ranch lands, which have relatively low productive value.

Alternative 3: Pueblo SH 47 Connection. Alternative 3 at Pueblo includes the existing alignment to the south of the airport, with the addition of a connection to SH 47. The impacts to farmland are similar to Alternative 2: Pueblo Existing Alignment and less than Alternative 1: Pueblo Airport North. Alternative 3 would affect slightly less than103 acres of farmland and ranch lands, which are composed of less than one percent alfalfa/corn land (less than one acre) and 99 percent ranch lands (102 acres). Loss of this area would result in an estimated $1,000 loss in annual productive value. As with Alternative 2, 12 acres of prime farmland could be impacted by the alternative. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005).

Section 2: Pueblo to Fowler

Alternative 1: Fort Reynolds Existing Alignment. Approximately 361 acres of prime farmland could be impacted by Alternative 1. No land at this location is classified as having statewide importance by the NRCS (2005). This alternative would affect 619 acres of farmland and ranch lands, with an estimated $34,000 loss of annual productive value. Alfalfa/corn crops make up 90 percent of the loss in productive value (86 acres); the remaining 10 percent loss in annual productive value consists of impacts to ranch lands (533 acres). It is likely the alternative would bridge the canals and have minimal impact.

Alternative 2: Fort Reynolds Realignment. The alignment of Alternative 2 is similar to the existing alignment with the exception of approximately three miles around Fort Reynolds. Approximately 377 acres of land identified as prime farmland would be affected by Alternative 2. The impact to prime farmland is similar to the impact estimated for Alternative 1. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). Alternative 2: Fort Reynolds Realignment would affect 616 acres of farmland and ranch lands and incur an estimated loss of $50,000 of annual productive value. Alfalfa/corn crops make up 93 percent of the loss in productive value (117 acres); the remaining 7-percent loss in annual productive value is due to impacts to ranch lands (499 acres). This alternative also would potentially affect the Excelsior and Oxford Farmers ditches and the Rocky Ford Highline Canal. It is likely that Alternative 2 would have a minimal impact on these irrigation resources, but further effects would be analyzed during Tier 2 studies.

Section 3: Fowler

Alternative 1: Fowler North. Approximately 76 acres of prime farmland would be affected by Alternative 1. This is almost half the amount of acres of prime farmland impacted by Alternative 2: Fowler South. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). This alternative would affect 89 acres of farmland and ranch lands and incur an estimated loss of $21,000 of annual productive value. Alfalfa/corn crops account for 98 percent of the loss in productive value (51 acres); the remaining 2-percent loss in annual productive value is due to impacts to ranch lands (38 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. This alternative also would affect the Otero Canal.

Alternative 2: Fowler South. Approximately 146 acres of prime farmland would be affected by Alternative 2. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). The south alternative would affect 146 acres of farmland and ranch lands and experience an estimated loss of $58,000 of annual productive value. Alfalfa/corn crops constitute more than 99 percent of the loss in productive value (144 acres). Impacted ranch lands (two acres) would result in less than one percent of the loss of annual productive value. This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. This alternative also would affect the Rocky Ford Highline Canal and Oxford Farmers Ditch.

Section 4: Fowler to Manzanola

The Build Alternative from Fowler to Manzanola would impact approximately 170 acres of prime farmland. It would affect 184 acres of farmland and ranch lands, at an estimated loss of $82,000 of annual productive value. Losses in productive value are made up of 17 percent from impacts to vegetable farmland (three acres), 83 percent from impacts to alfalfa/corn farmland (171 acres), and a small portion from impacts to ranch lands (10 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. It also would affect the Otero and Catlin canals.

Section 5: Manzanola

Alternative 1: Manzanola North. Approximately 78 acres of prime farmland would be impacted by Alternative 1. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). The Manzanola North Alternative would affect 78 acres of farmland and ranch lands and sustain an estimated loss of $22,000 of annual productive value. Losses in productive value are made up of more than 99 percent of impacts to alfalfa/corn farmland (56 acres) and less than 1 percent of impacts to ranch lands (22 acres). Under the Manzanola North Alternative, efforts would be made to avoid fragmentation of farmland and uneconomical remainders of farm fields. This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. Impacts to farmland also would have minor impacts to local irrigation demand on the Otero and Catlin canals.

Alternative 2: Manzanola South. Approximately 79 acres of prime farmland would be impacted by Alternative 2. This impact to prime farmland is very similar to the estimated impact for Alternative 1. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). Alternative 2 would affect 77 acres of farmland and ranch lands, with an estimated $86,000 loss in annual productive value. Lost productive value is made up of 73 percent vegetable production (14 acres), 27 percent alfalfa/corn production (58 acres), and less than 1 percent ranch lands (five acres). Although this is a minor impact relative to the entire corridor, the effect of Alternative 2 on productive value is significant for this location compared to Alternative 1: Manzanola North. This is primarily because 73 percent of the land impacted is used for vegetable production, the most valuable of the agricultural land uses in the Lower Arkansas Valley. There also would be minor impacts to local irrigation demand on the Otero and Catlin canals.

Section 6: Manzanola to Rocky Ford

Between Manzanola and Rocky Ford, the Build Alternative would impact approximately 163 acres of prime farmland. No land impacted by this alternative is classified as having statewide importance by the NRCS

(2005). The Build Alternative would affect 164 acres of farmland and ranch lands and incur an estimated $262,000 loss in annual productive value. Lost productive value is made up of 84 percent vegetable production (49 acres), 16 percent alfalfa/corn production (105 acres), and less than 1 percent ranch lands (10 acres). This would be considered a minor impact as far as acreage goes, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A, but note that the effect on productive value is significant, given that 84 percent of the loss is vegetable production. It also has the potential to affect Mills Brothers Farm Market and O'Neal Produce (Arkansas Valley Produce). Efforts will be made to avoid direct effects to these permanent roadside produce markets during Tier 2 studies. Impacted businesses would be relocated following provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended. Indirect effects related to vehicle access from U.S. 50 also will be reviewed in more detail during Tier 2 studies when a final alignment for U.S. 50 in this area has been identified. The Build Alternative in this area also would affect the Main Leach Canal.

Section 7: Rocky Ford

Alternative 1: Rocky Ford North. Approximately 223 acres of prime farmland would be impacted by Alternative 1. No land impacted by this alternative is classified as having statewide importance by the NRCS. The Rocky Ford North Alternative would affect 236 acres of farmland and ranch lands, incurring an estimated $765,000 loss in annual productive value. Lost productive value is made up of 72 percent vegetable production (170 acres) and less than 1 percent ranch lands (66 acres). This is the highest loss in productive value of all the sections by a substantial margin. In fact, it is $432,000 higher than the next largest loss, which is $333,000 resulting from the Swink South Alternative. The loss is expected to be high because of the large number of highly productive vegetable acres that would be affected. It also could affect Sackett Farm Market and the parking lot of Knapp's Farm Market (both are permanent roadside produce markets). Impacted commercial areas to be acquired would be identified during the final decision and would be relocated according to the Uniform Act. Efforts will be made to avoid direct effects to these facilities during Tier 2 studies. Indirect affects related to vehicle access from U.S. 50 also will be reviewed in more detail during Tier 2 studies after a final alignment for U.S. 50 in this area has been identified. The Rocky Ford North Alternative in this area also would affect the Main Leach and Rocky Ford canals.

Alternative 2: Rocky Ford South. Approximately 219 acres of prime farmland would be impacted by Alternative 2. This is similar to the impact on prime farmland estimated for Alternative 1. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). This alternative would affect 248 acres of farmland and ranch lands and sustain an estimated $762,000 loss in annual productive value. Lost productive value is made up of 66 percent vegetable production (164 acres), 24 percent alfalfa/corn production (59 acres), and 10 percent ranch lands (25 acres). This is less than the effect to productive value estimated for Alternative 1: Rocky Ford North, but a relatively high loss compared with other sections along the corridor. The Rocky Ford South Alternative also has the potential to affect two feedlots, United Feeders and Rocky Ford Feedyard. The Rocky Ford South Alternative also would affect the Catlin, Otero, Rocky Ford Highline, and Rocky Ford canals.

Section 8: Rocky Ford to Swink

Approximately 24 acres of prime farmland would be impacted by the Rocky Ford to Swink Build Alternative through this section. No land impacted by the Build Alternative is classified as having statewide importance by the NRCS (2005). The Build Alternative would affect 31 acres of farmland and ranch lands and experience an estimated $112,000 loss in annual productive value. Lost productive value is made up of close to 99 percent vegetable production (25 acres), 1 percent alfalfa/corn production (3 acres), and less than 1 percent ranch lands (3 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. The Build Alternative in this area also has the potential to affect a feedlot, which is located west of Swink on the north side of U.S. 50. Efforts will be made to avoid direct effects to this feedlot during Tier 2 studies.

Section 9: Swink

Alternative 1: Swink North. Approximately 39 acres of prime farmland would be impacted by Alternative 1: Swink North. No land impacted by this alternative is classified as having statewide importance by the NRCS. This alternative would affect 61 acres of farmland and ranch lands, with an estimated $107,000 loss in annual productive value. Lost productive value is made up of 95 percent vegetable production (23 acres), 5

percent alfalfa/corn production (12 acres), and less than 1 percent ranch lands (26 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. This alternative also would affect (directly or indirectly) a permanent roadside produce market—Mary's Farm Market (Hanagan Farms). Efforts will be made to avoid direct effects to this market during Tier 2 studies. Impacted businesses would be relocated following provisions of the Uniform Act. In addition, vehicle access to the market from U.S. 50 was considered an indirect effect and also will be reviewed in more detail during Tier 2 studies after a final alignment for U.S. 50 has been identified.

Alternative 2: Swink South. Approximately 71 acres of prime farmland would be impacted by Alternative 2 in Swink. This is almost twice the area of prime farmland estimated to be impacted by Alternative 1. No land impacted by this alternative is classified as having statewide importance by the NRCS. The Swink South Alternative would affect 76 acres of farmland and ranch lands and incur an estimated $333,000 loss in annual productive value. Lost productive value is made up of more than 99 percent vegetable production (74 acres) and less than 1 percent ranch lands (two acres). The agricultural land south of Swink has been identified as some of the highest quality farmland in the state of Colorado and is rivaled in quality by only a few small pockets of land in the Midwestern United States (Tranel 2008a). While it is difficult to put a numerical value on this characteristic, this unique quality suggests that these resources be given a higher level of protection than other farmland or ranch lands. Alternative 2 also would affect (directly or indirectly) a permanent roadside produce market—Lusk Farms (Grasmick's Produce). Efforts will be made to avoid direct effects to this market during Tier 2 studies. Vehicle access to it from U.S. 50 was considered an indirect effect, so this also will be reviewed in more detail during Tier 2 studies after a final alignment for U.S. 50 has been identified.

Section 10: La Junta

Alternative 1: La Junta North. Approximately 61 acres of prime farmland would be impacted by Alternative 1, which is the smallest impact to prime farmland of all three alternatives in this section. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). La Junta North would affect 262 acres of farmland and ranch lands and incur an estimated $38,000 loss in annual productive value. Lost productive value is made up of 78 percent vegetable production (7 acres), 17 percent alfalfa/corn production (16 acres), and 5 percent ranch lands (239 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. This alternative would affect the Fort Lyon Canal, which is not currently impacted by the existing highway alignment.

Alternative 2: La Junta South . Approximately 91 acres of prime farmland would be impacted by Alternative 2. No land impacted by this alternative is classified as having statewide importance by the NRCS. Alternative 2 would affect 253 acres of farmland and ranch lands, sustaining an estimated $178,000 loss in annual productive value. Lost productive value is made up of 99 percent vegetable production (39 acres) and less than 1 percent of both alfalfa/corn production (3 acres) and ranch lands (211 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. This alternative also would affect the Otero Canal, which is not currently impacted by the existing highway alignment.

Alternative 3: La Junta South . Approximately 89 acres of prime farmland would be impacted by Alternative 3. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). Alternative 3 would affect 295 acres of farmland and ranch lands and experience an estimated $216,000 loss in annual productive value. Lost productive value is made up of 99 percent vegetable production (48 acres) and less than 1 percent of both alfalfa/corn production (one acre) and ranch lands (246 acres). This alternative also would affect the Otero Canal, which is not currently impacted by the existing highway alignment.

Alternative 4: La Junta South . Approximately 79 acres of prime farmland would be impacted by Alternative 4. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). Alternative 4 would affect 359 acres of farmland and ranch lands and incur an estimated $223,000 loss in annual productive value. Lost productive value is made up of 96 percent vegetable production (48 acres),

three percent of alfalfa/corn production (17 acres), and 1 percent ranch lands (294 acres). This alternative also would affect the Otero Canal, which is not currently impacted by the existing highway alignment.

Section 11: La Junta to Las Animas

La Junta to Las Animas Build Alternative would impact 230 acres of prime farmland between La Junta and Las Animas. The Build Alternative would affect 327acres of farmland and ranch lands and incur an estimated $20,000 loss in annual productive value. Lost productive value is made up of 90 percent alfalfa/corn production (46 acres) and 10 percent ranch land production (281 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. It also would affect the Consolidated and Jones ditches.

