



Town of Waynesville
Lake Junaluska
Annexation Memorandum



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Introduction

The study represents a joint effort between the Town of Waynesville and Martin-McGill to provide the management, elected officials and community members of the Town of Waynesville and Lake Junaluska Assembly (LJA) a clear and objective analysis of the projected impact of assuming LJA's public works and utilities functions.

The LJA has proposed to transfer ownership and responsibility of the following services to the Town:

- Streets (as clearly defined)
- Sidewalks (that abut the streets for which TOW is assuming responsibility)
- Water and sewer infrastructure
- Pump station
- Water tank
- Water meters
- Lift station
- Stormwater ditches/culverts
- Storm drainage collection/conveyance system
- Public utilities/works administrative and billing support
- All road right-of-way along with any other applicable easements
- Fire protection
- Police protection
- Street lighting
- Planning and inspections services

The following items are out of scope and LJA will retain control of:

- Sidewalks and walking paths within LJA exempt properties
- Lake
- Dam
- Bridge / Road across the dam
- Recreational amenities and LJA common areas
 - Pool
 - Golf
 - Walking Trails
 - Playground
 - Picnic areas & benches
 - Outdoor Gym
 - Rose Garden
 - Monuments
 - Memorial structures

Overview

LJA is located at the eastern end of the Town's city limits. It is a 1.4 square mile area comprised of a full-time population of 1,683 people (Based on the State demographer's formula for Haywood County and number of residential units identified) in 661 households. However, the number of seasonal residents increases significantly during warmer months. The area consists of 1,044 unique parcels valued at \$219,345,600. Of the total, 17 parcels (14 LJA; 3 TOW) valued at \$29,416,500 are assumed to be exempt from property taxes, and the remaining 1,027 parcels (138 LJA; 889 individual/private property owners), valued at \$189,929,100 are taxable and taxed at the current tax rate.

LJA currently provides public safety, maintenance of 16.6 miles of streets, street lighting, water transmission, and sewer collection services. However, LJA receives some services from the Town, including fire protection and bulk water supply and sewer treatment. The Town charges each LJA household a fire protection fee of \$4 per month and the Assembly a fee of \$591.20 per month. Additionally, the Town currently bills LJA \$2.76 per 1,000 gallons for water and \$3.22 per 1,000 gallons sewer (\$5.98 total) bulk sales. LJA sells water and sewer service to its customers using its own rate structure and network of 15.4 miles of water lines and 15 miles of sewer lines. Average monthly residential usage is 2,700 gallons.

Financial Impact – First Year

The annexation of the proposed LJA area is projected to increase both the revenues and the expenditures of the general, water, and sewer funds of the Town of Waynesville. During the first full year of the annexation, the following changes are estimated:

General Fund Revenues

Property Excluding Vehicles

Total tax values of property, excluding vehicles in the proposed annexation area, total \$189,929,100. At a tax rate of \$0.4082 per \$100 valuation and current collection rate of 96%, the estimated new revenue is \$744,279. For the purpose of this model, no tax rate increases were considered.

Registered Vehicles

The ratio of the Town's FY 2012 Registered Vehicles Levy of \$255,402 to Property Excluding Vehicles Levy of \$4,295,214 is 5.95% and the Registered Vehicles levy collection rate is 86%. The estimated Property Excluding Vehicles levy for the annexation area is \$775,291, yielding an estimated Registered Vehicle Levy of the annexation area of \$39,646.

Assembly Fire and Police Fee

The Assembly has proposed to pay the Town 2.5% of its \$4,530,420 fire and police budget costs in order to receive fire and police service on its properties that are exempt from taxes. The annual revenue totals \$113,261.

Utility Franchise Tax

The ratio of the Town's FY 2012 Utility Franchise Tax revenue of \$648,011 to the Town's area of 8.76 square miles is \$73,974 per square mile. The annexation area is comprised of 1.4 square miles, yielding estimated new revenue of \$103,563.

