A Recommendation of a Preferred Strategy for a Long Range Transportation Plan for Northwest Butler County, Ohio

Prepared for:

The Ohio Kentucky Indiana Regional Council of Governments,
The Butler County Engineer’s Office, The Ohio Department of Transportation, the Federal Highway Administration and The Northwest Butler Transportation Advisory Committee

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January 2004
ACKNOWLEDGEMENTS

The successful completion of the Northwest Butler Transportation Study was only possible through the collaborative planning, review and participation of many dedicated people. On behalf of the Project Team, Balke American wishes to express our sincere appreciation and gratitude to all the study participants.

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## Stakeholder Representatives and Alternates

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**Note:** Member names listed in parentheses are former committee members (i.e., although these persons were not active members at the conclusion of the study, they served on the committee during the study). In addition, the Butler County Board of Commissioners, the Ohio Environmental Protection Agency and the U.S. Environmental Protection Agency were also invited to provide input on this study.
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Additional Technical Data and Analyses Materials (not included in this report)
In-depth technical materials have been developed as part of this study and will be made available to the project sponsors for use in advancing the recommended plan to implementation as needed. These materials include:

- Accident History and Analysis;
- Existing Roadway Characteristics Inventory and Map;
- Environmental Features Inventory and Map.
I. INTRODUCTION AND BACKGROUND
I. INTRODUCTION AND BACKGROUND

The Northwest Butler Transportation Study (NBTS) is an in-depth study of the transportation needs and possible solutions to transportation-related problems in a 125 square mile area centered on US 27 and SR 73 and spanning eight townships in northwest Butler County, Ohio. The purpose of this study was to determine a recommended long range strategic plan of implementable improvements for future transportation in the NBTS area to forward to OKI for incorporation into the OKI Regional Transportation Plan. Related to that objective, this study was also focused on establishing the purpose and need for the NBTS transportation plan. On September 10, 2003, the Advisory Committee reached a consensus to advance a recommended plan to the OKI Board. The findings of the Northwest Butler Transportation Study, including the Advisory Committee's recommendation of Alternative 5C, were presented to the Ohio Kentucky Indiana Regional Council of Governments (OKI) Board of Trustees on October 9, 2003. The Board approved Resolution 2003-49 adopting the study findings and recommendation at that meeting.

Project History

This Northwest Butler Transportation Study evolved from a larger, county-wide, east-west transportation study initiated by the Butler County Engineer's Office in the mid-1990's. The original transportation study extended from I-75 west across central and northern Butler County to the Indiana state line, and included three sub-areas: Monroe, Trenton and Oxford (from east to west). The Trenton and Monroe sub-areas developed into the State Route 63 Extension study between SR 63 in Monroe and US 127 near Seven Mile.

In 1999, as studies progressed on the State Route 63 Extension, the Ohio Department of Transportation requested that the Ohio Kentucky Indiana Regional Council of Governments (the local Metropolitan Planning Organization) team with the Butler County Engineer's Office to facilitate the study of the transportation problems in northwest Butler County, in an area generally defined by two major routes: US 27 from the Hamilton / Butler County line north to the Butler / Preble County line, and SR 73 from the Ohio / Indiana state line east to the Village of Seven Mile (which covered the original Oxford subarea, as mentioned above. In 2000, the planning study of transportation problems and possible solutions in this area was renamed the Northwest Butler Transportation Study (NBTS).

The NBTS was sponsored by the Ohio Kentucky Indiana Regional Council of Governments (OKI), the Butler County Engineer’s Office (BCEO), the Ohio Department of Transportation (ODOT) and the Federal Highway Administration (FHWA). While the
NBTS considers transportation needs in a regional context, is not dependent on the SR 63 Extension study nor any other major projects in Butler County.

OKI, in association with the Butler County Engineer’s Office and the Ohio Department of Transportation, has directed this transportation planning study. Balke American (formerly Balke Engineers) was contracted as the Project Planning Consultant to provide the technical planning, environmental and preliminary engineering studies, Advisory Committee workshop direction, public involvement presentations, speaker bureau presentations, and the plan and report preparation. In addition, OKI contracted with the consultant team of ME Companies and HUB Communications, to provide associated services including the coordination and set up of public involvement meetings and speaker bureau presentations, preparation of project fact sheets, tabulation of public input, and media relations for this project.

Project Area

The study area encompasses the incorporated communities of the City of Oxford, and the Villages of Seven Mile, Millville and College Corner, and eight Butler County townships, Oxford Township, Ross Township, Reily Township, Hanover Township, Milford Township, Morgan Township, Wayne Township, and St. Clair Township (see Exhibit 1).

Approximately 80,000 people currently live in this area and the area includes over 150 miles of public roadways, comprised of nearly 80 miles of state or federally maintained roads, including portions of U.S. Routes 27 and 127, and State Routes 73, 129, 130, and 177, with the remainder under local or county maintenance.

The study considered existing and future area conditions with the project’s stated purpose to determine a long range plan to provide for Year 2030 needs. With this area’s population projected to increase by 50,000 persons (see Exhibit 2) and traffic demands on major routes forecasted to more than double by the year 2030, the need for long range planning in Northwest Butler County now was recognized as a high priority.

The Northwest Butler County area is a predominantly rural area, with active agricultural cropland in abundance interspersed with growing residential development. Commercial land use is concentrated in the incorporated communities in the area. The City of Oxford provides the area’s only urban land use mix. The Miami University, with a student enrollment of 16,000, is located in Oxford and is the largest employer in the NBTS area. Important natural features in the area
include four major high quality streams, Indian Run, Salmon Run, Four Mile Creek and Seven Mile Creek; the Great Miami / Little Miami River Buried Valley Aquifer System; five State and County parks, natural areas, and preserves, including Hueston Woods State Park and Preserve, Pater Park Wildlife Area, Bunker Hill Universalists Pioneer Cemetery, Butler County Metroparks Wildlife Preserve, and several Miami University property natural areas; and over 20 historic sites listed on the National Register of Historic Places.

Project Scope

The NBTS has been conducted according to ODOT’s Five-Step Planning Process (ODOT, April 2001). The Five-Step Planning Process is designed to provide transportation decision makers with the facts and analysis needed to make intelligent, informed choices for the best use of transportation resources. The process is also designed to merge with and into ODOT’s Transportation Development / National Environmental Policy Act (NEPA) process as the plan advances towards implementation. The five planning process steps in relation to the 14 step process are illustrated in Figure 1 and further described below.

**Figure 1: The Planning Process**

The Five-Step Planning Process is described below.

**Step 1: Confirm and Clarify the Issues, Goals, Problem and Need** - During this step, a Public Involvement Plan (PIP) is developed and area stakeholders and the
general public are engaged to help define transportation problems and needs and goals.

Step 2: **Conduct Appropriate Transportation, Technical, and Other System Analysis** - In Step 2, surveys and analyses are conducted to determine transportation, social, growth, land use, economic, environmental and other needs and issues to understand existing conditions, causes, trends, and scope of problems and needs.

Step 3: **Identify Alternatives** - The goal of Step 3 is to identify reasonable and realistic alternative solutions to address the problems, issues, goals, and needs identified in Steps 1 and 2.

Step 4: **Evaluate Alternatives** - In Step 4, feasible alternatives identified in Step 3 are qualitatively and quantitatively evaluated based on a variety of reasonable comparative measures, including technical criteria and the objectives identified by stakeholders and others impacted by the project or study.

Step 5: **Recommend an Alternative and Strategic Plan** - Step 5 involves the selection of an alternative solution and the completion of a Strategic Plan through reaching a consensus among the Advisory Committee membership and the general public. In Step 5, prioritization of plan components is explored, and a recommendation for plan implementation is developed.

As mentioned above, the Five-Step Planning Process was designed to merge with ODOT’s Transportation Development / National Environmental Policy Act (NEPA) process. Specifically, the Five-Step Planning Process leads directly into the final stages of Step 4 (Present Recommendations / Conceptual Plan) and the initial stages of Step 5 (Develop Preliminary Corridors / Alignments) in ODOT’s new 14-Step Project Development Process (PDP) for Major Projects. The remainder of the 14-Step PDP will include the completion of the Project Development / NEPA process (for environmental clearance) and will culminate with project design and construction. **Exhibit 3** depicts the ODOT 14 Step Major Project Development Process.
II. Extensive Public Involvement Throughout to Guide Study
II. EXTENSIVE PUBLIC INVOLVEMENT THROUGHOUT TO GUIDE STUDY

Extensive public involvement has played an important role in determining a recommended plan in this study. The intent of the Northwest Butler Transportation Study (NBTS) was to provide a cooperative and collaborative process to determine a long range plan to address the transportation needs in Northwest Butler County. The study included a comprehensive evaluation of costs, benefits, and impacts of potential alternatives resulting in a recommended strategy of implementable projects to be incorporated into the OKI Long Range Regional Transportation Plan, a critical step toward realizing these improvements.

Stakeholder Guidance

The Northwest Butler Transportation Study was initiated in the summer of 2000 with the coordination and interviews of area stakeholders conducted by OKI and the Butler County Engineer’s Office to define the area’s transportation needs and goals. Residents, business owners, local leaders, civic groups and others actively participated and directed the study via an Advisory Committee of sixty individuals representing over thirty-five groups, agencies, organizations or jurisdictions (see page ii, Acknowledgements, for a listing of the stakeholder groups and representatives who participated in this study). This group met practically monthly (over 25 meetings) over the last two plus years to review and direct project studies and provide valuable local input.

The Advisory Committee meetings were conducted as open, work sessions with technical presentations by Balke American and OKI to explain aspects of the study processes, analysis techniques, evaluation methods, and study findings, combined with reports from the public involvement consultants, ME Companies and HUB Communications, and Committee members. In addition, the Committee worked through an array of exercises to encourage dialogue among the members to better understand and appreciate the different perspectives of their respective constituency and to reach consensus on the project needs, goals and ultimate recommendations. This active, very dedicated group has been critical to the success of this study in building consensus on the project need and project goals and evaluating and determining project solutions. Appendix A includes a compilation of the Advisory Committee actions and decisions over the course of this study.
Community Outreach

In addition, an extensive, broad-based, interactive public involvement process was utilized to obtain input from the project area communities and public at large. Several public presentations on the project studies were conducted for local area civic groups, including the League of Women Voters, the Audubon Society, the Three Valley Conservation Trust, the Collinsville Livestock Protection Association, the Oxford Chamber of Commerce, the Oxford Rotary, Oxford Lions Club, Oxford Kiwanis and the Butler County Farm Bureau. Three open house public meetings / workshops were held at key points in the study process to obtain additional public perspective.

May 23, 2001 Open House Public Involvement Workshop

The initial open house public involvement workshop specifically focused on this study was held in May 2001. The purpose of the first workshop was to obtain input from the general public on the project goals established by the Advisory Committee and on the identification of transportation problems and issues that need to be addressed in the Northwest Butler Transportation Study.

Toward that end, the meeting was a success. Over eighty people attended the meeting representing all parts of the study area (including project team members and 19 Advisory Committee members, over 50 attendees from general public). Twenty-five written comments were received. In general, the public response indicated a recognition of US 27, SR 73 and Oxford transportation problems that need to be addressed, but also a concern that the rural residential nature of the area needs to be preserved. From the comments heard at the workshop and received in written responses, the project goals established by the Advisory Committee were determined to be well founded and consistent with the general public's views. Project needs identified to date appeared to coincide well with what the workshop attendees perceived.

April 2, 2003 Open House Public Involvement Workshop

The second public workshop was held on April 2, 2003 focused on an update and to present preliminary alternatives being considered by the Advisory Committee. The open
house format was used to encourage participants to explore information on the project background, goals, and preliminary improvement options that the committee had been considering. At this stage, the improvement options were presented as potential components to include as parts of the long range plan, i.e., no comprehensive plans for the study area had yet been developed.

Interest in the project was growing, with this second public meeting attracting a much larger attendance than the first, with over 180 area residents attending along with many of Advisory Committee members. Over 80% of resident attendees live and/or work in Oxford and Milford Townships. The majority of attendees work in the City of Oxford. Many of the comments from this meeting indicated a recognition of the need for transportation improvements, but concern that improvements would result in too great of an impact on property, the environment and the existing character of the area. Several attendees had come to the meeting based on misinformation distributed by area residents indicating that a recommended plan had already been determined and that it included a bypass (with a defined roadway alignment) north of the City of Oxford.

**July 15, 2003 Open House Public Involvement Workshop**

The third open public workshop for the Northwest Butler County Transportation Study was held on July 15, 2003. The purpose of the last meeting was to update the public on work that had been ongoing with the Advisory Committee, including the consideration of the public comments from the second meeting and to present alternative plans that the committee had been studying and had voted on for further consideration. Again, the open house format was used to display over fifty large scale exhibits describing the study and the plans under consideration. Project Team representatives and Advisory Committee members served as information ambassadors to help attendees interpret the exhibits and to field questions regarding the study. In addition, a short presentation with slide show was given four times over the course of this meeting. A questions and answer session was included after each presentation.

This third public meeting drew the highest attendance with over 310 area residents attending. Approximately 80 percent of resident attendees live in City of Oxford and Oxford and Milford Townships. Input from this meeting helped the Advisory Committee work
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It is toward a consensus recommended plan. Six Build plans and the Do Nothing / No Build alternative were displayed as well as information on the Advisory Committee’s vote that resulted in Build Alternatives 1A and 3B receiving equal votes for advancement. In brief summary, the public comments from this meeting while mixed, overall indicated that the public was still concerned about the ability to make necessary, major transportation improvements without undue environmental and property impacts and without changing the area’s existing rural character. In general, many favored upgrades to the existing roadway network, but there was considerable support for other major improvements, including new roadway facilities expressed by others noting an acknowledgment that the plan needs to address both short and long term area needs. Some suggestions were made on additional alternative solutions for the area, including: designating SR 177 as an alternative truck route, improving US 27 to three lanes between Millville and Oxford, exploring alternative transportation such as public transit, enacting limitation on student vehicles, and reroute US 27 on existing roads both inside and outside of Oxford.

Communication through Web Site, Newsletters, Mailings and More

In addition, project information and study updates were regularly posted to the Butler County Engineer’s Office website (www.bceo.org). Information available on the website included project background summaries, study updates, maps and links to materials presented at recent meetings, links to project newsletters, technical terms, answers to frequently asked questions, meeting announcements, agenda and proceedings and project contacts. From goal setting to problem identification to the development, evaluation and recommendation of a strategic long range plan, this study focused on optimizing the input from the people who live in the area and use these roads every day.

Project information in the form of newsletters, mailings, newspaper releases, feature articles in the Hamilton News-Journal and local radio announcements were also used to communicate with the public throughout the study. Additionally, three project fact sheets were developed and issued during the course of the NBTS. These fact sheets provided to Advisory Committee members, as well as members of the general public who attended the public involvement meetings or otherwise requested to be included on the project mailing list. At the close of the study, the mailing list numbered over 600 persons. These fact sheets included summary information on recent project studies and decisions, as well as facts and background information (both general and technical) on a wide range of transportation and environmental issues important to the NBTS.

Extensive details on the public involvement activities and Advisory Committee meetings (minutes and proceedings) have been compiled for this study. In addition, ME Companies and HUB Communications have prepared a thorough, stand-alone, Public Involvement Summary report for OKI for this study.
III. TECHNICAL ANALYSES FINDINGS SUMMARY
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Components of this study included detailed analyses of traffic and accidents; identification of natural and cultural resources and environmental issues; and preliminary development of engineering and technical feasibility studies. An important element of the project study considerations was the recently adopted land use plans of the eight townships directed by the Butler County Department of Economic Development (see Exhibit 4). In addition, the adopted land use plan of the City of Oxford was also reviewed in its context to transportation plans in the NBTS.

