

**FIGURE 2.5-4
ALTERNATIVE 4 ALIGNMENT
NORTH**

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|---------------|--|-------------------------------|--------------|---------------------|
| LEGEND | | ALT 4 - ALIGNMENT | | STUDY AREA BOUNDARY |
| | | ALT 4 MILE MARKERS | | MAJOR HIGHWAYS |
| | | ALT 2 - ALIGNMENT | | SECONDARY ROADS |
| | | ALT 2 MILE MARKERS | | MARIAS SUBSTATION |
| | | ALT 3 - ALIGNMENT | | |
| | | ALT 3 MILE MARKERS | | |
| | | CITIES AND TOWNS | | |
| | | ALIGNMENT END AND EXIT POINTS | | |
| | | | NOTE: | ALT = ALTERNATIVE |
| | | | | |

The alignment would turn west for approximately 1 mile before crossing Alternative 2, approximately 4 miles north of the Dry Fork of the Marias River crossing. The portion of the alignment along Dry Fork of the Marias and Big Flat Coulee would minimize diagonal crossing of crop land, avoid crossing crop land by traversing uncultivated land, and avoid residences and paralleling of pipelines.

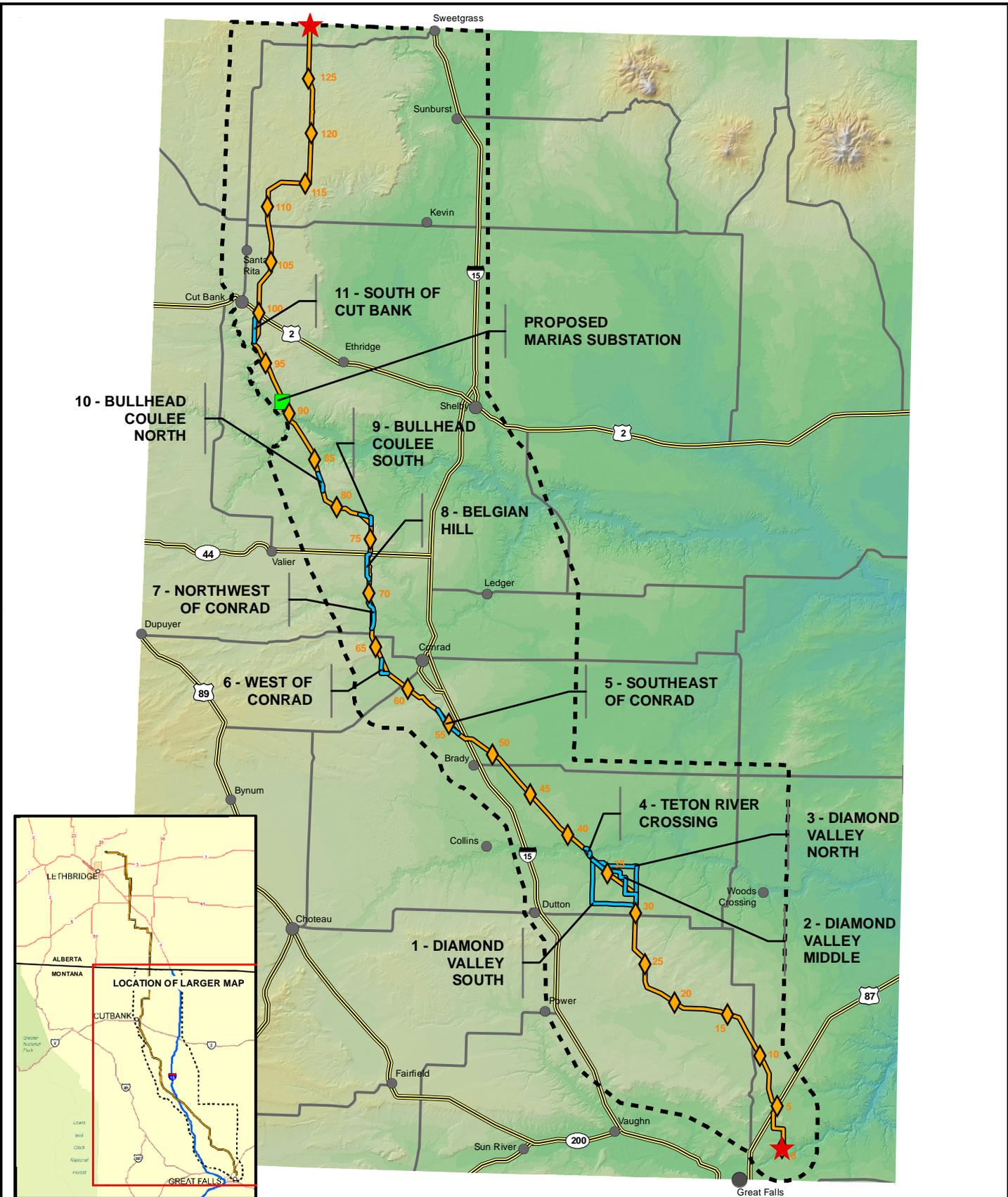
After crossing Alternative 2 near milepost 81, the Alternative 4 alignment would run slightly west of the Alternative 2 alignment for about 1 mile, just north of Belgian Hill, and would be located farther away from residences. The Alternative 4 alignment in this area would reduce visual impacts, although some diagonal crossing of farmland would be required. The alignment then rejoins the Alternative 2 alignment around milepost 83.