Cable Franchise Tax

The ratio of the Town's FY 2012 Cable Franchise Tax revenue of \$151,600 to the Town's estimated current population of 9,922 persons is \$15.28 per capita. The population of the annexation area is estimated to be 1,683 persons. An annexation area population of 1,683 persons generating \$15.28 per capita yields new revenue of \$25,708.

Local Option Sales Tax

It is estimated that the annexation of 1,683 persons to the Town's population will yield additional \$100.79 per capita or \$169,576.

Powell Bill

The 2012 Powell Bill revenue allocation per mile of non-State system or local streets was \$1,610.94. The estimated new mileage for non-State system or local streets in the annexation area is 16.65 but only 9.37 miles meet Powell Bill standards, yielding estimated new revenue of \$15,095.

The 2012 Powell Bill revenue allocation per capita was \$20.43. The population of the annexation area is estimated to be 1,683 persons. Per capita new revenue for the annexation area is estimated to be \$34,374.

Estimated combined Powell Bill funds total \$49,469.

Beer and Wine Tax

The ratio of the Town's FY 2012 Beer and Wine Tax revenue of \$42,833 to the Town's current population of 9,922 persons yields revenue per capita of \$4.32. The estimated annexation area population is 1,683 persons, yielding estimated new revenue of \$7,263.

Solid Waste Fee

Residential

The Town charges a residential monthly solid waste fee of \$9 per household. An estimated 661 households generate annual revenue of \$71,388.

Commercial

The Town charges a monthly fee of \$123.58 per commercial 8-yd dumpster with bi-weekly service. LJA exempt properties will be billed for solid waste expenses as are other businesses. It is assumed that the Assembly will use five dumpsters generating annual revenue of \$7,415.

Estimated combined solid waste revenues total \$78,803.

Fire Protection

The Town currently collects \$4 per month from each of the 661 households and \$591.20 per month from the Assembly, totaling \$38,822 over a year. Upon annexation, this service will be free and this revenue source will end.

The net general fund revenue generated by the annexation is estimated to total \$1,292,746 in the first full year.

General Fund Expenditures

Administration

The two administrative staff members at LJA are assumed to be hired by the Town. The estimated total cost of salaries and benefits for both positions are \$100,000 in the first year. No other Administrative costs are anticipated.

Street Maintenance

Three LJA employees are assumed to be assigned to the Town's Public Works department to provide streets maintenance. The estimated total cost of salaries and benefits for the three positions are \$120,000 in the first year. Maintenance and repair costs are also expected to be incurred each year. The total for the first year is \$100,000. The Town will also assume all street light accounts from the LJA that currently total \$35,198. Furthermore, other miscellaneous costs are projected to be \$35,000. Lastly, a truck purchase is estimated to cost \$23,000. The total of all costs related to Streets is \$313,198.

Solid Waste

Two LJA employees are assumed to be employed by the Town to provide solid waste services. The total cost of their salaries and benefits are expected to be \$60,000. It is assumed that LJA will convey one truck to the Town at no charge. The cost to operate and maintain the truck is expected to be \$45,000, plus an additional \$7,000 for yard waste service. The total cost of all solid waste services will be \$112,000.

Public Safety

Four additional patrol officers will need to be hired as a result of the proposed annexation. Additional annual expenses will include \$140,000 for salaries and benefits, \$10,000 for initial equipment costs, \$19,000 for financing two vehicles, and \$7,000 for fuel and other operating costs. The total costs during the first year are expected to be \$206,000.

The Town will not need to make any changes for fire protection support. Fire Protection Compliance is assumed to not be addressed.

Contingency

Since the projection of the aforementioned costs involves uncertainty, a contingency of 10% of all costs or \$73,120 has been added.

The total new expenditures generated by the annexation are estimated to total \$804,318.

