

**Measuring the Economic Impact and Value of Parks,
Trails and Open Space in Jefferson County**

Accounting for Current and Future Scenarios

Prepared for Jefferson County Parks Department and
Wisconsin Department of Natural Resources

Prepared by:

Sanya Carleyolsen

Tanya Meyer

Joseph Rude

Ian Scott

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Course Facilitators:
Dr. David W. Marcouiller and Dr. Steve Grabow

EXECUTIVE SUMMARY

Jefferson County parks, trails and open space provide important economic benefits to local citizens. County residents and local officials understand this, and thus seek to expand on these resources. Before doing this, however, the County wishes to better understand how parks, trails and open space make the County a better place to live, work, and recreate. For this reason they have partnered with UW-Extension and the UW-Madison Department of Urban and Regional Planning to provide them with research and analysis related to the way that parks, trails and open space should be expanded. Meanwhile, the county is concurrently being evaluated as a potential site for the Wisconsin Land Legacy program, which will help with the financing and implementation of the expansion plans.

This paper attempts to determine the economic value that parks, trails, and open space resources provide to Jefferson County. The economic value of these resources includes the income and jobs generated by the spending of visitors using the recreation infrastructure, as well as increased property values for nearby residents, non-use values, and natural system values. This study looks at all of these economic value components, first under existing park and trail conditions, and then under an expanded park system scenario, ten years in the future.

The direct use component of economic value estimates the impacts of spending in Jefferson County by parks and trails visitors. These estimates were made using input-output analysis, which involves modeling the interrelationships between sectors in a local economy, and then measuring what impacts new spending will have on each of those sectors. This modeling exercise is based on the notion that new spending in one sector will increase that sector's demands for inputs from other sectors with which it has supplier relationships.

Using estimates of total non-local visitors to the County and State Park and Trail systems as well as typical recreation expenditure patterns, it is estimated that the current park and trail system generates a total of approximately \$13 million in total value-added income, and 420 jobs for Jefferson County residents. With Land Legacy and other investments in park and trail expansion, we estimate that up to \$32 million in total value-added income, and 1028 jobs might be generated.

The indirect use component of economic value is estimated in this study using the hedonic pricing technique to understand how parks and open spaces contribute to higher property values on adjacent parcels. Studies have shown that residential properties near parks are often worth between one and twenty percent more, based solely on the premium provided by the adjacency to the natural

resource. This study estimates that the total market value of properties near current park and State Wildlife Areas in Jefferson County is likely enhanced between \$8 - 42 million. Adding more park area will increase this impact.

The third component in our assessment of economic value is the non-use and natural systems values. This paper assesses these benefits in qualitative and quantitative terms. Fully estimating these values quantitatively is beyond the scope of this study, so we have instead tried to give the reader a better idea of what these values contribute to a wider concept of economic value.

This study was conducted over a short time frame (fifteen weeks) and with limited financial resources. As a result, we have supplemented local data sources with expert local knowledge, data derived from previous research on parks, trails and open space, and have made reasonable, conservative assumptions where necessary. Moreover, this study has looked exclusively at the economic benefits of parks, trails and open space in Jefferson County. As we have made no attempt to calculate any of the costs of increasing investments in these resources, this study should not be mistaken as benefit-cost analysis.

The results of this study suggest a few important policy implications that we present for consideration. First, Jefferson County communities and businesses may increase the economic impact of parks, trails and open space by making strategic investments to capture more spending by non-local park visitors. In turn, this can make the County an even more desirable place to live and do business. Second, establishing a monitoring program that collects data on visitor numbers and expenditure patterns will allow County officials to conduct more accurate economic impact analysis in the future. Third, there are many different economic benefits to parks, trails and open space, and the distribution of public-friendly summaries of this report can help communicate these benefits to the citizens of Jefferson County.

Because parks, trails, and open spaces provide so many benefits to a local economy, accurately determining the total economic value they provide is a difficult proposition. This paper uses direct use value, indirect use value, and non-use and natural systems values to provide a wider concept of the contribution that these resources provide to the local economy. We also offer estimates of the increased contribution that an expanded system of parks, trails, and open space might make to the local economy. We hope that this will be a valuable information for policy-makers faced with decisions on how Jefferson County will develop.

TABLE OF CONTENTS

1.	OVERVIEW.....	1
1.1.	PURPOSE	2
2.	APPROACH AND METHODS	3
2.1.1.	DIRECT USE VALUATION.....	4
2.1.2.	INDIRECT USE VALUATION.....	4
2.1.3.	NON-USE VALUATION	4
3.	ECONOMIC IMPACT ANALYSIS USING INPUT-OUTPUT ANALYSIS.....	6
3.1.	OVERVIEW.....	6
3.2.	INPUT-OUTPUT ANALYSIS	6
3.3.	DATA AND METHODOLOGY	7
3.4.	RESULTS AND ANALYSIS	9
3.5.	CAVEATS AND LIMITATIONS	11
4.	INDIRECT USE VALUATION USING THE HEDONIC PRICING METHOD.....	12
4.1.	OVERVIEW.....	12
4.2.	DATA AND METHODOLOGY	14
4.3.	RESULTS AND ANALYSIS	15
4.3.1.	EXISTING CONDITIONS	15
4.3.2.	EXPANDED PARK SYSTEM	16
4.4.	CAVEATS AND LIMITATIONS	17
5.	NON-USE VALUES AND INDIRECT NATURAL SYSTEM VALUES	18
5.1.	NON-USE VALUES.....	18
5.2.	INDIRECT USE - NATURAL SYSTEMS VALUES.....	19
6.	THE ENVIRONMENTAL CONSERVATION VALUE OF PRIVATE OPEN SPACE.....	21
6.1.	OVERVIEW.....	21
6.2.	DATA AND METHODOLOGY	22
6.3.	RESULTS.....	24
6.4.	CAVEATS AND LIMITATIONS	25
7.	SUMMARY OF RESULTS.....	26
7.1.	ECONOMIC IMPACT ANALYSIS USING INPUT-OUTPUT ANALYSIS.....	27
7.2.	INDIRECT USE VALUATION USING THE HEDONIC PRICING METHOD.....	27
7.3.	OTHER NON-USE AND INDIRECT USE VALUES	28
8.	POLICY IMPLICATIONS AND IMPLEMENTATION	28
8.1.	FIND WAYS TO MAKE ECONOMIC IMPACT EVEN MORE SIGNIFICANT.....	28
8.2.	COLLECT MORE PARK USAGE DATA.....	29
8.3.	COMMUNICATE BENEFITS AND DEVELOP PARTNERSHIPS.....	30
8.4.	CONDUCT FURTHER RESEARCH.....	32
8.5.	FRAME STRATEGIES FOR INFRASTRUCTURE THROUGH TAX DOLLARS.....	32
9.	SUMMARY OF IMPORTANT CAVEATS AND LIMITATIONS	33
10.	CONCLUSION	34
	APPENDIX A – EXISTING JEFFERSON COUNTY PLANS AND STUDIES.....	43
	APPENDIX B – BASE CASE AND FUTURE SCENARIO VISITOR TABLES.....	45
	APPENDIX C – METHODS FOR ESTIMATING EXPENDITURES BY ACTIVITY	51
	APPENDIX D – STAKEHOLDER ANALYSIS.....	53
	APPENDIX E – IMPLAN RESULTS.....	56

1. OVERVIEW

Parks, trails, and open spaces are important to people because of the amenities they offer. They provide a venue for outdoor recreation, offer aesthetic views, enhance adjacent properties, and function as wildlife habitat, to name a few such benefits. Jefferson County residents and public officials recognize the importance of natural, open space and have engaged in planning to preserve and expand parks, trails, and recreation areas.

Jefferson County residents value the opportunity for recreational activity close to home and feel as though it is important that the County ensure that these resources are available. The presence of parks, trails and open space not only add to the quality of life of local residents, but these natural spaces also serve as magnets that bring visitors to explore and patronize the surrounding park area. Jefferson County is located in southcentral Wisconsin, between Madison, Milwaukee, and Chicago. County and state officials believe the County will experience increased visitor demand for recreation. This influx of visitors and new residents is likely to impact the character, and, potentially, the overall quality of life of the County.

Jefferson County has emphasized its commitment to rural character and agricultural base preservation within various policy documents. Three major plans have been developed that explore parks, trails and open space as they relate to the future of Jefferson County: The Jefferson County Parks, Recreation and Open Space Plan (2005); the Jefferson County Agricultural Preservation and Land Use Plan (1999); and the Jefferson County Bikeway/Pedestrianway Plan (1996). (Refer to Appendix A for a summary of these reports.)

Jefferson County's efforts to expand parkland, trails and open space may be even more successful when combined with the Wisconsin Department of Natural Resources (DNR) initiatives, specifically the DNR's Land Legacy program. Since 1999, the DNR has been conducting a project to identify locations throughout the state that may protect distinctive natural resources and service an increasing recreational demand (DNR, no date). The Glacial Heritage Area in western Jefferson County, for instance, has been identified as one of these Legacy Places (Pohlman, 2004). The intent of the Glacial Heritage Area plan is to protect "units" of land in western Jefferson County that are distinctive to this part of the state, such as glacial formations. Another important component is to link these units of land with other parks and open space throughout the County. In turn, these connected lands

would offer expanded recreational opportunities for Wisconsin residents. A feasibility study is currently underway for the Glacial Heritage Area (Pohlman, 2004).

Increasing attention across the country is being given to the value of parks, trails and open space in individual communities. Citizens are not only concerned about how the use of these resources by local residents and visitors generate economic activity in local and regional markets, but also how these resources are valued in other ways – for scenic beauty, for outdoor pastimes, for environmental conservation or for the benefit of future generations. The total economic value of parks, trails and open space is made up of the value that individuals derive from directly using these resources in a consumptive way; from benefits they indirectly receive from using the resource; and the value that individuals derive from these resources even though they may not use them (Fausold and Lilieholm, 1999). It is important, when one considers the economic value of public natural areas, that all of these elements of value are included.

Because parks, trails and open spaces are public goods, as provided and maintained by the state or local government, no true market exists for these spaces, thereby making it very difficult to measure the demand for these resources. Using other methods, however, as we do in this analysis, one can estimate an approximate value of public spaces beyond the more easily obtained direct use value.

1.1. PURPOSE

The existing system of parks, trails, and open spaces represents an important economic value for Jefferson County. Developing a more thorough understanding of the economic value can help with public policy decisions related to park expansions (Marcouiller, Deller, Moskal, & Grabow, 1999). This study is intended to identify and estimate the economic value—according to current conditions and a potential future expansion scenario— of parks, trails, and open space in Jefferson County. To perform these valuation analyses, the study will focus on three components:

- A quantitative analysis of direct use recreation impacts on the Jefferson County economy.
- A quantitative and qualitative analysis of the indirect use benefits of parks upon the Jefferson County economy.

- A quantitative and qualitative assessment of the non-use value of non-park open space.

This study looks at these three components first under existing park and trail conditions, and then under an expanded park system scenario, ten years in the future. We intend for this analysis to serve as an information resource, which can be considered by policy-makers and planners as they shape the development of Jefferson County.

2. APPROACH AND METHODS

Due to the varied nature of the total economic value of parks, trails and open spaces in Jefferson County, a single data collection and analysis method is not possible. Instead, different methods are required to calculate different components of the total economic value of the parks, trails and open space. In this study, however, we will measure only some of the components of the economic value of these natural public spaces in Jefferson County. We have chosen to focus on a few of the most significant components (see Figure 1), where we have reliable secondary data sources and can safely make reasonable assumptions. Our approach uses a combination of secondary data sources from Jefferson County, personal communication with Jefferson County officials, and data from other studies conducted in Wisconsin, the Midwest, and across North America.

The scope of this study and the type of data that are available for analysis dictate to a large degree the methods of our study. Our goal is to illustrate to our clients and interested stakeholders the type and relative magnitude of the economic values for parks, trails and open space in Jefferson County. Figure 1 illustrates the conceptual model that guides our planning approach. This study represents the first attempt to employ these methodologies in Jefferson County.

The following sections of the report describe the three methods employed in this analysis, as explained below. Each section presents the data technique and methodology, followed by the results, analysis, caveats and limitations. We use each method to calculate the current economic value of parks, trails and open space. We then create a future scenario case, based on the expansion plans, as documented in the Jefferson County Parks, Recreation and Open Space Plan, and consultation with staff at the Jefferson County Parks Department and the DNR. We use this scenario to calculate the change in economic value,

according to all three methods, that can be expected from an expansion of Jefferson County parks, trails and open space.

2.1.1. DIRECT USE VALUATION

We prepare an economic impact analysis as a way to measure the direct use values that people place on natural public spaces and the recreational opportunities that they offer. Using an input-output analysis, by tracking traveler spending according to their recreational activities, we estimate the impact of Jefferson County and State parks on jobs and revenues in the local economy.

2.1.2. INDIRECT USE VALUATION

We use a hedonic pricing technique—by analyzing property values adjacent to natural public resources—to infer the value that individuals place on parks, trails, and open space. Additionally, we conduct a descriptive analysis of other indirect use values such as natural system ecosystem services, maintenance of water quality, or natural flood control, which are not captured by the hedonic pricing method.

2.1.3. NON-USE VALUATION

We estimate the value of conservation easements as an approximation of the non-use value that Jefferson County citizens place on natural public spaces. Additionally, we provide a descriptive assessment of the non-use value of parks and open space. This qualitative assessment will discuss the value that society places on wildlife habitat and preservation of lands for future generations.

Figure 1. Conceptual model of methods for calculating total economic value of parks, trails and open space in Jefferson County. This study will only undertake the white boxes. The other methods will be described and the types of values found in other studies will be discussed.

DIRECT USE

INDIRECT USE

NON USE

Recreation - Park and Trail Visitation

Collect total number of non-local visitors and average local expenditures per visitor.

Determine local economic impact using input/output analysis (IMPLAN)

Productive Land Uses – Agriculture

Collect agricultural revenues statistics.

Determine total local economic impact using input/output analysis (IMPLAN)

Natural Systems Values

Have focus group with DNR / local residents to determine the top 3 functions

Determine value using cost for similar service or benefit transfer method.

Amenity Values for Local Residents

Collect assessed housing values from Land Information Office.

Determine value using hedonic pricing method for housing with marginal price values from other studies.

Value for Recreation

Collect total number of visitors and origin location. Calculate cost of travel by origin zone.

Determine value using modified travel cost method.

Option Value and Existence Value

Conduct contingent valuation survey within Jefferson County region.

Value of Conservation Easement

Collect value of per acre conservation easements in Jefferson County from Land Information Office and Jefferson County Land Trust.

Determine total value of conservation easements on other property.