Review of Local and Regional Plans and Studies

Several recent local and regional transportation studies and land use plans for the area were reviewed in this study to help in formulating the understanding of the area’s problems and needs. The following studies were reviewed:

- Butler County Regional Transit Authority Strategic Plan (1999-2001), 1998;
- Butler County Township Land Use Plans, 1998;
- Butler County, Ohio Thoroughfare Plan, 1998;
- City of Oxford Comprehensive Plan, 1998;
- City of Oxford Truck Origin-Destination Study, March 1999;
- Oxford Township Community Survey, 2000; and

Each of these studies provided important insight to the problem identification and goal setting for the Northwest Butler Transportation Study. However, early in the study process, the Advisory Committee recognized the particular importance of three of these studies and their relationship the transportation planning process. The three key studies were: the Township Land Use Plans, the Oxford Comprehensive Plan and the Oxford Truck Origin-Destination Study.

The land use planning efforts of the eight townships, Butler County and the City of Oxford provided a current, up-to-date vision of what local planners and citizens envisioned for Northwest Butler County. The Advisory Committee reviewed these future land use plans and used these to evaluate how alternative transportation improvements could not only support the land use goals, but also be compatible with desired land use development patterns. As discussed in the next section, the Committee established one of the NBTS Plan’s goal to be the preservation of the rural character of the Northwest Butler County area and the small town ambience of the Oxford, Millville, Darlington, and the other communities in the area, while at the same time addressing pressing transportation needs and desires.
The Oxford Truck Origin - Destination Study was also an area of focus in that it provided some key quantitative measurement of the perceived concerns over increased heavy truck traffic in the area. This study, conducted in 1998, concluded that there is a significant volume of truck traffic serving the northwest Butler County area and the City of Oxford, but there was also a significant portion of that truck traffic that was just passing through. The study measured the truck volume in and through the City of Oxford and concluded that while three-fourths of the daily truck (and bus) volumes related to business in Oxford, almost half of the heavy truck volume during the peak hours of the day was only passing through. In other words, the truck volumes perceived to be the most problematic in terms of motorist and pedestrian safety and congestion, were indeed caused by through trucks. The study further concluded that removal of the heavy trucks during peak hours, by re-routing, would reduce truck volumes in Oxford by almost 60%. As the Northwest Butler Transportation Study progressed, the issue of trucks and particularly their effect on travel safety and on pedestrian conflicts in Oxford and through the Miami University campus was reviewed continually in the alternative improvement plan development and evaluation process.

Inventory and Analysis of Existing Conditions

A key component of the Northwest Butler Transportation Study involved the detailed analyses of the efficiency and safety of current roads in the study area. The technical data was reviewed by, and combined with input from, the community to identify critical transportation needs and to develop alternative improvement plans.

In the NBTS area, there are more than 150 miles of roadway with nearly 80 miles of state and federally maintained highways and numerous miles of county, township and other roads. The overwhelming majority of these roads are two lanes wide.

Level of service (LOS) is a quantitative and qualitative measure of traffic and road conditions. LOS takes into account several factors, including: total traffic, truck volumes, speed, travel time, traffic interruptions, freedom to maneuver, safety and operating costs. Transportation efficiency is measured on an “A” to “F” scale, with “A” being the best, “C” being the acceptable standard, and...
ratings below “C” indicating the need to consider improvements. This rating is determined for roads during their peak hours of traffic demand, which usually occur during the morning and afternoon commute times.

In the NBTS area, there are more than 150 miles of roadway with nearly 80 miles of state and federally maintained highways and numerous miles of county, township and other roads. The overwhelming majority of these roads are two lanes wide.

Many of the roads, or segments of roads, in the study area currently provide an acceptable level of service, although with projected traffic increases level of service will decrease unless transportation improvements are implemented. Traffic demands, high percentages of heavy truck volume, roadway inadequacies such as the number or location of access points (over 400 driveways on US 27 south of Oxford), or the need for turn lanes or signalization or a combination of factors are contribute to inadequate level of service. Some of the problem areas are related to congested conditions at intersections, some are due to narrow lane and shoulder widths, and some are related to insufficient opportunities for passing slower moving traffic on two-lane roads.

Exhibits 5a through 5c depict some of the roadway characteristics of the NBTS network contributing to the area’s transportation problems.

Travel Safety: Accident History Analysis

The Ohio Department of Public Safety compiles traffic accident reports from local, county and state police jurisdictions in a comprehensive statewide database. The database includes the following information: location; number and type of vehicles involved; severity of accident (property damage only, personal injuries, or fatalities); weather; lighting; road conditions; direction of travel; type of accident (head-on, rear end, passing, turning, etc.); contributing factors (alcohol, animal action); citation; fault; and driver action.
Accident data from 1995 through 2001\(^1\) was analyzed to identify roadway inadequacies or problem areas. While many accidents are caused by driver errors, these errors often are related to roadway characteristics or problems such as traffic congestion, narrow lane or shoulder widths, or a high frequency of roadway or driveway intersections. To help determine if a road's accident history reflects roadway conditions that can be corrected, accident data is combined with traffic data.

Each year for the last five years, there has been an average of 1,400 accidents on the roads in the NBTS area. Figure 2 shows the annual number of accidents for each of the area's state and U.S. routes between 1995 and 1999. A review of the 2000 and 2001 accident data for US 27 and SR 73 (when it was released by the Ohio Department of Public Safety) revealed that the trends evident in the five years prior depicted in the above graph are continuing.

For comparison of the area's accident experience, annual accident rates in accidents per million vehicle miles traveled are derived based on roadway characteristics, functional classification, daily traffic volumes and annual average of traffic accidents. In this way, an area's roads can be fairly compared to other similar roads across the state.

\(^1\) At the time of the analysis for this study, full yearly data only extended to 1999, so the detailed analysis focused on the 1995 through 1999 data. Near the end of the study, two additional years of data were released by ODPS and the analysis was updated to include 2000-2001 data for US 27 and SR 73.
Many roads in the area are experiencing traffic accidents at a rate that exceeds the statewide rates for similar roads. In fact, all the major roads in the Northwest Butler Transportation Study area are experiencing rates exceeding the statewide rates (by two to six times the equivalent statewide rates for similar roads). Figure 3 depicts the annual accident rates for the major roads in the area compared with the statewide rates for similar roads, carrying similar volumes of traffic.

Exhibit 6 displays the historical accident data and rates for the NBTS area.

Based on these findings, travel safety was identified early in this study as the most critical component of the NBTS purpose and need for both short term and long range transportation improvements. The following tables summarize the accident data for this area.

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<td>------------------</td>
</tr>
<tr>
<td>1995</td>
</tr>
<tr>
<td>1996</td>
</tr>
<tr>
<td>1997</td>
</tr>
<tr>
<td>1998</td>
</tr>
<tr>
<td>1999</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>
Table 2 displays the accident severity history. While the Northwest Butler area accounts for about 14% of all Butler County accidents, 25% of the County’s fatal accidents occur in the Northwest Butler area.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>BUTLER COUNTY</th>
<th>NORTHERN BUTLER STUDY AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property Damage Only</td>
<td>32,813</td>
<td>4,794</td>
</tr>
<tr>
<td>Personal Injury</td>
<td>17,962</td>
<td>2,196</td>
</tr>
<tr>
<td>Fatality</td>
<td>147</td>
<td>37</td>
</tr>
</tbody>
</table>

The following points briefly summarize the key findings from the accident history analysis:

**Total NBTS Area (all roads)**
Over 7,000 accidents in study area between 1995-1999
- over 1,400 per year on about 150 miles of roadway
- almost a third involved injuries
- 37 fatalities, almost 8 per year
- over a third are access related (driveways, intersections)
- about half involved only one vehicle
- 65 involved pedestrian (about 2/3 in Oxford or on campus)
- 12% involved truck

**State and US Routes in Study Area**
Almost 5,000 accidents on state and US routes in study area (about 2/3 of total)
- almost a third involved injuries
- 41 fatalities
- about half involved only one vehicle
- 13% involved truck
- all have accident rates exceeding statewide rates

**State and US Routes in Oxford**
Over 1,000 accidents on US 27, SR 73 and SR 732
- about a third involved injuries
- almost 60% access related
- almost 75% involved two vehicles
- 9% involved truck

**On US 27**
Almost 300 accidents per year (1,464 in five years)
- about 30% involved injuries
- average 1 fatality per year (although 3 in 1998, and 2 in 1999)
- almost 40% access related
- almost 40% involved only one vehicle
- 14% involved truck
On SR 73
Over 90 accidents per year (456 in five years)
- almost 40% involved injuries
- almost 40% access related
- almost half involved only one vehicle
- 17% involved truck

Environmental Inventory

An important part of this study was the inventory of Northwest Butler County’s environmental features and resources including identification and accurate mapping using secondary source information that included mapping, publications, and coordination with the following: a) United States and Ohio Environmental Protection Agency, b) Ohio Department of Natural Resources, c) United States Department of Agriculture, d) United States Department of the Interior Fish and Wildlife Service, e) United States Geological Survey (USGS), f) State and local agencies, g) Miami University, and h) other organizations and pertinent publications.

Secondary source information was used to identify and map such significant environmental features as: streams; wetlands; locations of state and federal listed threatened and endangered species; location of the Great Miami Buried Valley Aquifer System; Wellhead Protection Areas; locations of Public Water Service / Supply Wells; locations of Federal Emergency Management Agency (FEMA) mapped 100-year floodplains; locations of parks, preserves, and designated natural areas; and the locations of cultural, historic, and archaeological resources.

All information collected was fully documented and mapped to the Butler County GIS (Geographic Information System, electronic map files) base to be available for use in any advancement of this study into more detailed plan implementation. Appendix B includes a summary of the environmental inventory conducted for this study.

Analysis of Forecasted Conditions

The OKI Regional Travel Demand Model was first used in this study to determine the pattern of travel demand in the NBTS area and the surrounding counties of the OKI region. The model uses existing and projected population data, developed by the Ohio
Department of Economic Development and OKI (derived independently from this transportation study), and existing and future land use, developed by the local planning agencies, to project travel in terms of trips between home and work, school and shopping, and all other destinations. This illustration depicts the total 1995 trips compared to the future 2030 trips, regardless of transportation facilities. In other words, the model illustrates the demand for connection between origins and destinations based on population, employment and land use data, not on the availability, capacity or inadequacy of the transportation facilities and network. The model then allocates these trips to the available facilities to help determine problem areas and transportation needs.

An analysis of trip origins and destinations data showed that travel demand in the NBTS area is more directly linked to north-south travel as opposed to east-west travel. Additionally, the majority of trips leaving from an origin are ultimately returning to that same origin (i.e., round trips). Most trips in the NBTS area (by percentage of all trips) remain within the zones or immediate areas of the trip origin. There are also a high percentage of trips being made to the City of Hamilton (an economic and employment center) and northern Hamilton County.

Projected Year 2030 Traffic

The prevailing travel patterns and projected travel patterns are a key component in the development of alternative solutions for the transportation problem in the NBTS area. The OKI Regional Travel Demand Model was also used to determine future traffic volumes compared with existing conditions. Figure 5 depicts the projected routes that will experience more than a doubling of travel demand by the Year 2030, whether or not any new transportation facilities or improvements are implemented.
Exhibit 7 is a summary map showing the problem identification that resulted from the Advisory Committee’s review of the roadway and intersection characteristics study, the accident history analysis, and public input. This map became an important blueprint for the establishment of project goals through the development and evaluation of alternative solutions.

Separate technical reports, including more in-depth details on the data collected and analyzed in this study, have been developed as part of this study and will be made available to the project sponsors for use in advancing the recommended plan to implementation. These appendices include:

- Accident History and Analysis;
- Existing Roadway Characteristics Inventory; and
- Environmental Features Inventory (with GIS Mapping).
IV. ADVISORY COMMITTEE AND PUBLIC INPUT
ESTABLISHED PROJECT GOALS
IV. ADVISORY COMMITTEE AND PUBLIC INPUT ESTABLISHED PROJECT GOALS

An important and integral part of this study was the Advisory Committee’s establishment of project goals and the solicitation of public input to refine these goals. As the study progressed, the goals served as a solid foundation for the development and evaluation of project alternative solutions. Likewise, as the Advisory Committee continued to evaluate and refine its focus on the transportation problems and needs for the NBTS area and collect public input, the study goals have been continually verified and more comprehensively defined. Every alternative solution considered for incorporation into the final Strategic Plan was evaluated for how it addresses or fits with these goals. The following pages depict the project goals as established by the Advisory Committee with public review and input throughout the course of the study and as presented at the final public involvement meeting.

As emphasized throughout the Northwest Butler Transportation Study, the project goals established by the Advisory Committee are the foundation of the alternative solution development and evaluation and integral to the decision-making process. The advancement of a recommended plan to the OKI Transportation Board for endorsement and incorporation into the regional transportation plan and the ultimate funding and implementation of any proposed improvements will depend on the plan’s ability to address the established goals and purpose and need determined in this study.
Travel Efficiency:
Improve the movement of people and goods

- Provide an acceptable transportation level of service through the Year 2030
- Better manage truck movement in the Study Area and through Oxford and the Miami University campus
- Promote countywide transit service

Considerations:

- Focus on US 27 and SR 73 as primary routes for improvement in NBTS area,

- Address identified areas of congestion (intersections, sections of major roads),

- Provide for MU / Oxford regional needs and opportunities for local improvements to be made in conjunction with area-wide plan,

- Improve east - west SR 129 connection in Millville area (for better east - west connectivity),

- Provide for better access management for existing development (and consider access management role in guiding future development),

- Provide better access and level of service for special event traffic,

- Provide separation of through and local travel needs, and

- Consider benefits of other modes of travel including transit, bicycle and pedestrian as part of solution.
Travel Safety: Improve vehicular and pedestrian travel safety

- Identify and correct existing roadway deficiencies that contribute to unsafe travel

- Address vehicular / pedestrian conflict issues on the Miami University campus and in Oxford’s Uptown

Considerations:

- Address identified safety problem areas (intersections and road sections with high accident rate history),

- Upgrade roads to safe standards in terms of lane and shoulder widths,

- Reduce vehicular / pedestrian conflict points or areas,

- Consider access management needs (existing and future land use), and

- Provide separation of through and local travel needs to improve safe property access.
Improve regional accessibility

- Improve access and connectivity between the Study Area and regional neighbors

Considerations:

- Improve north - south through travel facilities
- Provide for improved regional access to economic centers and interest points (Oxford, Miami University, McCollough-Hyde Hospital, Hueston Woods State Park, others)
- Address east - west connectivity needs
Preserve character of area and ensure improvements are compatible with adopted land use plans

- Ensure that recommended transportation solutions are not only compatible with, but support, adopted land use plans of townships and incorporated communities.

Considerations:

- Provide means for growth management and support for adopted township and local long range planning goals,

- Avoid / minimize impact on cultural historic resources, parks, natural resources, farmland, and existing development,

- Preserve small town character of Oxford and rural landscape and character of NBTS area, and

- Support MU and Oxford needs as regional center for area jobs, as well as cultural, educational and entertainment opportunities.
V. ALTERNATIVES DEVELOPED AND EVALUATED
V. ALTERNATIVES DEVELOPED AND EVALUATED

The Advisory Committee considered a very comprehensive array of potential solutions to the identified transportation problems and needs in Northwest Butler County and carefully weighed every option in its ability to address their established project goals.