Just south of Highway 2 near milepost 107, the Alternative 4 alignment would be located approximately $\frac{1}{4}$ mile west of Alternative 2 for a 2-mile stretch. This location would better follow property boundaries and be located farther away from residences. The Alternative 4 alignment would rejoin the Alternative 2 alignment near milepost 109 and would follow the Alternative 2 alignment north for approximately 30 miles to the border crossing.

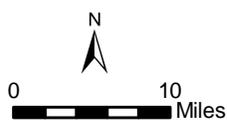
Design Features of Alternative 4

In order to minimize impacts, the transmission line would use monopole construction design in areas used for croplands and CRP. Monopole construction design is shown in **Figure 2.3-5**. The design characteristics are summarized in **Tables 2.3-1 and 2.3-2**. The Alternative 4 alignment would cross 88.9 miles of cropland and CRP.

If Alternative 4 were selected, the agencies would apply additional environmental specifications to it that would not be required for Alternatives 2 or 3. DEQ's draft Environmental Specifications (**Appendix F**) identify general environmental protection measures and sensitive areas for site-specific specifications; DOE or BLM may also require some additional environmental protection measures. Bird markers would also be used where recommended within $\frac{1}{4}$ mile of wetlands. To implement this measure, FWP and FWS biologists would be invited to field verify sites identified for markings. To decrease the line's contrast and visibility, non-shiny conductors would be used. Steel monopoles would be self-weathering to decrease contrast. In order to make the transmission line more visible to low flying aircraft navigating by the roads, ball markers would be used where the line crosses Interstate 15 and U.S. Highways 87 and 2. Marker balls would also be placed at all river crossings.



