# 4.7 HISTORIC AND ARCHAEOLOGICAL PRESERVATION

## Summary

The Advisory Council on Historic Preservation (ACHP) has developed regulations (36 Code of Federal Regulations [CFR] 800) that guide federal agencies on how to assess effects of their undertakings on historic properties and mitigate those effects, if necessary. Section 106 of the National Historic Preservation Act of 1966 (NHPA) and implementing regulations require that federal agencies, such as Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), or state or other agencies that receive federal assistance, such as the Colorado Department of Transportation (CDOT) and the Regional Transportation District (RTD), take into account the effects that a proposed undertaking may have on historic properties. This is generally accomplished through the Section 106 compliance process, which consists of the following basic steps:

- Initiate the Section 106 process
- Identify consulting parties to participate in the process
- Identify the Area of Potential Effects (APE)
- Evaluate historic properties
- Assess adverse effects
- Consult to resolve adverse effects

FHWA initiated Section 106 consultation with the Colorado State Historic Preservation Officer (SHPO) and consulting parties in early 2004 to discuss the APE and methodology, and to gather information on specific concerns. A letter from CDOT to consulting parties, agencies, and individuals was prepared and sent in late 2004. Coordination with SHPO and consulting parties will continue through the release of the Final Environmental Impact Statement (FEIS). To date, the following entities have indicated an interest in being consulting parties: City of Westminster, Town of Superior, Historic Boulder, Inc., City of Louisville, Broomfield Depot Museum, and Colorado Preservation, Inc.

Historic properties reviewed under Section 106 for the United States Highway 36 (US 36) corridor include districts, sites, buildings, structures, and objects that represent past human activities and were built in 1964 or earlier (i.e., are 45 years of age or older). Significant cultural resources, or historic properties, include those resources that are listed, or considered eligible for listing, in the National Register of Historic Places (NRHP). The criteria for NRHP eligibility are set forth at 36 CFR 60.4:

> *The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, building, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and*
>
> *A. that are associated with events that have made a significant contribution to the broad patterns of our history; or*
>
> *B. that are associated with the lives of persons significant in our past; or*
>
> *C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
>
> *D. that have yielded, or may be likely to yield, information important in prehistory or history.*

Historical sites, such as buildings and ditches, are usually evaluated under the first three criteria, while archaeological sites, if eligible, are usually considered under Criterion D. Other cultural resources of local, regional, or state significance may be listed in the State Register of Historic Properties, administered by the Colorado Historical Society.

*Twenty-six NRHP-eligible historic built resources, one State Register-eligible property, and one NRHP-eligible prehistoric archaeological site were identified in the US 36 corridor.*

Twenty-six NRHP-eligible historic resources, one State Register-eligible property, and one NRHP-eligible prehistoric archaeological site were identified in the US 36 corridor. Additional information on all of the eligible and non-eligible sites can be found in the Technical Memorandum, *U.S. Highway 36 Environmental Impact Statement: Results of a Historic Architectural Survey of the Highway and Railroad Corridors, Adams, Boulder, Broomfield, Denver, and Jefferson Counties, Colorado* (URS 2006).

As defined in Section 106 regulations, an effect is "an alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" (36 CFR 800.16). Effects to cultural resources are categorized as No Historic Properties Affected, No Adverse Effect, and Adverse Effect (36 CFR 800.5).

- **No Historic Properties Affected**: Either no historic properties are present, or there are historic properties present, but there is no effect of any kind, harmful nor beneficial, on the historic properties.
- **No Adverse Effect**: There is an effect, but the effect is not harmful to those characteristics that qualify the property for inclusion in the NRHP.
- **Adverse Effect**: There is an effect, and that effect diminishes the qualities of significance that qualify the property for inclusion in the NRHP.

Effects to historic properties may be direct or indirect. Direct effects include, but may not be limited to, the physical destruction or modification of all or part of a resource. Indirect effects can include a variety of factors, such as the introduction of or an increase in noise and visual intrusions that alter the qualities that make a site eligible for the NRHP. Most effects to historic properties are permanent, but there may be only short-term, temporary effects related to the construction process.

## ***Substitution of Section 106 Process in NEPA Process***

Pursuant to 36 CFR Section 800.8(c)(1), in December 2003, FHWA and FTA notified SHPO and the ACHP of the intention to substitute part of the Section 106 consultation process for this project with the National Environmental Policy Act of 1969 (NEPA) requirements. CDOT and FHWA formally arranged to substitute the NEPA documents (Draft Environmental Impact Statement [DEIS] and FEIS) in lieu of separate correspondence. Specifically, the document substitution is intended to provide a more complete opportunity for comments on the effects to NRHP eligible or listed historic properties from Package 2 and Package 4 and the Combined Alternative Package (Preferred Alternative).

Previous steps included the identification of the APE and the identification of properties eligible for the NRHP. The Section 106 consultation step involving determinations of NRHP-eligibility for all historic and archaeological resources was accomplished by the traditional method of submitting survey reports to SHPO and participating consulting parties. Once the eligibility step was completed and all comments and questions were satisfactorily addressed, CDOT and FHWA described and made determinations of effect for these properties in the DEIS, arranged by package. SHPO responded to these determinations in correspondence dated August 28, 2007. The City of Westminster and the Broomfield Depot Museum also submitted comments. This correspondence can be found in Appendix B, Consultation and Coordination, of this document and the responses to these comments are located in Volume III of this FEIS.

CDOT has updated effect determinations for the FEIS to include the Combined Alternative Package (Preferred Alternative) because it was not analyzed in the DEIS. Additionally, CDOT has evaluated the effects of all three build packages to eight additional resources that were not in the DEIS. More detail on the resources that were not evaluated in the DEIS, but that are in the FEIS, can be found in the Affected Environment and Impact Evaluation subsections of this section.

All Section 106 consulting parties can comment upon the determinations of effect and recommended mitigation measures presented in this section. Following consultation on effects, any changes as a result of the consultation can be incorporated into the Record of Decision (ROD).

## Native American Consultation

Section 106 of the NHPA and the ACHP regulations (36 CFR 800.2[c][2][I]) mandate that federal agencies must involve interested Native American tribes in the planning process for federal undertakings. Consultation with a Native American tribe recognizes the government-to-government relationship between the United States government and sovereign tribal groups. Federal agencies must be sensitive to the fact that historic properties of religious and cultural significance to one or more tribes may be located on ancestral, aboriginal, or ceded lands beyond modern reservation boundaries. Consulting tribes are offered the opportunity to identify concerns about cultural resources and comment on how the project might affect them. If it is found that the project would impact cultural resources that are eligible for inclusion on the NRHP and are of religious or cultural significance to one or more consulting tribes, then their role in the consultation process may also include participation in resolving how best to avoid, minimize, or mitigate those effects. By describing the proposed undertaking and the nature of known cultural sites, and consulting with the interested Native American community, CDOT and FHWA strive to protect areas important to Native Americans.

*By consulting with the interested Native American community, CDOT and FHWA strive to protect areas important to Native Americans.*

In February 2004, the following 16 federally-recognized tribes with an established interest in Adams, Boulder, Broomfield, Denver, and/or Jefferson counties, were invited to participate as consulting parties, as documented in a letter contained in Appendix B, Consultation and Coordination.

- Apache Tribe of Oklahoma
- Cheyenne and Arapaho Tribes of Oklahoma
- Comanche Nation of Oklahoma
- Cheyenne River Sioux Tribe
- Crow Creek Sioux Tribe
- Kiowa Tribe of Oklahoma
- Northern Arapaho Tribe
- Northern Cheyenne Tribe
- Oglala Sioux Tribe
- Pawnee Nation of Oklahoma
- Rosebud Sioux Tribe
- Southern Ute Indian Tribe
- Standing Rock Sioux Tribe
- Ute Mountain Ute Tribe
- Ute Tribe of the Uintah and Ouray Agency (“Northern” Ute)
- White Mesa Ute Tribe

Six tribes (Cheyenne and Arapaho Tribes of Oklahoma, Northern Cheyenne Tribe, Northern Arapaho Tribe, Northern Ute Tribe, and Southern Ute Indian Tribe) responded to the invitation, each indicating an interest in participating as a consulting party for the project. No specific issues of concern regarding the proposed undertaking were raised by any of the tribes in the context of places of religious or cultural significance. However, two tribes requested that information related to Native American archaeological sites that may be discovered during the subsequent field survey remain confidential.

By initiating, encouraging, and facilitating Native American consultation, CDOT, RTD, FHWA, and FTA have fulfilled their legal obligations in this regard as stipulated in the Section 106 and the ACHP regulations.

## Notification of Section 4(f) De Minimis

FHWA has made Section 4(f) *de minimis* findings for 15 of the historic sites based on the Section 106 determinations of No Historic Properties Affected and No Adverse Effect for all of the packages described in the FEIS. See Chapter 7, Final Section 4(f) Evaluation, for more information on the *de minimis* process and findings.

## Development of a Programmatic Agreement for the US 36 Corridor

Once the consultation on effects has been completed, FHWA and CDOT will submit a Programmatic Agreement (PA) to be signed by FHWA, ACHP, SHPO, CDOT, and other consulting parties to culminate the Section 106 process. A PA is being employed because the construction of the Combined Alternative Package (Preferred Alternative) is expected to be over a long period of time (i.e., greater than 30 years) with numerous construction projects. The PA will outline the process to agree on mitigation of adverse effects and re-evaluate eligibility and effects to historic properties, as appropriate, as construction projects are undertaken. The PA develops a process to follow as more information is known about the construction project from detailed design, allowing for better information to assess the effects to historic resources. The PA is currently in a draft format and is being reviewed by the participating agencies. It will be executed in time to be included with the ROD for the US 36 corridor.

The PA will also include a process for notifying the ACHP of adverse effects to historic properties and allow for their participation in resolving adverse effects. Such mitigation measures may include a comprehensive publication or other educational project on the significance and history of irrigation systems along the US 36 corridor, commitments to protect resources during construction, detailed recordation of adversely affected historic properties, data recovery at archaeological sites, or other stipulations. Possible mitigation measures have been summarized at the end of this section. The agreement will take into consideration the different kinds of project delivery methods that CDOT uses for construction:

1. The traditional design/bid/build process for construction projects; or
2. The design/build process.

The PA will also allow the parties to discuss issues or problems that might arise with the process as outlined. Section 106 consulting parties will be invited to concur with the agreement.

## National Register of Historic Places Eligibility for Post World War II Residential Development

In addition to the properties identified in this FEIS as eligible for the NRHP, CDOT evaluated the eligibility of post-World War II residential subdivision developments in Westminster (Adams County), and Boulder (Boulder County) in locations where subdivisions are adjacent to the highway and within the APE. CDOT evaluated the NRHP eligibility for the subdivisions during two separate surveys.

In January 2009, CDOT submitted 10 site forms and a final report for Westminster and Unincorporated Adams County to SHPO and consulting parties that determined no individual structures, sites, or historic districts were eligible for the NRHP. SHPO concurred with this finding on February 2, 2009 (see Appendix B, Consultation and Coordination). No additional analysis of impacts, avoidance, minimization, and mitigation measures of these resources is required in this FEIS.

The Boulder survey included the Keewaydin Subdivision and the William Martin Homestead Addition Subdivision (on either side of US 36 west of the Foothills Parkway interchange), and Keewaydin Meadow Subdivision (east of Foothills Parkway and north of South Boulder Road). In September 2009, CDOT submitted one site form and a final report for the Keewaydin Meadows neighborhood to SHPO and interested Section 106 consulting parties. CDOT has determined that the Keewaydin Meadows Subdivision does not have any individual structures or sites eligible to the NRHP and is not an eligible historic district. Comments on this eligibility determination from SHPO and consulting parties will be included in the ROD for the US 36 Corridor FEIS.

The subdivisions, Keewaydin and William Martin Homestead Addition, require additional research to determine their potential NRHP eligibility as historic districts. They are being treated as eligible for purposes of this FEIS. Effects determinations to these resources have been prepared for SHPO and consulting party comment in the Boulder Segment of this section.

## Affected Environment

### ***Methodology***

Section 106 regulations require agencies to assess the activities and actions necessary for the undertaking and the resulting effects to the qualities that make a historic property significant (CFR 800.5[a][1]). In the US 36 DEIS (published in July 2007), CDOT evaluated the potential effects of Package 2 and Package 4 by analyzing the current condition, location, and setting of all cultural resources within the project study area, and the nature of the planned activities within the APE. For the FEIS, CDOT added the potential effects of the Combined Alternative Package (Preferred Alternative) to the evaluation. Each resource section in Chapter 4, Affected Environment and Environmental Consequences, notes where the three build packages have similar impacts to historic resources and where the effects differ. The final determination of effect (found in the section for each resource) is based on the Combined Alternative Package (Preferred Alternative).

This particular corridor has a large number of linear resources (e.g., ditches, roads, and railroad grades) that CDOT determined, and that SHPO concurred, to be eligible for nomination to the NRHP. For linear resources, effects are based on an evaluation of the impacts to the segment within the APE, but the effect determination applies to the entire eligible linear resource. In cases where multiple segments of the same linear resource would be impacted, the effect to the entire resource would be based on an assessment of the combined effects to the segments. This includes making determinations of effect to non-supporting segments of eligible resources that were not evaluated in the DEIS but are evaluated in this FEIS.

The correspondence between SHPO and CDOT (found in Appendix B, Consultation and Coordination, of this document) details the eligibility determinations for the resources within the APE. Two of these resources (Equity Ditch and Marshallville Ditch) were determined to be eligible for nomination to the NRHP and their segments support the eligibility of the overall resource, but were omitted from evaluation in the DEIS.

Resources that were not evaluated in the DEIS but that are evaluated in the FEIS include:

1. Lower Clear Creek Canal (5AM80/5AM80.6)
2. Colorado Agricultural Canal (5AM81/5AM81.3)

3. Allen Ditch (5AM1132.1, 5JF1762.1, and 5JF1762.4) (the DEIS evaluated 5AM1132.3 and 5AM1132.4)
4. Equity Ditch (5BF98/5BF98.1 and 5JF3752/5JF3752.1)
5. Community Ditch (5BF67/6BF67.5)
6. Marshallville Ditch (5BL5042/5BL5042.1)
7. Keewaydin Subdivision (no site number)
8. William Martin Homestead Addition Subdivision (no site number)

## Area of Potential Effects

The Section 106 regulations define the APE as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" (800.16[d]).

*The APE for architectural and historical resources included the ROW for US 36 and extended out two legal parcels from the ROW.*

The APE for large projects such as the US 36 Corridor Project will change according to the level of design completed for the corridor and because projects take place over a long period of time. The APE for all three build packages for architectural and historical resources included the right-of-way (ROW) for US 36 and extended out two legal parcels from the ROW. The APE for linear resources (ditches, railroad grades, etc.) for the US 36 corridor was 400 feet wide, including US 36, and extending 200 feet from the edge of the pavement on both sides of the highway. A literature search and a reconnaissance survey for historic properties were conducted for this APE. All structures built during or before 1964 were surveyed and those that appeared to meet NRHP criteria for eligibility were recorded.

The APE for Package 2 and Package 4 for archaeological resources for the US 36 corridor was 800 feet wide, enveloping US 36 and extending 400 feet out from the edge of the pavement on both sides of the highway. Within this alignment, those areas not previously surveyed or not previously disturbed by commercial or residential development were surveyed.

Research revealed some previously recorded historic and archaeological sites within the APE. After the initial research of documented properties, historians conducted an intensive cultural resources survey of the US 36 corridor. The combination of the previously recorded sites and the sites found during the survey resulted in the identification of 26 NRHP-eligible built resources, one site eligible to the Colorado State Register of Historic Properties, and one NRHP-eligible prehistoric archaeological site. These sites meet one or more criteria of eligibility for the NRHP or are considered locally significant.

The Combined Alternative Package (Preferred Alternative) has a slightly different footprint that expands beyond the APE established for Package 2 and Package 4. The Combined Alternative Package (Preferred Alternative) is described in Chapter 2, Alternatives Considered, and is depicted in Appendix A, Corridor Reference Maps.

On June 4, 2009, CDOT met with SHPO to discuss the areas where the Combined Alternative Package (Preferred Alternative) footprint expands beyond the APE for Package 2 and Package 4. As a result of this meeting, CDOT has established the following methodology for areas where the Combined Alternative Package (Preferred Alternative) footprint is outside of the established APE:

- Where the Combined Alternative Package (Preferred Alternative) impacts are outside of the established APE, the APE will be expanded an additional 200 feet on the side of the corridor where the improvements will take place and in areas where known historic resources or resources built in 1964 or earlier are found.

- For resources that are impacted by the slightly larger Combined Alternative Package (Preferred Alternative) footprint, the existing APE and expanded APE are depicted with different shades of color. SHPO and consulting parties are requested to comment on these APE changes as part of this FEIS.
- Prior to the publication of the FEIS, CDOT requested comments from SHPO and consulting parties for properties that had not been previously surveyed within the expanded APE. SHPO concurred with these determinations in correspondence dated September 15, 2009. As of October 7, 2009, no consulting parties had submitted comments or responses to these determinations.
- The PA will outline steps that CDOT must take to re-evaluate the APE when projects are funded according to more developed design plans and other project information. At that time, SHPO and consulting parties will be notified electronically as to changes in the APE to request comment. If major changes are required, a meeting will be arranged with SHPO, CDOT, FHWA, and consulting parties to discuss APE changes.
- During the preparation of the FEIS, CDOT conducted additional survey work in one area that was not included in the *US Highway 36 Historical Architectural Survey* (URS 2006): on the west end of the corridor at the Foothills Parkway interchange. Improvements in this location have the potential to impact structures that were built in 1964 or earlier. The survey work included one subdivision (Keewaydin Meadows) and two properties on South Boulder Road that were evaluated as not meeting the criteria for NRHP eligibility. CDOT requested comments from SHPO and consulting parties independently of the FEIS and will provide a summary of these comments in the ROD.

Table 4.7-1, Effects to National Register — Eligible Historic Properties Along the US 36 Corridor, lists the structures, ditches, roads, and railroads, and the Section 106 determinations of effect for the Combined Alternative Package (Preferred Alternative). Figures 4.7-1 through 4.7-3 show the approximate location of these same sites that are included in this table.

**Table 4.7-1: Effects to National Register — Eligible Historic Properties Along the US 36 Corridor**

| Smithsonian Site Number | Location | NRHP Eligibility Criteria | Summary of Effects for the Combined Alternative Package (Preferred Alternative) | Combined Alternative Package (Preferred Alternative) Effect Determination for the Entire Resource |
|---|---|---|---|---|
| DITCH IMPACTS | | | | |
| Adams Segment | | | | |
| 5AM80/ 5AM80.6 | Lower Clear Creek Canal, near Broadway | Entire ditch is eligible (Criterion A). This segment does not support eligibility of the entire resource. | No direct or indirect impact – ditch is underground. | No Historic Properties Affected |
| 5AM81/ 5AM81.3 | Colorado Agricultural Canal, near Broadway | Entire ditch is eligible (Criterion A). This segment does not support eligibility of the entire resource. | No direct or indirect impact – ditch is underground. | No Historic Properties Affected |
| 5AM1132 5AM1132.4 | Allen Ditch, east of 80th Avenue | Entire ditch is eligible (Criterion A). This segment does not support eligibility of the entire resource. | The 230-foot culvert would be extended an additional 120 feet (extending 40 feet on the north and 80 feet on the south). | Adverse Effect |
| 5AM1132/ 5AM1132.3 | Allen Ditch, west of 80th Avenue | Entire ditch is eligible (Criterion A). This segment does not support eligibility of the entire resource. | The 200-foot culvert would be extended an additional 70 feet (extending 20 feet on the north and 50 feet on the south). | Adverse Effect |

**Table 4.7-1: Effects to National Register — Eligible Historic Properties Along the US 36 Corridor**

| Smithsonian Site Number | Location | NRHP Eligibility Criteria | Summary of Effects for the Combined Alternative Package (Preferred Alternative) | Combined Alternative Package (Preferred Alternative) Effect Determination for the Entire Resource |
|---|---|---|---|---|
| 5AM1132/ 5AM1132.1 | Allen Ditch, east of 88th Avenue | Entire ditch is eligible (Criterion A). This segment does not support eligibility of the entire resource. | An additional 330 feet of the 1,640-foot segment would be impacted. | Adverse Effect |
| 5JF1762/ 5JF1762.1 | Allen Ditch, west of 88th Avenue | Entire ditch is eligible (Criterion A). This segment does not support eligibility of the entire resource. | The 270-foot culvert would be extended an additional 700 feet (extending 50 feet on the north and 650 feet on the south). | Adverse Effect |
| 5JF1762.4 | Allen Ditch, west of 5JF1762.1, near 88th Avenue | Entire ditch is eligible (Criterion A). This segment supports the eligibility of the entire resource. | 300 feet of the 600-foot segment would be piped underground. | Adverse Effect |
| Westminster Segment | | | | |
| 5JF3787/ 5JF3787.2 | Niver Canal, 92nd Avenue | Additional research required to determine eligibility of resource. Resource is being treated as eligible for purposes of this FEIS. | The 120-foot culvert would be extended 190 feet (90 feet on the north and 100 feet to the south). | No Adverse Effect |
| 5JF250/ 5JF250.4 | Farmers Highline Canal, 92nd Avenue | Entire ditch is eligible (Criterion A). This segment supports eligibility of entire resource. | The 140-foot culvert would be extended 280 feet (150 feet on the north and 130 on the south). | No Adverse Effect |
| Broomfield Segment | | | | |
| 5JF3752/ 5JF3752.1 | Equity Ditch, Wadsworth Boulevard | Entire ditch is eligible (Criteria A and C). This segment supports eligibility of entire resource. | 370 feet would be impacted (not at culvert) due to highway expansion. | No Adverse Effect |
| 5BF98/ 5BF98.1 | Equity Ditch, Wadsworth Parkway | Entire ditch is eligible (Criteria A and C). This segment supports eligibility of entire resource. | The 90-foot culvert would be extended 470 feet (410 feet on the north and 60 feet on the south). 700 feet of the ditch would be piped under the proposed 116th Avenue Station. Total impact to segment would be 1,170 feet | No Adverse Effect |
| 5BF7/5BF7.2 | Dry Creek Valley Ditch, Wadsworth Parkway | Entire ditch is eligible (Criterion A). This segment supports eligibility of entire resource. | 2,960 feet would be impacted (not at culvert) due to highway expansion. | Adverse Effect |
| 5BF67/ 5BF67.5 | Community Ditch, Broomfield Interchange | Additional research required to determine eligibility of overall resource. Resource is being treated as eligible for purposes of this FEIS. This segment does not support eligibility of overall resource. | The 109-foot culvert would be extended 310 feet (90 feet on the north and 220 feet on the south). | No Adverse Effect |

**Table 4.7-1: Effects to National Register — Eligible Historic Properties Along the US 36 Corridor**

| Smithsonian Site Number | Location | NRHP Eligibility Criteria | Summary of Effects for the Combined Alternative Package (Preferred Alternative) | Combined Alternative Package (Preferred Alternative) Effect Determination for the Entire Resource |
|---|---|---|---|---|
| Superior/Louisville Segment | | | | |
| 5BL5664/ 5BL5664.33 | Coal Creek Ditch - east of Superior | Additional research required to determine eligibility of resource. Resource is being treated as eligible for purposes of this FEIS. Segment does not support eligibility of entire resource. | Pipes would be replaced and a slight change to the laterals would be made on either side. | No Adverse Effect |
| 5BL9577/ 5BL9577.1 | Louisville Reservoir Inlet, west of Superior | Entire ditch is eligible (Criterion A). This segment supports eligibility of entire resource. | The 166-foot culvert would be extended 130 feet (70 feet to the north and 60 feet to the south). | No Adverse Effect |
| Boulder Segment | | | | |
| 5BL453/ 5BL453.2 | Davidson Ditch, Milepost 41.246 | Entire ditch is eligible (Criterion A). This segment supports eligibility of entire resource. | The 100-foot culvert would be extended an additional 330 feet (70 feet on the north and 260 feet on the south). | No Adverse Effect |
| 5BL2719/ 5BL2719.38 | Goodhue Ditch, Davidson Ditch, and Marshallville Ditch | Entire ditch is eligible (Criterion A). This segment supports eligibility of entire resource. | The 160-foot culvert would be extended 110 feet (50 feet to the north and 60 feet to the south). | No Adverse Effect |
| 5BL5040/ 5BL5040.1 | Shearer Ditch, west of Cherryvale Road | Entire ditch is eligible (Criterion A). This segment supports eligibility of entire resource. | The 100-foot culvert would be extended 420 feet (170 feet to the north and 250 feet to the south). | No Adverse Effect |
| 5BL5042/ 5BL5042.1 | Marshallville Ditch, east of Cherryvale Road | Entire ditch is eligible (Criterion A). This segment supports eligibility of entire resource. | The 150-foot culvert would be extended 180 feet (120 feet on the north and 60 feet on the south). | No Adverse Effect |
| 5BL750/ 5BL750.51 | South Boulder Canyon Ditch, east of South Boulder Creek | Entire ditch is eligible (Criterion C). This segment supports eligibility of entire resource. | The 160-foot culvert would be extended 190 feet (90 feet to the north and 100 feet to the south). | No Adverse Effect |
| 5BL3935/ 5BL3935.34 | Anderson Extension Ditch, South Boulder Road | Additional research required to determine supporting and non-supporting segments of resource. Segments are being treated as eligible for purposes of this FEIS. Entire ditch is eligible (Criteria A, B, C, and D). This segment does not support the eligibility of the entire resource. | 500 feet (which partially overlaps 5BL3935.35) would be piped underground due to the interchange reconfiguration and slight shift in the South Boulder Road alignment. | No Adverse Effect |