Section 12: Las Animas

Alternative 1: Las Animas North. Approximately 70 acres of prime farmland would be impacted by Alternative 1. This is slightly more than half of the area of prime farmland estimated to be impacted by Alternative 2: Las Animas South. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). Alternative 1: Las Animas North would affect 101 acres of farmland and ranch lands, incurring an estimated $14,000 loss in annual productive value. Lost productive value is made up of 97 percent alfalfa/corn production (33 acres), and 3 percent ranch lands (68 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. It also would affect the Consolidated and Las Animas Town ditches. Under Alternative 1, efforts would be made to avoid fragmentation of farmland and uneconomical remainders of farm fields.

Alternative 2: Las Animas South. Approximately 122 acres of prime farmland would be impacted by Alternative 2. No land impacted by this alternative is classified as having statewide importance by the NRCS (2005). This alternative would affect 141 acres of farmland and ranch lands, sustaining an estimated $15,000 loss in annual productive value. Lost productive value is made up of 95 percent alfalfa/corn production (36 acres) and 5 percent ranch land production (105 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. Alternative 2: Las Animas South also would affect the Consolidated and Las Animas Town ditches.

Section 13: Las Animas to Lamar

Approximately 690 acres of prime farmland would be impacted by the Build Alternative from Las Animas to Lamar. This is slightly more that 0.16 percent of the total prime farmland within Bent County. No land impacted by the alternative at this location is classified as having statewide importance by the NRCS (2005). The Build Alternative would affect 733 acres of farmland and ranch lands and incur an estimated $196,000 loss in annual productive value. Lost productive value is made up of 99 percent alfalfa/corn production (488 acres) and 1 percent ranch land production (245 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. This section affects more acres of farmland and ranch lands and the most acres of alfalfa/corn production. This is because it is one of the longest sections, and, therefore, largest in total area. The Build Alternative in this area also has the potential to affect two feedlots. These facilities are located east of Las Animas on the north side of U.S. 50 near CR 14.5 and CR JJ.5 and west of Lamar on the south side of U.S. 50 near the junction of U.S. 50 and U.S. 287. Efforts will be made to avoid direct effects to these facilities during Tier 2 studies. The Build Alternative in this area also would affect seven irrigation canals and ditches, including Amity Canal, Millers Ditch, Lubers Drainage Ditch, McClave Drainage Ditch, Sunflower Ditch, Riverview Ditch, and the Vista Del Rio Ditch.

Section 14: Lamar to Granada

Approximately 280 acres of prime and unique farmland are impacted in this section, of which 112 acres is classified as having statewide importance (NRCS 2005). The Build Alternative between Lamar and Granada would affect 423 acres of farmland and ranch lands and sustain an estimated $138,000 loss in annual productive value. Lost productive value is made up of close to 19 percent vegetable production (6 acres), 81 percent alfalfa/corn production (279 acres), and less than 1 percent ranch lands (138 acres). This would be

considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. It also would affect the Manvel and Lamar Canals.

Section 15: Granada

Alternative 1: Granada North. Approximately 63 acres of prime farmland would be impacted by Alternative 1. Of this land, 43 acres are classified as having statewide importance (NRCS 2005). This is much greater impact to prime and unique farmland than the estimated impacts of Alternative 2: Granada South. Alternative 1 would affect 48 acres of farmland and ranch lands and incur an estimated $33,000 loss in annual productive value. Lost productive value is made up of 45 percent vegetable production (three acres) and 55 percent alfalfa/corn production (45 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. Alternative 1 also would affect the X-Y Canal and the Granada Ditch.

Alternative 2: Granada South. Approximately 18 acres of prime and unique farmland would be impacted by Alternative 2. Of this area, 13 acres are classified as having statewide importance (NRCS 2005). Alternative 2 would affect 63 acres of farmland and ranch lands and experience an estimated $67,000 loss in annual productive value. Lost productive value is made up of 99 percent vegetable production (15 acres) and less than 1 percent of both alfalfa/corn (one acre) and ranch land production (47 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. It also would affect the X-Y Canal.

Section 16: Granada to Holly

Approximately 208 acres of prime and unique farmland would be impacted by this section; 19 percent of this area is classified as having statewide importance (39 acres) (NRCS 2005). The Build Alternative would affect 248 acres of farmland and ranch lands, with an estimated loss of $60,000 of annual productive value. Losses in productive value are made up of 99 percent alfalfa/corn farmland production (148 acres) and 1 percent ranch lands production (100 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. It also would affect the X-Y Canal and Granada Ditch.

Section 17: Holly

Alternative 1: Holly North. Approximately 50 acres of prime and unique farmland would be impacted by Alternative 1. Of this acreage, 22 percent is classified as having statewide importance (11 acres) (NRCS 2005). Alternative 1 would affect 51 acres of farmland and ranch lands and incur an estimated loss of $12,000 of annual productive value. Losses in productive value are made up of 99 percent alfalfa/corn farmland production (31 acres) and 1 percent ranch lands production (20 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A.

Alternative 2: Holly South. Approximately 58 acres of prime and unique farmland would be impacted by Alternative 2. Of this area, 3 percent is classified as having statewide importance (two acres) (NRCS 2005). Compared to Alternative 1: Holly North, this is a similar impact to prime and unique farmland in general, but a lesser impact to farmland of statewide importance. The Holly South Alternative would affect 63 acres of farmland and ranch lands and sustain an estimated loss of $8,000 of annual productive value. Losses in productive value are made up of 96 percent alfalfa/corn farmland production (20 acres) and 4 percent ranch lands production (43 acres).

Section 18: Holly Transition

Approximately 71 acres of prime and unique farmland would be impacted by Section 18, of which three acres are classified as having statewide importance (NRCS 2005). The Holly Transition Build Alternative would affect 110 acres of farmland and ranch lands and experience an estimated loss of $18,000 of annual productive value. Losses in productive value are made up of 97 percent alfalfa/corn farmland production (44 acres) and three percent ranch lands production (66 acres). This would be considered a minor impact, as identified in the Economics Technical Memorandum included with the U.S. 50 East Corridor EIS in Appendix A. It also would affect the Buffalo Canal and Holly Ditch.

7. Mitigation Strategies

Since the ultimate roadway footprint would be identified during Tier 2 studies, this Tier 1 analysis cannot identify which specific agricultural resources would be affected by the Build Alternatives. However, the following mitigation strategies have been developed to ensure that negative effects to these resources are minimized during Tier 2 studies.

Effects to farmland and ranch lands should be minimized by routing Tier 2 highway alignments to follow section lines and existing roads where possible. Section lines and existing roads are important because they frequently serve as boundaries between areas of farmland and ranch lands. If farmland cannot be avoided, Tier 2 highway alignments should be routed to minimize the number of uneconomical remainders when possible. Uneconomical remainders are the portions of farmland rendered unusable (see Figure 7-1) for a number of reasons, including:

- Their small size
- The farmer's inability to get to them
- The farmer's inability to water them
- The farmer's inability to reasonably move equipment between them

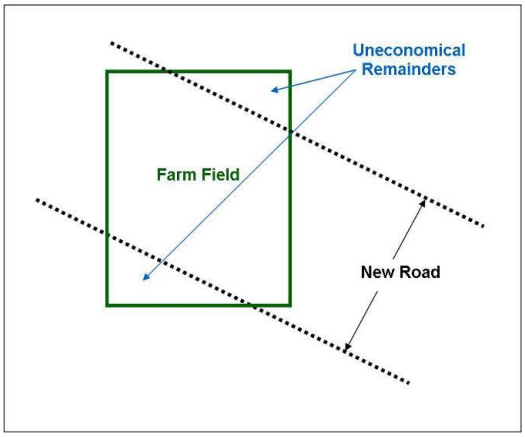

Figure 7-1. Example of Uneconomical Remainders

When the route of the highway alignment causes uneconomical remainders, CDOT will purchase that land.

To minimize effects to feedlots, Tier 2 highway alignments should be routed around the facilities when feasible. When this is not possible, all reasonable methods should be employed to route alignments in such a manner that a feedlot could continue operations.

During Tier 2 studies, water flows through the Lower Arkansas Valley's extensive system of irrigation canals and ditches will be identified and effects to them analyzed. Tier 2 highway projects should be constructed in a manner that maintains the water flows of these systems. This does not mean that highway alignments would not cross them. However, in these instances, CDOT should ensure that mitigation measures maintain the functionality of these systems, including associated maintenance roads.

To minimize effects to permanent roadside produce markets, Tier 2 highway alignments should be routed in a manner that avoids direct effects to them where possible. In the event a market cannot be avoided, reasonable methods will be employed to ensure that owners are compensated.

Agricultural activities require the ability to move goods to market. Since U.S. 50 is the primary east-west route through the Lower Arkansas Valley, the highway is frequently used for this purpose. Construction activities should, when possible, be scheduled to minimize disruptions (including closures) to key portions of U.S. 50 that are heavily used for farm-to-market travel activities, especially during harvest times. These key portions include areas where co-ops and feedlots are located.

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Appendices

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Appendix A. Resource Methodology Overview for Agricultural Resources

This resource methodology overview is attached to this technical memorandum for reference only. The lead agencies for the U.S. 50 Tier 1 EIS (CDOT and FHWA) drafted resource methodology overviews to identify and document which resource evaluation activities would be completed during the Tier 1 EIS, and which would be completed during Tier 2 studies. These overviews were intended to be guidelines to ensure that the Tier 1 EIS remained a broad-based analysis, while clarifying (to the public and resource agencies) when particular data and decisions would be addressed in the tiered process. These overviews were approved by the lead agencies, and they were agreed upon by the resource agencies during the project's scoping process. They were used subsequently by the project's resource specialists as guidelines to ensure that their activities were relevant to the Tier 1 (corridor location) decision.

Table A-1. Resource Methodology Overview for Agricultural Resources

Methodology Overview	Agricultural Resources	
	Tier 1	**Tier 2**
Relevant Data/ Information Sources	• NRCS soil surveys for counties in study area and other appropriate data sources • Input from community leaders	Review and update Tier 1 data search and collect additional data required to complete the appropriate Tier 2 analysis
Collection and/or Analysis Methodology	• Map prime and unique farmland soils • Consult with local farmers, NRCS, and the Colorado Department of Agriculture to identify farming practices in the project area • Identify unique crops grown in the study area	Sufficient for standard NEPA documentation
Project area	One to four miles wide surrounding the existing U.S. 50 facility beginning at I-25 in Pueblo to the vicinity of the Colorado-Kansas state line	Tier 2 specific SIUs corridor boundaries
Impacts	Prime and unique farmland soils occurring in the study area will be mapped through a GIS overlay process. Tier 1 impacts will be estimated by taking the full Tier 1 corridor alternative width at that specific location, multiplying the potentially impacted acreage of the recommended ultimate typical section footprint divided by the Tier 1 corridor width at that location. [For example, if a 1,000-foot-wide Tier 1 corridor impacts 5 acres and the recommended ultimate typical section is 300 feet, the Tier 1 impact at this site would be calculated as: 5 acres x (300 feet / 1,000 feet) = 1.5 acres]	Impacts on farmland will be determined through a GIS overlay process that will identify direct as well as indirect impacts, with an emphasis on the conversion of prime and unique farmland soils in the study area
Mitigation Options	Avoidance and/or minimization will be the primary mitigation options	Same as Tier 1
Deliverables	Farmland Technical Memorandum will include boundaries of prime, unique, and irrigated farmland	• NRCS-CPA Form No. 106 (Farmland Conversion Form) as needed • Prime and Unique Farmland Technical Report of findings and documentation of avoidance and minimization efforts if needed
Regulatory Guidance/ Requirements	• FHWA Technical Advisory T6640.8A • Farmland Protection Policy Act of 1981 (7 USC 658) • 7 CFR 658, as amended at 59 *Federal Register* 31117, June 17, 1994	

Appendix B. Abbreviations and Acronyms

CDOT	Colorado Department of Transportation
CEDIS	Colorado Economic and Demographic Information System
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CR	County Road
EA	Environmental Assessment
ECHO	Enforcement and Compliance History Online
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act of 1981
GIS	Geographic information system
I-25	Interstate 25
MAP-21	Moving Ahead for Progress in the 21st Century Act
NAICS	North American Industry Classification System
NEPA	National Environmental Policy Act of 1969
NRCS	Natural Resources Conservation Service
SH	State Highway
SIU	Section of independent utility
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
U.S. 287	U.S. Highway 287
U.S. 50	U.S. Highway 50
U.S. 50 Tier 1 EIS	U.S. Highway 50 Tier 1 Environmental Impact Statement
USC	United States Code

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Appendix C. Figures (C-1 through C-21)

This appendix contains the following figures (in the order listed):

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Figure C-1. Prime and Unique Farmland—Pueblo County

