13.0 LEVEL 2 EVALUATION – PRELIMINARY ANALYSIS

13.1 Level 2 Evaluation Summary

The Level 2 evaluation assigned qualitative ratings and/or numerical values for each alternative in each evaluation category. The results of the Level 2 evaluation are discussed below and presented in Tables 22 and 23 in Appendix A. Quantitative values presented in the matrices are approximations or estimates based on general alignments located within the proposed corridors. *Again, brief summaries are given for alternatives being carried forward to Level 3, while those not carried forward at this analysis level are discussed more thoroughly.*

Alternative 1 – No-Build

Alternative 1 (No-Build Alternative) offers no physical improvement to the current transportation system, nor does it address the traffic and transportation deficiencies identified in the study. It also offers no new opportunities for economic development. However, the No-Build Alternative also has few if any impacts on the human and natural environment; no construction costs; no property or utility impacts; and some local support. It preserves the visibility of current businesses on US 51 and has little effect on community character. The No-Build Alternative also provides the basis for comparing other build alternatives. Therefore Alternative 1 was carried on to Level 3 both as a benchmark and as a viable alternative.

Alternative 2 – Spot Improvements

Alternative 2 seeks to improve traffic operations on US 51 by upgrading six critical locations highlighted as potential problem areas. Each of the six locations is discussed briefly below, with a recommendation regarding advancement to the Level 3 evaluation.

Alternative 2A – US 51 in the Vicinity of Cresap Street

The proposed Alternative 2A improvements address pedestrian safety issues identified by the public. Major improvements include lowering the hill north of Cresap Street and reconstructing the highway and sidewalk. As shown in Table 22, the improvements are not anticipated to significantly improve traffic flow or truck operations, but are expected to improve pedestrian safety, particularly for students going to the public schools located a few blocks to the east.

As shown in Table 22, impacts to the natural environment are unlikely. There are however possible impacts to up to four potential hazardous material sites and more significantly three sites either listed on, or potentially eligible for, the National Register of Historic Places (NRHP). In the vicinity of US 51 and Cresap Street are two sites listed on the National Register of Historic Places, Marvin College and Marvin College's President's House. The other site potentially eligible for the NRHP is a 1.5 Story

Craftsman House. The proposed improvements would not directly impact these buildings because there is sufficient distance between the highway and the structures. However, retaining walls may be necessary to avoid or minimize impacts to the sites. The potential for impacts to these sites needs to be evaluated further.

As shown in Table 23, the Alternative 2A improvements are not expected to have any major impacts on the community as a whole, but may require minor property acquisition. According to Table 23 the total right-of-way required is less than one acre, but there may be some utility issues with the construction. Costs are expected to be "Low" with most of the estimated costs resulting from the earthwork, roadwork, and possible retaining walls needed to lower the hill.

Overall, the Alternative 2A improvements offer a means of improving an area identified by the public as having safety issues without significant negative impacts to the natural environment and community. Based on this analysis, Alternative 2A was recommended for further analysis in Level 3.

Alternative 2B – US 51 (Washington Street) at KY 58 / KY 123 (Clay Street)

This intersection is the only signalized intersection in the study area. Preliminary analysis indicates that the intersection currently operates acceptably, but in the future it is anticipated that traffic growth may cause the intersection to function poorly. Suggested improvements include constructing an eastbound right turn lane, northbound and southbound left-turn lanes, upgrading the existing signal to an actuated signal, and upgrading the intersection to better accommodate truck turning movements. As shown in Table 22, traffic benefits and truck traffic benefits are rated "Medium" since improvements are expected to increase traffic flow and truck operations only at the intersection. The intersection currently has deficient radii for trucks turning to and from US 51. Vehicle/pedestrian/bicycle safety benefits are expected to be "Medium" as well with anticipated benefits resulting from the addition of pedestrian signal heads and repair / reconstruction of sidewalks at the intersection.

Similar to Alternative 2A, negative impacts to the natural environment are unlikely. According to Table 22, there is the potential for impact to one listed NRHP site, the Hickman County Courthouse. The improvements are unlikely to affect either the structure or the courthouse lawn areas, but may affect parking around the courthouse. To construct the turn lanes and widen the existing lanes, some existing on-street parking may need to be eliminated.