The Do Nothing / No Build Alternative

Maintenance of the existing transportation facilities, the network of roads and limited transit service, in the NBTS area represents a potential future scenario. Although, as population is projected to increase (as discussed and shown in Exhibit 2) and as projected travel demand will increase substantially throughout the NBTS area (as depicted in Figure 5), the possibility that a Do Nothing or No Build plan could be the result of this study was considered. The Do Nothing / No Build Alternative does not include any major roadway or transportation improvements and consists of the continued use of the existing roadway network and transit service with only routine maintenance and upkeep. Existing facilities and committed improvement projects in the OKI region are included in the Do Nothing / No Build scenario. In the NBTS area, the only projects currently in the OKI Regional Transportation Plan in the NBTS area are:

1) the improvement of approximately 2 miles of US 27 north of the City of Oxford (widen to three lanes, sidewalks and signal improvement),
2) the development of a shared use (bicycle and highway) corridor around the City of Oxford, and
3) the construction of a park-and-ride facility along US 27 near the City of Oxford.

Although the Advisory Committee concurred that the Do Nothing / No Build alternative would fail to meet their established project goals, this alternative was carried throughout the study and was used as the baseline condition for comparison of benefits and impacts of all other alternatives.

Consideration of TSM and TDM Solutions

Early in the study process, before developing or considering major capacity increasing transportation improvement alternatives such as new highway facilities, the Advisory Committee reviewed an array of alternative solutions that may be less capital intensive or require less right-of-way for potential applicability in addressing transportation needs in Northwest Butler County. These alternatives generally fall into two categories: Transportation System Management (TSM) and Transportation Demand Management (TDM).
TSM includes a variety of measures designed to optimize the efficiency and capacity of the existing system such as access management, signalization, widening, and transit support. TDM takes a different approach, rather than changing system capacity, it includes measures to reduce travel demand, or better manage the demand by shifting some of it from peak hours. TDM relies on incentives and disincentives to encourage changes in behavior attractive such as telecommuting and flex time for workers.

**Transportation Systems Management (TSM) Alternatives**

Transportation System Management (TSM) alternative strategies focus on optimizing the existing transportation network and components to accommodate transportation demands. This type of alternative also includes the addition or expansion of non-highway travel modes. The following are brief descriptions of the TSM alternatives that were considered by the Advisory Committee for the NBTS and eliminated from consideration. However, some TSM alternatives, such as intersection and roadway upgrades, were advanced for further consideration to be included as part of the final recommendation for this study.

**Intelligent Transportation Systems**

Intelligent Transportation Systems (ITS) are advanced communication technologies that are linked to the transportation infrastructure to move people and goods more efficiently. Intelligent Transportation System technologies can include multiple components that support each other and optimize transportation efficiency. ARTIMIS, which stands for Advanced Regional Interactive Traffic Management and Information System, is the first project of this type in Ohio and Kentucky. Through the use of electronic surveillance and changeable message signs, radio interconnection and phone access coupled to freeway service patrol vans and a control center, it is designed to manage congestion by monitoring traffic problems, such as congestion, accidents, or disabled vehicles on 88 miles of freeway in the Cincinnati - Northern Kentucky area. The goals of ARTIMIS include the improvement of safety, travel time and air quality. The following is a list of some of those components that can function within an ITS: 1) Advanced Traffic Management System, 2) Traveler Information System, 3) Incident Management Program, 4) Advanced Traffic Monitoring System, 5) Advanced Public Transit Management System, and 6) Traffic Signal Control System.

**Transit Support (Park-and-Ride)**

Transit support facilities provide or improve modes of travel to reduce single occupant vehicles (SOV's) during peak periods. Bus transit ridership can be enhanced through the use of park-and-ride facilities, which increase accessibility to major bus routes linking outlying areas with major employment, education or shopping areas.
Rail Freight Support Facilities
Rail freight support facilities provide for reliable and efficient movement of freight and goods between producers and markets, while reducing congestion, air, and noise pollution. Intermodal facilities include transfer hubs that allow goods to be placed on trucks, trains, pipelines, barges, and planes.

Bike and Pedestrian Facilities
Bike and pedestrian facilities provide non-highway alternatives for some SOV travel and a means of connecting with transit to reduce congestion and vehicle emissions, especially from short-distance SOV trips. The most effective approach is to expand facilities that enable these modes to be used safely, primarily by reducing conflicts with motorized vehicles (including: on-road bicycle facilities, separate off-road facilities and sidewalks).

Growth Management Strategies
Growth management strategies involve the public sector in shaping new development patterns to help reduce SOV travel as well as address environmental, social, and fiscal issues. Typically, growth management promotes compact mixed-use development patterns that place employment and commercial activities closer to residential areas to promote travel by transit, bicycle, and pedestrian modes. Land use planning in this area, particularly with the City of Oxford’s and the eight townships’ recent future land use plan development, has begun to deal with the issue of growth management.

Transportation Demand Management Alternatives
Transportation Demand Management (TDM) alternative strategies are used to better manage, control or accommodate transportation demand. TDM: Measures to reduce travel demand, or shift from peak hours. TDM relies on incentives and disincentives to make shifts in behavior attractive (telecommuting, flextime). The following are brief descriptions of the TDM alternatives that were considered for the NBTS.

Telecommuting
Telecommuting would allow workers to work at home by using an electronic connection to their place of work, i.e., using a computer connected to the employer’s network. This measure functions as a transportation improvement measure on the basis of replacing commuter trips (whether by car or bus) with that of electronic “trips” (phone or computer). This is often achieved by increasing the opportunities for work at home, which in turn, decrease the number of daily commuter trips. Telecommuting is effective when employers allow or encourage employees to work from home or at remote “satellite” facilities to eliminate, shorten or reduce the commuter trips to work.
Parking Management
Parking management is a technique that functions by discouraging SOV travel and rewards those who carpool and utilize more efficient means of travel. This technique is employed by structuring public and private parking fees to provide incentives for carpooling, incentives to travel outside of peak periods, and disincentives to drive-alone travel. Parking lots can designate spaces for rideshare. Zoning ordinances may discourage SOV travel by requiring a minimum number of parking spaces, or maximum parking requirements could be set at low levels to create a shortage of parking and encourage alternative modes of travel or multiple occupancy vehicle travel.

Alternative Work Schedules
Alternative work schedules can result in a redistribution of travel demand to reduce peak hour congestion. A variety of different programs could be used to reduce worker commute trips during peak periods including: flex time, staggered work hours, and compressed work week schedules.

High Occupancy Vehicle Strategies
High Occupancy Vehicle (HOV) lanes are designated lanes on existing multi-lane roadways that are reserved for the exclusive use of vehicles carrying more than one person (buses, carpools, and vanpools). These lanes are designed to provide an incentive to travelers to carpool or use transit by reducing their travel time during peak periods. This measure can only be applied where multiple lanes are available.

Congestion Pricing
Congestion pricing involves charging a fee for using a particular major thoroughfare or for crossing into a certain area during peak commuting periods. This measure is designed to encourage travel off peak, thereby reducing demand during the most congested times of day.

Summary of Disposition of TSM and TDM Alternatives Solutions Considered
The Advisory Committee considered and voted on the potential applicability of each of these TSM and TDM alternative solutions to the project purpose, need and goals (see Appendix A). The Advisory Committee recommended the following alternatives be eliminated from consideration due to having the least potential applicability: High Occupancy Vehicle Strategies, Congestion Pricing, Rail Freight Support Facilities, Intelligent Transportation Systems, and Telecommuting. Measures such as Alternative Work Schedules, Parking Management, and Growth Management were determined to have some potential applicability but were not seen as viable alternatives to pursue.
Alternative solutions that were determined to have a higher potential applicability were noted for further consideration as appropriate: Transit Support (Park-and-Ride) and Bike and Pedestrian Facilities.

The Advisory Committee concluded that these alternatives could play some role in the future transportation plans for the NBTS area, but in general, none of these alternatives could substantially satisfy the key project goals and need components.

The Build Alternatives

Based on developing an understanding the area’s problems and needs, reviewing projected conditions and soliciting public input, a number of potential projects or improvements were developed ranging from intersection improvements to roadway upgrades to potential new roadway facilities. These possible improvement projects were presented to the public in April 2003 as independent project components to consider for incorporation into a comprehensive long range plan for Northwest Butler County. Following that public meeting and upon review of the public comments received, the individual project components were assembled into six possible long range plans, consisting of various combinations of improvements.

Six Build Plans were compiled for evaluation. It is important to understand that roadway extensions or new facilities in any of the plans represent conceptual, directional paths, not actual roadway alignments. The development of physical roadway alignments or “footprints” is beyond the scope of this study and would require in-depth planning, environmental and engineering study.

Each Build Alternative plan considered for the project included some common elements as follows:

- Transportation System Management (TSM) upgrades at identified critical intersections;
- lane and shoulder width upgrades of major roadways identified; and
- a Millville Realignment of US 27 to the west of Millville, with a re-alignment of the SR 129 intersections both east and west of US 27.

Each successively numbered Build Alternative has additional components that build upon this base. The following pages describe the six Build plans as compiled and evaluated by the Advisory Committee and presented to the public for review and comment.
1A: Upgrade plus US 27 Access Management

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus additional three lane segment for improved access management and through capacity between Minton Road and SR 130

1B: Upgrade plus Four Lane (Ross to Oxford)

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford

Build Alternative 1B includes the widening of US 27 to four lanes between SR 128 and the City of Oxford or a new four lane road parallel (east or west) to US 27, with the existing US 27 then becoming a local access road.
A Recommendation of a Preferred Strategy For a Long Range Transportation Plan for Northwest Butler County, Ohio
January 2004

2A: Upgrade plus US 27 Four Lane plus Western Oxford Realignment

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford
- plus add two lane western parkway-design roadway / re-alignment of US 27 around Oxford

The US 27 realignment would run around the southwest side of Oxford, around the west side of the Miami University Airport and rejoin existing US 27 northwest of the City of Oxford.

2B: Upgrade plus US 27 Four Lane plus Western Oxford Re-alignment with Eastward Extension to SR 73

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford
- plus add two lane western parkway-design roadway / re-alignment of US 27 around Oxford with eastward parkway-design roadway extension to SR 73

Alternative 2B is the same as Build Alternative 2A with an extension from the southern termini of the western re-alignment at US 27, eastward to connect with SR 73 east of the City of Oxford.
3A: Upgrade plus US 27 Four Lane plus Eastern Oxford Re-alignment

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford
- plus eastern parkway-design roadway / re-alignment of US 27 around Oxford

Build Alternative 3A includes the realignment of US 27 to the east side of the City of Oxford, as a two-lane parkway with access only at a limited number of intersections.

3B: Upgrade plus US 27 Four Lane plus Eastern Oxford Re-alignment with Westward Extension to SR 732 (south of Oxford)

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen or re-align US 27 to four lanes from SR 128 to Oxford
- plus eastern parkway-design roadway / re-alignment of US 27 around Oxford
- plus westward parkway-design roadway extension to SR 732 south of Oxford

Build Alternative 3B is the same as Build Alternative 3A with an extension of the US 27 realignment around the east side of the City of Oxford west to SR 732. These connections would be parkway-design, two-lane facilities with access only at a limited number of intersecting roads.
Evaluating the Alternatives

Recognizing that all seven alternatives are not equal in terms of benefit, impact or cost and that any of the Build alternatives would involve substantial capital costs to implement, the Advisory Committee was asked to focus their evaluation on the project goals they had established as the foundation of the decision-making process and ultimate advancement of a recommended plan.

The following tables, Tables 3 through 5, were developed to better illuminate the differences among the alternatives. The analysis is based on the Year 2030 projected traffic for each scenario using the OKI Regional Travel Demand Model output. The proposed improvements and components of each scenario were input into the model to assess future travel patterns and volumes.

Table 3 compares projected safety benefits in terms of predicted increase or decrease in traffic accidents on US 27 and SR 73, the two most important roadways in the Northwest Butler area, using projected accident rates and projected volumes. Accident rates were calculated for roadway segments based on the proposed roadway improvements. The rates were then used to predict accident numbers based on projected traffic volumes and then each Build alternative was compared to the Do Nothing / No Build projected conditions.

<table>
<thead>
<tr>
<th>Alternatives:</th>
<th>Do Nothing / No Build</th>
<th>1A</th>
<th>1B</th>
<th>2A</th>
<th>2B</th>
<th>3A</th>
<th>3B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety Benefit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential increase or reduction in number of traffic accidents on US 27 and SR 73 (compared to Existing accident levels)</td>
<td>85% Increase</td>
<td>47% Increase</td>
<td>34% Increase</td>
<td>5% Reduction</td>
<td>12% Reduction</td>
<td>15% Reduction</td>
<td>13% Reduction</td>
</tr>
<tr>
<td>Potential increase or reduction in number of traffic accidents on US 27 and SR 73 (compared to predicted Yr. 2030 No Build accidents)</td>
<td>--</td>
<td>21% Reduction</td>
<td>28% Reduction</td>
<td>49% Reduction</td>
<td>52% Reduction</td>
<td>54% Reduction</td>
<td>53% Reduction</td>
</tr>
</tbody>
</table>
Table 4 illustrates transportation benefits, i.e., how each alternative plan will perform in terms of level of service based on the proposed improvements within each alternative. Level of Service is a quantitative and qualitative measure of traffic operations and conditions taking into account the effect of several factors including: traffic, truck volumes, speed, traffic interruptions, safety, and operating costs. Level of Service is rated from A to F, with A being the highest level, and C being the generally accepted standard.

<table>
<thead>
<tr>
<th>Alternatives:</th>
<th>Do Nothing / No Build</th>
<th>1A</th>
<th>1B</th>
<th>2A</th>
<th>2B</th>
<th>3A</th>
<th>3B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of US 27 and SR 73 in the NBTS with unacceptable* Level of Service (does not include US 27 or SR 73 within corporate limits of Oxford)</td>
<td>41%</td>
<td>37%</td>
<td>12%</td>
<td>12%</td>
<td>12%</td>
<td>13%</td>
<td>13%</td>
</tr>
<tr>
<td>Projected change in through volumes from No Build on existing streets within corporate limits of Oxford**</td>
<td>----</td>
<td>2% Increase</td>
<td>7% Increase</td>
<td>10% Reduction</td>
<td>10% Reduction</td>
<td>11% Reduction</td>
<td>15% Reduction</td>
</tr>
<tr>
<td>Projected change in traffic volumes from No Build on existing SR 73 within corporate limits of Oxford</td>
<td>----</td>
<td>2% Reduction</td>
<td>11% Reduction</td>
<td>18% Reduction</td>
<td>26% Reduction</td>
<td>30% Reduction</td>
<td>34% Reduction</td>
</tr>
</tbody>
</table>

* = Levels of D, E or F are considered unacceptable for roads in the Northwest Butler County area.
** = based on an average of daily traffic on US 27 (High) and Chestnut Street.

As the cost estimates in Table 5 illustrate, the alternative plans all involve substantial cost. Potential implementation of any major improvement or component of the recommended plan will require a combination of local, state and federal funding, and without a strong basis in addressing the project’s stated purpose and need, funding will be denied.

<table>
<thead>
<tr>
<th>Alternatives:</th>
<th>Do Nothing / No Build</th>
<th>1A</th>
<th>1B</th>
<th>2A</th>
<th>2B</th>
<th>3A</th>
<th>3B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary Cost Estimate (does not include right-of-way acquisition or utility relocation costs)</td>
<td>No Initial Construction Cost</td>
<td>$52 to 63 million</td>
<td>$83 to 104 million</td>
<td>$90 to 110 million</td>
<td>$96 to 118 million</td>
<td>$95 to 116 million</td>
<td>$99 to 122 million</td>
</tr>
</tbody>
</table>
The Committee evaluated the six plans based on each plan’s ability to address the project goals and forecasted travel demand and performance capabilities, compared each to the Do Nothing / No Build alternative and voted to determine a preferred plan to present to the public.