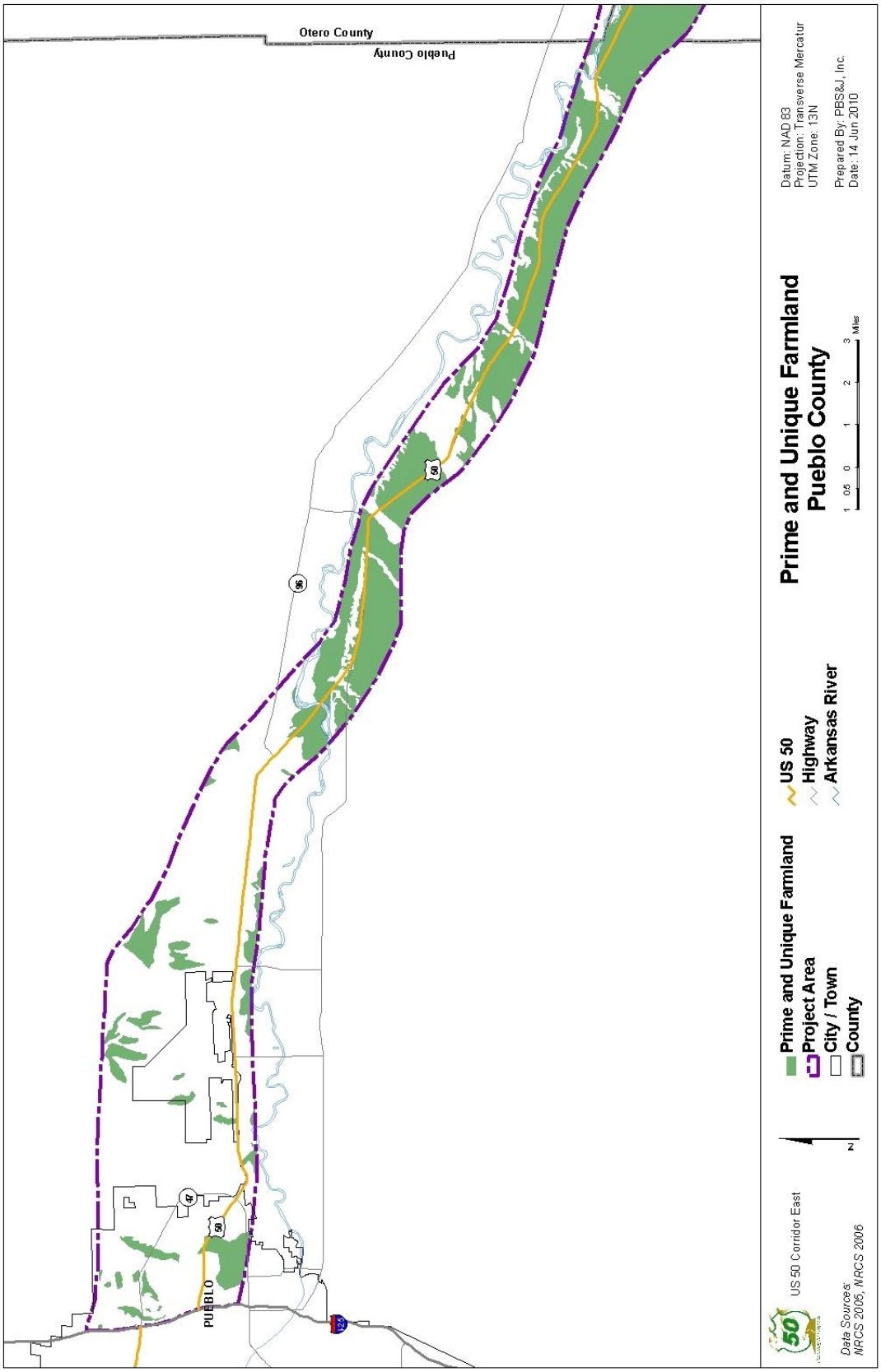


Figure C-2. Prime and Unique Farmland—Otero County

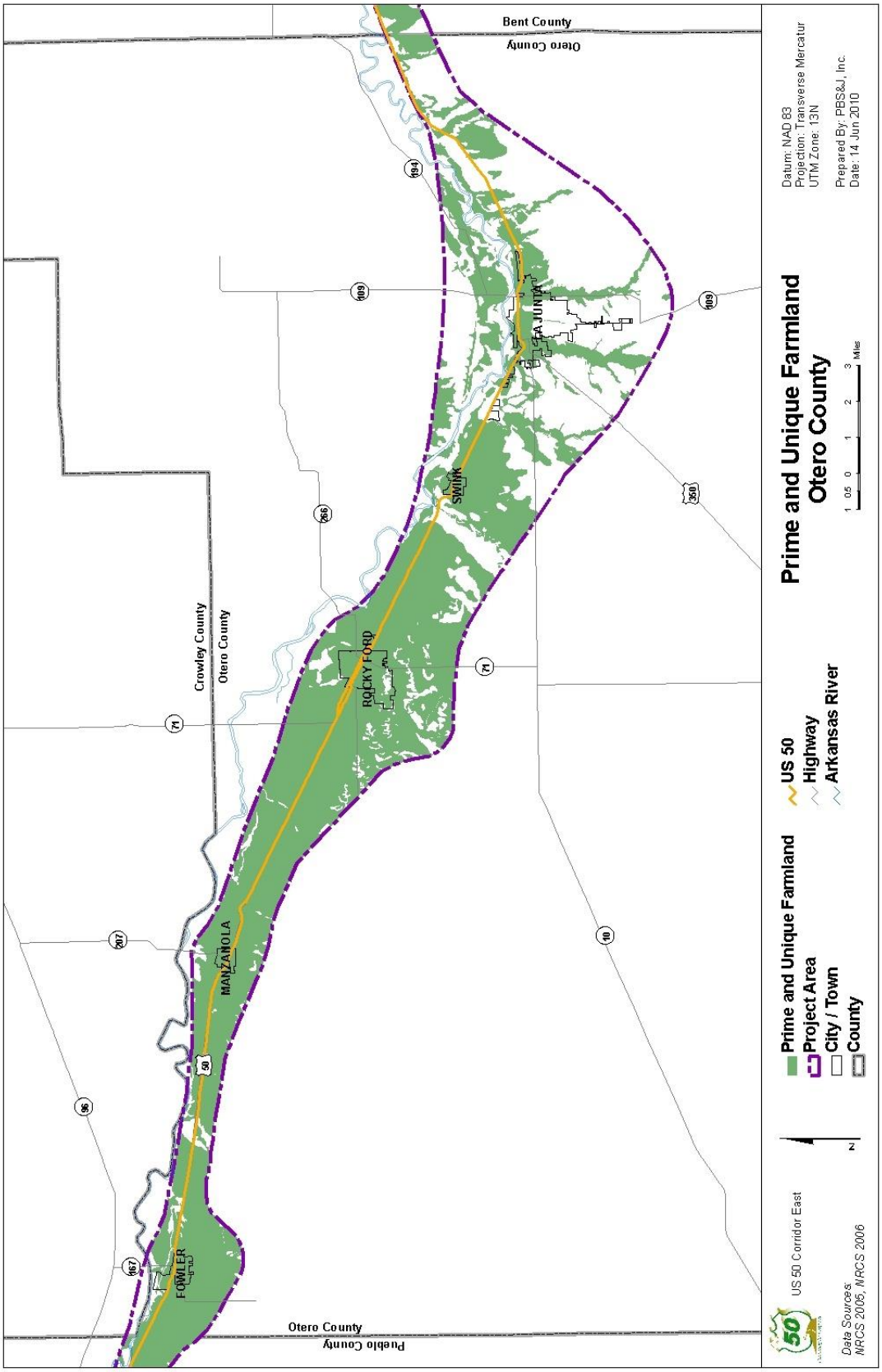


Figure C-3. Prime and Unique Farmland—Bent County

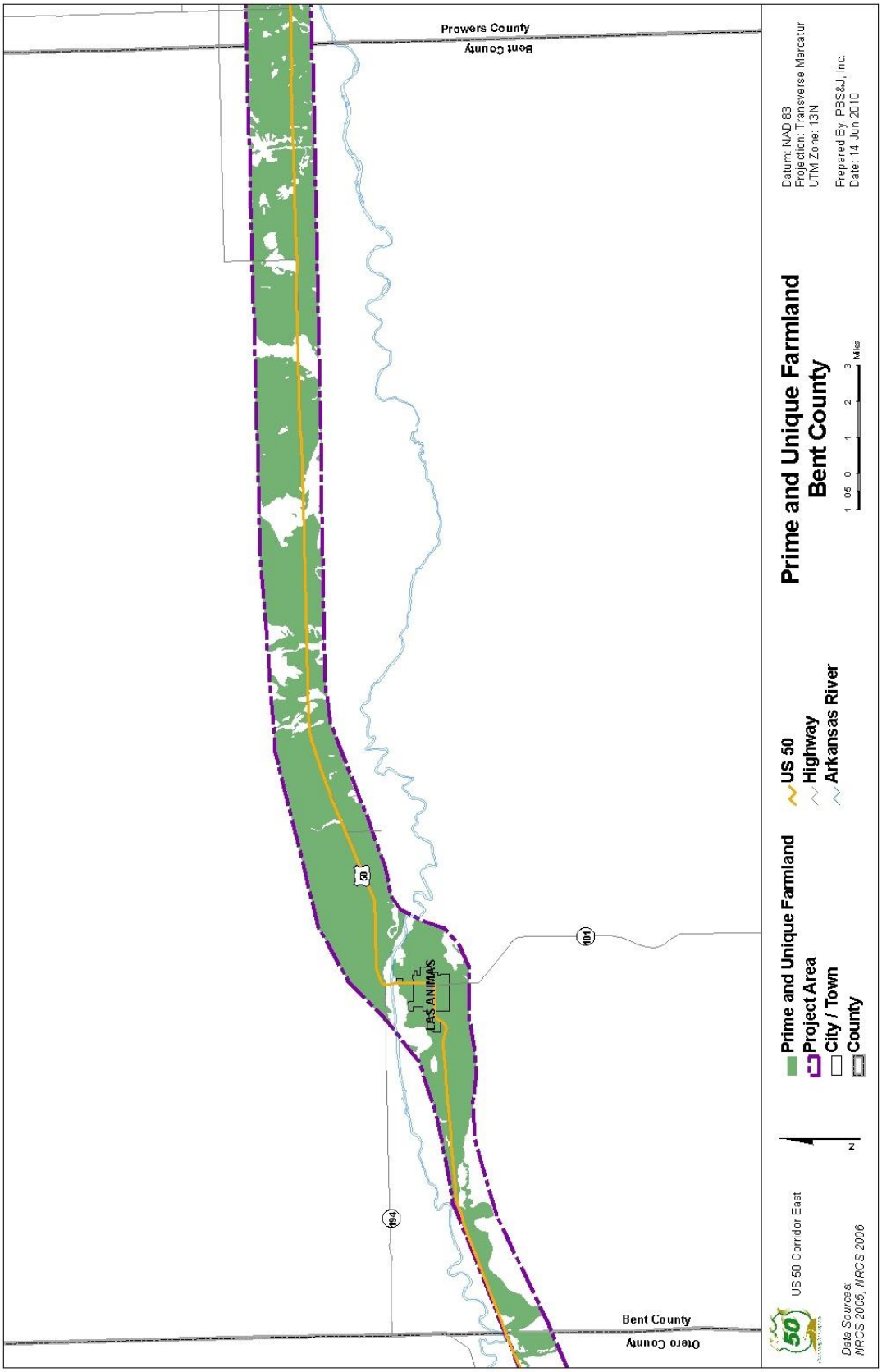


Figure C-4. Prime and Unique Farmland—Prowers County

Figure C-5. Historic Agricultural Use—Pueblo County

