3.0 Alternatives Identification and Screening Evaluation

The next step in the evaluation process included the identification of project alternatives, the criteria used to evaluate each alternative, and the findings of the screening evaluation process. The evaluation process typically consists of two steps. The first step involves an initial screening assessment to compare and contrast alternatives. The screening assessment is used to identify major differences between alternatives and to eliminate alternatives that are flawed or that are clearly less practical due to their cost, impacts, performance, or other substantive factors. The second step is an in-depth evaluation of the alternatives that are not eliminated by the screening process.

The screening process used for the LLCS followed the alternative development and analysis process used by the NMDOT as described in the New Mexico *Location Study Procedures* (LSP). As previously discussed, the screening process also integrated the early coordination requirements of the USACE [Section 404(b)(1) Guidelines] with the requirements of the LSP. These guidelines were followed because project alternatives involve a crossing of the Rio Grande. The guidelines followed by the USACE require the selection of the "least environmentally damaging practicable alternative (LEDPA)" before a 404 permit can be issued.

The information in the remainder of this section provides: (1) a description of the alternatives considered by the screening process and the process and factors used to identify and select these alternatives; (2) the screening criteria used for the initial screening phase; and (3) the findings of the screening analysis. The screening phase of the Alternatives Analysis process is not intended to be detailed. Screening is based on simplified assumptions and techniques applied consistently and equitably to all alternatives. The analysis includes both qualitative and quantitative assessment methods.

3.1 Alternatives Identification and Development Process

Factors Considered

The initial set of alternatives for the LLCS was developed by a team of transportation and traffic engineers, transportation and environmental planners, and other resource specialists. The primary factors considered in the initial development of alternatives included the following:

1. *Consistency with the Project Purpose and Need* – The foundation of all alternatives identified was their consistency, in whole or in part, with the purpose and need of the study, i.e., they would provide a significant benefit to the congestion, mobility, accessibility, and safety needs within the LLCS area and they were generally consistent with the study scope identified by the Valencia County Mobility Plan.

2. *Feasibility and Practicability* – The feasibility and practicability of potential alternatives was a key consideration in the selection of initial alternatives. Feasibility and practicability can be subjective measures that can vary by project. For this study, alternatives were considered infeasible and/or not practical if they were excessively costly to implement, and/or out of context for the project area, and/or if they presented unreasonable technical challenges. For example, early input received from the public included suggestions to consider a freeway, a light rail system, a tunnel under the river, or the implementation of strategies that shifted traffic to different times of day or that required students to use buses to travel to and from the high school. Consideration of a freeway or a light rail system that would span the study area were

judged by the Project Team to be inconsistent and out of context with the rural atmosphere of the study area and excessively expensive to implement. An alternative that would consist of a tunnel under the river was deemed technically impractical and cost-prohibitive. In addition, driving restrictions on students and parents or implementing measures to shift the time of trips was judged to be impractical and beyond the authority of the sponsoring agencies.

3. *Environmentally and Culturally Sensitive* – Because the project area includes farmlands, wildlife use areas, and historic communities, project alternatives that would have excessive impacts to these areas were avoided, to the extent practical. However, the river and river bosque could not be avoided due to the east-west alignment of the study area and the north-south alignment of the Rio Grande and the underlying project need of providing additional mobility across the valley and river.

4. *Public Interests* – The identification and development of alternatives considered neighborhood cohesion, land use, farmlands, property ownership, and aesthetics. Alternatives that would result in excessive acquisitions of residential, commercial, or institutional properties were avoided, to the extent practical. Likewise, alternatives that would impact the security and operations of the CNMCF were avoided on the basis of conflict with public interest.

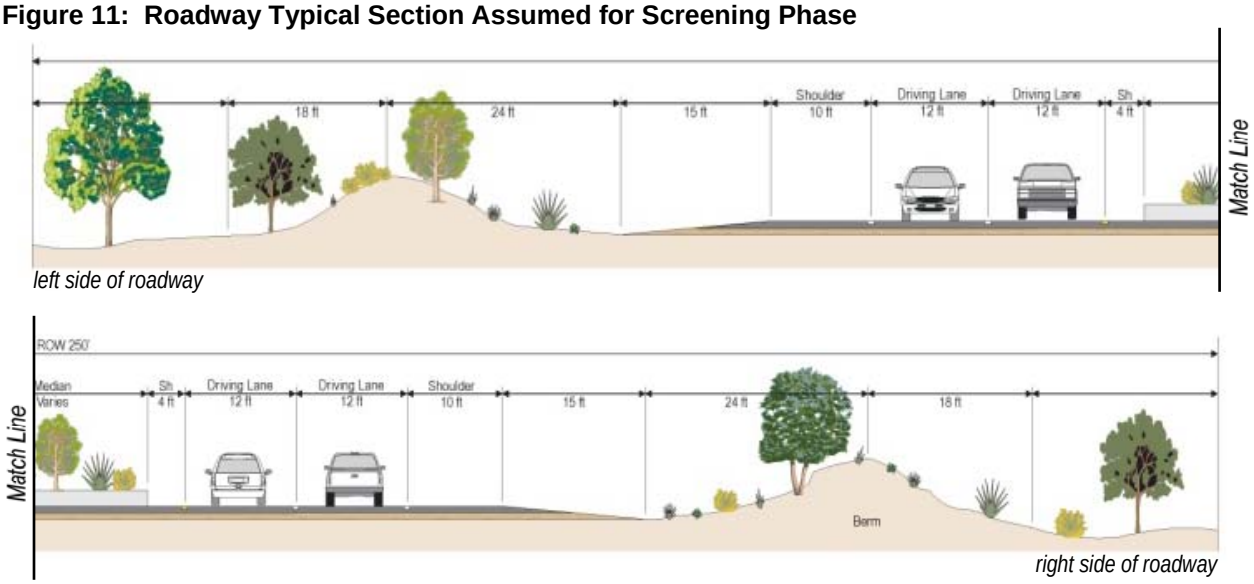
In addition to the above factors, travel demand forecasts were used to estimate the traffic demand within the study area for a planning horizon year of 2030 (it is the practice of the NMDOT to plan major roadway projects for a 20-year or greater horizon). Traffic projections were prepared using the MRCOG regional travel demand model tailored to reflect the population, employment, and land use of the Los Lunas region. The travel demand model provided insight as to the size of facility needed to reduce congestion on NM 6.