**Table 4.7-1: Effects to National Register — Eligible Historic Properties Along the US 36 Corridor**

| Smithsonian Site Number | Location | NRHP Eligibility Criteria | Summary of Effects for the Combined Alternative Package (Preferred Alternative) | Combined Alternative Package (Preferred Alternative) Effect Determination for the Entire Resource |
|---|---|---|---|---|
| 5BL3935/ 5BL3935.35 | Anderson Extension Ditch, South Boulder Road | Additional research required to determine supporting and non-supporting segments of resource. Segments are being treated as eligible for purposes of this FEIS. Entire ditch is eligible (Criteria A, B, C, and D). This segment supports the eligibility of entire resource. | Approximately 1,100 feet would be piped underground (which partially overlaps 5BL3935.34) due to the interchange reconfiguration and slight shift in the South Boulder Road alignment. | No Adverse Effect |
| 5BL4165/ 5BL4165.1 | McGinn Ditch, South Boulder Road | Entire ditch is eligible (Criterion A). This segment supports eligibility of entire resource. | The 10-foot culvert would be extended 10 feet under the bikeway. | No Adverse Effect |
| OTHER RESOURCE IMPACTS | | | | |
| Adams Segment | | | | |
| 5AM1806 | Advent Evangelical Lutheran Church – 7979 Meade Street | Criterion C. | Freeway would be 20 feet closer to site than existing conditions. Noise barrier on highway would be replaced. Church would be 180 feet from edge of expanded highway. | No Historic Properties Affected |
| Westminster Segment | | | | |
| 5JF519.7 | BNSF Railway Segment, no address | Entire resource is eligible (Criterion A). This segment supports eligibility of entire resource. | Changes in setting due to wider bridge over railroad grade. No direct impact to railroad ROW would occur. | No Adverse Effect |
| Broomfield Segment | | | | |
| 5BF109 | 11415 Wadsworth Boulevard | Criterion C. | No property acquisition required due to retaining wall. Highway would be 100 feet closer to the property boundary. The off-ramp to 120th Avenue and Wadsworth Parkway would be 1,000 feet from the rear of the house. | No Adverse Effect |
| 5BF9 | 8375 West 120th Avenue | Criterion C. | Demolition of structure. | Adverse Effect |
| Undisclosed Segment | | | | |
| 5BF99 | Prehistoric Hearth, no address | Criterion D. | No indirect or direct impact. | No Historic Properties Affected |

**Table 4.7-1: Effects to National Register — Eligible Historic Properties Along the US 36 Corridor**

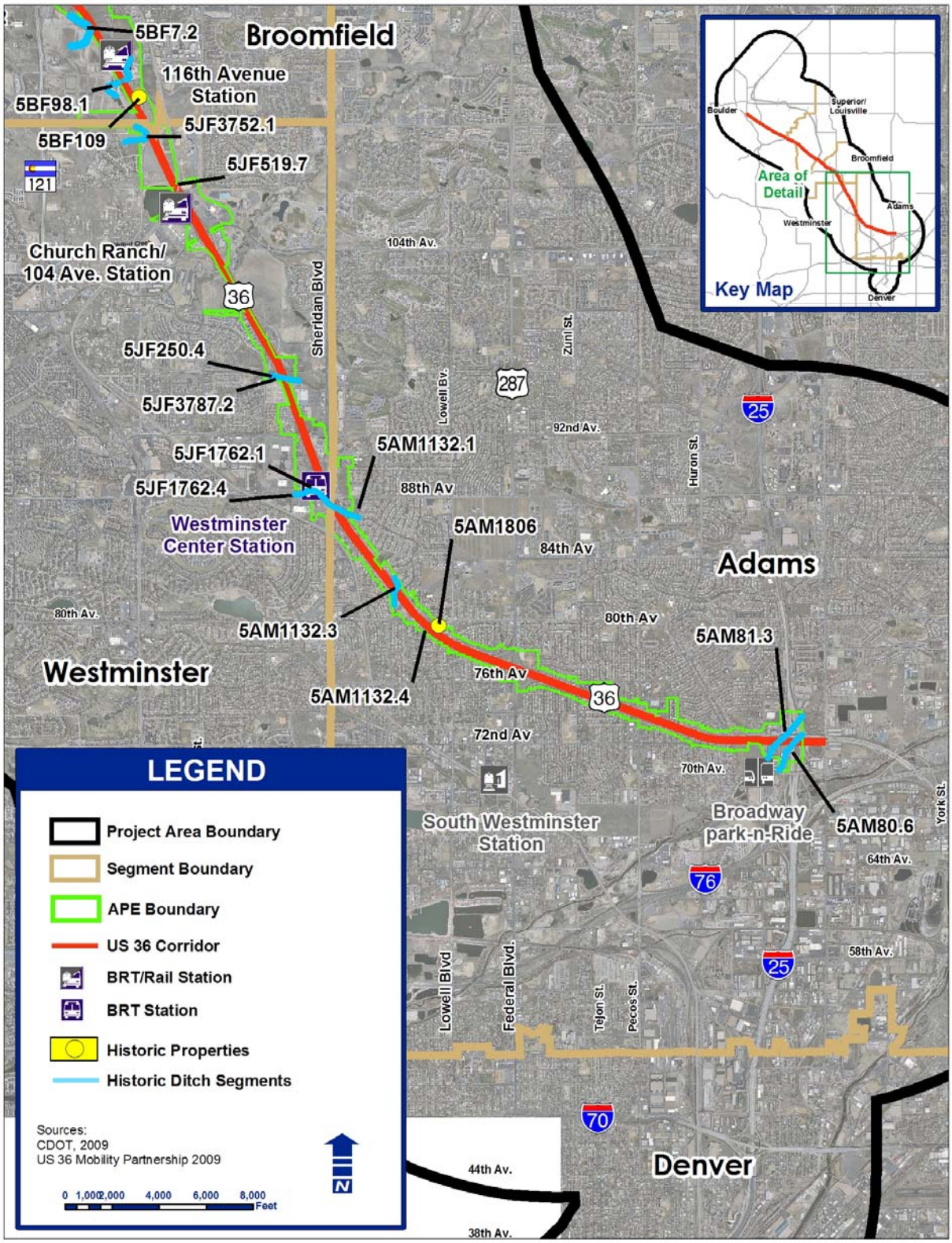
| Smithsonian Site Number | Location | NRHP Eligibility Criteria | Summary of Effects for the Combined Alternative Package (Preferred Alternative) | Combined Alternative Package (Preferred Alternative) Effect Determination for the Entire Resource |
|---|---|---|---|---|
| Boulder Segment | | | | |
| 5BL7529.3 | US 36, Denver to Boulder Turnpike between Foothills Parkway to Davidson Mesa | Criteria A and C. | Reconstruction and widening of highway segment; direct effect to 100% of resource. | Adverse Effect |
| 5BL5036 | Viele Homestead, southwest corner of Cherryvale Road and South Boulder Road | Criteria A and C. | No indirect or direct impact. | No Historic Properties Affected |
| None | Keewaydin Subdivision | Additional research required to determine eligibility of resource under Criterion A. Resource is being treated as an eligible historic district for purposes of this FEIS. | Indirect impact to historic district with construction of noise wall in US 36 ROW. | No Adverse Effect |
| None Assigned | William Martin Homestead Addition Subdivision | Additional research required to determine eligibility of resource under Criterion A. Resource is being treated as an eligible historic district for purposes of this FEIS. | Indirect impact to historic district with construction of noise wall in US 36 ROW. | No Adverse Effect |

Source: US 36 Mobility Partnership, 2009.

Notes:

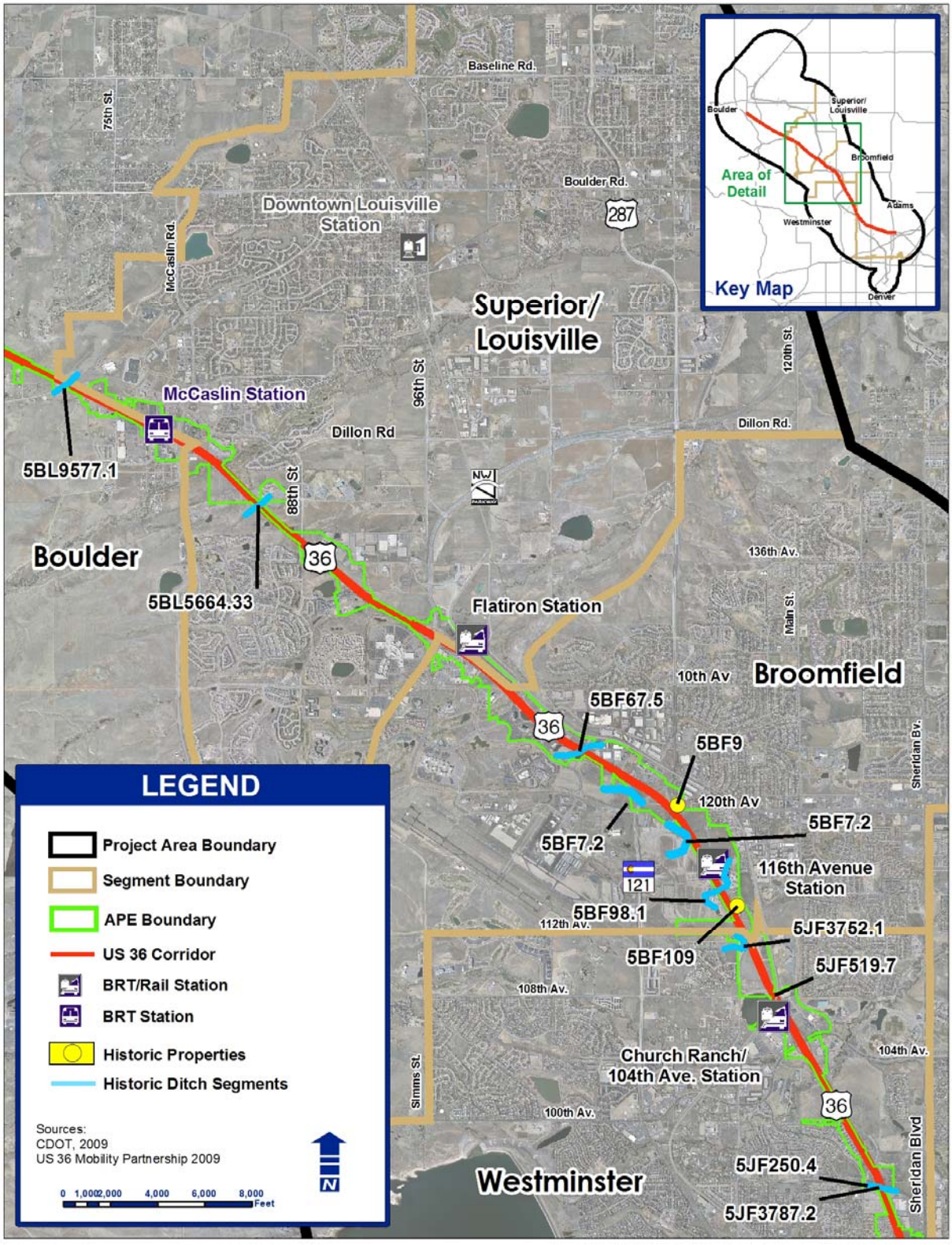
| | | |
|---|---|---|
| Criterion A | = | Associated with events that have made a significant contribution to the broad pattern of history |
| Criterion B | = | Associated with the lives of persons significant in our past |
| Criterion C | = | Embodies the distinctive characteristics of a type, period, or method of construction or engineering; or that represent a significant and distinguishable entity whose components may lack individual distinction |
| % | = | percent |
| FEIS | = | Final Environmental Impact Statement |
| NRHP | = | National Register of Historic Places |
| ROW | = | right-of-way |
| US 36 | = | United States Highway 36 |

**Figure 4.7-1: Historic Sites — Denver and Adams Segments**



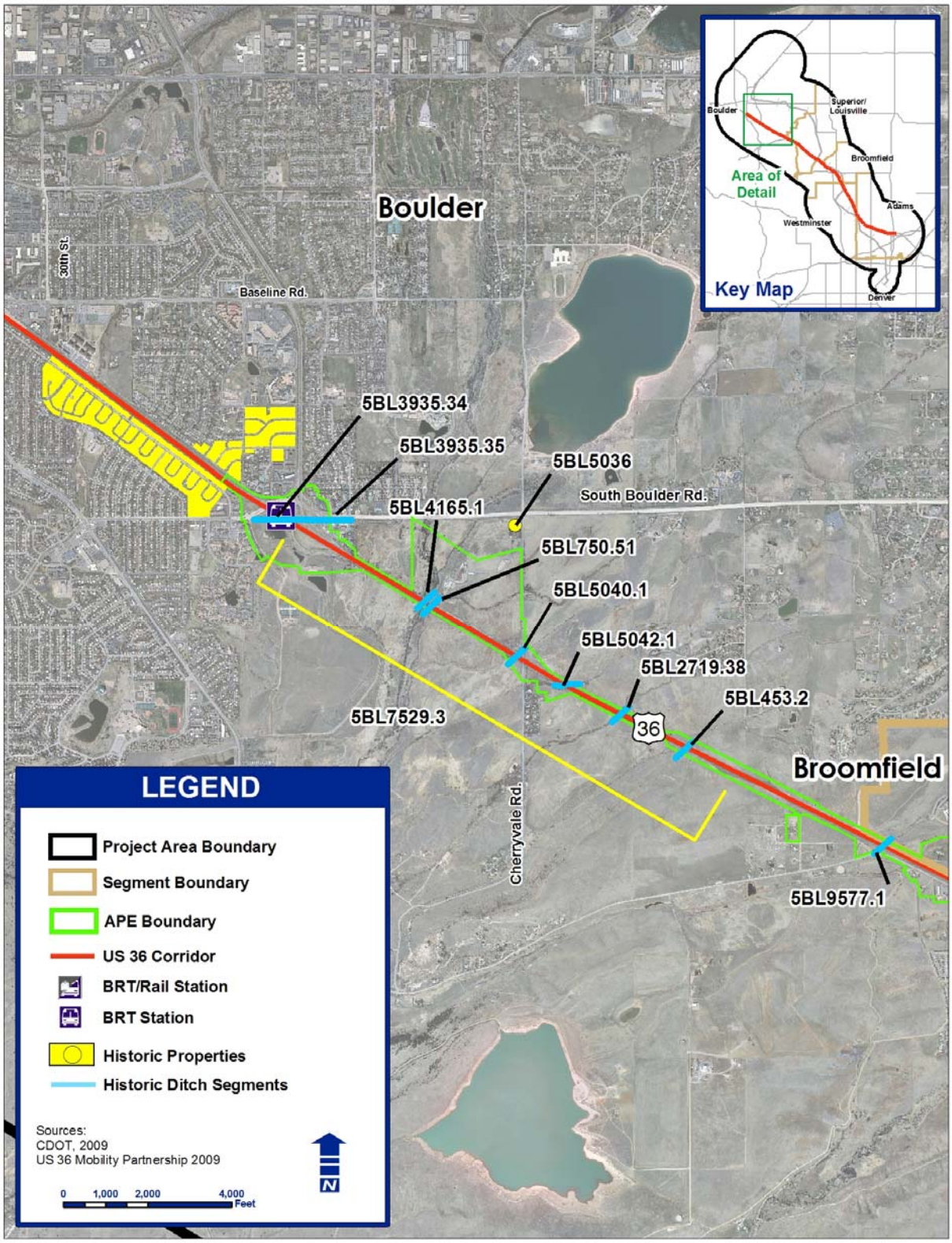

Note: The 116th Avenue Rail Station is not a part of the 2004 FasTracks Program. Additional stations were added in the early planning stages of the US 36 Environmental Impact Statement. Exact rail station locations and additional stations may be reconsidered in the U.S. Army Corps of Engineers/Regional Transportation District Northwest Rail Environmental Assessment/Environmental Evaluation.

**Figure 4.7-2: Historic Sites — Westminster, Broomfield, and Superior/Louisville Segments**




Note: The 116th Avenue Rail Station is not a part of the 2004 FasTracks Program. Additional stations were added in the early planning stages of the US 36 Environmental Impact Statement. Exact rail station locations and additional stations may be reconsidered in the U.S. Army Corps of Engineers/Regional Transportation District Northwest Rail Environmental Assessment/Environmental Evaluation.

**Figure 4.7-3: Historic Sites — Boulder Segment**



## Impact Evaluation

Based on the current conceptual design, CDOT evaluated temporary and permanent direct and indirect effects to historic and archaeological properties for each of the three build packages. Impacts to NRHP-eligible and listed resources have been described in this section and the Section 106 criteria of Adverse Effect applied to the Combined Alternative Package (Preferred Alternative) for SHPO and consulting party comment and review. The site eligible for the Colorado State Register of Historic Properties (Shep's Grave) is also included.

Eight resources have been added to this FEIS that were not evaluated in the DEIS. These resources are listed in the Affected Environment subsection of this section.

Several resources have different determinations of effect than those described, and previously concurred upon by SHPO, for Package 2 and Package 4 in the DEIS. These resources are listed in Table 4.7-2, Different Effects Determinations Between DEIS and FEIS.

**Table 4.7-2: Different Effects Determinations between DEIS and FEIS**

| Resource | DEIS Effect Determination | FEIS Effect Determination |
|---|---|---|
| Viele Homestead (5BL5036) | No Adverse Effect | No Historic Properties Affected |
| Advent Evangelical Lutheran Church (5AM1806) | No Adverse Effect | No Historic Properties Affected |
| Prehistoric Hearth (5BF99) | Adverse Effect | No Historic Properties Affected |

Source: US 36 Mobility Partnership, 2009.
Notes:
DEIS = Draft Environmental Impact Statement
FEIS = Final Environmental Impact Statement

The reasons for the different determinations of effect are outlined in the section for each resource. Percent impacts for linear features are calculated based on the length of the overall resource and the segment. While these percentages provide a means to understand how much of the entire linear resource and the segment would be impacted by the undertaking, they do not provide enough information to accurately apply the Section 106 criteria of Adverse Effect. For these reasons, CDOT evaluated ditch impacts based on changes to the ditch in its surrounding environment, as well as based on the nature of the work, the current condition and significance of the part of the ditch that would be impacted, and the proposed changes or modifications the impact would have to the feature.

### *Cumulative Impacts of the Build Packages*

In addition to direct impacts to historic resources from the extent and encroachment of the build packages, the Section 106 regulations also require agencies to consider reasonably foreseeable project effects to historic properties that may occur later in time, be farther removed in distance, or be cumulative in nature.

## Effects Determinations

The effects determinations in this section are organized according to the location of the resources from east to west in the highway corridor.

## ***Adams Segment***

### *Lower Clear Creek Canal (5AM80)*

#### Site Description

The segment of the canal within the APE is located in a pipe under the intersection of US 36 and Interstate 25 (I-25) and has also been piped underneath adjacent commercial properties southwest of the interchange in an aqueduct. It parallels the Colorado Agricultural Canal (5AM81.3).

#### Eligibility Determination

The entire Lower Clear Creek Canal (5AM80) is eligible to the NRHP under Criterion A because its construction period, 1860 to 1861, coincides with the period of significance in the development of water rights and agriculture in Adams County. The segment in the APE (5AM80.6) has undergone major alterations since its original construction and lacks sufficient integrity to support the eligibility of the larger linear resource of which it is a part.

#### Effect Determination

The historic setting of the canal has been changed by street crossings at Washington Street and York Street on the east side of the I-25/US 36 interchange and Pecos Street and Federal Boulevard on the west side. The only location that has been modified within a 1-mile radius of the APE is in the area of the I-25/US 36 interchange. Package 2 and Package 4 and the Combined Alternative Package (Preferred Alternative) include slight modifications to the ramps between the two highways above the piped section of the canal. The proposed undertaking would not change the appearance, operation, or maintenance of the entire canal in its present form. CDOT did not prepare a figure to illustrate these changes because the affected segment does not support the eligibility of the larger linear resource. These impacts do not affect the ability of the canal to convey its historic significance and would not modify the setting of the canal. Therefore, CDOT and FHWA have determined that the proposed undertaking as described in Package 2 and Package 4 and the Combined Alternative Package (Preferred Alternative) would have no effect on the ditch, resulting in the Section 106 determination of No Historic Properties Affected.

### *Colorado Agricultural Canal (5AM81)*

#### Site Description

The segment of the canal within the APE is located in a pipe under the intersection of US 36 and I-25 and has also been piped underneath adjacent commercial properties in the aqueduct. It parallels the Lower Clear Creek Canal (5AM80.6).

#### Eligibility Determination

The entire Colorado Agricultural Canal (5AM81) is eligible to the NRHP under Criterion A because its construction period, 1867, coincides with the period of significance in the development of water rights and agriculture in Adams County. The segment in the APE (5AM81.3) has undergone major alterations since its original construction and lacks sufficient integrity to support the eligibility of the larger linear resource of which it is a part.

#### Effect Determination

The historic setting of the canal has been changed by street crossings at Washington Street and York Street on the east side of the I-25/US 36 interchange and Pecos Street and Federal Boulevard on the west side. The only location that has been modified within a 1-mile radius of the APE is in the area of the I-25/US 36 interchange. Package 2 and Package 4 and the Combined Alternative Package (Preferred Alternative) include slight modifications to the ramps between the two highways above the piped section

of the canal. The proposed undertaking would not change the appearance, operation, or maintenance of the entire canal in its present form. CDOT did not prepare a figure to illustrate these changes because the affected segment does not support the eligibility of the larger linear resource. These impacts would not affect the ability of the canal to convey its historic significance and would not further modify the setting of the canal. Therefore, CDOT and FHWA have determined that the proposed undertaking as described in Package 2 and Package 4 and the Combined Alternative Package (Preferred Alternative) would have no effect on the ditch, resulting in the Section 106 determination of No Historic Properties Affected.

### *Allen Ditch (5AM1132 and 5JF1762)*

#### Site Description

The parabola-shaped earthen ditch is approximately 10 to 15 feet wide at the top and 4 feet deep. Five separate ditch segments were recorded in the APE: 5AM1132.1 (560 feet), 5AM1132.3 (1,125 feet), 5AM1132.4 (800 feet), 5JF1762.1 (1,000 feet), and 5JF1762.4 (600 feet). All of the ditch segments pass under the roadway through concrete box culverts. The entire ditch measures approximately 34,790 feet (6.6 miles) long. Riparian vegetation is located along the banks of the ditch. The surrounding area includes dense commercial and residential development.

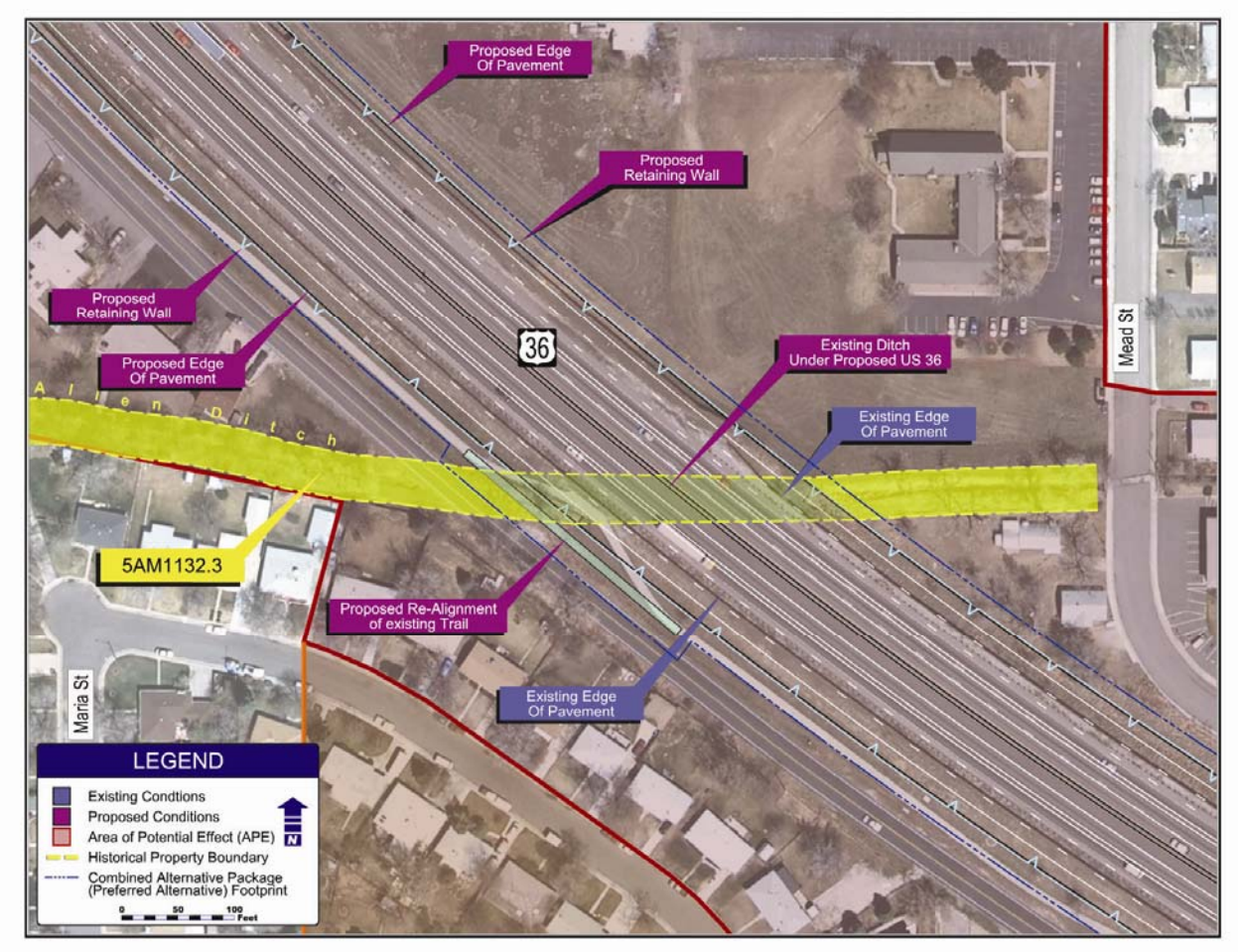
#### Eligibility Determination

The entire Allen Ditch (5AM1132 and 5JF1762) is eligible for listing in the NRHP under Criterion A for its relation to the development of water rights and agriculture in Adams County. The ditch is a lateral of the Farmers Highline Canal, and it dates to 1883. The Farmers Highline Canal was originally built in the 1860s by the Arapahoe Ditch Company from Clear Creek to Van Bibber Creek. The remaining segments to the east were built in subsequent years by the Golden City and Arapahoe Ditch Company. The Allen Ditch supplies irrigation water to the Westminster area. Segments 5AM1132.3, 5AM1132.4, and 5JF1762.4 were found to retain sufficient integrity to support the overall eligibility of the entire ditch (see Appendix B, Consultation and Coordination, for SHPO concurrence). Segments 5AM1132.1 and 5JF1762.1 do not support the overall eligibility of the entire ditch but impacts to these segments were assessed to determine effects of the proposed undertaking to the overall resource.