Many local residents and leaders favored spot improvements to this intersection; however removing parking spaces is a concern of some residents. It may be possible to leave some parking on US 51 fronting the court house by changing the orientation of parking spaces from angled to parallel. By reducing the number of on-street parking spaces, additional right-of-way acquisition can be limited and may not be necessary at all. The anticipated costs could range from "Low to Medium" depending on the extent of reconstruction and how many of the proposed improvements are implemented.

Improvements to this intersection may be necessary to maintain desirable traffic operations in the future. They are also necessary to provide adequate truck turning radii. Implementation is not expected to have major impacts to the environment and community, and could be accomplished at a reasonable cost. Therefore, Alternative 2B was recommended for further analysis in Level 3.

Alternative 2C – Vicinity of US 51 (Washington Street) and KY 58 (Mayfield Road)

Currently, the intersection operates acceptably, though it has a limited radius on the northeast corner. Future increases in traffic as illustrated by Table 22 may cause undesirable delays for traffic on KY 58 (the side street). Possible improvements for this location include providing adequate turning radii for trucks, relocating the STOP sign installation, installing a flashing beacon, or installing a signal when warranted. Similar to Alternative 2B, the expected traffic benefits and truck traffic benefits are rated "Medium" because the improvements will only affect traffic and truck operations in the vicinity of this intersection. Vehicle/pedestrian/bicycle safety benefits are expected to be "Medium" as shown in Table 22.

Alternative 2C improvements are unlikely to cause impacts to the natural environment. There is the possibility that the First United Methodist Church could be affected since it is in the vicinity of the proposed improvements. The church is potentially eligible for the NRHP, and further evaluation is necessary to assess the possible affect to the site. Opposite from the church is a service station (potential hazardous materials and/or underground storage tank (UST) site) that is likely to be impacted. There may also be some issues with utilities during construction.

Impacts to the community are expected to be "Good' with minimal property impacts and little right-of-way acquisition. Community character was rated "Fair" because the proposed improvements are not expected to enhance or detract from the community.

Similar to Alternative 2B, preliminary analysis indicates that without improvements at this intersection, traffic operations and safety may become problematic. The overall potential for community and environment impacts is low, and the proposed improvements could be accomplished with "Low" cost. Therefore, Alternative 2C was recommended for further analysis in Level 3.

Alternative 2D – US 51 in the Vicinity of KY 780 (North)

Alternative 2D was proposed to realign the US 51 / KY 780 (North) intersection to a typical "T" intersection because the current configuration was identified as a potential safety issue. As shown in Table 22, traffic and truck traffic benefits are unlikely because this alternative was primarily proposed to improve safety. Crash data indicates that one fatal crash occurred at this location in the past three and a half years. However, based on the available information, the single vehicle run-off-road crash was likely not related to the KY 780 intersection geometry. Vehicle/pedestrian/bicycle safety benefits are expected to be "Low" for this alternative.

Impacts to the human environment are unlikely, but the proximity of a farm pond to the intersection could lead to design problems. Realignment of the intersection is not expected to impact the community negatively, but it also is not likely to greatly enhance the community. Therefore, in Table 23, impacts to the community are rated as "Good", and community character is rated as "Fair".

According to Table 23, the realignment of the intersection will require less than three acres of additional right-of-way. Construction costs could range from "Low to Medium" depending on design issues associated with the farm pond and the extent of work to realign the intersection.

According to the analysis in Tables 22 and 23, the stand-alone realignment of US 51 and KY 780 (North) is a potentially costly improvement that is anticipated to have little overall benefit to traffic operations, safety, or the community. As a result, Alternative 2D was not recommended for further study as a stand-alone project in Level 3. However, it is possible that improvements to this location could be made in concert with Alternative 3, which includes more extensive improvements throughout the corridor.

Alternative 2E – US 51 in the Vicinity of Martin Road

The intersection of US 51 and Martin Road was another intersection identified as having a potential safety problem. Crash data showed a concentration of accidents in the vicinity of the intersection. In response, the realignment of Martin Road at US 51 was proposed. However, further investigation revealed that Martin Road has very little traffic (ADT may be less than 100). In addition, the majority of crashes in this vicinity involved a single vehicle colliding with a fixed object. There was one angle collision and one rear end collision at this location; however, it seems likely that they are more related to the many driveways in the area than to the low volume Martin Road. In addition, the spot crash rate for US 51 and Martin Road is lower than the statewide critical spot crash rate for similar highways. Overall, the side street volume is low, and without supporting crash data, safety benefits are expected to be "Low". The side street realignment alone is also unlikely to provide significant benefits to general traffic flow or truck traffic operations.