New general fund revenues generated by the annexation area are expected to exceed the new expenditures in the first year, as shown in the following table:

TABLE 1
TOWN OF WAYNESVILLE GENERAL FUND
LAKE JUNALUSKA ANNEXATION
FIRST YEAR FINANCIAL SUMMARY

REVENUES

Real Property Levy	\$744,279
Registered Vehicles Levy	\$39,646
Assembly Fee	\$113,261
Utility Franchise Tax	\$103,563
Cable Franchise Tax	\$25,708
Local Option Sales Tax	\$169,576
Powell Bill Allocation (Mileage)	\$15,095
Powell Bill Allocation (Population)	\$34,374
Beer and Wine Tax	\$7,263
Solid Waste Fee	\$78,803
Fire Protection loss	(\$38,822)
Total Increase in Revenues	\$1,292,746

EXPENDITURES

Administration	\$100,000
Street Maintenance	\$313,198
Solid Waste	\$112,000
Public Safety	\$206,000
Contingency	\$73,120
Total Increase in Expenditures	\$804,318
 Revenues Over Expenditures	 \$488,428

Water and Sewer Funds Revenues

Water Retail

LJA has 861 water users consuming an average of 2,700 gallons per month. Applying the Town of Waynesville's rates to these users will generate approximately \$200,000 in a year. However, this new revenue will replace the Town's bulk water sales to LJA, which total about \$145,000. The net water revenue is estimated to be \$55,000 in the first year.

Sewer Retail

LJA has 782 sewer users with similar monthly usage to water users. Applying the Town of Waynesville's rates to these users will generate approximately \$170,000 in a year. However, this new revenue will replace the Town's bulk sewer sales to LJA, which total about \$165,000. The net water revenue is estimated to be only \$5,000 in the first year. Furthermore, annual pump station revenue currently totaling \$400 will end.

The net water and sewer funds revenue generated by the annexation is estimated to total \$59,600 in the first full year.

Water and Sewer Funds Expenditures

Salaries and Benefits

Three LJA employees are assumed to be employed by the Town to provide water and sewer services. The total cost of their salaries and benefits are expected to be \$135,000.

Operations

It is assumed that maintaining water and sewer lines will cost \$80,000 and \$114,250, respectfully. A truck is expected to be purchased in the first year at a cost of \$23,000.

Contingency

A contingency of 10% is also applied to all costs totaling \$35,225.

The total new expenditures generated by the annexation are estimated to total \$387,475.

New water and sewer fund revenues generated by the annexation area are expected to be less than the new expenditures in the first year, as shown in the following table:

TABLE 2
TOWN OF WAYNESVILLE WATER & SEWER FUNDS
LAKE JUNALUSKA ANNEXATION
FIRST YEAR FINANCIAL SUMMARY

<u>REVENUES</u>	
Water	\$55,000
Sewer	\$4,600
Total Increase in Revenues	\$59,600
<u>EXPENDITURES</u>	
Salaries and Benefits	\$135,000
Maintenance and Repairs	\$217,250
Contingency	\$35,225
Total Increase in Expenditures	\$387,475
Revenues Over Expenditures	(\$327,875)

Financial Impact - Ten Years

Beyond the first year of annexation, it is expected that the general, water, and sewer funds' revenues and expenditures will continue to change due to growth at LJA, inflation, and anticipated capital needs. Consequently, the net income in each fund will also be affected. The following is a list of the assumptions used for the ten year projections:

Revenue Assumptions

- There will be 1% average annual population and household growth.
- The tax levy and assembly fee will annually increase by 1% and 3%, respectfully.
- The real property collection rate will remain at 96%. The registered vehicle collection rate will remain 86%.
- Utility franchise and cable franchise taxes will annually increase by 1%.
- Beer and wine tax per capita is unchanged.
- Solid waste fee increases by an average annual rate of 1%.
- Powell Bill allocations per mile and capita will not change.

Operating Expenditure Assumptions

- Maintenance and repair, lights, yard waste, and other costs will increase 3% annually.
- Salaries and benefits will increase 4-5% annually. Other operating and maintenance expenditures will increase by 3% annually.
- The 10% contingency used in the first year is also applied to all future years.