3. ECONOMIC IMPACT ANALYSIS USING INPUT-OUTPUT ANALYSIS

3.1. OVERVIEW

Quantifying the full range of direct use values is quite challenging, but is grounded in actual monetary transactions. One class of use values—direct uses such as paying to camp at a park and spending money in local shops for food, supplies, and gas while in the county—is measured using a class of techniques called *economic impact analysis* (Stynes, 1999).

The field of economic impact analysis traces the flows of spending generated by an activity to quantify the cumulative impact of changes in sales, tax revenues, income and jobs associated with that activity (Stynes, 1999). Economic impact analysis in tourism and recreation aims to determine the level of economic activity that is associated with new spending in a local economy. (Ennew, 2003). From a public policy and planning perspective, economic impact analysis looks to avoid simply determining sales or expenditure levels, but to calculate more meaningful impact measures such as personal income or jobs.

Depending on the structure of the local or regional economy, spending by park and trail visitors can have a substantially different economic impact. A number of different techniques exist to estimate the economic impact of visitor spending on a local economy. Input-output analysis is one of the most common methods used in tourism and recreation economic impact analyses (Archer, 1977; Fletcher, 1989; Briassoulis, 1991). Other sophisticated techniques, such as computable general equilibrium models (Zhou et al., 1997; Mules, 2000; Dwyer et al., 2004) and social accounting matrices (Wagner, 1997; Daniels, 2004), are used by researchers in other jurisdictions. The cost and complexity of such methods, however, is prohibitive for this study. This analysis evaluates the direct economic impact of parks, trails and open space in Jefferson County using an appropriate technique, input-output analysis, in view of our scope and objectives.

3.2. INPUT-OUTPUT ANALYSIS

Input-output (I-O) analysis is an inferential tool used to predict output, income or employment changes as a result of an expenditure “shock” on a local economy. This technique enables us to track the flow of expenditures through the various sectors of Jefferson County’s

economy (Cordell, Bergstrom, & Watson, 1992). This analysis uses the I-O technique to determine the effects of non-local park and trail visitor expenditures on Jefferson County's economy.

Input-output analysis is an accounting framework with which to model inter-industry relationships and the manner in which goods and services flow between an economy's sectors. Each region's I-O model will represent how all economic activities within the region, including both inputs and outputs, correspond to each other, as represented in matrix form.

Using an I-O matrix to estimate changes in final output as a result of expenditures allows analysts to predict direct, indirect and induced expenditure shocks on the local economy. The direct expenditures, as inputted into the I-O matrix, is only a portion of the total economic activity effect. The direct effects represent the first round of purchases made by park visitors. For example, when visitors spend money at a food retail establishment this causes new demand among these food retailers for their food inputs, which are purchased from wholesalers and farmers. These expenditures, in turn, create a chain reaction of economic activity. The food retailers, as a result of increased expenditures at their establishments, will now purchase more food from the farmers and kitchen equipment from the local manufacturers. The increase in demand for produce and equipment is an indirect effect. Farmers themselves may then purchase more inputs, such as machinery, which represents another indirect effect. Local restaurants may then pay higher wages to wait staff, who then provide induced effects by increasing the amount that they spend in the local economy. Induced effects, therefore, are the associated effects of increased local household income as a result of increased direct and indirect sector effects (Bergstrom et al., 1990). The total economic effect is comprised of all three effects.

By tracking the connections between economic sectors and the direct source of expenditures, the I-O matrix generates a multiplier, which then predicts output, income, or employment numbers. "Multiplier" refers to the amount that one dollar spent by someone visiting a park must be multiplied to get the total amount of sales, taxes, income or jobs generated by that dollar.

3.3. DATA AND METHODOLOGY

Our direct economic impact model is based on estimates of per visitor daily expenditures related to each visitor's primary recreational activity at Jefferson County's parks and trails. In order to produce usable and relatively accurate data, we worked with local park and planning experts. We

begin by generating a number for annual non-local park visits. We use non-local visitor numbers because it is incoming revenue, which represent injections of new money into the local economy. We combine available DNR park visitor numbers, with a reasonable estimate for the number of visitors to the Jefferson County Park system, to determine the annual, total of non-local Jefferson County parks and trail visitors. We then estimate the number of increased park visitors that Jefferson County would capture from a parkland expansion scenario. The sites used in the future scenario are determined through interviews with Jefferson County Park, UW-Extension, and DNR staff. Based on feasibility, budget and political considerations, we include four land legacy sites, several expanded trails and bicycle roadways, and acreage and infrastructure expansions at four County parks as a possible 10-year expansion park scenario (refer to Appendix B for current and future scenario park visitor tables).

We break total visitor numbers for each park and trail down by the primary recreational activity (e.g. boating, hiking, camping) hosted at each site. For instance, a park may provide picnicking opportunities for 75 percent of its visitors, and hiking trails for the remaining 25 percent of its visitors. For the future Jefferson County park expansion scenario, we similarly estimate the future make-up of parks visitors by recreational activity.

We then determine average local expenditures per visitor. Recognizing that some types of activities are much more lucrative than others in terms of associated visitor spending, we separate visitor expenditures by recreational activity, and then break these per person spending totals down by category—food retail, general retail, entertainment, transportation-related, lodging and other—of expenditure. This is done by analyzing academic studies of average visitor expenditures, according to expenditure category, associated with each type of recreational activity. Wherever possible we use data collected in Wisconsin, and always use the most current data available. Where Wisconsin data are not available, we attempt to use data from the most similar area in terms of population demographics, location, amenities, and climate (refer to Appendix C for specific details on expenditure patterns).

To estimate the current and future economic impacts attributable to non-local park visitor spending, we multiply per visitor expenditures, according to recreation type, by the total number of non-local visitors. The future scenario performs the same calculation based on an estimate of visitor numbers following park and trail expansion. This total yearly expenditure shock for each sector is

put into the IMPLAN I-O model.¹After inserting our predictive data into IMPLAN, the model produces three types the resulting direct, indirect, and induced effects of the original expenditures. By summing the direct, indirect, and induced effects, we can get an estimate for total impact on the Jefferson County economy. We have used these figures in the description of our results.

3.4. RESULTS AND ANALYSIS

Based on our data, we estimate the total value-added income² that parks-related spending contribute to the Jefferson County economy to be roughly \$13.0 million (2005 dollars). Of this total, \$9.5 million is attributable to direct effects, \$1.5 million in indirect effects and \$2.0 million in induced effects (Table 1 provides a breakdown of how the direct, indirect and induced effects are distributed across different sectors of the County's economy³). Current park visitor expenditures contribute roughly 420 jobs to the local economy, and produce \$6.3 million in employee income.

Based on our estimates for the number of park visitors associated with parks and trails expansion, we estimate that the total value-added income to the economy in 2014 would increase by an additional \$32.1 million (2005 dollars). The direct effect accounts for \$23.6 million of this total, the indirect effect \$3.6 million and the induced effect \$4.9 million. Under this future expansion scenario the County could expect park and trail visitors to account for an additional 1028 jobs and \$15.4 million in total employee income.

The Jefferson County economy had a total value-added income of approximately \$2.2 billion for 2002. Workers in the County earned \$1.2 billion in wages in the same year (figures from IMPLAN). The total contribution of parks-related spending is clearly a small percentage of these totals. Compared to the economic impact of tourism as a whole in Wisconsin, \$6.6 billion in total income in 2004 (Davidson-Peterson Associates, 2005) the economic impact of parks and trails recreation spending in Jefferson County is relatively modest. However, another perspective is to compare park-related total value-added income, \$9.5 million currently and an additional \$23.6 million under an expanded parks and trails scenario, to total farm earnings in Jefferson County, estimated at \$32.1 million in 2003 (Bureau of Economic Analysis, n.d.).

¹ We used the IMPLAN program to model the Jefferson County economy. IMPLAN is a commercially available I-O database that provides insights into the structure of the interrelationships between sectors within a regional economy (IMPLAN 2002).

² Income value added includes all sources of incomes including employee wages, proprietor income, other property type income, and (4) indirect business taxes.

³ See Appendix E for full set of IMPLAN tables.

Table 1: IMPLAN I-O results for total value-added income for both the current and future scenarios.

IMPLAN Results - Current (Base Case) Scenario - Total Value-Added Income					
NAICS Code	Industry	Direct	Indirect	Induced	Total
22	Utilities	\$0	\$129,000	\$52,000	\$182,000
31-33	Manufacturing	\$0	\$165,000	\$80,000	\$245,000
42	Wholesale Trade	\$0	\$102,000	\$90,000	\$191,000
48-49	Transportation & Warehousing	\$0	\$109,000	\$49,000	\$158,000
44-45	Retail trade	\$6,431,000	\$77,000	\$389,000	\$6,896,000
52	Finance & insurance	\$0	\$50,000	\$89,000	\$139,000
53	Real estate & rental	\$22,000	\$397,000	\$150,000	\$569,000
54	Professional- scientific & tech svcs	\$0	\$83,000	\$36,000	\$119,000
56	Administrative & waste services	\$0	\$96,000	\$28,000	\$124,000
62	Health & social services	\$0	\$0	\$352,000	\$352,000
71	Arts- entertainment & recreation	\$329,000	\$14,000	\$17,000	\$360,000
72	Accomodation & food services	\$2,577,000	\$23,000	\$87,000	\$2,687,000
81	Other services	\$0	\$28,000	\$75,000	\$104,000
92	Government & non NAICs	\$131,000	\$80,000	\$447,000	\$658,000
	Other industries	\$23,000	\$159,000	\$58,000	\$239,000
	Total	\$9,513,000	\$1,512,000	\$1,999,000	\$13,024,000

Estimates for 2005. In 2005 Dollars.

IMPLAN Results - Future Scenario - Total Value-Added Income					
NAICS Code	Industry	Direct	Indirect	Induced	Total
22	Utilities	\$0	\$304,000	\$129,000	\$433,000
31-33	Manufacturing	\$0	\$388,000	\$195,000	\$584,000
42	Wholesale Trade	\$0	\$236,000	\$220,000	\$456,000
48-49	Transportation & Warehousing	\$0	\$259,000	\$120,000	\$378,000
44-45	Retail trade	\$15,681,000	\$184,000	\$955,000	\$16,820,000
52	Finance & insurance	\$0	\$119,000	\$220,000	\$338,000
53	Real estate & rental	\$67,000	\$937,000	\$368,000	\$1,372,000
54	Professional- scientific & tech svcs	\$0	\$190,000	\$88,000	\$279,000
56	Administrative & waste services	\$0	\$229,000	\$69,000	\$298,000
62	Health & social services	\$0	\$0	\$864,000	\$864,000
71	Arts- entertainment & recreation	\$603,000	\$31,000	\$43,000	\$677,000
72	Accomodation & food services	\$7,117,000	\$56,000	\$215,000	\$7,388,000
81	Other services	\$0	\$66,000	\$185,000	\$251,000
92	Government & non NAICs	\$107,000	\$184,000	\$1,098,000	\$1,390,000
	Other industries	\$42,000	\$373,000	\$141,000	\$556,000
	Total	\$23,618,000	\$3,557,000	\$4,908,000	\$32,084,000

Estimates for 2014. In 2005 Dollars.

For the future scenario, our model determines the base output multiplier to be 1.38. This number indicates what the amount of new visitor spending will stay in the local economy through direct, indirect, and induced effects. It is an indication of the strength of the relationships between firms in Jefferson County's economy. While a multiplier of 1.38 is not unusual for rural areas in the Midwest, a multiplier of this size does indicate leakage in the local economy (Stynes, 2001; Marcouiller, personal communication). By strengthening industries that will be particularly impacted by new visitor spending, and their ties with other local firms on the supply and the demand sides, the County can capture a more significant percent of visitor spending, and increase the economic impact of parks.

3.5. CAVEATS AND LIMITATIONS

Undertaking this analysis in a manner that produces reliable, usable policy information is a complicated proposition. We attempt to assess what future parkland development in Jefferson County will mean to the county economy without knowing the specific form or degree in which such development will take shape. This uncertainty can be attributed to the political questions inherent in attempting to acquire and dedicate hundreds, or even thousands of acres of land in one part of the County. State budgets in Wisconsin have been increasingly tenuous in recent years, making it impossible to predict the future of the Land Legacy program. Furthermore, individual land owners themselves may not be willing to sell lands that the DNR intends to purchase, which further complicates the political calculus.

This analysis is constrained by an initial lack of data on Jefferson County parks and trails visitors and their expenditures. We have attempted to compensate for this lack of data in the most methodologically sound ways that we could think of, given time and resource constraints. In generating estimates, we have consulted with project principles to ensure that our assumptions are reasonable and backed up by local experience. In our use of data from other studies, we have tried to ensure that the contexts from the different places are comparable. Despite these efforts, however, these results should be taken as estimates of how parks and trails contribute to the local economy.

The estimates of future park contributions to the local economy are particularly uncertain. These estimates are based on a scenario that we generate based on consultation with those involved with planning park and trail expansion in Jefferson County. As it is impossible to predict how the actual park and trail expansion program will take shape, we attempt to at least put

forth a feasible park expansion scenario and then model the contributions it would make to the economy. This forecast is subject to influence from numerous variables involved with developing the park and trail expansion program.

There are also methodological limitations to I-O analysis. While I-O analysis is an efficacious tool, it too has limitations. I-O analysis has very strict assumptions, based on a modeled economy that has both pre- and post-shock equilibrium, a linear expansion path and constant returns to scale, and all firms within a given sector are assumed to make the same production decisions in response to a shock. I-O is further constrained by its lack of social accounting and ability to track income effects as they relate to household behavior (Shafer, 2004).

4. INDIRECT USE VALUATION USING THE HEDONIC PRICING METHOD

4.1. OVERVIEW

Indirect use values can be defined as the name implies: the value placed on resources from which individuals benefit indirectly, such as scenic views of open space. Primary methodologies for determining the economic value of indirect uses are techniques that look to *reveal preferences* by examining consumer behavior in other areas (Freeman, 2003). The hedonic pricing method is such a technique, and it assumes “people’s valuation of environmental attributes can be inferred from the amount they are willing to pay for these attributes through the housing market (Hanley, Shogren, & White, 2001, p. 53).” For example, the prices of houses near a park can be used to infer the amount that individuals are willing to pay for the viewshed or open space that the park provides.

Open space and trails can be prime attractions for new homebuyers (National Park Service, 1995) and inevitably, some of this attraction is attributed to the accessibility to trail and park usage. However, research also suggests that parks and open space can have a positive impact on adjacent homeowners’ property values; that is, properties in the vicinity of parks and open space can have higher property values than those not in the vicinity. For example, an analysis of property surrounding four parks in Worcester, Massachusetts, showed a house located 20 feet from a park sold for \$2,675 (1982 dollars) more than a similar house located 2,000 feet away (More, Stevens, & Allen, 1982). Another study, conducted in Maryland in the early 90’s, showed that preserving a

significant amount of forest land accounted for anywhere from four to ten percent of the value of houses within one mile of the site, in three different counties (Crompton, 2000; Curtis, 1993).