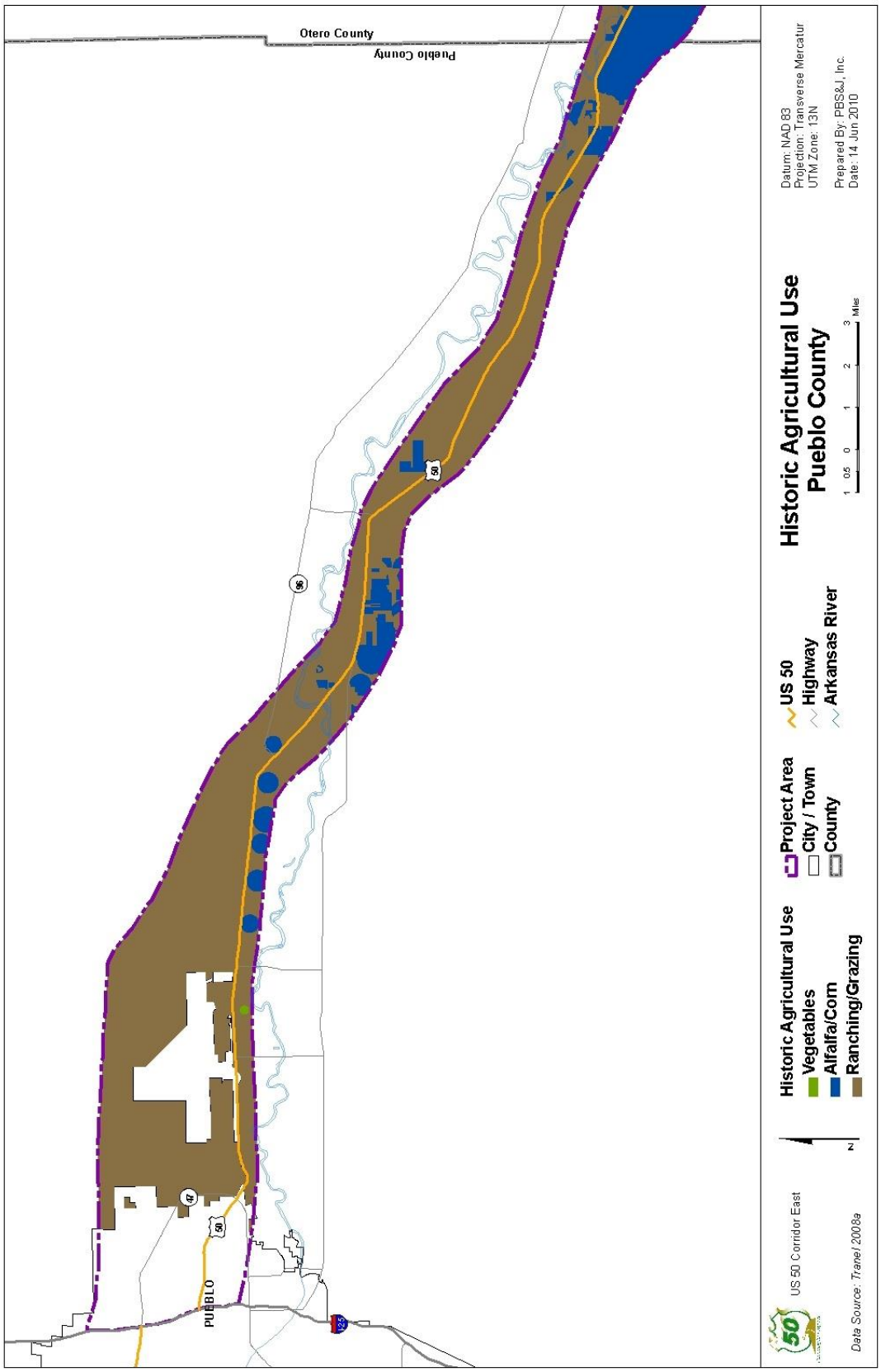


Figure C-6. Historic Agricultural Use—Otero County

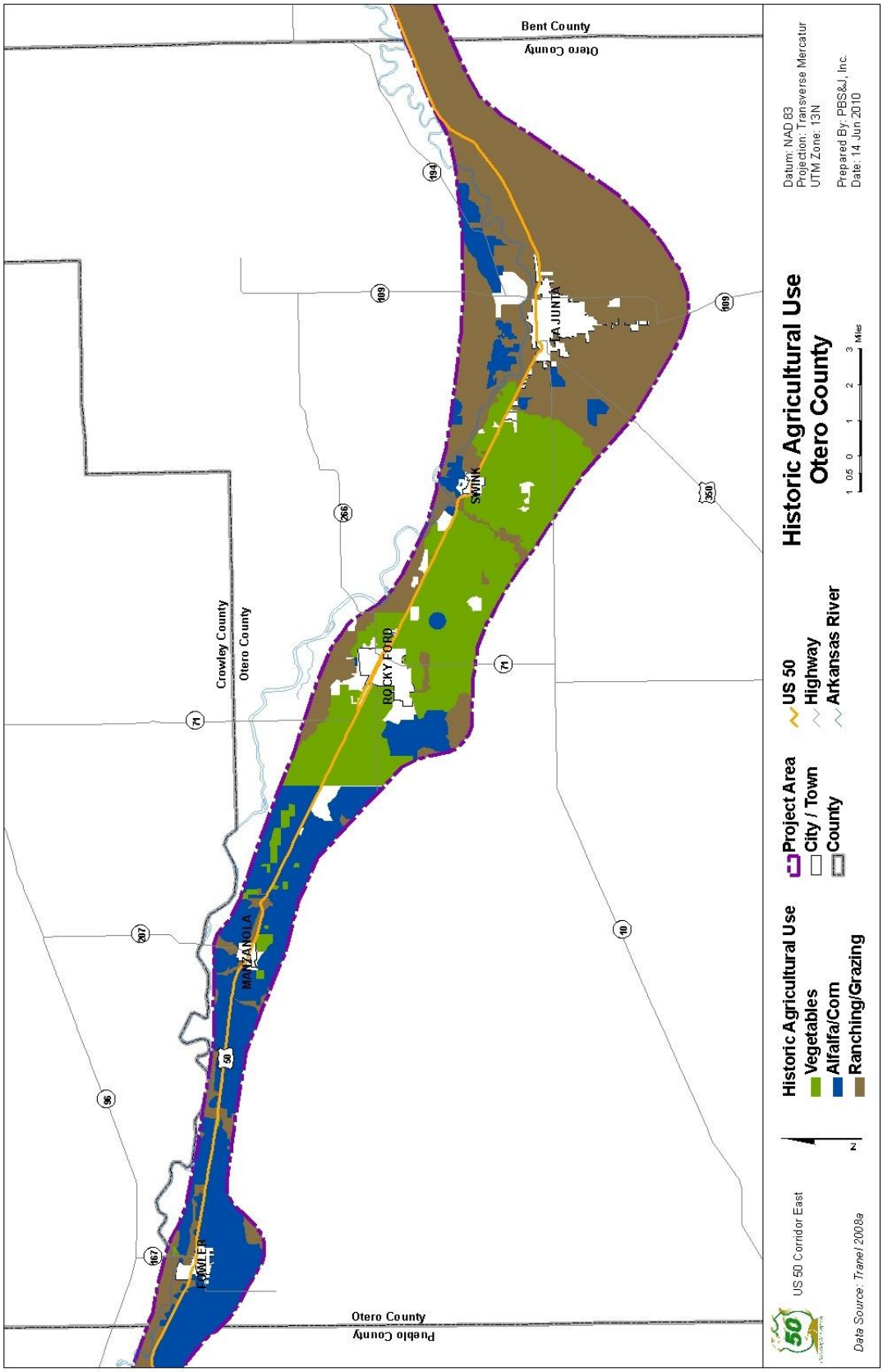


Figure C-7. Historic Agricultural Use—Bent County

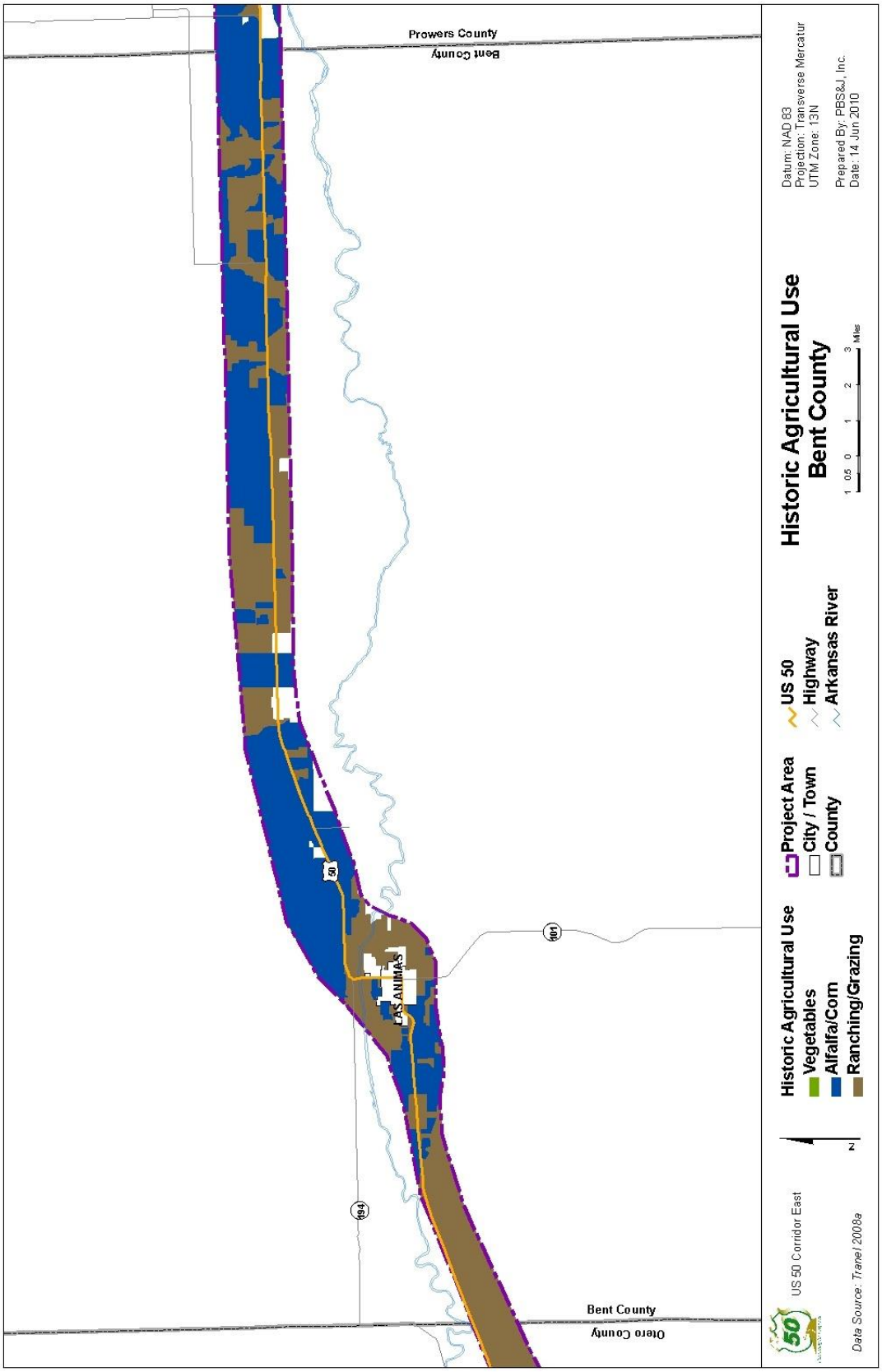


Figure C-8. Historic Agricultural Use—Prowers County

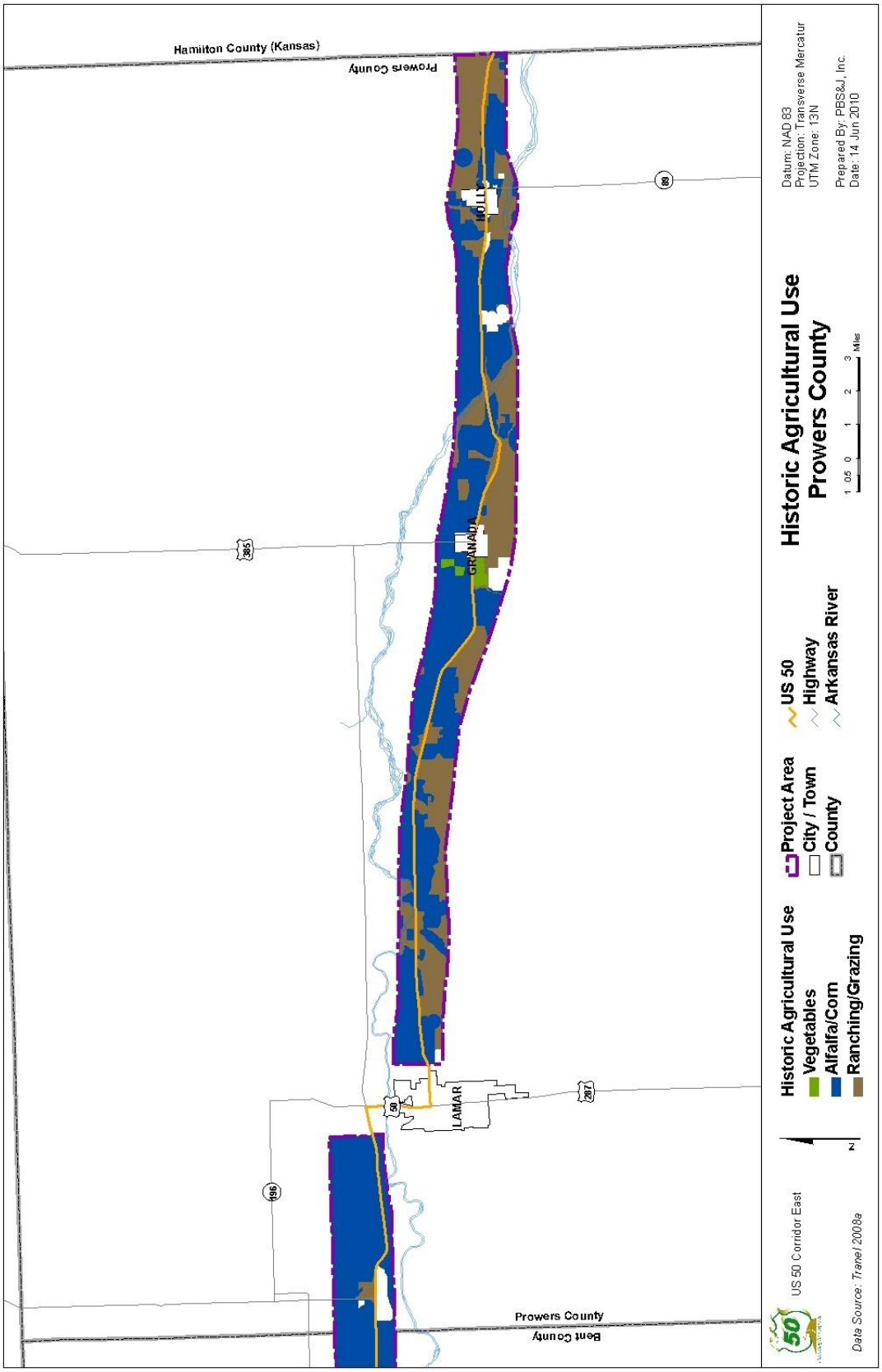


Figure C-9. Other Agricultural Resources—Pueblo County

