Sustainable Yellow Springs

A product of the City and Regional Planning Program
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EXECUTIVE SUMMARY

Yellow Springs has a unique opportunity to become a leader in sustainable development for small communities. Much is already being done in the community to prevent sprawl, protect the environment, and promote economic development. The Village has the benefit of numerous community organizations, institutions, and active citizens who are committed to the future well-being of Yellow Springs. This report highlights some of their efforts and offers recommendations for further action. In addition, the report introduces some of the elements of a comprehensive planning framework for sustainable development

This report is the result of a 10-week study in which students from The Ohio State University, with input from local residents and officials, researched sustainability in Yellow Springs in the areas of land use and urban ecology, energy and waste, and economic development and social equity. Some of the opportunities for action that were identified during the study include:

- updating zoning codes to facilitate implementation of community goals;
- creating a Village-wide incentive for moderately priced housing;
- generating revenue for necessary infrastructure improvements;
- offering renewable electricity options and encouraging green architecture;
- increasing the use of the regional carpool program;
- improving waste collection and recycling in public spaces and at events;
- improving the efficiency of the water and sewer system;
- attracting and retaining new high-tech businesses and eco-industries;
- remediating brownfield sites; and
- attracting young residents.

The report includes details on the current status of these and other topics in the Village as well as recommendations for action, incorporating cost considerations whenever possible. In addition, indicators of sustainable development are outlined to measure community progress toward sustainability.

Planning for sustainable development can provide a mechanism for uniting the many interests in the Village under one overarching goal. A comprehensive approach would help ensure that the economic, environmental, and social concerns of the community are addressed in a balanced manner. This report can serve as a reference document and a starting point for future efforts toward sustainable development.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

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INTRODUCTION

General Background

The modern concept of "sustainable development" emerged in the early 1970's when a heightened awareness of the impact of development practices began to spread. Though earlier sentiments by conservationists like John Muir and Aldo Leopold set the stage for an evolving land ethic, sustainable development did not enter into the framework of urban planning until the term appeared in seminal texts such as *The Limits to Growth* (Wheeler 2004, 19).

Since then, many different definitions of sustainable development have been proposed, and there is still much debate about the measures that should be taken to achieve sustainability. Some maintain a belief that technology and economic growth will overcome limits to development, while others take a no-growth approach. The path to sustainability for many poorer nations is to focus on social needs and equity, while in the industrialized nations the movement has concentrated on ecological crises and environmentalism. There is also a question of whether sustainable development leads to a planned "utopian" end-state, or rather suggests an unpredictable, constantly evolving process (Wheeler 2004, 25-26).

Despite these questions and conflicts, several common elements of sustainability planning have emerged to differentiate the process from traditional urban planning. Stephen M. Wheeler, in his 2004 book *Planning for Sustainability: Creating Livable, Equitable, and Ecological Communities*, identifies the following five concepts for sustainable development planning: a long-term perspective, a holistic outlook, acceptance of limits, a focus on place, and active involvement in problem-solving. The Village of Yellow Springs has likely adopted many, if not all, of these elements into the planning process. This study is just a beginning into the exploration of how the community might adopt a comprehensive planning framework that would foster a Sustainable Yellow Springs.

Study Purpose and Scope

Cities, towns, and villages represent many things to different people. They can be places that lead the way in physical development, or places that struggle to survive tough financial times. They can be places where residents are rich, but the government is cash poor. They can be places that lead others, or places that follow. Regardless of which role they embody, many small communities are examples to the broader global community of the different ways to grow and develop socially, environmentally, and economically.

Communities across the world battle the negative impacts of sprawl, pollution, and automobile dependency. Working within this environment are those communities others strive to follow – communities that set positive social, environmental, and economic examples for their neighbors, be they adjacent or part of the broader global community. A sustainability plan is based on the vision that Yellow Springs is a unique and diverse place. As such, it has an important role to play in the Miami Valley Region, in Ohio, and in the global community.

Introduction

In the 10-week spring quarter of 2006 at The Ohio State University, the students of City & Regional Planning 724, Planning for Sustainable Development, began the task of formulating a sustainable plan for the Village of Yellow Springs. The students developed the following definition of sustainability to guide their research and analysis:

> *Sustainable Development is physical, economic, and social development that meets current community needs without compromising the community's ability to meet the needs of future generations. Community sustainable development is a dynamic process of both example and partnership which enhances and rejuvenates environmental, economic, and social systems within the Yellow Springs community and those connected to it.*

Students focused their efforts on the Village with respect to land use, energy and waste, and economic development and social equity. This document is the outcome of their research and analyses. It outlines the strengths and opportunities for Yellow Springs to develop and implement sustainable practices throughout the Village in order to incorporate sustainable ideas and practices into the basic mindset of all Village residents.

Study Methodology

This study began with the discussion of a working definition of sustainable development for the Village of Yellow Springs. Students then divided into three teams focusing on the following areas of sustainability: land use, energy and waste, and economic development and social equity. Within these teams, students developed a vision statement and supporting goals based on the working definition of what a sustainable community is to look like with respect to the topic area. Indicators of sustainable development were then formulated to link the vision to future progress.

Students then undertook an opportunity assessment whereby they researched and evaluated existing conditions within the Village. This assessment identified strengths, weaknesses, opportunities, and threats to a sustainable future. Assessments were conducted with the assistance of Village staff, various agencies ranging from the local to the national level, through interviews and lectures, literature searches, and course readings.

Based on the assessments, students undertook a sustainability analysis where they focused the findings of the opportunity assessment and connected them to sustainable development opportunities based on sustainability principles and case examples from the U.S. and internationally. Students then provided short, medium, and long term recommendations to advance the sustainability agenda.

Despite the limited time frame of the study, attempts were made to involve the public throughout the entire planning process. A study message board was developed to foster community input and discussion about Yellow Springs' sustainable future. This forum was open to the general public through registration with Professor Conroy, and was advertised by Village agencies and on the Yellow Springs Concerned Citizens Forum. In-person and telephone meetings were also scheduled with various community representatives and project stakeholders; below are listed all in-person meetings that took place during the study:

- April 6, 2006 – Entire class meeting with Ed Amrhein, Assistant Planner
- April 10, 2006 – Land Use group attended Planning Commission meeting

- April 13, 2006 – Energy and Waste group meeting with Joe Bates and Ted Dunevant, Yellow Springs Water and Wastewater; and Harold Hamilton and Kelley Fox, Yellow Springs Public Works
- April 19, 2006 – Economic Development and Social Equity group meeting with Karin Wintrow, Village Council member and Chamber of Commerce President; Ed Amrhein, Assistant Planner; and Rodney Bean, Executive Director of the Yellow Springs Senior Center
- April 19, 2006 – Land Use group meeting with Eric Swansen, Village Manager; and Ed Amrhein, Assistant Planner
- April 25, 2006 – Land Use group meeting with Phil Hawkey, Village Planner
- April 27, 2006 – Energy and Waste group meeting with Joe Bates and Ted Dunevant, Yellow Springs Water and Wastewater; and Sharon Potter, Village Finance Director
- May 14, 2006 – Energy and Waste group meeting with Matthew McNelly, Crystal Kirkland, and Rich Welker, Rumpke Waste and Recycling; and Mark Faul, Greene County Sanitary Engineer

Report Overview

This report is comprised of six primary sections. Following this introduction is a review of the indicators proposed to measure community progress toward a sustainable future. The research and analysis of each of the three teams is then presented which includes the team vision, goals, opportunity assessment, and sustainability analysis. The report culminates with conclusions and recommendations which discuss and summarize the overall findings from the 10-week effort.

INDICATORS

Overview

Indicators provide information regarding the community's current conditions, direction, and future aspirations relating to a particular topic. Indicators allow a community to envision where problem areas may exist and provide information on ways to address these problems. Communities across the country, through public input and collaboration, have created exhaustive lists of indicators.