Capital Expenditure Assumptions

During the next 10 years, additional capital projects will be needed in LJA in addition to vehicles. McGill Associates was commissioned to ascertain the condition of the water, sewer, and streets and project the costs required to bring the facilities to reasonable conditions. Their report is attached in the Appendix.

Streets and Sidewalks

LJA is comprised of approximately 16.6 miles of streets where 9.37 miles are currently Powell Bill eligible. Approximately \$3.6M in improvement projects was identified for LJA streets, as shown in the following three conditional categories:

Critical	\$1.6 million
Poor	\$1 million
Widening	\$1 million *
TOTAL	\$3.6 million

* Road widening to meet Powell Bill standards and generate \$3,480 in annual Powell Bill revenue.

The above costs may be higher since they do not include engineering fees. This level of capital improvement will place financial hardship upon the general fund. Therefore, the Town staff proposes instead to allocate \$100,000 in annual maintenance costs adjusted for inflation to address street projects.

Public Works will need two more trucks in addition to the one planned for the first year for a total of \$180,000 in vehicle expense for 10 years.

There Town does not propose to make any changes to the current JLA street lighting program. The Town will simply assume the current lighting contract. Therefore, no capital needs are expected for street lighting. Details are shown in Table 3.

Water and Sewer

LJA is comprised of approximately 15.4 miles water lines and 15 miles of sewer lines. The needs for the water and sewer program include an additional vehicle, converting water meters to radio read, and two phases of water line improvements totaling \$3.4 million. Phase 1 of the Water CIP focuses on replacing all 1" water lines with 2" and 6" lines, replacing sufficient length of existing 2" line with 6" lines to reduce 2" lines to 1,000 linear feet, and making some additional upgrades. Phase 2 of the CIP sets aside money to replace 10% of existing 6" waterlines with new line, replaces 50% of remaining 2" lines with new 2" and 6".

The sewer capital program requires two phases of sewer line improvements totaling \$2.27 million. Phase 1 focuses on high priority needs and Phase 2 focuses on medium priority needs. A few LJA residents are unsewered and have their own septic tanks. It is assumed that there is no obligation to provide sewer to them. Additional maintenance and repair monies have also been factored in for water / sewer to address preventive maintenance needs and smaller repair projects.

The names and timing of each of the aforementioned projects are summarized in Table 4. The CIP is designed to show each capital need in a separate row showing the name in the left-most column. The following columns to the right show the total estimated cost of the project and the year or years in which the project is planned.

In order to minimize the impact of expensive capital projects in the CIP, the analysis assumes that funds will be acquired by borrowing capital to pay for the line improvements. The remaining vehicle and water meter costs will be paid by cash outlays. The proposed method to finance the improvements in the CIP is shown in Table 5.

TABLE 5
TOWN OF WAYNESVILLE
LAKE JUNALUSKA ASSEMBLY ANNEXATION
PROPOSED FUTURE DEBT PACKAGE

YEAR	TYPE	PRINCIPAL	YEARLY PAYMENT	RATE	TERM (YEARS)
2016	16A-20	\$ 3,163,000	\$ 302,241	5%	15
2020	160A-20	\$ 2,298,000	\$ 234,485	6%	15

Net Incomes and Losses

The projected new income for the general fund consistently exceeds its new operating and capital expenditures throughout the next ten years with current tax rates assuming the street projects are not funded. The majority of new income comes from ad valorem taxes and Assembly fees. As previously discussed, the general fund realizes a net income in the first year of \$488,000. By the tenth year, cumulative income grows to \$4.2 million, as shown in Table 6.

However, the net loss projected for the water and sewer funds is also projected to continue for ten years. This annual loss increases to \$506,111 by the tenth year, resulting in a cumulative loss of \$7.2 million. The water and sewer funds lose money every year because the new revenue from LJA customers is offset by a loss of bulk water and sewer sales to the LJA. The small income difference of approximately \$60,000 per year is not enough to pay for new operating and capital costs. If the projects in the water and sewer CIP were not funded, losses would be reduced but not eliminated. Instead of a ten-year cumulative water and sewer loss of \$7.2 million, the cumulative loss would be \$4.2 million, as shown in Table 7.