Roadway Features and Cross Section

Based on the projected travel demand, alternatives based on the implementation of a new roadway alignment assume a 4-lane limited access arterial roadway, except for a NM 6 widening alternative (see description in the following section). A nominal right-of-way width of 250 feet was assumed for the screening phase, except for the area across the river channel, which was limited to 100 feet. While a 4-lane arterial roadway can be accommodated in a much narrower section, the wider right-of-way was assumed to ensure potential impacts from the roadway and associated drainage treatments were fully considered. The assumed section of the roadway is illustrated in Figure 11 and included the following features:

- 4 travel lanes
- A 14-foot median to accommodate left turns at intersecting roadways and landscaping
- 6- to 8-foot shoulders to function as both shoulders and on-street bicycle lanes
- 10-foot multi-use pathways along both sides of the roadway
- Buffer areas along both sides of the roadway to accommodate a meandering pathway, landscaping, drainage swales, and the use of earth berms for roadway shielding

Figure 11: Roadway Typical Section Assumed for Screening Phase



3.2 Alternatives Selected for the Screening Evaluation

Using the above factors considered in the initial development of alternatives, the Project Team identified several route alternatives for the screening evaluation. This initial set of alternatives consisted of five new roadway alignments that started at I-25 and extended easterly across the Rio Grande to a terminus at NM 47. These alternatives are designated as S-1, S-2, S-3, S-4, and S-5. An alternative that would widen NM 6 from Desert Willow Road west of I-25 to NM 263 east of the Rio Grande was also developed. This alternative would add an additional travel lane on both sides of the existing roadway and would add a center median/left-turn lane in areas without this feature.

The above set of six alternatives was presented to the CAC assembled at the onset of the project. The CAC provided additional suggestions for alternatives, including consideration of routes north of NM 6. Based on the CAC suggestions, the Project Team developed two additional alternatives that were north of NM 6. These alternatives were designated N-1 and N-2.

Figure 12 illustrates the general location of the eight alternatives identified for consideration and evaluated in the screening analysis. Figures 13 and 14 show each alternative route in greater detail.

All of the above alternatives were presented at a public meeting. While no additional route alternatives were identified, other solutions were suggested through the public input process at both the initial public scoping meeting and a subsequent public meeting. These suggestions included the extension of the Manzano Expressway and the use of travel demand management strategies to reduce demand on NM 6. Travel demand management (TDM) typically involves strategies that reduce demand on a particular facility by changing the time of travel or by increasing the number of occupants within a vehicle. While many TDM strategies are available, most involve actions such as parking restrictions at employer sites to encourage ridesharing, changes in work hours to change the time of travel, and other similar strategies to reduce the volume of traffic in an area.

Table 6 on the following page lists all of the alternatives identified for consideration.

Table 6: Initial Set of Alternatives Identified for Consideration

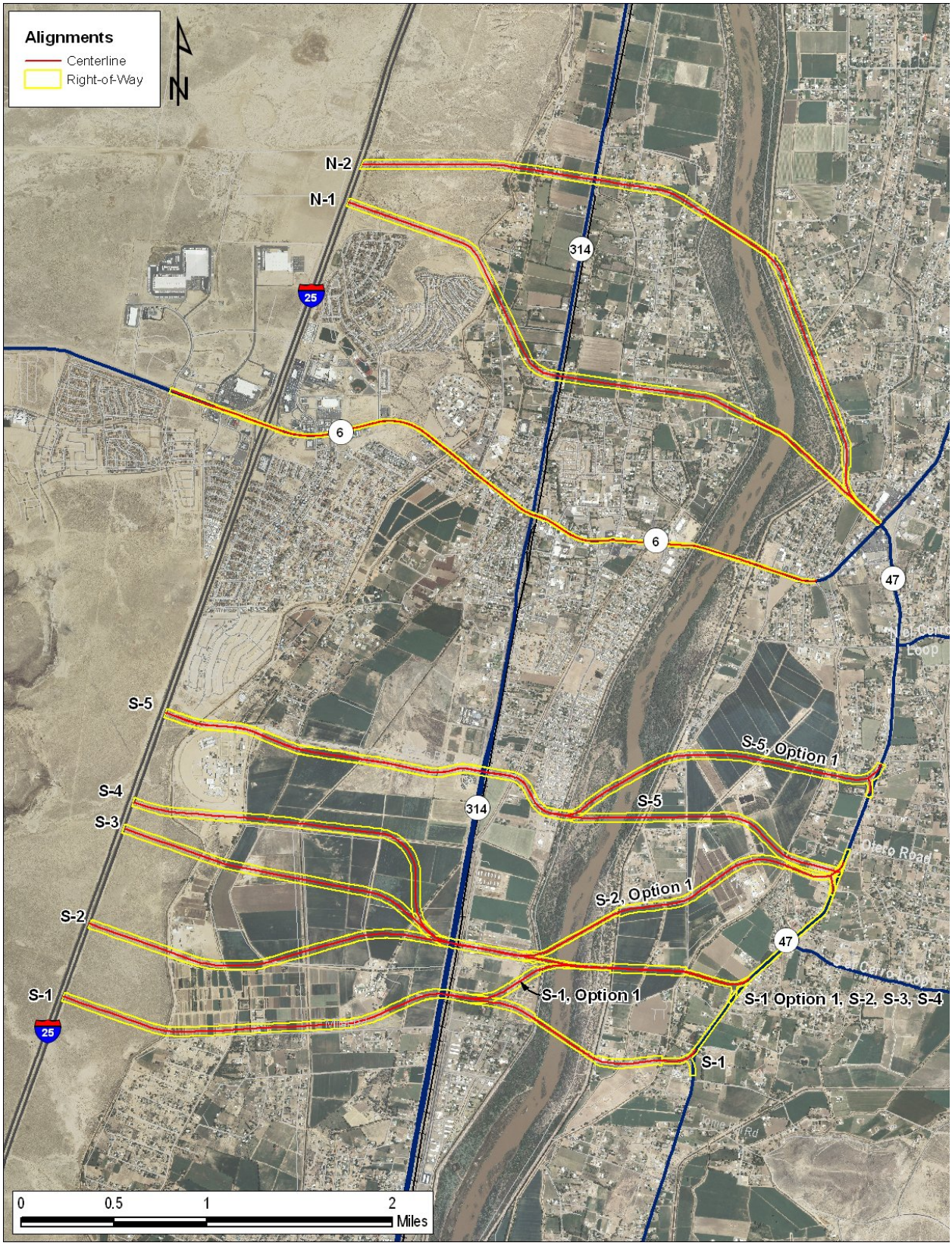
• NM 6 Widening Alternative	• Alternative S-5
• Alternative S-1	• Alternative N-1
• Alternative S-2	• Alternative N-2
• Alternative S-3	• Manzano Expressway Extension to I-25
• Alternative S-4	• Travel Demand Management Strategies

Note: Alternatives with an "S" are located south of NM 6. Those designated "N" are located north of NM 6.