Sustainability indicators are interdependent, making them different from traditional indicators of economic and social progress. Traditional indicators measure aspects of a community on an independent basis, disregarding their effects on other aspects of the community. For instance, a company may produce a high profit margin, indicating economic success, but this fails to take into account other impacts, such as environmental and social considerations. Sustainable indicators, on the other hand, are measures reflecting the "long term economic, social or environmental health of a community over generations" (Sustainable Seattle 1993, 4).

Indicators are measures of objective units rather than normative values. Indicators can be mathematical in nature using historic and statistical information to predict future conditions. Indicators can also be distributional in nature, considering how economic, environmental, and social considerations are allotted within a community or region. In general, indicators are agreed upon by a community through a highly participatory and open process (Maclaren 1996, 188). In order to be useful, indicators must be locally relevant and measurable over the long term.

Some indicators are applicable across communities. Sustainable Cincinnati, for instance, lists "the number of days that air quality is unhealthy based on national standards" as one of their fourteen community indicators (2005). This indicator could be measured in a similar way in other communities, especially those in metropolitan areas facing air quality non-attainment. Other indicators, such as oyster counts in Washington State's Willapa Bay area, would not be relevant in a land locked community like Yellow Springs (Willapa Alliance 1995). The measurability of an indicator over time allows a community to track its progress and provides a community with information on the continued relevance of the indicator.

Indicators for Yellow Springs have been created by the three OSU student teams; they are presented based on the team topics of land use and urban ecology, energy and waste, and economic development and social equity. These measures were developed after conducting interviews with Village residents and officials. They represent a subset of possible indicators for the Village as it continues to work towards a sustainable future.

Each indicator description contains three components: background, measure, and description. The background provides the context for the indicator, including why it is an important issue. The measure component pertains to the actual data that comprises the indicator as well as details on where the data exist and who is (or should be) responsible for the data. Finally, the description provides more details on the measure including how it is measured, previous years' measures if the data exist, and other considerations.

Land Use & Urban Ecology: Acres of Parkland and Open Space per Resident

Background

Parkland and open space are both key assets for a village such as Yellow Springs. The

Village has the Little Miami Scenic Bikeway running through its limits and a number of open spaces, helping to preserve its rural character. One way to measure the sufficiency of these areas is to evaluate the number of acres of parkland and open space per resident. This would allow the Village to determine if they should acquire more open space lands, build more parks, or sell some land for development. Parks and open space acreage is estimated based on data from Yellow Springs Parks and Recreation Department and the Tecumseh Land Trust.

Currently the Village and the Tecumseh Land Trust measure the number of naturally preserved sites (Village of Yellow Springs 2002). Through the Land Trust's program, 1% for Green Space, a partnership has been created with the Village enabling business owners interested in preserving green space to allow a portion of their earnings to be dedicated to funds used to purchase such land in the Village and in the surrounding area (Tecumseh Land Trust). This land trust has created a valuable tool for the Village, as they are heavily interested in closing their greenbelt but lack the funds necessary to purchase the remaining needed land (E. Amrhein, pers. comm.). Additionally, the Village of Yellow Springs keeps track of their own land information regarding protected areas in and around the Village and has listed them all in their 2002 Comprehensive Plan (Village of Yellow Springs).

The Yellow Springs Planning Commission ranks the adequacy of parks and open space development as its ninth highest priority. The Planning Commission has stated it is important to examine how many acres of parkland and open spaces are sufficient for Yellow Springs residents (Planning Commission 2006). The Village of Yellow Springs has approximately 2,300 acres of combined parkland and open space and a population of approximately 3,761 residents (Hilliard 2002). Looking at the "target of excellence" standard as established by the National Recreation and Park Association, 6.25 to 10.5 acres of parkland and open space should be allocated per 1,000 persons in urban areas (Ammons 2001); this translates to 0.006 to 0.01 acres per resident. Yellow Springs far exceeds this standard, having approximately 0.61 acres per resident.

Measure

The number of acres of parkland and open space per resident examines open space opportunities for Village residents. Open space areas can preserve natural areas, buffer areas, and serve as the rural backdrop for the community. Parkland areas provide space for formal recreation and physical activity opportunities for members of the community. This measure can also indicate how development affects the quality of life of Village residents. When the number increases, it signifies that open space is being protected in conjunction with continued development, while if the number decreases, it is indicative of development outpacing such conservation efforts.

Description

Data (parks and open space acreage) for this measurement are obtained from two primary sources. First, the Village's Parks and Recreation Department tracks acreage associated with skate parks, bike paths, public parks, basketball courts, baseball facilities, tennis courts, and other facilities valuable to the Yellow Springs community. Second, data concerning conservation easements and open space lands is obtained from the Village government and through the Tecumseh Land Trust. The Parks and Recreation Department should be in charge of this indicator, as it is a park and open space measurement, and plays a major role in the establishment of a green belt.

Land Use & Urban Ecology: Number of Miles of Bike Lanes or Dedicated Bikeways

Background

Bike lane installation will help achieve the goal of increasing non-motorized

transportation. Places with a greater number of bike lanes have a greater number of cyclists. According to the Federal Highway Administration, areas with higher levels of bicycle commuting have an average of six times more bikes lanes per roadway mile (FHWA 1998).

Although there is a dedicated bikeway along the eastern edge of the Village, there are no dedicated bike lanes elsewhere in the Village, especially along the roadways. Defined bike lanes give bicyclists a defined area for travel, minimizing conflict with automobiles. Furthermore, dedication of roadway to bicyclists can encourage more trips by bicycle, thus reducing automobile trips. According to the University of North Carolina, people are more likely to use a bicycle if they live with ¾ mile of a bike lane or dedicated bikeway (FHWA Office of Safety 2006). Reduction of automobile trips leads to a reduction in the negative externalities produced by cars: noise, air pollution, and potential dangers of inter-modal accidents. Reducing the number of automobile trips also reduces gasoline use.

Measure
The number of miles of bike lanes or dedicated bikeways measures the linear distance of each facility. This analysis adopts the American Association of Highway and Transportation Officials' definition of bike lane. A bike lane is "a portion of the roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists" (FHWA 1998). A dedicated bikeway is a paved surface area designated for operation of bicycles and upon which motorized vehicles may not operate. Pedestrians may use dedicated bikeways, but must yield to bicycles.

Since there are currently no bike lanes in Yellow Springs, no department maintains the number of miles of bike lanes. Once bike lanes are marked, the department of Public Works will maintain this figure. The department will maintain data on the width of the lanes and the type of design of the bike lanes.

The department of Public Works will also maintain the number of miles of dedicated bikeways. Currently, the data on the existing bikeway in the Village is maintained by the department of Park and Recreation. Parks and Recreation maintains this data because the existing bikeway, the Little Miami Scenic Trail, is a portion of a state park. Since the Village will be increasing bikeways in the Village, the majority of which will be outside public parks, the department of Public Works should maintain the data on the lengths of the bikeways.

Description
As bike lanes and other on-road bike facilities are built, the department of Public Works will maintain data on the characteristics of each bike lane or on-road bike facility. The department will keep track of the streets on which bike lanes are striped, the length and width of the lanes, and characteristics of other facilities, such as bike route-signed roads.

As the dedicated bikeway network is expanded, the department of Public Works will maintain data on the characteristics of each dedicated bikeway. Bikeway characteristics include the location of each dedicated bikeway, the streets for which the bikeway substitutes (meaning bike lanes are not required on these streets because of a nearby or parallel bikeway), and the width and distance of the bikeway.

Land Use & Urban Ecology: Percentage of Streets Meeting Sidewalk Guidelines
Background
Sidewalks, defined as paved paths parallel to roads but separated from them, are an essential component of non-motorized transportation. Sidewalks provide pedestrian safety, mobility, and accessibility. Although roads without sidewalks account for only 2.7 percent of pedestrian traffic nationwide,

they account for 23.4 percent of pedestrian collisions (Institute of Transportation Engineers 1998). Thus sidewalks provide a safer route for pedestrians than sharing a road surface with automobiles. Providing sidewalks that meet established guidelines works promotes the goal of reducing non-motorized transportation.