#### Effect Determination

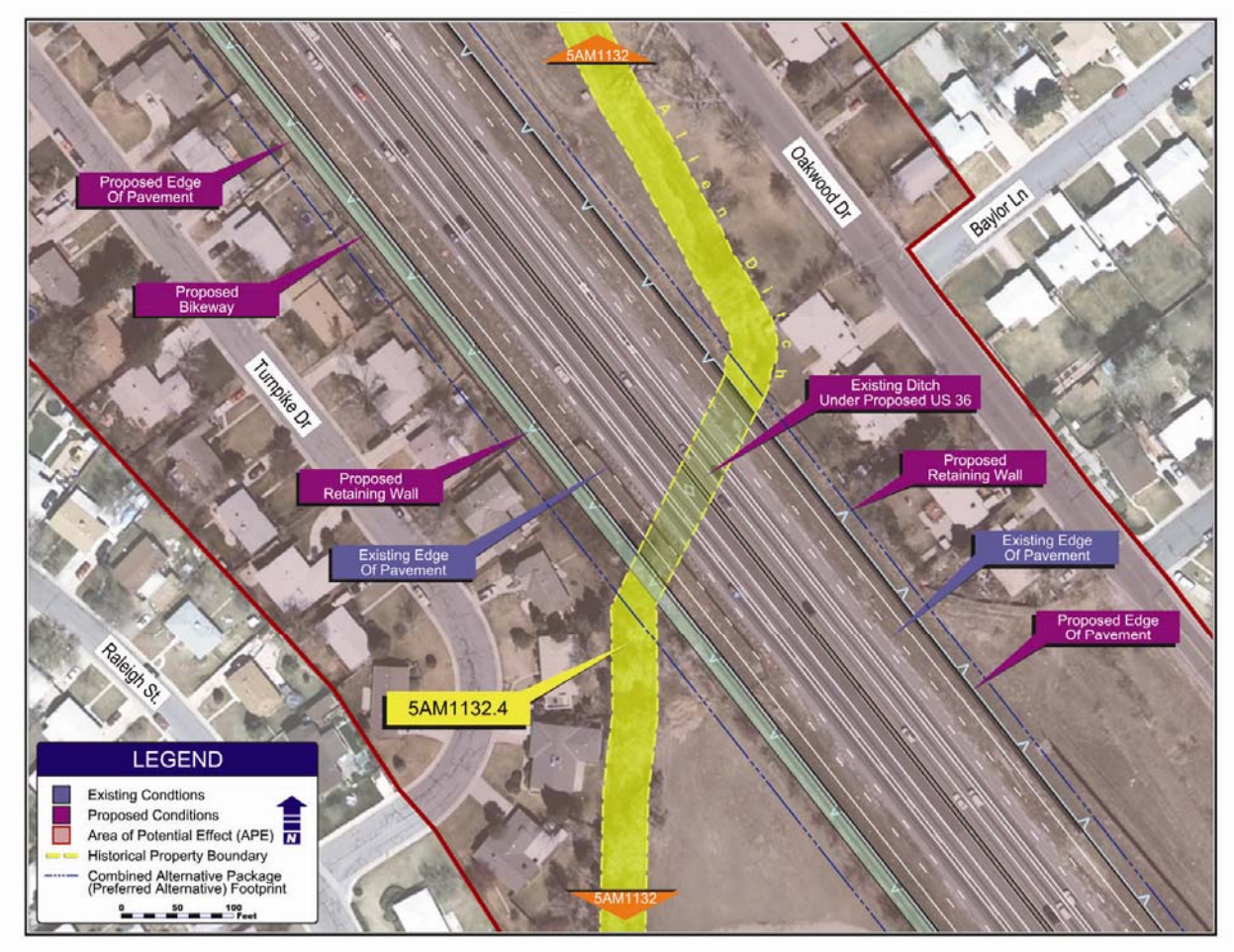
The resource would be affected by the widening of US 36 in all three build packages. The primary effect to the ditch would be extending culverts and placing segments of open ditch into pipes due to highway expansion and the realignment of local streets. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where the culvert extensions would be excavated. Figures 4.7-4 through 4.7-6, illustrate the effects described to this historic resource. Allen Ditch would be impacted by the packages as noted in Table 4.7-3, Allen Ditch Impacts.

**Figure 4.7-4: Impacts to Allen Ditch, 5AM1132.3**



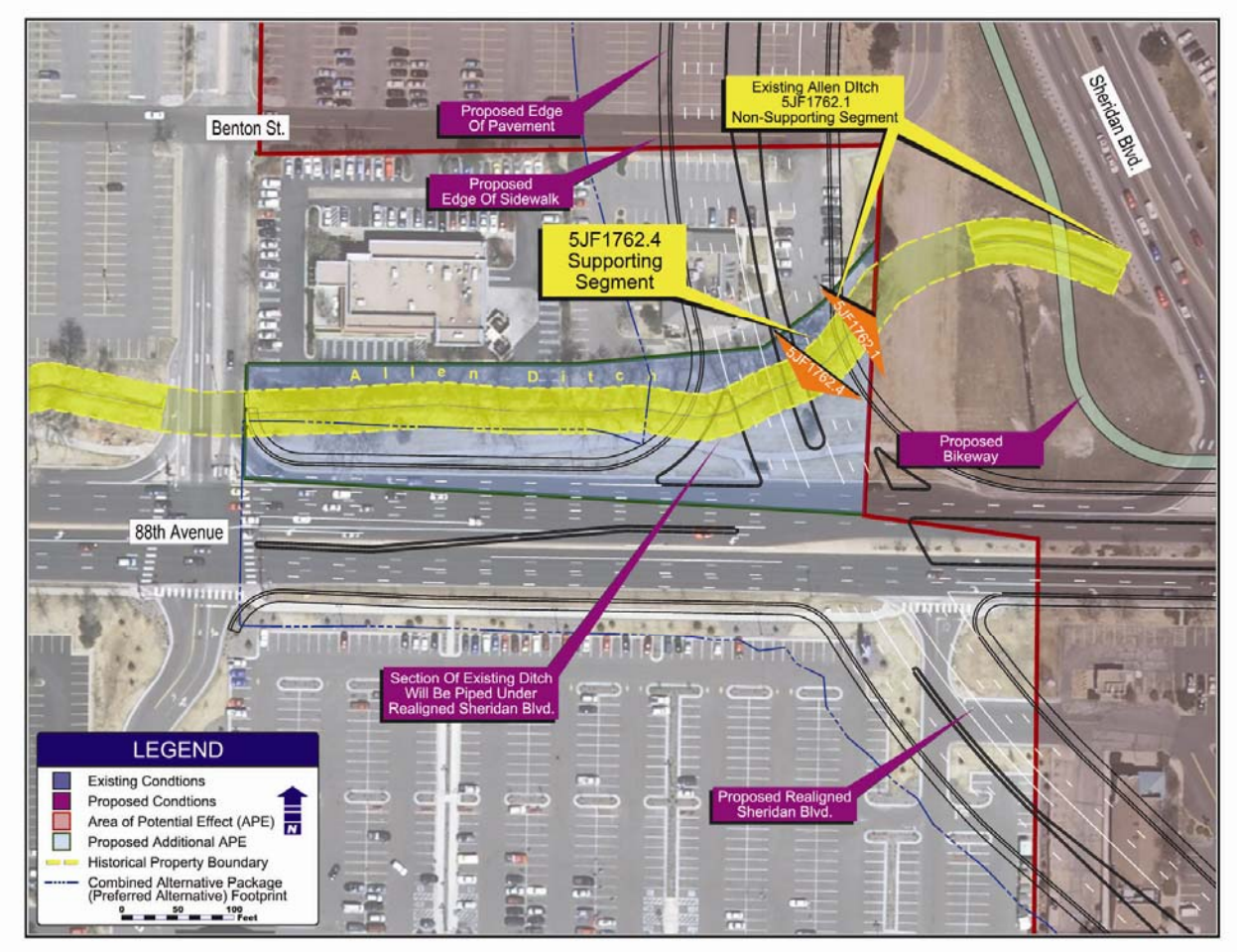

Source: US 36 Mobility Partnership, 2009.

**Figure 4.7-5: Impacts to Allen Ditch, 5AM1132.4**




Source: US 36 Mobility Partnership, 2009.

**Figure 4.7-6: Impacts to Allen Ditch, 5JF1762.4**




Source: US 36 Mobility Partnership, 2009.

**Table 4.7-3: Allen Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/Lining Under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact Area of the Ditch as Compared to the Entire 34,848-Foot (6.6-Mile) Length of the Ditch |
|---|---|---|---|
| 2 | See below | 2,730 feet | 7.8% |
| 4 | See below | 2,610 feet | 7.5% |
| Combined Alternative Package (Preferred Alternative) | 5AM1132.1 270 feet | An additional 330 feet of the 1,640-foot segment would be impacted | 1,520 feet for all four segments = 4.3% |
| | 5AM1132.3 200 feet | An additional 70 feet of the 1,125-foot segment would be impacted (extending 20 feet on north and 50 feet on south) | |
| | 5AM1132.4 230 feet | An additional 120 feet of the 800-foot segment would be impacted (extending 40 feet on north and 80 feet on south) | |
| | 5JF1762.1 270 feet | An additional 700 feet of the 1,000-foot segment would be impacted (extending 50 feet on north and 650 feet on south) | |
| | 5JF1762.4 (ditch is not under US 36 in this location) | An additional 300 feet of the 600-foot segment would be impacted | |

Source: OAHP, 2009a and 2009b.
Notes:
% = percent
US 36 = United States Highway 36

The historic setting of the Allen Ditch has been dramatically modified by the development of suburban neighborhoods, shopping malls, and the crossings of at least nine roads in the immediate area, in addition to three crossings of US 36 within approximately 6,864 feet (1.3 miles).

As shown in Table 4.7-3, Allen Ditch Impacts, all three build packages vary in the impacts within the APE. The Combined Alternative Package (Preferred Alternative) has the least impact, affecting 4.3 percent of the entire resource. The impacts result from the addition of two general-purpose lanes, an auxiliary lane, two managed lanes, barriers and shoulders between the travel lanes and managed lanes, and two 12-foot shoulders, requiring a total width of 180 feet in this area. The additional 1,220 feet in the culverts increases the amount under the highway but occurs in locations where the highway has already affected the condition of the resource. In addition, Sheridan Boulevard would be realigned near 88th Avenue in the vicinity of Westminster Mall, and would require piping 300 feet of the ditch in its original channel which has mature vegetation.

The ditch would still function as an irrigation feature. The improvements would involve extending culverts and piping short segments of the ditch that are currently earthen and open.

CDOT and FHWA determined that all three build packages affect the ditch in numerous locations and would affect the ability of the ditch to convey its historic significance. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of Adverse Effect.

### *7979 Meade Street (5AM1806) – Advent Evangelical Lutheran Church*

#### Site Description

This single-story structure has a cross-gabled roof design. The primary element of the roof design is the large front-facing gabled roof section on the north end of the building, which is approximately 40 feet tall. This detail gives the structure its A-Frame style. The roof is clad in composition shingles. The large roof section has exposed members in the eaves and stained glass in the dormer. The exterior walls are clad in

brick. A band of fixed pane windows span the primary façade and is located just below the roofline. The building was constructed circa 1960 and appears to be unaltered.

### Eligibility Determination

The property of 7979 Meade Street (5AM1806) is eligible for the NRHP under Criterion C as a good representative example of an A-Frame structure, in the post-World War II era.

### Effect Determination

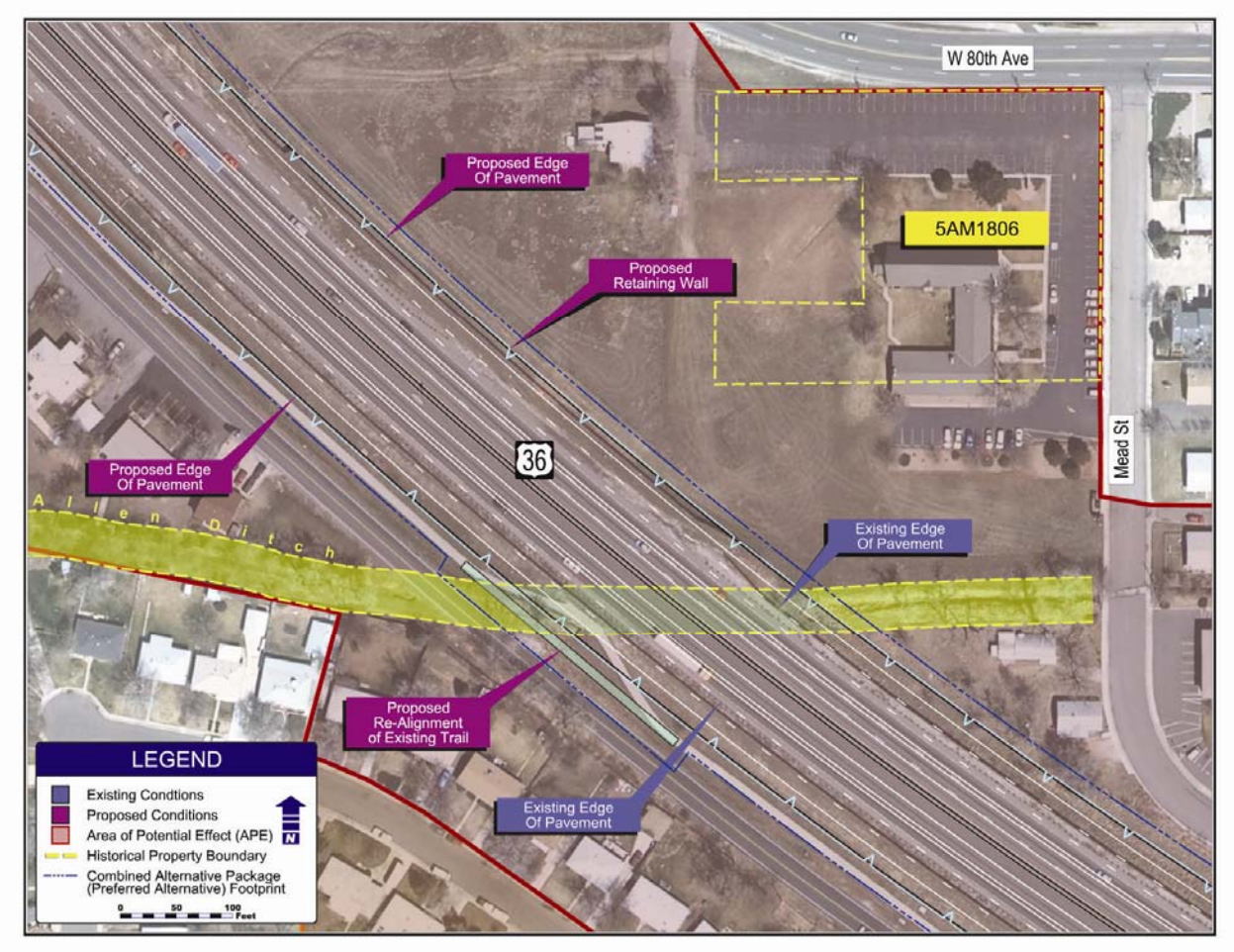
None of the packages evaluated in this FEIS would have a direct impact to this historic property. The DEIS evaluated direct impacts due to the realignment and widening of 80th Avenue due to the construction of a new 80th Avenue bridge. CDOT submitted a determination of effect separately to SHPO and consulting parties for the 80th Avenue bridge project because it will occur independently of this FEIS. SHPO concurred with CDOT's determination of No Adverse Effect for this resource in correspondence dated June 9, 2009.

Package 2 and Package 4 would have similar indirect impacts to the property associated with the church site and setting. The widening of US 36 would move the edge of the freeway about 80 feet closer to the site than the existing highway. The church structure would be more than 120 feet away from the edge of the expanded highway versus about 200 feet in the existing condition. The church site is elevated above the highway by about 15 to 20 feet. A noise barrier in the form of a wooden fence exists today along the highway edge. The undertaking would replace the noise barrier in this segment. The material would be concrete or other similar material. The wall would create a visual element that would be designed to be compatible with the surrounding area and would block noise and visual impacts of the highway from the church property.

The proposed undertaking would introduce visual elements by bringing the highway ROW 80 feet closer to the resource, to abut the edge of the parcel associated with the historic structure. The visual effect of the noise wall on top of the retaining wall is not expected to be substantially greater than that of the existing highway and wooden noise wall. Because of the difference in grade between the church property and the proposed US 36 alignment at this location, it is likely that the only substantial changes in views from the property would be the elimination of 80 feet of vacant land between the church property and the existing noise wall. Because the church has stained glass windows, this change would not be noticeable from the interior of the space, and would only affect parishioners moving from their cars to the church itself.

The Combined Alternative Package (Preferred Alternative) would have less impact to the property than Package 2 and Package 4 (see Figure 4.7-7, Impacts to Advent Evangelical Lutheran Church). The freeway expansion in the segment behind the church is approximately 20 feet wider than the existing freeway width, or 60 feet less than the widening proposed for Package 2 and Package 4. The church structure would be more than 180 feet from the edge of the expanded highway versus about 200 feet in the existing condition. The elevation of the church site would remain in its current condition. The undertaking also includes replacing the existing wooden noise barrier with a concrete wall on the highway edge. The visual effect of the noise wall is not expected to be substantially different or greater than existing conditions. Because of the difference in grade between the church property and the proposed US 36 alignment at this location, the only substantial changes in views from the property would be the elimination of 20 feet of vacant land between the church property and the existing noise wall. Because the church has stained glass windows, this change would not be noticeable from the interior of the space. Less ROW would be needed for the Combined Alternative Package (Preferred Alternative), so the noise wall would be further away from the church. This would have a minimal visual effect on the existing setting of the property which would not contribute to the architectural significance of the church.

**Figure 4.7-7: Impacts to Advent Evangelical Lutheran Church**




Source: US 36 Mobility Partnership, 2009.

The impacts of the Combined Alternative Package (Preferred Alternative) would not affect or change the ability of the property to convey its significance and would not diminish the property directly through a permanent acquisition of land nor indirectly through substantial visual or noise impacts due to the replacement of the existing noise barrier. Therefore, CDOT and FHWA have determined the proposed undertaking would have no effect to the property, resulting in the Section 106 determination of No Historic Properties Affected.

## ***Westminster Segment***

### *Niver Canal (5JF3787)*

#### Site Description

The segment of the Niver Canal in the APE passes under US 36 in a general west-to-east direction and is approximately 180 feet south of and parallel to the Farmers Highline Canal (5JF250). The parabola-shaped earthen canal is approximately 40 feet wide at the top and 15 feet deep. It passes under the roadway through a reinforced concrete box culvert. The surrounding area is commercial and residential. Heavy riparian growth surrounds the canal in this segment. During the initial construction of US 36, a 14-foot by 4-foot by 120-foot concrete box culvert was constructed to convey the ditch under the highway.

### Eligibility Determination

The eligibility of Niver Canal (5JF3787) has not been determined yet. This requires additional research to determine whether the criteria of eligibility apply to this resource. This documentation and a determination of eligibility will be sent from CDOT to SHPO for official concurrence when funding for the project is obtained. For the purposes of the FEIS, the resource is being treated as eligible for the NRHP. The canal was built in 1912. The 120 feet of ditch placed in a culvert under US 36 has lost all integrity, but the rest of the segment within the current US 36 ROW and APE (5JF3787.2) was found to support the eligibility of the larger resource of which it is a part.

### Effect Determination

The resource would be slightly affected by the widening of US 36 for all build packages (see Figure 4.7-8, Impacts to Niver Canal and Farmers Highline Canal). The primary effect would be extending the amount of culvert underneath the highway. The expansion of the highway in this area would include two bus only/auxiliary lanes, two managed lanes, four 12-foot shoulders, and a 4-foot barrier for a total width of 156 feet. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where the culvert extensions would be excavated. Table 4.7-4, Niver Canal Impacts, summarizes the impacts per package compared to existing conditions.

**Table 4.7-4: Niver Canal Impacts**

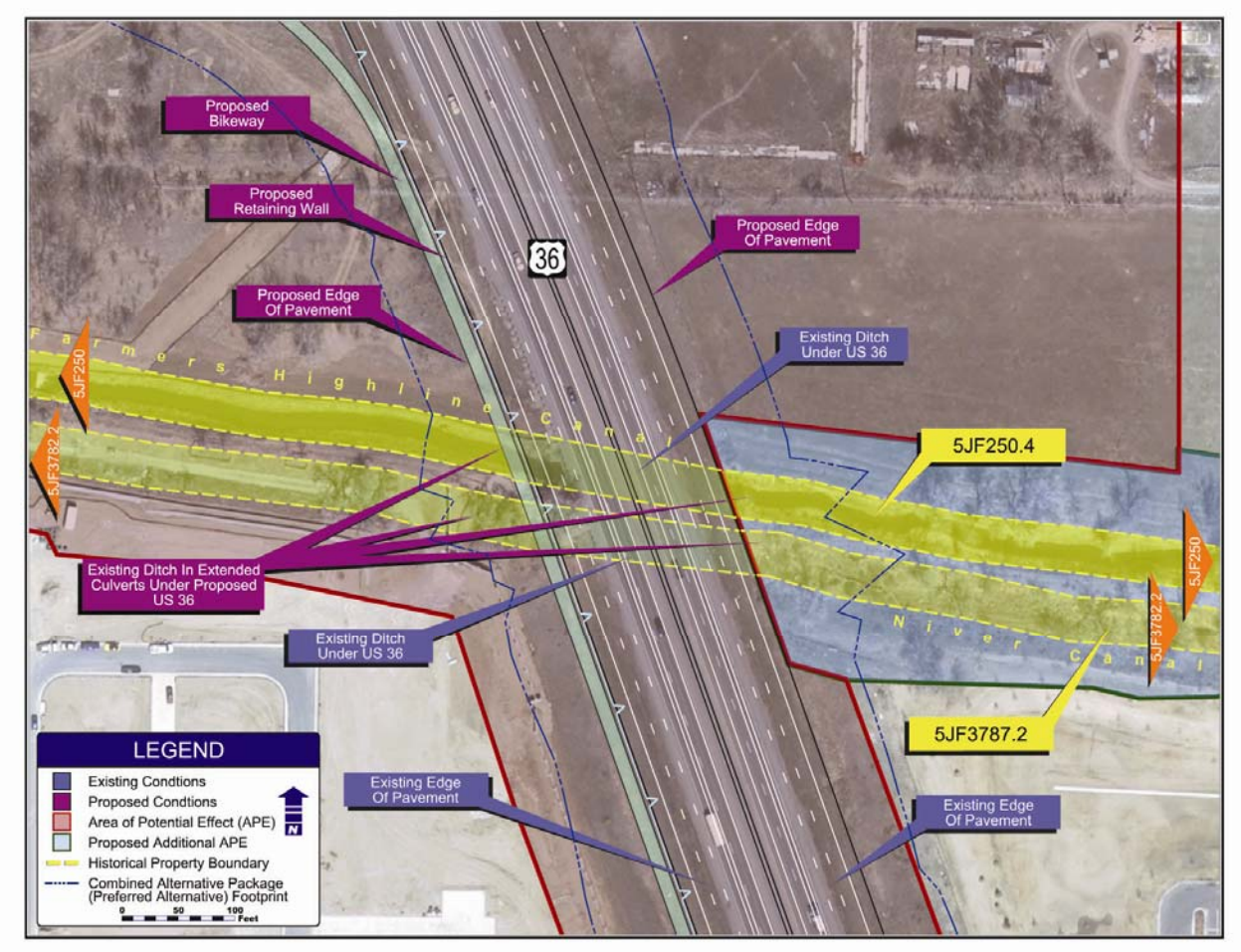
| Package | Existing Length of Culvert/Pipe/Lining Under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact to the 1,050-Foot Ditch Segment | Percent of Package Impact to the Entire 180,048-Foot (34.1-Mile) Ditch |
|---|---|---|---|---|
| 2 | 120 feet | 340 feet (extending 170 feet to the north and 170 feet to the south of the existing culvert) | 44% | 0.3% |
| 4 | 120 feet | 230 feet (extending 120 feet to the north and 110 feet to the south of the existing culvert) | 33% | 0.2% |
| Combined Alternative Package (Preferred Alternative) | 120 feet | 190 feet (extending 90 feet to the north and 100 feet to the south) | 30% | 0.2% |

Source: OAHP, 2009a and 2009b.
Notes:
% = percent
US 36 = United States Highway 36

The historic setting of the canal has changed dramatically due to roadway crossings and surrounding development. North of US 36, it is crossed by Sheridan Boulevard and City Center Drive, travels through the Hyland Hills Golf Course, and borders three commercial developments. South of US 36, it borders a large school, runs between two residential neighborhoods, and is crossed by North Pierce Street and 92nd Avenue.

As shown in Table 4.7-4, Niver Canal Impacts, all build packages vary in the impact the culvert extension would have to the 1,050-foot segment within the APE. The Combined Alternative Package (Preferred Alternative) would have the least impact, converting 30 percent of the segment in the APE to an extension of the existing culvert. However, the impact this action would have to the overall ditch (180,000 feet or 34 miles long) would be very minor, affecting just 0.2 percent of the entire resource.