The NM 6 Widening Alternative and Alternatives S-1, S-2, S-3, S-4, S-5, N-1, and N-2 were selected to move forward for further analysis in a screening evaluation. The Manzano Expressway Alternative and a TDM-based Alternative were considered and discussed by the Project Team, but were ultimately not included in the list of alternatives to advance into the screening analysis. The extension of the Manzano Expressway north from Meadow Lake Road to I-25 was deemed by the Project Team as inconsistent with the project purpose and need and not practicable. The Manzano Expressway is a 2-lane north-south route that starts at the intersection of NM 47 and NM 309 in Belen and terminates at Meadow Lake Road east of Los Lunas. It is approximately 3 miles east of and parallel to NM 47. The extension of the Manzano Expressway north to I-25 would cross approximately 11 miles of Isleta Pueblo tribal lands. The travel demand model was used to evaluate the effects this alternative would have on NM 6. Because of its north-south alignment, the modeling analysis showed that the Manzano Expressway would have only a minor effect on reducing east-west traffic volumes on NM 6. Moreover, correspondence received from the Governor of Isleta Pueblo stated that such a roadway would have "significant adverse impacts on their culture and traditions" and, for this reason, they would be unwilling to consider granting right-of-way for the extension of the Manzano Expressway. Based on the findings of the modeling analysis and the comments from Isleta Pueblo, this alternative was not advanced for further consideration in the screening analysis.

The use of travel demand management strategies to reduce the traffic on NM 6 was judged by the Project Team as not feasible and not practical. Several people who attended the public meetings suggested that the local school system prohibit students and parents from driving to area high schools as a measure to reduce traffic on NM 6. Others suggested that programs to modify work hours at employers be used to shift the time of travel on NM 6. The communities in Valencia County rely extensively on employment in Bernalillo County. This condition results in commute work trips comprising a significant portion of the traffic on NM 6. The sponsoring agencies for the LLCS do not have the authority to modify work hours for major employers in Bernalillo and Valencia Counties. Likewise, the NMDOT and Village of Los Lunas cannot impose restrictions on student driving. For these reasons, the Project Team deemed that TDM strategies were impractical to achieve a significant reduction in travel on NM 6 during the peak traffic hours and they were not advanced for further consideration.

Figure 12: Alternatives Advanced for the Screening Analysis



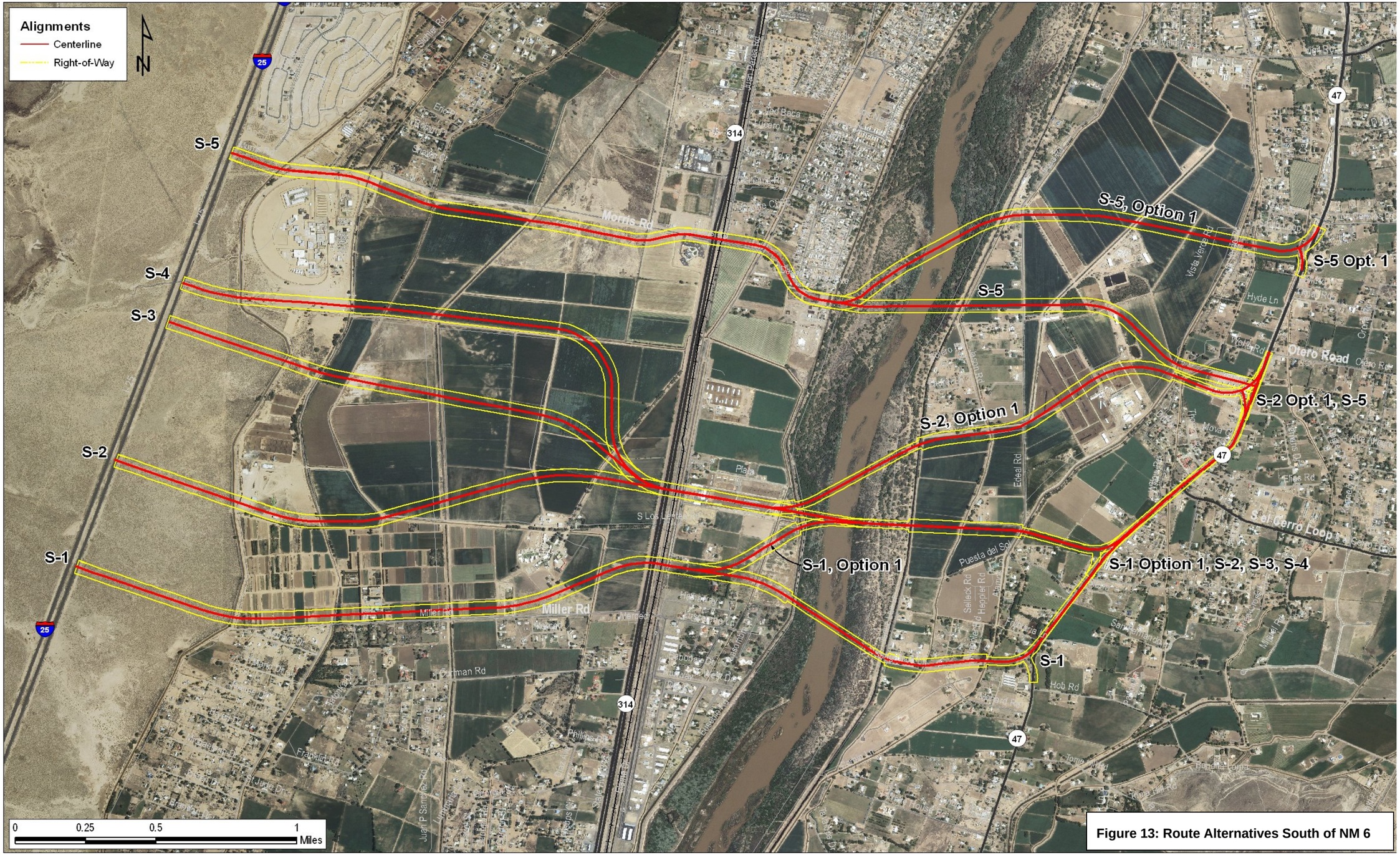


Figure 13: Route Alternatives South of NM 6

Figure 14: Route Alternatives North of NM 6

3.3 Screening Criteria

The identification and selection of criteria used for the initial screening of alternatives considered factors identified through the public outreach process and factors specified by pertinent guidelines followed by the NMDOT and USACE. Because the initial screening assessment is intended to identify major differences between alternatives and to eliminate alternatives that are flawed or that are clearly less practical due to their cost, impacts, performance, or other substantive factors, the evaluation criteria were limited to key factors having a significant bearing on their feasibility.

All of the screening criteria used fell within the general categories of: (1) consistency with the project purpose and need; (2) feasibility and practicability; (3) environmental and cultural impacts; and (4) public interest. The following criteria, organized by category, were used for the initial screening assessment.

1. *Project Purpose and Need* – This category considered the alternatives ability to:
    - Reduce congestion on NM 6 (traffic performance)
    - Provide access to major developing areas within the Los Lunas area
    - Improve access for emergency response needs
2. *Feasibility and Practicability*
    - Cost of implementation
    - The amount of property required for implementation, assuming a 250-foot right-of-way width
3. *Environmental and Cultural Consequences*
    - Impacts to farmlands and the acequia system
    - Impacts to aquatic resources
    - Impacts to riparian habitat
    - Impacts to wetlands
    - Impacts to wildlife including threatened and endangered species
    - Impacts to cultural resources
4. *Public Interest*
    - The number of residential buildings, commercial buildings, and institutional buildings that would be acquired
    - Impacts to neighborhoods and communities
    - Impacts to the operation and security of the Central New Mexico Correctional Facility
    - Connectivity to other transportation facilities, e.g., the New Mexico Rail Runner and planned trails
    - Consistency with other laws and regulations (primarily those of the USACE, the Endangered Species Act, and federal and state historic preservation regulations).