Although some people may choose to walk instead of drive, others do not have that option. The Federal Government estimates that 25 to 30 percent of Americans do not have a driver's license, meaning the provision of adequate pedestrian facilities is essential in accommodating non-drivers, many of whom are not of driving age (Institute of Transportation Engineers 1998). Individuals may not drive for a number of reasons including personal preference, car and fuel expense, physical and/or mental disability, or age. Appropriately designed sidewalks allow the non-driving public to more easily meet their needs and to participate in community activities. Additionally, with more people using sidewalks, communities with well-designed pedestrian facilities are generally safer (Institute of Transportation Engineers 1998).

Measure

In determining sidewalk standards, the Federal Highway Administration recommends providing appropriate sidewalks in all areas of a city or village by establishing sub-areas (FHWA Office of Safety 2006). The establishment of these sub-areas recognizes that different portions of a town or village have different level of potential pedestrian demands. For instance, central business areas have higher demand than adjacent residential areas. These adjacent residential areas, in turn, have higher demand than do less-dense residential areas further from the central business district.

To streamline the measurement and provision of different levels of sidewalk service, the FHWA guidelines have been adapted to the size and character of Yellow Springs. There will be four levels of sidewalk service: high demand areas, medium demand areas, low demand areas, and no demand areas. To aid administration and compliance, the level of sidewalk service will

Indicator Table 1

Sidewalk Requirements According to Level of Service

Level of Service	Physical characteristics		Zoning districts
	Width	Sides of street	
High Demand	8 feet	Both sides	Central Business Residence C
Medium Demand	5 feet	Both sides	Residence B Educational Institution General Business Office/Research
Low Demand	5 feet	One side minimum	Residence A Light Industrial
No Demand	No sidewalks	No sidewalks	Agricultural Conservation

Source: The Institute of Transportation Engineers

be dictated by zoning district. Since zoning already prescribes physical features that affect pedestrian volumes, such as density, lot size and land use, the zoning code is an appropriate means to guide sidewalk requirements.

The guidelines below are adapted from the Institute of Transportation Engineers publication *Design and Safety of Pedestrian Facilities* (1998). Indicator Table 1 describes each level of sidewalk service and assigns a service level to each zoning category:

Planned Unit Development is not assigned to a category. The sidewalk requirements will be included in the development text. The level of service will depend on the character of the development.

Description
As part of this analysis, the group performed a comprehensive inventory of the state of the Village's sidewalks. Data were gathered on sidewalk presence and width. Since the sidewalk characteristics of individual streets were variable, streets were divided into segments based on sidewalk characteristics. The street segment information was entered in a table and evaluated using the criteria in the above table.

The data table will be given to the department of Public Works, which will be responsible for maintaining the data. As sidewalks are improved, the department will update the data table to reflect compliance with the criteria. Compliance with the standards above will be calculated by demand level. Officials will measure compliance rate of each demand level by calculating the percentage of street segments meeting the standards. Each demand level will have a compliance percentage, one for each category requiring sidewalks: high demand, medium demand and low demand.

Land Use & Urban Ecology: Number of Vacant Structures and Undeveloped Parcels in the CBD
Background

Vacant structures and undeveloped parcels can indicate past, existing, or potential economic downturns and obsolescence. To ensure continued sustainability in a community, an accounting of existing vacant structures and parcels is necessary.

The current zoning in Yellow Springs' zoning code is restrictive in that it makes it difficult for redevelopment or new development in vacant areas (E. Amrhein, pers. comm.). Current zoning code requirement for development in the Central Business District includes:

1. "No building shall exceed an overall building footprint of 5,000 square feet" (Zoning code 1256.06);
2. "A minimum of 5,000 square feet constitutes a buildable lot. No lot shall exceed a -maximum of 8,000 square feet" (Zoning code 1256.06);
3. "No structure shall exceed thirty-five feet (two and one-half stories) in height" (Zoning code 1256.06)

The most restrictive element of the code is the height requirement, which prohibits construction from exceeding 35 feet in height. In order for some projects to be profitable the developer must be able to build a third story to allow for additional income from rental uses like apartments. With the limited number of developable parcels in the CBD, it is a logical step to allow three story buildings in order to encourage development.

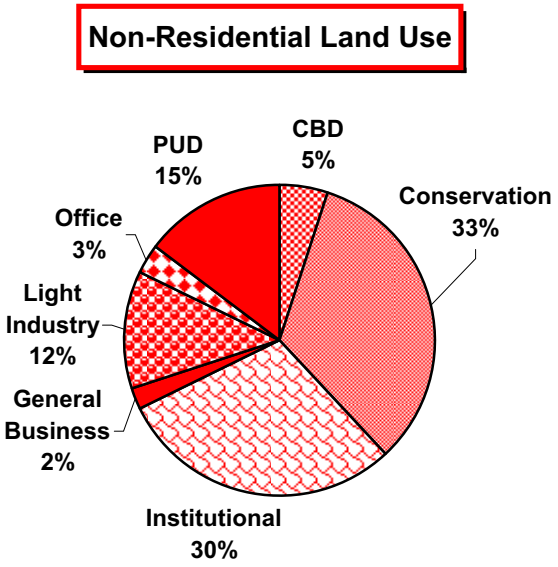
Measure
The number of vacant parcels and buildings will indicate how effective the Village's zoning code and associated policies work to encourage redevelopment in the CBD. From a baseline number of existing vacant parcels and buildings, a decrease following zoning and policy changes will indicate success of the alterations. The Village Planning, Zoning, and Building department will be responsible for gathering and maintaining this data.

Description
The Yellow Springs CBD is a relatively small area; maintaining counts of vacant parcels and structures is a straightforward task. Although this data is not kept currently, it could be obtained by a visual inspection by the Planning, Zoning and Building Department. Once the base data is obtained, the Department could be monitor changes by tracking building and occupancy permits.

Land Use & Urban Ecology: Diversity of Land Use

Background
In Yellow Springs, residential zoning is the dominant zoning category occupying more than 70 percent of the Village area. The remaining 30 percent of zoned land is allocated to PUD, CBD, office, light industrial, general business, institutional, and conservation zoning classifications (MVRPC GIS). Within these categories it is important to maintain a balance.

The existing zoning classifications within the Village zoning code are sufficient to satisfy future Village needs. However, these categories are currently not distributed evenly. As seen in Indicator Figure 1, over half of the non-residential zoning classification area is dedicated to institutional and conservation space; Antioch College and the Glen Helen reserve are the dominant uses. This leaves 37 percent available for other non-residential uses. Currently, this is dominated by PUD and light industrial classifications.



Indicator Figure 1. Percentages of Non-Residential Land Use
Source: Yellow Springs Comprehensive Plan 2002

Measure
This indicator measures the available and existing land (acreage) for all non-residential uses. It is the responsibility of the Planning, Zoning and Building Department to maintain this information in current zoning maps. This data has not been calculated, but can be gathered through examination of Village zoning maps and GIS data available through Greene County.

Description
It is the responsibility of the Planning, Zoning and Building Department to compile the necessary data and calculate land use diversity within the Village. As changes in land use occur, changes to this map can be easily made and new figures of land use diversity can be calculated. The Planning, Zoning, and Building Department will be responsible for maintaining this information, and encouraging diverse land uses before the Village Council and Planning Commission.

Land Use & Urban Ecology: Affordable Housing and Moderately-Priced Dwelling Units

Background
The diversity of housing stock in a community is a key component of keeping the Village of Yellow Springs affordable to families with lower incomes. In Yellow Springs, the average home is valued at $151,600, which is $32,000 more expensive than the national average and $47,900 more expensive than the Ohio average (U.S. Census Bureau). According to Yellow Springs officials, it has become increasingly difficult for families to afford homes in the Village (E. Amhrein, pers. comm.). With little new development in the housing sector, home prices remain relatively constant. As

illustrated in Indicator Table 2, 73.5 percent of the homes in Yellow Springs were built before 1970, with over 50 percent of the homes built before 1960.