**Figure 4.7-8: Impacts to Niver Canal and Farmers Highline Canal**




Source: US 36 Mobility Partnership, 2009.

The additional 190 feet in the extended culvert would increase the amount under the highway but would occur in a location where the highway and surrounding development have already affected the condition of the resource. This small increase in the amount of ditch in the culvert would not affect the ability of the entire ditch to convey its significance under Criterion A, or alter the function of the ditch as an irrigation feature, the attribute most closely tied to its historic significance. Therefore, CDOT and FHWA have determined the build packages would result in the Section 106 determination of No Adverse Effect.

### *Farmers Highline Canal (5JF250)*

#### Site Description

This segment of the Farmers Highline Canal in the APE passes under US 36 in a general west-to-east direction and is approximately 180 feet north of, and directly parallel to, the Niver Canal (5JF3787). The parabola-shaped earthen ditch is approximately 40 feet wide at the top and 15 feet deep. The ditch passes under the roadway through a reinforced concrete box culvert. The surrounding area is commercial and residential. Heavy riparian growth surrounds the canal in this segment. During the construction of US 36, a 14-foot by 4-foot by 140-foot concrete box culvert was constructed to convey the ditch under the highway. The original alignment remains unchanged.

### Eligibility Determination

The entire Farmers Highline Canal (5JF250) is eligible for the NRHP under Criterion A for its association with the development of water rights in Jefferson County. The ditch was built in 1859. The 140 feet of ditch placed in a culvert under US 36 has lost its integrity, but the 1,175-foot segment (5JF250.4) within the current US 36 ROW and APE was found to support the eligibility of the larger resource of which it is a part.

### Effect Determination

The resource would be slightly affected by the widening of US 36 for all three build packages (see Figure 4.7-8, Impacts to Niver Canal and Farmers Highline Canal). The primary effect would be extending the amount of culvert underneath the highway. The expansion of the highway in this area includes two bus only/auxiliary lanes, two managed lanes, four 12-foot shoulders, and a 4-foot barrier for a total width of 156 feet. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where the culvert extensions would be excavated. Table 4.7-5, Farmers Highline Canal Impacts, summarizes the impacts per package compared to existing conditions.

**Table 4.7-5: Farmers Highline Canal Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/Lining Under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact to the 1,175-Foot Segment | Percent of Package Impact to the Entire 180,048-Foot (34.1-Mile) Length of the Ditch |
|---|---|---|---|---|
| 2 | 140 feet | 340 feet (extending 190 feet on north and 150 feet on south end of the existing culvert) 480 feet total | 41% | 0.3% |
| 4 | 140 feet | 280 feet (extending 160 feet on north and 120 feet on south end of the existing culvert) 320 feet total | 36% | 0.2% |
| Combined Alternative Package (Preferred Alternative) | 140 feet | 280 feet (extending 150 feet on the north and 130 feet on the south of the existing culvert) 320 feet total | 36% | 0.2% |

Source: OAHP, 2009a and 2009b.

Notes:

% = percent

US 36 = United States Highway 36

The historic setting of the canal has changed dramatically due to roadway crossings and development. North of US 36, it is crossed by Sheridan Boulevard and City Center Drive, travels through the Hyland Hills Golf Course and borders three commercial developments. South of US 36, it borders a large school, runs between two residential neighborhoods, and is crossed by North Pierce Street and 92nd Avenue.

As shown in Table 4.7-5, Farmers Highline Canal Impacts, all build packages would have a similar impact to the culvert extension that is part of the 1,175-foot segment in the APE. The Combined Alternative Package (Preferred Alternative) would impact 36 percent of the segment in the APE to extend the existing culvert. However, the impact this action would have to the overall ditch (180,000 feet or 34 miles long) would be very minor, affecting just 0.2 percent of the entire resource.

The additional 280 feet in the extended culvert would increase the amount under the highway but would occur in a location where the highway and surrounding development have already affected the condition of the resource.

This small increase in the amount of ditch in the culvert would not affect the ability of the entire ditch to convey its significance under Criterion A, or alter the function of the ditch as an irrigation feature, the attribute most closely tied to its historic significance. Therefore, CDOT and FHWA have determined the proposed undertaking would result in the Section 106 determination of No Adverse Effect.

### *BNSF Railway Segment (5JF519.7)*

#### Site Description

The resource is a historic railroad segment that measures approximately 21,120 feet (4 miles) long. The US 36 alignment crosses the BNSF Railway alignment just northwest of the Church Ranch Boulevard interchange. The bridge that carries US 36 over the railroad was constructed in the 1990s following an accident on the rail line that occurred under the previous bridge. Tank cars caught fire and the previous bridge was severely burned and destroyed. The replacement bridge was constructed in a short period of time. During the reconstruction, a detour was used along the northeast side of the highway extending about 150 feet east of the existing highway ROW line. The detour crossed the BNSF line at-grade and substantially disturbed the area around the tracks and the reconstruction zone.

#### Eligibility Determination

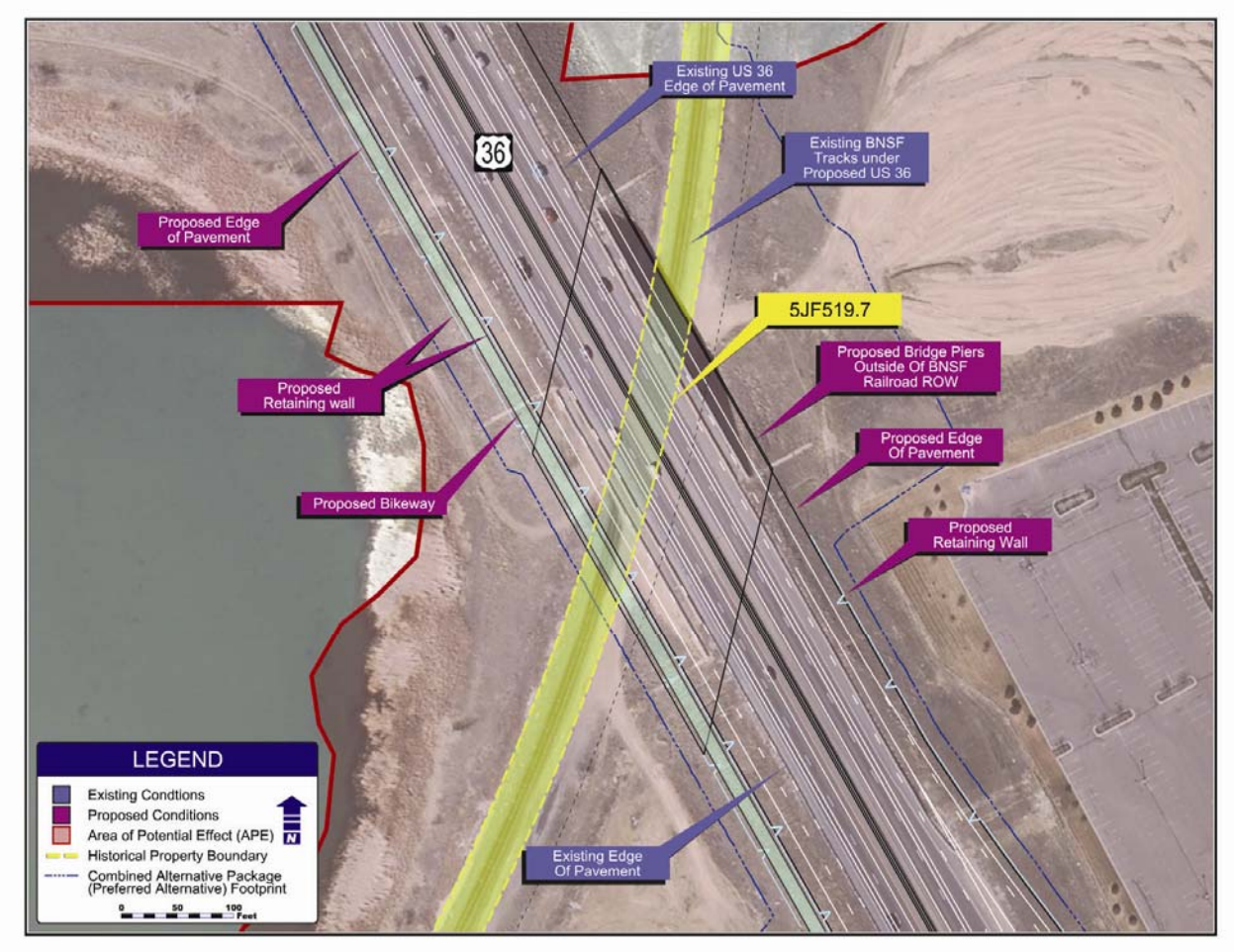
This segment of the BNSF Railway supports the overall eligibility of the entire railroad, which is eligible under NRHP Criterion A for its association with the development of railway transportation. Railway transportation was critically important to the settlement of Colorado.

#### Effect Determination

The effects would be the same for Package 2 and Package 4 and the Combined Alternative Package (Preferred Alternative) (see Figure 4.7-9, Impacts to the BNSF Railway Segment). The existing bridge would be widened and lengthened with a new structure at the crossing point. The existing bridge is 240 feet long and 130 feet wide. The new bridge would be 310 feet long and 270 feet wide with an approximate vertical clearance of 23 feet to include the expanded highway and adjacent bikeway. New bridge piers and abutments would be constructed on either side of the 100-foot wide BNSF Railway ROW to avoid impacts to the existing tracks and those planned as part of the RTD Northwest Rail Corridor Project. The historic boundary of the property is the railroad ROW. While there would be an increased use of the airspace above the railway alignment, no physical intrusion into the railroad ROW is planned.

Some change in the visual setting of the resource would result from the widening and lengthening of the highway bridge, but this change would not alter the qualities that make this railroad eligible. The proposed undertaking would not change the ability of the rail segment to convey its significance. Therefore, CDOT and FHWA have determined that the build packages would result in the Section 106 determination of No Adverse Effect.

**Figure 4.7-9: Impacts to the BNSF Railway Segment**




Source: US 36 Mobility Partnership, 2009.

## ***Broomfield Segment***

### *Equity Ditch (5BF98 and 5JF3752)*

#### Site Description

The site is an abandoned ditch measuring 10 feet wide and 5 feet deep, on average. In Jefferson County, the ditch segment (5JF3752.1) is curved and crosses twice under the frontage road (Wadsworth Boulevard) of US 36. Each crossing has a 6-foot diameter corrugated metal pipe that is buttressed by pieces of concrete. The segment in Jefferson County is about 1,000 feet in length on the west side of US 36. There are two diversion features in this segment.

The ditch continues north into Broomfield County where it is recorded as 5BF98.1. It crosses US 36 in a 90-foot long concrete box culvert built in 1951 during the Denver to Boulder Turnpike construction and continues north. Just west of the US 36 crossing, it crosses under Wadsworth Boulevard in a 6-foot diameter corrugated metal pipe buttressed by stacked pieces of concrete slab. The recorded segment length is 3,000 feet in Broomfield County.

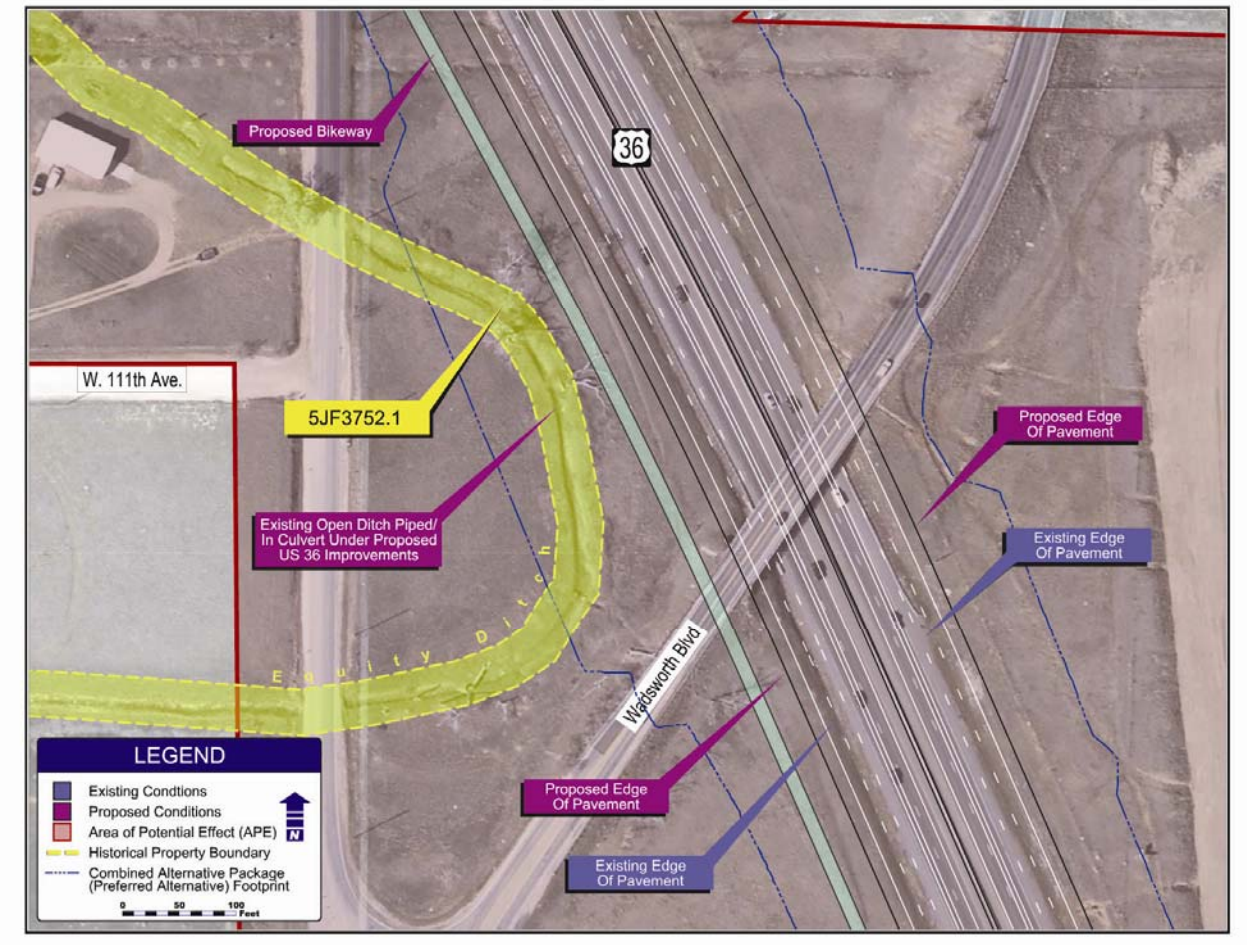
## Eligibility Determination

The entire Equity Ditch (5JF3752 and 5BF98) is eligible for the NRHP under Criterion A for its association with the development of water rights and agriculture in Jefferson and Broomfield counties. It is also eligible under Criterion C for its engineering association as a good representative example of a ditch in this region. The ditch was built in 1877 and was formerly known as the Graves and Dollison Ditch, known for two early families in the Broomfield area. The parts of the ditch under US 36 and Wadsworth Boulevard have lost integrity, but the remaining parts in Jefferson County (5JF3752.1) and Broomfield County (5BF98.1) within the current US 36 ROW and APE support the eligibility of the larger resource of which they are a part.

## Effect Determination

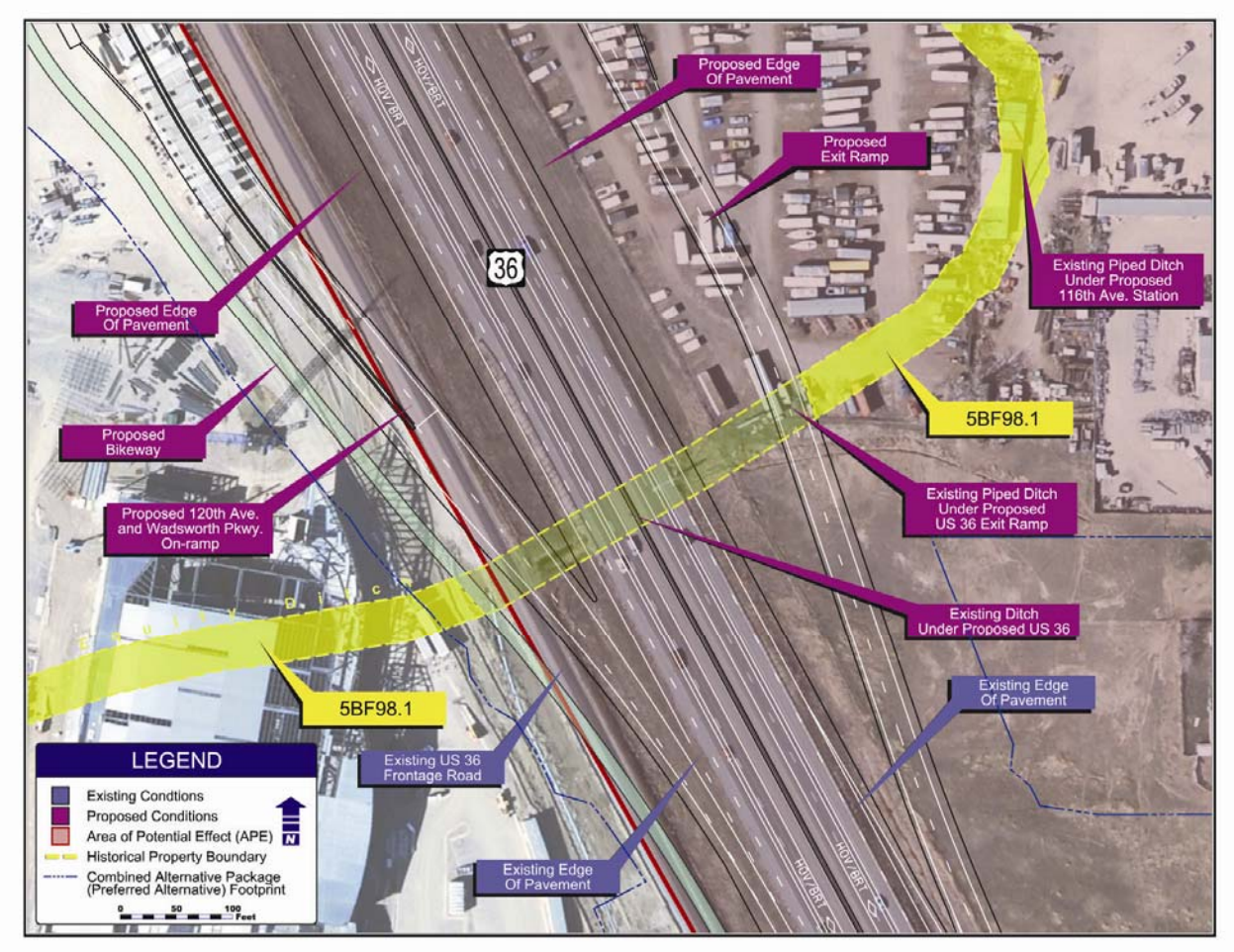
The portion of the resource in Broomfield County would be affected by the widening of US 36 for all build packages and the proposed RTD 116th Avenue commuter rail station (see Figure 7.4-10, Impacts to Equity Ditch, 5JF3752, and Figure 7.4-11, Additional Impacts to Equity Ditch, 5BF98). The primary effect would be extending the culvert underneath the highway and piping a segment of the ditch underground. The portion of the resource in Jefferson County would be piped underground due to the expansion of the freeway in the vicinity of the frontage road (also known as Wadsworth Boulevard). The total increase in length of these types of alterations per package is compared in Table 4.7-6, Equity Ditch Impacts, which summarizes impacts compared to existing conditions. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where the culvert extensions would be excavated.

**Figure 4.7-10: Impacts to Equity Ditch, 5JF3752**




Source: US 36 Mobility Partnership, 2009.

**Figure 4.7-11: Additional Impacts to Equity Ditch, 5BF98**




Source: US 36 Mobility Partnership, 2009.

**Table 4.7-6: Equity Ditch Impacts**

| Package | Resource Number | Existing Length of Culvert/Pipe/ Lining under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact to the Ditch Segment | Percent of Package Impact to the Entire 58,608-Foot (11.1-Mile) Ditch |
|---|---|---|---|---|---|
| 2 | 5BF98.1 | 90 | Additional 240 feet total of 3,000 foot segment (extending 140 feet on the north and 100 feet on the south) | 11% | 0.6% |
| | 5JF3752.1 | NA | Impacting 380 feet of 1,000 foot ditch segment | 38% | 0.6% |
| 4 | 5BF98.1 | 90 | Additional 240 feet total of 3,000 foot segment(extending 140 feet on the north and 100 feet on the south) | 11% | 0.6% |
| | 5JF3752.1 | NA | Impacting 380 feet of 1,000-foot ditch segment | 38% | 0.6% |
| Combined Alternative Package (Preferred Alternative) | 5BF98.1 | 90 | Additional 470 feet total of 3,000 foot segment (extending 410 feet on the north and 60 feet on the south under the highway). 700 feet of the ditch would be piped under the proposed 116th Avenue Station. Total impacts to this segment would be 1,170 feet. | 44% | 2.3% |
| | 5JF3752.1 | NA | Impacting 370 feet of 1,000-foot ditch segment | 37% | 0.6% |

Source: OAHP, 2009a and 2009b.
Notes:
% = percent
NA = not applicable
US 36 = United States Highway 36

The historic setting of the ditch has changed dramatically due to roadway crossings, development, and because it has been abandoned. It is crossed twice by Wadsworth Boulevard on the west side of the highway and has been piped underneath a residential development. It runs through a small portion of open, undeveloped land before being piped underneath a retaining pond and the new Broomfield Events Center. A small segment, less than 100 feet in length, emerges between Wadsworth Boulevard and US 36. On the east side of US 36 it emerges between two large parcels and continues to the north.

As shown in Table 4.7-6, Equity Ditch Impacts, the Combined Alternative Package (Preferred Alternative) would have a greater impact on the ditch segments than either Package 2 or Package 4. In Broomfield County, this is due to the need for an expanded width in this area for an exit ramp, bus features, and a queue jump on the east side US 36, as well as other changes on the west side of the highway that include an on-ramp from 120th Avenue and Wadsworth Parkway and the proposed RTD 116th Avenue commuter rail station on the east side of the highway. In Jefferson County, 370 feet of the open ditch would be realigned to tie back the slope next to the highway and the bikeway into the existing terrain. The Combined Alternative Package (Preferred Alternative) would convert 44 percent of the Broomfield County segment into an extended culvert or pipes and would place 37 percent of the Jefferson County segment that is open into pipes. However, the combined impact of these actions to the overall ditch (58,480 feet or 11.1 miles long) would be minor, affecting approximately 3 percent of the entire resource.

The additional 470 feet in the extended culvert, the placement of 770 feet of open ditch into a pipe, and the realignment of 370 feet along the roadway would increase the amount of ditch impacted, but would occur in locations where the highway and surrounding development have already affected the condition of the resource. These impacts would not lessen the reasons for the ditch significance, and it would still be able to convey its significance under Criteria A and C, and maintain its function as an irrigation feature,

the attribute most closely tied to its historic significance. Therefore, CDOT and FHWA have determined the proposed undertaking would result in the Section 106 determination of No Adverse Effect.

### *11415 Wadsworth Boulevard (5BF109)*

#### Site Description

This one-story, Craftsman-style dwelling was constructed in 1943. The floor plan of the building is generally irregular in shape. The roof is cross-gabled and clad in composition shingles. The exterior walls are clad in ship lap vinyl siding. There is a detached garage and a shed at the rear of the parcel. The landscape is populated with mature trees and shrubs, and the lawn is enclosed by a fence. The dimensions of the site on which the building sits is roughly 355 feet by 150 feet (about 1.22 acres) and is more than twice as deep as it is wide. The structures on the site are located on the eastern edge of the property within the half of the property furthest from the highway.

#### Eligibility Determination

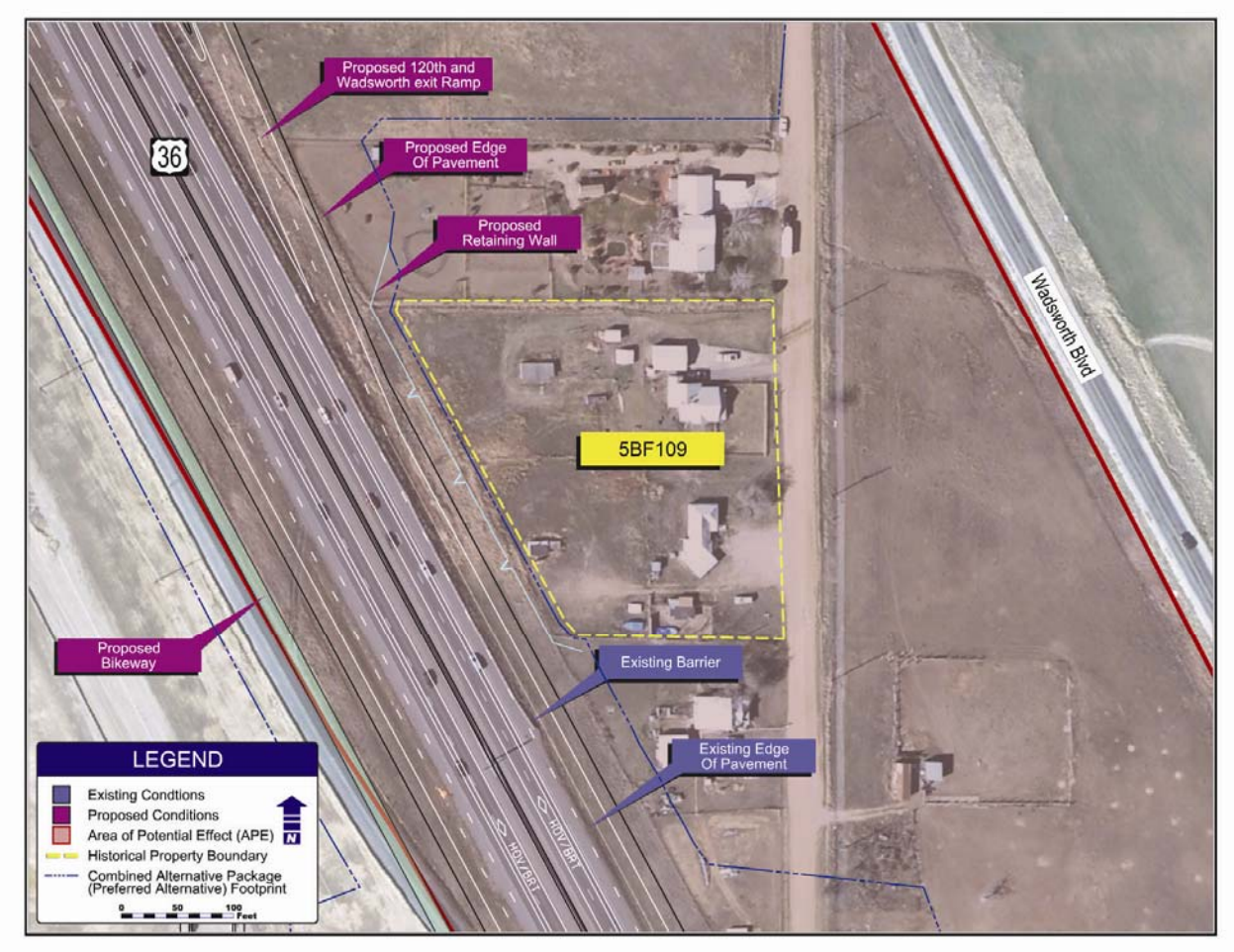
This building is a good example of a Craftsman-style single-family dwelling, which is an increasingly rare building type in the Broomfield area. It is eligible for the NRHP at the local level of significance under Criterion C.