**FIGURE 2.6-1
LOCAL ROUTING OPTIONS**



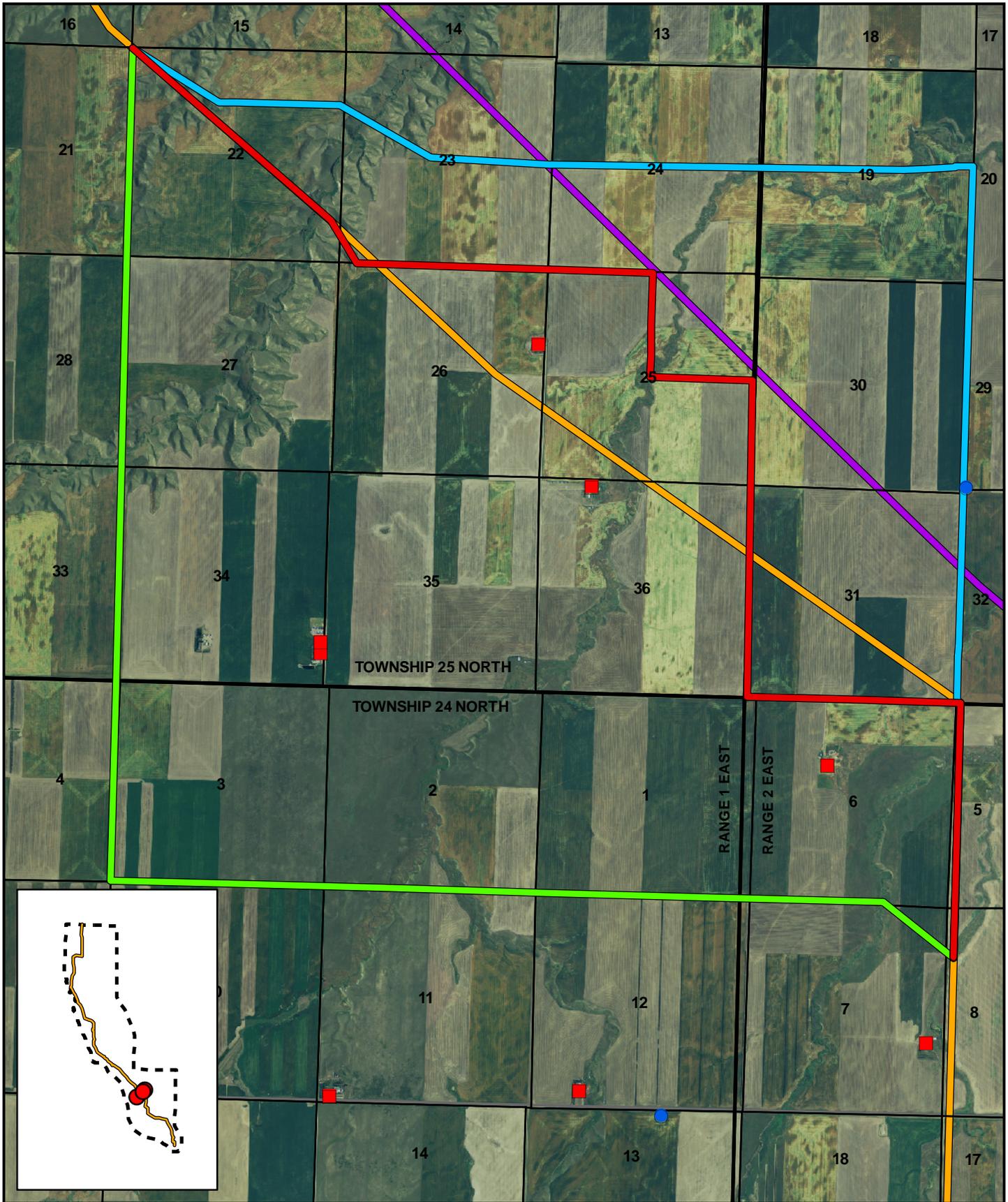
- LEGEND**
- ◆— ALT 2 - PROPOSED ALIGNMENT
 - ◆ MILE MARKERS
 - LOCAL ROUTING OPTIONS
 - TETON RIVER CROSSING
 - MAJOR HIGHWAYS
 - SECONDARY ROADS
 - STUDY AREA BOUNDARY
 - CITIES AND TOWNS
 - ★ ALIGNMENT END AND EXIT POINTS
 - PROPOSED MARIAS SUBSTATION

2.6 Development of Local Routing Options for Alternatives 2 and 4

Based on public comments received on the March 2007 document, the agencies worked with landowners to refine Alternatives 2 and 4 to address landowner concerns related to costs, impacts to farming, impacts to other land uses, and impacts to visual resources. They developed 11 local routing options for Alternative 2, a subset of which could also be applied to Alternative 4. **Figure 2.6-1** provides the general locations for the local routing options. The public comments, meetings with landowners, and cost information were used to further refine and compare the local routing options based on the costs to landowners to farm around structures on diagonal field crossings, costs to landowners to farm around structures on field edges, and the cost to MATL of additional line construction (Section 3.16). Other land use issues were considered, including one landowner's concern over the potential loss of income if the line is too close to allow the construction of a wind turbine on his land. The agencies also considered the potential for visual and human health impacts associated with the local routing options and their proximity to residences. Potential impacts for other resources were considered but are not discussed in detail since the potential effects would differ little between the Alternative 2 alignment and the local routing options. The sections below describe the local routing options in more detail and give the primary reasons for their development.

2.6.1 Diamond Valley Area

Landowner concerns with Alternative 2 in the Diamond Valley area east of Dutton focused on the amount of farmland crossed on the diagonal by Alternative 2 and the close proximity of residences. The Alternative 4 location in the Diamond Valley area was developed to avoid proximity to residences and reduce diagonal crossing of farmland (March 2007 document). However, Alternative 4 would still diagonally cross about 3.5 miles of farmland where it would parallel NWE's existing 115-kV line and could create even more obstacles for farm equipment. The Alternative 4 portion through the Diamond Valley did not meet with local acceptance and is no longer being carried forward as a mitigating measure for Alternative 2 in this area. Three local routing options were identified for the Diamond Valley area (**Figure 2.6-2**). In addition to the Diamond Valley South and Diamond Valley North options that were suggested by the local landowners, MATL identified the Diamond Valley Middle option.