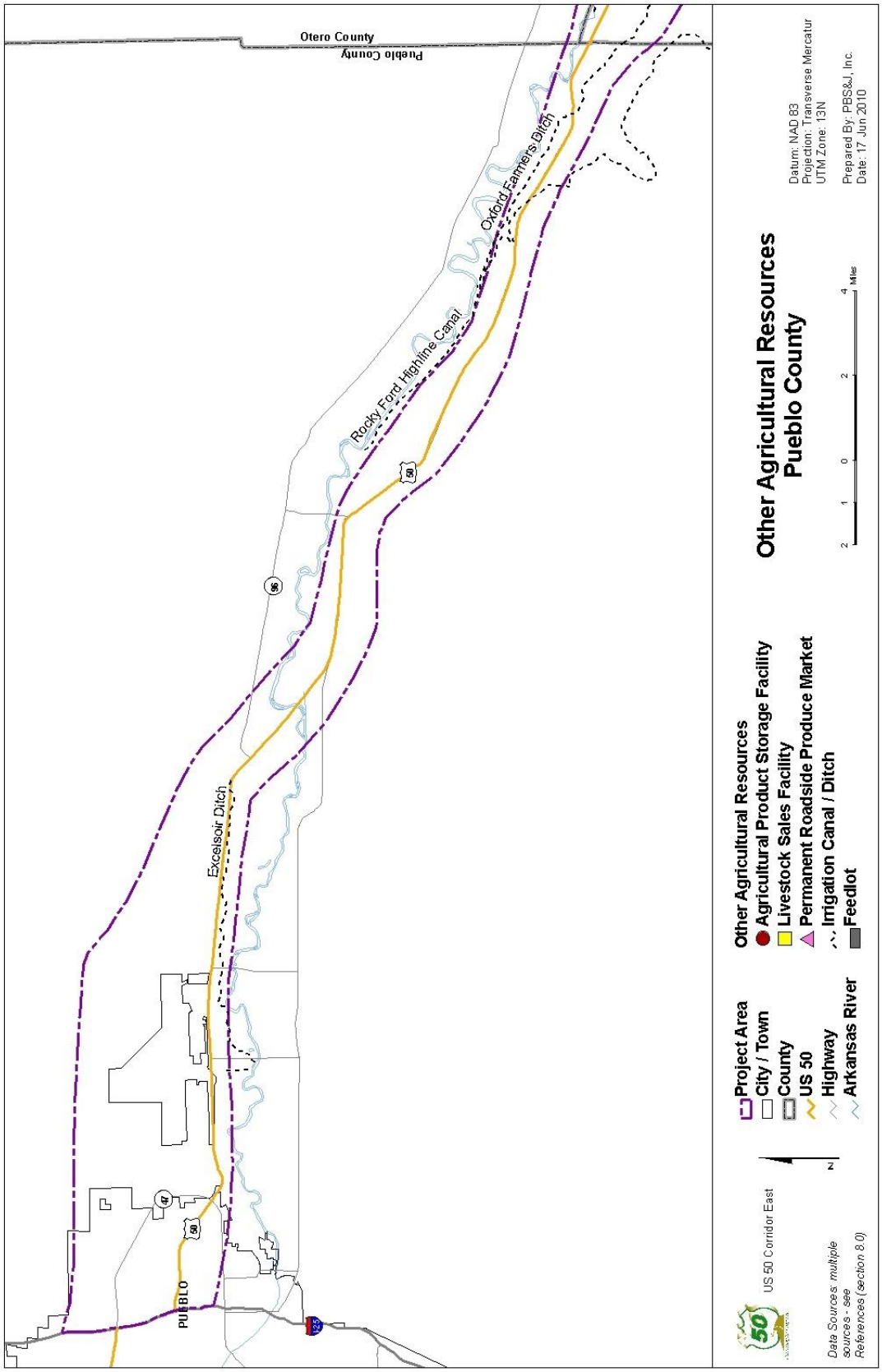


Figure C-10. Other Agricultural Resources—Otero County

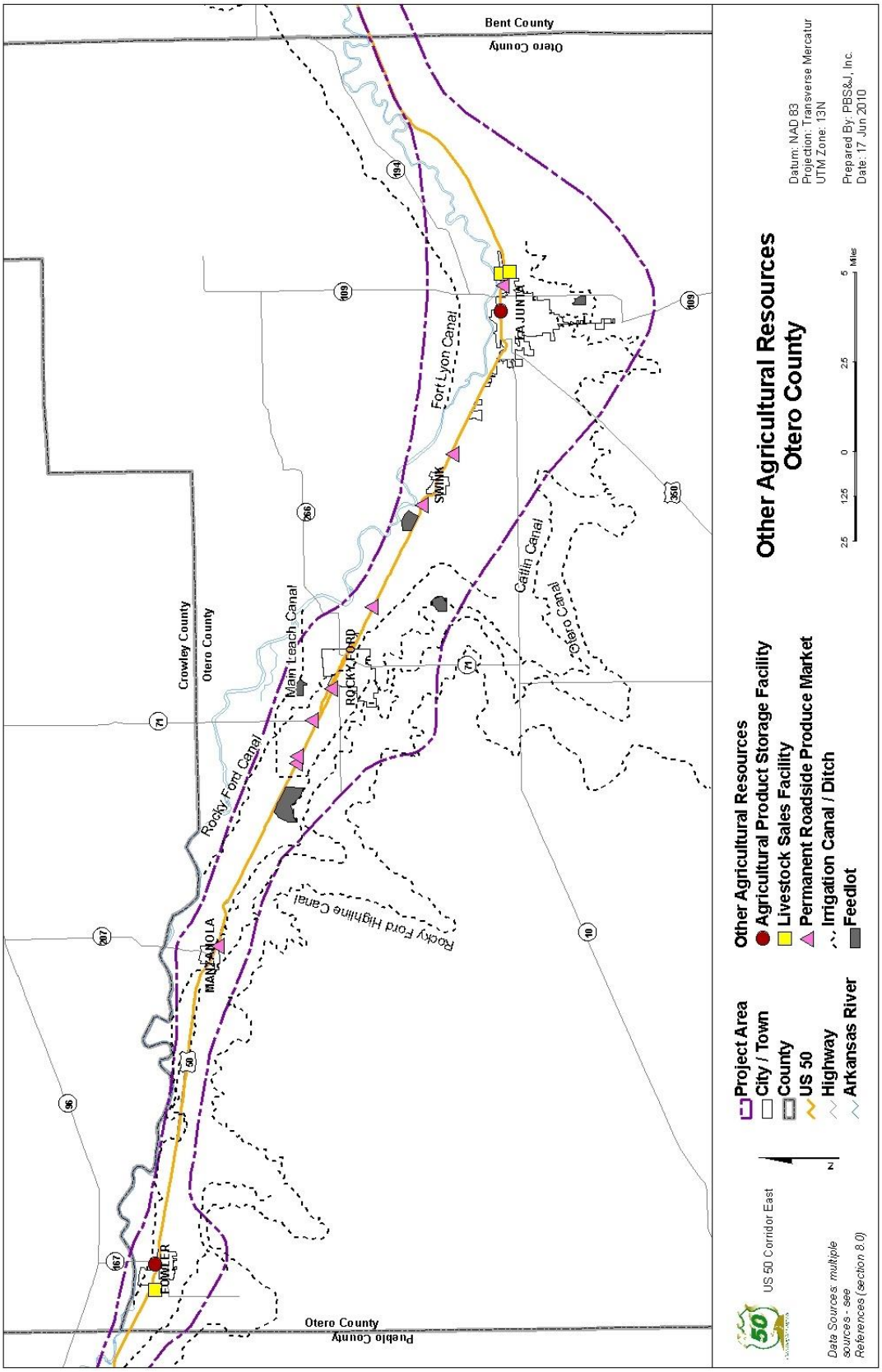


Figure C-11. Other Agricultural Resources—Bent County

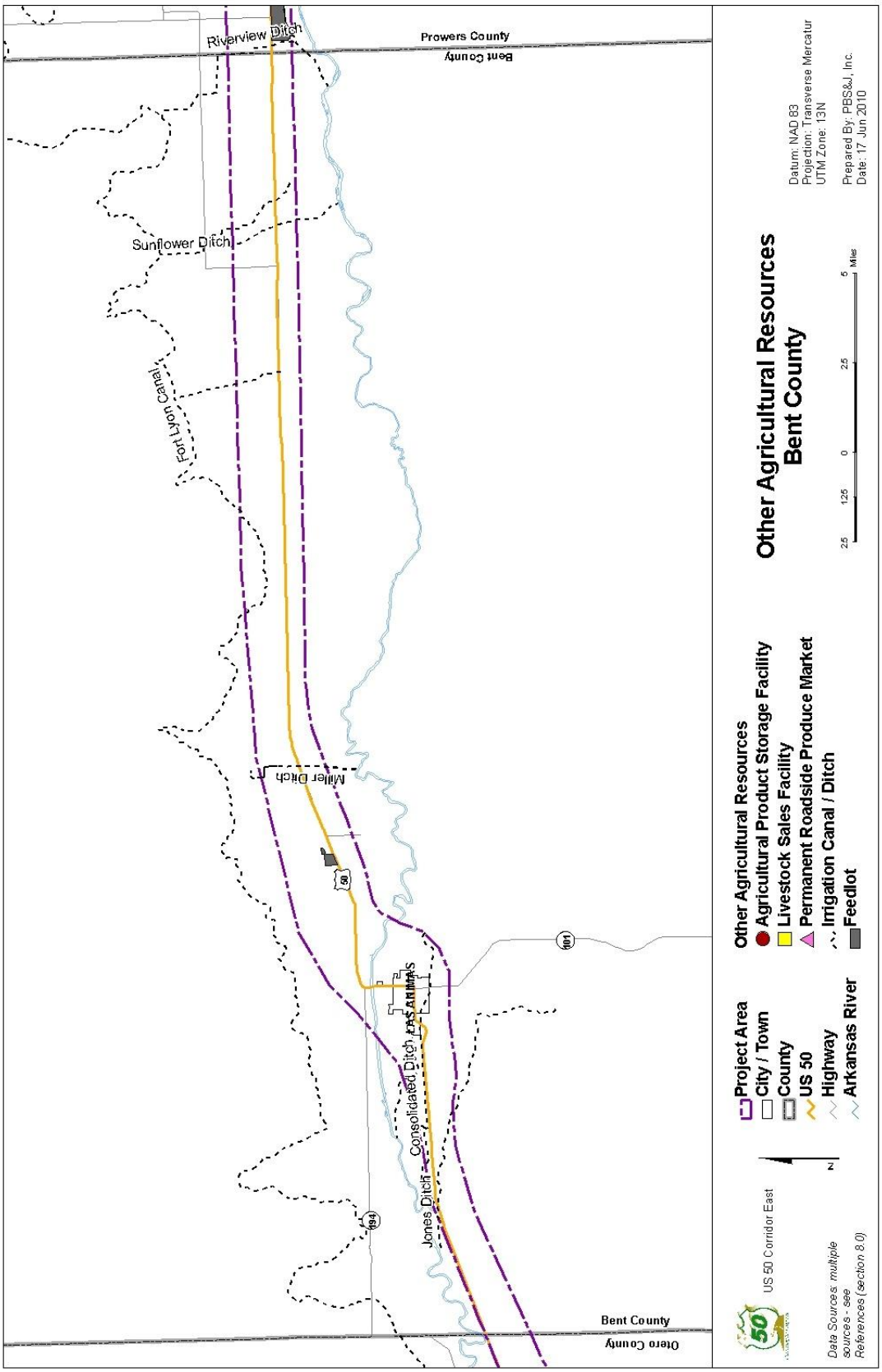


Figure C-12. Other Agricultural Resources—Prowers County

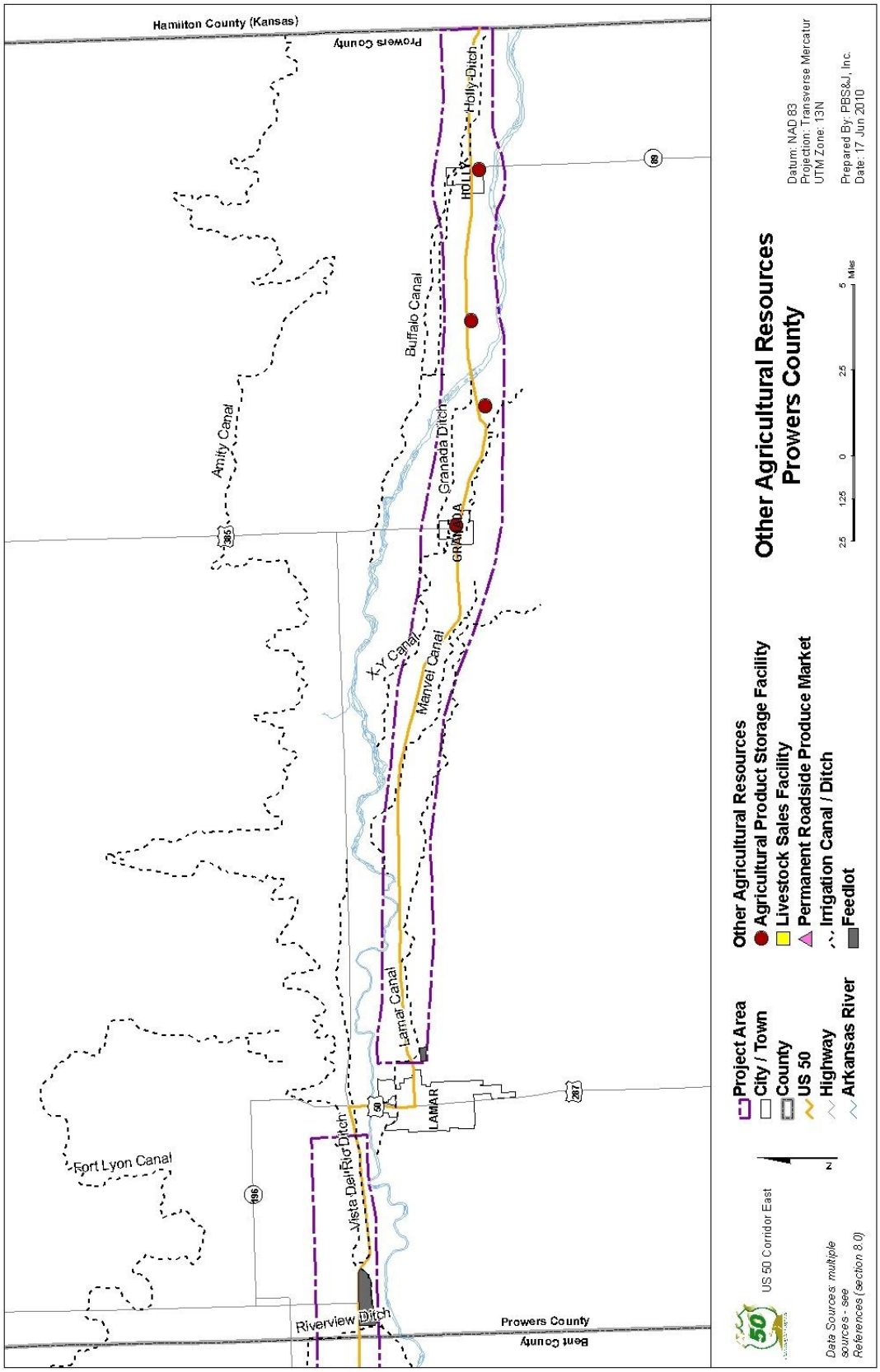