3.4 Screening Assessment and Findings

The screening evaluation was based on both qualitative and quantitative methodologies and criteria. The methodology and approach varied, depending on the factor under consideration. The findings of the analysis, along with the analysis approach, are summarized below for each key factor.

3.4.1 Purpose and Need

This factor considered each alternatives ability to reduce congestion on NM 6 (traffic performance), to provide access to major developing areas within the Los Lunas area, and to improve access for emergency response needs. The methodology and approach for these three criteria were as follows:

- Traffic performance was evaluated using the MRCOG EMME/2 regional travel demand model. Traffic forecasts were developed assuming the socioeconomic projections and land use for the year 2030. Differences between alternatives were based on a comparison of "volume-to-capacity" (v/c) ratios for each major link of NM 6. V/c ratios are a simplified quantitative measure that compares the projected volume of a roadway link with its theoretical capacity given the number of lanes and friction from driveways and side streets. V/c is specified as: (1) *under capacity* which is a condition where the roadway will function with no or low levels of congestion; (2) *approaching capacity* where the roadway will be expected to have moderate levels of congestion; and (3) *over capacity* where the roadway will have severe congestion.

  The traffic projections for the No Build Alternative assumed improvements to NM 6 consistent with the local Capital Improvement Program. The Village of Los Lunas has programmed several projects along NM 6 to improve intersection geometry and signalization.

- Access to growth areas was based on the location of the roadway relative to areas where high growth is projected according to local land use plans and socioeconomic projections.

- The evaluation of emergency response was based on a combination of congestion relief on NM 6 combined with improved east-west access across the river.

Table 7 summarizes the findings of the screening evaluation for each alternative's consistency with the project purpose and need.

In general, all of the alternatives except for the No Build achieve reasonable congestion benefits. The greatest congestion benefits would result from the new alignment alternatives, i.e., the N-1, N-2, and S-1 through S-5 Alternatives. The NM 6 Widening Alternative also achieves a reduction of congestion, although several major segments of this route remain congested under this alternative.

With regard to access to planned growth areas, there are substantial differences between the alternatives. The N-1 and N-2 Alternatives would substantially improve access to the industrial park located west of I-25 and north of NM 6. However, these alternatives would not improve access to the master planned areas south of NM 6 both east and west of the Rio Grande or to other growth areas within the project vicinity. All of the S Alternatives would improve access to the planned growth areas south of NM 6, with the greatest benefits resulting from the S-5 alternative. Improved access to planned growth areas and other developing areas would be minimal with the NM 6 Widening Alternative, as this growth would still connect to NM 6 via existing arterial and local roadways.

All of the alternatives would enhance emergency response, except for the No Build Alternative. The greatest benefit would result from the new alignment alternatives, as they provide a separate route that can be used in the event of a partial or full closure of the existing NM 6 route. Closures that close some or all of the lanes could result from traffic incidents, roadway and/or bridge maintenance activities, or wildfires in the bosque.

Table 7: Consistency with Purpose and Need

Alternative/Criteria	NM 6 Congestion Relief	Access to Growth Areas	Emergency Response
No Build	Does not provide any reduction of congestion.	Does not improve access to high growth areas.	No benefit as increased congestion on NM 6 further restricts emergency response travel.
NM 6 Widening	Reduces congestion on NM 6 although several major segments remain congested including the segments on both sides of I-25, a short segment between I-25 and NM 314, and the segment across the river.	In general, this alternative does not improve access to any planned or developing areas within the project area.	Does not provide an alternative route for emergency response, although reduced congestion on NM 6 does improve emergency response on this route.
S-1	Reduces congestion on NM 6 although the segments immediately adjacent to I-25 remain congested during the evening period.	Improves access to four master planned growth areas south of NM 6 and to other growth areas throughout the project area.	Provides alternative route for use by emergency response vehicles. Congestion reduction on NM 6 also improves response on this route.
S-2	Same congestion benefits as Alternative S-1.	Same accessibility benefits as Alternative S-1.	Same emergency response benefits as Alternative S-1.
S-3	Same congestion benefits as Alternative S-1.	Same accessibility benefits as Alternative S-1.	Same emergency response benefits as Alternative S-1.
S-4	Same congestion benefits as Alternative S-1.	Same accessibility benefits as Alternative S-1.	Same emergency response benefits as Alternative S-1.
S-5	Same congestion benefits as Alternative S-1.	Same accessibility benefits as Alternative S-1.	Same emergency response benefits as Alternative S-1.
N-1	Same congestion benefits as Alternative S-1.	Does not provide access to master planned growth areas south of NM 6. Does improve access to a developing industrial park west of I-25 and north of NM 6.	Same emergency response benefits as Alternative S-1.
N-2	Same congestion benefits as Alternative S-1.	Same access impacts as described for N-1.	Same emergency response benefits as Alternative S-1.

3.4.2 Feasibility and Practicability

This factor considered the cost and right-of-way needs for each alternative. Cost was based on route length and preliminary cost estimates of the roadway, drainage, interchange, and bridge elements. The cost of right-of-way, which can be a significant cost element, was included as a "contingency cost." Contingency costs are a percentage basis of the overall roadway costs. While not a precise estimate, this method provides a consistent comparison during the early phases of project development when detailed

design data are not available. Because the contingency costs are a percentage of overall costs, the cost is higher for longer and/or more complex alternatives that would presumably have greater right-of-way needs. This method is accepted by and commonly used by the NMDOT/local governments in the early phases of project development. The quantity of right-of-way was estimated using the route length and an assumed width of 250 feet. Table 8 summarizes the cost and right-of-way need for each alternative.

As shown in Table 8, the cost of the alternatives that assume a new alignment roadway are similar, with a difference of less than 15% between the lowest and highest cost alternatives. The cost of the NM 6 Widening Alternative is significantly less than the new alignment roadway alternatives. While the cost assumptions used for the screening analysis include a contingency for right-of-way and relocation costs, the costs would be substantially higher for alternatives that have a high number of relocations, especially when they involve businesses. The amount of right-of-way is also similar between alternatives.