**FIGURE 2.6-2
LOCAL ROUTING OPTIONS IN
DIAMOND VALLEY AREA**



LEGEND

- ALT 2 - PROPOSED ALIGNMENT
- ALT 3 - ALIGNMENT
- DIAMOND VALLEY AREA
- DIAMOND VALLEY SOUTH
- DIAMOND VALLEY MIDDLE
- DIAMOND VALLEY NORTH
- MAJOR HIGHWAYS
- SECONDARY ROADS
- SECTION LINE
- STUDY AREA BOUNDARY
- HOUSE
- GRAIN SILOS

The Diamond Valley South routing, although longer than other options, would be located almost entirely along section lines to minimize diagonal crossing of cultivated fields. It also would avoid residences by at least $\frac{1}{4}$ mile. In Section 7, T24N, R2E where this routing does cross a field diagonally, it is situated such that the guyed angle structures would be in range and pasture lands. This option would be approximately 1.7 miles longer than Alternative 2 and more costly to construct.

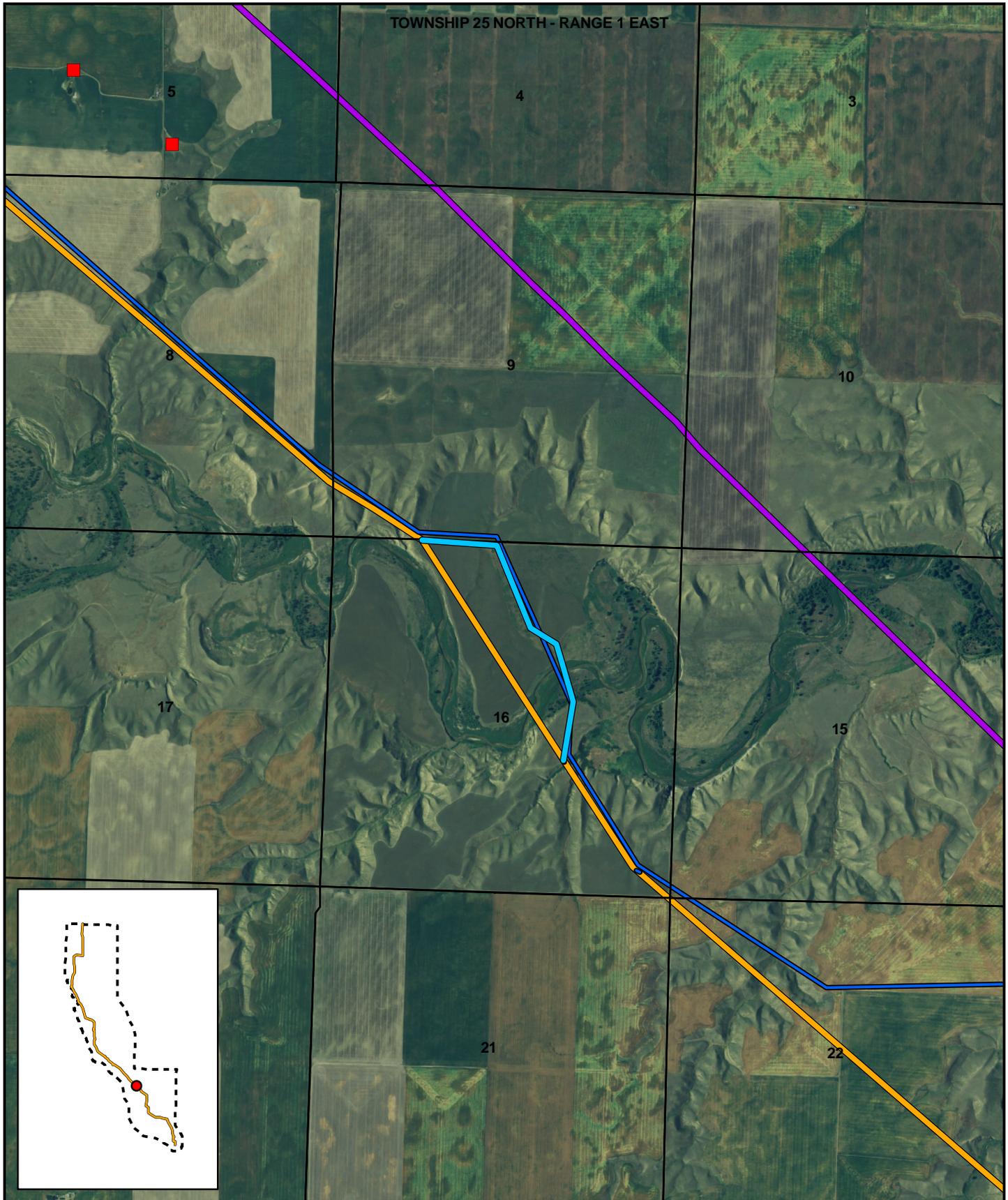
The Diamond Valley North option is similar to the Diamond Valley South option in that it would be located primarily on section and half section lines and would avoid diagonal crossing of most cultivated land. It also would avoid close proximity to residences.