Empirical research has shown that percentage premiums are highly variable due to differences in park sizes, uses, and design, among other conditions (Crompton, 2000), and can be noted even in the few studies described above. Studies have also shown that the relationship between parks and open space and property values is not a simple relationship. For example, parks with limited vehicular access (but with some recreational access) and with effective maintenance and security provisions are correlated with a positive influence on adjacent property values (Brown & Connelly, 1996; Colwell, 1986). In other cases, some high use areas can actually have a negative influence on adjacent property, but still contribute to increased value of nearby properties (Lyon, 1972). Nevertheless, hedonic pricing is commonly used to determine indirect use values.

The hedonic pricing method is conducted using regression analysis; one of the first steps in the analysis is to estimate a hedonic price equation. Property values are a function of many factors, such as physical characteristics of the housing structure and neighborhood characteristics. Environmental characteristics such as viewsheds and lake frontage also relate to property values (Bolitzer & Neutsil, 2000; Hanley, Shogren & White, 2001; Krysel et al., 2003; Palmquist, 1999). Because of this, it is important to control for various parcel characteristics through the price equation so that the effect of distance from parks and open space on property values can be isolated (Marcouiller et al., 1999). Results from the regressed equation can be used to calculate an implicit price for parks and open space. In turn, this implicit price could be applied to determine an overall impact on property values due to proximity to parks and open space (Hanley, Shogren & White, 2001; Palmquist, 1999).

Conducting a full hedonic pricing technique is beyond the scope of this study. In the absence of a formal hedonic study, another approach is to apply published hedonic studies on parks and open space to the conditions of Jefferson County. A range of marginal prices extracted from these studies are applied to existing parks and state wildlife areas in Jefferson County to find the overall impact on property values. Using the results from the analysis of existing conditions, similar impacts are then postulated for additional acreage resulting from park expansions.

4.2. DATA AND METHODOLOGY

Using land information data available from Jefferson County Geographic Information Systems (GIS) (Jefferson County Land Information Office, 2005), the current total acreage of the Jefferson County parks and state wildlife areas was calculated. State wildlife areas have typically been acquired by the DNR and are designated as public lands, including lands such as marshes and hunting areas. The current total acreage of Jefferson County parks is 4,800 acres, and state wildlife areas, 13,460 acres.

Again, studies typically show that as the distance of residential properties from parks increases, the positive impact of the park upon the property value tends to decrease. While these proximity impacts vary throughout the studies, few studies attempt to calculate impacts beyond 2,000 feet because additional variables come into play, creating too much complexity in the study (Crompton, 2000). Therefore, for Jefferson County purposes a 1500-foot boundary was chosen as a reasonably conservative parameter.

All parcels within the 1500-foot boundary are identified using real estate and land information GIS data (Jefferson County Land Information Office, 2005). Literature has typically applied hedonic pricing analysis to residential parcels; similarly residential parcels were captured in the 1500-foot boundary. To compensate for the fact that zoning codes are not immediately available in the GIS data, it is assumed that residential parcels could be selected as those parcels having street addresses or improvement values. While this method likely captures most residential parcels in the established boundary, it is possible that some valid parcels are deleted and invalid ones such as farms or commercial properties are retained. Any residential parcels that fall within the boundary of both parks and state wildlife areas are included in the parks analysis.

The total 2004 estimated fair market value for the residential properties within the boundary is then calculated. Percentage premiums from other hedonic studies are applied to the total property value to determine what portion is attributable to the property's vicinity to Jefferson County Parks. To account for high variability in percentage premiums, three different scenarios are analyzed to give more and less conservative estimates. For park lands, the three percentage premiums are two, five, and ten percent. Making the assumption that state wildlife areas have less impact upon neighboring properties, the wildlife areas are analyzed using lower percentage premiums than for the parks; namely one, three, and six percent. A decreasing premium within the 1500-foot boundary is not applied.

Dividing the portion of property value attributable to parks by the existing park acreage of 4,800 acres provides a property value per acre, which again is attributable to park proximity. Likewise, the portion of property value attributable to state wildlife areas is divided by the existing wildlife acreage to determine a property value per acre. In order to determine the increase in property values that might be realized by an expanded park system, the property value per acre for park proximity is multiplied by the additional acreage anticipated for an expanded park system. Because of the Land Legacy initiative, DNR staff anticipate that additional park acreage in Jefferson County at final build-out could be anywhere from 4,000 to 10,000 acres (Pohlman, pers. comm., Oct. 31, 2005; Prey, pers. comm., Oct. 31, 2005). Therefore, two scenarios are analyzed with an additional 4,000 and 10,000 acres. As a conservative analysis, it was assumed that increases or decreases in acreage of state wildlife areas would be negligible. These results ultimately provide property values that could be realized by an expanded park system.

4.3. RESULTS AND ANALYSIS

This hedonic pricing analysis demonstrates that the indirect value of parks and open space already has importance to Jefferson County under existing conditions, and will only increase with park expansions.

4.3.1. EXISTING CONDITIONS

Table 2 presents information about property values for parks and state wildlife areas in Jefferson County under existing conditions. The total property value (2004 estimated fair market value) within the 1500-foot boundary for parks is approximately \$272.9 million. The portion of this property value attributable to proximity to parks ranges from \$5.5 million at a two percent price premium to \$27.3 million at a ten percent premium. The property value per acre attributable to proximity ranges from \$1,137/acre to \$5,686/acre.

Table 2. Hedonic pricing analysis of existing conditions for residential properties within 1500 feet all County and State Parks. A total of 1,410 properties with an average parcel value of \$193,570 were found within 1500 feet of the parks.⁴

	Current Fair Market Value (FMV)	Assumed Enhancement of FMV	Total Enhanced FMV	Existing Park Acreage	Enhanced FMV per acre
Scenario 1	\$272,934,100	2%	\$5,458,682	4,800	\$1,137

⁴ Data Source: Jefferson County Land Information Office, Geographic Information Systems, 2005

Scenario 2	\$272,934,100	5%	\$13,646,705	4,800	\$2,843
Scenario 3	\$272,934,100	10%	\$27,293,410	4,800	\$5,686

For state wildlife areas the total property value, again listed as the 2004 estimated fair market value, within the 1500-foot boundary is \$244.5 million (see Table 3). The portion of this property value attributable to the properties' proximity to wildlife areas ranges from \$2.4 million at a one percent price premium to \$14.7 million at a six percent premium. The property value per acre attributable to proximity ranges from \$182/acre to \$1,090/acre.

Table 3. Hedonic pricing analysis of existing conditions for residential properties within 1500 feet all State Wildlife Areas. A total of 1,472 properties with an average parcel value of \$166,076 were found within 1500 feet of the wildlife areas.⁵

	Current Fair Market Value (FMV)	Assumed Enhancement of FMV	Total Enhanced FMV	Existing Wildlife Areas Acreage	Enhanced FMV per acre
Scenario 1	\$244,464,400	1%	\$2,444,644	13,460	\$182
Scenario 2	\$244,464,400	3%	\$7,333,932	13,460	\$545
Scenario 3	\$244,464,400	6%	\$14,667,864	13,460	\$1,090

4.3.2. EXPANDED PARK SYSTEM

Table 4 describes the increases in property values that are attributable to an expanded park system. As mentioned earlier, only the park system is expanded; as a conservative assumption, wildlife areas neither increase nor decrease. Under the first scenario, expanding the park system by 4,000 acres results in additional property values of \$4.5 million at a two percent price premium to \$22.7 million at a ten percent price premium. Under the second scenario—an additional 10,000 acres at full build-out—additional property values could reach \$11.4 million at the two percent price premium, and \$56.9 million at the ten percent price premium.

Table 4. Hedonic pricing analysis for an expansion of County parks by either 4,000 acres (Scenario 1) or 10,000 acres (Scenario 2). Assumed similar per acre impact as in the current situation (e.g., similar density of residential properties within 1500 feet of new parks).

	Additional Park Acreage	Assumed Enhancement of FMV	Assumed Enhanced FMV per acre	Total Enhanced FMV per acre
Scenario 1a	4,000	2%	\$1,137	\$4,548,902

⁵ Data Source: Jefferson County Land Information Office, Geographic Information Systems, 2005

Scenario 1b	4,000	5%	\$2,843	\$11,372,254
Scenario 1c	4,000	10%	\$5,686	\$22,744,508
Scenario 2a	10,000	2%	\$1,137	\$11,372,254
Scenario 2b	10,000	5%	\$2,843	\$28,430,635
Scenario 2c	10,000	10%	\$5,686	\$56,861,271

At current Jefferson County tax rates—assumed to average around \$25 dollars per \$1,000 dollars of property—the existing portion of the property value attributable to Jefferson County parks and State Wildlife Areas translates into approximately \$137,500 to \$682,500 in annual property tax revenue related to the parks, and \$60,000 to \$367,500 related to the State Wildlife Areas.

In addition, expanding the park system by 4,000 acres could result in an enhanced property value of \$4.5 to \$22.7 million for nearby residential properties. Making the assumption that lands being converted to parks will likely be agricultural land, and assuming a per acre land price of approximately \$5,000⁶ per acre, the total price of expanding the park system by 4,000 acres would be \$20,000,000. With tax revenues from the enhanced property values ranging from \$112,500 to \$567,500, it could take as little as 35 years to recoup the cost of the land purchase. This finding is encouraging as our analysis has generally erred on the conservative side and the enhanced property value of residential properties may actually be more than the 2% to 10% assumed in this study.

4.4. CAVEATS AND LIMITATIONS

Through the lens of the housing market, the results display significant indirect use value of Jefferson County parks and open space. However, it is important to keep in mind several caveats of the study. A limitation lies in the fact that a hedonic regression was not conducted for each park or natural area, but rather premiums from other studies were applied to the entire county system. This is an oversimplification of the hedonic method because it does not account for unique characteristics of Jefferson County parks. For example, a more detailed hedonic analysis may reveal a decreasing premium with distance unique to each park. Using several percentage premiums is intended to alleviate any oversimplification.

Another particular limitation of this approach is that some use values, such as being able to use the nearby recreation facilities, are incorporated into the increased value of the home. This study is not able to determine the exact magnitude of this effect.

⁶ In 2004 agricultural land sold for an average of \$4,099 per acre (Wisconsin Agricultural Statistics Service, 2005)

Finally, this analysis does not include trails and every type of open space. Hedonic pricing analysis on trails is not included in this analysis since results in the literature are mixed; studies have shown positive, negative, and no impact of trails on proximate property values. And including state wildlife areas in the analysis provides a representation of open space, but obviously does not account for all types of open space within the county, such as agricultural or other private, undeveloped lands.

Despite the limitations, the range of conservative and liberal assumptions in the analysis help make the hedonic pricing method a worthwhile tool, and in placing a monetary figure on the indirect use values of Jefferson County parks and open space.

5. NON-USE VALUES AND INDIRECT NATURAL SYSTEM VALUES

Environmental economists have developed the methods used for measuring non-use and natural systems values (Hanley et al., 2001; Freeman, 2003). Applying these techniques is beyond the scope of this study. The following discussion, therefore, is intended to highlight how these important components of economic value could be considered in future Jefferson County planning processes.

5.1. NON-USE VALUES

Non-use values is the collective value that people place on the ability to leave a resource for future generations, for the knowledge that a resource is being preserved, or on the preservation of biodiversity for potential, future drugs (Barnes, 2003; Blomquist & Whitehead, 1995). In many cases the non-use value of resources can be quite high (Fausold & Lilieholm, 1999).

The primary methods used to determine the economic value of non-use goods are *stated preference* techniques (Freeman, 2003). In stated preference surveys, individuals are asked about their willingness-to-pay for a good. The most common stated preference technique used to determine willingness-to-pay is the contingent valuation method (Lindberg & Johnson, 1997). In this technique, the respondent is given a scenario and information about how the resource in question will be affected. A plausible vehicle for payment is described, such as an increase in fishing license fees, and the respondent is asked how much they are willing to pay, given their current budget constraints, to preserve this resource.

It is likely that people from Jefferson County and around the State of Wisconsin place some non-use value on resources within the parks and open spaces in Jefferson County. There may be other resources, such as habitat for the threatened eastern prairie fringed orchid (U.S. Fish and Wildlife Service, 2004), which people from beyond Wisconsin's borders might value. The Jefferson County Land and Water Plan: 2000-2005 documents some of the other important environmental features in the County including the Rock River, groundwater, lake and wetland resources, and Allen Creek, which is home to the least darter, a species on the State of Wisconsin's special concern list.

Most often, contingent valuation studies are used to examine issues of global significance (Freeman, 2003). There are a few studies that investigate the non-use values in contexts similar to Jefferson County. A 1987 study in Wisconsin found mean willingness-to-pay per person for preserving bald eagles to be between \$10 and \$75 dollars and between \$1 to \$5 dollars for the striped shiner, a small freshwater fish (Boyle & Bishop, 1987). In a study in Oregon, citizens of Corvallis were willing to pay \$48.89 dollars per year for an open space conservation program, which includes some non-use values (Vossler et al., 2003).

There are many challenges with the implementation of non-use valuation techniques, but they are gaining increasing acceptance. For example, the federal government uses contingent valuation to determine the value of non-market resource damage as the result of oil spills (Fausold & Lillieholm, 1999). One particular challenge with valuing non-use resources is defining the appropriate jurisdiction from which to take the sample (Freeman, 2003). For example, an average willingness-to-pay of \$5 for a non-use value in Jefferson County translates into a total value of \$392,000 if we apply it to Jefferson County's population, but \$27.5 million if we assume everyone in Wisconsin is willing to pay. In this regard, non-use values in Jefferson County will be more sizable if there are resources that have some significance to people outside of Jefferson County.

5.2. INDIRECT USE - NATURAL SYSTEMS VALUES

Indirect use values, as highlighted in section 4.1 can be defined as the value placed on resources from which individuals benefit indirectly. Conservation of parks and open space is often focused on natural system values, which can have important indirect use benefits to society. Natural systems provide a host of functions that provide important human services (Scott et al., 1998), such as: high water quality due to plants' ability to filter pollutants, recharged groundwater due to effective drainage patterns, effective wetland flood control, and moderated vegetation climate

(Fausold & Lilieholm, 1999). Ultimately, the value of these natural systems is infinite— human life would not exist on earth without vital ecosystem services, such as oxygen, which is plant produced, or fresh water, which is a natural product of the hydrological cycle.

Estimating the economic value of natural systems involves a combination of techniques, including contingent valuation, the economic cost of not having the natural system service, and a calculation of what the ecosystem function would cost if it were provided purely through human technology.