Impacts to the environment, natural or human, are not anticipated with this alternative. Impacts to the community are similar to Alternative 2D; therefore the community analysis is the same in Table 23 for both alternatives. Realignment of the intersection is expected to require less than 5 acres of new right-of-way. However, the cost could be "Low to High" due to the potential earthwork necessary to provide adequate sight distance.

The crash data does not substantiate a safety problem directly related to Martin Road and the realignment of the intersection is not expected to significantly benefit traffic and truck operations. The cost of improving the intersection as a stand-alone project does not appear to be justified based on the analysis. Therefore Alternative 2E was not

recommended for further study in Level 3. Instead safety enhancements to US 51 in this area are being pursued as an important part of the Alternative 3 improvements.

Alternative 2F – US 51 in the Vicinity of KY 780 (South)

The existing configuration of the intersections in the vicinity of US 51 and KY 780 (South) combined with the topography limits sight distance. Alternative 2F is a proposal to realign the offset intersections and improve the sight distance by lowering the hill. Three crashes occurred in this area during the three and a half year crash data analysis period. However, inspection of the crash data shows only one crash that may be related to the intersection and highway geometry. In addition, the spot crash rate for this location does not exceed the critical spot crash rate. Average daily traffic volumes on KY 780 (South) are below 100 vehicles per day. The crash data does not indicate that the intersection is causing a significant safety problem at this location, therefore anticipated safety benefits are expected to be "Low" as shown in Table 22.

There are no anticipated environmental impacts, but intersection improvements could require the acquisition of one home (if KY 780 was completely realigned). Of the spot improvements, the reconfiguration of these offset intersections requires the most new right-of-way, and could have the highest cost.

Similar to Alternatives 2D and 2E, the crash analysis and traffic volumes do not indicate significant safety problems at this location, and the estimated construction cost does not appear to justify extensive intersection improvements. Therefore Alternative 2F was not recommended for further analysis as a separate spot improvement in Level 3. Instead, improvements to US 51 to improve sight distance have been incorporated into Alternative 3.

Alternative 3 – Reconstruct US 51 as a Two-Lane Roadway with Center Two-Way Left Turn Lane

Traffic Operations - Alternative 3 is a combination of the recommended Spot Improvements 2A, 2B, and 2C and reconstruction of the entire length of US 51 in the study area. A center two-way left turn lane is proposed south of town to improve traffic access and safety. Expected traffic benefits are rated "Medium" compared to the other build alternatives because the through traffic remains on US 51 in town. Traffic is projected to increase between 2002 and 2030 as shown in Table 22, however the improved highway will operate acceptably. Improved turning radii at major intersections and wider lanes will facilitate truck traffic movement on US 51 throughout the study area. However, with the truck traffic staying in town, truck safety and noise issues are likely to remain. As a result of a mix of positive and negative impacts, truck traffic benefits are expected to be "Medium" as shown in Table 22. The safety benefits associated with Alternative 3 are expected to be "High" because they include the safety benefits associated with Alternatives 2A, 2B, and 2C combined with the additional benefits of the two-way left turn lane south of town, wider travel lanes, shoulders, reconstructed continuous sidewalks and new bicycle facilities.

Environment - Because most of the land in the corridor is developed, minimal impact to the natural environment is expected as shown in Table 22. Along the study corridor there are ten potential hazardous material sites, and impacts to these sites are possible. The same concerns associated with the National Register of Historic Places (NRHP) and potentially eligible NRHP sites that were mentioned in Alternatives 2A, 2B, and 2C are concerns for Alternative 3 as well. In addition, Alternative 3 reconstruction may affect six other potentially eligible sites (five houses and the First Christian Church). Based on planning to date, it is likely that direct impacts to the buildings can be avoided. However, right-of-way acquisition from one or more of the sites may be necessary. Further analysis is necessary to determine the extent of potential impact to NRHP and NRHP eligible structures and sites.

Community - Similar to Alternatives 1 and 2, reconstructing US 51 will preserve business visibility through Clinton. South of town, a two-way left turn lane is proposed from KY 780 (North) to south of Martin Road. Much of the new commercial development in Clinton has been in this area. It is anticipated that constructing the two-way left turn lane will continue to encourage new development through improved access. Accordingly, economic development impacts are rated as “Good” for current businesses and “Fair” for new development. Property (frontage) impacts, parking impacts, traffic and access disruptions during construction are other issues associated with Alternative 3. Once construction is complete, the improved infrastructure (including sidewalks and bicycle facilities) will enhance the current community character, hence the rating of “Good” for this category.