Figure C-13. Potential Effects to Agricultural Resources—Pueblo

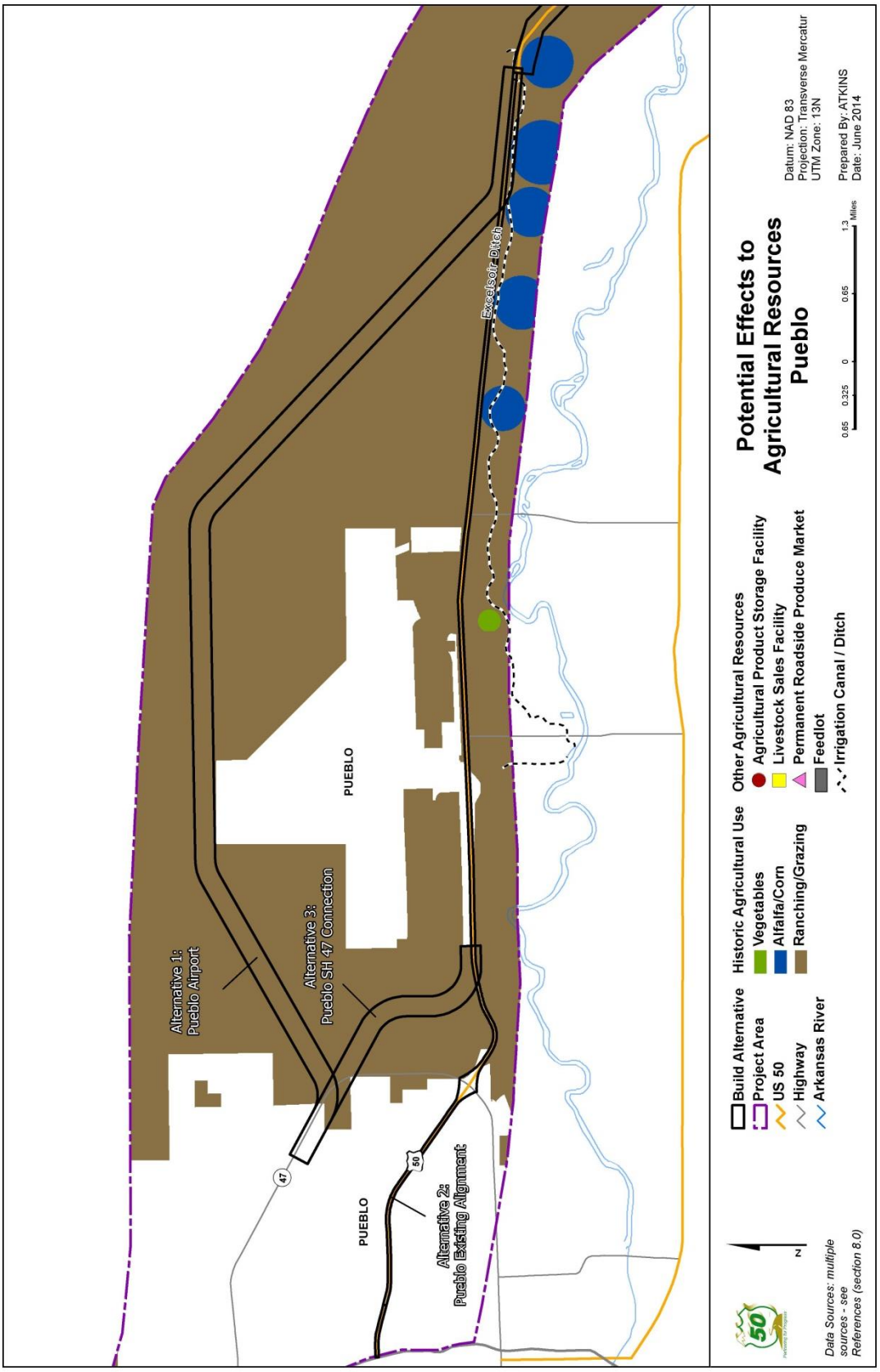


Figure C-14. Potential Effects to Agricultural Resources—Fowler

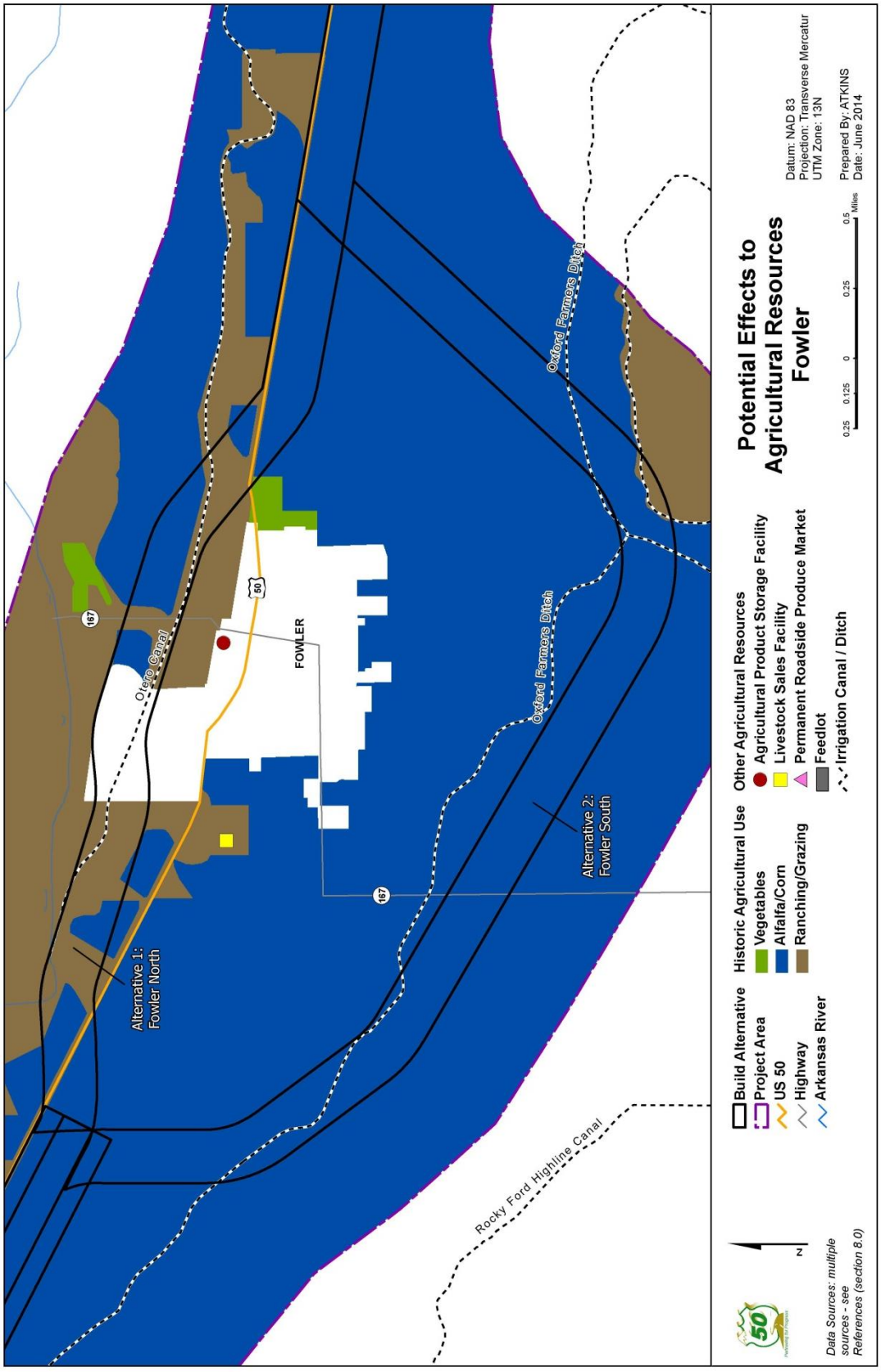


Figure C-15. Potential Effects to Agricultural Resources—Manzanola

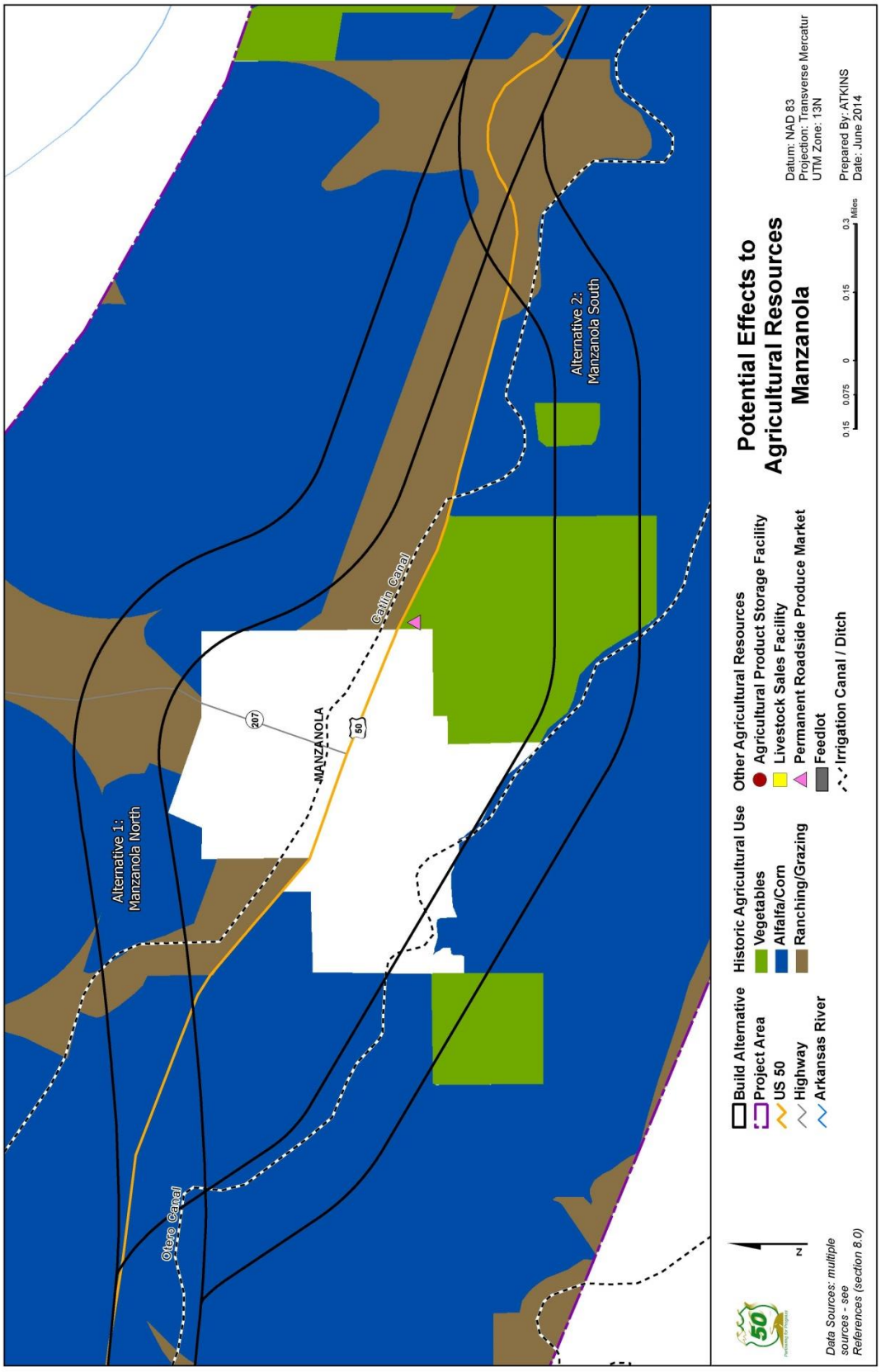