Two plans emerged on top receiving equal votes from the Advisory Committee, Alternatives 1A and 3B, depicted below. The Committee then agreed to present the plans with the highest votes, as well as all six of the considered plans to the public in July 2003 for review and comment.

![Alternatives 1A and 3B](image)

Figure 7: Alternatives 1A and 3B received equal votes in the Advisory Committee vote at the June 2003 Meeting

**Working Towards Consensus**

The Advisory Committee reconvened after the July public workshop to review the public input and to consider the next steps toward reaching a consensus recommended plan. Based on the review of the public input and several possible modifications to the
proposed plans (developed based on that input) presented at the August Advisory Committee meeting, the Committee directed OKI and the project planning team to develop additional information on a new alternative plan, labeled as Alternative 5C as depicted below and in Exhibit 8.

**Alternative 5C** consists of:

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen US 27 to four lanes from SR 128 to Millville
- plus three lane segment on US 27 between Minton Road and McGonigle and between Stillwell Beckett and Chestnut Roads
- plus two lane connector between US 27 and SR 73 and between US 27 and SR 732 (south of Oxford)
- plus consideration of re-routing US 27 over local roads.
VI. DETERMINING A RECOMMENDED PLAN
VI. DETERMINING A RECOMMENDED PLAN

Prior to the September Advisory Committee meeting, additional analysis was completed and sent to the committee members for the new Alternative 5C as compared to the Do Nothing / No Build alternative and Build Alternatives 1A and 3B. The alternative plans considered are not equal in terms of benefit, impact or cost. The following two tables present a comparison of the safety and transportation benefits of each of the three Build Alternative Plans and the Do Nothing / No Build alternative. The same methodology as used in the comparison of the original six alternatives with the Do Nothing / No Build as described above was applied to these tables. The analysis is based on the Year 2030 projected traffic for each scenario using the OKI Regional Travel Demand Model output. The proposed improvements and components of each scenario were input to the model to assess future travel patterns and volumes.

The first table, Table 6, compares the potential safety benefits of each plan with the projected Do Nothing / No Build conditions.

<table>
<thead>
<tr>
<th>Table 6: Safety Benefits</th>
<th>Do Nothing / No Build</th>
<th>Alternative 1A</th>
<th>Alternative 3B</th>
<th>Alternative 5C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential increase or reduction in number of traffic accidents on US 27 and SR 73 (compared to existing accidents)</td>
<td>108% Increase</td>
<td>41% Increase</td>
<td>1% Reduction</td>
<td>17% Increase</td>
</tr>
<tr>
<td>Potential increase or reduction in number of traffic accidents on US 27 and SR 73 (compared to predicted year 2030 Do Nothing / No Build accidents)</td>
<td>--</td>
<td>32% Reduction</td>
<td>52% Reduction</td>
<td>44% Reduction</td>
</tr>
</tbody>
</table>
Similarly, the second table, Table 7, illustrates the comparison of the transportation benefits.

<table>
<thead>
<tr>
<th>Table 7: Transportation Benefit</th>
<th>Do Nothing / No Build</th>
<th>Alternative 1A</th>
<th>Alternative 3B</th>
<th>Alternative 5C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of US 27 in the NBTS with unacceptable Level of Service (does not include US 27 within corporate limits of Oxford)</td>
<td>91%</td>
<td>63%</td>
<td>6%</td>
<td>51%</td>
</tr>
<tr>
<td>Projected change in through volumes from Do Nothing / No Build on existing streets within corporate limits of Oxford*</td>
<td>--</td>
<td>No Change</td>
<td>23% Reduction</td>
<td>16% Reduction</td>
</tr>
<tr>
<td>Projected change in traffic volumes from Do Nothing / No Build on existing SR 73 within corporate limits of Oxford*</td>
<td>--</td>
<td>2% Reduction</td>
<td>30% Reduction</td>
<td>15% Reduction</td>
</tr>
</tbody>
</table>

* = based on average daily traffic on US 27 (High Street) and Chestnut Street.

While Tables 6 and 7 provide important measures of the potential benefits and performance of the alternative plans, another consideration in the decision-making process is the potential cost of implementing the proposed plan. While it was recognized that the plan is long range and would require prioritization of individual components and staging plans for implementation (individual components of the plan would be implemented over the span of the next thirty years), an overall compilation of the full cost of each plan in current dollars was developed for comparison purposes.

Understanding these caveats, the cost estimates can be a factor in helping to evaluate the differences in the plans, particularly when used in conjunction with the comparison of benefits presented in Tables 6 and 7. The following table, Table 8, was presented to the Advisory Committee prior to their consensus discussion and final voting for a preferred strategy.
Table 8: Preliminary Cost Estimates
(costs are in millions of dollars and are based on similar, recent improvements in Ohio; estimates do not include right-of-way costs)

<table>
<thead>
<tr>
<th>Components</th>
<th>Alternative Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1A</td>
</tr>
<tr>
<td>Upgrade (intersections; lane and shoulder widths)</td>
<td>$24.2</td>
</tr>
<tr>
<td>Major Improvements (widening, new alignment)</td>
<td>$33.2</td>
</tr>
<tr>
<td>Service Roads (property access)</td>
<td>$0.0*</td>
</tr>
<tr>
<td>Total (without right of way costs)</td>
<td>$57.5</td>
</tr>
</tbody>
</table>

Notes:
* an additional $2 to 4 million will be required under 1A to address access management (access problems will increase as traffic increases).
** cost of re-routing US 27 over local roads not included

NBTS Advisory Committee Consensus on a Preferred Strategy

The Northwest Butler Transportation Advisory Committee met on September 10, 2003 to review three Build alternative long range plans and the Do Nothing / No Build alternative and to vote on advancing a recommended preferred strategy to the OKI Board for incorporation into the OKI Regional Transportation Plan.

Before making a final recommendation, the Committee members acknowledged the following key points:

- The recommended plan is a long range plan intended to serve as the guide to accommodating not only the area’s existing needs but also the future transportation needs to the year 2030. Potential staging of the implementation of parts of the plan over the 30 year period is a given, but the full realization of the plan is long range.

- The Year 2030 Do Nothing / No Build alternative is an important component of the comparison of Build alternatives. However, in short, the No Build alternative fails to address the project’s established goals. As discussed in previous meetings, the population of the area is growing and significant population growth is projected for this area over the next thirty years. Projected traffic demand will increase significantly even without any transportation improvements to the existing system
exacerbating the identified existing problems, undermining the ability to support land use plans and goals and resulting in extensive changes in the area’s character.

- The purpose and need and goal statements established by the Committee are the backbone of the comparison of alternatives and the foundation of determining a recommended plan (see Appendix D). Failure to meet the project’s stated purpose and need is the first basis of eliminating an alternative from consideration. Potential implementation of any major improvement will require a combination of local, state and federal funding, and without a strong basis in addressing the project’s stated purpose and need, funding will be denied.

- The environmental analysis presented in this planning study is an overview level study based primarily on available secondary source studies, with a limited amount of field verification and survey (see Appendix B), and as such represents a very preliminary assessment of the likelihood of impact on environmental resources, features and issues. Any advancement of any alternative (or any major component of an alternative) will require a more in-depth environmental assessment of impact and investigation of potential mitigation opportunities and requirements. Any major improvement requiring federal funding, will require in-depth environmental impact assessment to comply with the National Environmental Policy Act (NEPA) and applicable state regulations.

- The components of the alternative plans under consideration are not highway alignments or detailed plans (locational studies are not included in this stage of planning), but the plan components do represent potential areas or corridors that could accommodate the development of intersection and roadway alignments.

- As determined by the Advisory Committee, re-alignments of US 27, either east or west of Oxford, are understood to be a limited or controlled access, tree-lined parkway type facility with a limited number of intersection access points, and specifically designed to support the adopted future land use plans of the areas traversed. Driveways will not be permitted access to the facility and roads not provided an intersection for access will need to be handled as over or under passes or re-connected to the nearest intersection. In other words, neither the west or east re-alignments are intended nor are to be designed to
encourage commercial (or other non-residential) growth outside the Oxford corporate area.

- The four lane widening of US 27 south of Oxford has been analyzed under two possible conditions for consideration at this stage of study (recognizing that detail studies would be needed in either case to fully evaluate benefits and costs). The two conditions evaluated are (see Figure 8):
  - Widening on the existing centerline, i.e., adding two additional lanes the existing two lane US 27, and providing a network of parallel service roads on each side to provide access to the abutting properties (i.e., driveway access to a four lane facility will be prohibited).
  - Constructing a four lane parallel road east or west (or a combination) of US 27, and then transforming the existing US 27 to a service road to provide access to the existing properties that abut it. Some network of parallel service road may still be needed for the opposite side of the new facility to provide access to those existing properties.

All the three Build plans include a common base consisting of the following improvements:
- TSM and Upgrade Package: lane and shoulder upgrades on US 27, SR 73 and SR 177, and critical intersection improvements throughout study area, and the US 27 re-alignment around Millville. As such, all three alternatives

![Figure 8: Schematic depiction of four lane conditions evaluated.](image-url)
do address some of the project goals, specifically in addressing the study’s identified problem intersections and roadway segments and correcting system deficiencies. However, the evaluation tables for each alternative do re-iterate the benefits and impacts of these improvements even though common to all plans under consideration.

It is also important to note that the current OKI Regional Transportation Plan already includes several proposed transportation improvement projects located in the NBTS area:

- the improvement of approximately 2 miles of US 27 north of the City of Oxford (widen to three lanes, sidewalks and signal improvement),
- the development of a shared use (bicycle and highway) corridor around the City of Oxford, and
- the construction of a park-and-ride facility along US 27 near the City of Oxford.

The Ohio FY 2004-2007 Statewide Transportation Improvement Program (STIP) as part of OKI’s Draft FY 2004-2007 Transportation Improvement Program, includes: 1) the improvement of approximately 2 miles of US 27 north of the City of Oxford (widen to three lanes, sidewalks and signal improvement), and 2) the construction of approximately 0.8 mile of bikeway from Brookville Road to Fairfield Road on the west side of the City of Oxford.

After reviewing a comparison of the safety and transportation effects or benefits of each of the alternatives, and consideration of each alternative’s ability to address the project goals established by the Committee, the Committee eliminated the least preferred alternatives through a series of votes, and then voted for a preferred between the two remaining alternatives. In the final vote, the Committee selected Alternative 5C to be recommended to the OKI Board. The recommendation of this plan was based on the conclusion that it most effectively addressed the project’s goals and purpose and need elements (see Section VII and Appendix D for more on purpose and need).

It was noteworthy that 29 of the 32 Committee votes were for major transportation improvements in the Northwest Butler County area (three abstained from the final vote). In that all three Build alternatives shared several major improvements, the overwhelmingly strong Committee consensus and support for recommending the following common improvements is also significant:

- Upgrade lane and shoulder widths of critical portions of US 27, SR 73 and SR 177;
- Upgrade critical intersections identified in this study;
- Re-align US 27 west of Millville; and
- Re-align SR 129 in Millville area.

The recommended long range plan, Alternative 5C is illustrated in Exhibit 8.
VII. CONCLUSION AND NEXT STEPS
VII. CONCLUSION AND NEXT STEPS

At the close of the September meeting, the Advisory Committee Chairman Ken Bogard expressed his thanks and appreciation for all the time and dedicated participation of the Committee members and for the work of the project consultants, Balke American, for conducting and presenting the planning and engineering technical studies, and ME Companies and HUB Communications for their work in guiding the public involvement effort, and the OKI staff, for their effective direction of the study. In turn, the NBTS Study Team wishes to thank Ken for his devoted Committee leadership for this important study.

The findings of the Northwest Butler Transportation Study, including the Advisory Committee’s recommendation of Alternative 5C, were presented to the Ohio Kentucky Indiana Regional Council of Governments (OKI) Board of Trustees on Thursday, October 9, 2003. Resolution 2003-49 adopting the study findings and recommendation, was approved by the Board. In addition, the City of Oxford passed a resolution (Resolution 3941) in support of the recommendation on September 16, 2003. Endorsement letters were also received from Miami University and McCullough-Hyde Memorial Hospital (see Appendix C for copies of resolutions and endorsements). Projects from this study will compete against other projects for inclusion in the OKI Regional Transportation Plan.

Once incorporated into the Regional Transportation Plan, components of the recommended strategy can be advanced towards further development and implementation.

Prioritization of NBTS Recommended Plan Components

At the completion of this study, the components of the recommended plan were prioritized based on Advisory Committee and public input and project team review and are listed in Table 9.

<table>
<thead>
<tr>
<th>Table 9: Northwest Butler Transportation Plan Priorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Upgrades to Existing Network:</td>
</tr>
<tr>
<td>a. Intersection upgrades, study area-wide,</td>
</tr>
<tr>
<td>b. Upgrade lane and shoulder width, SR 73, US 27 to US 127,</td>
</tr>
<tr>
<td>c. Upgrade lane and shoulder width, SR 177, SR 30 to SR 73;</td>
</tr>
<tr>
<td>2. New 2 lane connector northeast, US 27 to SR 73;</td>
</tr>
<tr>
<td>3. Widen US 27 from 2 to 3 lanes, Stillwell-Beckett to Chestnut;</td>
</tr>
<tr>
<td>4. Widen US 27 from 2 to 3 lanes, Minton to SR 130;</td>
</tr>
<tr>
<td>5. New 4 lane US 27 alignment, Millville;</td>
</tr>
<tr>
<td>6. Widen US 27 from 2 to 4 lanes, SR 128 to Millville;</td>
</tr>
<tr>
<td>7. New 2 lane connector southwest, US 27 to SR 732;</td>
</tr>
</tbody>
</table>
Intersection Upgrades Priority

In addition, the intersection upgrades under the first priority component listed in Table 9 were further prioritized based on traffic demands, accident history and public input. The following table, Table 10, presents the priority ranking.

**Table 10: Northwest Butler Transportation Plan Intersection Upgrade Priorities**

1. SR 73 at SR 177
2. US 27 at Stillwell Beckett Road
3. US 27 at Hamilton New London Road
4. SR 732 at Stillwell Beckett Road
5. SR 73 and US 127 (north)
6. US 27 and SR 129 (north)
7. US 27 and SR 129 (south)
8. US 27 and Spring Street
9. Stillwell Beckett Road and Pierson Road
10. SR 73 and US 127 (south)
11. US 27 and SR 130
12. US 27 and SR 128
13. SR 177 and Scott Road
14. SR 130 and SR 177

The Project Purpose and Need Established

One of the primary purposes of the Northwest Butler Transportation Study was to establish the Purpose and Need for advancing the recommended plan towards implementation. A Purpose and Need Statement is required for all federally funded transportation projects. As part of ODOT's Project Development Process, the initial drafting of the Purpose and Need statement occurs during planning studies and is considered a dynamic document that to be continually refined as a project or plan advances into the next stages of study, the environmental impact assessment stage, or the National Environmental Policy Act (NEPA) studies. Appendix D consists of the Northwest Butler Transportation Plan Purpose and Need Statement developed in this study.
Appendix A: Advisory Committee Actions and Record of Decision
Northwest Butler Transportation Study
Advisory Committee Record of Decision, December 2000 to September 2003

Between the Summer of 2000 and the Fall of 2003, the stakeholders of Northwest Butler County regularly convened in meetings of the NBTS Advisory Committee. During this time span, over twenty-five committee meetings were held, all at locations within the NBTS area and all advertised and open to the public. These Advisory Committee meetings were conducted as working sessions involving presentations and reviews of various aspects of the study in progress, roundtable discussions, group interactive exercises and surveys all designed to encourage a full exchange of ideas, perspectives and debate on important transportation related issues in the area. The process was a successful means of considering both quantitative technical data and analysis findings and qualitative values and judgment, which culminated in consensus building toward a final plan recommendation. OKI kept meeting minutes and copies of materials distributed at the meetings. The following table highlights the actions and activities of the Advisory Committee through the official documentation of the motions and decisions made in determining a recommended strategic plan for Northwest Butler County.