According to the *Yellow Springs Cost of Living Report* (2002), the housing appreciation rate in 2005 was 17.3 percent, compared to just 5.6 percent in 2004. This high housing appreciation, and slow building rate in the Village, indicates a need for housing that is affordable to all members of the Yellow Springs community. Rental units also act as an indicator of housing affordability. Indicator Table 5 illustrates Village rents as a percentage of household income. As the table shows, 31.2 percent of all Yellow Springs renters spend 30 percent or more of their household income in rent or mortgage. The amount of rent or mortgage is considered affordable according to government standards when it is no more than 30 percent of the household monthly income (Los Angeles Housing Department).

Currently, Yellow Springs has a Moderately Priced Dwelling Unit Ordinance (Title 12, chapter 1267, 2000) that encourages the construction of affordable housing units. The ordinance does not dictate a certain number of affordable units, but indicates that if one is built it must remain affordable for a period of ten years and can only be sold to an "eligible person." An "eligible person" is defines as "a person or household whose combined income does not exceed eighty percent of the median income for the Village for such number of persons, as determined from time to time by the Department of housing and Urban Development (HUD)" (Title 12, Chapter 1267, Section 02, 2000). Based on 2000 U.S. Census data, a household earning $41,587 or less would qualify for these homes in Yellow Springs.

The most recent development in the Village of Yellow Springs has occurred on the northern, southern and western edges of the Village. Most of this new development has been zoned Residence 'A'. Residence 'A' allows for medium density single family detached development (Yellow Springs Codified Ordinances). This zoning does not allow for two, three, or multifamily development. Almost half of the Village's entire land area is zoned for Residence 'A' development. If Residence 'A' continues as the prominent development in Yellow Springs, the Village will lose some of the diversity in its housing stock.

Indicator Table 2

Housing Construction Dates

	Yellow Springs		Greene County	
YEAR BUILT	#	%	#	%
1999 to March 2000	13	0.6	1,363	2.3
1995 to 1998	123	5.2	3,779	6.5
1990 to 1994	164	7	4,663	8
1980 to 1989	125	5.3	5,986	10.3
1970 to 1979	196	8.4	12,174	20.9
1960 to 1969	478	20.4	10,812	18.6
1940 to 1959	591	25.2	13,485	23.2
1939 or earlier	654	27.9	5,962	10.2

Source: U.S. Census

Indicator Table 3

Yellow Springs Rent as a Percentage of Income

GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME IN 1999	Number	Percent
Less than 15 percent	111	18
15 to 19 percent	74	12
20 to 24 percent	120	19.5
25 to 29 percent	75	12.2
30 to 34 percent	69	11.2
35 percent or more	124	20.1
Not computed	43	7

Source: U.S. Census

Measure

This indicator measures the number of affordable homes in the Village as calculated by 30 percent of median household income. Currently there is no official list of the number of affordable housing units, though this information can be retrieved. Government agencies, such as the U.S. Census Bureau and the Greene County Auditor, as well as a multiple real estate sites, such as Realtor.com and Zillow.com, are responsible for gathering housing related data. Data on housing can provide information about the housing values and monthly costs of living in an area. This

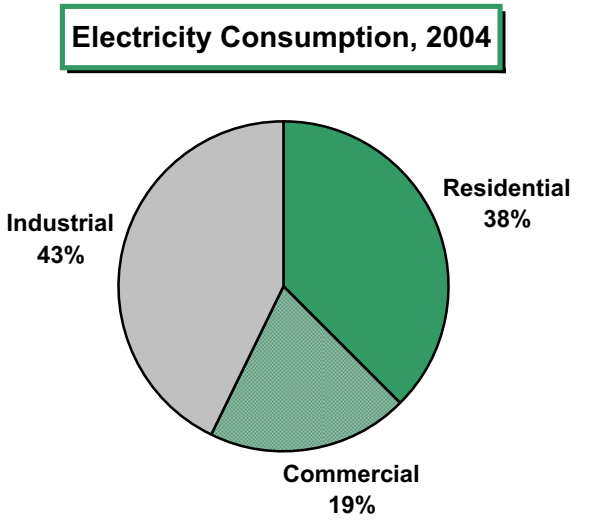
data should be gathered and tracked by the Planning, Zoning, and Building Department.

A number of individuals in the Village are dedicated to the construction of affordable homes, though these figures are not compiled by the Village itself. Because the Planning, Zoning, and Building Department is responsible for tracking development and zoning, it should also be the department's responsibility to maintain official Village records on the number of affordable homes.

Description
To begin, the Village must create a system for mapping the number of affordable homes in the Village. In the future, the Village must coordinate with builders to determine the number of units. As the Village continues to develop, it is important for a variety of income levels to afford to live within Yellow Springs boundaries.

Energy & Waste: Renewable and Non-Renewable Electricity Consumption

Background
Sustainable energy is essential to the sustainable development of Yellow Springs. Energy prices have been on the rise, which will consequently raise the cost of living and affect all residents, businesses, and the Village's capacity to provide services. Consumption of fossil fuels for energy also contributes to environmental pollution and climate change, which increases the Village's impact on global resources. Total energy consumption measured by this indicator can be reduced through building design and other efficiency improvements. In addition to these measures, Yellow Springs should begin a transition to renewable sources of energy in order to prepare for potential dwindling supplies and increased prices of non-renewable fuels.



Indicator Figure 2.
Source: Julia Blankenship, AMP-Ohio

Measure
This indicator measures consumption of renewable and non-renewable electricity in Yellow Springs. The measurement is calculated on an annual basis, using megawatt-hours (MWh) to measure electricity. Data is reported in the AMP-Ohio Annual Directory, provided by Julia Blankenship, Manager of clean energy development and sustainability, AMP-Ohio. The Yellow Springs Environmental Commission could be responsible for collecting and reporting this data.

Description
All electricity is purchased from AMP-Ohio and distributed by the Village-owned electric utility. Other than a few installations of solar collectors and geothermal systems at private residences, the Village is not currently obtaining any measurable amount of energy from renewable sources. The largest consumption sector in Yellow Springs is industrial, followed closely by residential (see Indicator Figure 2). Total electricity consumption in the Village was 33,917 MWh in 2004, a 7.8 percent increase over 2003 (J. Blankenship, pers. comm.).

Energy consumption that is measured by this indicator consists of purchased electricity only. It would be ideal to include natural gas consumption as well, because the majority of businesses and residences in Yellow Springs utilize natural gas for heating. However, natural gas is sold and distributed by Vectren and records are not maintained by the Village (K. Fox, pers. comm.). Vectren

does not meter the amount of gas consumed by the Village, and would not share its billing records (J. Jones, pers. comm.). Energy use for transportation is also left out of this measure because of data availability; however, commuting patterns are used as a proxy for transportation energy in another indicator.

Energy & Waste: Commuting Transportation Mode

Background

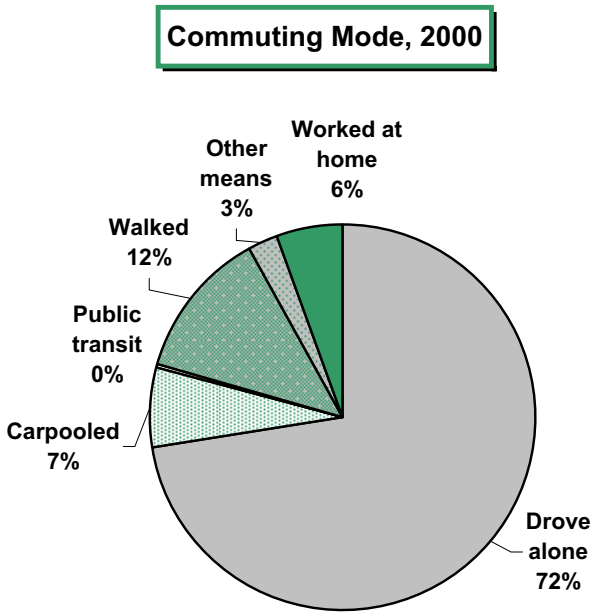
The use of personal automobiles accounts for 16 percent of all energy consumed in the U.S.; all but 5 percent of that energy comes from petroleum (EIA 2004). Automobiles burn large quantities of non-renewable fossil fuels which contribute to air pollution and global climate change. Communities can lower this consumption by encouraging alternatives to the personal automobile for transportation.