This routing would cross the existing NWE 115-kV line twice, potentially creating areas in fields not sprayable by cropdusters where the two lines are in close proximity and create an acute angle. This routing would be located near a single grain bin that might have to be moved if too close to the transmission line. It would be approximately 1.6 miles longer than Alternative 2 and more costly to construct.

The Diamond Valley Middle option is being considered as an applicant-initiated option. It would be approximately 1.3 miles longer and more costly to construct compared to Alternative 2. This option would be located within $\frac{1}{2}$ mile of three residences. The Diamond Valley Middle option would create several angular approaches to the existing NWE 115-kV line (primarily Section 25 T25N, R1E) resulting in some potentially unsprayable fields if cropdusters were used.

2.6.2 Teton River Crossing Area

The Teton River Crossing local routing option (**Figure 2.6-3**) was developed based on a landowner's concern that a structure would be located on a low terrace that is reported to have flooded in 1964 and DNRC's recommendation that the line be located at the edge of fields. The general alignment of this option is similar to Alternative 4 through this specific area. The Teton River has a meandering channel through a much broader river floodplain. The rerouting of Alternative 2 through this location would put the structure on a slightly higher elevation. The proximity to residences would be the same for this option as Alternative 2 with no occupied residences nearby. Because the Teton River Crossing routing would require more angled structures, it would be more costly to construct compared to Alternative 2.



**FIGURE 2.6-3
LOCAL ROUTING OPTION AT
TETON RIVER CROSSING**

2.6.3 Southeast of Conrad

The Southeast of Conrad local routing option (**Figure 2.6-4**) was proposed to decrease diagonal crossing of cultivated farmland. Most of this routing would be on range and pasture land. This option would result in less farming impacts than Alternative 2. The construction costs would be slightly greater than the costs for Alternative 2.

2.6.4 West of Conrad

The suggested local routing option west of Conrad would reduce the amount of cultivated land crossed diagonally (**Figure 2.6-5**). This option would decrease potential mid-field interference with aerial crop dusting compared to Alternative 2, but would increase edge-of-field and some mid-field interference along the southern east-west segment. This routing would result in reduced farming costs to farmers due to structure locations along the edges of fields.