#### Effect Determination

Under Package 2 and Package 4, a 142-foot by 63-foot parcel along the west side of the lot would be acquired and used as a result of the undertaking. No physical damage to the structures would result from either build package; the main house and other features (e.g., sheds) on the property would remain in place. The main house faces east to Wadsworth Boulevard. The current distance between the rear of the buildings and the highway is about 1,250 feet; the undertaking would bring the highway ROW 60 feet closer to the structures on the property.

The Combined Alternative Package (Preferred Alternative) would not require any acquisition of this property due to the construction of a retaining wall on the edge of the property (see Figure 4.7-12, Impacts to 11415 Wadsworth Boulevard). The exit ramp for 120$^{th}$ Avenue and Wadsworth Boulevard tapers to the east away from the boundary of the property. The highway would expand with two managed lanes. The exit ramp to 120$^{th}$ Avenue and Wadsworth Boulevard would be approximately 1,000 feet from the rear of the houses. The main house faces east to Wadsworth Boulevard. The view from the rear of the parcel would change with the addition of the wall. Although the highway would be closer to the property and the visual setting would be affected by the presence of the expanded highway and retaining wall, this would not alter the other elements of integrity, including the architectural workmanship and materials, original location, or the ability of the property to convey its significance. With regard to noise, the noise analysis indicates there would be an increase of approximately 2 decibels between Package 1 and the three build packages. This increase would not be great enough to prevent the site from conveying its significance or from being used for its current purpose. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of No Adverse Effect.

**Figure 4.7-12: Impacts to 11415 Wadsworth Boulevard**




Source: US 36 Mobility Partnership, 2009.

### *Dry Creek Valley Ditch (5BF7)*

#### Site Description

This segment of the Dry Creek Valley Ditch generally runs parallel to US 36 and crosses under State Highway 121. The parabola-shaped earthen ditch is approximately 20 feet in width at the top, and approximately 10 feet in depth. The portion of the ditch that crosses under the highway was altered when the highway was constructed and includes a concrete box culvert. During the construction of US 36, the original alignment of the ditch was shifted to the south to remove the ditch from the highway ROW and the ROW of the Broomfield interchange. The entire ditch is approximately 36,960 feet (7 miles) long. The documented segment in the APE (5BF7.2) is 6,425 feet long. Heavy riparian growth exists along either bank of the ditch in many areas. The surrounding area includes industrial and residential development.

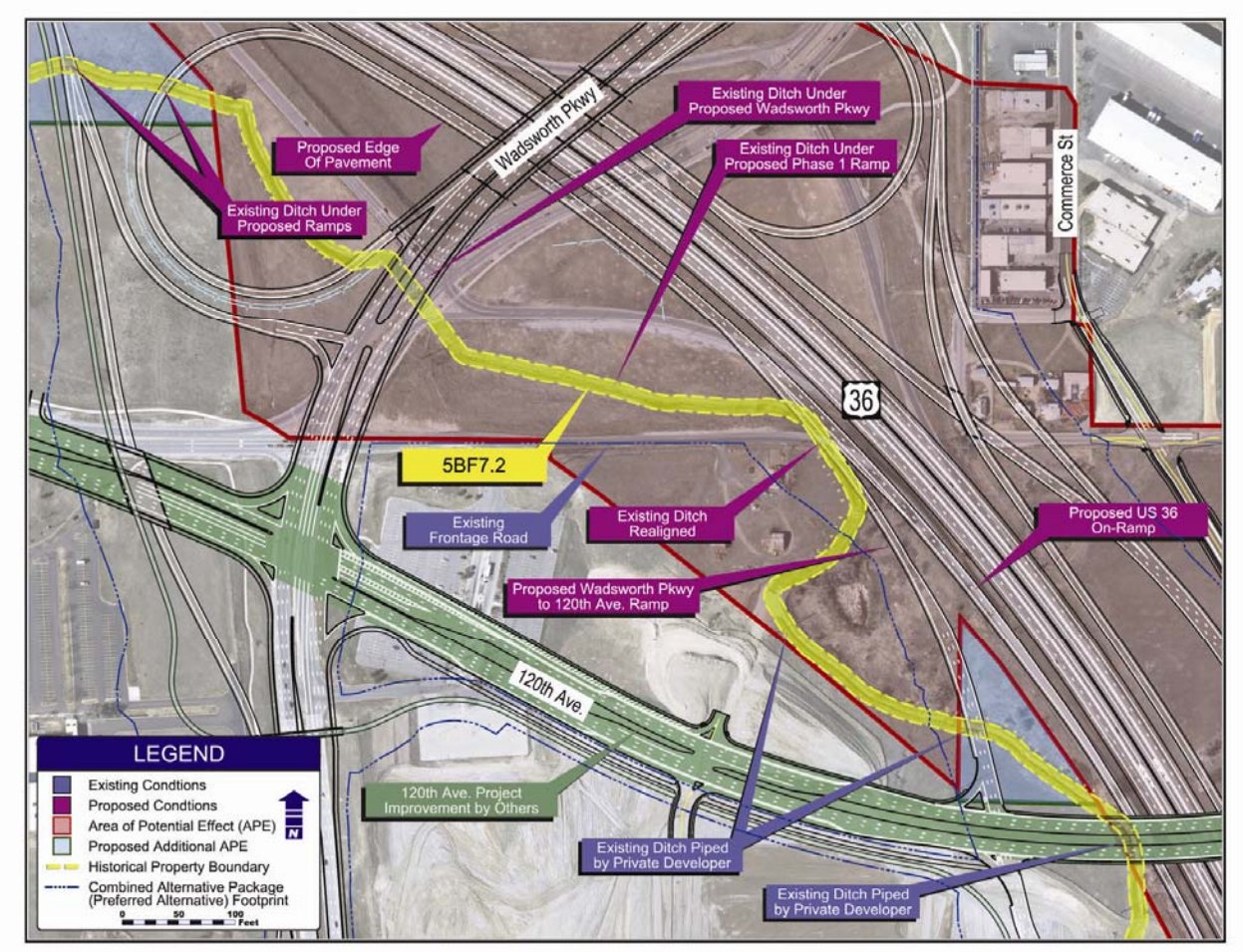
#### Eligibility Determination

The entire length of the Dry Creek Valley Ditch (5BF7) is eligible for listing in the NRHP under Criterion A for its relation to the development of water rights and agriculture in Broomfield County. The ditch was originally built in the mid-1880s. The segment within the APE was found to retain sufficient integrity of location, setting, feeling, and use to support the eligibility of the larger resource of which it is a part.

## Effect Determination

The resource would be affected by the widening of US 36 in all three build packages (see Figure 4.7-13, Impacts to Dry Creek Valley Ditch) and by an interim ramp during Phase 1 construction. The primary effect would be placing approximately 3,000 feet of open ditch into a pipe due to highway widening at the Wadsworth Parkway/120th Avenue interchange on the west side of US 36. The total increase in length for Package 2 and Package 4, and the Combined Alternative Package (Preferred Alternative) are compared in Table 4.7-7, Dry Creek Valley Ditch Impacts. Existing riparian vegetation would likely be lost where the ditch would be excavated. Table 4.7-7 summarizes impacts compared to existing conditions.

**Figure 4.7-13: Impacts to Dry Creek Valley Ditch**




Source: US 36 Mobility Partnership, 2009.

**Table 4.7-7: Dry Creek Valley Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/Lining Under US 36 | Length of Additional Pipe/Lining Proposed as Part of the Package | Percent of Package Impact on the 6,425-Foot Ditch Segment | Percent of Package Impact Area of the Ditch as Compared to the Entire 36,960-Foot (7-Mile) Length of the Ditch |
|---|---|---|---|---|
| 2 | NA | 3,190 feet (south of the existing culvert) | 50% | 8.6% |
| 4 | NA | 3,110 feet (south of the existing culvert) | 48% | 8.4% |
| Combined Alternative Package (Preferred Alternative) | NA | 3,760 feet (south of the existing culvert) | 59% | 10.2% |

Source: OAHP, 2009a and 2009b.
Notes:
% = percent
NA = not applicable
US 36 = United States Highway 36

The historic setting of the ditch has already changed dramatically due to residential and commercial development. The ditch is crossed by Wadsworth Parkway and crosses through a small section of open land between Wadsworth Boulevard and the on-ramp to US 36, but has been impacted by nearby commercial development. A large portion of the ditch has been piped underground for the Broomfield/Arista development. The ditch channel has been abandoned and will be eradicated by the development. The ditch would be crossed by the proposed West 120th Avenue connection to US 36 (part of the No Action Package). Any impacts to the ditch as a result of the West 120th Avenue connection will be consulted upon in separate correspondence between CDOT (on behalf of FHWA), SHPO, and consulting parties. CDOT will re-evaluate the total linear feet of impacts to this ditch when the US 36 corridor construction project in this area has been funded.

As shown in Table 4.7-7, Dry Creek Valley Ditch Impacts, the Combined Alternative Package (Preferred Alternative) would convert 59 percent of the segment within the APE and 10.2 percent of the entire ditch. This reflects the amount impacted by the corridor improvements and the construction of a ramp during the construction of Phase 1 of the undertaking.

This increase in the total length of the piped portion of the ditch would affect the ability of the ditch to convey its significance because a substantial portion of the ditch would be modified and concealed from view. Although the undertaking would not substantially alter the function of the ditch as an irrigation feature, the increased piping would have a significant impact on the ability of this segment of the ditch to convey its historic appearance and character. Therefore, CDOT and FHWA have determined that the proposed undertaking under all three build packages would result in the Section 106 determination of Adverse Effect.

### *8375 West 120th Avenue (5BF9)*

#### Site Description

This structure is a single-story, hip-roofed residence with a hipped extension and shed-roofed additions on the rear. The main body of the structure is built of rusticated concrete block, and additions are wood frame with horizontal wood lap siding. A full front porch has a hipped roof supported by milled wood posts. Windows are wood sash and double hung. The structure was built in either 1900 or 1909.

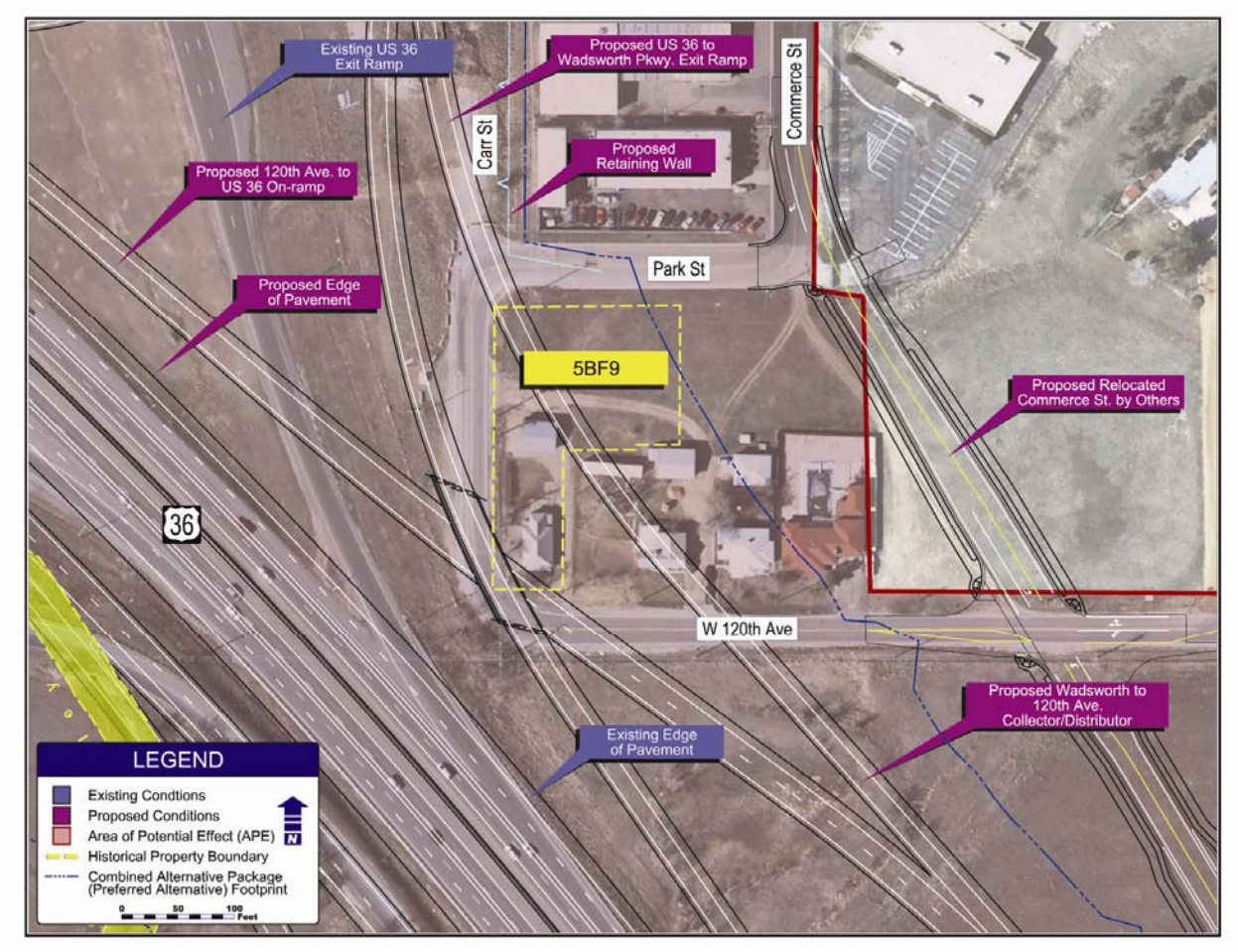
## Eligibility Determination

The property at 8375 West 120th Avenue (5BF9) is eligible for the NRHP under Criterion C as a representative example of an increasingly rare type, the hipped-roof box.

## Effect Determination

The majority of the lot would be disturbed and the structure itself would be completely demolished as a result of all three build packages (see Figure 4.7-14, Impacts to 8375 West 120th Avenue). The improvements that impact the lot include an exit ramp from US 36 to Wadsworth Parkway that also serves as a collector/distributor from Wadsworth Parkway to 120th Avenue. The proposed 120th Avenue to US 36 on-ramp would also impact the parcel. Approximately 0.62 acre in Package 2, 0.61 acre in Package 4, and 0.64 acre in the Combined Alternative Package (Preferred Alternative), or 95, 92, or 97 percent of the parcel, respectively, would need to be acquired, including the structure. Therefore, CDOT and FHWA have determined that the proposed undertaking as described for Package 2 and Package 4, and the Combined Alternative Package (Preferred Alternative) would result in the Section 106 determination of Adverse Effect.

**Figure 4.7-14: Impacts to 8375 West 120th Avenue**




Source: US 36 Mobility Partnership, 2009.

### *Community Ditch (5BF67)*

#### Site Description

This segment of the Community Ditch crosses US 36 near the Interlocken development on the west and an industrial complex on the east. A portion of the ditch crosses under the highway through a 12-foot by 4-foot by 109-foot concrete box culvert. During the construction of US 36, the original alignment of the ditch was shifted slightly to the north. The entire ditch is approximately 190,044 feet (36 miles) long. The documented segment in the APE (5BF67.5) is 295 feet long. The surrounding area includes industrial and residential development.

#### Eligibility Determination

The eligibility of Community Ditch (5BF67) has not been determined yet. This requires additional research to apply the criteria of significance and determine whether the resource meets the criteria. This documentation and a determination of eligibility will be sent from CDOT to SHPO for official concurrence when funding for the project is obtained. For the purposes of the FEIS, the resource is being treated as eligible for the NRHP. The date of construction of the ditch is unknown. The segment 5BF67.5 was determined by SHPO to not support the NRHP eligibility of the entire ditch. The portions of the ditch placed in a culvert under US 36 have lost all integrity.

#### Effect Determination

The resource would be slightly affected by the widening of US 36 in all three build packages. The primary effect to the ditch would be extending the culvert underneath the highway. CDOT did not prepare a figure to illustrate these changes because the affected segment does not support the eligibility of the larger linear resource. The total increase in length of this type of alterations per package is compared in Table 4.7-8, Community Ditch Impacts. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where the culvert extensions would be excavated. Table 4.7-8 summarizes impacts compared to existing conditions.

**Table 4.7-8: Community Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/ Lining Under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact to the 295-Foot Segment | Percent of Package Impact to the Entire 190,080-Foot (36-Mile) Length of the Ditch |
|---|---|---|---|---|
| 2 | 109 | 390 feet (extending 190 on the north and 200 feet on the south) | 169% | 0.3% |
| 4 | 109 | 260 feet (extending 130 feet on the north and 130 feet on the south) | 125% | 0.2% |
| Combined Alternative Package (Preferred Alternative) | 109 | 310 feet (extending 90 feet on the north and 220 feet on the south) | 142% | 0.26% |

Source: OAHP, 2009a and 2009b.
Notes:
% = percent
US 36 = United States Highway 36

The historic setting of the ditch has changed dramatically due to residential and commercial development. On the west side of US 36, the ditch has been realigned and channeled in concrete as part of the Interlocken development. It is crossed by four lanes of Interlocken Boulevard. On the east side of US 36, the ditch has not been rechanneled in concrete but is crossed by Industrial Lane, two tracks of the BNSF Railway, and several other roads in a large industrial development.

As shown in Table 4.7-8, Community Ditch Impacts, all three build packages would impact the entire 295-foot segment of the ditch within the APE. However, the impact this action would have to the overall ditch would be very minor, affecting less than 0.2 percent of the entire resource.

The Combined Alternative Package (Preferred Alternative) places 310 feet in the extended culvert, increasing the amount under the highway, but it occurs in a location where the highway and surrounding development have already affected the condition of the resource. This increase in the culvert does not appear to substantially affect the ability of the ditch to convey its significance under Criterion A, or substantially alter the function of the ditch as an irrigation feature, the attribute most closely tied to its historic significance. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of No Adverse Effect to the entire ditch.

### *Prehistoric Hearth (5BF99)*

#### Site Description

This site is located on Rock Creek. It is a lens of oxidized red soil with a thinner charcoal (ash) layer above it. The lens has a shallow convex bottom with a flat top. The top surface may have been eroded. It coincides with an erosional disconformity in the profile. It is about 2.95 feet long, has a maximum thickness of 0.49 feet, and is located approximately 4.92 feet below ground surface. Some riparian growth is located in the surrounding area.

#### Eligibility Determination

The Prehistoric Hearth (5BF99) may be eligible for the NRHP under Criterion D (site has yielded, or may be likely to yield, information important in history or prehistory). There is visible soil discoloration and charcoal evidence within the cut bank. However, some of the feature has eroded out from the cut bank.

#### Effect Determination

This prehistoric resource would be entirely destroyed as a result of Package 2 and Package 4. However, the Combined Alternative Package (Preferred Alternative) would completely avoid the resource. Therefore, CDOT and FHWA have determined the proposed undertaking would result in the Section 106 determination of No Historic Properties Affected.

## ***Superior/Louisville Segment***

### *Coal Creek Ditch (5BL5664)*

#### Site Description

This resource consists of three parallel pipes that were constructed to convey water from three laterals of the Coal Creek Ditch over US 36. The pipes are supported by three support columns located within the US 36 ROW and are anchored by concrete foundation features on either side of the highway. The entire structure is identified as E-16-FT.

#### Eligibility Determination

The eligibility of Coal Creek Ditch (5BL5664) has not been determined yet. This requires additional research to determine whether the criteria of eligibility apply. This documentation and a determination of eligibility will be sent from CDOT to SHPO for official concurrence when funding for the project is obtained. For the purposes of the FEIS, the resource is being treated as eligible for the NRHP. The pipe structure (5BL5664.33) was built in 1951 when US 36 was constructed. It conveys water for three irrigation laterals associated with the Coal Creek Ditch. This segment does not support the eligibility of the irrigation laterals (pending further survey).

### Effect Determination

The historic setting of the ditch has changed dramatically due to nearby residential and commercial development. On the west side of US 36, the laterals run through open space but have been erased by residential development along South Rock Creek Parkway. On the east side of US 36, the laterals have been eradicated by Centura Avista Hospital, Coal Creek Golf Course, and residential developments in Louisville. CDOT did not prepare a figure to illustrate these changes because the affected segment does not support the eligibility of the larger linear resource.

All three build packages involve the replacement of the pipe structure over US 36, excavation of the ditch on each side of the pipes, and slight realignment of the laterals to meet the new pipe extensions over the highway. The structure is currently 200 feet long and it would be replaced by a longer structure due to the expanded highway (approximately 156 feet) in this section.

The pipe structure does not support the eligibility of the entire resource, and the modifications to the ditch on either side of the lateral are minor in scope and would have no effect to the integrity of the resource or its ability to convey its significance. The undertaking would not impact any of the qualities of significance or the characteristics that may qualify this ditch for inclusion in the NRHP. Therefore, CDOT and FHWA have determined the proposed undertaking would result in the determination of No Adverse Effect.

## *Louisville Reservoir Inlet (5BL9577)*

### Site Description

This segment of the Louisville Reservoir Inlet in the APE passes under US 36 in a northeasterly direction. The parabola-shaped inlet is approximately 10 feet wide at the top and 8 feet deep. Portions of the segment are carried through concrete box culverts with steel gates and turnouts. During the construction of US 36, the inlet's alignment was unchanged, but a 6-foot by 3-foot by 166-foot concrete box culvert was constructed to convey the inlet under the railroad. The concrete diversion box on the south side of the road was removed and a new concrete diversion box was constructed on the north side of the road. The entire inlet measures approximately 16,368 feet (3.1 miles). The documented segment in the APE measures 1,025 feet. Riparian growth is located along either bank of the inlet. The surrounding setting is a developing urban area.

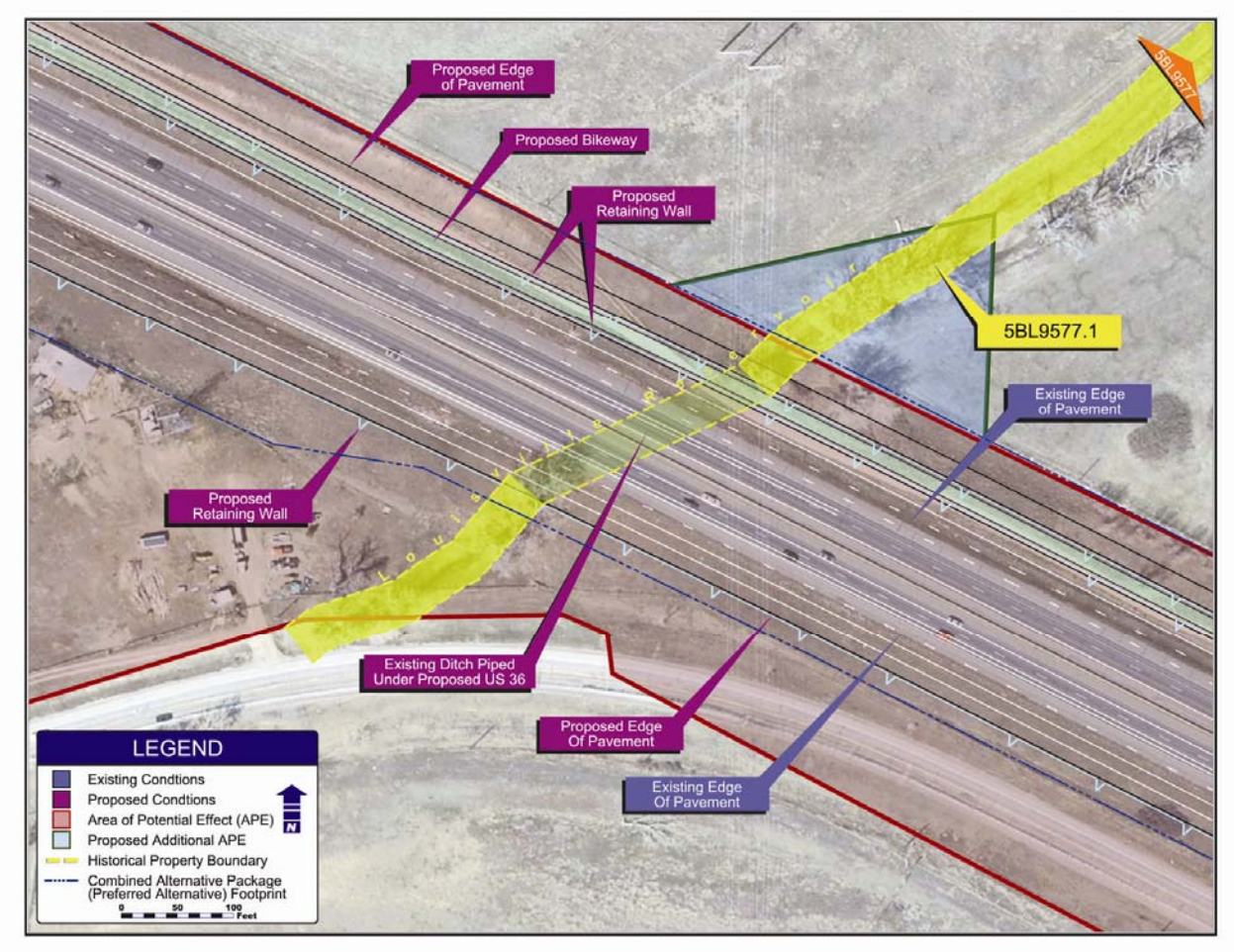
### Eligibility Determination

The entire Louisville Reservoir Inlet (5BL9577) is eligible for the NRHP under Criterion A for its association with the development of water rights and agriculture in Boulder County in the latter half of the 19$^{th}$ century. The inlet was built in the 1890s to provide water to the town of Louisville. The 166 feet of culvert under US 36 has lost all integrity, but the segment (5BL9577.1) within the current US 36 ROW was found to support the eligibility of the larger resource of which it is a part.