When combined, the overall financial impact of annexing the LJA into the Town of Waynesville is a net loss of \$3 million over ten years.

Findings and Conclusions

The Town and LJA leadership feel that the time is right to bring the communities closer together. Annexation will benefit the region as a whole and is in the best long-term interest of both parties. LJA has a well run public works/public utilities systems with conscientious and quality staff supporting them. The state of the LJA infrastructure and needed capital projects for LJA are not abnormal when compared to other smaller system across the State. Many are facing similar capital investment challenges and considering other operational and/or consolidation options. Systems across the country are dealing with aging infrastructure and limited financial resources.

While the capital project estimates for LJA were cautious and there may be some opportunity for cross project coordination and savings, additional monies will be needed from the Town's water and sewer funds and/or general fund in order to finance the projected losses from annexing LJA. Fortunately, the Town's water and sewer rates are low when compared to other providers in the area and will be able to tolerate adjustments. Table 8 compares the Town's charges with the charges by other providers within a 50-mile radius.

TABLE 8
TOWN OF WAYNESVILLE
LAKE JUNALUSKA ASSEMBLY ANNEXATION
COMPARISON OF WATER AND SEWER CHARGES

Water Bill for 4,000 gal: Waynesville - \$16.93, 50 mi radius average - \$27

Sewer Bill for 4,000 gal: Waynesville - \$18.59, 50 mi radius average - \$27

Water Bill for 10,000 gal: Waynesville - \$28.15, 50 mi radius average - \$50

Sewer Bill for 10,000 gal: Waynesville - \$33.11, 50 mi radius average - \$55

The financial effect of the annexation upon residents of LJA includes both increases and decreases to various bills, but the net effect is a slight decrease. As shown in Table 9, a resident with a \$300,000 house and \$10,000 vehicle who uses a typical 4,000 gallons of water and sewer service per month will see the greatest increase in property taxes and the greatest savings in sewer charges. Additionally, non-exempt properties will no longer pay additional fees for fire / police protection.

TABLE 9
TOWN OF WAYNESVILLE
LAKE JUNALUSKA ASSEMBLY ANNEXATION
EFFECT UPON LJA RESIDENT

	LJA	TOW	DIFFERENCE
TAX / ASSESSMENT - PROPERTY (300,000)	\$ 990.00	\$ 1,224.60	\$ 234.60
TAX / ASSESSMENT - VEHICLE (10,000)	\$ 33.00	\$ 40.82	\$ 7.82
WATER (4000 GAL/MO)	\$ 266.04	\$ 203.16	\$ (62.88)
SEWER (4000 GAL/MO)	\$ 310.68	\$ 223.08	\$ (87.60)
TRASH (GA1)	\$ 166.32	\$ 108.00	\$ (58.32)
FIRE PROTECTION	\$ 48.00		\$ (48.00)
TOTAL	\$1,814.04	\$1,799.66	\$ (14.38)

* Does not consider impact of property taxes on federal taxes.

Appendix - Capital Improvements Plan

Lake Junaluska Assembly Infrastructure Assessment – Water, Sewer and Street Systems

The infrastructure assessment for the Lake Junaluska Assembly (LJA) water and sewer systems utilized three (3) previously prepared reports as the basis for determining the condition of the existing system. These documents included the *Water and Sewer Assessment and Appraisal* prepared by the LJA Public Works Department dated September 2011, the *Water and Sewer Capital Improvement Plan* dated May 1, 2012 prepared by Cavanaugh & Associates, and the *Water and Sewer System Assessment and Appraisal* prepared by the LJA Public Works Department dated Spring 2012. The scope of our effort included meeting with LJA staff and performing limited field visits to “spot check” the general assessments and recommendations of these previously prepared documents. Updated project cost estimates were then prepared for the recommended improvements.

The infrastructure assessment for the LJA street system utilized the *Strategic Pavement Survey* prepared by the Lake Junaluska Assembly Public Works department (Spring 2011) extensively to determine the condition of the existing roads, and limited site visits were performed to determine the general accuracy of the LJA survey.