In contingent valuation studies, respondents may be asked how much they were willing to pay to ensure that wetlands are preserved, and thereby continue to provide flood protection, water supply and pollution control functions. A study in New England in 1995 found a mean willingness-to-pay for these functions of approximately \$74 to 80 per year for five years (Stevens et al., 1995).

Human interference with natural systems may incur large costs. For example, draining wetlands may damage cities and homes due to flooding. In a study of the Charles River Basin, near Boston, Massachusetts, it was estimated that draining 8,535 acres of wetlands would result in approximately \$2000 per acre per year (in 1981) in property damages due to flooding (Thibodeau & Ostro, 1981).

Similarly, the cost of providing the ecosystem function through human means can be used to calculate the value of the natural systems. For example, how much would Charles River Basin homeowners have to pay if their wells dried up because the wetlands were drained and groundwater aquifers were not recharging? The difference in the cost of obtaining drinking water from the District Commission, as compared to the cost of running a well, would be approximately \$16.56. Based on the assumption that one well provides for ten acres of residents, the wetlands are providing a benefit of approximately \$6,044 dollars per year (Thibodeau & Ostro, 1981).

Using these and other techniques to calculate recreation value, and contingent valuation to calculate non-use values, some authors deliberate whether a parcel of land is more valuable in its natural state or converted to other uses. In the Charles River Basin study, the authors conclude that the value of an acre of wetland is conservatively worth \$150,000 per acre, but its value for construction is only between \$200-\$5,000 per acre (Thibodeau & Ostro, 1981). In comparison, a study of shrub-steppe habitat in Washington State finds that left in its natural state, the land is more valuable than if it is farmed, but has roughly the same value (\$460 per acre) as being used for a building site (Scott et al., 1998).

The above literature review demonstrates that there are tangible economic values of the natural ecosystem functions and processes in the parks, trails, and open spaces of Jefferson County. Calculating the value of these natural systems is the task of future research endeavors.

6. THE ENVIRONMENTAL CONSERVATION VALUE OF PRIVATE OPEN SPACE

6.1. OVERVIEW

The principal method that this study uses to estimate non-use and indirect natural system economic value of parks, trails and open space in Jefferson County is a study of the price of conservation easements. For the purposes of simplifying the following discussion, non-use and indirect natural systems values are referred to as *environmental conservation* values. This analysis is conducted for private, unincorporated lands in Jefferson County.

In cases where more detailed study is not possible, the economic value of environmental conservation efforts can be used to estimate non-use and natural system values (Fausold & Lilieholm, 1999). This method provides a reasonable estimate of the environmental conservation value of private open space, but is likely to underestimate total non-use and indirect use values (Freeman, 2003).

The current value of a conservation easement or land purchase represents a quasi-market price for the benefits that are derived from open space (Gupta & Foster, 1975). In this analysis, we assume that the lands with environmental attributes similar to current conservation easement lands are providing similar benefits, and consequently similar value, to society. One should note that this is an exercise in estimating the economic value of environmental conservation benefits rather than a feasibility analysis of expanding these programs.

There are a number of conservation programs that are run in partnership with State and Federal agencies, in which conservation easements are used to protect land that is set aside for conservation purposes. These programs include the Wetland Reserve Program (WRP), the Conservation Reserve Program (CRP) and the Conservation Reserve Enhancement Program (CREP). These programs pay private landowners lump sums (for WRP) or yearly payments (for CRP/CREP) to establish various conservation measures on their property. The goal of the WRP is to restore wetlands that have been converted to farmland. While the goal of the CRP/CREP is to

pay farmers to leave larger “buffer strips” and practice other conservation measures around environmentally sensitive areas, such as streams, wetlands or sensitive habitats. All of these programs require that the land be taken completely out of agricultural production.

Another type of conservation easement in Jefferson County is an agricultural conservation easement. This type of conservation easement allows for the continuation of current farming practices, but prevents development of the land. The Jefferson County Land Trust, a not-for-profit citizens group, has purchased two agricultural conservation easements. Since the Jefferson County Land Trust has made so few easement purchases, data from the Purchase of Development Rights program in the Town of Dunn in Dane County is used to verify whether the cost of these two purchases is broadly representative of the cost agricultural easements in Jefferson County.

6.2. DATA AND METHODOLOGY

Table 5 documents the acreage and percentage of private lands within unincorporated areas of Jefferson County currently covered by the WRP and CRP/CREP. The approximate total acreage of private land within unincorporated areas in Jefferson County is 304,000 acres. The WRP and CRP/CREP cover only a small percentage of the land base, 1.7% and 2.8% respectively. However, both the WRP and CRP/CREP programs cover more than the county and state park area, excluding linear trails.

The CRP/CREP currently provides a yearly rental rate of approximately \$78.27 dollars per acre, depending on soil characteristics and environmental features of the land being conserved. This represents a total yearly payment of approximately \$675,000. In contrast, the WRP program provides a one time payment based on the value of the land for agricultural production. This size of payment is related to improvements, such as drainage tiles or pumps, in which the land owner may have invested. These payments range from approximately \$1,100 dollars per acre (no improvements) to \$2,200 per acre for (many improvements) (Gerald Kokakonen, pers. comm. Oct. 24, 2005) Taking a conservative average value per acre of \$1,600 dollars, which discounts to a yearly value of \$82.05⁷, the total yearly value of the WRP program in Jefferson County is approximately \$427,000.

⁷ Discounting is an inexact process and is very dependent on the time frame chosen for the discounting process and annual percentage rate. Previous studies have used a wide range of values. In this study we have chosen 150 years and a 2% interest rate.

Table 5. Current land area in Wetland Reserve Program (WRP) and Conservation Reserve Program (CRP) and Conservation Reserve Enhancement Program (CREP) for unincorporated areas of Jefferson County, Wisconsin. Data provided by Jefferson County Land and Water Conservation and Land Use Information Departments.

Land Use Type ¹⁰	WRP ⁸		CRP+CREP ⁹		County	
	Parcel Acres	% of County land use	Parcel Acres	% of County land use	Parcel Acres	% of County land use
Cropland	3,547	1.17%	6,830	2.25%	212,745	69.93%
Wetlands	1,427	0.47%	440	0.14%	45,522	14.96%
Rural Uncultivated	219	0.07%	1,141	0.38%	16,455	5.41%
Upland Woods	0	0.00%	94	0.03%	9,572	3.15%
Other	11	0.00%	118	0.04%	19,920	6.55%
Total	5,203	1.71%	8,623	2.83%	304,215	100%

The Jefferson County Land Trust has made two purchases of agricultural conservation easements within Jefferson County. These easements are assessed at approximately \$1,150 per acre and \$1,800 per acre, representing close to 40% of the total parcel value (Peter Jacobs, pers. comm., Nov. 8, 2005) For the Town of Dunn’s Purchase of Development Rights program, conservation easement prices over the last four years have ranged from \$1,300-\$5,200 per acre and 17% to 69% of the total parcel value (Renee Lauber, pers. comm., Oct. 18, 2005). The value of these easements is dependent on a host of factors, but development pressure is a huge determinant. Per acre agricultural land prices are considerable higher in Dane County, which explains the difference between the value of easements in Jefferson County versus the Town of Dunn. For the purposes of this analysis, a value of \$1,400 dollar per acre is assumed to be a reasonable average agricultural conservation price, which has a yearly discounted value of \$71.80¹¹.

To calculate the potential economic value of environmental conservation in Jefferson County, the following conservative assumptions have been made based on the above information.

⁸ Acreage total may not match exactly program totals due to issues of data currency, rounding and area calculations in ArcGIS.

⁹ Acreage total may not match exactly program totals due to issues of data currency, rounding and area calculations in ArcGIS.

¹⁰ Land use classification based on interpretation of 2000 aerial photography and do not include public lands, incorporated areas, areas classified as surface water and right-of-way.

- *Conservation-Based Land-Management Benefits:* We assume that environmental conservation benefits similar to the CRP/CREP programs could be achieved on double (conservative) to triple (less conservative) the land base currently covered by the CRP/CREP programs.
- *Wetland Restoration Benefits:* Based on soil characteristics of Jefferson County, at least 34% of the county once supported wetlands (Caroline Clarin, pers. comm. Oct. 27, 2005). Currently, wetlands cover only 15% of the Jefferson County. A conservative estimate is that 40% of former wetlands could be restored to provide the environmental conservation benefits targeted by the WRP program, while 60% is a less conservative estimate.
- *Current Wetlands Benefits:* We assume that all current wetlands provide similar environmental conservation benefits as the non-improved parcels in the WRP program (\$1,100 per acre discounted to 56.4012 per acre per year).
- *Agricultural Conservation Benefits:* Some of the remaining agriculture land also provides environmental conservation benefits even when it remains as agricultural land. We will assume 20% (conservative) or 30% (less conservative) of the *remaining* agricultural land has values that could be targeted by agricultural conservation easements.

6.3. RESULTS

The yearly economic value of environmental conservation benefits of current easement programs is \$1,122,000 (Table 6). Extending the value of these benefits to similar lands in Jefferson County results a yearly conservation benefit estimate of \$7,304,000 for a conservative set of assumptions and \$9,871,000 for a slightly less conservative set of assumptions. The largest contributor to this value in both scenarios is conservation of agricultural lands (\$2,787,000 and \$3,893,000), followed by the value of current wetlands (\$2,567,000), then the use of conservation-based land-management techniques (\$1,350,000 and \$2,025,000).

¹¹ Based on 150 years of benefits discounted at a 2% interest rate.

¹² Based on 150 years of benefits discounted at a 2% interest rate

Table 6. Approximate yearly value¹³ of current and expanded hypothetical scenarios of the economic benefits being provided by the conservation of unincorporated private lands in Jefferson County.

Program	Current Status		Conservative Scenario		Less Conservative Scenario	
	Acres	Value	Acres	Value	Acres	Value
Conservation Management ¹⁴	8,623	\$675,000	17,246	\$1,350,000	25,869	\$2,025,000
Wetland Restoration ¹⁵	5,203	\$427,000	7,309	\$600,000	16,892	\$1,386,000
Current Wetlands ¹⁶	-	-	45,522	\$2,567,000	45,522	\$2,567,000
Agricultural Conservation ¹⁷	148	\$10,000	38,820	\$2,787,000	54,222	\$3,893,000
TOTAL	59,496	\$1,112,000	108,897	\$7,304,000	142,505	\$9,871,000

In comparison to total value-added income in Jefferson County, approximately \$2.2 billion in 2002 (IMPLAN), the economic benefits of environmental conservation of private open space are relatively modest. However, the environmental conservation value of \$7.3 to \$9.8 million is not much less than the total value-added income being generated by recreation activities in Jefferson County's parks and trails (approximately \$13 million).

The value per acre of these benefits, \$69 per year, is substantially less than was found in other natural system values studies (\$440-\$3,220 for wetlands in Massachusetts in 1972, Gupta & Foster, 1975). The benefit of environmental conservation, when divided evenly between residents of Jefferson County, is approximate \$92 to \$124 dollars per person per year. This total is somewhat higher than the willingness-to-pay found for wetland preservation in New England (\$74-\$96, Stevens et al., 1995) or for open space protection in Oregon (\$49, Vossler et al., 2003).

6.4. CAVEATS AND LIMITATIONS

This method has a few methodological limitations. First, the price of a conservation easement may include direct use values, such as wildlife viewing or recreation opportunities, which are difficult to separate from the non-use and indirect use components. Second, there is a strong

¹³ Rounded to the nearest 1,000.

¹⁴ Based on current per acre weighted average value of \$78.27.

¹⁵ Assumes discounted average per acre yearly value of \$82.05.

¹⁶ Assumes discounted average per acre yearly value of \$56.40.

¹⁷ Assumes discounted average per acre yearly value of \$71.80.

likelihood of “free-rider” behavior with many people not contributing to, but only benefiting from conservation easement programs. Third, there is no true market for easements and in many cases the programs are government run. In these cases, there is only one buyer and a strong likelihood for market distortion. Finally, the value of the conservation easement does not represent a direct valuation of the non-use values, but rather the cost to purchase the farming or development rights.

This analysis limits itself to only agricultural lands and lands associated with wetlands and other sensitive water habitats. It does not include grasslands or woodlands. Moreover, this technique is only considering unincorporated private land in the County. Non-use and indirect use values likely exist in State and County Parks and State Wildlife Areas, as well as on public and private land within incorporated areas of the County. The hedonic pricing analysis has likely captured some of this value, but much of this value has likely gone unmeasured.

The technique we apply to estimate some of the non-use and indirect use values of unincorporated, private land in Jefferson County is not as accurate a method as contingent valuation or estimating the cost of providing the equivalent environmental service with technology. In many respects, evaluating the public policy implications of conservation easement programs should use this analysis to estimate the costs and the other techniques used to estimate the societal benefits.

This analysis should not be interpreted as a feasibility assessment of expanding any of the programs that are discussed here. A feasibility assessment would take a more detailed look at each of these programs and include an analysis of a variety of different factors that were not considered here.

7. SUMMARY OF RESULTS

This study illustrates that the economic value of parks, trails and open space includes the direct benefits associated with tourist dollars in the local economy, as well as the indirect benefits associated with increases in nearby property values. In addition, a broader range of economic values exist, including non-use values and other indirect benefits associated with the preservation of natural systems. The results of this study can help Jefferson County policy makers understand how parks, trails, and recreational opportunities relate to the strength of the Jefferson County economy.

7.1. ECONOMIC IMPACT ANALYSIS USING INPUT-OUTPUT ANALYSIS

This study estimates the direct economic impact of parks and trails on the Jefferson County economy by conducting input-output analysis using estimates of non-local recreation user expenditure patterns. We estimate that current non-local visitors spend approximately \$15 million annually in the local economy. The input-output analysis estimates that this expenditure pattern translates into approximately \$13 million in total value-added income, of which, \$6.2 million is employee income. This contributes the equivalent of 420 jobs. With an expanded parks and trails system, we estimate an additional \$36 million dollars in annual non-local visitor expenditures. This includes \$32 million in value-added income. Of this value-added income, \$15 million is employee income. This contributes the equivalent of 1028 jobs to the County economy.

The total value-added income resulting from parks and trails expenditures is a small percentage of both the Jefferson County total value-added income (\$2.2 billion) and total Wisconsin tourism income (\$6.6 billion). As compared to total Jefferson County farm earnings, however, current direct value-added income is \$9.5 million while total farm earnings are \$32.1 million. With an expanded parks and trails system we estimate an additional \$23.6 million in direct value-added income would accrue to Jefferson County. The future expanded parks and trails system carries a base output multiplier of 1.38. This figure indicates that the local tourism industry has relatively high leakage, and that Jefferson County could more effectively capture new spending impacts by strengthening linkages between its tourism-related sectors.