Public Support - Based on the comment form responses at the first public meeting, approximately 27 percent of the local residents favor Alternative 3, improving the existing US 51. This was the second highest rated alternative, receiving a little less support than Alternative 2, the spot improvement alternative.

Implementation / Construction - Construction of Alternative 3 could be difficult given the constraints of existing buildings and utilities (underground and overhead). As shown in Table 23, approximately 20 acres or less of additional right-of-way could be required for construction. Most of the new right-of-way would be acquired south of town with minimal anticipated property acquisition through town. Utility impacts are rated as “Poor” in Table 23 because some utilities are located within a foot of the current edge of pavement in town. Construction costs are estimated to be “Medium to High” in Table 23 depending on the extent of reconstruction in the corridor.

During the construction of this alternative major disruption to the community is possible. However, upon completion the traffic and safety benefits are anticipated to offset the negative construction impacts. Furthermore, there is little detrimental impact to the community and the environment, and the character of the community essentially remains the same. The total estimated construction cost is expected to be medium to high depending on the extent of the reconstruction. Alternative 3 could easily be divided into three sections for phasing purposes – through town, the two-way left turn lane section, and from Martin Road south to the Bayou de Chien bridge. The order of

construction would depend on the priority of each section. By phasing construction of Alternative 3, not only would the costs be spread out over time but selected improvements could also be made early on to provide the community with immediate benefits. Therefore, Alternative 3 was recommended for further study in Level 3.

Alternative 4A – Western Bypass Option A

Traffic Operations - Alternative 4A is a new 2-mile bypass west of Clinton. As shown in Table 22, the expected traffic benefits are rated "Medium". The bypass provides an alternate route designed to avoid, not fix, the geometric problems in town. Based on the current ADT and future ADT volumes listed in Table 22, most of the traffic will continue to use US 51. The truck traffic benefits are rated "Medium". Truck traffic is expected to shift from the old US 51 to the new US 51 on the west side of town, thereby decreasing truck traffic in the existing town center. Posted speeds through town on the bypass will be only slightly higher than those on the current US 51. Due in part to the shift in truck traffic, the anticipated safety benefits are rated "Medium-High" in Table 22. The Alternative 4A bypass offers some traffic benefits, but primarily it shifts the traffic from the center of town to another part of town, where issues such as cross street traffic, speeds, and pedestrian conflicts are still present.

Environment - Alternative 4A follows the railroad on the western edge of town, going through a mix of developed and undeveloped areas. As shown in Table 22 there is the potential for a number of impacts to the natural environment. Approximately 2,200 feet of stream may need to be relocated, and almost the entire bypass is located in the floodplain. Because Alternative 4A affects so many water resources, there is the potential for impacts to habitats associated with streams, farm ponds, and floodplains. Human environmental issues include two properties potentially eligible for the NRHP in or near the corridor. One is the "Old Hotel", and the other is the Clinton Seminary Site. However, direct impacts to these sites could likely be avoided. The bypass could impact up to five potential hazardous materials sites. Overall, the Alternative 4A bypass could result in significant environmental impacts.

Community - With construction of the Alternative 4A bypass, businesses in the town center will no longer be visible from US 51. However, recent University of Kentucky research indicates a bypass located close to the town typically causes less downtown business loss than a bypass far removed from the town.[5] Therefore financial impacts to current businesses in the town center are expected to be somewhat less for Alternative 4A than for the other bypass alternatives, but still more than for Alternative 3. It is rated "Fair" in Table 23. New development is possible along the bypass; however, the new highway would provide access to a relatively small amount of undeveloped land. New development may occur south of town similar to Alternative 3 or on the north side of town where some non-retail commercial development exists.

[5] *The Impact of a New Bypass Route on the Local Economy and Quality of Life*, Thompson, Miller and Roenker, KTC Research Report KTC-01-10/SPR219-00-2I, June 2001.