A. Water System

The water system serving Lake Junaluska is comprised of distribution system made up of approximately 15.4 miles of pipeline ranging in size from 1-inch in diameter to 8-inches. The system also includes a 230,000 gallon concrete storage tank and a booster pump station. Water is supplied to the system from the Town of Waynesville through two (2) metered connections. While some of the water lines have been installed within the past 10 years, much of the system is over 100 years old. These older lines are both galvanized pipes and cast iron, with lead joints. The age and condition of the water system results in frequent breaks and significant leakage.

The proposed improvements to the water system were prioritized into two (2) phases. The first phase targets the portions of the water system that are not in compliance with the Rules Governing Public Water Systems (NCAC Title 15A, Subchapter 18C). These rules require a minimum line size of 2-inches and also limit the length of 2-inch lines to 1000 feet. Therefore, Phase 1 includes the replacement of all of the existing 1-inch water lines with 2-inch and/or 6-inch water lines and also the replacement of existing 2-inch lines with 6-inch lines to reduce the lengths of these sections of 2-inch line to less than or equal to 1000 feet. Approximately 6,500 linear feet of new 6-inch ductile iron water line and 4,850 linear feet of 2-inch PVC water line are proposed for installation in Phase 1. Also included in this first phase is the addition of Supervisory Control and Data Acquisition (SCADA) equipment at the storage tank and booster pump station to allow these facilities to communicate with each other thereby enabling the pump station to fill the tank automatically. The proposed SCADA equipment will also allow communication with the existing Town of Waynesville SCADA system.

The second phase is not as well defined as the first phase and generally includes the replacement of a portion of the remaining water system as needed to improve the overall condition of

the system and its reliability. Phase 2 includes the replacement of 10% of the remaining 6-inch water lines and 50% of the remaining 2-inch water lines. The 6-inch lines would be replaced with new 6-inch ductile iron water lines and the 2-inch lines would be replaced with a combination of 2-inch PVC and 6-inch ductile iron water lines. Approximately 9,000 linear feet of 6-inch water line and 5,000 linear feet of 2-inch water line are proposed for installation in Phase 2. Also included in Phase 2 is a minor upgrade to the booster pump station to add variable frequency drives (VFDs) to the pumps. These will allow the pumps to ramp up and down which will reduce the sudden pressure surge that currently happens when the pumps are turned on at full speed.

B. Sewer System

Based on site visits and a review of the available mapping, the estimated total length of existing sewer lines is approximately fifteen (15) miles as scaled from aerial maps. According to the previous studies, the original sewer system dates back to the 1910's. Although there are some extensive hand drawn maps of the existing sewer system as to locations, we were provided with little information regarding the sewer pipes, such as size and material. Based on input from LJA staff, it has been assumed that much of the older portions of the system was constructed with 4-inch and 6-inch vitrified clay pipe (VCP) with brick manholes or no manholes, as was standard practice during this time period. Vitrified clay pipe has a tendency settle and break at the pipe joints, and brick manholes have a tendency to deteriorate over time, often significantly. For these reasons, it is recommended that additional video and field inspections be performed to gain a better understanding of the system and to refine the recommendations and priorities for rehabilitation and capital improvements. These inspections could be performed system wide all at once, or phased over multiple years covering a different portion of the system each year. There is also one (1) sewage lift station near the Tri-Vista condominiums which we understand from LJA staff serves primarily, possibly only, the condominiums. According to the LJA report, this lift station was severely damaged during a 2010 snowstorm and the grinder pumps and controls were replaced in 2011. This lift station appears to be in adequate condition and not in need of any immediate improvements.