7.2. INDIRECT USE VALUATION USING THE HEDONIC PRICING METHOD

Results from previous studies using hedonic analysis show that there is a measurable impact on the property values next to parks (Crompton, 2000). This study demonstrates - under existing conditions – that the park system within Jefferson County likely accounts for \$5.5 to \$27.3 million of the value of Jefferson County residential properties. State Wildlife Areas account for between \$2.4 to \$14.7 million in enhanced property value. This translates into approximately \$137,500 to \$682,500 in annual property tax revenue related to the parks, and \$60,000 to \$367,500 related to the State Wildlife Areas.

Expanding the park system by 4,000 acres could result in an enhanced property value of \$4.5 to \$22.7 million for nearby residential properties. With tax revenues from the enhanced property

values ranging from \$112,500 to \$567,500, it could take as little as 35 years to recoup land purchase costs resulting from the park expansion. Expanding the park system by 10,000 acres could result in enhanced property values ranging from \$11.4 to \$56.9 million, which could lessen the timeframe for recovering the cost of land purchases.

7.3. OTHER NON-USE AND INDIRECT USE VALUES

Although the most widely used techniques for estimating these values are beyond the scope of this study, the economic value of environmental conservation efforts is another valid methodology. Using the value of conservation easements in Jefferson County, we estimate that the conservation of unincorporated, privately owned wetlands, riparian habitat and agricultural lands results in yearly societal benefits valued at approximately \$7.3 to \$9.8 million. This translates into approximately \$69 of environmental conservation value per acre per year. When viewed from the perspective of Jefferson County's citizens, the value is approximately \$92-\$124 per person per year. The results from this study are generally similar to previous research, but most likely underestimate the total economic value of non-use and natural system values.

8. POLICY IMPLICATIONS AND IMPLEMENTATION

The results of these analyses highlight several policy implications for Jefferson County. Public officials will have an important role in responding to these implications and in making decisions that not only support the parks and trails system, but further strengthen the Jefferson County economy and quality-of-life for its residents. Therefore, the following section details some policy implications and provides suggestions that could be implemented in response.

8.1. FIND WAYS TO MAKE ECONOMIC IMPACT EVEN MORE SIGNIFICANT

As shown, parks, trails, and open space add a notable amount of money and jobs into the local Jefferson County economy. However, the results have demonstrated that there are significant leakages from the local economy related to visitor spending. In this regard, this study assumes a static economic structure for the Jefferson County economy. For example, it was assumed that the business mix of Jefferson County will not change, and the percentage of expenditures spent by outdoor recreation users will remain the same.

An opportunity exists to reinforce current patterns, and even increase the economic impact of parks and open space. Local cities and villages could increase the economic impact by establishing appropriate facilities, infrastructure and signage to capture more value from out-of-county park and trail visitors. Moreover, private entrepreneurs may shift their focus to industries that rely on parks, trails and open space, which has the potential to also increase local economic impact. Policy makers could support these efforts by increasing coordination with and resource allocation to the Tourism Council. They could also provide fiscal or non-monetized incentive support of local tourist cottage industries, such as bed and breakfasts.

Similarly, policies that promote the expansion of “social capital” as a business development strategy may make Jefferson County even more attractive to new residents and businesses looking to relocate or expand. As a method of enhancing economic competitiveness, Jefferson County can emphasize the recreational attractiveness and the tourist-rich amenities of the area. These developments may also raise the standard of living among locals, by promoting better health and well-being.

Using the results of this and future research, Jefferson County park managers may consider the following actions that could also increase the economic impact of the parks and trails: 1) target specific recreational types (e.g., the ones that generate the most income, yet degrade the land the least), 2) provide for more recreational options at each park, 3) create another dog park, as that appears rather valuable to local residents, and 4) tie social amenities to the natural amenities (e.g., create maps that show how local establishments can be accessed via trails).

8.2. COLLECT MORE PARK USAGE DATA

One of the major limitations of this study is the lack of primary data for Jefferson County. While the analysis suggests the general magnitude of the fiscal effects of an expanded park, recreation and open space system in Jefferson County, using actual visitor numbers would most accurately assess these benefits. In order to obtain these data, the Jefferson County Parks Department should institute a program for regular data collection at its parks. This program will allow the Parks Department to justify investments in park infrastructure and new park expansion. These data collection methods do not need to be complicated. Some simple implementation options include:

- Installation of automatic trail counters.

- Half or full day face-to-face surveys collected by park staff, performed once a day each month or on several random days each season.
- Tabulation of visitor numbers and origins upon entry, registration, or fee payment to each park.
- Self-administered survey cards included with self-administered trail registration.
- Establish a "Park-keepers" volunteer group modeled after the "Streamkeepers" program. "Park-keepers" volunteers could, among other activities, conduct surveys of park visitors. This is a good opportunity to get local residents, who may be avid users of the county park system, to contribute to monitoring and management of the park system.
- Hire local high school students—as part of summer work experience programs—to conduct interviews and collect visitor numbers and expenditure data.

Periodic data collections will give Jefferson County a basis for valuing their parks and open space system. Having the ability to quantify effects, impacts, and values will allow Jefferson County to make better-informed policy decisions. There are a variety of methods that Jefferson County could use to document these findings. Park staff could produce periodic park report cards. These would document the summary of visitor numbers, local economic impacts, and County and State investments in improving and maintaining the facilities. A copy of the database used for completing the analysis in this study has been provided to Jefferson County Parks Department staff. This template can be easily updated easily and run through IMPLAN in cooperation with the University of Wisconsin-Extension. Ideally, the Jefferson County Parks Department annual budget should allocate money for conducting one or more of the methods suggested above.

8.3. COMMUNICATE BENEFITS AND DEVELOP PARTNERSHIPS

As mentioned earlier, this study demonstrates the large contribution that indirect use and non-use valuation can have to the total economic value of parks, trails and open space in Jefferson County. There are important public policy and planning implications of considering indirect and non-use values when making land use decisions or conducting comprehensive planning. However, some of the concepts and methods discussed in our report may not be very familiar to Jefferson County citizens or decision makers. An important first step towards bringing these conclusions into the public policy debate, and in building local literacy, would be to circulate the findings of this report in formats that have wide appeal. Some possibilities include:

- A website designed for easy navigation and links to research in other jurisdictions;
- A factsheet or series of factsheets designed for public consumption;
- A newspaper editorial or article;
- Press release designed get stories in the local media;
- Distribution of a letter highlighting main conclusions along with copies of the executive report to stakeholder groups; and
- A series of presentations to stakeholder groups (see Appendix D).

Current considerations for establishing a *Land Legacy* in Jefferson County represent a valuable opportunity for the County, its communities and the entire Southwest region of Wisconsin. This study, along with the other research conducted by the Department of Urban and Regional Planning at the University of Wisconsin-Madison, can serve as important vehicle for communicating the benefits of expanding the legacy of parks, trails and open space in Jefferson County. It is important that the Jefferson County Parks Department and the DNR work with interested stakeholders to capitalize on this valuable opportunity. Increasing awareness through all segments of the Jefferson County citizenry can build public and political support to ensure a positive outcome and increase understanding of parks, trails and open space issues in general. This awareness may also build support for such actions as implementing a visitor monitoring program or increasing parks funding.

Discussion of parks, trails and open space valuation need not stop at county borders. Some of these facilities are very near to, or even cross, the Jefferson County border. Moreover, the economic benefit of increasing investments in parks, trails and open space in Jefferson County flow to neighboring counties. Stakeholders should work with adjacent counties to impart knowledge and encourage cooperation on such issues as visitor research and promotion of the parks system. Jefferson County could also market their park system to neighboring jurisdictions through the distribution of maps and other promotional materials.

Research on the economic impact of parks, trails and open space may also open other partnership possibilities. Jefferson County could work with the Wisconsin Department of Tourism and the DNR to conduct more detailed research on the economic impact of visitors to county parks and trails. Jefferson County could also seek opportunities to work with University of Wisconsin-Extension, and University of Wisconsin faculty and students to conduct more in depth research on the non-use and indirect use value of Jefferson County parks, trails and open space.

8.4. CONDUCT FURTHER RESEARCH

There are a variety of related studies that Jefferson County could perform that would improve the quality of future economic impact analyses of county parks, trail and open space system. The County Fairgrounds, for instance, generates significant revenue that could also be measured through input-output analysis and included in the overall impact of parks and open space. Similarly, if one were to document all of the events, such as weddings or school cross country meets, that each park hosts each year and include these numbers in the final visitor and expenditure data, the overall impacts and value of parks space may be greater. For the most part, this analysis does not include private agricultural or other private open space land. If one were to include the full value of these lands in all aspects of the analysis then a higher impact economic impact might be found.

8.5. FRAME STRATEGIES FOR INFRASTRUCTURE THROUGH TAX DOLLARS

Expanding the park system in Jefferson County does not simply represent a drain on fiscal resources. The results clearly suggest there are very specific ways that the County and the State are able to recover some of their investment:

- Through the collection of taxes from businesses benefiting from the increased economic activity attributable to more recreation visitors from outside the County.
- Through the collection of property taxes from homeowners whose property values are higher because of the presence of parks or open space adjacent to, or in the vicinity of, their property.

Additionally, to ensure that parks and trails have a continuing impact, Jefferson County policy makers should be prepared to devote resources to maintaining and staffing them. Again, the current tax revenues affiliated with properties adjacent to parks and state wildlife areas suggest that annual budgets for park maintenance and management could be partially justified on the economic value of increased property values alone.

In brief, the policy implications of this study show that the benefits of parks, trails, and open space are not insignificant, and efforts to find ways to complete more detailed studies or to find other ways to incorporate these values in public policy decision making are important for the overall welfare of Jefferson County citizens.

9. SUMMARY OF IMPORTANT CAVEATS AND LIMITATIONS

It is important to note that investments in parks, trails, and preservation of open space can have positive benefits for Jefferson County, but it may also have costs. For example, creating a *Land Legacy* in Jefferson County may increase the attractiveness of living in the County for people commuting to Madison or Milwaukee, or for second home owners. This could have the consequence of putting pressure on transportation infrastructure, altering the make-up of local communities, increasing land and property values, and putting pressure on the viability of local agricultural industry. It is important that policy makers ensure that in implementing an expansion of parks and trails and preservation of space that the costs of such an expansion be considered and mitigated.

Moreover, this study is not a cost-benefit study. We only look at what is the economic benefit and value of the parks, trails and open space system in Jefferson County. No attempt is made to calculate whether the benefits of expanding the park and trail infrastructure outweigh the costs. Furthermore, no analysis is performed to determine if spending public dollars on other public investments besides the park and trail system might be a more efficient use of public funds.

This study is hampered by a limited scope and lack of primary data, which influences the final results. These include:

- We have no primary data on the total number of visitors at County Parks;
- We have no data from State or County Parks on the origin of visitors;
- We have no data on actual expenditure patterns of recreation users in Jefferson County itself;
- We do not calculate an actual price premium for property values near the parks and State Wildlife Areas, but instead assumed an impact based on previous research;
- We do not make estimates of all the potential economic values of Jefferson County parks, trails and open space.
- We do not have time or sufficient data to use well accepted economic valuation methods such as the travel-cost method for recreation value, contingent valuation for non-use and indirect use values, and the human costs avoided from the provision of services by natural systems.

Despite these limitations we do make some reasonable assumptions, and with the cooperation of staff from both the Jefferson County Park Department and the DNR, we derive reasonable estimates for park visitor numbers and visitor origin. While further research can only improve the accuracy of our results, we believe that this study provides a reasonable illustration of the both the type and magnitude of the economic values of Jefferson County parks, trails and open space.

10. CONCLUSION

Jefferson County and the Wisconsin Department of Natural Resources are actively considering ways to expand and improve the parks and trails and conserve open space in the County. In particular, the Department of Natural Resources *Land Legacy* program has identified Jefferson County as a priority area within Wisconsin. This study was intended to clarify the manner in which parks, trail and open space contribute economic benefits to the local economy and provide important informational resources to decision makers

In this study we estimated the economic value of parks, trails and open space under both current conditions and a potential expansion scenario. Three components of economic value were identified: direct use, indirect use and non-use values. For direct use, we used input-analysis to estimate the impact of non-local recreation visitor spending on local income and jobs. For indirect use, we used the hedonic pricing technique to estimate the likely increase in residential property values next to parks and wildlife areas in the County. For non-use, we used the price of conservation easements to estimate the total economic benefits of environmental conservation. We also conducted a literature review of other methods for calculating non-use and indirect use natural system values.

The results of this study demonstrate that current parks, trails and open space system add economic benefits to the local economy in a number of different ways. Expanding the parks and trails system will only increase those benefits. The results of this study also have important policy implications, both in terms of the magnitude of economic benefits, but also in terms of specific aspects of the economic value of parks, trails and open space. This report highlights those policy implications and provides recommendations for implementation.

The potential expansion of the parks and trails system is a great opportunity for Jefferson County, but it also presents difficult choices in terms of the types of parks to create, the amount of

land to preserve, the total length of trail to construct, and the types of infrastructure to build. We trust this study assists local and state decision makers as they undertake this challenging task.

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APPENDIX A – EXISTING JEFFERSON COUNTY PLANS AND STUDIES

Jefferson County residents and public officials believe that parks, trails and open space provide notable value. As a result, a number of officially adopted documents have set out visions for expansion of the parks and trails land base, and established goals for maintaining significant amounts of open space. In particular, the goals and statements from four plans provide important benchmarks for this current study:

JEFFERSON COUNTY BIKEWAY/PEDESTRIANWAY PLAN (1996)

This plan describes future goals including the construction of a system of multi-use trails separated from roadways. The key multi-use trails proposed for construction include:

- Glacier River Trail - Fort Atkinson to Jefferson County line
- Jefferson to Johnson Creek Trail paralleling the Rock River
- Watertown to Oconomowoc Trail
- Johnson Creek to Watertown Trail

JEFFERSON COUNTY AGRICULTURAL PRESERVATION AND LAND USE PLAN (1999)

A fundamental goal of this plan is to guide and manage the growth and development in a manner that will: 1) preserve the rural character, agricultural base, and natural resources of the countryside, and 2) contribute to the high quality of life and prosperity of the communities.

WISCONSIN BUSINESS RETENTION AND EXPANSION STUDY (2004)

There are several findings in this study that give a better picture of the business environment in Jefferson County. First, 78 percent of responding executives feel the community is an "excellent" or "good" place to do business. Those executives cite factors such as the local government, the county location, and the quality of life within the county as the most significant assets of the business environment. In terms of business recruitment, Jefferson County executives believe the best selling points of the county are the quality of life and the K-12 education system.