Table 8: Cost and Right-of-Way Needs

Alternative/Criteria	Cost	Right-of-Way
No Build	Routine Maintenance	
NM 6 Widening	$15,200,000	26 acres
S-1	$54,000,000	102 acres
S-1 Option 1	$53,600,000	109 acres
S-2	$54,600,000	103 acres
S-2 Option 1	$63,800,000	122 acres
S-3	$53,800,000	100 acres
S-4	$55,300,000	107 acres
S-5	$57,000,000	109 acres
S-5 Option 1	$69,800,000	113 acres
N-1	$58,200,000	98 acres
N-2	$54,900,000	111 acres

Cost Assumptions

- Interchange = $10M / mi.
- Roadway/Drainage = $6.4 M / mi.
- Bridge (new) = $11,500 / lin. ft.
- Bridge (NM 6) = $5,280 / lin. ft.
- NM 6 widening = $1.8M / mi.
- NM 47 widening = $1.7M / mi.

Right-of-Way based on route length and an average width of 250 ft.

3.4.3 Environmental and Cultural Consequences

Adverse impacts to farmlands, aquatic resources, riparian habitat, wetlands, threatened and endangered species, and cultural resources were considered. For the screening analysis, impacts were calculated using simple assumptions and methods. Impacts to farmlands were based on the amount of irrigated agricultural lands that would be converted to roadway and roadway right-of-way. For the S-5 Alternative, the large farmland tracts east of Edeal Road were recently rezoned for residential use as part of a master planned community. The timing of this development is unknown. For this reason, these lands were included in the assessment even though their use as farmland will change in the future.

Upland habitat exists in the area from I-25 east to the Belen Highline Canal. This canal is between the interstate and NM 314 and is as close as 700 feet from I-25 near Morris Road (the S-5 Alternatives) and as far as 4,500 feet from I-25 at the N-2 Alternative. In most locations, this ditch is approximately 2,200

feet east of I-25. This upland habitat consists of desert grasses and shrubs typical of the west mesa. This vegetation provides habitat for various small mammals, birds, and reptiles. While this habitat would be affected, it is at the fringe of much larger areas with the same or similar habitat. Impacts to upland habitats were based on the width of right-of-way and the length of road that would pass through these areas.

The highest quality habitat within the project area is that found along the Rio Grande, including the aquatic habitats found within the river and the two large ditches that parallel the river, and the riparian forests (bosque) that exist along each side of the river. The quality of the bosque habitat varies within the 5-mile expanse between the northernmost and southernmost alternatives. The primary habitat includes cottonwood, Russian olive, and coyote willow. However, in some areas salt cedar, Siberian elm, and mulberry trees occur and are the dominant species. The age structure of cottonwoods also varies, with some areas having old growth trees 18-36 inches in diameter and a few trees approaching 60 inches in diameter. Field observation indicates that the habitat is generally higher quality (older and denser cottonwood forest) in the area north of NM 6. The width of the riparian area between the levees is also greater in this area. High quality habitat is also found on the west side of the river along the S-1 and S-2 routes; however, the forest is generally narrow in these areas. The forest area on the west side of the river along the S-5 route consists of young and low-density cottonwoods — a condition that may be the result of a previous burn or the removal of other tree species.

From the standpoint of endangered species, all of the alignments provide potential habitat for southwestern willow flycatcher and yellow-billed cuckoo in the thickets along the edge of the river. All of the alignments also provide potential roosting habitat for species such as bald eagles. Likewise, the ditches below the levees and on both sides of the river provide potential habitat for the New Mexico meadow jumping mouse. For the screening assessment, the impacts to these and other animal species are assumed similar with the only difference being the quantity of habitat affected.

The alignment of alternatives is imprecise at the screening analysis stage. A detailed assessment of impact to habitat that considers the quality of habitat is not possible without extensive field investigations. For this reason, the assessment is based on the area that would be lost due to roadway or bridge construction, as follows:

- For aquatic resources, impact was based on the number of bridge piers constructed within the river channel, assuming a pier is constructed every 180 feet of bridge span.
- The loss of riparian habitat was the area that would be under the bridge deck, piers, and bridge abutments, assuming an average bridge width of 100 feet and abutment width of 200 feet.
- The loss of wetland habitat was based on an average width of 5 feet along each ditch bank and 10 feet along the edges of the river. The extent and quality of wetlands along the ditches is highly variable, with the areas along drainage ditches and the two riverside drains having the best quality habitat. All of the alignments cross these ditches. Thus, the primary difference between the alternatives was the total number of ditches crossed. The S-5 alternative may cross an existing retention pond. This pond likely has the hydrology, vegetation, and soil characteristics that will qualify as wetland habitat. However, this pond was constructed to retain runoff for the Carson Park Subdivision and is not tied to a jurisdictional drainage.
- Impacts to wildlife were assumed as the sum total of farmland, upland, aquatic, riparian, and wetland habitats.

Table 9 summarizes the amount of farmlands and the various habitat types affected by each of the project alternatives.

Table 9: Impacts to Environmental Resources

Alternative	Farmlands	Aquatic Habitat	Riparian Habitat	Wetland Habitat	Wildlife Habitat
No Build	None	None	None	None	None
NM 6 Widening	6 acres	4 piers (727')	1.42 acres	0.1 acre	10.06 acres
S-1	48 acres	4 piers (615')	3.18 acres	0.51 acre	62.7 acres
S-1 Option 1	72 acres	3 piers (516')	3.33 acres	0.51 acre	93.8 acres
S-2	60 acres	3 piers (510')	3.33 acres	0.46 acre	77.0 acres
S-2 Option 1	67 acres	5 piers (738')	4.23 acres	0.55 acre	85.0 acres
S-3	62 acres	3 piers (510')	3.33 acres	0.46 acre	79.1 acres
S-4	68 acres	3 piers (510')	3.33 acres	0.46 acre	90.0 acres
S-5	58 acres	3 piers (458')	4.20 acres	0.55 acre	73.6 acres
S-5 Option 1	64 acres	5 piers (751')	6.16 acres	0.55 acre	81.4 acres
N-1	47 acres	4 piers (560')	4.87 acres	0.55 acre	80.9 acres
N-2	32 acres	4 piers (665')	3.18 acres	0.59 acre	61.2 acres

Note: Wildlife habitat impacts are the sum or farmlands, upland, aquatic, riparian, and wetland habitats.

Cultural Resources

The assessment of cultural resources focused on historic buildings and historic acequias. While it is likely that archaeological sites are present within the project area, the development and agriculture have likely removed and/or deeply buried many archaeological sites. It is likely that all of the proposed alternatives would affect at least some number of archaeological sites; however, the number and significance of these sites cannot be determined without field survey. This activity will occur during a later phase of project development.

The investigations of cultural resources at the screening level of analysis included a records review, field reconnaissance, and analysis of historic aerial photography. Record reviews included searches of the National Register of Historic Places (NRHP), the New Mexico State Register of Cultural Properties (SRCP), and the New Mexico Cultural Resources Information System (NMCRIS). Based on the records review, few archaeological sites have been recorded within the study area. However, this is likely due in large part to the lack of survey that has been conducted.