Official Record of Decision (compiled by OKI)

<table>
<thead>
<tr>
<th>Record of Decision</th>
<th>Description</th>
<th>Motion</th>
<th>Second</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROD #1 December 6, 2000</td>
<td>Draft Problems, Needs, and Goals</td>
<td>Judy Proeschel</td>
<td>Ken Reed</td>
<td>Motion carried.</td>
</tr>
<tr>
<td>ROD #2 February 14, 2001</td>
<td>Problem, Needs, and Goals Statement</td>
<td>William Renwick</td>
<td>Michael Juengling</td>
<td>Motion carried</td>
</tr>
<tr>
<td>ROD #3 April 4, 2001</td>
<td>Public Involvement Plan</td>
<td>Sally Southard</td>
<td>Jane Howington</td>
<td>Motion carried</td>
</tr>
<tr>
<td>ROD #4 August 8, 2001</td>
<td>Alternative Evaluation</td>
<td>Harry Fillager</td>
<td>Steve Snyder</td>
<td>Motion carried with two opposed. Parking Management and Alternative Work Schedules were added to the motion by an amendment by Steve Snyder, seconded by Jane Howington. The amendment passed with two opposed.</td>
</tr>
<tr>
<td>ROD #5 November 7, 2001</td>
<td>Scenarios to be Evaluated</td>
<td>Robert Kimbrough</td>
<td>Richard Daniels</td>
<td>Motion carried.</td>
</tr>
</tbody>
</table>
## Appendix A: Advisory Committee Actions and Record of Decision

### A Recommendation of a Preferred Strategy For a Long Range Transportation Plan for Northwest Butler County, Ohio

January 2004

<table>
<thead>
<tr>
<th>Record of Decision</th>
<th>Description</th>
<th>Motion</th>
<th>Second</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROD #6</td>
<td>Preliminary Travel Model Output Results</td>
<td>Motion to combine scenarios 2, 3, and 4 into one option.</td>
<td>Steve Snyder</td>
<td>Bob Ison</td>
</tr>
<tr>
<td>ROD #7</td>
<td>Preliminary Travel Model Output Results</td>
<td>Motion to further consider scenarios 7, 8, and 9.</td>
<td>Steve Snyder</td>
<td>Dave Prows</td>
</tr>
<tr>
<td>ROD #8</td>
<td>Preliminary Travel Model Output Results</td>
<td>Motion that the options previously identified as 7A and 9A be included with the scenarios for further consideration.</td>
<td>Robert Kimbrough</td>
<td>Steve Snyder</td>
</tr>
<tr>
<td>ROD #9</td>
<td>Preliminary Travel Model Output Results</td>
<td>Motion to eliminate scenario 6 from further consideration.</td>
<td>Steve Snyder</td>
<td>Dave Prows</td>
</tr>
<tr>
<td>ROD #10</td>
<td>Preliminary Travel Model Output Results</td>
<td>Motion to consider scenario 10 only in combination with scenarios 7, 8, or 9.</td>
<td>Dave Hysell</td>
<td>Steve Snyder</td>
</tr>
<tr>
<td>ROD #11</td>
<td>Alternative Vehicular Accident Estimates</td>
<td>Motion to reinstate alternative 6 for future consideration.</td>
<td>William Renwick</td>
<td>Greg Wilkens</td>
</tr>
<tr>
<td>ROD #12</td>
<td>Review of Preliminary Alternatives</td>
<td>Motion to eliminate the US 27 Reroute over Local Road Network alternative from further consideration.</td>
<td>Steve Snyder</td>
<td>Robert Kimbrough</td>
</tr>
</tbody>
</table>
| ROD #13            | Addition of Build Alternatives | Motion that in addition to no build and a 4-lane road between SR 128 and Oxford, the following build alternatives be considered:  
  2a: west of the airport re-alignment around Oxford  
  2b: west of the airport re-alignment around Oxford and US 27 (south) connection to SR 73  
  3a: east re-alignment around Oxford  
  3b: east re-alignment around Oxford and US 27 (south) connection to SR 732 | Jim Haley       | Bob Ison          | Motion carried. |
# Appendix A: Advisory Committee Actions and Record of Decision

## A Recommendation of a Preferred Strategy For a Long Range Transportation Plan for Northwest Butler County, Ohio

January 2004

<table>
<thead>
<tr>
<th>Record of Decision</th>
<th>Description</th>
<th>Motion</th>
<th>Second</th>
<th>Comments</th>
</tr>
</thead>
</table>
| ROD #14 | **April 16, 2003** | **Build Alternatives for Consideration** Motion that 3 build alternatives should be considered:  
- 1a: Roadway improvements along US 27 and other routes as necessary to improve safety  
- 1b: Re-alignment and 4-lane capacity of US 27 from SR 128 to Oxford  
- 2a: West re-alignment around Oxford  
- 2b: West re-alignment around Oxford plus connection of US 27 (south) to SR 73  
- 3a: East re-alignment around Oxford  
- 3b: East re-alignment around Oxford plus connection of US 27 (south) to SR 732  
(Alternatives 2a, 2b, 3a, and 3b all assume that Alternative 1b will be included) | Jim Haley | Robert Kimbrough | Motion carried |
| ROD #15 | **June 11, 2003** | **Non-Binding, Straw Vote of Locally Preferred Strategy** Motion to take a non-binding, straw vote to get an idea where the committee stands. | Steve Snyder | Bill Renwick | Roll call vote:  
Alternative 1A – 12 votes  
Alternative 1B – 1 vote  
Alternative 3B – 13 votes |
| ROD #16 | **June 11, 2003** | **Motion to Vote** Motion that a vote be taken on Alternatives 1A and 3B. | Steve Snyder | Richard Daniels | Motion carried. |
| ROD #17 | **June 11, 2003** | **Locally Preferred Strategy** Motion that a binding vote be taken on Alternatives 1A and 3B. | Steve Snyder | Bob Kimbrough | Roll call vote:  
Alternative 1A – 13 votes  
Alternative 3B – 13 votes |
<p>| ROD #18 | <strong>August 6, 2003</strong> | <strong>Modification of Alternatives</strong> Motion that a modified alternative be considered which combines Alternative 1A to extend three lanes to Oxford then Alternative 3B around Oxford, which includes a two-lane, tree lined, highly restricted roadway by-passing to the east of Oxford. | Bob Kimbrough | Steve Snyder | Motion carried. Amended motion to modify Alternative 3B to include three lanes from Milville to Oxford, with the by-pass remaining the same as previously defined. Motion withdrawn. |
| ROD #19 | <strong>August 6, 2003</strong> | <strong>Alternatives to Consider</strong> Motion that Alternatives 5C, 1A, and 3B be considered for further evaluation. | Steve Snyder | Mike Juengling | Motion carried. The motion passed unanimously. |</p>
<table>
<thead>
<tr>
<th>Record of Decision</th>
<th>Description</th>
<th>Motion</th>
<th>Second</th>
<th>Comments</th>
</tr>
</thead>
</table>
| ROD #20 August 6, 2003 | Voting Procedure  
Motion that a voting scheme be crafted in such a way so that at the end there must be a majority of votes present. | Jim Haley  
Mike Juengling |         | Motion carried.            |
| ROD #21 September 10, 2003 | Final Vote (32 voting members present)  
Round 1: Elimination (least preferred)  
No Build: 29 votes  
Alternative 1A: 1  
Alternative 3B: 1  
Alternative 5C: 0  
Abstain: 1  
Round 2: Elimination (least preferred)  
Alternative 1A: 15 votes  
Alternative 3B: 13  
Alternative 5C: 3  
Abstain: 1  
Round 3: Vote for preferred alternative.  
Alternative 3B: 14 votes  
Alternative 5C: 15  
Abstain: 3 | | | No Build alternative determined least preferred.  
Alternative 1A eliminated.  
Alternative 5C was selected as the alternative to recommend to the OKI Board of Trustees. |
Appendix B: Environmental Inventory
Environmental Inventory

An important part of this study was the inventory of Northwest Butler County’s environmental features and resources including identification and accurate mapping using secondary source information that included mapping, publications, and coordination with the following: a) United States and Ohio Environmental Protection Agency, b) Ohio Department of Natural Resources, c) United States Department of Agriculture, d) United States Department of the Interior Fish and Wildlife Service, e) United States Geological Survey (USGS), f) State and local agencies, g) Miami University, and h) other organizations and pertinent publications.

Secondary source information was used to identify and map such significant environmental features as: streams; wetlands; locations of state and federal listed threatened and endangered species; location of the Great Miami Buried Valley Aquifer System; Wellhead Protection Areas; locations of Public Water Service / Supply Wells; locations of Federal Emergency Management Agency (FEMA) mapped 100-year floodplains; locations of parks, preserves, and designated natural areas; and the locations of cultural, historic, and archaeological resources.

All information collected was fully documented and mapped to the Butler County GIS (Geographic Information System, electronic map files) base to be available for use in any advancement of this study into more detailed plan implementation. As the study progressed, this preliminary environmental inventory was referenced in gauging the feasibility of alternative improvements in terms of potential impact or avoidance or minimization of impact. The exhibit included at the end of this appendix is a simplified reproduction of the environmental inventory mapped in GIS.

Ecological, Natural and Man-made Resources
A summary of the primary resources and features in the NBTS area is presented below.

Surface Streams
Forty USGS named and/or perennial blue line surface streams exist in the NBTS area. Four of the streams, including Indian Run, Salmon Run, Four Mile Creek (from river mile 0.4 to 13.0), and Seven Mile Creek, have been given Exceptional Warm Water Habitat use designations by the Ohio Environmental Protection Agency (OEPA). Additionally, two streams, Indian Run and Salmon Run, have been given State Resource Water designations by the OEPA.

All surface streams located in the NBTS area are in the Great Miami River Drainage Basin. Most small stream features (except Dry Run and Two Mile Creek) drain either into the Four Mile Creek or the Indian Creek sub-basins of the Great Miami River Drainage Basin. Dry Run and Two Mile Creek drain into the Great Miami River and are a part of the Great Miami River Drainage Basin.

National Wetland Inventory (NWI) Mapped Wetlands
A total of 160 NWI mapped wetlands occur in the study area. The majority of NWI-mapped wetlands are concentrated along the floodplain of Four Mile Creek in the northern portion of the NBTS area, or along Indian Creek in the southern portion of the NBTS area. Based on visual approximation, typical wetland sizes appear to range from <1 to 10 acres in size. The wetlands located in 100-year floodplains of the NBTS area streams are mostly forested, scrub-shrub, or
emergent features. Upland wetlands are mostly aquatic bed and emergent features predominantly associated with ponds.

**Federal and State Threatened and Endangered Species**
A total of 13 occurrences of 9 State Threatened or Endangered Species are known within the NBTS area, and habitat for one Federal Endangered Species is also known to occur within the NBTS area.

Potential summer habitat for the one Federal Endangered Species, Indiana bat (*Myotis sodalis*), is likely to occur scattered throughout the NBTS area, particularly along Indian Creek, Four Mile Creek and Seven Mile Creek. Four occurrences of the State Threatened snowy camphion (*Silene nivea*) and one occurrence (each) of the State Endangered soft-leaved arrowwood (*Viburnum molle*), Missouri gooseberry (*Ribes missouriense*), and five-angled dodder (*Cuscuta pentagona*) are known along or immediately adjacent to Four Mile Creek. Two occurrences of the State Threatened Sloan’s crayfish (*Orconectes sloanii*) are known in Indian Creek. One occurrence (each) of the State Threatened nodding rattlesnake root (*Prenanthes crepidinea*) and upland sandpiper (*Bartramia longicauda*) are known on the Miami University main campus and at the Miami University Airfield, respectively. One occurrence of the State Threatened tongue-tied minnow (*Exoglossum laurae*) is known in Seven Mile Creek and one occurrence of the State Potentially Threatened wetland plant Southern wapato (*Lophocarpus calycinus*) is known just north of the City of Hamilton and just west of Four Mile Creek.

**Great Miami / Little Miami Buried Valley Aquifer System**
The Great Miami/Little Miami River Buried Valley Aquifer System is designated as a Sole Source Aquifer (SSA) by the United States Environmental Protection Agency (USEPA). This aquifer system underlies about 18 % (14,749 acres) of the NBTS area. The aquifer is divided into two separate classes (Class I and Class II) based on wellhead production amounts.

Class I portions of the aquifer (expected to produce >75 gpm from developed wells) occur along Four Mile Creek east of the City of Oxford, in the eastern portion of the NBTS area along Four Mile and Seven Mile Creeks, and at the convergence of Indian and Dry Run Creeks in the southern portion of the NBTS area. Approximately 4,156 acres of Class I Sole Source Aquifer exists within the NBTS area.

Class II portions of the aquifer (expected to produce < 75 gpm from developed wells) occur along the entire length of Four Mile Creek through the northern portion of the NBTS area, along northern portions of Seven Mile Creek, west of the City of Hamilton associated with the Great Miami River, and along Indian Creek across the southern portion of the NBTS area. Approximately 10,603 acres of Class II Sole Source Aquifer exists within the NBTS area.

**Wellhead Protection Areas**
The NBTS area encroaches upon a total of approximately 1,468 acres of five OEPA recognized Wellhead Protection Areas (WHPA’s). These five WHPA’s include the Southwestern Ohio Water Company WHPA, Joint Hamilton-Fairfield WHPA, Hamilton North Wellfield WHPA, Oxford-Seven Mile Creek WHPA, and the City of Oxford WHPA. The Oxford-Seven Mile Creek and the City of Oxford WHPA’s are located in the northeastern and northern portions of the NBTS area, respectively, and are completely within the project study area boundary. The Southwestern Water Company, Joint Hamilton-Fairfield, and Hamilton North Wellfield WHPA’s...
are located in the southern and southeastern portions of the NBTS area and are only partially within the project study area boundary.

**OEPA Public Water Service Wells**
A total of 23 OEPA recognized Public Water Service wells are located in the NBTS area with the majority of the wells concentrated in the southern and southeastern portions of the study area. Several wells are located in the eastern portion of the NBTS area close to the Village of Seven Mile, while the remaining wells are located near the City of Oxford.

**FEMA Mapped 100-Year Floodplains**
A total of five streams with approximately 37 stream miles of Federal Emergency Management Agency (FEMA) identified 100-year floodplain are located within the NBTS area. FEMA 100-year floodplain exists in the NBTS area along Indian Creek, Seven Mile Creek, Four Mile Creek, Collins Run, Bull Run, and Two Mile Creek. The average width of the 100-year floodplain in the NBTS area is approximately 1,600 feet with an approximate range from 440 to 3,400 feet (measured from the center of each stream).

**Public or Semi-Public Lands and Other Recreational Areas**
A number of parks, preserves and other public (or semi-public) lands are located in the NBTS area. Additionally, several golf courses are located in the project study area. A total of 12 parks, 7 preserves, 3 golf courses, 1 university and 1 airfield are found in the NBTS area. A list of these 24 sites is presented in the following table.

<table>
<thead>
<tr>
<th>Table 1: Public or Semi-Public Lands and Other Recreational Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonham Road Park</td>
</tr>
<tr>
<td>Bunker Hill Universalist Pioneer Cemetery (Butler County MetroPark)</td>
</tr>
<tr>
<td>Hamilton Fire Fighters Park</td>
</tr>
<tr>
<td>Hanover Memorial Park</td>
</tr>
<tr>
<td>Hueston Woods State Park</td>
</tr>
<tr>
<td>Immanuel Evangelical Park</td>
</tr>
<tr>
<td>Leonard Howell Park</td>
</tr>
<tr>
<td>Milford Township Community Center And Ballpark</td>
</tr>
<tr>
<td>Milford E. Dot Ballpark</td>
</tr>
<tr>
<td>Miami University</td>
</tr>
<tr>
<td>Miami University airfield</td>
</tr>
<tr>
<td>Ecological Research Center</td>
</tr>
</tbody>
</table>
Cultural Historic Resources
A total of 13 properties on the National Register of Historic Places have been identified in the NBTS area. A tabular summary of the 13 National Register historic properties is presented in the following table.