In order to accommodate the new highway through town, 3-4 outbuildings (including buildings on the Hickman County Feed Mill site) and up to five homes may need to be acquired. As a result of the building impacts and anticipated property impacts, impacts to the community are expected to be "Fair". Based on an analysis of census data, there is a defined Environmental Justice population in the north and west portions of the town (refer to the Environmental Justice Review in Appendix C for more details). Alternative 4A will impact this community in a number of ways including direct property impacts, increased truck traffic, increased traffic noise, and neighborhood disruption. The bypass will also adversely affect the neighborhoods on the western side of Clinton by introducing additional traffic to previously local streets. As shown in Table 23, impacts to community character are rated "Fair".

Public Support - Based on the comment form responses it appears that the community is mixed on whether or not a bypass is needed. Of the respondents answering the question regarding which alternative they favored, approximately one-third (32%) indicated they opposed a bypass, one-fourth (25%) indicated they favored a bypass, and the remaining 43% did not take a position regarding a bypass. However, of the 25% that supported a bypass, approximately 80% supported Alternative 4A (corresponding to 20% of respondents).

Implementation / Construction - Alternative 4A is rated "Fair" with regard to construction feasibility. The portion of the alignment in flat, dry, undeveloped areas will be simple to construct. The portions of the alignment following the streambed, in the floodplain, and on the edge of town may be more complicated and expensive. As shown in Table 23, Alternative 4A requires more new right-of-way than Alternatives 1-3, but less than the other proposed bypasses because it is short and a portion of it follows existing roads. Similar to Alternative 3, utility impacts are rated "Poor" because a portion of the highway would be constructed in town. The order of magnitude costs for the alternative is expected to be "High".

The Alternative 4A bypass may lead to improved traffic flow and safety, but these benefits appear to be achieved at the expense of the environment and the community. The highway runs through a floodplain and may impact a significant section of stream area. The additional traffic associated with a new highway on the west side of town may disrupt the neighborhood on that side of Clinton, with possible environmental justice consequences. In addition, the construction cost is estimated to be high and a number of residential properties may need to be acquired. Therefore, it was recommended that this alternative be removed from further evaluation. As discussed later in the report, another western bypass (Alternative 9) is recommended for advancement to Level 3 instead of Alternative 4A.

Alternative 5A – Near Eastern Bypass Option A

Traffic Operations - Alternative 5A is a three-mile bypass on the east side of Clinton. As shown in Table 22, the expected traffic benefits are rated "High" because the bypass would provide a new, high speed route for through traffic with proposed design speeds

of 50 mph or higher, resulting in shorter travel times than for Alternatives 3 and 4A. It gives drivers another north-south option, bypasses geometric problems in the town, and reduces overall traffic through town. It does not however, directly address current traffic issues in the town center. The 2002 ADT projected to use the bypass is approximately 900 vehicles (approximately 13 percent of the total traffic). By 2030, the volume on the bypass could double to between 1,600 and 1,800 vehicles (approximately 17 percent of the total traffic). For truck traffic benefits, Alternative 5A is rated "Medium". Most through truck traffic would be shifted to the bypass, thus improving safety and reducing noise in the center of town. However, the truck traffic would shift to the east edge of town near existing homes, separating a small neighborhood from the rest of the town. From a safety perspective, Alternative 5A is rated "High". It would provide a new north-south route built to current design standards for both through and local traffic. It would divert heavy trucks from the town center and provide improved bicycle and pedestrian facilities along the new road.

Environment - As shown in Table 22, there is the possibility of impacts to several streams, a floodplain, and farm ponds located within the proposed bypass corridor. Similar to Alternative 4A, there are habitat concerns associated with the streams, farm ponds, and floodplains in the corridor. In addition to potential aquatic habitat impacts, the alternative traverses land designated as a potential maternity (summer) Indiana Bat habitat. With regard to the human environment, there are no known cultural historic issues, but there could be some farmland impacts. Much of the land in the proposed corridor is crop/pasture land, and the bisection of fields is possible. Two potential hazardous material sites are located in the corridor. Overall, the major environmental issues for Alternative 5A relate to the natural environment.

Community - Expected economic development impacts are "Poor" for current businesses because the downtown businesses would not be visible from the new bypass and some businesses, especially retail businesses may be adversely affected by this change. However, the majority of traffic currently on US 51 is local in nature and is expected to remain on the old US 51 in town.

Alternative 5A is rated "Fair" for new development because bypass construction opens additional land to new development and improves access to areas around Clinton. However, while there is the possibility of economic development along the bypass, recent University of Kentucky research indicates that there is not a strong direct correlation between bypass construction and county level economic growth.[6] The bypass may open new lands to development, but the fact that these lands are available does not necessarily mean development will occur.