Figure C-16. Potential Effects to Agricultural Resources—Rocky Ford

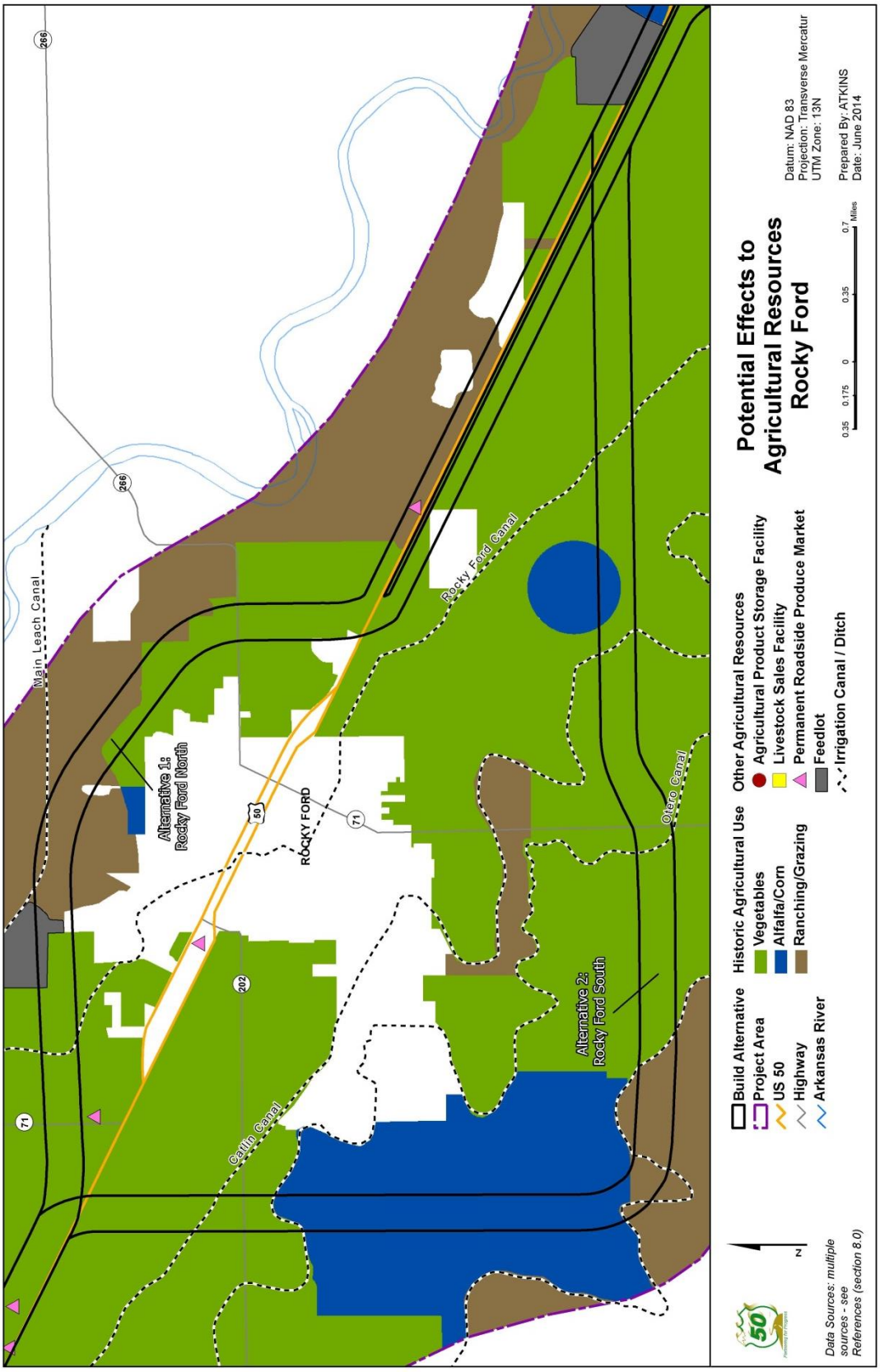


Figure C-17. Potential Effects to Agricultural Resources—Swink

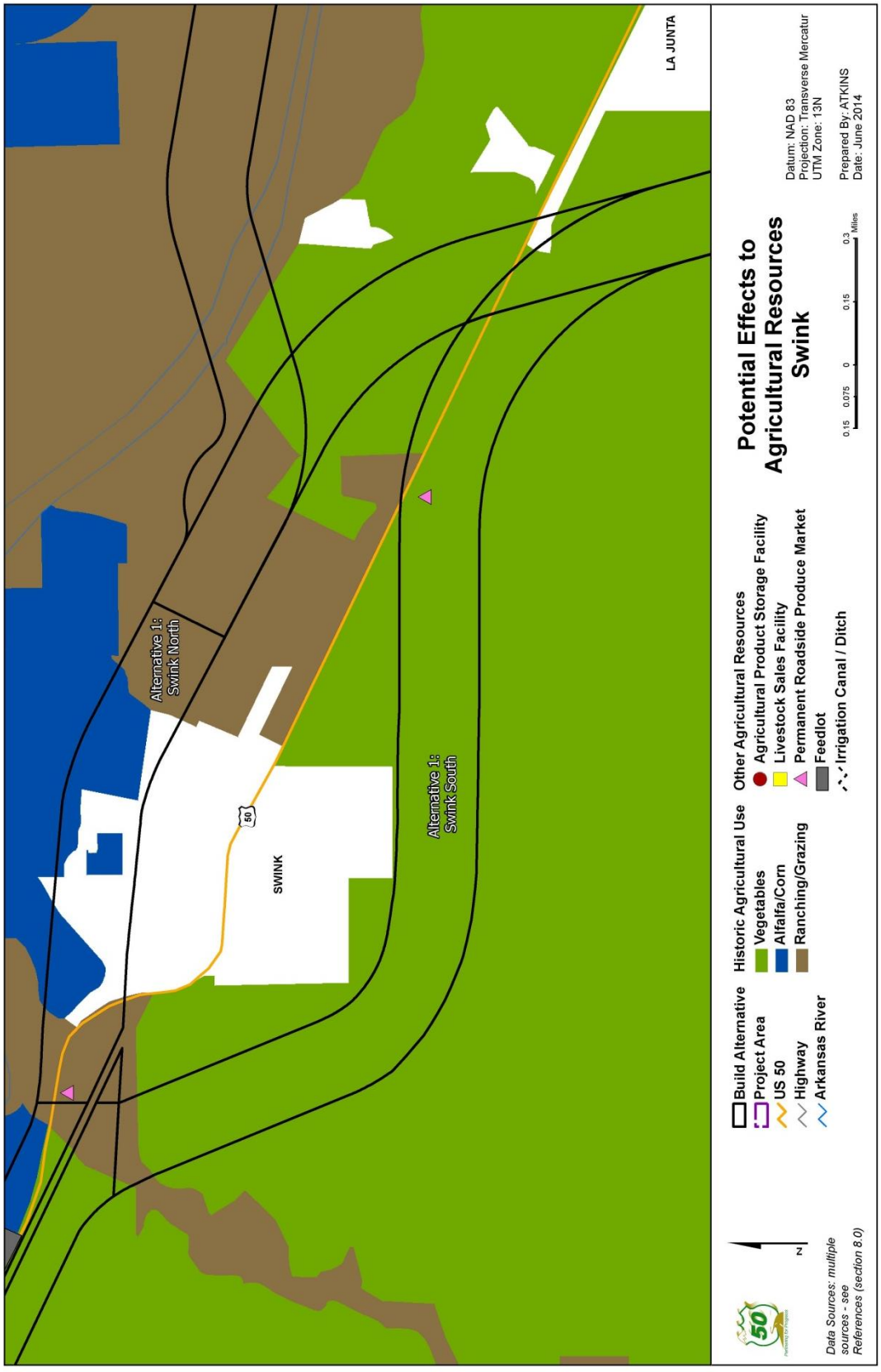


Figure C-18. Potential Effects to Agricultural Resources—La Junta

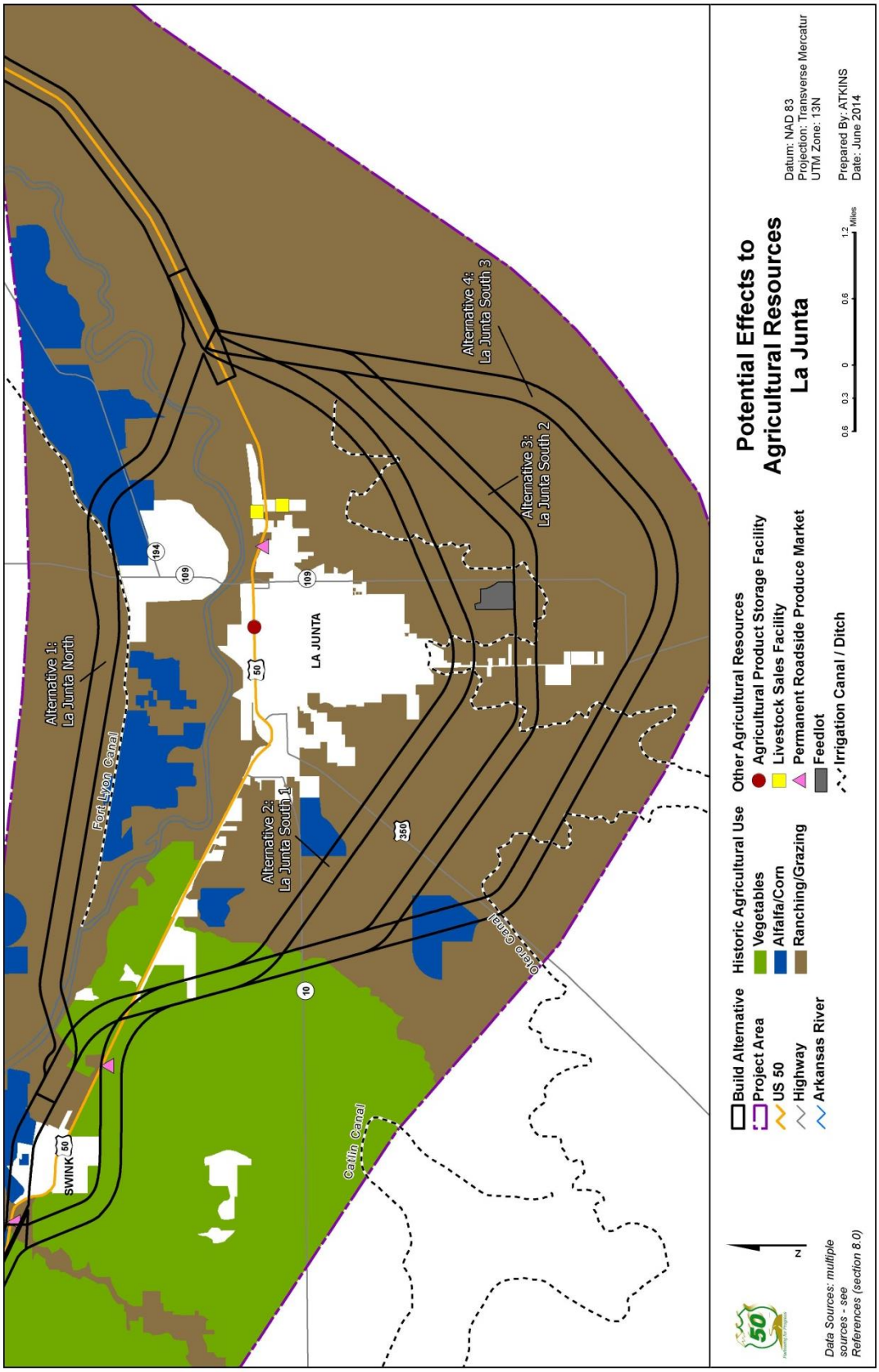