JEFFERSON COUNTY PARKS, RECREATION, AND OPEN SPACE PLAN (2005-2010)

This plan is an update to the 1997 version, and many of its components are pertinent to the economic value of parks, trails, and open space. As part of the plan, an assessment of the existing parks is summarized, including park acreages, recreation activities, and facilities provided. The study

also reiterates a 1997 goal to bring Jefferson County parks into a more typical "standard" for the provision of county parks. In view of such a parkland standard, Jefferson County is currently deficient in the amount of overall parkland designated for county parks; both the 1997 and the 2005-2010 plans recommend that 12 acres of parkland should be available for each 1,000 residents. The plan also includes descriptions of public input and visioning efforts.

From this information, the plan identifies recreation needs, states visions for future scenarios and expansions, and delineates strategies to achieve these visions. For example, in conjunction with the Land Legacy initiative, the County should identify and acquire four to six possible new sites for large natural resource-oriented parks. It is further suggested that these new parks be a minimum of 100 acres. The plan also recommends identifying potential lakes for passive or natural activities such as Red Cedar Lake, Hope Lake, and Rose Lake, and preserving and acquiring lands around these lakes. In addition, the plan recommends that as larger tracts of parkland become available, the county should consider incorporating hiking and other low impact trail use; camping may also be suitable in these areas.

Finally, the plan recommends that the County continue to seek funding and consider new revenue sources such as impact fees, and state and federal grants for land acquisition and improvements.

APPENDIX B – BASE CASE AND FUTURE SCENARIO VISITOR TABLES

Total Visitor Current Visitor Estimates

Base Case County Parks and Trails	Annual visitor number	Percent local visitors	Percent non-local visitors	Total local visitors	Total non-local visitors
Altpeter	3000	0.9	0.1	2700	300
Bicentennial	50000	0.6	0.4	30000	20000
Burnt Village	7000	0.8	0.2	5600	1400
Busseyville	3000	0.9	0.1	2700	300
Carlin Weld	25000	0.7	0.3	17500	7500
Cold Spring Creamery	6000	0.8	0.2	4800	1200
Dorothy Carnes	40000	0.8	0.2	32000	8000
Indian mounds	6000	0.7	0.3	4200	1800
Joy	3000	0.8	0.2	2400	600
Kanow	25000	0.5	0.5	12500	12500
Korth	20000	0.8	0.2	16000	4000
Mccoy	3000	0.09	0.1	270	300
Pohlmann	8000	0.6	0.4	4800	3200
Rock Lake lakeside	60000	0.6	0.4	36000	24000
Rock Lake hillside	20000	0.8	0.2	16000	4000
Rock River	10000	0.8	0.2	8000	2000
Rome Pond	8000	0.7	0.3	5600	2400
Welcome Travelers	20000	0.1	0.9	2000	18000
Garman	3000	0.8	0.2	2400	600
Glacial River Trail	75000	0.8	0.2	60000	15000
Snowmobile Trail	75000	0.5	0.5	37500	37500
County bike way/road routes	200000	0.2	0.8	40000	160000
Formal event rides	6000	0.2	0.8	1200	4800

Base Case Visitor Expenditure by Recreational Type (fraction non-local)

County and State Parks	camping	hiking	m. biking	X-c skiing	picnicking	kayaking	boating	fishing	hunting	birding	wildlife watching	running	biking	dog walking	cultural apprec.	Snowmobiling
Altpeter	0				0.75						0.25					
Bicentennial	0													1		
Burnt village	0							0.9		0.1						
Busseyville	0				0.75						0.25					
Carlin weld	0	0.2		0.15	0.5					0.15						
Cold spring creamery	0				0.75						0.25					
Dorothy carnes	0	0.2		0.15	0.5					0.15						
Indian mounds	0				0.5										0.5	
Joy	0				0.75						0.25					
Kanow	0				0.2	0.2		0.6								
Korth	0				0.35					0.25	0.25		0.15			
Mccoy	0				0.75						0.25					
Pohlmann	0				0.7								0.3			
Rock lake lakeside	0				0.3		0.4	0.3								
Rock lake hillside	0	0.5			0.5											
Rock river	0				0.3		0.4	0.3								
Rome pond	0				1											
Welcome travelers	0				1											
Garman	0	0.2			0.3					0.1	0.2	0.2				
Glacial river trail	0	0.5											0.5			
Snowmobile trail	0															1
County bike way/road routes	0	0.5											0.5			
Formal event rides	0												1			
Aztalan		0.15			0.15										0.7	
Kettle Moraine	0.1	0.2	0.2	0.1	0.2				0.1							0.1
Glacial Drumlin Trail		0.1											0.9			
Total non-local visitors	4757.94	108998	9515.88	7082.94	48951.02	2500	10400	16560	4757.94	3525	1795	120	146816.7	20000	4997.38	42257.94

Break Down of Expenditures (dollars)																
Dining and Drink	3	3.76	6.69	3.86	4.2933333	14.36	12.43	16.58		21.9	21.9	3.76	6.12	3.76	3.76	18.08
Grocery and Convenience Stores	2	2.5	4.46	2.57	2.86	9.57	8.28	11.05		14.6	14.6	2.5	4.08	2.5	2.5	12.06
Retail Shopping	2.46	1.3	2.05	1.72	1.8766667	15.17	13.78	6.61	16	5.87	5.87	1.3	1.87	1.3	1.3	20.31
Entertainment	1.64	0.87	1.36	1.14	1.2533333	10.11	9.18	4.41	10.67	3.91	3.91	0.87	1.25	0.87	0.87	13.55
Transportation (Gas and auto)	4.14	3.27	6.82	4.28	4.55	8.36	24.08	20.89	9.08	28.55	28.55	3.27	6.24	3.27	3.27	12.28
Accommodation	5.75	1.9	4.96	0.48	4.06	13.06	6.53	13.82	3.62	18.25	18.25	1.9	4.53	1.9	1.9	6.16
Govt Rev (fees collected)														20000		
Other (miscellaneous retails)	4.6	3.6	4.65	5.29	4.15	1.51	6.19	12.38	1.08	0	0	3.6	4.25	3.6	3.6	0.17
Total	23.59	17.2	30.98	19.34	23.0433333	72.14	80.47	85.75	40.45	93.08	93.08	17.2	28.34	20017.2	17.2	82.61

Total Shock by Expenditure (dollars)																
Dining and Drink	14273.82	409832.4		27340.15	210163.05	35900	129272	274564.8	0	77197.5	39310.5	451.2	898518.3	75200	18790.15	764023.6
Grocery and Convenience Stores	9515.88	272494.9		18203.16	139999.92	23925	86112	182988	0	51465	26207	300	599012.2	50000	12493.45	509630.8
Retail Shopping	11704.53	141697.4		12182.66	91864.748	37925	143312	109461.6	76127.04	20691.75	10536.65	156	274547.3	26000	6496.594	858258.8
Entertainment	7803.022	94828.23		8074.552	61351.945	25275	95472	73029.6	50767.22	13782.75	7018.45	104.4	183520.9	17400	4347.721	572595.1
Transportation (Gas and auto)	19697.87	356423.4		30314.98	222727.14	20900	250432	345938.4	43202.09	100638.8	51247.25	392.4	916136.3	65400	16341.43	518927.5
Accommodation	27358.16	207096.1		3399.811	198741.14	32650	67912	228859.2	17223.74	64331.25	32758.75	228	665079.7	38000	9495.022	260308.9
Govt Rev (fees collected)												39649.5	2792.4	20000	67018.7	
Other (miscellaneous retails)	21886.52	392392.7		37468.75	203146.73	3775	64376	205012.8	5138.575	0	0	432	623971.1	72000	17990.57	7183.85
Total	112239.8	1874765	0	136984.1	1127994.7	180350	836888	1419854	192458.6	328107	167078.6	41713.5	4163578	364000	152973.6	3490928

Future Building Scenario of Land Legacy Areas (fraction non-local)

	camping	hiking	m. biking	X-c skiing	picnicking	kayaking	boating	fishing	hunting	birding	wildlife watching	running	biking	dog walk	horseback riding	total
LAND LEGACY AREAS																
Oakland Highlands	0.2	0.3	0.1	0.15	0.2						0.05					1
Red Cedar Lake	0.15	0.15		0.05	0.15	0.1		0.25	0.15							1
Hope Lake					0.2		0.2	0.2	0.2	0.2						1
Holzhueter farm	0.12	0.12	0.55	0.1	0.11											1
Non-local visitors by rec. type	49875	60375	58625	30625	66500	12250	17500	48125	35875	17500	5250					

Break Down of Expenditures																	
Dining and Drink	4.15	5.20	9.26	5.34	5.94	19.88	17.21	22.95		30.31	30.31	5.20	8.47	5.20			169.45
Grocery and Convenience Stores	2.77	3.46	6.17	3.56	3.96	13.25	11.46	15.30		20.21	20.21	3.46	5.65	3.46			112.91
Retail Shopping	3.41	1.80	2.84	2.38	2.60	21.00	19.07	9.15	22.15	8.13	8.13	1.80	2.59	1.80			106.83
Entertainment	2.27	1.20	1.88	1.58	1.73	13.99	12.71	6.10	14.77	5.41	5.41	1.20	1.73	1.20			71.21
Transportation (Gas and auto)	5.73	4.53	9.44	5.92	6.30	11.57	33.33	28.92	12.57	39.52	39.52	4.53	8.64	4.53			215.04
Accommodation	7.96	2.63	6.87	0.66	5.62	18.08	9.04	19.13	5.01	25.26	25.26	2.63	6.27	2.63			137.05
Govt Rev (fees collected)																20000	
Other (misc. retail)	6.37	4.98	6.44	7.32	5.74	2.09	8.57	17.14	1.49	0.00	0.00	4.98	5.88	4.98			75.99
Total	32.65	23.81	42.90	26.77	31.90	99.86	111.39	118.68	55.99	128.84	128.84	23.81	39.23	20023.81	0.00	20888.49	

Total Shock by Expenditure in Future Growth																	
Dining and Drink	207116	314234	542898	163633.7	395208	243500.6	301105.5	1104498	0	530507.6	159152.3	0	0	0	0	0	3961854.4
Grocery and Convenience Stores	138077.3	208932	361932	108947.9	263267.4	162277.2	200575.5	736109.6	0	353671.8	106101.5	0	0	0	0	0	2639893.1
Retail Shopping	169835.1	108645	166359	72914.52	172750.1	257235.6	333808	440333.4	794550.2	142195.4	42658.63	0	0	0	0	0	2701285.1
Entertainment	113223.4	72708	110365	48327.07	115371.3	171433.9	222377.2	293777.7	529865.7	94716.2	28414.86	0	0	0	0	0	1800580.8
Transportation (Gas + auto)	285820.1	273284	553447	181438.5	418834.6	141759.4	583316.2	1391614	450907.3	691597.8	207479.4	0	0	0	0	0	5179498.6
Accommodation	396972.3	158788	402507	20348.24	373729.3	221456.7	158183.3	920636.6	179767	442089.7	132626.9	0	0	0	0	0	3407106.5
Govt Rev (fees collected)																	
Other (misc. retails)	317577.9	300863	377350	224254.5	382013.9	25604.87	149947.1	824709.2	53632.14	0	0	0	0	0	0	0	2655953.7
Total	1628622	1437458	2514861	819864.4	2121175	1223268	1949313	5711678	2008722	2254779	676433.6	0	0	0	0	0	22346172.

Future Expansion Scenario of Trails and Greenways

TRAILS AND GREENWAYS	running	biking
Watertown link to Glacial Drumlin Trail	0.3	0.7
Other linkages/trails*	0.3	0.7
Road routes		1
Events		
Non-local visitors by rec. type	89250	208250

Break Down of Expenditures (dollars)		
Dining and Drink	5.204719	8.471511
Grocery and Convenience Stores	3.460585	5.647674
Retail Shopping	1.799504	2.588517
Entertainment	1.204283	1.730292
Transportation (Gas and auto related)	4.526445	8.637619
Accommodation	2.630044	6.270579
Govt Rev (fees collected)		
Other (misc. retails)	4.983242	5.882994
Total	23.80882	39.22919

Total Shock by Expenditure (dollars)		
Dining and Drink	464521.2	1764192
Grocery and Convenience Stores	308857.2	1176128
Retail Shopping	160605.7	539058.7
Entertainment	107482.3	360333.4
Transportation (Gas and auto related)	403985.2	1798784
Accommodation	234731.5	1305848
Govt Rev (fees collected)		
Other (misc. retails)	444754.3	1225133
Total	2124937	8169478

Future Expansion Scenario of Existing Parks

	camping	hiking	X-c skiing	picnicking	fishing	birding	wildlife watching	biking	dog walk	horseback riding	Total
EXPANSION SCENARIO PARKS											
Korth Park	0.15	0.1	0.1	0.1	0.15	0.15	0.15	0.1			
Bicentennial Park									1		
Dorothy Carnes	0.2	0.2	0.15	0.1	0.15	0.05	0.15			0.05	
Non-local visitors by rec. type	34300	28000	24150	20300	30450	22750	30450	12600	37500	3850	

Break Down of Expenditures (dollars)											
Dining and Drink	4.152702	5.204719	5.343143	5.942977	22.9506	30.31472	30.31472	8.471511	5.20471935		169.448682
Grocery and Convenience Stores	2.768468	3.460585	3.557481	3.958909	15.29578	20.20981	20.20981	5.647674	3.46058468		112.911957
Retail Shopping	3.405215	1.799504	2.380882	2.597746	9.149786	8.125453	8.125453	2.588517	1.79950403		106.830556
Entertainment	2.270144	1.204283	1.578027	1.734906	6.104471	5.412354	5.412354	1.730292	1.20428347		71.2096044
Transportation (Gas and auto related)	5.730728	4.526445	5.924521	6.298264	28.91665	39.51988	39.51988	8.637619	4.52644476		215.040732
Accommodation	7.959345	2.630044	0.664432	5.61999	19.13011	25.26227	25.26227	6.270579	2.63004435		137.052996
Govt Rev (fees collected)									30000		
Other (misc. retails)	6.367476	4.983242	7.322597	5.744571	17.13682	0	0	5.882994	4.98324193		75.9944395
Total	32.65408	23.80882	26.77108	31.89736	118.6842	128.8445	128.8445	39.22919	30023.8088	0	30888.489

Total Shock by Expenditure by Expansion (dollars)											
Dining and Drink	142437.7	145732.1	129036.9	120642.4	698845.7	689659.9	923083.3	106741	195176.976	0	3151356.06
Grocery and Convenience Stores	94958.44	96896.37	85913.17	80365.85	465756.6	459773.3	615388.9	71160.69	129771.925	0	2099985.22
Retail Shopping	116798.9	50386.11	57498.31	52734.23	278611	184854.1	247420	32615.32	67481.4012	0	1088399.33
Entertainment	77865.92	33719.94	38109.34	35218.6	185881.2	123131.1	164806.2	21801.68	45160.63	0	725694.527
Transportation (Gas and auto related)	196564	126740.5	143077.2	127854.8	880511.9	899077.2	1203380	108834	169741.678	0	3855781.37
Accommodation	273005.5	73641.24	16046.04	114085.8	582511.9	574716.6	769236.1	79009.3	98626.6633	0	2580879.14
Govt Rev (fees collected)									30000		30000
Other (misc. retails)	218404.4	139530.8	176840.7	116614.8	521816	0	0	74125.72	186871.573	0	1434204.02
Total	1120035	666647	646521.7	647516.5	3613934	2931212	3923315	494287.8	922830.847	0	14966299.7

Base Case Total Expenditure by Sector

Sector	TOTAL Direct Expenditure (dollars)
Dining and Drink	2974837.412
Grocery and Convenience Stores	1982347.302
Retail Shopping	1820961.96
Entertainment	1215370.88
Transportation (Gas and auto related)	2958719.522
Accommodation	1853441.867
Govt Rev (fees collected at the parks)	129460.6
Other (miscellaneous retails)	1654774.555
Total	14589914.1

Future Scenario Total Expenditure by Sector

Sector	TOTAL Direct Expenditure (dollars)
Dining and Drink	9341923.891
Grocery and Convenience Stores	6224863.727
Retail Shopping	4489348.904
Entertainment	2994091.057
Transportation (Gas and auto related)	11238049.41
Accommodation	7528565.293
Govt Rev (fees collected at the parks)	30000
Other (miscellaneous retails)	5760045.606
Total	47606887.89

APPENDIX C – METHODS FOR ESTIMATING EXPENDITURES BY ACTIVITY

ATV

Average Individual Per Trip Spending for South Central Region (\$289.02¹⁸ broken down into spending categories), divided by 2.5 days (assumed based on 2 Average Nights Spent in Region) to calculate Per Person Daily Expenditures (\$115.61). (All spending categories also divided by 2.5).