Implementation of Alternative 5A may require the acquisition of five to eleven homes and one outbuilding. In addition, near KY 58 the corridor crosses through a residential area, separating one neighborhood from the remainder of the town. As mentioned

[6] *The Impact of a New Bypass Route on the Local Economy and Quality of Life*, Thompson, Miller and Roenker, KTC Research Report KTC-01-10/SPR219-00-2I, June 2001.

previously, it also divides some farmland. For these reasons, Alternative 5A is rated "Poor" in the community impact category. Construction of a bypass around Clinton is likely to cause changes to the overall character of the community by shifting the focus of some of the town's activity from US 51 to the bypass. However, there is the opportunity to construct new facilities for pedestrians and bicyclists, which could enhance overall mobility in the community. As a result of mixed community character impacts, Alternative 5A is rated "Fair" in this category.

Public Support - Approximately seven percent of the comment form respondents favored Alternative 5A. This is compared to 25 percent who expressed support for a bypass and 32 percent who opposed a bypass. A possible reason for the lack of support for Alternative 5A could be concern that the alternative would take too many homes and properties and hurt community character.

Implementation / Construction - As shown in Table 23, construction feasibility for Alternative 5A is rated "Fair". Much of the corridor is undeveloped crop/pasture land with the exception of the one residential area. As shown in Table 23, approximately 80 acres of new right-of-way is required for Alternative 5A construction. Minor impacts to utilities are likely to occur near KY 58 and KY 123. The order of magnitude cost estimate for Alternative 5A is rated "High".

The Alternative 5A bypass offers potential traffic flow and safety benefits, especially for through traffic. It does not provide improvements in town. It may require the acquisition of a number of homes and divides a residential area on the east side of town from the rest of the community. The bypass may also change the business environment and character of the community. The environmental issues include streams, wetlands / floodplains, and habitat areas (including a potential maternity Indiana Bat habitat). As a result of the community concerns, environmental issues, and minimal public support, it was recommended that Alternative 5A be dropped from further consideration.

Alternative 6A – Far Eastern Bypass Option A

Traffic Operations - Alternative 6A is the longest of the bypass alternatives at 3.9 miles. It avoids nearly all non-farm development around Clinton. While it may be the longest proposed bypass, it may yield the shortest through travel time because of higher design speeds and few cross streets or access points. This bypass is projected to carry 700 vehicles daily in 2002 and 1,200 vehicles in 2030, representing approximately 10 percent of the total traffic. As with Alternative 5A, it gives drivers another north-south option, bypassing geometric problems in town and reducing traffic through town. It does not however, directly address traffic issues in town.

Alternative 6A is rated "High" in Table 22 for truck traffic benefits. With Alternative 6A most through truck traffic would shift to the bypass on the far eastern edge of the community, improving safety and reducing noise in town. Alternative 6A is also rated "High" in the safety category because it would provide a new north-south route for through and local traffic (built to current design standards) and would divert heavy

trucks from the center of town. Improved bicycle and pedestrian facilities are also planned along the new road.

Environment - As indicated in Table 22, potential natural environment issues include one to four new stream crossings and one to four farm pond impacts. The Alternative 6A bypass also passes directly through a potential Indiana Bat habitat area. The habitat impact could be similar to or greater than that expected for Alternative 5A because it traverses a larger portion of the potential habitat. Similar to Alternative 5A, there are no known cultural resource impacts. Almost the entire Alternative 6A bypass goes through crop/pasture land. Farmland impacts are expected and the highway could divide some farms. One potential hazardous material site is located in the corridor.

Community - As with Alternative 5A, the expected economic development impacts of the Alternative 6A bypass are "Poor" for current businesses because the downtown businesses are not visible from the bypass and some businesses, especially retail businesses, may be negatively affected by this change. However, the majority of traffic currently on US 51 is local in nature and is expected to remain on the old US 51 in town. Alternative 6A is rated "Fair" for new development because the new highway opens substantial land up to new development and improves access to areas around Clinton. While there is the possibility of development in what is now farmland in the corridor, recent University of Kentucky research does not support a direct connection between bypass construction and overall county level economic growth. The bypass may open new lands to development, but the fact that these lands are available does not necessarily mean development will occur.

Direct property impacts could be limited to one home and one barn. There may be some disruption of farmlands in the corridor, as the highway may divide some fields. It is therefore rated "Fair" in the community impact category. With regard to community character, Alternative 6A is rated "Fair", similar to Alternative 5A.