<table>
<thead>
<tr>
<th>Name</th>
<th>Vicinity</th>
<th>Location</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beckett-Manrod House</td>
<td>Hamilton</td>
<td>2019 Stillwell-Beckett Road</td>
<td>Building</td>
</tr>
<tr>
<td>Matthew Hueston House</td>
<td>Hamilton</td>
<td>1320 Four Mile Creek Road</td>
<td>Building</td>
</tr>
<tr>
<td>Cochran Farm</td>
<td>Millville</td>
<td>2900 Ohio SR 129</td>
<td>Building</td>
</tr>
<tr>
<td>Dr. William S. Alexander House</td>
<td>In Oxford</td>
<td>22 N. College Avenue</td>
<td>Building</td>
</tr>
<tr>
<td>Elliott and Stoddard Halls, Miami U.</td>
<td>In Oxford</td>
<td>Miami University campus</td>
<td>Building</td>
</tr>
<tr>
<td>Elias Kumler House</td>
<td>In Oxford</td>
<td>120 S. Main Street</td>
<td>Building</td>
</tr>
<tr>
<td>Langstroth Cottage</td>
<td>In Oxford</td>
<td>303 Patterson Avenue</td>
<td>Building</td>
</tr>
<tr>
<td>Henry Maltby House</td>
<td>In Oxford</td>
<td>216 E. Church Street</td>
<td>Building</td>
</tr>
<tr>
<td>William H. McGuffey House</td>
<td>In Oxford</td>
<td>401 E. Spring Street</td>
<td>Building</td>
</tr>
<tr>
<td>Oxford Female Institute</td>
<td>In Oxford</td>
<td>High St. and College Avenue</td>
<td>Building</td>
</tr>
<tr>
<td>Hunting Lodge Farm</td>
<td>Oxford</td>
<td>5349 Bonham Road</td>
<td>Building</td>
</tr>
<tr>
<td>Lane’s Mill Historic Buildings</td>
<td>Oxford</td>
<td>3884 Wallace Road</td>
<td>District</td>
</tr>
<tr>
<td>Black (Pugh’s Mill) Covered Bridge</td>
<td>Oxford</td>
<td>North of Oxford off SR 732</td>
<td>Structure</td>
</tr>
</tbody>
</table>
Social and Economic Characteristics

The following summarizes demographic data for the study area compared to county figures. Since census tracts do not fit the study area boundaries, tracts that have all or some area located within the boundaries were included in the demographic data. Data for a total of 17 census tracts were compiled for the NBTS area. Data by townships is also used in the following analysis where noted.

**Total Population (from 2000 Census Tract Data)**
Based on 2000 census figures, the total population for the NBTS area was 79,427 (the total population within the 17 census tracts evaluated), which is 24% of Butler County’s total population for 2000. The population for the NBTS area grew 4.7% from 1990, though the NBTS area population did not grow as fast as other areas within the county (the NBTS area represented 26% of the county’s population in 1990, which shows that areas outside the NBTS area slightly outpaced the 4.7% population increase that took place within the study area).

The general population concentrations in the NBTS area are located in the City of Oxford and areas north of the City of Hamilton. According to the 2000 Census, the population of the City of Oxford was 21,943, which is a 15.9% increase from the 1990 Census. In the same time frame, Butler County’s population increased 14.2% (to 332,807 persons). It should be noted that Oxford’s population includes the student population at Miami University.

The 1990, 2000 and projected 2030 total population for the eight townships and the City of Oxford is shown in this table.

Oxford Township was the most populated in the year 2000 with 24,133 persons (primarily from the City of Oxford and the student population of Miami University).
The remaining townships have mostly rural populations. Comparing 2000 census data to 1990 census data, Oxford Township (including the City of Oxford) grew at the highest rate (4.5%), while St. Clair Township was the only NBTS area township to lose population between 1990 and 2000 (Note: Oxford Township, excluding the City of Oxford, also lost population between 1990 and 2000).

Comparing 2000 township census data to projected 2030 population figures (developed by the Ohio Department of Development and OKI), substantial population increases are expected in Ross Township (southernmost portion of the NBTS area) and Hanover Township (the heart of the NBTS area, including the communities of Millville and McGonigle). Populations in these two townships are expected to more than double by 2030. Population increases are also expected in the other six NBTS area townships by 2030, though at more moderate levels. While the 2030 population of the City of Oxford is estimated to slightly drop, the population shift is expected to be absorbed by neighboring rural townships (which is partially responsible for the expected increase in NBTS area township population by 2030).

**Housing and Income (from 2000 Census Tract Data)**

According to 2000 Census data, a total of 29,080 housing units are located in the NBTS area, 96% of which are being occupied. This data is similar to data for all of Butler County, in which 95% of housing units are occupied. Of the occupied housing units in the NBTS area, a total of 69% were owner-occupied and 31% were renter-occupied. The 69% owner-occupied housing was lower than the overall Butler County percentage, which was at 76%. In 2000, more than 60% of the housing units in Oxford Township were renter-occupied, indicating that the student population at Miami University substantially influences the renter-occupied housing data for the NBTS area.

The median household income in 2000 in the NBTS area was $40,273. Overall, the median household incomes of the different census tracts were either slightly higher or lower than the Butler County median household income of $47,885.

**Employment (from 2000 Census Tract Data)**

In 2000, the total number of residents in the study area in the civilian labor force was 40,099. The total unemployment rate for the study area was 5.1%, which is higher than the county. According to the 2000 Census, the unemployment rate for Butler County was 4.0%. The study area has a mixture of manufacturing and services industries. Educational services were dominant in Oxford due to the presence of Miami University.

**Racial Composition (from 2000 Census Tract Data)**

According to the 2000 Census figures, 95% of the NBTS area is white, and the overall racial composition of the NBTS area is similar to that of Butler County. The two largest groups of minorities are black and Asian. These minority populations are concentrated in the City of Oxford and Village of New Miami. Further discussion of racial composition in the NBTS area is also included in the following section on Environmental Justice.
Environmental Justice
The Federal-aid Highway Act of 1970 and Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations requires that all segments of the population be included in the planning process to promote nondiscrimination in Federal Programs. This Order directs every federal agency to make environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of their policies, programs, and activities on minority and low-income populations.

In order to address potential environmental justice issues and identify the target populations in the NBTS area, a detailed analysis by census tract and block group was performed. The data was used to identify minority and low income populations as compared to county averages. Low-income populations include all persons below the poverty level. Minority populations include blacks, Hispanics, Asian-Americans (including persons with origins in the Pacific Islands), American Indians, and Alaskan Natives.

According to 2000 Census data, 9.1% of people in Butler County had an income below the poverty level, and 9.5% of people in Butler County were of a minority race. A number census block groups in the NBTS area have higher percentages of minority persons and persons living below the poverty level than the Butler County average. These block groups are located in and around the City of Oxford and at the southeast edge of the study area (near the City of Hamilton).
REFERENCES

Cultural, Historic, and Archaeological Resources and Land Use Data Sources


Hanover Township police and fire district information, and map of other public land: Bill Cropenbaker, Administrator for Hanover Twp.

Oxford Township police and fire district information: Wayne Hall, police chief and road Superintendent.

Reily Township fire district information: Reily Township Administration office.

Ross Local School District map: Ross Local School District board of education.

Ross Township police and fire district information: John Dozier, Police Chief, and Teddy Patterson, Fire Chief.
Appendix B: Environmental Inventory
A Recommendation of a Preferred Strategy For a Long Range Transportation Plan for Northwest Butler County, Ohio
January 2004


Environmental Data Sources

Streams

Ohio Administrative Code. Ohio Water Quality Standards 3745-1-21 (Great Miami River Basin)

Wetlands

Threatened and Endangered Species Federal and State
Ohio Department of Natural Resources / Division of Natural Areas and Preserves. Natural Heritage Database. Agency Division Review
  • list of species with USGS coordinates

United States Department of the Interior Fish and Wildlife Service
  • general range of endangered species in the area

Sole Source Aquifer


Ohio Department of Natural Resources. Great Miami/Little Miami River Basins Buried Valley Aquifer System. Sole Source Aquifer Designated and Project Review Area.


Wellhead Protection Areas
Ohio EPA Division of Drinking and Groundwater: Email and fax correspondence for mapped boundaries.
City of Oxford Service Department: David Treleaven, Environmental Specialist. City of Oxford and Oxford-Seven Mile Creek Wellhead Protection Areas.

Public Water Service Wells
- same as Wellhead Protection Areas

FEMA Mapped 100-year Floodplains

ESRI and FEMA Project Impact Hazard Information and Awareness. Flood Hazard Maps. 
www.esri.com/hazards/makemap.html

State Parks, County, Township Public Lands Preserves, Etc.


Butler County Township Officials: Phone conversations for locations of parks, cemeteries, historic places, etc.

Population and Land Use

U.S. Bureau of the Census. 1990 and 2000 population (http://www.census.gov/)

Ohio Kentucky Indiana Regional Council of Governments. Population Projections by Traffic Assignment Zone (http://www.oki.org/)

Ohio Department of Development. Population Projections by County

Butler County Department of Development. Land Use plans, GIS base map. 2002-3.
This map is graphic reproduction of the environmental data compiled, accurately mapped to the Butler County GIS (Geographic Information System) and used in the development, analysis and evaluation of alternatives in this planning study. The GIS base includes an array of other important data also used in this study, ranging from demographics, infrastructure, land use, property survey data and recent aerial photography. During the course of the study, the information on this map was displayed over the aerial photographic base at Committee work sessions and at the public involvement open houses. Due to the extent and size of this data, reproduction for report use is not feasible.
Cultural, Historic & Archaeological Resources

Resources including public or semi-public lands (parks, preserves, natural areas, community centers, churches, schools, and cemeteries), historic architectural structures and property, prehistoric and historic archaeological sites, and Native American sites are protected by federal and state laws. The National Register of Historic Places is a listing of properties that have been determined significant in American history, architecture, archaeology, engineering, or culture, by virtue of design or architectural criteria, association with historical persons and events or value for historic or prehistoric information. There are 13 historic properties listed on the National Register in the study area, and many more may be eligible.

Landmarks

- Miami University Property
  1. Ecological Research Center
  2. Miami University Natural Areas & Preserves
  3. Miami University
  4. University Airfield

- Parks and Recreation
  1. Bonham Road Park
  2. Bunker Hill Universalist Pioneer Cemetery (Butler County MetroPark)
  3. Fitton Wildlife Preserve
  4. Hamilton Fire Fighters Park
  5. Hanover Memorial Park
  6. Hueston Woods State Park
  7. Immanuel Evangelical Park
  8. Indian Ridge Golf Course
  9. Leonard Howell Park
  10. Milford Township Community Center and Ballpark
  11. Milford E. Dot Ballpark
  13. Pater Park Wildlife Preserve
  14. Peffer Park
  15. Seven Mile Community Park
  16. Triangle Memorial Park
  17. Twin Run Golf Course

- Historic Properties
  1. Hunting Lodge Farm
  2. Lane's Mill Historic Buildings
  3. Matthew Hueston House
  4. Beckett-Manrod House
  5. Cochran Farm
  6. Dr. William S. Alexander House
  7. Henry Maltby House
  8. Oxford Female Institute
  9. Elias Kumlert House
  10. William H. McGuffey House
  11. Elliot and Stoddard Halls
  12. Langstroth Cottage
  13. Black (Pugh’s Mill) Covered Bridge

Green Heron Wildlife Sanctuary and Wildlife Habitat Park
Great Miami/Little Miami Buried Valley Aquifer System

This aquifer system is an extensive groundwater supply formed from ancient glacial deposits. It underlies most of southwest Ohio and is the source of all the drinking water supplied by the Public Water Utilities in Butler County.

Ohio EPA Endorsed Public Water Supply Wells

These wells are owned by - or located within - such places as Public Water Supply Utility Companies, subdivisions, mobile home parks, bars, restaurants, grocery and convenient stores, service stations and other public places. Water supplied to the public by these facilities comes from groundwater that must be protected to ensure public safety. There are 24 public water supply wells in the study area.

Wellhead Protection Areas (WHPA)

A Wellhead Protection Area is designated around a wellfield (such as a public water supply utility company) to safeguard the public water supply. Five public water utility companies have partial or entire wellhead protection areas in the study area: the Southwestern Regional Water Company, Joint Hamilton-Fairfield, Hamilton North Wellfield, Oxford-Seven Mile Creek and the City of Oxford.

Aquifer System

- **Sole Source Aquifer**
- **Wellhead Location**
- **Wellhead Protection Areas**
- 1 Year Time of Travel
- 5 Years Time of Travel
- 10 Years Time of Travel
Wetlands

Wetlands are important to human life in that they are havens for wild life, aid in controlling floods, act as natural water purifiers (filters for underground aquifers) and provide places for recreational activities. Wetlands can be ponds, lakes, marshes, bogs, swamps, and similar areas. Through the use of satellite maps, more than 160 wetlands can be identified in the study area. Most of these wetlands range from less than one to two acres in size.

Streams

Streams (creeks, runs, swales, and ditches) are natural channels that carry water off land to larger bodies of water such as the Great Miami River. About 40 permanently flowing streams exist in the study area. Four of these are rated High Quality Streams by Ohio Environmental Protection Agency (OEPA): Indian Creek, Salmon Run, Four Mile Creek and Seven Mile Creek.

Federal Emergency Management Agency (FEMA) 100-Year Floodplains: The 100-year floodplain is a designated zone or width along a stream or river in which a flood is expected to occur once every 100 years (on average, based on stream studies). Floodplains are protected to prevent any increase in the risks or severity of possible future floods and to maintain their natural and ecological benefits. Five streams in the study area have 100-year floodplains: Indian Creek, Four Mile Creek, Seven Mile Creek, Collins Run and Bull Run.

Threatened or Endangered Species

Plants and animals are classified as threatened or endangered by state or federal agencies when their numbers are low or declining due to direct destruction or degradation of suitable habitat. The presence of a threatened or endangered species in an area indicates a better or good quality environment. If these species disappear from an area, it may indicate that environmental conditions have been degraded to levels that other non-threatened or non-endangered animals, livestock and even people, may begin to suffer.

Wetlands

**Environmental Inventory Legend**

![Legend Image]
Appendix C: Recommended Plan Endorsements
Recommended Plan Endorsements

The findings of the Northwest Butler Transportation Study, including the Advisory Committee's recommendation of Alternative 5C, were presented to the Ohio Kentucky Indiana Regional Council of Governments (OKI) Board of Trustees on October 9, 2003. OKI Resolution 2003-49 adopting the study findings and recommendation was approved by the Board. In addition, the City of Oxford passed a resolution, Resolution 3941, in support of the recommendation on September 16, 2003. Endorsement letters were also received from Miami University and McCullough-Hyde Memorial Hospital. Copies of these resolutions and endorsements and included in this appendix.
ITEM#6: ADOPTION OF THE NORTHWEST BUTLER TRANSPORTATION STUDY

BACKGROUND: The Northwest Butler Transportation Study (NBTS) is an in-depth study of the transportation needs and possible solutions to transportation-related problems in an 125 square mile area centered on US 27 and SR 73 in northwest Butler County. The purpose of this study was to determine a recommended long range strategic plan of implementable improvements for future transportation in the NBTS area to forward to OKI for incorporation into the OKI Regional Long Range Plan. On September 10, 2003, the Advisory Committee reached a consensus to advance a recommended plan to the OKI Board.