The Middle Rio Grande Conservancy District (MRGCD) system of irrigation and flood control was developed in the 1920s and 1930s, and while changes to individual ditches have occurred, the system as a whole continues to reflect its historic character and significance. All of the proposed alternatives would cross the majority of ditches in the system. These crossings would likely require new culverts to carry the ditches under the new roadway. These new crossings would be similar to other roadway crossings in the study area and would not likely cause adverse impacts to the individual ditches or to the historic significance of the MRGCD system as a whole.

Differences in the impacts to cultural resources between the various alternatives are more apparent in terms of historic buildings and properties. Alternatives that follow existing roadways with developed built environments such as NM 6 and NM 47 have the greatest potential for impacts. The NM 6 Widening Alternative likely has the most potential to affect cultural resources. Review of historic aerial photographs show that the NM 6 corridor was largely developed by 1965, primarily as a commercial corridor. While many of the original buildings have since been removed and replaced with more modern structures, clusters of historic buildings remain, including several buildings near the NM 6/NM 314 intersection and eastward to the river.

NM 6 currently exists as a 5-lane facility, except for the area between NM 313 and Don Pasqual Road where it does not have a center turn lane, and many buildings are located very close to the roadway. Widening NM 6 to seven lanes would impact numerous historic structures as well as other buildings.

Alternatives S-1, S-2, S-3, and S-4 would widen portions of NM 47 and would have high potential to affect historic structures. Development of NM 47 was sparser and more residential/agricultural than NM 6, but scattered historic homes and structures still remain adjacent to the roadway. Impacts are highest with S-1, which uses the largest segment of NM 47. Other known historic properties in the study area include the Los Lunas Honor Farm, a correctional facility originally built in 1939, and the New Mexico State University (NMSU) Agricultural Research Station, constructed in 1957. While none of the alternatives directly affect the Honor Farm, Alternative S-1 would directly impact the NMSU facility.

Alternatives N-1 and N-2 would also likely affect several historic structures. Historic homes are concentrated along Los Lentes Road, crossed by both alignments, as well as scattered amongst agricultural fields on the west side of the river. On the east side, both N-1 and N-2 converge in an area of historic structures near the NM 6/NM 47 intersection.

Impacts on cultural resources are likely to be greatest under the NM 6 Widening and S-1 Alternatives. The potential for impacts under Alternatives N-1 and N-2 is also relatively high. Alternatives S-2, S-3, and S-4 have more moderate potential, while impacts are anticipated to be lowest under Alternative S-5.

3.4.4 Public Interests

Impacts to public interests are based on the loss of residential, commercial, and institutional buildings; impacts to community cohesion; and impacts to the security of the CNMCF. The acquisition of residential and commercial buildings would displace families and businesses and would potentially remove these from local tax rolls. The public interest is also impacted by alternatives that split existing neighborhoods and adversely affect access to community facilities such as schools, churches, parks, etc.

Residential, Commercial, and Institutional Relocations

Although all of the alternatives would result in the acquisition of homes and/or businesses, there is a significant difference in the number of relocations required. As shown in Table 10, residential acquisitions range from as few as two for the S-2 Option 1 Alternative to as many as 36 with the N-2 Alternative. Impacts to businesses are generally minor with all of the alternatives except for the NM 6 Widening Alternative, which would acquire as many as 23 businesses. The S-1 and S-1 Option 1 Alternatives would both acquire up to 5 buildings at the NMSU Agricultural Research Facility. The affected buildings would include a laboratory, storage buildings, and an administrative office.

Table 10: Residential, Commercial, and Other Structure Acquisitions

Alternative	Residential	Business	Institutional	Total Relocations
No Build	0	0	0	0
NM 6 Widening	8	23	0	31
S-1	21	0	5	26
S-1 Option 1	10	0	5	15
S-2	10	0	0	10
S-2 Option 1	2	2	0	4
S-3	10	1	0	11
S-4	10	1	0	11
S-5	10	2	0	12
S-5 Option 1	10	1	0	11
N-1	26	2	0	28
N-2	36	2	0	38