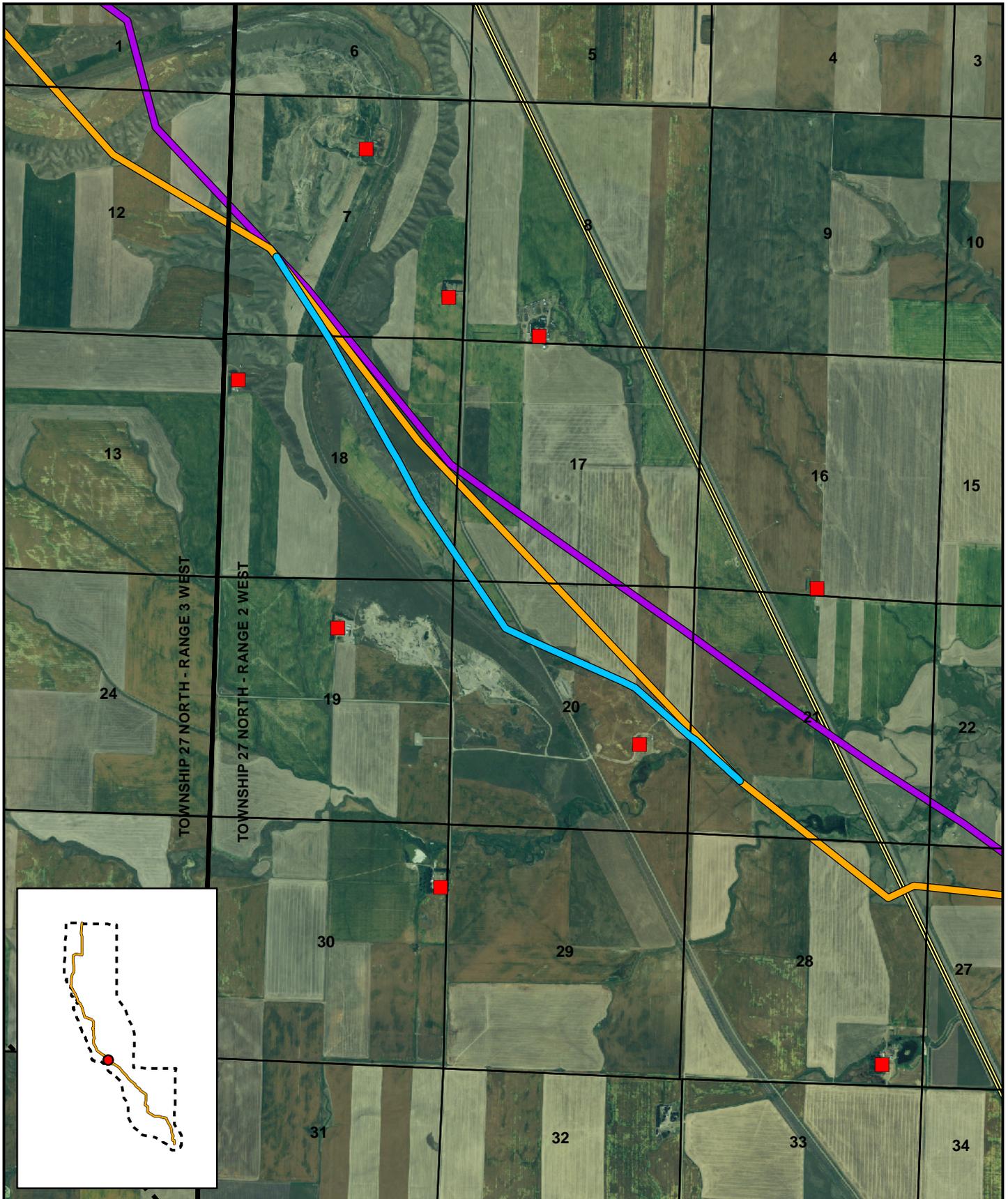
However, it would still have some structures in mid-field locations. Cost of construction would be greater than Alternative 2. MATL has indicated a willingness to implement this small, local routing option.

2.6.5 Northwest of Conrad

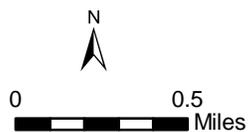
Northwest of Conrad a local routing option would reduce diagonal crossing of farmland and increase placement of structures along field boundaries on both private and state land (**Figure 2.6-6**). The routing would decrease the amount of cultivated land crossed, thereby decreasing costs to farm around structures. The line length would increase 0.1 mile.