Measure

This indicator measures the distribution of modes of transportation to work for all workers age 16 and older in Yellow Springs. Data is obtained from the U.S. Census, Summary File 3. The Yellow Springs Environmental Commission could be responsible for collecting and reporting this data.

Description

According to the U.S. Census, in the year 2000 Yellow Springs had 1,887 workers over the age of 16, of which 72 percent drove alone to work in personal automobiles (car, truck, or van), as shown in Indicator Figure 3. The percentage of commuters from Yellow Springs who drive alone is below the state and national averages of 83 percent in Ohio, and 76 percent in the U.S. (U.S. Census Bureau), indicating that Yellow Springs commuters use alternatives to the personal automobile just slightly more than the average American. The average commute time to work for Yellow Springs residents was 21.3 minutes. This is just slightly below the state and national averages of 22.9 and 25.5



Indicator Figure 3.
Source: U.S. Census 2000

minutes, respectively (U.S. Census Bureau). Other than bicycling, the MVRPC RideShare program is the only alternative means of transit available to those who commute far beyond Yellow Springs.

Commuting patterns are calculated from survey data in the decennial census. Because this measure relies on census data, it can only be updated every ten years. However, other measures could be tracked in the intervening years, such as participation in the Miami Valley Regional Planning Commission's RideShare program. RideShare is a free program that matches commuters in the Miami Valley region who have similar destinations and schedules (MVRPC). Currently there are 11 residents of Yellow Springs in the program. In addition, 21 of the program's 2,019 total participants commute from other areas to work in Yellow Springs (T. Lee, pers. comm.).

Energy & Waste: Total Solid Waste Generated and Percent Recycled

Background

Solid waste generation and recycling are important to measure because they are related to two significant environmental

impacts of consumption of material goods: the energy and materials required to produce the goods, and the energy and land required to process the wastes. In addition, solid waste disposal is costly for the Village and its residents. The solid waste budget for 2006 is nearly $200,000 and expenses are projected to exceed revenues in 2008 (Swansen 2005, 18). Reductions in the amount of waste would decrease the Village's environmental impact and improve the cost of living in Yellow Springs.

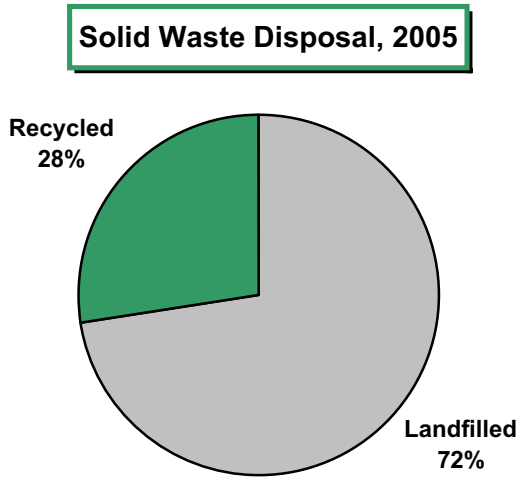
Measure

This indicator measures total solid waste generated and percent of waste recycled annually, in tons. Total amount of waste and percent of waste recycled is based on collection data by Rumpke Waste and Recycling. This indicator does not measure waste that is collected by other waste management providers, or waste that is disposed of or recycled locally by individuals in the community. Data is provided by Matthew McNelly, Yellow Springs Municipal Representative for Rumpke.

Description

Yellow Springs was the first Rumpke-serviced community to have curbside pick-up of recycling and a pay-as-you-throw system for trash collection, which was instituted in 1999 (M. McNelly, pers. comm.). In 2005, Yellow Springs generated 1,822 tons of solid waste that was collected by Rumpke, of which 28 percent was recycled (see Indicator Figure 4). The recycling rate has increased by 4 percent overall since 2002.

Materials that can be collected at the curb in Yellow Springs include mixed paper, most metals, glass containers, and number 1 and 2 plastic containers. Because these materials constitute only a part of the solid waste stream, there is a threshold to the percentage of total solid waste that can be recycled. The amount of recyclable material that enters the landfill from Yellow Springs is unknown (M. McNelly, pers. comm.). It would be interesting to measure



Indicator Figure 4.
Source: Rumpke

the percentage of waste that is recycled against the percentage that is recyclable if the data were available. However, this type of measurement may create a disincentive to use more recyclable materials once the recycling threshold is reached. Increased consumption of recyclable materials would increase the threshold of the percentage of waste that is recyclable, and potentially reduce the amount of solid waste that is landfilled. For this reason the indicator measures percent recycled out of total solid waste generated.

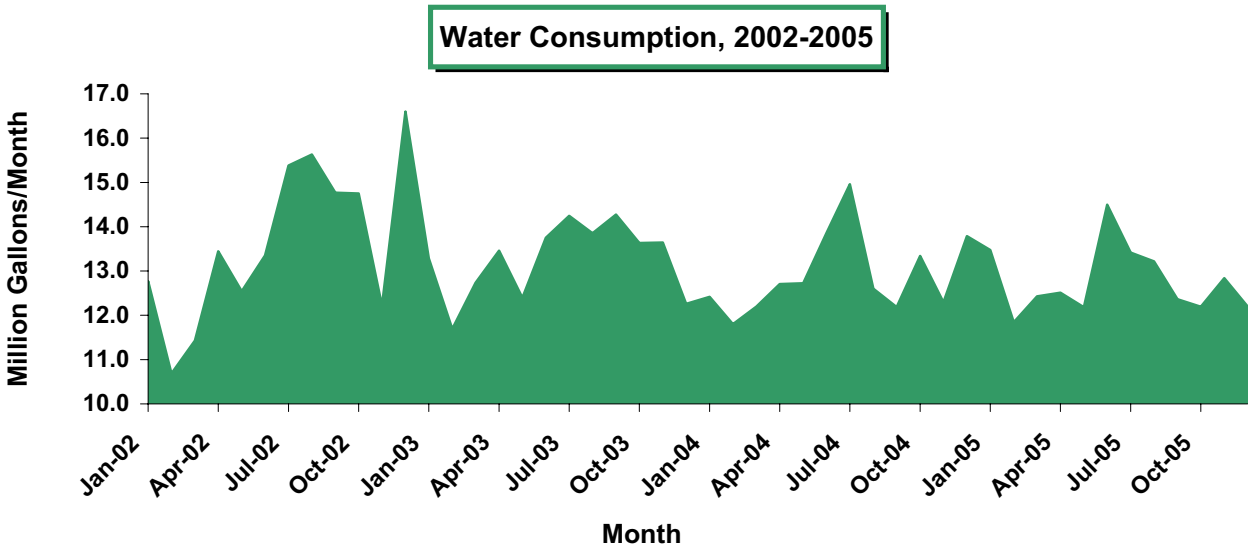
Energy & Waste: Total Water Consumption

Background

Water is the most fundamental resource required for human life. The population of Yellow Springs may be able to adapt to energy shortages, but a sufficient, clean supply of water must always be available for any community to function. Water not only sustains human life, it is a critical element for agriculture, industry, and habitat. It is important, therefore, to measure water consumption to ensure an adequate supply and treatment capacity for years to come.