### Effect Determination

The resource would be affected by the widening of US 36 for all three build packages (see Figure 4.7-15, Impacts to Louisville Reservoir Inlet). The primary effect would be extending the culvert underneath the highway. The total increase in length of this alteration per package is compared in Table 4.7-9, Louisville Reservoir Inlet Impacts. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where the culvert extensions would be excavated. Table 4.7-9 summarizes impacts compared to existing conditions.

**Figure 4.7-15: Impacts to Louisville Reservoir Inlet**




Source: US 36 Mobility Partnership, 2009.

**Table 4.7-9: Louisville Reservoir Inlet Impacts**

| Package | Existing Length of Culvert/Pipe/Lining Under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact to 1,025-Foot Segment | Percent of Package Impact to the 16,368-Foot (3.1–Mile) Inlet |
|---|---|---|---|---|
| 2 | 166 feet | 170 feet (extending 120 feet to the north and 50 feet to the south of the existing culvert) | 33% | 2.1% |
| 4 | 166 feet | 180 feet (extending 120 feet to the north and 60 feet to the south of the existing culvert) | 34% | 2.1% |
| Combined Alternative Package (Preferred Alternative | 166 feet | 130 feet (extending 70 feet to the north and 60 feet to the south) | 29% | 1.8% |

Source: OAHP, 2009a and 2009b.
Notes:
% = percent
US 36 = United States Highway 36

The historic setting of the inlet has changed dramatically due to surrounding commercial development. The inlet parallels two large commercial developments. On the east side of US 36, it is crossed by Marshall Drive. On the west side of US 36, it is crossed by Dyer Road and a commercial development at Infinite Drive.

As shown in Table 4.7-9, Louisville Reservoir Inlet Impacts, all three build packages have similar impacts to the 1,025-foot segment within the APE. The Combined Alternative Package (Preferred Alternative) would have the least impact, converting 29 percent of what is now open ditch to extend the existing culvert. However, the impact this action would have to the overall ditch would be very minor, affecting just 1.8 percent of the entire resource.

The additional 130 feet in the extended culvert increases the amount under the highway but occurs in a location where the highway and surrounding development have already affected the condition of the resource. This small increase in the culvert does not appear to substantially affect the ability of the ditch to convey its significance under Criterion A, or substantially alter the function of the ditch as an irrigation feature, the attribute most closely tied to its historic significance. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of No Adverse Effect.

## ***Boulder Segment***

### *US 36 (The Denver to Boulder Turnpike) (5BL7529)*

#### Site Description

This resource is the portion of US 36 ROW located between Foothills Parkway (Milepost 39.26) and the top of Davidson Mesa Drive (Milepost 41.67).

#### Eligibility Determination

This Denver to Boulder Turnpike (5BL7529) is eligible for the NRHP under Criterion A for its association with the regional suburban development and commerce in the Denver and Boulder regions. Additionally, the road is significant under Criterion C as a good example of limited-access roadways built in the 1950s. The segment of the road between Mileposts 39.26 and 41.67 (5BL7529.3) has been determined to support the overall eligibility of the resource.

#### Effect Determination

This portion of the original turnpike alignment would be replaced and realigned as part of all three build packages (see Figure 4.7-3, Historic Sites — Boulder Segment, for the location of this resource). The improvements in this section would include two to four managed lanes, as well as four 12-foot shoulders and buffers, and barriers between the general-purpose lanes and managed lanes for a total width of 156 feet from the current width of approximately 100 feet. The existing appearance and integrity of the highway segment would be destroyed as part of the undertaking. This is the only remaining segment of highway that retains integrity. Therefore, CDOT and FHWA have determined all three build packages would result in the Section 106 determination of Adverse Effect.

### *Davidson Ditch (5BL453)*

#### Site Description

This segment of the Davidson Ditch passes under US 36 in a west-to-east direction. The parabola-shaped earthen irrigation ditch is approximately 36 feet wide at the top and 10 feet deep. The entire ditch is approximately 53,328 feet (10.1 miles) long. The documented segment (5BL453.2) in the APE measures 800 feet long. The ditch passes under US 36 through a reinforced concrete box culvert approximately 100 feet long. Some riparian growth is located along either bank of the ditch. Semi-rural fallow fields and several large modern housing developments characterize the area surrounding the ditch. The ditch has been intermittently placed in culverts and pipes under other road crossings.

#### Eligibility Determination

Davidson Ditch (5BL453) is eligible for the NRHP under Criterion A for its role in the development of water rights and agriculture in Boulder County (1850-1910). This resource was originally constructed in 1872. The 100 feet of ditch under US 36 has lost all integrity, although the 800-foot segment (5BL453.2) within the APE supports the eligibility of the larger resource of which it is a part.

#### Effect Determination

The resource would be slightly affected by the widening of US 36 for all three build packages (see Figure 4.7-16, Impacts to Davidson Ditch). The primary effect would be extending the culvert underneath the highway. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where the culvert extensions would be excavated. The total increase in length of this alteration per package is compared in Table 4.7-10, Davidson Ditch Impacts.

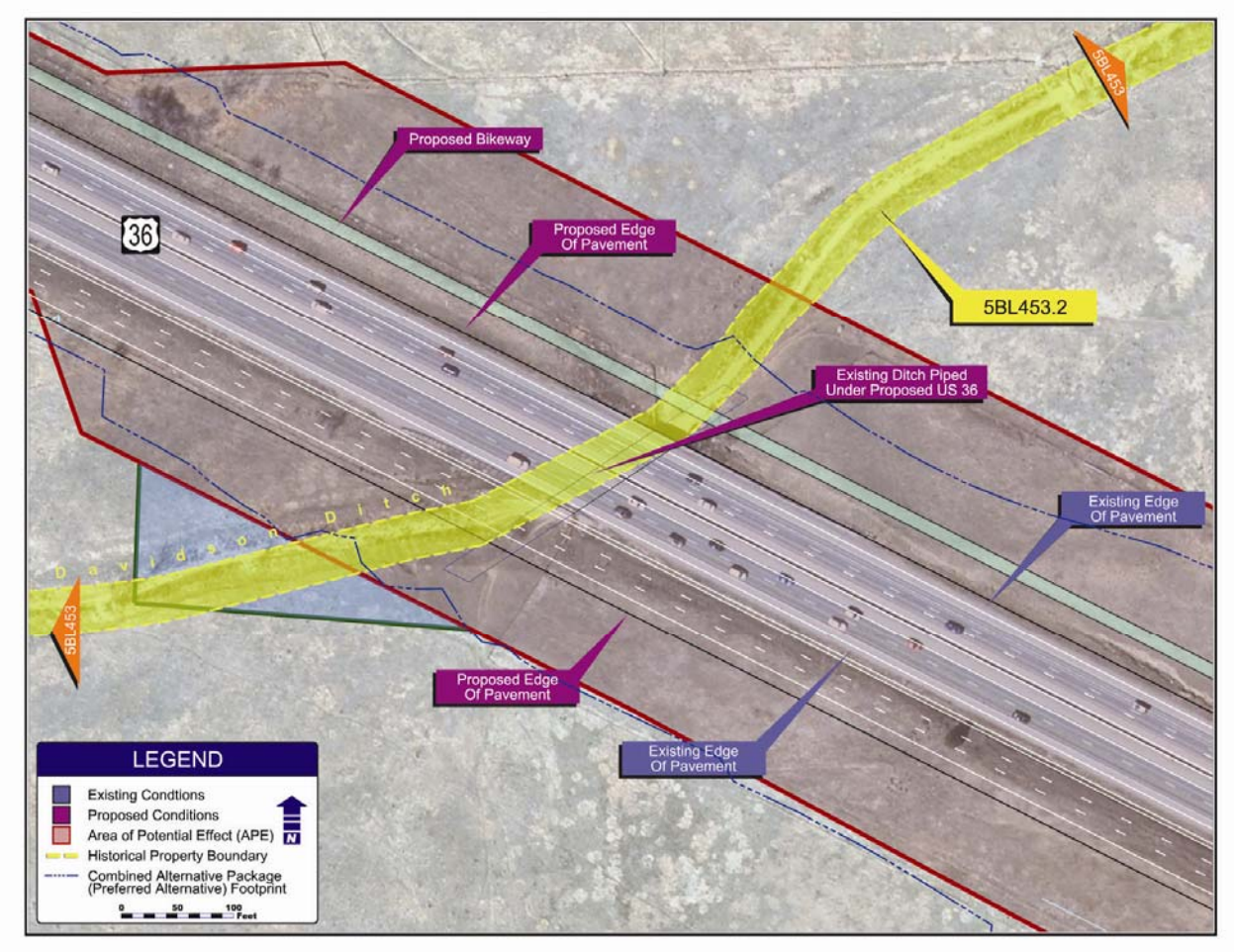
**Table 4.7-10: Davidson Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/Lining Under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact to 800-Foot Segment | Percent of Package Impact to the Entire 53,328-Foot (10.1-Mile) Ditch |
|---|---|---|---|---|
| 2 | 110 feet | 290 feet (extending 80 feet on the north and 210 feet on the south end of the existing culvert) | 50% | 0.8% |
| 4 | 110 feet | 300 feet (extending 80 feet on the north end and 220 feet on the south end of the existing culvert) | 51% | 0.8% |
| Combined Alternative Package (Preferred Alternative) | 110 feet | 330 feet (extending 70 feet on the north and 260 feet on the south end of the existing culvert) | 55% | 0.8% |

Source: OAHP, 2009a and 2009b.
Notes:
% = percent
US 36 = United States Highway 36

The historic setting of the ditch has changed in this area but not as much as ditches in the Adams, Westminster, and Broomfield segments. On the south side of US 36, Davidson Ditch has been crossed by Cherryvale Road, Marshall Road, and Foothills Highway. On the north side, it has been crossed by South 68th Street and the setting has changed due to a residential development west of McCaslin Boulevard.

**Figure 4.7-16: Impacts to Davidson Ditch**




Source: US 36 Mobility Partnership, 2009.

As shown in Table 4.7-10, Davidson Ditch Impacts, all three build packages would impact between 50 to 55 percent of the 800-foot segment within the APE by extending the culvert. The Combined Alternative Package (Preferred Alternative) would have the greatest impact, converting an additional 330 feet of open ditch into a culvert beneath the expanded highway. The impacts would occur because of the proposed bikeway on the northeast side of the freeway, and the addition of two managed lanes, four 12-foot shoulders, and barriers between the managed and general-purpose lanes for a total width of 156 feet. Most of the impacts to the ditch segment occur to the expansion on the south side of the freeway. However, the impact this action would have to the overall ditch would be very minor, affecting just 0.8 percent of the entire resource.

The additional 330 feet in the extended culvert (for a total culvert length of 440 feet) increases the amount under the highway but occurs in a location where the highway has already affected the condition of the resource. This small increase in the culvert would not substantially affect the ability of the ditch to convey its significance under Criterion A, or substantially alter the function of the ditch as an irrigation feature, the attribute most closely tied to its historic significance. While the undertaking would convert more than half of the existing 800-foot-segment in the APE into a culvert, only a minor amount of the overall resource would be affected. The impacts would be largely due to the ditch's setting and materials, but other aspects of integrity, including workmanship, design, and use of the ditch as a whole, would remain intact. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of No Adverse Effect.

### *Goodhue Ditch (5BL2719)*

#### Site Description

This segment of the Goodhue Ditch passes under US 36 in a west-to-east direction approximately 1,500 feet west of Davidson Ditch. The parabola-shaped earthen irrigation ditch is approximately 28 feet wide at the top and 10 feet deep. The entire ditch is approximately 61,776 feet (11.7 miles) long. The documented segment (5BL2719.38) in the APE measures 1,110 feet long. The ditch passes under US 36 through a reinforced concrete box culvert approximately 160 feet long. Some riparian growth is located along either bank of the ditch. Semi-rural fallow fields and several modern housing developments characterize the area surrounding the ditch. The ditch has been intermittently placed in culverts or pipes under other road crossings.

The Goodhue Ditch originates on south Boulder Creek downstream of Dillon Road, and diverts water to the south and east for about 15,840 feet (3 miles) to Rock Creek Farm. The ditch traverses the southeastern segment of Boulder County. It was originally built in 1860 to provide water for Stearns Dairy Farm, which is located in the Rock Creek Basin.

#### Eligibility Determination

The entire Goodhue Ditch (5BL2719) is eligible for the NRHP under Criterion A due to its association with the development of water rights and agriculture in Boulder County in the latter half of the 19th century. The 160 feet of ditch in a culvert and piped under US 36 has lost its integrity, but the segment (5BL2719.38) within the current US 36 ROW and APE was found to support the eligibility of the larger resource of which it is a part.

#### Effects Determination

The resource would be slightly affected by the widening of US 36 for all three build packages (see Figure 4.7-17, Impacts to Goodhue Ditch). The primary effect would be extending the culvert underneath the highway. The total increase in length of this alteration per package is compared in Table 4.7-11, Goodhue Ditch Impacts. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where the culvert extensions would be excavated. Table 4.7-11 summarizes impacts compared to existing conditions.

**Table 4.7-11: Goodhue Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/Lining Under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact to 1,110-Foot Segment | Percent of Package Impact to the Entire 61,776-Foot (11.7-Mile) Ditch |
|---|---|---|---|---|
| 2 | 160 feet | 110 feet (extending 40 feet to the north and 70 feet to the south of the existing culvert) | 24% | 0.4% |
| 4 | 160 feet | 170 feet (extending 90 feet to the north and 80 feet to the south of the existing culvert) | 30% | 0.5% |
| Combined Alternative Package (Preferred Alternative) | 160 feet | 110 feet (extending 50 feet north and 60 feet south of the existing culvert) | 24% | 0.4% |

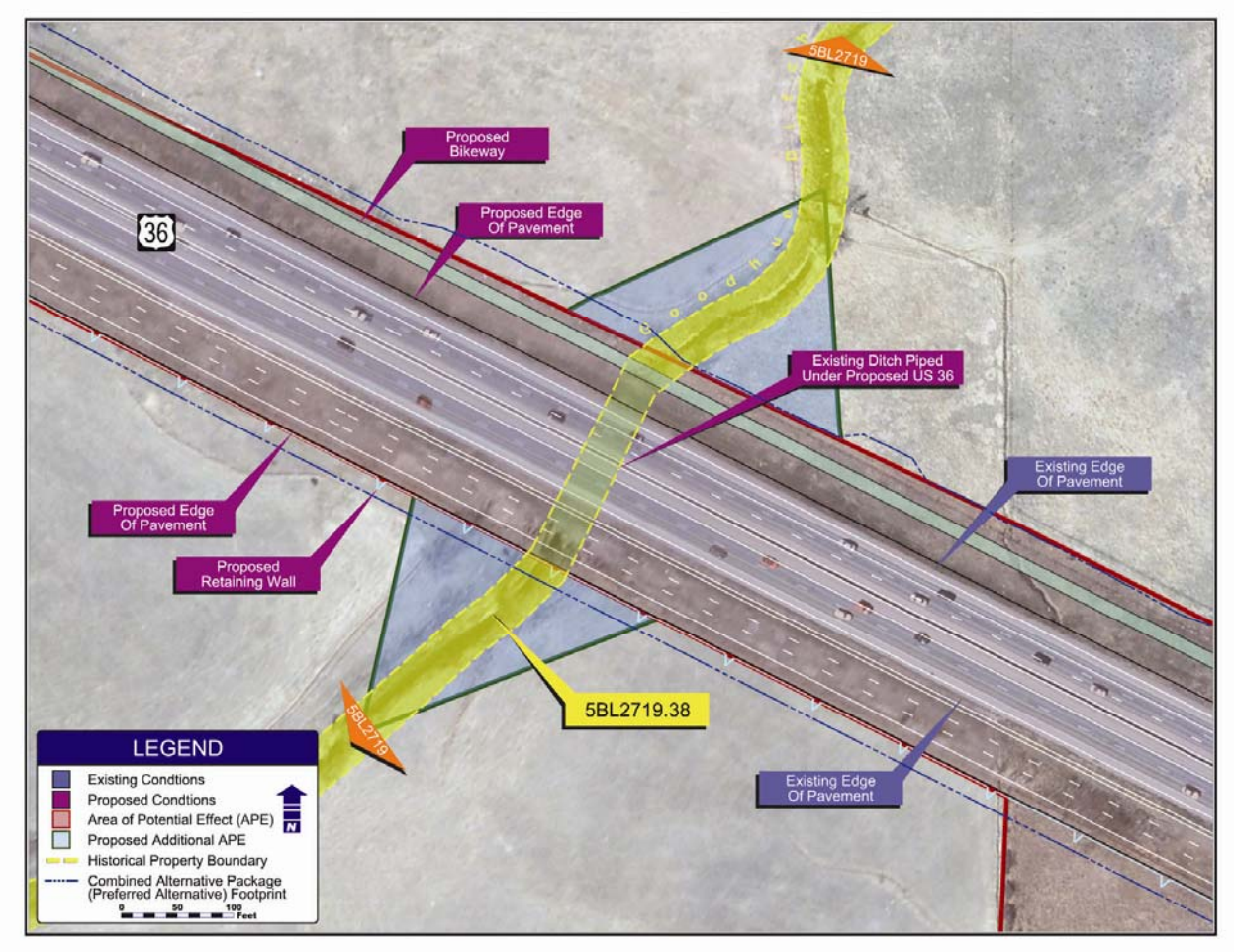
Source: OAHP, 2009a and 2009b.

Notes:

% = percent

US 36 = United States Highway 36

**Figure 4.7-17: Impacts to Goodhue Ditch**




Source: US 36 Mobility Partnership, 2009.

The historic setting of the ditch has changed, but not as much as ditches in the Adams, Westminster, and Broomfield segments. On the south side of US 36, Goodhue Ditch has been crossed by Cherryvale Road, Marshall Road, and Foothills Highway. On the north side, it has been crossed by South 68th Street and the setting has changed due to a residential development west of McCaslin Boulevard.

As shown in Table 4.7-11, Goodhue Ditch Impacts, all three build packages would impact between 24 and 30 percent of the 1,110-foot segment within the APE by extending the culvert. The Combined Alternative Package (Preferred Alternative) would convert an additional 110 feet of open ditch into a culvert beneath the expanded highway. The impacts would occur because of the proposed bikeway on the northeast side of the freeway, and the addition of two managed lanes, four 12-foot shoulders, and barriers between the managed and general-purpose lanes for a total width of 156 feet. The impacts would be similar on both sides of the freeway. However, the impact this action would have to the overall ditch would be very minor, affecting just 0.4 percent of the entire resource.

The additional 110 feet in the extended culvert (for a total culvert length of 270 feet) increases the amount under the highway but occurs in a location where the highway has already affected the condition of the resource. This small increase in the culvert does not appear to substantially affect the ability of the ditch to convey its significance under Criterion A, or substantially alter the function of the ditch as an irrigation feature, the attribute most closely tied to its historic significance. While the undertaking would convert 24 percent of the existing segment into a culvert, only a minor amount of the overall resource would be affected. The impacts would be largely due to the ditch's setting and materials, but other aspects of

integrity, including workmanship, design, and use of the ditch as a whole, would remain intact. Therefore, CDOT and FHWA have determined that the three build packages would result in the Section 106 determination of No Adverse Effect.

### *Marshallville Ditch (5BL5042)*

#### Site Description

This segment of the Marshallville Ditch passes under US 36 in a west-to-east direction approximately 1,200 feet west of Goodhue Ditch. The documented segment (5BL5042.1) in the APE measures 29,500 feet long. During construction of US 36, the ditch's original alignment was moved to the south so that it is perpendicular to the highway. To convey the ditch under the highway, a 150-foot long concrete box culvert was constructed. The entire ditch is approximately 33,950 feet (6.4 miles) long.

#### Eligibility Determination

The entire Marshallville Ditch (5BL5042) is eligible for the NRHP under Criterion A due to its association with the development of water rights and agriculture in Boulder County in the latter half of the 19th century. The ditch was built in 1865. The 150 feet of ditch in a culvert and piped under US 36 has lost its integrity, but the segment (5BL5042.1) within the current US 36 ROW and APE was found to support the eligibility of the larger resource of which it is a part.

#### Effect Determination

The resource would be slightly affected by the widening of US 36 for all three build packages (see Figure 4.7-18, Impacts to Marshallville Ditch). The primary effect would be extending the culvert underneath the highway. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where the culvert extensions would be excavated. The total increase in length of this alteration per package is compared in Table 4.7-12, Marshallville Ditch Impacts.

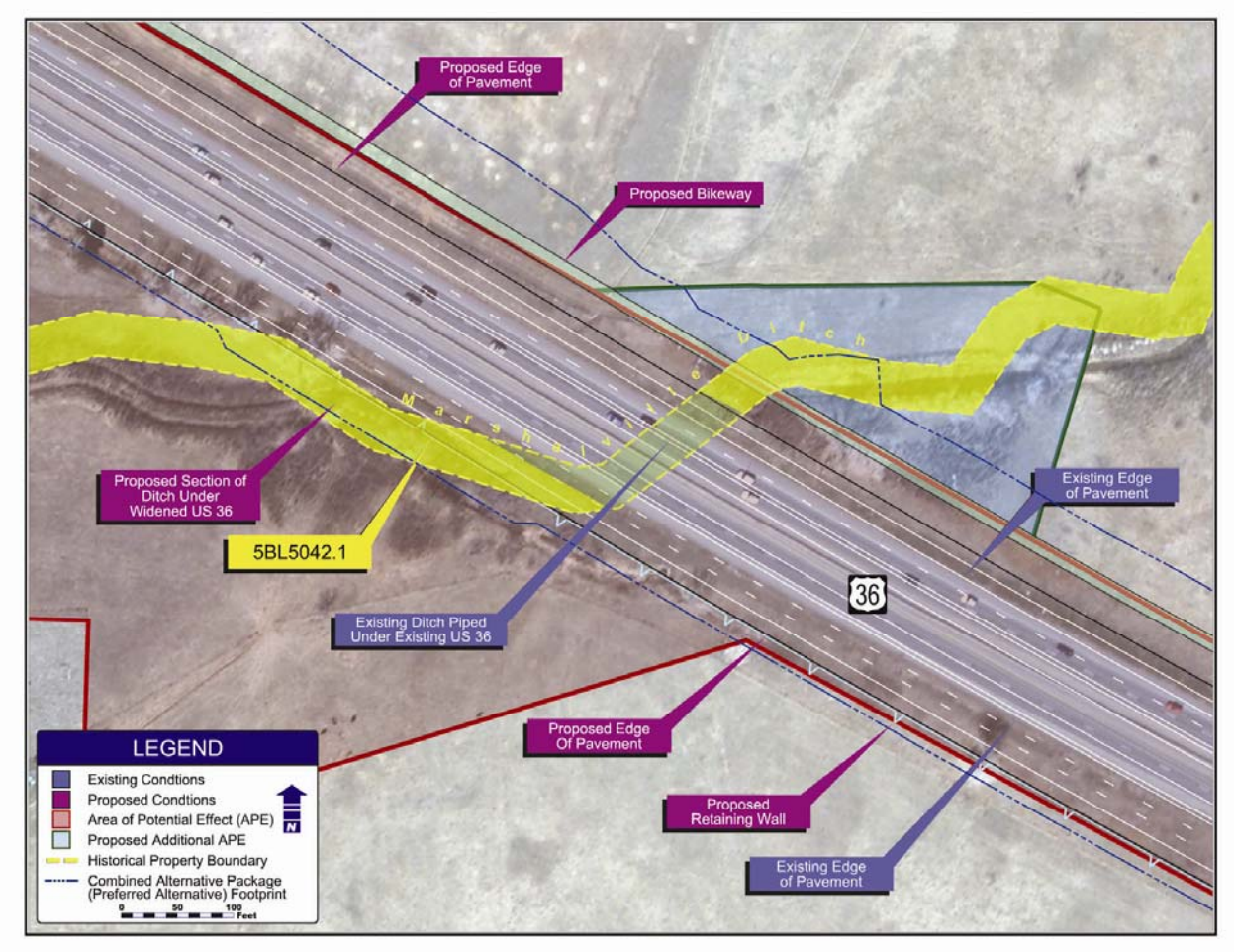
**Table 4.7-12: Marshallville Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/ Lining Under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact to 29,500-Foot Segment | Percent of Package Impact to Entire 33,792-Foot (6.4-Mile) Ditch |
|---|---|---|---|---|
| 2 | 150 | 185 feet (extending 125 feet on the north and 60 feet on the south) | 1% | 1% |
| 4 | 150 | 185 feet (extending 125 feet on the north and 60 feet on the south) | 1% | 1% |
| Combined Alternative Package (Preferred Alternative | 150 | 160 feet (extending 120 feet on the north and 440 feet on the south) | 2% | 2.1% |

Source: OAHP, 2009a and 2009b.
Notes:
% = percent
US 36 = United States Highway 36

The historic setting of the ditch has changed, but not as much as ditches in the Adams, Westminster, and Broomfield segments. On the south side of US 36, Marshallville Ditch has been crossed by Cherryvale Road, Marshall Road, and Foothills Highway. On the north side, it has been crossed by South 68th Street and the setting has changed due to a residential development west of McCaslin Boulevard.