2.6.6 Belgian Hill Area

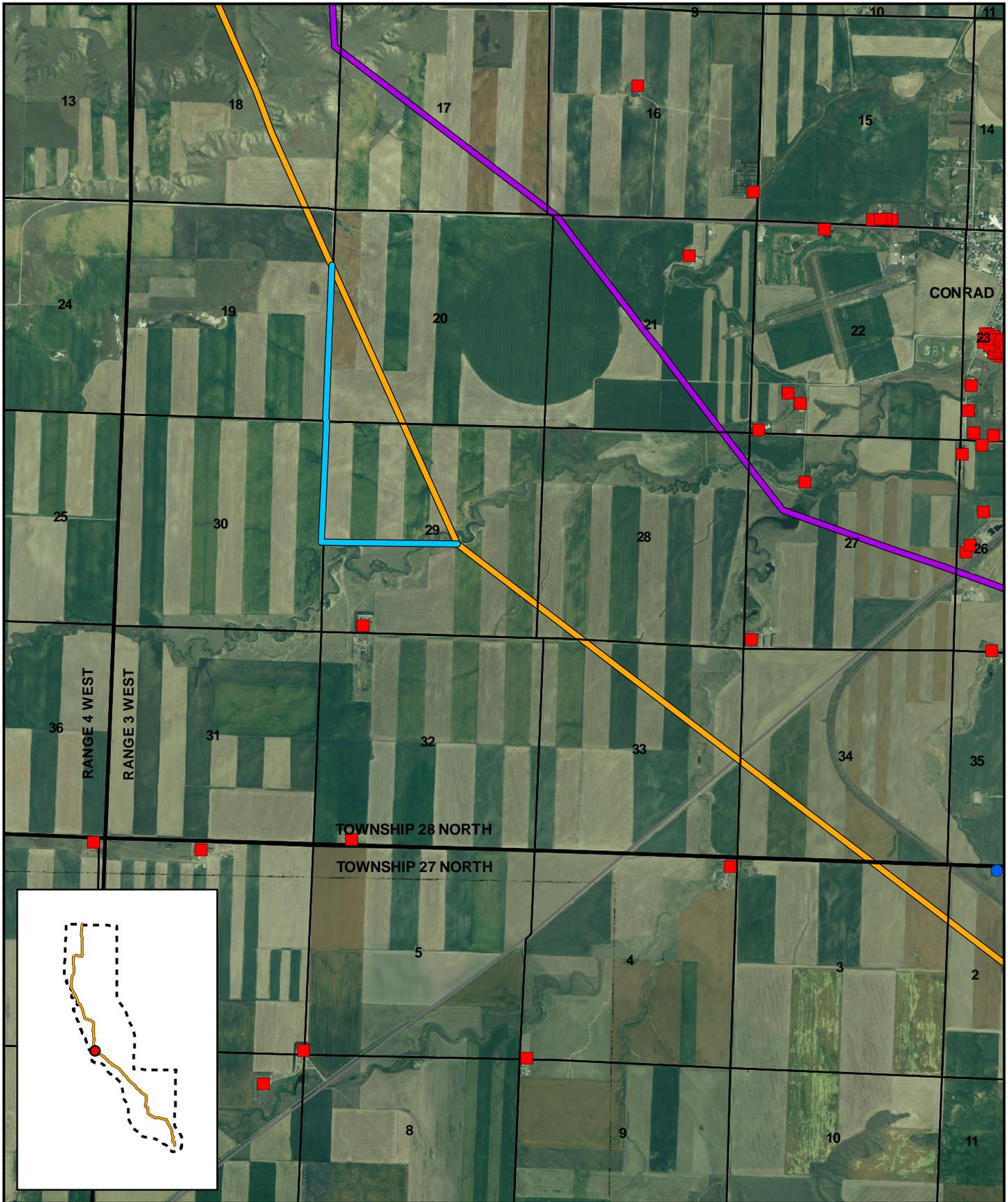
The Belgian Hill Area local routing option (**Figure 2.6-7**) would increase the distance from four residences in this area compared to Alternative 2. Alternative 4 through this area was also developed to increase the distance from residences by moving the line approximately $\frac{1}{2}$ mile to the west. According to comments received on the March 2007 document and subsequent field verification, Alternative 4 would cross approximately $\frac{1}{2}$ mile of cultivation diagonally and would also traverse a side-roll irrigated field. This local routing option would reduce farming costs by reducing the length of diagonal crossing of cultivated fields by about $\frac{1}{4}$ mile when compared to Alternative 4. This option would be within $\frac{1}{4}$ to $\frac{1}{2}$ mile of the two residences on Alternative 2 and within $\frac{1}{4}$ to $\frac{1}{2}$ mile of one residence on Alternative 4. As with Alternative 2, this option would still cross a field with a side roll irrigation system.