Public Support - Approximately five percent of the comment form respondents favored Alternative 6A. This is compared to 25 percent overall who supported a bypass and 32 percent opposing a bypass. This is similar to the level of support for Alternative 5A.

Implementation / Construction - Of the proposed bypass alternatives, Alternative 6A may be the simplest to construct because the corridor consists primarily of undeveloped land with little difficult topography. Construction feasibility and potential utility impacts are both rated "Good". As indicated in Table 23, approximately 130 acres of new right-of-way is required for Alternative 6A construction. This is the largest amount of new right-of-way of any alternative. The order of magnitude cost estimate for Alternative 6A is "High".

There are several benefits associated with Alternative 6A including improved traffic operations, high operating speeds, and improved safety, especially for through traffic. Like Alternative 5A, the bypass does not provide improvements in town. Aside from economic impacts (which could be deemed similar for both of the eastern bypass

alternatives), the Alternative 6A bypass limits direct negative impacts to the community. It has a high estimated cost, but could be the simplest highway to construct and would result in a good bypass alignment, given local terrain and physical features. Overall, Alternative 6A is preferred over the other eastern bypass options. Alternative 6A was recommended for further study in Level 3.

Alternative 8A – One-Way Street System Using Existing Streets

Traffic Operations - Construction of Alternative 8A, the one-way street alternative, offers "Medium" benefits to traffic flow, as shown in Table 22. It will increase capacity but create a more complex local street system with directional restrictions. In particular, many local drivers may become frustrated with the circuitous travel patterns necessitated by a one-way street system and they may not abide by the system. Truck traffic benefits are rated "Low". Truck traffic will remain in town and will affect streets that are now primarily low volume residential streets. Average travel speeds will remain fairly low, but the wide one-way streets may encourage speeding through town. Safety benefits are rated "Medium". The major safety concerns relate to speeding and the potential for wrong way travel (intentional or otherwise) on the one-way streets. Overall, Alternative 8A may have more negative than positive traffic implications.

Environment - As shown in Table 22, the implementation of Alternative 8A is expected to have a minimal to moderate affect on the natural environment. There are ten known potential hazardous material sites in the corridor. There are also a total of 13 NRHP or potentially eligible NRHP sites in the vicinity of the proposed improvements, 11 of which are located along US 51 and have been identified in Alternative 3. The two additional sites are located on Jefferson Street north of KY 58. For most and possibly all of these locations, there may be no impact to the building or the site, because the current right-of-way is sufficient for one-way streets. However, further analysis is necessary to verify the extent of potential impact(s) to NRHP or potentially eligible NRHP structures and/or sites.

Community - Alternative 8A is rated "Fair" for both current development and future development. The construction of the alternative splits visibility for current downtown businesses between the northbound and southbound highways and complicates access. It leaves business visibility and access south of town unchanged. It opens little new land to development. Community impacts are rated "Poor" in Table 23 because half of the US 51 traffic will be shifted to what are now low volume residential streets (Jefferson Street and Moss Drive) significantly altering their function. The expected results of the increased traffic (including truck traffic) are increased noise and decreased pedestrian safety. In addition, Jefferson Street runs through an environmental justice community. Alternative 8A implementation may require the acquisition of up to four homes and three businesses for construction of the southbound highway. Construction will also affect parking near the courthouse. Finally, for a community the size of Clinton (and with relatively low traffic volumes), a one-way street system appears unnecessary and out of character.

Public Support - Based on the comment form responses, approximately 21 percent of local residents support a one-way street system. This is approximately the same percentage as supported Alternative 4A, the western bypass.

Implementation / Construction - Construction feasibility for Alternative 8A is rated "Poor" because of the complexity of converting the existing streets to a one-way street system. Of particular concern are issues related to Jefferson Street in the vicinity of the courthouse square, where buildings are close to the roadway and where the topography and grades may require extensive grading and possible retaining walls or building impacts. Maintenance of traffic, access, and parking during construction are all potential issues as well. Potential utility impacts are rated "Poor" since most of the reconstruction will occur through town. Construction of a one-way street system is expected to require less additional right-of-way than most of the bypass alternatives, but more than reconstruction of US 51. Also, the order of magnitude cost estimate is rated "High".