**Figure 4.7-18: Impacts to Marshallville Ditch**




Source: US 36 Mobility Partnership, 2009.

As shown in Table 4.7-12, Marshallville Ditch Impacts, all three build packages would impact 1 to 2 percent of the 29,500-foot segment within the APE by extending the culvert. The Combined Alternative Package (Preferred Alternative) would convert an additional 560 feet of open ditch into a culvert beneath the expanded highway. The impacts would occur because of the proposed bikeway on the north side of the freeway, and the addition of two managed lanes, four 12-foot shoulders, and barriers between the managed and general-purpose lanes for a total width of 156 feet. In addition, a short section of the ditch parallels the highway on the south side within the footprint required for the improvements. However, the impact this action would have to the overall ditch would be very minor, affecting just 1 percent of the entire resource.

The additional 560 feet in the extended culvert (for a total culvert length of 710 feet) would increase the amount under the highway but would occur in a location where the highway has already affected the condition of the resource. This small increase in the culvert does not appear to substantially affect the ability of the ditch to convey its significance under Criterion A, or substantially alter the function of the ditch as an irrigation feature, the attribute most closely tied to its historic significance. While the undertaking would convert 2 percent of the existing segment into a culvert, only a minor amount of the overall resource would be affected. The impacts would largely be due to the ditch's setting and materials, but other aspects of integrity, including workmanship, design, and use of the ditch as a whole, would remain intact. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of No Adverse Effect.

### *Shearer Ditch (5BL5040)*

#### Site Description

This segment of the Shearer Ditch passes under US 36 in a west-to-east direction approximately 1,200 feet west of Marshallville Ditch. The documented segment (5BL5040.1) in the APE measures 8,000 feet long. During construction of US 36, the ditch's original alignment was moved to the south so that it is perpendicular to the highway. To convey the ditch under the highway, a 42-foot by 119-foot siphon with a 6-inch valve and valve box was constructed. The irrigation diversion gate on the north edge of the highway's ROW was unchanged. The entire ditch is approximately 10,727 feet (2 miles) long.

#### Eligibility Determination

The entire Shearer Ditch (5BL5040) is eligible for the NRHP under Criterion A for its relation to the development of water rights and agriculture in Boulder County (1858 to 1910). This resource was originally constructed beginning in 1860. The 100 feet of ditch under US 36 has lost its integrity, but the segment (5BL5040.1) within the current US 36 ROW and APE was found to support the eligibility of the larger resource of which it is a part.

#### Effect Determination

The resource would be slightly affected by the widening of US 36 for all three build packages (see Figure 4.7-19, Impacts to Shearer Ditch). The primary effect would be extending the culvert underneath the highway. The total increase in length of this alteration per package is compared in Table 4.7-13, Shearer Ditch Impacts. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where the culvert extensions would be excavated. Table 4.7-13 summarizes impacts compared to existing conditions.

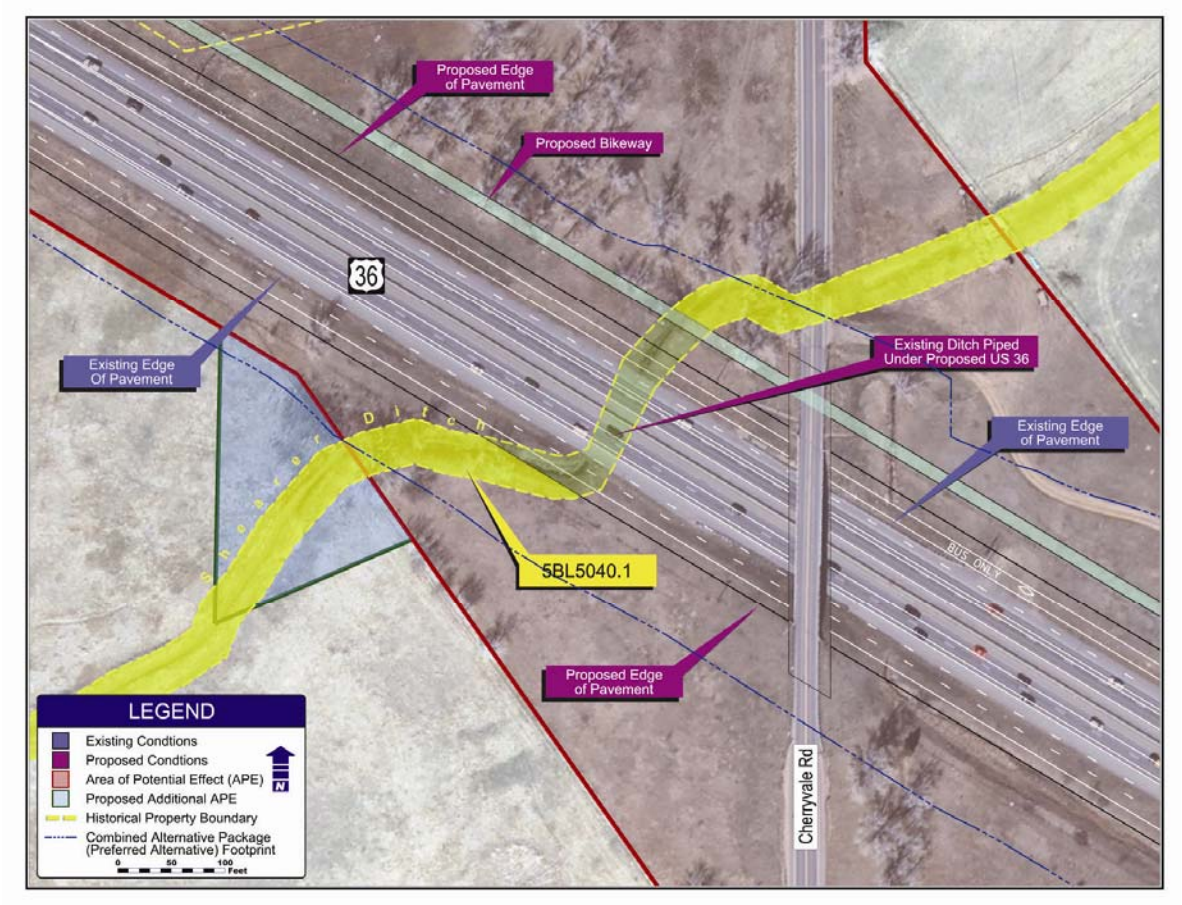
**Table 4.7-13: Shearer Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/Lining Under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact to 8,000-Foot Segment | Percent of Package Impact Area of the Ditch as Compared to the Entire 10,560-Foot (2.0-Mile) Length of the Ditch |
|---|---|---|---|---|
| 2 | 100 feet | 400 feet (extending 160 feet to the north and 240 feet to the south of the existing culvert) | 6% | 4.7% |
| 4 | 100 feet | 370 feet (extending 150 feet to the north and 220 feet to the south of the existing culvert) | 6% | 4.4% |
| Combined Alternative Package (Preferred Alternative) | 100 feet | 420 feet (extending 170 feet to the north and 250 feet to the south | 7% | 4.8% |

Source: OAHP, 2009a and 2009b.
Notes:
% = percent
US 36 = United States Highway 36

The historic setting of the ditch has changed, but not as much as ditches in the Adams, Westminster, and Broomfield segments. On the south side of US 36, Shearer Ditch has been crossed by Cherryvale Road, Marshall Road, and Foothills Highway. On the north side, it has been crossed by South 68th Street and the setting has changed due to a residential development west of McCaslin Boulevard.

**Figure 4.7-19: Impacts to Shearer Ditch**




Source: US 36 Mobility Partnership, 2009.

As shown in Table 4.7-13, Shearer Ditch Impacts, all three build packages would impact between 6 to 7 percent of the 8,000-foot segment within the APE by extending the culvert. The Combined Alternative Package (Preferred Alternative) would convert an additional 420 feet of open ditch into a culvert beneath the expanded highway, effectively making the culvert four times larger than the current culvert. The impacts would occur because of the proposed bikeway on the north side of the freeway, and the addition of two managed lanes, four 12-foot shoulders, and barriers between the managed and general-purpose lanes for a total width of 156 feet. The impacts would be greater on the south side of the freeway because of the curve of the ditch toward the west within the APE. This would impact approximately 4.8 percent of the entire 10,560 feet (2 mile) long ditch.

The additional 420 feet in the extended culvert (for a total culvert length of 520 feet) would increase the amount under the highway but would occur in a location where the highway has already affected the condition of the resource. The impacts would be largely due to the ditch's setting and materials, but other aspects of integrity, including workmanship, design, and use of the ditch as a whole, would remain intact. This small increase in the culvert would not affect the ability of the ditch to convey its significance under Criterion A, or substantially alter the function of the ditch as an irrigation feature, the attribute most closely tied to its historic significance. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of No Adverse Effect.

### *South Boulder Canyon Ditch (5BL750)*

#### Site Description

This segment of the South Boulder Canyon Ditch passes under US 36 in a southwest-to-northeast direction. The U-shaped earthen ditch is approximately 8 feet wide at the top and 10 feet deep. The entire ditch measures approximately 67,056 feet (12.7 miles) long. The documented segment (5BL750.51) in the APE measures 2,225 feet long. The ditch passes under the roadway through a siphon fronted in board-formed concrete. Substantial riparian growth is located along either bank of the ditch. The surrounding area is characterized as semi-rural with some new residential development.

#### Eligibility Determination

The entire South Boulder Canyon Ditch (5BL750) is eligible for the NRHP under Criterion A due to its association with the development of water rights and agriculture in Boulder County in the latter half of the 19th century. The portion of the ditch that crosses under the highway was altered when the highway was constructed in the 1950s and includes a 160-foot concrete box culvert. During the construction of US 36, the original alignment was shifted approximately 1,000 feet southeast. The 100 feet of ditch under US 36 has lost all integrity, although the segment within the APE was found to support the eligibility of the larger resource of which it is a part.

#### Effects Determination

The resource would be slightly affected by the widening of US 36 for all three build packages (see Figure 4.7-20, Impacts to South Boulder Canyon Ditch). The primary effect would be extending the culvert underneath the highway. The total increase in length of alteration per package is compared in Table 4.7-14, South Boulder Canyon Ditch Impacts. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas where culvert extensions would be excavated. Table 4.7-14 summarizes impacts compared to existing conditions.

**Table 4.7-14: South Boulder Canyon Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/Lining Under US 36 | Length of Additional Culvert/Pipe/Lining Proposed as Part of the Package | Percent of Package Impact to 2,225-Foot Segment | Percent of Package Impact to Entire 67,056-Feet (12.7-Mile) Ditch |
|---|---|---|---|---|
| 2 | 160 feet | 250 feet (extending 140 feet to the north and 110 feet to the south of the existing culvert) | 18% | 0.6% |
| 4 | 160 feet | 220 feet (extending 120 feet to the north and 100 feet to the south of the existing culvert) | 17% | 0.6% |
| Combined Alternative Package (Preferred Alternative) | 160 feet | 190 feet (extending 90 feet to the north and 100 feet to the south of the existing culvert) | 16% | 0.5% |

Source: OAHP, 2009a and 2009b.

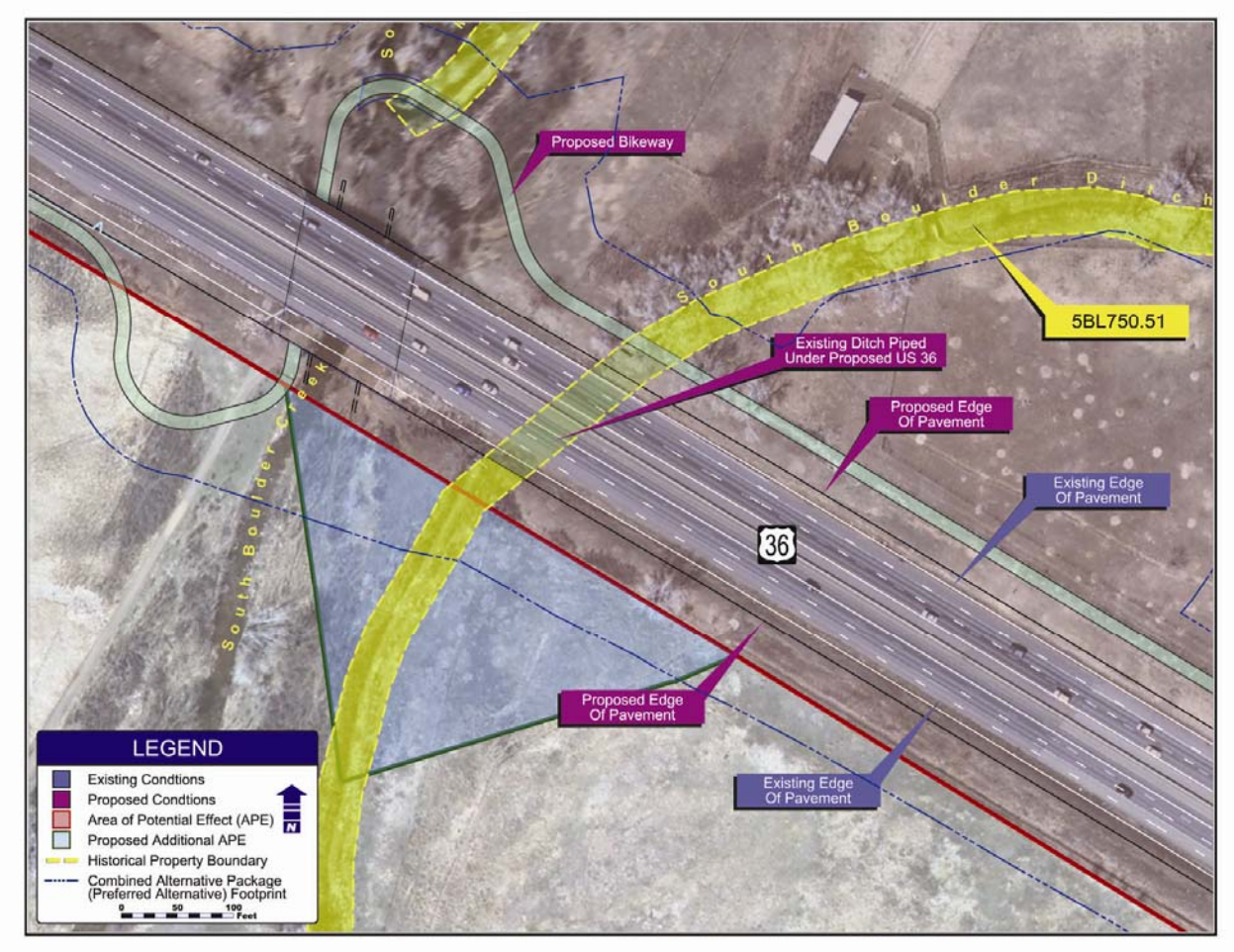
Notes:

% = percent

US 36 = United States Highway 36

The historic setting of the canal has changed due to roadway crossings and residential development. On the north side of US 36, South Boulder Canyon Ditch is crossed by Cherryvale Road and South Boulder Road. The setting includes a field irrigated by the ditch. On the south side of US 36, the ditch crosses through an open, undeveloped space of land.

**Figure 4.7-20: Impacts to South Boulder Canyon Ditch**




Source: US 36 Mobility Partnership, 2009.

As shown in Table 4.7-14, South Boulder Canyon Ditch Impacts, all three build packages would impact between 16 to 18 percent of the 2,225-foot-segment within the APE. The Combined Alternative Package (Preferred Alternative) would have the least impact, converting 16 percent of what is now open ditch into a culvert. The impacts occur because of the proposed bikeway on the north side of the freeway, and the addition of two managed lanes, four 12-foot shoulders, and barriers between the managed and general-purpose lanes for a total width of 156 feet. The impacts would be approximately equal on both sides of the ditch within the APE. The impact this action would have to the overall ditch would be very minor, converting just 0.5 percent of the entire resource.

The additional 190 feet in the extended culvert increases the amount under the highway to 350 feet, but occurs in a location where the highway has already affected the condition of the resource. This small increase in the culvert does not appear to substantially affect the ability of the ditch to convey its significance under Criterion A, or substantially alter the function of the ditch as an irrigation feature, the attribute most closely tied to its historic significance. The impacts are largely to the ditch's setting and materials, but other aspects of integrity, including workmanship, design, and use of the ditch as a whole, would remain intact. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of No Adverse Effect.

### *Viele Homestead (5BL5036)*

#### Site Description

This homestead was constructed in the 1880s or 1890s. It is located at the intersection of South Boulder Road and Cherryvale Road. The homestead consists of a house, barns, and equipment storage structures.

#### Eligibility Determination

Based on its association with 19th century Boulder County agriculture and the overall integrity of the farm structures built during the period of significance (1880s to 1949), this homestead has been determined eligible for listing on the NRHP under Criteria A and C.

#### Effect Determination

Under Package 2 and Package 4, the Cherryvale Road/South Boulder Road bikeway would involve paving a new concrete bikeway measuring 8 to 12 feet wide within the historic boundary of the Viele Homestead. A dirt multi-use path exists along the west side of Cherryvale Road and the south side of South Boulder Road adjacent to the homestead. The existing path is on a permanent easement from the City of Boulder to Boulder County for the transportation purposes of the multi-use path. The new bikeway would be located within 2 to 4 feet of the edge of the parcel on which this structure and associated outbuildings sit. The new bikeway would be approximately 40 feet north of the front of the farmhouse along South Boulder Road, and approximately 50 feet east from the side of the house along Cherryvale Road. Construction would require removal of a wooden fence to the east of the structure and parallel to Cherryvale Road. The fence dates to when Boulder County Open Space obtained the property during the 1980s and was not recorded as part of the eligibility determination. The construction would take place on lands dedicated for transportation purposes. CDOT would also install a stop sign and/or a pole with an attached mirror near the southeast corner of the contributing outbuilding. The sign would be located on the bikeway ROW and not within the property boundary. The sign and mirror would serve as a safety measure to avoid collisions between bicyclists and pedestrians. Package 2 and Package 4 would not require permanent acquisition of new ROW for the construction of the path. The permanent easement would continue to be held by Boulder County and the local jurisdictions would be responsible for the ongoing operations and maintenance of the path, consistent with CDOT practice. The easement would continue to allow for access and use, as well as maintenance activities. No physical impacts to the resource structure are planned as a part of the packages.

The bikeway improvements, including paving, fence removal, and sign/mirror installation would not alter any of the contributing elements of this eligible property. Because there is an existing dirt path, there is already recreational traffic in the area. Paving the existing path may lead to additional recreational use and some additional noise, but these changes would not be significant enough to alter the qualities that make the property significant. In addition, the installation of pavement would change the appearance of the trail, but this would not significantly change the setting of the property. In the DEIS, CDOT and FHWA determined that the undertaking would have No Adverse Effect on this historic property.

The Combined Alternative Package (Preferred Alternative) would have no effect to this resource because the bikeway alignment would follow US 36 and is no longer in the vicinity of this resource. CDOT did not prepare a figure for this resource due to the lack of impacts. Therefore, CDOT and FHWA have determined the proposed undertaking would result in the Section 106 determination of No Historic Properties Affected.

### *McGinn Ditch (5BL4165)*

#### Site Description

The Cherryvale Road/South Boulder Road bikeway alignment alternative would cross over a section of this ditch just south of South Boulder Road. This section of McGinn Ditch is in a box culvert which conveys irrigation water under South Boulder Road in a northeasterly direction. This segment of the McGinn Ditch also ends just northeast of US 36 at the South Boulder Creek drainage. This documented ditch segment in the APE (5BL4165.1) measures approximately 4,265 feet while the entire ditch is 26,400 feet (5 miles) long. Riparian growth is located along either bank of the ditch.

#### Eligibility Determination

The entire McGinn Ditch (5BL4165) is eligible for the NRHP under Criterion A as one of the oldest irrigation features in Boulder County, dating from the 1860s, and because it is associated with the development of water rights and agriculture in Boulder County in the latter half of the 19th century. The ditch is still active, but many of the gates and gauging stations have been rebuilt since original construction.

Under Package 2 and Package 4, the primary effect to the ditch would be an increase in the length of culverts associated with the Cherryvale Road/South Boulder Road bikeway alternative. The total increase in length of this alteration would be 10 feet or 0.04 percent of the entire 26,400-foot (5-mile) ditch under both packages. Existing riparian vegetation located at the ends of each culvert would likely be lost along the areas of the ditch excavated. The bikeway consists of a new paved path that would require an additional bridge over the existing McGinn Ditch culvert.

Under the Combined Alternative Package (Preferred Alternative), the bikeway was moved from the Cherryvale Road/South Boulder Road alignment to follow the US 36 corridor (see Figure 4.7-21, Impacts to McGinn Ditch). As a result, the ditch would not be impacted at South Boulder Road. However, it would be impacted slightly by the construction of a bridge to carry the bikeway parallel to US 36. It would not be impacted by the expansion of the highway in this location because it ends northeast of the US 36 alignment. The total amount of impacts per package is compared in Table 4.7-15, McGinn Ditch Impacts.

**Table 4.7-15: McGinn Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/Lining Under Dirt US 36 | Length of Proposed Culvert/Pipe/Lining Extension for Paved Bikeway | Percent of Package Impact to 4,265-Foot Ditch | Percent of Package Impact to Entire 26,400-Foot (5.0-mile) Ditch |
|---|---|---|---|---|
| 2 | 0 feet | 10 feet | 0.5% | 0.04% |
| 4 | 0 feet | 10 feet | 0.5% | 0.04% |
| Combined Alternative Package (Preferred Alternative) | 0 feet | 0 feet | 0% | 0% |

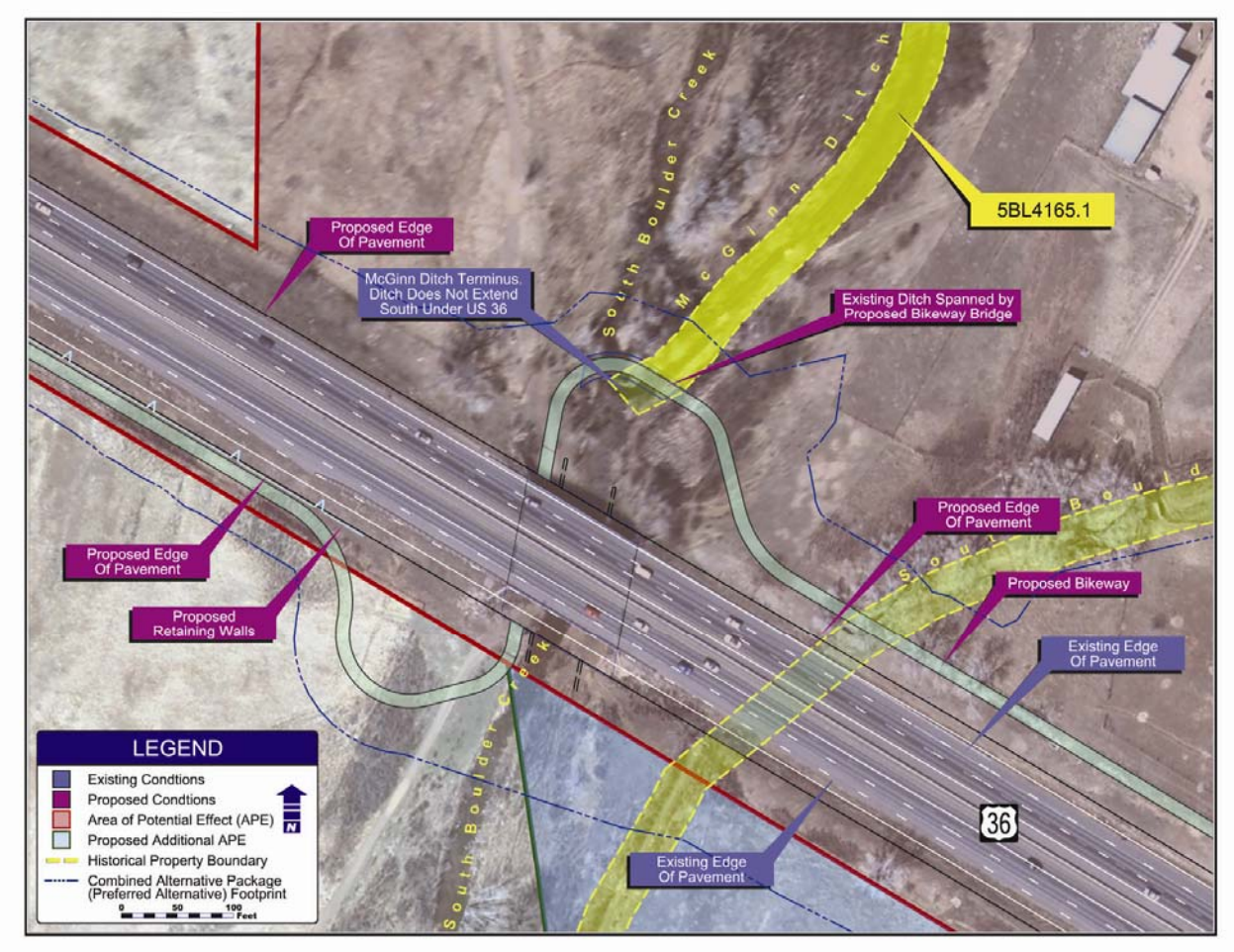
Source: OAHP, 2009a and 2009b.