Measure

This indicator measures total annual and monthly water consumption in Yellow Springs, in millions of gallons (MG). The



Indicator Figure 5.
Source: Jeff Hines, Ohio EPA Southwest Office

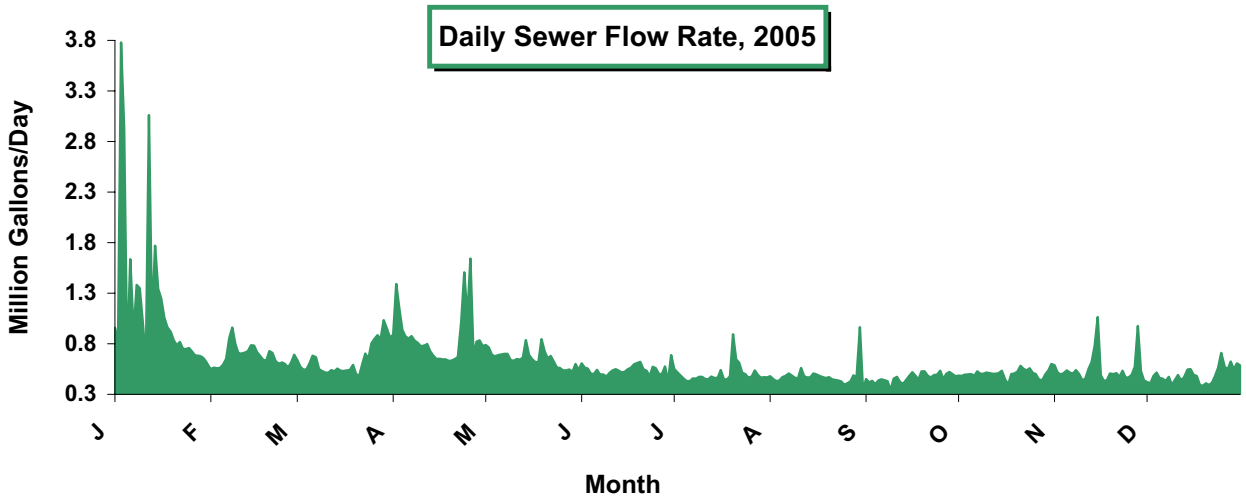
measure is based on water flow from the water treatment plant. Records are maintained by Jeff Hines at the Ohio EPA.

Description
In 2005, the Village consumed 153 MG of water, an overall reduction of 6.4 percent since 2002 (J. Hines, pers. comm.). According to Ted Dunevant, operator of the Yellow Springs water treatment plant, consumption has dropped by about 20 percent over the past decade due to the loss of industry (T. Dunevant, pers. comm.). The Village obtains its water from an underground aquifer that is fed by rainfall and surface water percolation. The total water supply is unknown, but is expected to be sufficient well into the future (J. Bates, pers. comm.). Major consumers include Antioch College, The Antioch Company, YSI, and the local schools. Some water is also lost through leaky pipes in the distribution system.

Energy & Waste: Total Wastewater Treated and Amount of Inflow and Infiltration
Background
Measuring wastewater is important for determining the efficiency of the Village sewer system. Sanitary wastewater not only requires a significant amount of resources to treat, but can also potentially pollute local streams and ground water. Wastewater treatment capacity can also be a barrier to future growth. Measuring the total volume of wastewater treated and the amount of inflow and infiltration will help the Village to plan for sufficient treatment capacity and maximize the efficiency of the wastewater treatment plant.

Measure
This indicator measures the annual amount of wastewater treated at the Village wastewater treatment plant (WWTP) in millions of gallons (MG), and the amount of inflow and infiltration (I&I) of stormwater into the sewer system. Data is maintained by Jeff Hines, Ohio EPA.

Description
Inflow of stormwater into the sewer system occurs through improper connections of residential stormwater collectors such as downspouts and sump pumps. Infiltration describes stormwater that enters the sewer system through leaks in the sewer pipes. I&I reduces the efficiency of the WWTP because the stormwater does not need to be treated. The peaks in daily flow seen in Indicator Figure 6 can be attributed mostly to I&I during heavy rainfall events (J. Bates, pers. comm.).



Indicator Figure 6.
Source: Jeff Hines, Ohio EPA Southwest Office

The average daily flow rate in 2005 was 0.62 MG, with a range of 0.34-3.78 MG. Without I&I, the daily flow rate should be similar to the rate of water consumption. However, daily water consumption in 2005 only ranged from 0.21-0.76 MG, with an average of 0.42 MG. The total amount of wastewater treated in 2005 was 229 MG, while only 153 MG of water was consumed in the same year, giving an estimated I&I volume of 76 MG, or one-third of all wastewater treated (Hines 2006).

Economic Development & Social Equity: Business Diversity

Background

In order to weather downturns in certain sectors in the economy, it is important for a community to have a broad base of business and industry. This indicator gives a snapshot of the number of businesses in a certain industry; it does not show the size or health of the business. However, it does illustrate the mix of businesses and could be useful to compare to other communities of a similar size that have thriving central business districts.

Measure

The U.S. Census records the number of businesses across industries each year in the County Business Patterns. This information is available at the zip code level, making it easy to track the business mix from year to year in Yellow Springs. Appendix 1 shows the percentage of businesses by industry in Yellow Springs for the years 1998 through 2002.

Description

County Business Patterns is an annual series from the U.S. Census that provides sub-national economic data by industry. The series is useful for studying the economic activity of small areas; analyzing economic changes over time; and as a benchmark for statistical series, surveys, and databases between economic censuses (U.S. Census, County Business Patterns). The Chamber of Commerce or Community Resources could collect and analyze the data. Both organizations are concerned with the economic standing of the community and exist to either help promote businesses in Yellow Springs, or to aid in the economic development of the community. Certain data, such as information regarding self-employed individuals, employees of private households, railroad employees, agricultural production employees, and most government employees are not included in this measure. Therefore, it does not paint a complete picture of all the industries in which people are employed and is not a complete overview of the vitality of the business health of the community.

Economic Development & Social Equity: Brownfields

Background

The U.S. EPA defines a brownfield as "a property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant" (U.S. EPA 2006). Because developers may be concerned about the cost and liability of cleaning up the property, they more typically are attracted to sites with no existing structures, called "greenfields." The resulting development pattern often is sprawl. However, as communities face unwanted loss of farmland and open space to development, many are turning to the redevelopment of abandoned sites. Tracking existing brownfields is an important indicator in a community's sustainability; the community, knowing where those brownfields exist, can work toward their remediation and prevent their future sites through the encouragement of "green" industries or those that do not pollute or degrade the environment. The U.S. EPA has recognized that brownfield redevelopment is an important component in sustainable development:

> Sustainable development promises more efficient resource use and thus more profitable economic activity on former brownfields sites than is possible with traditional approaches. As a result, communities can turn brownfields into models of sustainability while still meeting and potentially surpassing their economic development goals (U.S. EPA, Region 8 – Brownfields 2003)

An emerging sector in the economy is the restoration of brownfields as a business enterprise. It is defined as socioeconomic revitalization based on the restoration of our natural and built environments and is expected to reshape the economy throughout the twenty-first century (Cunningham 2006, 261). Restoration industries involve both the natural and built environment. Socioeconomic revitalization has the potential to deliver strong financial returns, as well as aesthetic and environmental returns (Cunningham 2006, 264).

Measure

Superfund sites, which are listed by the U.S. EPA, are one measure of identified brownfields. However, the number of brownfields may be larger than the number of Superfund sites. Property owners may be reluctant to reveal possible sources of contamination and frequently finding the actual number of brownfields that exist in a community may be difficult. Some ideas for identifying brownfields are listed in the recommendations section of this plan and if developed should be added as an indicator with the Superfund sites.

The U.S. EPA tracks Superfund sites in Region 5, which includes Ohio, through the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) database. This database is available online and all sites are recorded; searches can be conducted by zip code. Users may access the CERCLIS search at http://www.epa.gov/superfund/sites/cursites/. Currently two Yellow Springs sites are listed on the CERCLIS database: Vernay Laboratories, Inc., 875 Dayton St., and Yellow Springs Instruments (YSI), Inc., area wells.

Description

The CERCLIS Database contains general information on sites across the nation that have been identified as being potentially contaminated. Information regarding the status and efforts undertaken is tracked. Both National Priority List sites and non-NPL sites are listed. NPL sites are those that are considered the most serious, none of which exist in Yellow Springs (U.S. EPA 2006).