**FIGURE 2.6-4
LOCAL ROUTING OPTIONS
SOUTHEAST OF CONRAD**



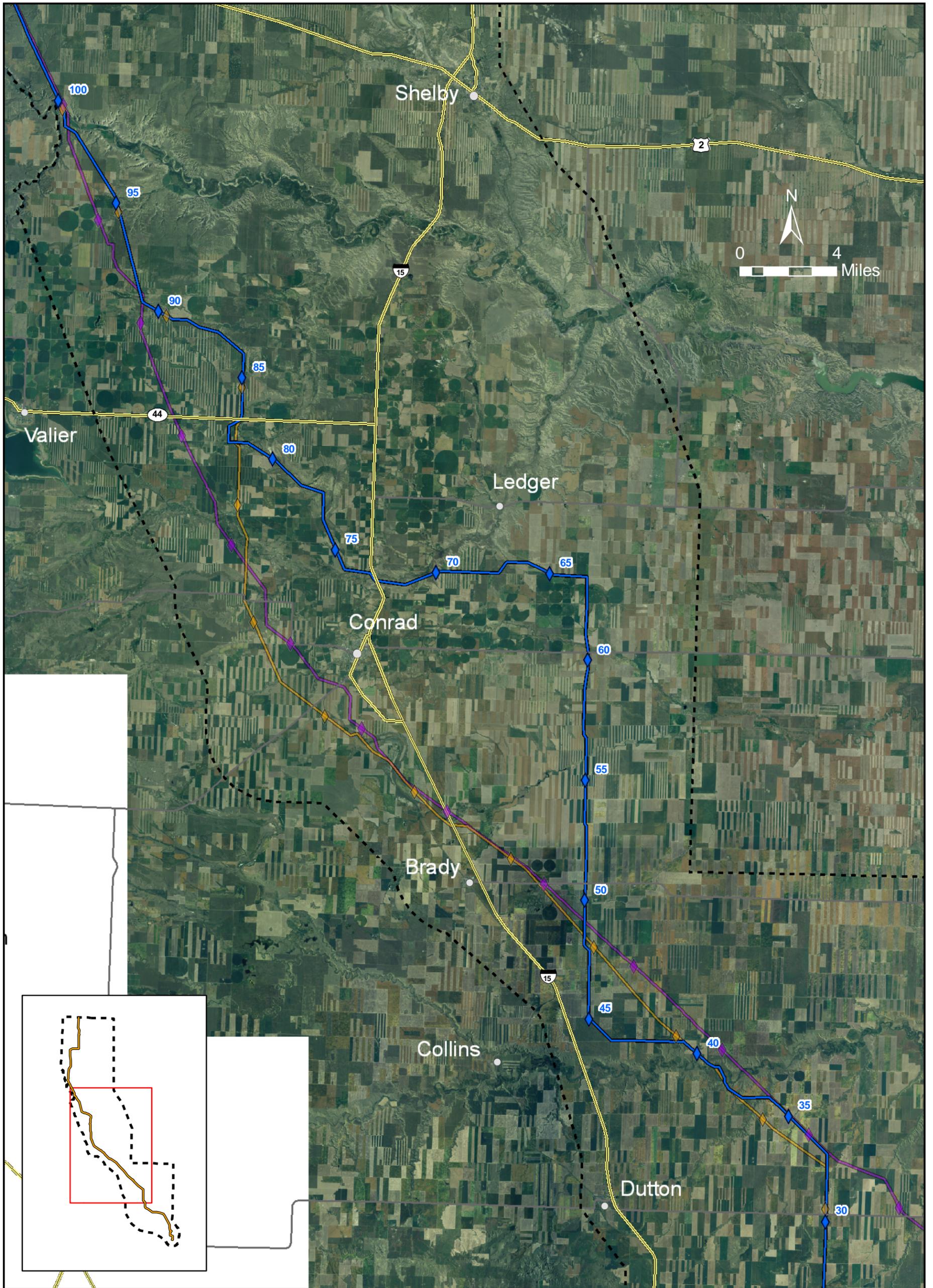
- LEGEND**
- ALTERNATIVE 2 - ALIGNMENT
 - ALTERNATIVE 3 - ALIGNMENT
 - SOUTHEAST OF CONRAD
 - MAJOR HIGHWAYS
 - SECONDARY ROADS
 - SECTION LINE
 - STUDY AREA BOUNDARY
 - HOUSE
 - GRAIN SILOS



**FIGURE 2.6-5
LOCAL ROUTING OPTION
WEST OF CONRAD**



LEGEND	ALT 2 - PROPOSED ALIGNMENT	MAJOR HIGHWAYS
	ALT 3 - ALIGNMENT	SECONDARY ROADS
	WEST OF CONRAD	SECTION LINE
	HOUSE	STUDY AREA BOUNDARY
	GRAIN SILOS	



**FIGURE 2.5-3
ALTERNATIVE 4 ALIGNMENT
MIDDLE**

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|---------------|--|---|--|-----------------------------------|
| LEGEND | | ALT 4 - ALIGNMENT
ALT 4 MILE MARKERS | | STUDY AREA BOUNDARY |
| | | ALT 2 - ALIGNMENT
ALT 2 MILE MARKERS | | MAJOR HIGHWAYS |
| | | ALT 3 - ALIGNMENT
ALT 3 MILE MARKERS | | SECONDARY ROADS |
| | | CITIES AND TOWNS | | |
| | | ALIGNMENT END AND EXIT POINTS | | |
| | | | | NOTE:
ALT = ALTERNATIVE |
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