Notes:

% = percent

US 36 = United States Highway 36

**Figure 4.7-21: Impacts to McGinn Ditch**




Source: US 36 Mobility Partnership, 2009.

The Combined Alternative Package (Preferred Alternative) impacts to McGinn Ditch would only be on the north side of the highway because the ditch ends northeast of the highway alignment. The highway expansion in this section would include two managed lanes, four 12-foot shoulders, and barriers between the managed and general-purpose lanes for a total width of 156 feet. The ditch would be spanned by a 21-foot-wide bridge to carry the bikeway over the ditch on the north side of the highway. There would be no physical impact to the ditch from this package.

The proposed undertaking would not affect the ability of the historic property to convey its significance as a historic irrigation ditch. The use of the ditch as an irrigation canal would not be affected in any way. The undertaking would not affect the ability of the ditch to convey it significance under Criterion A, nor does it substantially alter the function of the ditch as an irrigation feature, the attribute most closely tied to its historic significance. The impacts are largely to the ditch's visual setting, but other aspects of integrity, including workmanship, design, and materials and use of the ditch as a whole, would remain intact. Therefore, CDOT and FHWA have determined the three build packages would result in the Section 106 determination of No Adverse Effect.

### *Anderson Extension Ditch (5BL3935)*

#### Site Description

During the initial construction of US 36, an 8-foot by 4-foot by 185-foot concrete box culvert was added to convey the Anderson Extension Ditch under the highway. The alignment was unchanged. A wooden bridge (10 feet by 12 feet) that spanned the ditch on the north side of the highway was removed. Riparian vegetation can be found along the ditch, as well as cottonwood and willow trees.

#### Eligibility Determination

The Anderson Extension Ditch (5BL3935) dates back to the late 19th century and was determined eligible for the NRHP in 1993 under Criterion A. The ditch was the first significant ditch in Boulder Valley. Water from the Anderson Extension Ditch was part of the enticement for locating the University of Colorado in Boulder and has supported the campus landscape. Under Criterion B, the ditch is associated with Marinus Smith and Jonas Anderson. Under Criterion C, the ditch maintains segments of earthen ditch channel in their original condition. Also existing are other segments with early masonry or rock-cut channels, control structures dating from early 20th century, first generation structures of concrete-and-steel, and replacements in kind of those simple structures. Finally, under Criterion D (possessed or had information to contribute to our understanding of human history or prehistory), the Anderson Extension Ditch's lateral system traces are a unique resource for tracing early urban water supply. Some parts of the ditch also embody information about pre-urban agricultural uses of parts of the City of Boulder. The entire ditch is 27,984 feet (5.3 miles) long.

Two segments of the ditch are within the APE and partially overlap. Site 5BL3935.34 begins at the off-ramp from eastbound US 36 to South Boulder Road and continues across the turnpike to the intersection of South Boulder Road and Boulder Circle. It was determined by SHPO to not support the eligibility of the larger linear resource due to major alterations to the turnpike in 2004. Site 5BL3935.35 begins at the western loop of the Foothills Parkway/US 36 interchange and continues across the interchange underneath the ramps and parallel to South Boulder Road. Approximately 300 feet east of Manhattan Drive, the ditch crosses South Boulder Road and goes underground. In 2007, SHPO concurred with CDOT's determination that 5BL3935.35 supports the eligibility of the larger linear resource.

The determination for supporting and non-supporting segments of the Anderson Extension Ditch (5BL3935) requires additional documentation to be sent from CDOT to SHPO for official concurrence. For the purposes of the FEIS, the segments are being treated as segments that support the overall resource.

#### Effects Determination

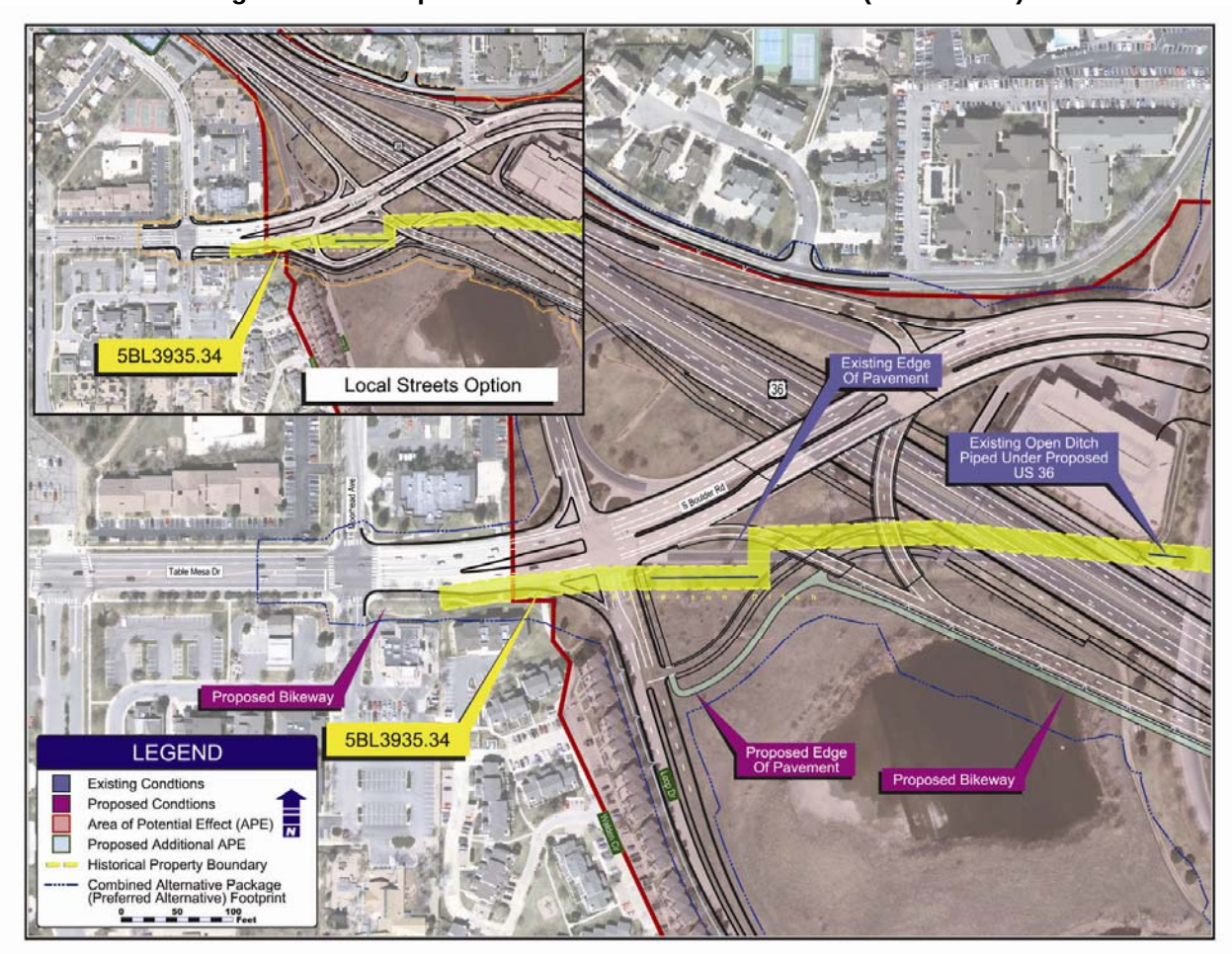
Under all three build packages, the overall impact to the ditch consists of placing 1,550 feet of open ditch into underground pipes within the APE, which includes an area that extends between the intersection of Moorhead Avenue and South Boulder Road, including the Foothills Parkway interchange and the current US 36 ROW, and extends along South Boulder Road approximately 300 feet east of Manhattan Drive. The undertaking would reconfigure the Foothills Parkway interchange and ramps, and realign South Boulder Road slightly to the south between Boulder Circle, and would extend 300 feet past Manhattan Drive. The linear feet impacted is shown in Table 4.7-16, Anderson Extension Ditch Impacts, Figure 4.7-22, Impacts to Anderson Extension Ditch (5BL3935.34), and Figure 4.7-23, Impacts to Anderson Extension Ditch (5BL3935.35).

**Table 4.7-16: Anderson Extension Ditch Impacts**

| Package | Existing Length of Culvert/Pipe/Lining Under US 36 | Additional Pipe/Lining as Part of the Package | Percent of Package Impact to 2,640-Foot Segment | Percent of Package Impact Area of the Ditch as Compared to the Entire 26,400-Foot (5.0-Mile) Length of the Ditch |
|---|---|---|---|---|
| 2 | N/A | 1,550 | 59% | 5.5% |
| 4 | N/A | 1,550 | 59% | 5.5% |
| Combined Alternative Package (Preferred Alternative) | N/A | 1,550 | 59% | 5.5% |

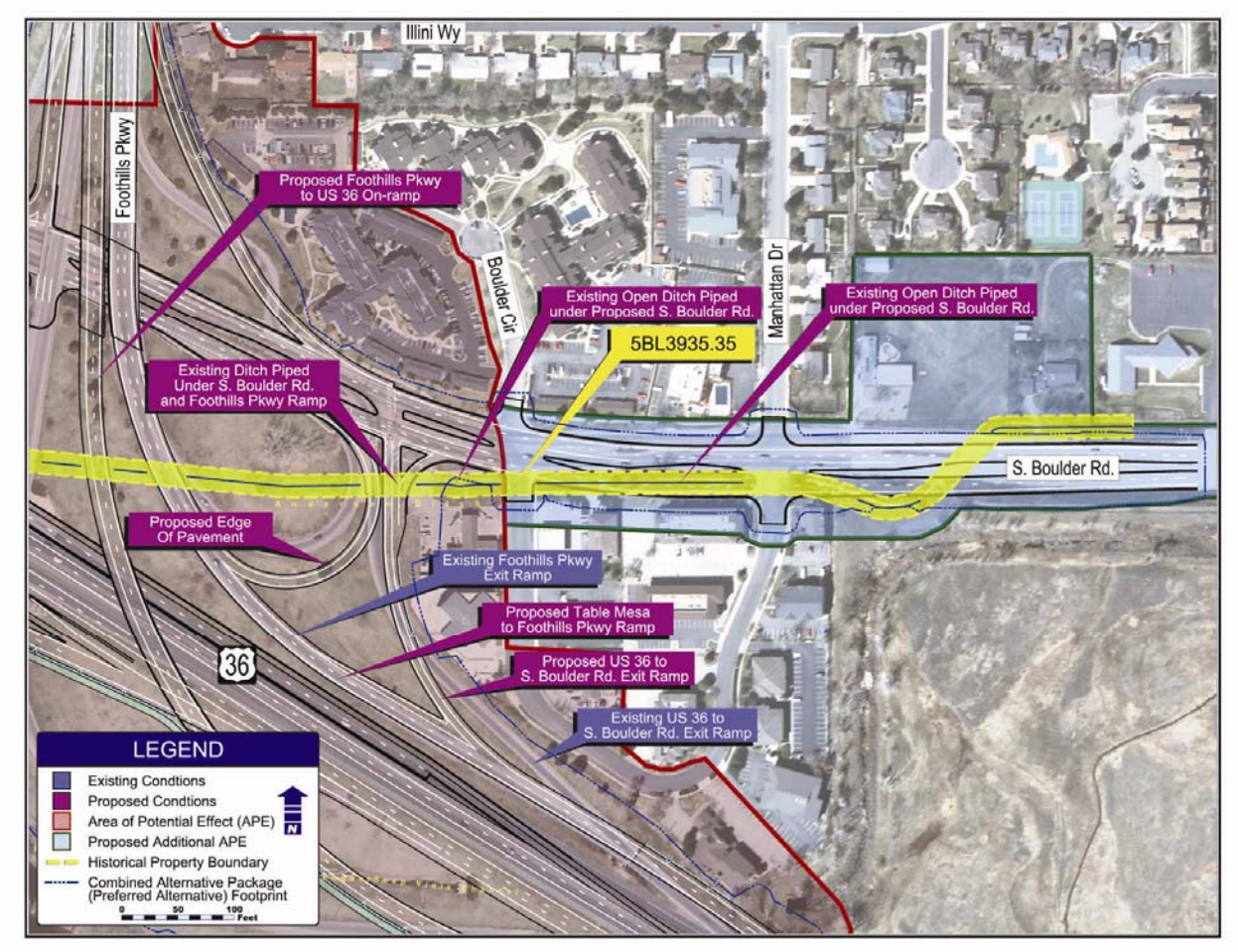
Source: OAHP, 2009a and 2009b.
Notes:
% = percent
N/A = not applicable
US 36 = United States Highway 36

**Figure 4.7-22: Impacts to Anderson Extension Ditch (5BL3935.34)**




Source: US 36 Mobility Partnership, 2009.

**Figure 4.7-23: Impacts to Anderson Extension Ditch (5BL3935.35)**




Source: US 36 Mobility Partnership, 2009.

The ditch has been extensively impacted in this area due to the interchange, the existing US 36 travel lanes, the park-n-Ride in the northeast part of the interchange, the crossings of Boulder Circle and Manhattan Drive, and commercial and residential development. The work involves piping areas of the ditch that have not already been placed underground into pipes. This would impact a total of 1,550 linear feet over a distance of approximately 3,000 feet. The work would take place in a section of the ditch that has already been dramatically impacted. The work would affect 5.5 percent of the entire ditch but is in an area that has been heavily impacted by the turnpike and surrounding development, and that consists of placing intermittent, truncated sections of the ditch into pipes. This work would not substantially affect the ability of the ditch to convey its significance under Criterion A, or substantially alter the function of the ditch as an engineering irrigation feature under Criterion C. The impacts would be largely to the ditch's setting and materials, but other aspects of integrity, including workmanship, design, and use of the ditch as a whole, would remain intact. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of No Adverse Effect.

## ***Keewaydin Subdivision***

### Site Description

The Keewaydin Subdivision is located on the north side of US 36 and directly west of Foothills Parkway. It is bounded by Apache Avenue on the south, Sioux Drive and Eutaw Drive on the north, Thunderbird Drive on the east, and Pawnee Drive on the west.

### Eligibility Determination

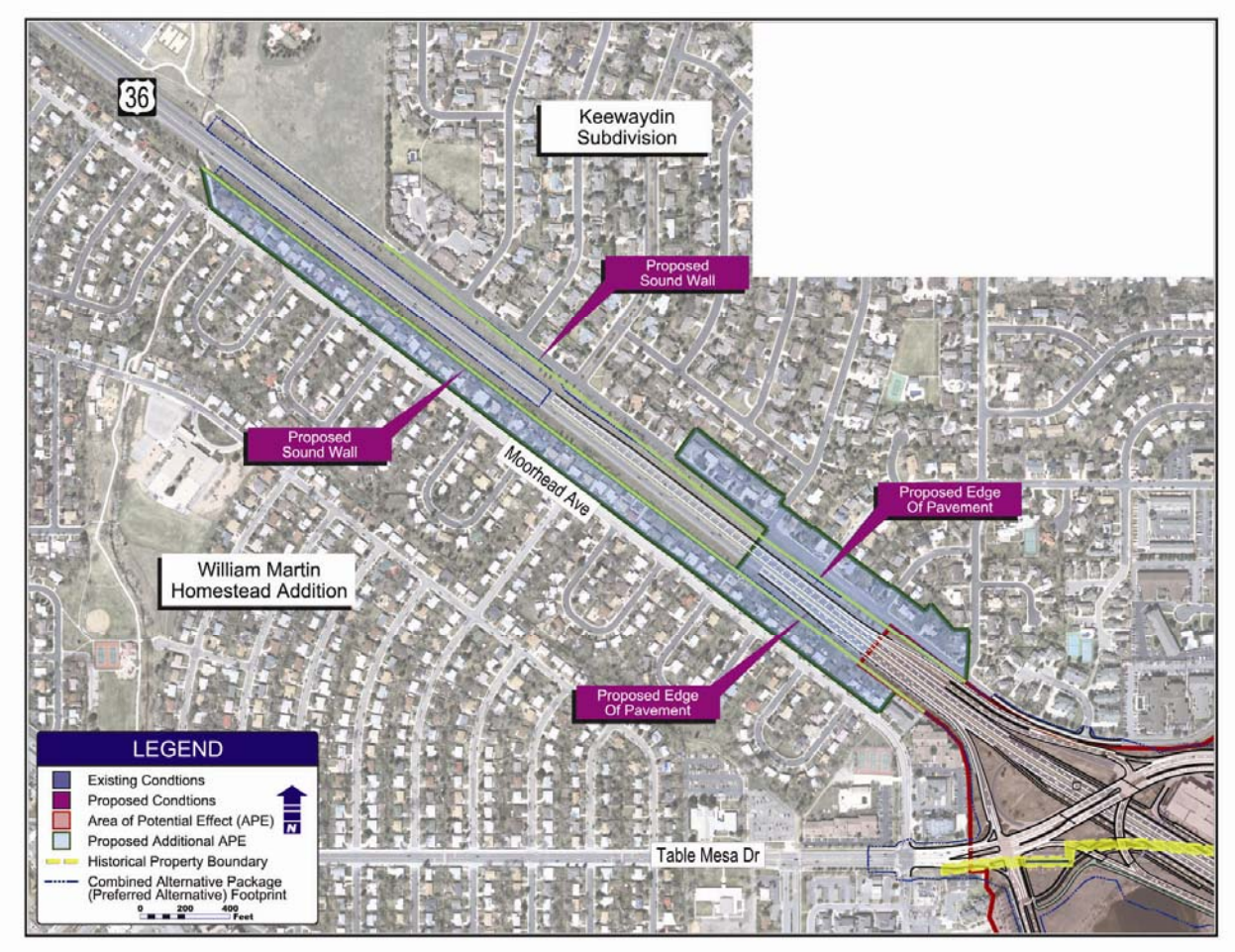
This subdivision, constructed between 1958 and 1963, was initially developed by William Suitts and Richard Gray on land bought from Loyal and Sadie King, Jimmie H. Queen, Reginald Howard, and Willard M. Queen, Jr. The homes were constructed by individual builders that contracted for a certain number of homes while the development of curb, gutter, sewage, other utilities, and other issues, were handled by William Suitts, who also financed the development. While two models appear to have been made available to homeowners (a single-story ranch and a bi-level), most of the homes were custom, architect-designed homes as evidenced in the neighborhood's eclectic mix of architectural details from the late 1950s and early 1960s. Additional research is necessary to determine the significance of William Suitts and the local history of the development of this subdivision. For the purposes of the FEIS, it is being treated as an NRHP-eligible historic district associated with Criterion C.

### Effects Determination

All three build packages include the construction of a noise wall within CDOT ROW south of Apache Avenue. The wall would end at the open space parcel west of the homes on Fox Drive. There are other homes that would be impacted by the wall west of 4125 Apache Avenue, but they were built after 1964, the cutoff date for surveying historic properties. This subdivision and the surrounding area is shown on Figure 4.7-24, Impacts to Keewaydin Subdivision and William Martin Homestead Addition Subdivision.

The new wall would be visible from the homes with front yards that face Apache Avenue and the highway, and the homes located on the corners of Mohawk Drive, Osage Drive, Ottowa Place, and Pawnee Drive, within the boundaries of the historic subdivision. The wall would have a visual impact on the potential historic district, but would be located approximately 100 feet from the edge of the district and the homes that face Apache Avenue and the highway. The noise walls would have a beneficial impact on the noise levels in the neighborhood/historic district. The indirect nature of these changes and the proposed benefits to the homes would not change or modify any of the qualities that may make the subdivision eligible as a historic district. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of No Adverse Effect.

**Figure 4.7-24: Impacts to Keewaydin Subdivision and William Martin Homestead Addition Subdivision**




Source: US 36 Mobility Partnership, 2009.

## ***William Martin Homestead Addition Subdivision***

### Site Description

This subdivision is part of the larger neighborhood known as Martin Acres. Martin Acres was established in 1954, but the homes in the William Martin Homestead Addition were built in 1961. The addition is located on the south side of US 36 and west of Table Mesa Drive. It is bound by Moorhead Avenue on the north, Berkeley Court on the west, Ingram Court on the east, and Martin Drive on the south.

### Eligibility Determination

The addition is part of the development built by Francis & Williams Company, also known as Melody Homes and High Country Homes, and includes variants of the simple ranch or split-level floor plans with attached carports or garages. The subdivision includes houses with simple Ranch details and more stylistic variations, including English Tudor Revival and Swiss Chalet architectural elements, represented with whimsical trim and asymmetrical pediments over the front entrance. This section of the neighborhood illustrates a transition to taller and larger houses during the early 1960s in residential development, dominated by the split-level floor plans in a variety of configurations. Additional research is necessary to determine the significance of the William Martin Homestead Addition under Criterion A for its association with local history. For the purposes of the FEIS, it is being treated as an NRHP-eligible historic district.

### Effects Determination

All three build packages include the construction of a noise wall within CDOT ROW north of Moorhead Avenue. The proposed wall would terminate at Bear Creek Trail, approximately 4,500 feet west of the on-ramp from South Boulder Road to eastbound US 36. All of the homes in the potential historic district face Moorhead Avenue and have a privacy fence and dense vegetation that help shield the backyards from US 36. Because of these elements, the visual impact of the wall would be hard to discern within the neighborhood boundaries and would have a minor impact on the qualities of significance. The wall would have a beneficial impact on the noise levels in this part of the neighborhood. The indirect nature of these changes would not change or modify any of the qualities that may make the neighborhood eligible as a historic district. Therefore, CDOT and FHWA have determined that the proposed undertaking would result in the Section 106 determination of No Adverse Effect. This subdivision and the surrounding area is shown on Figure 4.7-24, Impacts to Keewaydin Subdivision and William Martin Homestead Addition Subdivision.

## Sites of Local Interest

### Shep's Grave (5BF46)

#### Site Description

This resource is a canine grave and associated headstone/monument.

#### Eligibility Determination

This resource was determined eligible for the Colorado State Register of Historic Properties under State Register Criterion A (see Appendix B, Consultation and Coordination). It is not eligible to the NRHP and therefore is not subject to Section 106. It would be evaluated under the State Register because it is a site of local interest and would be moved as a result of the improvements to the interchange.

#### Effects and Mitigation

This resource would be affected by the widening of US 36 under all three build packages and would be entirely destroyed as a result of excavation and construction for the undertaking. Mitigation consists of moving the monument and remains. CDOT and the Broomfield Depot Museum will coordinate efforts to move the monuments that mark Shep's resting place to a more suitable location on the museum grounds. Visitors can access the monuments in a safe location where additional information about Shep can be provided by the volunteers of the county museum. No Section 106 effects determination is necessary because State Register-eligible properties are not protected by Section 106.

## Summary

Package 2 and Package 4 would result in adverse effect determinations for five properties: Allen Ditch, Dry Creek Valley Ditch, 8375 West 120th Avenue, a segment of US 36, and a prehistoric hearth. The Combined Alternative Package (Preferred Alternative) would have adverse effects on four properties: Allen Ditch, Dry Creek Valley Ditch, 8375 West 120th Avenue, and a segment of US 36. Adverse effects for the prehistoric hearth were avoided by reducing the overall amount of width required for the highway in the vicinity of the resource.

Shep's Grave is not a Section 106 resource because it is eligible for the State Register, and not the National Register. Mitigation is not required as part of the State Register, but mitigation consists of moving this resource in a safer location at the Broomfield Depot Museum.

## Mitigation

During the development of the build packages, all three packages were modified to avoid and minimize effects to historic resources wherever possible.

Examples of mitigation measures are described here but will be refined based upon the re-evaluation of eligibility and effects to historic properties. These mitigation measures will be included in the PA for the Combined Alternative Package (Preferred Alternative) that will be executed among CDOT, RTD, FHWA, FTA, ACHP, and the Colorado SHPO, and will be specific to those resources for which the undertaking results in an Adverse Effect. Mitigation measures will continue to be suggested according to conditions and are not exclusive to those included in this section. The opportunity for creative mitigation and other ideas will be discussed to allow consulting parties and other partners to consider a variety of mitigation options that will meet the project scope, schedule, and budget.

According to CDOT Standard Specifications (CDOT 1999), in the event that cultural deposits are discovered during construction along the US 36 corridor, work will cease in the area of discovery and the CDOT archaeologist will be notified. The CDOT archaeologist or a designated representative will evaluate any such discovery, and, in consultation with SHPO, complete proper mitigation measures before construction activities resume.

The specific historic structures and sites for which there are adverse effects under any of the build packages, and mitigation measures for those effects, are described below. Table 4.7-17, Mitigation Measures — Historic and Archaeological Preservation, lists possible mitigation measures for the anticipated impacts to historic properties.

**Table 4.7-17: Mitigation Measures — Historic and Archaeological Preservation**

| Impact | Impact Type | Mitigation Measures |
|---|---|---|
| Removal or impact to structure | Permanent | • Avoidance and minimization will be addressed first.<br>• A Programmatic Agreement with all parties will be established.<br>• Relocation of structure, if possible, will take place. |
| Impact to a portion of a parcel | Permanent | • Avoidance and minimization will be addressed first.<br>• A Programmatic Agreement with all parties will be established. |
| Impact to archaeological resource or linear feature | Permanent | • Avoidance and minimization will be addressed first.<br>• Data recovery and excavation will be provided.<br>• Construction monitoring will be provided, as necessary, in areas with archaeological resources. |
| Direct effects to some or all sites: dust and debris | Temporary/ Construction | • Precautionary measures, such as temporary shields to reduce the impact of dust, will be implemented.<br>• Contractor training to prevent flying debris effects will take place. |
| Indirect effects to some or all sites: visual, auditory, and decreased access | Temporary/ Construction | • Planned construction staging will be provided to avoid these effects wherever possible.<br>• Signage and well-marked alternate routes for access will be provided. |
| Indirect impact to remaining sites: visual and noise | Indirect/ Permanent | • Case-by-case consultation will be performed.<br>• Sound walls or visual barriers will be constructed. |

Source: US Mobility Partnership, 2006.