Economic Development & Social Equity: Charitable Donations by Yellow Springs Residents Retained Locally

Background

The scope of philanthropic giving in the Village of Yellow Springs is an interesting indicator to measure because of its relevance to sustaining the economic well-being of the Village. Many Village residents describe philanthropic giving as a "way of life" (K. Wintrow, pers. comm.). While philanthropic giving alone cannot sustain the Yellow Springs economy, it does provide some insight into the extent to which Yellow Springs' residents are involved in sustaining their local economy. One of the Village's sustainable economic development goals is to encourage and provide a business base supported by a range of economic possibilities with a diversity of businesses that embrace environmental protection of natural features. It is important, however, for the Village of Yellow Springs to consider the scope of their philanthropic giving and its manifestation in supporting the nonprofit and charitable organizations in the Village. This consideration is an important sustainability issue in that a strong philanthropic sector has some bearing on the capacity of local nonprofits to sustain local employment, the capacity-building of residents, and helps them to become effective community developers (Kansas City Comm. Develop. and Neighborhood Building Capacity 2000).

The Yellow Springs Community Foundation and the Morgan Family Foundation are the two major foundations located in the Village of Yellow Springs. Yellow Springs Community Foundation is a public charitable foundation that provides financial support to existing nonprofits, charities, and underserved individuals and families within the Village of Yellow Springs. The Morgan Family Foundation is a private charitable foundation whose assets in 2004 were $45,705,675 (The Foundation Center 2006). As a public charitable foundation, information regarding the annual giving of Yellow Springs Community Foundation is accessible to the public. Conversely, the Morgan Family Foundation, a private foundation, does not publicize this information. Therefore, the Yellow Springs Community Foundation will be highlighted as an example of current giving to the foundation and the impact the organization has had on the sustainability of community resources and beneficiaries. According to the Foundation Center, a national resource for grant seekers and contributors, endowment funds, or funds donated by past and current residents, are managed by a charitable foundation and allocated to the organization of the donor's choice. As identified in Indicator Table 4, 95 percent of the Foundation's $2.5 million assets (2004) were contributions from endowment funds.

Measure

The indicator is the percentage of funds donated by Yellow Springs' residents

Indicator Table 4

Percentage of Community Contributions

Endowments	December 31, 2003	December 31, 2004
Unrestricted Endowments	$403,156	$451,068
Restricted Endowments	$893,288	$1,002,421
Total Funds	$2,185,051	$2,379,721
Percentage of community contribution based on the $2.5 million net assets of the Yellow Springs Community Foundation.	87%	95%

Source: Yellow Springs Community Foundation

and community organizations to local foundations and charitable organizations. It provides insight into the current and future impacts of community giving to the nonprofit organizations and programs they support. Specifically, campaigns and initiatives to build or grow a necessary program or service can be based on the implications of this indicator. The IRS 990 forms required for charitable organizations are a source of data for community or public contributions to these agencies.

Description
The percentage of public contributions to charitable organizations is a measure that is easily tracked based on the amount of available financial reports of these types of organizations. An aggregate percentage of the total amount of public contributions is a recommended task and effort to promote sustainability in the future. One of the two charitable foundations in the Village of Yellow Springs is an active member of the local Chamber of Commerce. Therefore, in order to develop a uniform and centralized location of this type of information, community foundations should report their giving activities to the Yellow Springs Chamber of Commerce annually.

Economic Development & Social Equity: Capacity-Building Activities of Local Nonprofit Organizations.

Background
According to Deborah Linnell of the Alliance for Nonprofit Management, the term capacity refers to the skills and capabilities of individuals (2003). Nonprofit organizations and charitable foundations are capacity-building agents who provide the necessary resources for local agencies to promote activities that will build the capacity of an individual or group. Nonprofit community and social service organizations are a resource to the community and residents in which capacity and skill building is oftentimes the primary goal. The Yellow Springs Community Foundation's IRS 990 form identifies seven categories in which local contributions were divided and allocated. These seven categories are: Civic, Senior Citizen Activities, Nature Educational Programs, Governmental, Educational, Personal Scholarships (Youth), and Arts.

As a continued claim for funding, the better nonprofits can measure the scope of capacity-building within the organizations and outside of the organization, the more likely they are to secure and retain new funding sources (Urban Coalition Minneapolis). Program expansion for changing demographics is one of many essential elements of promoting a sustainable economy. Currently, many nonprofit organizations are required to report the status of their existing programming to their contributors and board of directors (Social Enterprise Alliance 2006). Performance measures and client-centered outcomes have become an important tool to track the success of social service programs and client-specific program activities. Furthermore, it is likely that funding retention for many social service agencies will become dependent on the ability of agencies to report outcome and performance measures in the future.

Measure
The number of dollars devoted to capacity-building activities of local nonprofit organizations is one method of measuring the amount of support for specific capacity-building activities. Examples of capacity-building activities found in the Village of Yellow Springs include: employment training, Smart Growth Education Task Force, literacy, arts, and entertainment (Yellow Springs Community Directory 2006). This measure does not identify the satisfaction of clients with the services of local agencies.

Description
The number of agencies that would be expected to contribute to this measure is not currently quantified. Identification of these types of agencies can be determined through the *2005-2006 Guide to Yellow Springs*,

which is compiled by residents of the Village. Informal organizations may not be included in these types of publications, however. This analysis would seek to provide a total dollar amount of funds (i.e., federal and local) appropriated to programs that promote capacity and skill-building activities that result in business development or growth, community organizing, and population retention within Yellow Springs. The existing data, as stated above, is available through the *Guide to Yellow Springs* publication.

An expansion of this publication, which promotes and highlights the quantitative details of community organizations, is an essential task in successfully measuring this indicator. Development of a new task force or utilization of an existing task force to begin discussing the performance of local nonprofit organizations and the financial contributions made to their programs is an important economic sustainable development indicator.

INTRODUCTION

In an increasingly developed world, land use and urban ecology impact the economic, ecological, and social sustainability of a community. Land use can dictate what kinds of businesses can locate in certain areas, while zoning code requirements can work with or against closed loop systems. Small communities are often left behind, or surrounded by other larger and often wealthier communities, in the race to urbanize and develop first. A sustainable community is one that interacts with its neighbors in a quest to guide land use decisions in individual communities as well as the region. Provisions for a diverse mix of land uses and code requirements that promote unique character and innovation can help guide a community towards overall sustainability.

VISION

Future land use decisions in Yellow Springs will continue to actively reflect the social, economic, and environmental values in the village. Yellow Springs recognizes the importance of land dedication for a variety of community purposes. Village policies will encourage a mix of land uses that are appropriate within each planning area context. As a community with an active citizenry and rich history of progressive thought, the Village will implement development practices that are ecologically and economically sustainable.

GOALS

The following goals will direct Yellow Springs toward achieving the vision of sustainable Land Use and Urban Ecology:

- Encourage environmentally friendly development
- Preserve CBD as a community hub
- Increase number of gathering places
- Expand and close Greenbelt
- Encourage non-motorized transportation options
- Encourage diversity of land uses
- Encourage infill development in CBD
- Encourage collaboration with surrounding governments
- Utilize existing parking availability

OPPORTUNITY ASSESSMENT

Yellow Springs is a unique place in Ohio. Located in Greene County between Dayton and Columbus, Yellow Springs is a community drawing workers from both cities. Its scenic nature, proximity to regionally significant natural areas, and extensive bike paths make Yellow Springs attractive to residents and tourists alike. Yellow Springs boasts a vibrant Central Business District, public places and parks all adding to the Village's unique character. Residential uses within the Village are diverse, though single-family residential development dominates this use (Village of Yellow Springs 2002). This Opportunity Assessment examines Yellow Springs' sustainability in terms of Land Use and Urban Ecology through four main categories: residential uses, non-residential uses, the Central Business District, and accessibility issues.

Residential Uses

Residential land uses are an important part of all community development. Because residential uses can shape the direction of a community, their form, function, and character is an important consideration. In Yellow Springs, nearly 70% of the land is dedicated to residential uses (Village of Yellow Springs 2002). In shaping a sustainable community, understanding how these uses interact with the natural environment is key to determining the extent to which the community is engaged in sustainable practices. This residential use opportunity assessment measures the Village's strengths and weaknesses in relation to traditional residential land uses, affordable housing, and low impact development.