In addition to the above discussion, the Institute of Transportation Engineers, Traffic Engineering Handbook (ITE, 1999) lists a number of general conditions that should be met for a roadway to be converted from two-way operations to one-way operations. Two of these conditions include:

- *A specific traffic problem would be alleviated and the overall efficiency of the transportation system improved;*
- *The overall advantages significantly outweigh the disadvantages.*

The proposed one-way street system in Clinton does not clearly meet these two conditions. Instead, there appear to be other alternatives that would provide benefits to the local street system, thus meeting the needs of the community. It is also useful to note that there has been a recent trend across the nation away from one-way street systems. In fact, many communities are converting one-way streets back to two-way operations.

Alternative 8A has some positive aspects such as limited natural environment impacts and use of existing right-of-way in town. However, it has many more drawbacks including expected operational problems, residential community impacts, business and community impacts, potential property impacts near the courthouse, safety concerns, environmental justice issues, and a high capital cost. It also appears to be unwarranted based on the traffic volumes and out of character for the community. It was therefore recommended that Alternative 8A not be considered for further evaluation in Level 3.

Alternative 9 – Western Bypass (West of Railroad)

Traffic Operations - Alternative 9 is a proposed 2.3-mile bypass located west of Clinton and west of the railroad. Traffic benefits and safety benefits are expected to be similar to Alternatives 5A and 6A as shown in Table 22. However, compared to Alternative 4A, (the other western bypass), traffic benefits are rated higher for this alternative because

the proposed bypass would be located primarily outside the town and may limit new traffic on residential streets. Alternative 9 is expected to carry up to 23 percent of the traffic in Clinton. With construction of the bypass, most of the heavy truck traffic would shift to the bypass, mitigating truck traffic impacts in town.

Environment - The Alternative 9 bypass corridor includes a mix of land uses, but should not have any major impacts to developed areas other than possible impacts to up to six potential hazardous material sites. There are many water resources scattered throughout the proposed corridor as shown in Table 22. While there is the potential for impacts to several streams, farm ponds, and a floodplain, the anticipated impacts to the natural environment are not expected to be as severe as those anticipated for the construction of Alternative 4A.

Community - The Alternative 9 corridor was developed primarily to provide a western bypass route with limited residential impacts, while keeping the highway close to town. It also does not bypass the development south of town. As a result, it is expected that Alternative 9 would not cause as great an economic impact to the downtown as implementation of Alternatives 5A and/or 6A. Therefore, Alternative 9 is given a rating of "Fair" for economic development impacts to current businesses, similar to Alternative 4A. The economic development impacts for new development are also thought to be similar to Alternative 4A, and are therefore rated "Fair" as well. It may be necessary to acquire one house for construction of the highway. Alternative 9 runs along the edge of an environmental justice community, but it is not clear without further study, whether there would be impacts to that community. Overall, community impacts and character are rated "Fair" in Table 23.

Public Support - Of those who supported a bypass, the majority was in favor of some form of a western bypass. However, it is not clear what support exists for a bypass west of the railroad.

Implementation / Construction - The Alternative 9 bypass is expected to be longer than the Alternative 4A bypass, but construction may be easier since this bypass is not anticipated to have as much of an impact on developed areas. The two grade separated railroad crossings however, do add complexity and cost. Impacts to utilities are expected to be less than those for Alternative 4A and are rated "Fair". The estimated construction costs are expected to be similar to Alternatives 4A and 5A, but possibly less than Alternative 6A.

Alternative 9 offers a potential western bypass route with fewer direct community impacts than Alternative 4A. There are some environmental concerns with this alternative, but they are potentially offset by the anticipated benefits of improved traffic flow and safety. Compared to the other western bypass alternatives, this alternative has the least overall impact to the environment and community. Therefore Alternative 9 was recommended for further analysis in Level 3.

13.2 Level 2 Analysis Summary

After the Level 1 initial screening evaluation, eight (8) of the original fourteen (14) alternatives remained for further consideration. The more detailed analysis performed in the Level 2 preliminary analysis further reduced the alternatives to only five (5) alternatives. It was recommended that the other three alternatives (Alternatives 4A, 5A, and 8A) be removed from further consideration. Each element of Alternative 2 was analyzed separately in this evaluation, which led to the advancement of Alternative 2A, 2B, and 2C as Alternative 2. Alternatives 2D, 2E, and 2F were recommended to be set aside from further consideration. Major reasons for discarding the alternatives listed above include negative community impacts, high construction costs compared to anticipated benefits, major utility impacts, and lack of community support.