The intent of the Northwest Butler Transportation Study (NBTS) was to provide a cooperative and collaborative process covering a range of multi-modal alternatives with a long range focus on addressing area transportation needs. The study included a comprehensive evaluation of costs, benefits, and impacts of potential alternatives resulting in a recommended strategy of implementable projects to be considered for incorporation into the OKI Long Range Regional Transportation Plan.

After reviewing a comparison of the safety and transportation effects or benefits of each of the alternatives, and consideration of each alternative’s ability to address the project goals established by the Committee, the Committee eliminated the least preferred alternatives through a series of votes, and then voted for a preferred between the two remaining alternatives. In the final vote, the Committee selected Alternative 5C to be recommended to the OKI Board of Trustees.

ACTION RECOMMENDED: Approval of Resolution OKI 2003-49

EXHIBIT: (1) Resolution OKI 2003-49, (2) Northwest Butler Transportation Study Summary and Preferred Strategy Package
RESOLUTION

OF THE BOARD OF TRUSTEES OF THE
OHIO-KENTUCKY-INDIANA REGIONAL COUNCIL OF GOVERNMENTS

CONCERNING THE ADOPTION OF THE NORTHWEST BUTLER
TRANSportATION STUDY

WHEREAS, the Northwest Butler Transportation Study has been prepared by
the Ohio-Kentucky-Indiana Regional Council of Governments in consultation with the
Ohio Department of Transportation and the Butler County Engineer’s Office; and

WHEREAS, the Northwest Butler Transportation Study is a plan that has been
prepared under the direction of an Advisory Committee representing diverse
perspectives in the public and private sectors and through an extensive public
involvement effort; and

WHEREAS, the Northwest Butler Transportation Study accounts for other
planning initiatives at the corridor, regional and state levels; and

WHEREAS, the Northwest Butler Transportation Study has identified
transportation improvements for the study area located in the western and northern
part of Butler County; and

RESOLVED, that the Board of Trustees of the Ohio-Kentucky-Indiana Regional
Council of Governments at its meeting of October 9, 2003 adopts the Northwest Butler
Transportation Study.

NOW, THEREFORE, BE IT RESOLVED, that the OKI 2030 Regional
Transportation Plan update will consider high priority transportation recommendations
as identified by the Northwest Butler Transportation Study subject to air quality and
fiscal constraint requirements.

KENNETH F. REED, PRESIDENT

BK
10/09/03
September 11, 2003

Mr. James Q. Duane
OKI Executive Director
801-B West Eighth Street
Cincinnati, Ohio 45203

Dear Mr. Duane:

We are writing with regard to the September 10 vote of the Northwest Butler County Transportation Study Advisory Committee. Miami University would like to go on the record that even though we voted for Option 3B, we can fully support the option which carried the majority of the votes, Option 5C. We believe that the research done by Balke Engineers provides a compelling argument for improvements to the roadways in north-west Butler County and Option 5C will take us a long way toward alleviating many of the problems cited in their research. We are disappointed that we will still have a great deal of through traffic coming through the middle of our campus, but many of the traffic problems will be resolved with this solution.

We want to take this opportunity to thank you, Bob Koehler, and Karen Whitaker for your perseverance and your support during this long and arduous process.

Sincerely yours,

Stephen D. Snyder
Executive Assistant to the President and Secretary to the Board of Trustees

Richard M. Norman
Vice President for Finance and Business Services

cc: Kenneth Bogard
    Richard Daniels
    Jim Haley
    Jane Howington
    Robert Koehler
    Karen Whitaker
September 29, 2003

Via fax: 513-621-9325

Mr. Bob Koehler
OKI
720 East Pete Rose Way
Suite 420
Cincinnati, Ohio 45202

Dear Mr. Koehler:

Mayor Bogard requested I send you a copy of Resolution No. 3941 which was passed by Oxford City Council on September 16, 2003.

The Resolution notes Council's support of the Northwest Butler County Transportation Study's Recommendation be included on the OKI Long Range Plan.

Should you have any questions, please feel free to contact me.

Sincerely,

Donna J. Heck
Clerk of Council

djh
RESOLUTION NO. 3941

A RESOLUTION OF SUPPORT FOR INCLUSION OF THE NORTHWEST BUTLER COUNTY TRANSPORTATION STUDY’S RECOMMENDATION ON THE OKI LONG RANGE PLAN.

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF OXFORD, BUTLER COUNTY, STATE OF OHIO, THAT:

SECTION 1: Council recognizes that the Northwest Butler County Transportation Study has been a regional transportation study effort since 1998 with the purpose of proposing a long-range vision for transportation improvements in Northwest Butler County.

SECTION 2: Council is aware that a vote of the Advisory Committee was conducted on September 10, 2003 to determine which one of four alternatives to present to OKI and that the Advisory Committee endorsed, by majority vote, the option referred to as 5C, as shown in Attachment "A".

SECTION 3: Council having determined the importance of improvements in Northwest Butler County, hereby recommends OKI include this project in their long range transportation improvement plan and to do all things possible to secure funding and approvals for the necessary improvements to the transportation system in Northwest Butler County.

SECTION 4: This resolution shall take effect at the earliest date allowed by law.

ADOPTED: September 16, 2003

ATTEST:

VICE MAYOR

CLERK OF OXFORD CITY COUNCIL

INTRODUCED BY: KEN BOGARD

PREPARED BY: LAW(STAFF)
October 2, 2003

James Q. Duane
OKI Executive Director
720 E. Pete Rose Way Suite 420
Cincinnati, OH 45203

Dear Mr. Duane:

I am writing with regard to the September 10th decision/vote of the Northwest Butler County Transportation Study Advisory Committee. I participated as a representative of The McCullough-Hyde Memorial Hospital, Inc., which employs over 500 people and provides services for the populations of five counties in Ohio and Indiana. I voted for Option 3B because over two years of information and study convinced me of the value of that option. However, I can fully support Option 5C which had the majority of the votes.

The research done by Balke Engineers provides a strong argument for improvements to the roadways in northwestern Butler County. Option 5C will address the great majority of them, and the City of Oxford in cooperation with others in our community will have to work on the issues that remain within the City.

I learned a great deal through this process, and I want to thank you, Bob Koehler and Karen Whitaker for your work and support during this effort.

Sincerely,

Richard A. Daniels, CHE
President and CEO
Appendix D: The Northwest Butler Transportation Plan
Purpose and Need Statement
The Northwest Butler Transportation Plan
Purpose and Need Statement

I. BACKGROUND

The Northwest Butler Transportation Study (NBTS) provided an in-depth assessment of the transportation needs and possible solutions to transportation-related problems in a 125 square mile area centered on two major roads, US 27 and SR 73, in northwest Butler County. The purpose of this study was to determine a recommended long range strategic plan of implementable improvements for future transportation in the NBTS area to forward to OKI for incorporation into the OKI Regional Transportation Plan. The study followed a logical step by step planning approach to identify project goals and transportation problems and needs, explore and evaluate alternative improvement options, and to determine a long range strategic plan for the area. The planning process was designed to provide transportation decision makers with the facts and analysis needed to make intelligent, informed choices for the best use of transportation resources.

The purpose of the study was two-fold: 1) to identify the transportation problems that affect the safe and efficient movement of people and goods in northwest Butler County, and 2) to determine an effective, comprehensive and implementable transportation solution that is consistent with the land use planning goals for the area.

II. STUDY GOALS

Following the identification of project stakeholders and the establishment of a project Advisory Committee, the first task in the NBTS was to identify and develop the goals for the project study. Once the transportation problems and needs in the NBTS area were initially identified, the overall goals for the study were developed and refined during early Advisory Committee meetings and confirmed by public review through open public involvement meetings.

In all, the Advisory Committee developed four overall goals for the project study. These goals were established to stand as the core foundation for the study, forming the basis for the evaluation of every alternative solution considered for incorporation into the final Strategic Plan. As the NBTS has progressed through the ODOT’s Five-Step Transportation Planning Process, the Advisory Committee continually returned to these goals to evaluate and refine its focus on the transportation problems and needs for the NBTS area. Consequently, the study goals have been continuously verified and more comprehensively defined as the study progressed. A summary of the four study goals identified by the NBTS Advisory Committee is presented below:

• Goal 1 - Improve Travel Efficiency

A major goal for the NBTS is to improve the movement of people and goods in and through the NBTS area. More specifically, the transportation improvements or plan
needs:
- to provide an acceptable transportation level of service through the year 2030,
- to better manage truck movement in the study area and through Oxford and the Miami University campus, and
- to promote county-wide transit service.

The following considerations relate to the goal of improving travel efficiency:
- Focus on US 27 and SR 73 as primary routes for improvement in NBTS area;
- Address identified areas of congestion (intersections, sections of major roads);
- Provide for MU / Oxford regional needs and opportunities for local improvements to be made in conjunction with area-wide plan;
- Improve east - west SR 129 connection in Millville area (for better east - west connectivity);
- Provide for better access management for existing development (and consider access management role in guiding future development);
- Provide better access and level of service for special event traffic;
- Provide separation of through and local travel needs; and
- Consider benefits of other modes of travel including transit, bicycle and pedestrian as part of solution.

• **Goal 2 - Improve Travel Safety**

Another major goal of the NBTS is to improve vehicular travel and pedestrian safety throughout the study area. Plans to improve travel safety needs to be based on the identification and correction of existing roadway deficiencies that contribute to unsafe travel in the study area, as well as to address vehicular/pedestrian conflict issues (including issues with through truck traffic) on the campus of Miami University and in the City of Oxford’s uptown area.

The following considerations relate to the goal of improving travel safety:
- Address identified safety problem areas (intersections and road sections with high accident rate history);
- Upgrade roads to safe standards in terms of lane and shoulder widths;
- Reduce vehicular / pedestrian conflict points or areas;
- Consider access management needs (existing and future land use); and
- Provide separation of through and local travel needs to improve safe property access.

• **Goal 3 - Improve Regional Accessibility**

A third goal for the NBTS is the improvement of regional accessibility. Alternative solutions will be developed for this study in an effort to improve access and connectivity between the NBTS area and regional neighbors. Access to points of regional interest, including economic centers, public services, and parks/recreational areas, through the improvement of both north-south and east-west travel routes, is a key goal of the NBTS.
The following considerations relate to the goal of improving regional accessibility:
- Improve north-south through travel facilities;
- Provide for improved regional access to economic centers and interest points (Oxford, Miami University, McCullough-Hyde Hospital, Hueston Woods State Park, others); and
- Address east-west connectivity needs.

Goal 4 - Preservation of Character / Compatibility with Land Use Plans

Finally, the Advisory Committee determined that alternative solutions developed for this study should preserve the existing character of the area and ensure that the improvements are compatible with and support the adopted land use plans of townships and incorporated communities.

The following considerations relate to the goal of preserving character and ensuring the transportation plan’s compatibility with land use plans:
- Provide means for growth management and support for adopted township and local long range planning goals;
- Avoid/minimize impact on cultural historic resources, parks, natural resources, farmland, and existing development;
- Preserve small town character of Oxford and rural landscape and character of NBTS area; and
- Support MU and Oxford needs as regional center for area jobs, as well as cultural, educational and entertainment opportunities.

III. PROBLEM IDENTIFICATION

The transportation needs of Northwest Butler County predominantly relate to travel efficiency and safety. As the project goals reflect, the improvement of transportation is also important to provide for regional accessibility and support of recently adopted land use plans.

These goals and the identification of the area’s transportation problems and needs were developed by the people who live, work, and travel the study area on a daily basis. The NBTS was conducted under the direction and full participation of a group of volunteer stakeholders, through an organized Advisory Committee, and every step and decision was presented to the general public for review and comment through an extensive public involvement effort.

The transportation problems in the NBTS area consist primarily of deficiencies with the current roadway network combined with increasing traffic volumes that has contributed to high accident rates. Regional accessibility limitations, growing areas of congestion and decreasing level of service, while not considered at critically unacceptable levels currently, are anticipated to become more problematic over time based on the evidence of increasing pressure for converting agricultural lands to residential development and projected population growth in this area.

Additional discussion of the identified transportation problems in the NBTS area is presented
A. **Existing Transportation Network Deficiencies**

The existing transportation network in the NBTS area is predominantly automobile based, and consists of a number of rural, two-lane federal and state highways, as well as a grid of local county, township, and city / village roads. The only existing high-capacity, multi-lane highway facility in the NBTS area is the southernmost four lane, divided highway section of US 27 between I-275 and SR 128. Some short portions of the federal and state highway network have been recently improved to acceptable standards of lane and shoulder width. However, for the most part, existing roadways in the NBTS area are already unable to safely and efficiently serve the present travel demand and patterns in the area, and will be insufficient to handle the future travel demands of the population increases projected for northwest Butler County. The primary deficiencies in the existing transportation network include:

**Narrow Lane and Shoulder Widths and Roadside Hazards**

A substantial amount of the primary state and federal highway system in the NBTS area has safety deficiencies in the form of narrow travel lanes (less than 12 feet wide), narrow shoulders (less than 6 feet wide), and substandard lateral clearance, such as deep roadside ditches and other adjacent roadside hazards, such as fences, utility lines/poles, trees, mailboxes, culvert headwalls and other drainage-related structures. The following tables note the mileage of roadway that needs to be upgraded for shoulder and lane widths on US 27, SR 73, and SR 177.

<table>
<thead>
<tr>
<th>Table 1: Substandard Shoulder Widths*</th>
<th>Milepoints</th>
<th>Existing Width</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US 27 (South of Oxford)</strong> (Locations with shoulders &lt; 10')</td>
<td>0.6 to 2.5 (both sides)</td>
<td>8' (SB); 3' (NB)</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td>2.5 - 2.7 (both sides)</td>
<td>5'</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>2.7 - 3.4 (both sides)</td>
<td>0'</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>3.4 - 4.0 (northbound only)</td>
<td>1'</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>4.0 - 6.6 (Millville)</td>
<td>2' - 8'</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>6.9 - 7.4 (Millville)</td>
<td>2'</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>10.8-14.0 (both sides)</td>
<td>3'</td>
<td>3.2</td>
</tr>
<tr>
<td><strong>SR 73 (Oxford to US 127)</strong> (Locations with shoulders &lt; 6')</td>
<td>0.3-0.4 (westbound only)</td>
<td>3'</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>0.4 - 1.6 (both sides)</td>
<td>3'</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>1.6 - 1.9 (both sides)</td>
<td>3' (WB); 4' (EB)</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>1.9 - 3.9 (both sides)</td>
<td>1'</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>3.9 - 6.8 (both sides)</td>
<td>3'</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>SR 177 (SR 73 to SR 130)</strong> (Locations with shoulders &lt; 6')</td>
<td>0.0 - 6.7 (both sides)</td>
<td>2'</td>
<td>6.7</td>
</tr>
</tbody>
</table>

* = shoulder width standards for US 27 are 10'; whereas other routes in area require 6' shoulders.
### Table 2: Lane Widths  
(Locations with lanes < 12’)

<table>
<thead>
<tr>
<th>Milepoints</th>
<th>Existing Width</th>
<th>Total Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0-5.2 (Millville)</td>
<td>22’ (2 lanes)</td>
<td>1.2</td>
</tr>
<tr>
<td>5.7-7.4 (Millville)</td>
<td>20’ (2 lanes)</td>
<td>1.7</td>
</tr>
<tr>
<td>10.8-14.0 (both lanes)</td>
<td>19’ (2 lanes)</td>
<td>3.2</td>
</tr>
<tr>
<td>SR 73 (Oxford to US 127)</td>
<td>20’ (2 lanes)</td>
<td>6.4</td>
</tr>
<tr>
<td>SR 177 (SR 73 to SR 130)</td>
<td>22’ (2 lanes)</td>
<td>6.7</td>
</tr>
</tbody>
</table>

### Roadway Curvature, No Passing Zones and Speed Limits

The rural highway system in the NBTS area is comprised of narrow, two lane facilities with much of the system posted for speed limits of 55 mile-per-hour. The NBTS area highway network also contains numerous segments marked as No Passing zones, as well as segments with substandard horizontal and vertical alignment. With increasing traffic volumes, including slower moving truck traffic, roadway alignment deficiencies and the lack of adequate passing zones, hazardous driving conditions are the result.