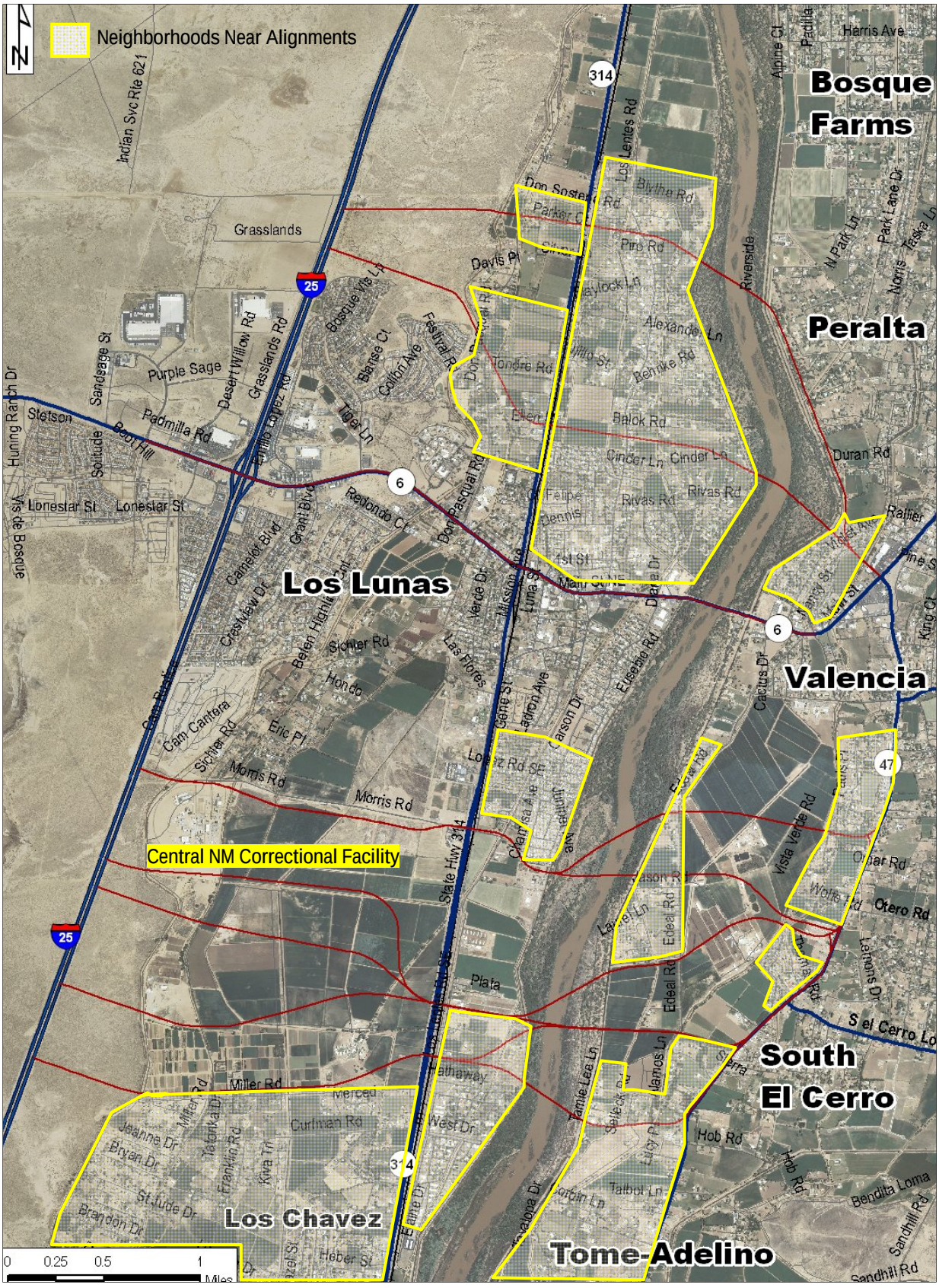
Community Cohesion

Loss of community cohesion can occur when a roadway divides an existing neighborhood or when access to community facilities such as schools, churches, or community centers is adversely affected. Avoiding densely developed areas, to the extent practical, was an objective during the development of alternatives. For this reason, most of the alternatives have only minor impacts to community cohesion. The exceptions to this are the N-1 and N-2 Alternatives. These routes pass through developed communities, and little undeveloped land is available to locate a new roadway without removing numerous homes and disrupting the community. It is noted that the consideration of the north corridors was in response to suggestions made by the public. Figure 15 illustrates the general boundaries of neighborhoods and communities.

The notable effects of each alternative on community cohesion are as follows:

- *S-1 and S-1 Option 1 Alternatives* – This alternative is located at the northern edge of the Los Chavez community on the west side of the Rio Grande and the north edge of Tomé east of the river. In the western half of the corridor, the roadway alignment is north of Los Chavez and does not significantly impact existing neighborhoods. On the east side of the Rio Grande, the alignment would separate a small block of homes from the main parts of the Tomé community. Access to these homes is via residential streets that connect to NM 47; north-south residential streets would not be affected. Access to community facilities would not be affected. Consequently, impacts to community cohesion would be minor.
- *S-2, S-3, and S-4 Alternatives* – These alternatives would have little effect on community cohesion, as they cross through the lands of the CNMCF west of the river and large tracts of farmlands east of the river. Access between the small neighborhoods to the north and the south of the alternative would remain as it currently occurs (Edeal Road).

Figure 15: Neighborhoods Affected by Alternatives



- *S-5 and S-5 Option 1 Alternatives* – These alternatives are located at the southern edge of the Village of Los Lunas municipal boundaries. West of the Rio Grande, the lands south of the S-5 Alternative are almost exclusively agricultural, except for the CNMCF facility. Thus, there is little north-south travel between neighborhoods in this area. Agricultural lands are also the predominant land use between the Rio Grande and NM 47. However, two small neighborhood residential areas are present: one along the east edge of the river and a second along the west side of NM 47. Access within the neighborhood along the river is provided by Edeal Road, a north south collector street. The proposed roadway would include an intersection at Edeal Road; therefore, the use of this road would not be affected, and travel within the neighborhood would occur much as it does today. Access to the neighborhood along NM 47 is provided via residential streets that connect to NM 47. Access to these streets would not be affected by the S-5 Alternatives, and no disruption to community access or cohesion would result.
- *N-1 and N-2 Alternatives* – These alternatives would have the most impact of all of the alternatives under consideration. The areas north of NM 6 on both sides of the river are densely developed, in comparison to the areas along the south corridors. Routes that avoid neighborhoods are not possible in the portion of this area west of the Rio Grande and the alternatives would close several north-south residential and collector streets. Consequently, travel within the affected neighborhoods west of the river would be disrupted, and impacts to community cohesion would be substantial. Impacts would be less in the area east of the river, as the route would skirt the western edge of the neighborhoods, except where it joins NM 6/NM 47. A small neighborhood would be split by the roadway in this area.
- *NM 6 Widening Alternative* – This alternative would not affect community cohesion as it involves the widening of an existing arterial street.

Security Impacts to the Central New Mexico Correctional Facility (CNMCF)

The CNMCF is located near the geographic center of the study area. The main facility includes a diagnostic center for inmates incarcerated by the state and a mental health treatment facility. The Los Lunas Honor Farm, which is a satellite operation to the main facility, is located approximately 1.1 miles southeast of the main facility. The Honor Farm serves to support the main operations through an inmate-assisted farming operation. Security of the overall CNMCF site, which encompasses over 1,000 acres, is a critical consideration.

Coordination with representatives of CNMCF occurred as part of the screening assessment and agency coordination plan. Comments from the CNMCF identified significant concerns with the alternatives that cross the main grounds of this facility (S-2, S-3, and S-4). Representatives of CNMCF stated that these alternatives would have significant impacts to the security of the CNMCF and would create a barrier separating the main facility from the Honor Farm. A roadway between these facilities would create a physical barrier that would disrupt the farming operations and would make security of inmates involved in farming activities very difficult. Moreover, because the prison is located within a populated area of Los Lunas and Valencia County, a security breach would have adverse impacts on community safety.

Accessibility and Connectivity to Other Transportation Facilities

This factor focuses on accessibility and connectivity to the Rail Runner Station in Los Lunas and connections to pedestrian and bicycle trails that already exist or that are planned and included in the Capital Improvement Program for the Village of Los Lunas. Access to these alternative travel modes is important to overall mobility for area residents, especially for commuters who travel to the Albuquerque area for employment.

The Los Lunas Rail Runner Station is located on NM 314 approximately 0.5 miles south of NM 6. The Village of Los Lunas recently extended a pedestrian/bicycle trail from NM 6 south to the Rail Runner Station to improve access to this station. Under the No-Build Alternative and the NM 6 Widening Alternative, users of the Rail Runner whose trips originate east of the river would continue to use NM 6 to access the station. While access to the station would be improved if NM 6 were widened, access would generally be no more efficient than currently exists.

All of the S Alternatives would improve access to the Rail Runner Station for vehicular traffic. Cross river access for pedestrians and bicyclists would also be provided by the 10-foot multi-use pathway included in all of the proposed improvements. However, NM 314 does not have sidewalks or bicycle lanes. Juan Perea Road, located adjacent to and just east of NM 314, extends between Morris Road and the Rail Runner Station. This roadway has a sidewalk along its eastern edge. Because it is a low volume roadway, it could also be used by bicyclists. Thus, pedestrian and bicycle access to the station would exist with the S-5 Alternative.

Los Lentes Road parallels NM 314 between Morris Road and Miller Road. However, this roadway does not have sidewalks and pedestrians would have to walk on the roadway shoulders. If the S-1 through S-4 Alternatives were implemented, pedestrian improvements to Los Lentes Road or NM 314 would be required. These improvements are not part of the proposed project and would require additional funding.