Figure C-19. Potential Effects to Agricultural Resources—Las Animas

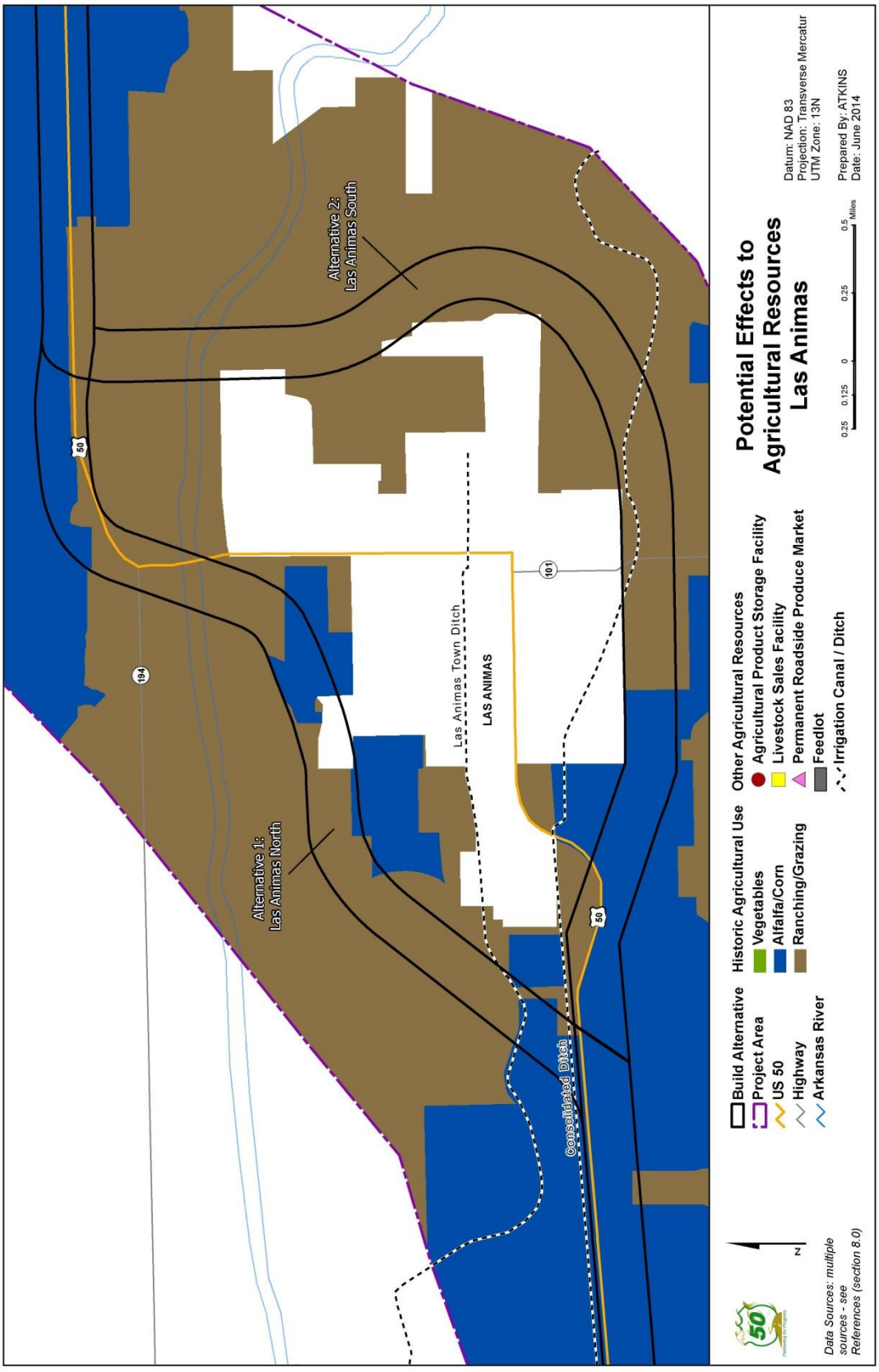


Figure C-20. Potential Effects to Agricultural Resources—Granada

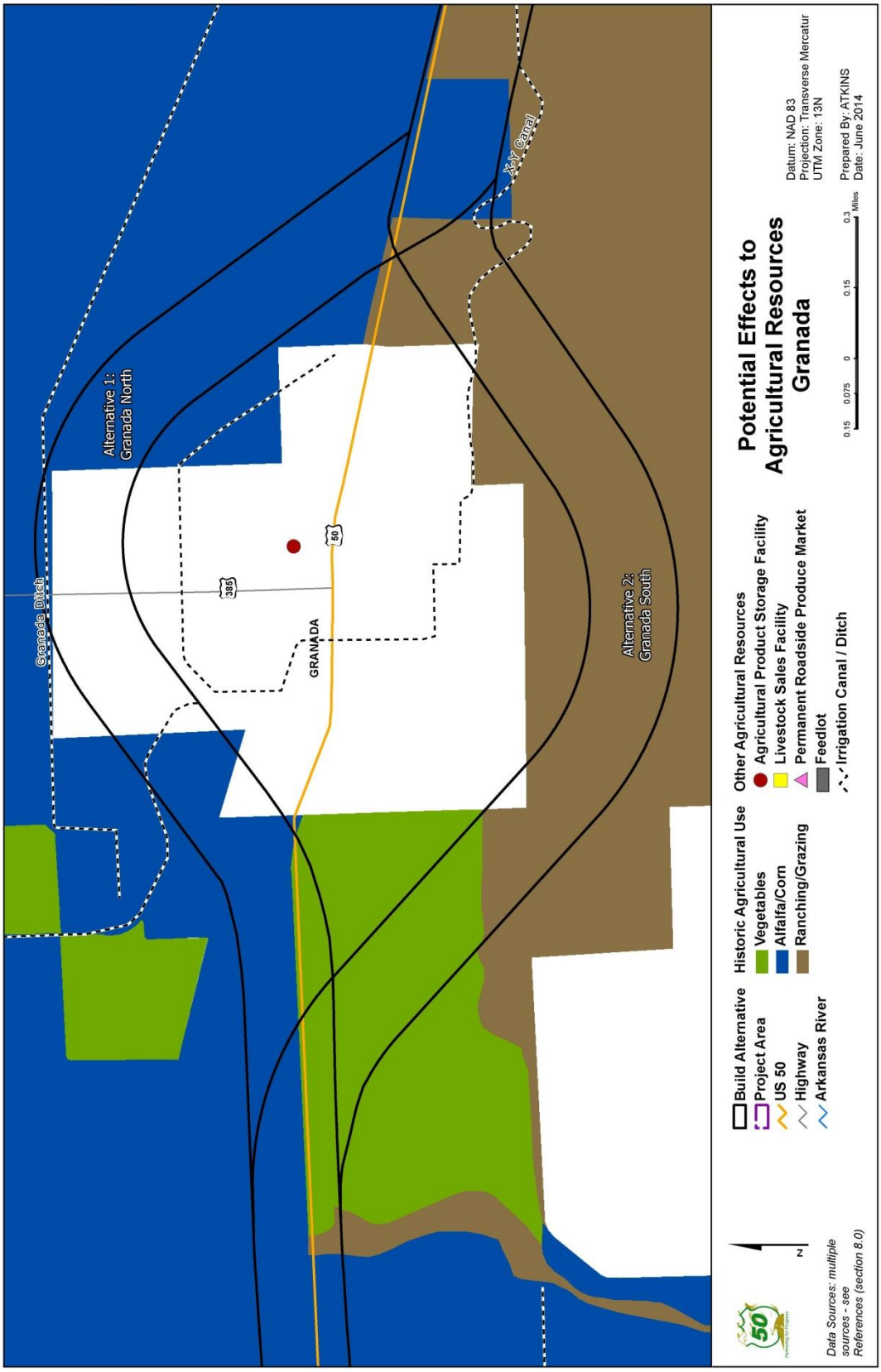
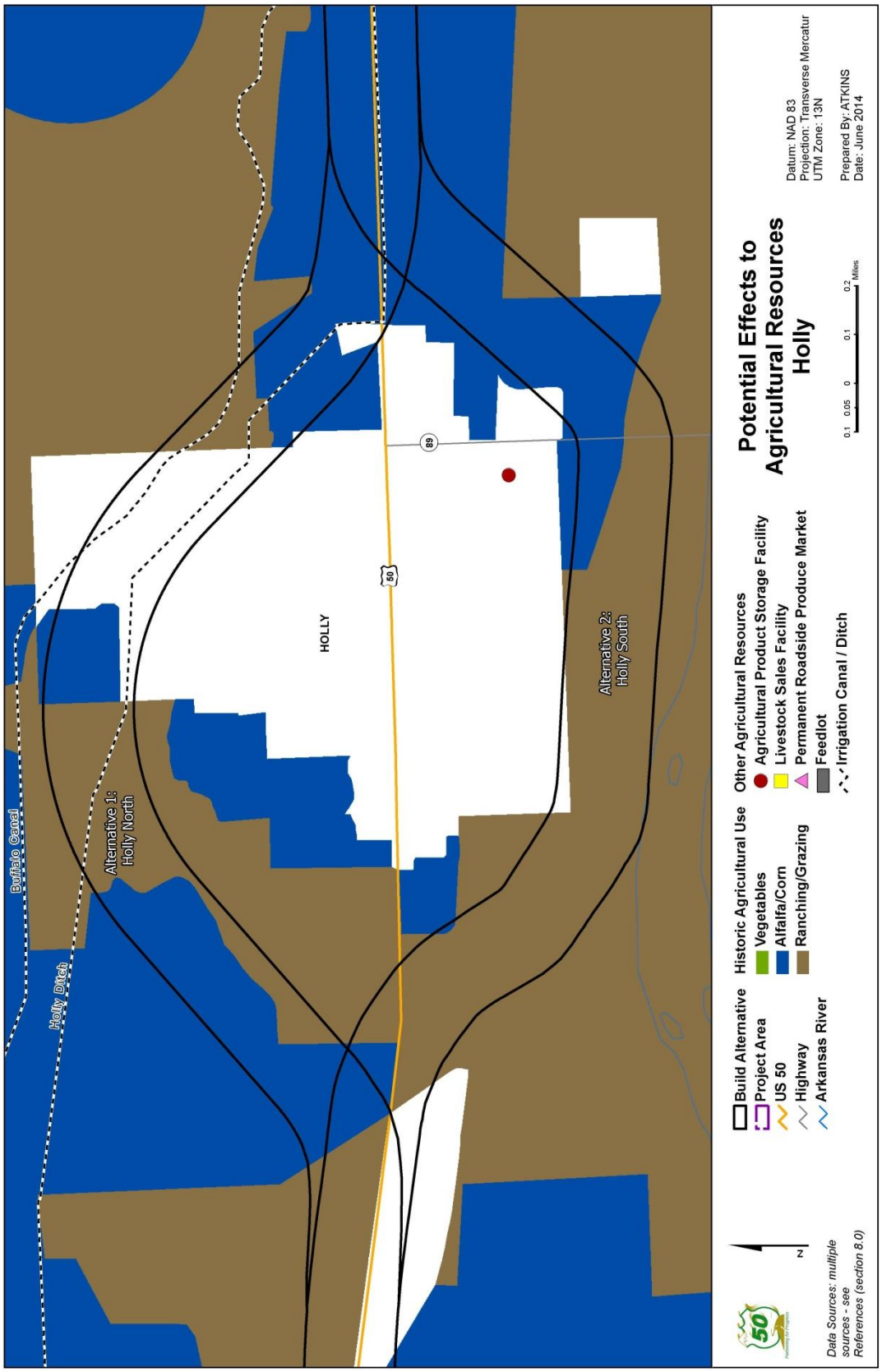


Figure C-21. Potential Effects to Agricultural Resources—Holly



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