### High Numbers of Access Points

As discussed above, the NBTS area highway network is comprised of narrow, two lane facilities in a generally rural land use setting that is gradually changing to accommodate increasing residential demands. Though rural residential and commercial development has steadily increased along the higher volume state and federal highways, there are few access restrictions in the NBTS area. As a result, there are currently over 400 access points along US 27 alone, primarily for private property driveway access. This level of uncontrolled access increases congestion, conflicting traffic movements and abrupt speed changes with a major impact on travel safety. Between 1995 and 1999, an average of over 100 access-related accidents occurred along US 27 in the NBTS area, accounting for almost 40 percent of all of the accidents on that facility in the study area (see Section III.C below). Routes such as US 27 currently designated with a functional classification as Rural Principal Arterial for most of its length in the NBTS area, actually serves a dual function as a rural collector or rural local road due to the high demand for property access up and down its length. At present, access management provisions are non-existent in this area with the exception of a short segment of US 27 between SR 130 and Stillwell Beckett Road, which includes a two way center turn lane.

### Problematic Intersections

Analysis of traffic and accident data, as well as Advisory Committee and public input, has resulted in the identification of a number of problematic intersections in the NBTS area. Contributing factors to problems at these intersections include confusing intersection layout, poor lane / approach configuration, restricted sight visibility, intersection spacing problems, congestion (further aggravated at some intersections by heavy truck and
pedestrian traffic), and/or access conflicts. A total of 14 problem intersections have been identified in the NBTS area. Six of these intersections are located on US 27, south of the City of Oxford.

Lack of Alternative Transportation Options / Facilities

A key factor in the decreasing effectiveness of the local transportation network is the lack of alternative transportation options. At this time, there are limited public transit operations in the study area. Miami University operates a small bus transit operation (Miami Metro) serving the campus and the City of Oxford and providing transit connections between Oxford and Miami University satellite campuses in Hamilton and Middletown. In the past, Butler County Regional Transit Authority provided bus transit services in the area, including Oxford, and a limited on-demand service. However due to funding cuts and failure to pass a new tax levy in 2002, these services are not currently provided (note: in late 2003, Cincinnati Metro began discussion with the BCRTA for possible future limited service in Butler County). Furthermore, no bike or pedestrian facilities (other than sidewalks in the urban areas, such as Oxford and Millville) are currently located in the NBTS area. This forces bicycle and pedestrian traffic on to the local road and highway network, where deficient travel safety conditions already exist. The result is increased vehicle / bike / pedestrian conflict (especially prevalent in the City of Oxford / Miami University area), increased congestion (due in large part to increases in single occupancy vehicle traffic), decreased level-of-service, and overall decreased travel safety.

B. Congestion and Level of Service

Traffic Volumes and Congestion

In addition to deficiencies of the existing transportation network, the need for improvements in the NBTS area is further demonstrated by increasing travel volumes (and congestion) in the study area. On average, traffic volumes on US 27 from the Hamilton County line north to Oxford increased by nearly 20 percent from 1996 to 2000. According to preliminary projections from the OKI Regional Travel Demand Model, by 2030, traffic on US 27 is expected to further increase by nearly 65 percent from 2000 levels, on average. Similarly, increases are expected on other major routes through the NBTS area. Traffic volumes on US 127 are expected to increase by nearly 100 percent by 2030, while traffic volumes on SR 73 and SR 130 are expected to increase over 100 percent. By 2030, traffic volumes on SR 128 are expected to increase over 40 percent and traffic volumes on SR 732 are expected to increase over 150 percent.

These projected traffic volumes indicate that traffic congestion currently being experienced on the existing local road network will substantially increase if the transportation problems in the area are not addressed.
Level of Service

Level of Service is a quantitative and qualitative measure of traffic operations and conditions that takes into account the effects of several factors including: traffic, truck volumes (as a percentage of total), speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, convenience and operating costs. Although many of these factors are only indirectly considered, empirical data has been collected nationwide in independent studies to correlate level of service with each of these factors.

Level of Service is rated from A to F, with A being the highest level, and C being the generally accepted standard. For rural highways, level of service is defined in terms of density of traffic. Level A represents completely free flow conditions, where the operation of vehicles is unaffected by the presence of other vehicles and only constrained by geometric features of the facility and driver preferences. Level C represents a range in which the influence of traffic density on operations becomes marked and the ability to maneuver within the traffic stream and to select an operating speed is clearly affected by the presence of other vehicles. Average travel speeds are reduced and minor disruptions may be expected to cause some local deterioration in service. Level E represents operations at or near capacity, while Level F represents forced or breakdown flow, with complete traffic stoppages.

Based on 2000 traffic data, several of the major state and federal highway routes in the NBTS area currently have a substandard level of service (Level of Service D or E). These routes include substantial portions of US 27, SR 73, SR 130, SR 128, SR 177 and US 127. Considering the projected increases in traffic volumes on the NBTS highway network by 2030, as discussed above, the substandard level of service currently being experienced on the portions of the existing local road network will continue to degrade if the transportation problems in the area are not addressed.

C. Safety

Transportation safety is a major concern in the study area and under existing conditions and traffic volumes, a higher priority than the need to increase capacity or improve level of service. Most roads in the NBTS area are already experiencing traffic accidents at a rate (and severity) that exceeds statewide rates for similar roads. Deficiencies in the existing NBTS area transportation network (discussed Section III. A. above), along with increasing traffic volumes and decreasing levels of service (discussed in Section III.B above), will result in increasing hazardous travel conditions for motorists, as well as bicyclists and pedestrians.

To identify and evaluate recent accident history for NBTS roads, and to determine what effect the current congestion, level of service and physical deficiencies of the NBTS roadway network have recently had on travel safety in the NBTS area, traffic accident data for the five year period from 1995 -1999 was obtained from the Ohio Department of Public Safety. This database of information provides details on every reported accident in Butler County and includes details such as time, location, contributing factors and
Appendix D: The Northwest Transportation Plan Purpose and Need Statement
A Recommendation of a Preferred Strategy For a Long Range Transportation Plan for Northwest Butler County, Ohio
January 2004

severity of accidents. Traffic accident data was analyzed for all major roadways within the project study area and comparisons were made with statewide and countywide accident data. Statewide averages were obtained from 1999 Ohio Crash Facts, produced by the Ohio Department of Public Safety. This data was used in combination with a field inventory of the physical roadway conditions of state and US routes within the NBTS area to determine which factors are chiefly contributing to the higher number and severity of accidents.

Summary of Accident Data in the NBTS Area

**Accident Type and Severity**

A total of 7,027 accidents occurred within the project study area during the five year period from 1995 to 1999. This total represents approximately 14 percent of all the reported accidents in Butler County and approximately 2 percent of all the reported accidents in the State of Ohio. Of the total accidents within the project study area, 68% were property damage only, 31% were personal injury accidents, and 0.5% involved a fatality.

**Accidents on State and U.S. Routes**

Approximately 48 percent of all accidents within the NBTS area occurred on State and/or U.S. routes. For comparison of the area’s accident experience, annual accident rates in accidents per million vehicle miles traveled are derived based on roadway characteristics, functional classification, daily traffic volumes and annual average of traffic accidents. In this way, an area’s roads can be fairly compared to other similar roads across the state. In the NBTS area, accident rates on all State and U.S. routes are above the Statewide average.

![Accident Rates by Route](image)

1995-1999 Accidents

- US 127: 3.86
- SR 73: 1.12
- SR 732: 1.12
- SR 748: 3.64
- SR 128: 1.12
- SR 129: 1.12
- SR 130: 1.63
- SR 177: 1.12
- US 127: 1.22

**Study Area Rate**

**Statewide Rate**
Accidents at Intersections

A total of 1,896 accidents (or 27 percent) in the NBTS area were at intersections or were intersection-related, and 12 intersections had at least 20 accidents from 1995 to 1999. The intersection of US 27 and SR 129 in Millville had the most accidents (41). The most common type of accidents among all the intersections were rear-end and angle accidents.

Accidents with Fatalities

A total of 37 accidents in the NBTS area between 1995 and 1999 involved a fatality, which averages to almost 8 per year.

Accidents Involving Trucks

A total of 1,134 accidents (over 16% of the five year total) in the NBTS area between 1995 and 1999 involved trucks. Approximately 68 percent of these accidents involved a truck driver at fault.

Pedestrian Accidents

Although accounting for less than one percent of all accidents within the project study, there were 65 accidents involving pedestrians between 1995 and 1999. Pedestrian safety is an important concern in the NBTS area primarily due to the high pedestrian volumes in the City of Oxford and on the campus of Miami University.

Comparison of Five-Year Data with Most Current Two-Year (2000-2001) Data

A review of the 2000 and 2001 accident data for US 27 and SR 73 (when it was released by the Ohio Department of Public Safety) revealed that the trends evident in the five years prior are continuing. When calculating the overall accident rates for US 27 and SR 73 over the seven year period (including the most recent 2000 and 2001 data), using year 2000 ADT numbers, accident rates have decreased slightly. However, both routes are still experiencing accident rates significantly higher than the statewide average.

D. Local and Regional Accessibility

The existing roadway network in the NBTS area does not adequately provide for the local and regional connectivity and accessibility demands of the area. Overburdened two lane facilities, as discussed above, connect areas of regional importance in terms of employment, education, health service, tourism, and entertainment in the Northwest Butler County area such as the City of Oxford, Miami University, McCullough-Hyde Memorial Hospital, and Hueston Woods State Park, with surrounding neighbors of the Cities of Hamilton and Fairfield, the remainder of Butler County, and the state of Indiana.
as well as southern Ohio, Hamilton County and the City of Cincinnati. Access to the interstate system, I-70 to the north, I-71 and I-75 to the east, and I-74 and I-275 to the south all require traversing two lane roadways.

The lack of connectivity is a critical concern, not only for its adverse effect on local commerce and emergency response services, but its impact on tourism and entertainment / event patronage (such as to Miami University and Hueston Woods State Park). Inadequate local and regional accessibility is also detrimental to the continued economic vitality of the area, by its effect on the movement of goods and services to and from local and regional markets.

IV. STATE AND REGIONAL TRANSPORTATION PLANS

Several projects related to the NBTS are currently in ODOT’s statewide and OKI’s regional transportation plans. Two proposed transportation projects in the NBTS area are currently listed in the Draft FY 2004-2007 Statewide Transportation Improvement Program (STIP) as part of OKI’s Draft FY 2004-2007 Transportation Improvement Program, including: 1) the improvement of approximately 2 miles of US 27 north of the City of Oxford (widen to three lanes, sidewalks and signal improvement), and 2) the construction of approximately 0.8 mile of bikeway from Brookville Road to Fairfield Road on the west side of the City of Oxford. In addition, the OKI Regional Transportation Plan also includes one other project, the construction of a park-and-ride facility along US 27 near the City of Oxford.

Several recent local and regional transportation studies and land use plans for the area were reviewed in this study to help in formulating the understanding of the area’s problems and needs. The following studies were reviewed:

- Butler County Regional Transit Authority Strategic Plan (1999-2001), 1998;
- Butler County Township Land Use Plans, 1998;
- Butler County, Ohio Thoroughfare Plan, 1998;
- City of Oxford Comprehensive Plan, 1998;
- City of Oxford Truck Origin-Destination Study, March 1999;
- Oxford Township Community Survey, 2000; and

Common to each of these studies was the need to address existing area transportation problems and the need to plan for the future improvement of transportation in this area. Each of these studies provided important insight to the problem identification and goal setting for the Northwest Butler Transportation Study. However, early in the study process, the Advisory Committee recognized the particular importance of three of these studies and their relationship the transportation planning process. The three key studies were: the Township Land Use Plans, the Oxford Comprehensive Plan and the Oxford Truck Origin-Destination Study.
The land use planning efforts of the eight townships, Butler County and the City of Oxford provided a current, up-to-date vision of what local planners and citizens envisioned for Northwest Butler County. The Advisory Committee reviewed these future land use plans and used these to evaluate how alternative transportation improvements could not only support the land use goals, but also be compatible with desired land use development patterns. As discussed in the next section, the Committee established one of the NBTS Plan’s goal to be the preservation of the rural character of the Northwest Butler County area and the small town ambience of the Oxford, Millville, Darrtown, and the other communities in the area, while at the same time addressing pressing transportation needs and desires.

The Oxford Truck Origin - Destination Study was also an area of focus in that it provided some key quantitative measurement of the perceived concerns over increased heavy truck traffic in the area. This study, conducted in 1998, concluded that there is a significant volume of truck traffic serving the northwest Butler County area and the City of Oxford, but there was also a significant portion of that truck traffic that was just passing through. The study measured the truck volume in and through the City of Oxford and concluded that while three-fourths of the daily truck (and bus) volumes related to business in Oxford, almost half of the heavy truck volume during the peak hours of the day was only passing through. In other words, the truck volumes perceived to be the most problematic in terms of motorist and pedestrian safety and congestion, were indeed caused by through trucks. The study further concluded that removal of the heavy trucks during peak hours, by re-routing, would reduce truck volumes in Oxford by almost 60%. As the Northwest Butler Transportation Study progressed, the issue of trucks and particularly their effect on travel safety and on pedestrian conflicts in Oxford and through the Miami University campus was reviewed continually in the alternative improvement plan development and evaluation process.

On September 10, 2003, the Advisory Committee reached a consensus to advance a recommended plan to the OKI Board. The findings of the Northwest Butler Transportation Study, including the Advisory Committee’s recommendation of Alternative 5C, were presented to the Ohio Kentucky Indiana Regional Council of Governments (OKI) Board of Trustees on October 9, 2003. The Board approved a resolution adopting the study findings and recommendation at that meeting. It is anticipated that the recommended plan will become part the OKI Regional Transportation Plan when the plan is next updated in 2004.
Exhibit 3:
ODOT Project Development Process (14 Step)
Exhibit 4: Adopted Land Use Plan

Source: Butler County Department of Development
Exhibit 5a:
Existing Roadway Characteristics
Lane and Shoulder Width Deficiencies / Roadside Ditches
Exhibit 5b: Existing Roadway Characteristics
Passing Zones / Speed Limits
Exhibit 5c:
Existing Roadway Characteristics
Access Point Concentrations
Exhibit 6:
Accident History, 1995 - 1999
Exhibit 7: Problem Identification
ALTERNATIVE 5C

Proposed Improvements
- Intersection Upgrades
- Lane and Shoulder Upgrades
- Major Improvements
- Widen to Three Lane Section
- Major Project: Two Lane

Previously Improved
- Lane and Shoulders Upgraded (existing)

- Upgrade key intersections and roadway sections (lane and shoulder widths)
- plus re-align US 27 and SR 129 in Millville
- plus widen US 27 to four lanes from SR 128 to Millville
- plus three lane segment on US 27 between Minton Road and McGonigle and between Stillwell Beckett and Chestnut Roads
- plus two lane connector between US 27 and SR 73 and between US 27 and SR 732 (south of Oxford)
- plus consideration of re-routing US 27 over local roads

Exhibit 8: Recommended Plan