The N Alternatives would provide limited accessibility improvements for access to the Rail Runner Station. The more northerly locations of these alternatives (1.3 miles and 2.35 miles for N-1 and N-2, respectively) and their eastern terminus at the NM 6/NM 47 intersection, results in considerable out-of-direction travel for motorists, bicyclists, and pedestrians. Consequently, the users of the Rail Runner would likely continue to use NM 6 to access the station. However, the reduced congestion on NM 6 that would result from the N alternatives would make vehicular access somewhat easier than under the No Build Alternative. Improved access for bicyclists and pedestrians would require the addition of a sidewalk or trail along NM 314 between NM 6 and the N alignments. These improvements are not part of the proposed project and would require additional funding.

Consistency with Other Laws and Regulations

Implementation of any alternative would be required to comply with the laws and regulations under the jurisdiction of the USACE, the USFWS, NM Historic Preservation Division, and other entities having jurisdiction within the project area. Thus, all of the alternatives would be consistent with pertinent laws and regulations. The extent of mitigation required for compliance would likely differ among the alternatives. The greatest amount of mitigation efforts would likely occur with the N and S alternatives – the difference between these alternatives would be relatively minor.

3.5 Conclusions and Recommendations

The screening analysis identified significant differences between the alternatives with regard to their consistency with the project purpose and need and their impacts to public interest factors. Differences in the feasibility and practicability of alternatives and their impacts on environmental and cultural resources were also identified, although the differences were less pronounced. The key consequences of each alternative are as follows.

1. **Consistency with the Purpose and Need**

    - The S-1, S-2, S-3, S-4, and S-5 Alternatives all achieve the purpose and need for the project. They would provide substantial reduction of congestion on NM 6, would

provide efficient access to planned growth areas, and would improve access for emergency response.

- The N-1 and N-2 Alternatives would reduce congestion on NM 6 and would improve emergency response capabilities. They would not provide efficient access to most major growth areas. They are marginally consistent with the proposed project purpose and need.
- The NM 6 Widening Alternative would reduce congestion on NM 6, but it would not improve access to major growth areas. It would not substantially improve emergency response capabilities.

2. Feasibility and Practicability

- The NM 6 Widening Alternative is the lowest cost alternative and requires the least amount of right-of-way.
- Significant differences were not identified for the cost and right-of-way needs of the N-1, N-2, S-1, S-2, S-3, S-4, and S-5 Alternatives. The S-5 Option 1 Alternative would have substantially higher cost than the other alternatives. The higher cost is due to the significantly longer bridge spanning the river with this alternative.
- The S-2, S-3, and S-4 Alternatives would adversely impact the security of operations at the Central NM Correctional facility. For this reason, these alternatives are not practicable.

3. Impacts to Aquatic Resources

- Significant differences to aquatic resources (aquatic, wetland, and riparian habitats) were not identified. However, the alternatives have minor differences in impacts to these resources.
- The S-2 Option 1 and S-5 Option 1 Alternatives have notably higher impacts to aquatic habitat and riparian habitat due to their significantly longer bridges spanning the river with this alternative. The N-2 Alternative would also have greater impacts to aquatic habitat for this same reason.
- Relatively minor differences are estimated for the quantity of riparian habitat lost with Alternatives N-2, S-1, S-2, S-3, and S-4. These alternatives would take approximately 1 acre less riparian habitat than the S-5 alternative and approximately 1.5 acres less than the N-1 Alternative. Field reconnaissance indicates the riparian habitat is of higher quality in the vicinity of the S-1, S-2, S-3, S-4, N-1, and N-2 alignments. The greater quantity of affected habitat for S-5 is offset by the greater quality of habitat lost for these other alternatives. N-1 would impact both a high quantity and high quality of riparian habitat.

4. Impacts to Other Environmental and Cultural Resources

- The NM 6 Widening Alternative has the least impact to environmental resources. However, it would have the greatest impact to historic buildings because of the buildings that would be destroyed by roadway widening between NM 314 and Don Pasqual Road.
- Environmental impacts of the N-1, N-2, S-1, S-2, S-3, S-4, and S-5 Alternatives are similar. The N-1 and N-2 Alternatives would have the greatest net loss of wildlife habitat. The higher impacts are due to the greater loss of upland habitat.

- The greatest impact to cultural resources would occur with the S-1 Alternative and the NM 6 Widening Alternative. This is due to the loss of structures on NM 6 between NM 314 and Don Pasqual Road, and the loss of five buildings associated with the NMSU Research facility located on Miller Road west of NM 314.

5. Public Interests

- All of the alternatives would result in the acquisition of residences and businesses. The highest number of relocations would occur with the NM 6 Widening Alternative and the N-1, N-2, and S-1 Alternatives. All of these alternatives would acquire from 26 to 38 homes and/or businesses. The NM 6 Widening Alternative would acquire 23 businesses along NM 6/Main Street. This number accounts for approximately 20% or more of all existing businesses on NM 6 between the Rio Grande and I-25.
- The N-1 and N-2 Alternatives would split existing neighborhoods. Impacts to neighborhoods would also result with the S Alternatives; however, the impacts are relatively minor.
- The S-2, S-3, and S-4 Alternatives would adversely impact the security of the Central New Mexico Correctional facility. Impacts to the security of this facility would pose a threat to public safety and well-being.

Based on the findings of the screening analysis, the following actions were recommended:

1. **Eliminate** the **NM 6 Widening Alternative** from further consideration because it does not meet the purpose and need for the proposed project and because it is not practicable. This alternative would result in the loss of a significant number of existing businesses and residences adjacent to the roadway.
2. **Eliminate** the **N-1 and N-2 Alternatives** from further consideration based on their logistical impacts on neighborhoods and businesses and their greater impact on aquatic habitat. In addition, these alternatives are only marginally consistent with the project purpose and need.
3. **Eliminate** the **S-1 Alternative** from further consideration because it is not practicable based on its logistical impact on neighborhoods. Its intrusion into the Historic Tomé community and significant number of residential relocations would not be in the public interest.
4. **Eliminate** the **S-2, S-2 Option 1, S-3, and S-4 Alternatives**. These alternatives are not practicable due to their impact on the security at the CNMC. Security risks at this facility are not in the public interest.
5. **Eliminate** the **S-5 Alternative Option 1** consideration due to its greater impact on aquatic and riparian habitats in comparison with the S-5 Alternative. Because the S-5 Alternative is similar to the S-5 Alternative Option 1 in all other regards, there is no benefit in carrying S-5 Option 1 forward given its greater impact to aquatic and riparian habitat.
6. **Advance** the **No Build Alternative, S-1 Alternative Option 1, and S-5 Alternative** for further analysis and consideration. The S-1 Option 1 Alternative and the S-5 Alternative achieve the project purpose and need, are practicable, and would have the least environmental damage on the aquatic environment and the least impact on other environmental and community resources. Refinements to these alternatives to improve their performance and to reduce their impact to communities, aquatic habitat, natural resources, and property acquisitions will be investigated as part of the detailed impact assessment.