Source: Wisconsin Department of Tourism. (2003). "Economic & Demographic Profile of Wisconsin's ATV Users: Results of an economic survey conducted between June-October 2003."¹⁹

BOATING

We took the mean total statewide trip-related expenditures for the boats under 16 feet long. Table 7 in the report. Multiplied figures by a reasonable percentage (.40) to account for differences in expenditure patterns among statewide boaters in New York, compared to in Jefferson County, WI.

Source: Connelly, Nancy, Tommy Brown, and David Kay. (2004, September). Recreational Boating Expenditures in 2003 in New York State and Their Economic Impacts. Retrieved October 2005 from <http://www.seagrant.sunysb.edu/CoastalGeo/BoatingReport-FINAL.pdf>

CROSS-COUNTRY SKIING

We formed our expenditure estimates using data from a Trans Canada Trail study. We converted annual data to per day per visitor by combining days of day trippers and overnight trippers and dividing by the total number of non-local visitors.

Source: PriceWaterhouseCoopers. (2000). Trans Canada Trail Economic Impact Study. Alberta Community Development Agency. Retrieved October 2005 from http://www.cd.gov.ab.ca/building_communities/sport_recreation/resources_links/trails_economic_impact_analysis/pdf/Appendix3.pdf

CAMPING

Average Travel Budget for Southeast WI Campers (\$269) divided by Average Party Size (3.8) divided by Average Nights Camping (3.0) to find Per Person Daily Expenditures (\$23.59). Then used a range of other studies expenditures broken up by Local and Non-local and by category to generate percentages to make estimates about the impacts on particular sectors.

Source: 2004 Profile of Wisconsin's Campers. (2004). Wisconsin Department of Tourism.

FISHING

Used State of Wisconsin residents for non-local, assuming that most people who come to Jefferson County to fish will not come from a great distance.

¹⁸ Assumed typo in the Average Individual Non-local Per Trip Spending for South Central Region.

¹⁹ All studies are converted to American 2005 dollars. In cases where the figures were converted from Canadian dollars, we used the Bank of Canada's currency average for the year of the study. Inflation rate in all cases is assumed to be 3%.

Source: 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation for Wisconsin. (Revised 2003). U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, US Census.

GENERAL BICYCLING

After converting the Trans Canada Trail Economic Impact Study numbers to per person per day (see XC Skiing above), we used the percentage of total expenditures by expenditure category for that study to represent spending categories as a percent of the daily expenditure. We then took these percentages as a function of the total daily expenditure value for the Elroy-Sparta Bike Trail Study. This enabled us to use a Wisconsin figure for daily expenditures, although the categories are drawn from the Canadian context.

Sources: PriceWaterhouseCoopers. (2000). Trans Canada Trail Economic Impact Study. Alberta Community Development Agency. Retrieved October 2005 from http://www.cd.gov.ab.ca/building_communities/sport_recreation/resources_links/trails_economic_impact_analysis/pdf/Appendix3.pdf

Wisconsin Department of Tourism. (1989). Elroy-Sparta Bike Trail Study.

HIKING

We used the Trans Canada Trail study for Hiking expenditures. Same procedures as XC Skiing above.

Source: PriceWaterhouseCoopers. (2000). Trans Canada Trail Economic Impact Study. Alberta Community Development Agency. Retrieved October 2005 from http://www.cd.gov.ab.ca/building_communities/sport_recreation/resources_links/trails_economic_impact_analysis/pdf/Appendix3.pdf

HORSE-BACK RIDING

We used the Trans Canada Trail study for Hiking expenditures. Same procedures as XC Skiing above.

Source: PriceWaterhouseCoopers. (2000). Trans Canada Trail Economic Impact Study. Alberta Community Development Agency. Retrieved October 2005 from http://www.cd.gov.ab.ca/building_communities/sport_recreation/resources_links/trails_economic_impact_analysis/pdf/Appendix3.pdf

WILDLIFE WATCHING

Used State of Wisconsin residents for non-local category. Converted to per day, per person.

Source: 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation for Wisconsin. (Revised 2003). U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, US Census.

APPENDIX D – STAKEHOLDER ANALYSIS

Parks, trails and open space are an important resource to any community. They provide environmental protection, a place to recreate, and aesthetic value. From an economic standpoint, the park, trails and open space system provides jobs, brings in tourists, contributes to enhanced property values, and helps to attract new businesses and residents. Because parks, trails and open space provide an assortment of benefits, there are a wide range of stakeholders with an interest in parks and trail expansion decisions and any actions that help to preserve open space. On the other hand, expansion represents an investment in public resources that might otherwise be spent in other ways, and therefore has its detractors as well. A stakeholder analysis is useful in developing a more complete picture of the individuals and groups involved in this planning process.

The matrix below displays the stakeholders with an interest in the expansion of the park system in Jefferson County. The stakeholders are separated into two categories: the official and the public groups. The official stakeholders are those who are directly involved with studying the expansion of the Jefferson County park system. These stakeholders are our clients, and our partners in leading this planning process; the stakeholders were involved in confirming the various assumptions made in this analysis. The public stakeholders are those with an interest in the outcomes, whose involvement in the process will be more grassroots in nature. The table also includes an identification of specific groups, the values and interests of each stakeholder, the stakeholders' time frame and approach, and their position and goals. Stakeholder analysis is one way that planners can help make the planning process more transparent and determine appropriate stakeholder involvement. *Appendix C – Stakeholder Analysis*

APPENDIX D – STAKEHOLDER ANALYSIS

Official Stakeholders	Specific Groups	Values/Interest	Time Frame/ Approach	Positions/Goals
County	County Parks Department Land and Water Conservation Department Planning Department University of Wisconsin-Extension	Efficient and well-used park system that improves quality of life, conserves natural resource and increases/ maintains county amenities	Long-term / politically sensitive	Want increased parkland with funding for maintenance and related infrastructure
State DNR	Bureau of Endangered Resources – Land Legacy Parks and Recreation South Central Region Other (Facilities & Lands, Water, Wildlife Management)	Conservation and outdoor use of WI lands; securing organizational resources	Long-term / politically sensitive	Identifying best park sites, and careful planning to avoid political controversies
Tourism Industries	Jefferson County Tourism Council Wisconsin Bed and Breakfast Assn. Wisconsin Innkeepers Association Wisconsin Restaurant Association Governor Council on Tourism Specific hotels, restaurants, outfitters in the region	Increasing flow of visitors and dollars into Jefferson County	<i>Tourism Industries:</i> Short-term / proactive lobbying <i>Tourism Council:</i> Long-term / proactive promotion	Increased park land that serves a market niche and will attract new visitors
Local Chambers of Commerce and Economic Development Entities	Economic Development Consortium Fort Atkinson Chamber of Comm. Watertown Chamber of Commerce Cambridge Chamber of Commerce Lake Mills Chamber of Commerce Whitewater Community Development Authority Jefferson Chamber of Commerce Palmyra Chamber of Commerce	Promoting business recruitment, retention, expansion, and dollars into Jefferson County	Long-term / proactive lobbying	Parks are valuable for tourist industries, and as a quality of life amenity for business recruitment
County Policy Makers	County Board of Supervisors County Board Committees	Enhancing resident quality of life, including an increase of jobs and dollars into Jefferson County; winning re-election	Short-term / decision making	Parks are politically popular, State Parks are especially attractive

APPENDIX D – STAKEHOLDER ANALYSIS

Public Stakeholders	Specific Groups	Values/Interest	Time Frame/ Approach	Positions/Goals
Park users and residents who reside in the County	Watertown Bicycle Club Fort Atkinson Community Foundation Jefferson Community Foundation Watertown Area Community Foundation	Having easily accessible parks that enhance their quality of life	Long-term / proactive lobbying	Parks are valuable, especially if they offer a variety of activities and uses
Park users and residents who reside outside the County	Resident of Dane County, Milwaukee metropolitan area and Chicago metropolitan area	Having easily accessible parks that enhance their quality of life	Long-term / passive	Parks are valuable, especially if they offer a variety of activities and uses
State Policy Makers	Members of State Assembly and Senate, Commissioners on Parks and Tourism Boards	Winning re-election, advocating for local constituents	Short-term / decision making	Parks are in Wisconsin’s best interest, and will be appreciated for years to come
Adjacent residents/ land owners / farmers	No formal organizations identified	Mitigating externalities from parks, securing benefits such as higher property values, and keeping potentially new neighbors at a distance	Long-term / proactive lobbying	Parks should be developed in a way that preserves the privacy of adjacent landowners and protects or increases land values. Farmers interested in being able to continue farming and / or sell property.
Environmental/Open Space Interest Groups	Ice Age Park and Trail Foundation Bike Federation of Wisconsin 1000 Friends of Wisconsin Urban Open Space Foundation Citizens for a Better Environment	Land conservation, ecologically- sensitive land use, limiting urban sprawl	Long-term / proactive lobbying	Parks are critically important, although it is also important to develop them in an eco-sensitive manner
Development and Real Estate Community	No formal organizations identified	Promoting and profiting from new construction	Short- and long-term / proactive lobbying	Parks limit land to be used for development, but make Jefferson County a more attractive place to live. May raise land values
County and Local Taxpayers	No formal organizations identified	A good return on tax bill in the form of services	Short-term / reactive	Parks shouldn’t represent a resource drain

APPENDIX E – IMPLAN RESULTS

BASE CASE – OUTPUT

Industry	Direct*	Indirect*	Induced*	Total*
11 Ag, Forestry, Fish & Hunting (AGG)	\$74,914	\$50,760	\$26,476	\$152,150
21 Mining (AGG)	\$0	\$88	\$49	\$137
22 Utilities (AGG)	\$0	\$183,420	\$74,450	\$257,870
23 Construction (AGG)	\$0	\$106,931	\$20,966	\$127,897
31-33 Manufacturing (AGG)	\$0	\$469,365	\$247,834	\$717,199
42 Wholesale Trade (AGG)	\$0	\$140,759	\$123,642	\$264,401
48-49 Transportation & Warehousing (AGG)	\$0	\$183,215	\$90,039	\$273,255
44-45 Retail trade (AGG)	\$8,634,438	\$101,962	\$518,236	\$9,254,635
51 Information (AGG)	\$219	\$155,855	\$38,434	\$194,508
52 Finance & insurance (AGG)	\$0	\$79,620	\$149,121	\$228,741
53 Real estate & rental (AGG)	\$31,506	\$570,639	\$220,926	\$823,071
54 Professional- scientific & tech svcs (AGG)	\$238	\$112,724	\$51,064	\$164,027
55 Management of companies (AGG)	\$0	\$31,642	\$3,586	\$35,228
56 Administrative & waste services (AGG)	\$0	\$160,849	\$46,723	\$207,572
61 Educational svcs (AGG)	\$0	\$676	\$19,943	\$20,619
62 Health & social services (AGG)	\$0	\$113	\$523,870	\$523,983
71 Arts- entertainment & recreation (AGG)	\$919,017	\$42,250	\$38,534	\$999,801
72 Accomodation & food services (AGG)	\$4,798,971	\$60,626	\$242,331	\$5,101,928
81 Other services (AGG)	\$0	\$59,889	\$159,766	\$219,655
92 Government & non NAICs (AGG)	\$193,270	\$112,663	\$567,639	\$873,572
Institutions (AGG)	\$337,060	\$0	\$0	\$337,060
Total	\$14,989,632	\$2,624,045	\$3,163,628	\$20,777,305

BASE CASE – EMPLOYMENT COMPENSATION

Industry	Direct*	Indirect*	Induced*	Total*
11 Ag, Forestry, Fish & Hunting (AGG)	\$8,548	\$8,836	\$7,413	\$24,797
21 Mining (AGG)	\$0	\$25	\$14	\$39
22 Utilities (AGG)	\$0	\$35,483	\$14,402	\$49,885
23 Construction (AGG)	\$0	\$36,401	\$6,187	\$42,588
31-33 Manufacturing (AGG)	\$0	\$111,474	\$43,743	\$155,217
42 Wholesale Trade (AGG)	\$0	\$51,227	\$44,998	\$96,225
48-49 Transportation & Warehousing (AGG)	\$0	\$84,273	\$34,002	\$118,275
44-45 Retail trade (AGG)	\$3,202,272	\$41,759	\$211,087	\$3,455,118
51 Information (AGG)	\$16	\$43,084	\$9,402	\$52,502
52 Finance & insurance (AGG)	\$0	\$18,911	\$32,585	\$51,496
53 Real estate & rental (AGG)	\$628	\$14,240	\$8,108	\$22,976
54 Professional- scientific & tech svcs (AGG)	\$64	\$40,252	\$17,946	\$58,262
55 Management of companies (AGG)	\$0	\$13,633	\$1,545	\$15,178
56 Administrative & waste services (AGG)	\$0	\$67,573	\$19,666	\$87,239
61 Educational svcs (AGG)	\$0	\$73	\$2,165	\$2,238
62 Health & social services (AGG)	\$0	\$40	\$256,746	\$256,786
71 Arts- entertainment & recreation (AGG)	\$168,539	\$11,656	\$12,266	\$192,462
72 Accomodation & food services (AGG)	\$1,446,677	\$17,055	\$67,319	\$1,531,051
81 Other services (AGG)	\$0	\$14,577	\$46,884	\$61,461
92 Government & non NAICs (AGG)	\$33,399	\$17,301	\$11,929	\$62,629
Institutions (AGG)	\$0	\$0	\$0	\$0
Total	\$4,860,144	\$627,874	\$848,407	\$6,336,425