The previously prepared reports identified several sewer line segments as "High Priority" for replacement. The existing sewer lines on Liberty Road and Kilgore Road are reportedly 4-inch diameter VCP with limited manholes and a large number of service taps, and are considered the highest priority for replacement with 8-inch diameter to meet current State regulations. The sewer lines on JB Ivey Road, Stuart Circle, Littleton Road and Glendale Drive are 4-inch and 6-inch diameter and also have limited manholes and a large number of service taps. Therefore, these sewer lines are also considered "high priority" for replacement and upgrades. Sewer lines identified in previous reports as "Medium" or "Low" priority include Weldon Way, Oxford Road, Cokesberry Circle, and Atkins Loop. These lines have excessive age and are undersized, and are recommended for replacement. Cost estimates for the replacement of all of these priority sewer lines identified in the previous report with 8-inch diameter sewer lines have been revised based on our opinions of probable cost. The minimum size for new sewer lines allowed by current State regulations for a municipal sewer system is 8-inch diameter. Many of the existing sewer lines to be replaced will require pavement repairs and, due to the depth and locations of

the sewer lines, it will often be preferable to overlay the entire road width with asphalt. It is noted that the preliminary cost estimates developed are significantly higher than those included in the previously prepared reports by LJA staff and their consultant. For sewer lines being replaced on streets identified as needing repairs, the asphalt repair and overlay costs have been included in the sewer system cost estimates and not in the street repair cost estimates.

C. Street System

The infrastructure assessment for the LJA street system utilized the *Strategic Pavement Survey* prepared by the Lake Junaluska Assembly Public Works department (Spring 2011) as a starting point for the condition of the existing roads. This LJA survey appears to be a fairly detailed review. The Town of Waynesville staff also requested that we determine which existing roads appear to meet the minimum width for Powell Bill funding (16-feet in width) and which roads could be brought into Powell Bill compliance fairly easily. There are many roads in the LJA area which do not meet the Powell Bill requirements and with constraints of topography and rights-of-way, cannot easily be brought up to standards. There are, however, many which are just under the 16-foot requirement and could be widened without much difficulty.

The LJA *Strategic Pavement Survey* included a field review of each street. Each street was rated as being in one of five categories based on the condition of the street. However, the streets in greatest need of repair fall into categories designated as either "Critical" or "Poor", as defined as follows in the LJA survey:

Critical Condition – Consistently rough ride, severe deterioration, frequent patching

Poor Condition – Clearly bumpy ride, above average deterioration, frequent patching

Streets that are in "Critical" condition would be considered the highest priority for repairs. These streets, as listed in the LJA survey, included Holston Village Road, Aldersgate Road, Hickory Hills Drive, North Lakeshore Drive, Weldon Way, Simplicity Drive, Sleepy Hollow Drive, Cokesberry Circle, Atkins Loop and Chapel Drive. Note that part of the street repair costs for Weldon Way, Cokesberry Circle, and Atkins Loop have been included in the sewer line replacement costs for these areas as appropriate.

Streets listed by the LJA survey as being in "Poor" condition include Tillman Drive, Oxford Road, Crum Drive (partial section), South Lakeshore Drive (partial section), Wells Road, Memory Lane, Ponder Lane, Mouzan Road, Liberty Road (partial section), and Sleepy Hollow Road (partial section). Note that part of the street repair costs for Liberty Road have been included in the sewer line replacement cost for this street as appropriate.

Based on scaling of available aerial maps, it is estimated that the total length of LJA streets is approximately 16.65 miles, not including State-maintained roads or road portions near the Conference Center that the LJA is likely to keep. Of the 16.65 miles of roads, approximately 9.4 miles appear to be greater than 16 feet wide and should be Powell Bill eligible. In addition, based on our field observations, there is another approximately 2.1 miles of streets that could feasibly be widened with reasonable efforts to a width of 16 feet to result in the streets being Powell Bill eligible. These streets that could be

widened include the following: Harrell Drive, Harmon Drive, Crum Drive, White Dogwood Drive, Oxford Road, Carolina Road, and Whitfield Way.

Preliminary cost estimates were developed for all of the street improvements described above. In addition, estimates for a yearly amount of pavement repair and paving have been made. These estimates assume that some of the cracking and potholed sections will need subgrade repairs and additional stone in some locations, and that minor drainage pipe replacements will be necessary.