BASE CASE – TOTAL VALUE ADDED

Industry	Direct*	Indirect*	Induced*	Total*
11 Ag, Forestry, Fish & Hunting (AGG)	\$22,737	\$17,242	\$13,500	\$53,480
21 Mining (AGG)	\$0	\$53	\$30	\$83
22 Utilities (AGG)	\$0	\$129,117	\$52,408	\$181,526
23 Construction (AGG)	\$0	\$56,011	\$9,942	\$65,953
31-33 Manufacturing (AGG)	\$0	\$164,917	\$79,589	\$244,505
42 Wholesale Trade (AGG)	\$0	\$101,909	\$89,516	\$191,425
48-49 Transportation & Warehousing (AGG)	\$0	\$108,847	\$48,683	\$157,530
44-45 Retail trade (AGG)	\$6,431,096	\$76,560	\$388,703	\$6,896,360
51 Information (AGG)	\$21	\$65,807	\$17,303	\$83,131
52 Finance & insurance (AGG)	\$0	\$49,854	\$89,404	\$139,258
53 Real estate & rental (AGG)	\$22,229	\$397,124	\$150,015	\$569,368
54 Professional- scientific & tech svcs (AGG)	\$184	\$83,197	\$36,008	\$119,389
55 Management of companies (AGG)	\$0	\$20,001	\$2,267	\$22,268
56 Administrative & waste services (AGG)	\$0	\$95,830	\$27,940	\$123,770
61 Educational svcs (AGG)	\$0	\$493	\$14,537	\$15,030
62 Health & social services (AGG)	\$0	\$62	\$351,737	\$351,798
71 Arts- entertainment & recreation (AGG)	\$328,811	\$13,511	\$17,421	\$359,743
72 Accomodation & food services (AGG)	\$2,576,524	\$23,451	\$87,372	\$2,687,346
81 Other services (AGG)	\$0	\$28,301	\$75,266	\$103,567
92 Government & non NAICs (AGG)	\$131,432	\$79,608	\$447,203	\$658,243
Institutions (AGG)	\$0	\$0	\$0	\$0
Total	\$9,513,035	\$1,511,896	\$1,998,841	\$13,023,773

BASE CASE – EMPLOYMENT

Industry	Direct*	Indirect*	Induced*	Total*
11 Ag, Forestry, Fish & Hunting (AGG)	1.4	0.8	0.4	2.6
21 Mining (AGG)	0	0	0	0
22 Utilities (AGG)	0	0.5	0.2	0.7
23 Construction (AGG)	0	1.2	0.2	1.4
31-33 Manufacturing (AGG)	0	2.7	1.1	3.8
42 Wholesale Trade (AGG)	0	1.3	1.1	2.4
48-49 Transportation & Warehousing (AGG)	0	2.1	1	3.1
44-45 Retail trade (AGG)	202	2	9.8	213.8
51 Information (AGG)	0	1.2	0.3	1.5
52 Finance & insurance (AGG)	0	0.5	1	1.5
53 Real estate & rental (AGG)	0.1	1.9	0.9	2.9
54 Professional- scientific & tech svcs (AGG)	0	1.6	0.7	2.3
55 Management of companies (AGG)	0	0.3	0	0.4
56 Administrative & waste services (AGG)	0	3.6	1	4.6
61 Educational svcs (AGG)	0	0	0.1	0.1
62 Health & social services (AGG)	0	0	6.6	6.6
71 Arts- entertainment & recreation (AGG)	23.9	2.5	1.5	28
72 Accomodation & food services (AGG)	132.3	1.7	6.9	141
81 Other services (AGG)	0	0.8	2.9	3.7
92 Government & non NAICs (AGG)	0.8	0.4	0.3	1.4
Institutions (AGG)	0	0	0	0
	360.1	25	36.1	421.6

BASE CASE – JEFFERSON COUNTY ECONOMY

	Industry		Employee	Proprietor	Other Property	Indirect	Total
Industry	Output*	Employment	Compensation*	Income*	Income*	Business Tax*	Value Added*
11 Ag, Forestry, Fish & Hunting	\$128.37	\$2,058.52	\$24.81	\$6.24	\$17.90	\$2.68	\$51.62
21 Mining	\$10.87	\$67.44	\$3.07	\$0.51	\$2.67	\$0.30	\$6.56
22 Utilities	\$71.03	\$202.97	\$13.74	\$0.81	\$27.19	\$8.26	\$50.00
23 Construction	\$204.18	\$1,863.48	\$54.54	\$26.61	\$6.83	\$1.06	\$89.04
31-33 Manufacturing	\$2,180.59	\$10,367.41	\$467.71	\$55.82	\$185.13	\$15.74	\$724.41
42 Wholesale Trade	\$138.77	\$1,372.68	\$50.50	\$4.04	\$22.30	\$23.63	\$100.47
48-49 Transportation & Warehousing	\$149.54	\$1,404.41	\$49.22	\$10.01	\$12.34	\$2.97	\$74.53
44-45 Retail trade	\$303.21	\$6,356.02	\$117.59	\$10.94	\$46.68	\$46.33	\$221.53
51 Information	\$96.84	\$685.66	\$25.58	\$2.45	\$11.18	\$1.26	\$40.48
52 Finance & insurance	\$90.32	\$664.50	\$20.65	\$3.96	\$31.10	\$1.43	\$57.13
53 Real estate & rental	\$213.92	\$848.29	\$6.56	\$28.14	\$89.46	\$22.42	\$146.58
54 Professional- scientific & tech svcs	\$61.32	\$862.89	\$21.35	\$14.98	\$6.39	\$0.91	\$43.63
55 Management of companies	\$7.78	\$90.19	\$3.35	-\$0.03	\$1.52	\$0.08	\$4.92
56 Administrative & waste services	\$81.32	\$1,691.71	\$33.25	\$4.93	\$9.52	\$2.07	\$49.77
61 Educational svcs	\$6.68	\$47.76	\$0.73	\$0.87	\$2.71	\$0.57	\$4.87
62 Health & social services	\$222.49	\$3,550.79	\$112.55	\$16.88	\$15.87	\$2.13	\$147.43
71 Arts- entertainment & recreation	\$30.43	\$1,842.20	\$8.47	\$0.56	\$0.79	\$1.07	\$10.88
72 Accomodation & food services	\$92.38	\$2,822.45	\$25.75	\$1.76	\$3.65	\$2.81	\$33.96
81 Other services	\$84.08	\$1,528.01	\$23.47	\$12.18	\$2.33	\$1.22	\$39.20
92 Government & non NAICs	\$370.54	\$3,781.65	\$150.93	\$0.00	\$145.12	\$24.22	\$320.27
Totals	\$4,544.63	\$42,109.02	\$1,213.81	\$201.65	\$640.64	\$161.17	\$2,217.26

FUTURE SCENARIO – OUTPUT (2005 DOLLARS)

Industry	Direct*	Indirect*	Induced*	Total*
11 Ag, Forestry, Fish & Hunting (AGG)	\$137,373	\$111,318	\$65,013	\$313,704
21 Mining (AGG)	\$0	\$200	\$120	\$320
22 Utilities (AGG)	\$0	\$432,373	\$182,810	\$615,184
23 Construction (AGG)	\$0	\$244,162	\$51,484	\$295,647
31-33 Manufacturing (AGG)	\$0	\$1,103,566	\$608,559	\$1,712,125
42 Wholesale Trade (AGG)	\$0	\$326,303	\$303,612	\$629,915
48-49 Transportation & Warehousing (AGG)	\$0	\$434,967	\$221,104	\$656,070
44-45 Retail trade (AGG)	\$21,152,882	\$245,388	\$1,272,582	\$22,670,852
51 Information (AGG)	\$402	\$370,576	\$94,379	\$465,357
52 Finance & insurance (AGG)	\$0	\$189,240	\$366,177	\$555,416
53 Real estate & rental (AGG)	\$95,249	\$1,345,610	\$542,464	\$1,983,323
54 Professional- scientific & tech svcs (AGG)	\$590	\$256,899	\$125,394	\$382,883
55 Management of companies (AGG)	\$0	\$77,778	\$8,805	\$86,583
56 Administrative & waste services (AGG)	\$0	\$388,477	\$114,734	\$503,211
61 Educational svcs (AGG)	\$0	\$1,589	\$48,975	\$50,564
62 Health & social services (AGG)	\$0	\$247	\$1,286,422	\$1,286,669
71 Arts- entertainment & recreation (AGG)	\$1,685,242	\$92,683	\$94,628	\$1,872,554
72 Accomodation & food services (AGG)	\$12,501,295	\$144,591	\$595,078	\$13,240,964
81 Other services (AGG)	\$0	\$139,744	\$392,334	\$532,078
92 Government & non NAICs (AGG)	\$155,276	\$260,994	\$1,393,979	\$1,810,248
Instutitions (AGG)	\$676,412	\$0	\$0	\$676,412
Total	\$36,404,721	\$6,166,705	\$7,768,652	\$50,340,078

FUTURE SCENARIO – EMPLOYEE COMPENSATION (2005 DOLLARS)

Industry	Direct*	Indirect*	Induced*	Total*
11 Ag, Forestry, Fish & Hunting (AGG)	\$15,674	\$19,269	\$18,204	\$53,147
21 Mining (AGG)	\$0	\$56	\$34	\$90
22 Utilities (AGG)	\$0	\$83,643	\$35,365	\$119,007
23 Construction (AGG)	\$0	\$83,322	\$15,192	\$98,514
31-33 Manufacturing (AGG)	\$0	\$262,394	\$107,415	\$369,809
42 Wholesale Trade (AGG)	\$0	\$118,753	\$110,495	\$229,249
48-49 Transportation & Warehousing (AGG)	\$0	\$201,002	\$83,497	\$284,499
44-45 Retail trade (AGG)	\$7,619,600	\$100,500	\$518,346	\$8,238,446
51 Information (AGG)	\$30	\$102,559	\$23,087	\$125,676
52 Finance & insurance (AGG)	\$0	\$44,980	\$80,015	\$124,995
53 Real estate & rental (AGG)	\$1,899	\$33,419	\$19,909	\$55,227
54 Professional- scientific & tech svcs (AGG)	\$159	\$91,738	\$44,068	\$135,964
55 Management of companies (AGG)	\$0	\$33,511	\$3,794	\$37,304
56 Administrative & waste services (AGG)	\$0	\$161,650	\$48,293	\$209,943
61 Educational svcs (AGG)	\$0	\$173	\$5,316	\$5,489
62 Health & social services (AGG)	\$0	\$89	\$630,468	\$630,557
71 Arts- entertainment & recreation (AGG)	\$309,058	\$26,570	\$30,121	\$365,748
72 Accomodation & food services (AGG)	\$3,823,012	\$40,681	\$165,312	\$4,029,005
81 Other services (AGG)	\$0	\$34,330	\$115,133	\$149,463
92 Government & non NAICs (AGG)	\$28,010	\$40,277	\$29,292	\$97,579
Institutions (AGG)	\$0	\$0	\$0	\$0
Total	\$11,797,441	\$1,478,914	\$2,083,354	\$15,359,710

FUTURE SCENARIO – TOTAL VALUE ADDED (2005 DOLLARS)

Industry	Direct*	Indirect*	Induced*	Total*
11 Ag, Forestry, Fish & Hunting (AGG)	41,695	37,832	33,151	112,678
21 Mining (AGG)	0	121	73	193
22 Utilities (AGG)	0	304,366	128,688	433,054
23 Construction (AGG)	0	128,037	24,413	152,449
31-33 Manufacturing (AGG)	0	388,386	195,431	583,817
42 Wholesale Trade (AGG)	0	236,242	219,814	456,056
48-49 Transportation & Warehousing (AGG)	0	258,906	119,547	378,453
44-45 Retail trade (AGG)	15,681,490	184,255	954,501	16,820,246
51 Information (AGG)	39	156,713	42,489	199,241
52 Finance & insurance (AGG)	0	118,575	219,536	338,111
53 Real estate & rental (AGG)	67,204	936,757	368,345	1,372,306
54 Professional- scientific & tech svcs (AGG)	456	189,783	88,420	278,660
55 Management of companies (AGG)	0	49,165	5,566	54,731
56 Administrative & waste services (AGG)	0	229,137	68,610	297,746
61 Educational svcs (AGG)	0	1,159	35,700	36,858
62 Health & social services (AGG)	0	136	863,728	863,863
71 Arts- entertainment & recreation (AGG)	602,956	30,880	42,779	676,615
72 Accomodation & food services (AGG)	7,117,241	55,975	214,555	7,387,771
81 Other services (AGG)	0	66,202	184,830	251,032
92 Government & non NAICs (AGG)	107,010	184,437	1,098,218	1,389,665
Institutions (AGG)	0	0	0	0
Total	23,618,091	3,557,060	4,908,393	32,083,544

FUTURE SCENARIO – EMPLOYMENT

Industry	Direct*	Indirect*	Induced*	Total*
11 Ag, Forestry, Fish & Hunting (AGG)	2.6	1.7	1	5.3
21 Mining (AGG)	0	0	0	0
22 Utilities (AGG)	0	1.1	0.5	1.6
23 Construction (AGG)	0	2.7	0.5	3.2
31-33 Manufacturing (AGG)	0	6.3	2.7	9
42 Wholesale Trade (AGG)	0	3	2.8	5.8
48-49 Transportation & Warehousing (AGG)	0	5	2.4	7.4
44-45 Retail trade (AGG)	491.2	4.7	24.1	520
51 Information (AGG)	0	2.8	0.6	3.5
52 Finance & insurance (AGG)	0	1.3	2.4	3.7
53 Real estate & rental (AGG)	0.3	4.6	2.1	7
54 Professional- scientific & tech svcs (AGG)	0	3.6	1.7	5.3
55 Management of companies (AGG)	0	0.8	0.1	0.9
56 Administrative & waste services (AGG)	0	8.6	2.5	11.1
61 Educational svcs (AGG)	0	0	0.3	0.3
62 Health & social services (AGG)	0	0	16.2	16.2
71 Arts- entertainment & recreation (AGG)	43.9	5.5	3.8	53.1
72 Accomodation & food services (AGG)	342.4	4.1	17	363.5
81 Other services (AGG)	0	1.8	7.2	9
92 Government & non NAICs (AGG)	0.6	0.9	0.6	2.1
Institutions (AGG)	0	0	0	0
Total	881.1	58.5	88.6	1,028.20