Traditional Residential Land Uses

The Yellow Springs Zoning Code divides residential uses into three categories – Residential A (medium-density single-family detached residential development), Residential B (medium-density single, two and three family and multifamily residential development, and row house residential development), and Residential C (high-density one, two, and three-family and multifamily residential development, and row house residential development). Within these categories, there are different requirements for single and multifamily housing (Yellow Springs Codified Ordinances Chapter 1250).

In terms of zoning, Yellow Springs has 608 acres zoned as residential, with the dominant use being Single Family Residential (Village of Yellow Springs 2002). In general, single family residential development occurs in the southern and northern portions of Yellow Springs (Village of Yellow Springs 2002). Land Use Table 1 lists these requirements for the Single Family Residential land use category.

Single Family Residential requirements create minimum standards, as seen in Land Use Figures 1, 2, and 3.

Multifamily development is not permitted in Residential Category A. Both Residential Categories B and C permit two-family

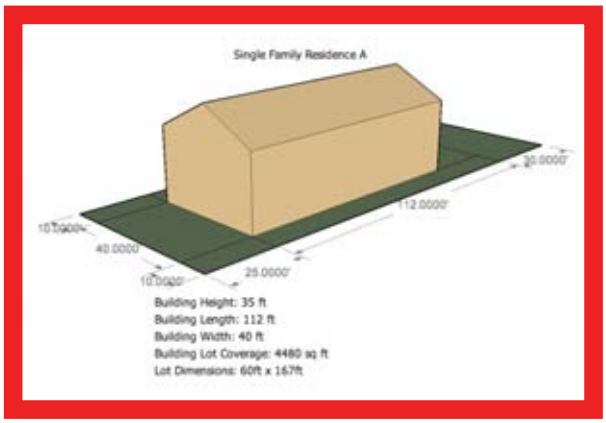
Land Use Table 1

Single Family Residential Standards

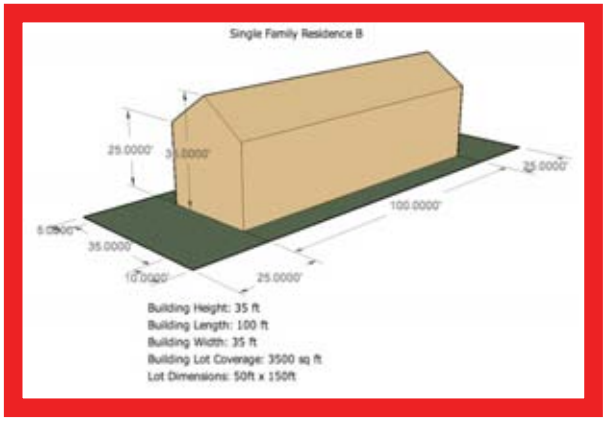
Permitted Uses by District	Minimum Lot Coverage	Minimum Zoning Lot		Minimum Setbacks			Maximum Height	
		Lot Area per Dwelling (Sq. Ft.)	Lot Width (Feet)	Front	Side	Rear	Feet	Number of Stories
A	35%	10,000	60	25**	10	30	35	2.5
B	40%	7,500	50	25***	12*	25	35	2.5
C	50%	7,500	45	15	12*	15	35	2.5

* side yard may be 5 feet, but total side yards must equal 12 feet
** Setback shall be 35 feet on streets other than local streets
*** Setback shall be 30 feet on streets other than local streets

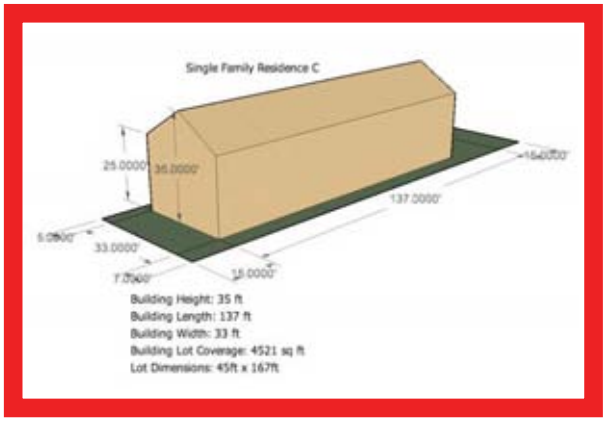
Source: Yellow Springs Ordinance 1250



Land Use Figure 1.
Source: Jessica Garrow, using SketchUp



Land Use Figure 2.
Source: Jessica Garrow, using SketchUp



Land Use Figure 3.
Source: Jessica Garrow, using SketchUp

dwellings and multifamily development. Land Use Table 2 lists requirements for Two Family homes. These standards allow for larger minimum lot widths and a lower lot area per dwelling unit than Single Family standards.

Two Family Residential requirements create building footprints much different than single family standards, as illustrated in Land Use Figures 4 and 5. Of note is the fact that the standards create shorter buildings than in Single Family standards: for instance, using minimum standards, a Residence B Single Family home is 100 feet long while a Residence B Two Family Home is only 35 feet long and a Residence C Single Family home is 137 feet long while a Residence C Two Family Home is 53 feet long.

Like Two Family Residence standards, Multi Family standards create different buildings that differ from the pother categories in a number of ways. Significantly, Residence C Multi Family standards call for lot sizes and building lengths lower than that of Residence C Two Family standards. These differences can be seen in Land Use Table 3 and Land Use Figure 6.

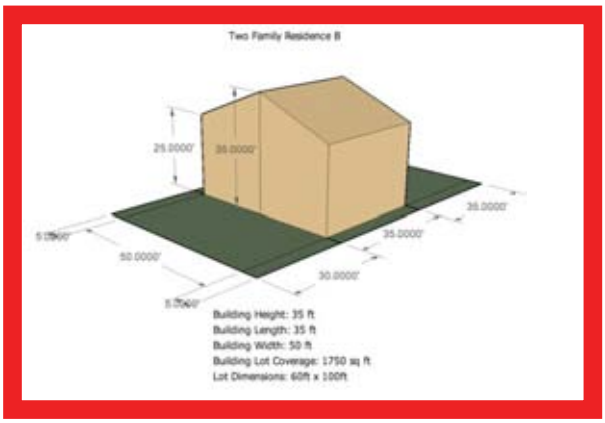
According to the 2002 Comprehensive Plan, many of the homes in the central portion of the Village are one family but “this area is also the one most interspersed with duplexes and multi-family developments” (Village of Yellow Springs 2002). As such, the code must continue to address, and the Village Council must continue to update, the criteria for all Residence zones. The diversity of

Land Use Table 2
Two Family Residential Standards

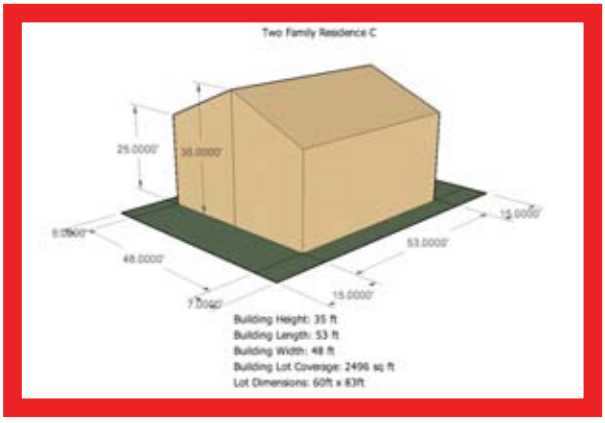
Permitted Uses by District	Minimum Lot Coverage	Minimum Zoning Lot		Minimum Setbacks			Maximum Height	
		Lot Area per Dwelling (Sq. Ft.)	Lot Width (Feet)	Front	Side	Rear	Feet	Number of Stories
A		NOT PERMITTED						
B	40%	6,000	60	30	10	35	35	2.5
C	50%	5,000	60	15	12	15	35	2.5

* side yard may be 5 feet, but total side yards must equal 12 feet

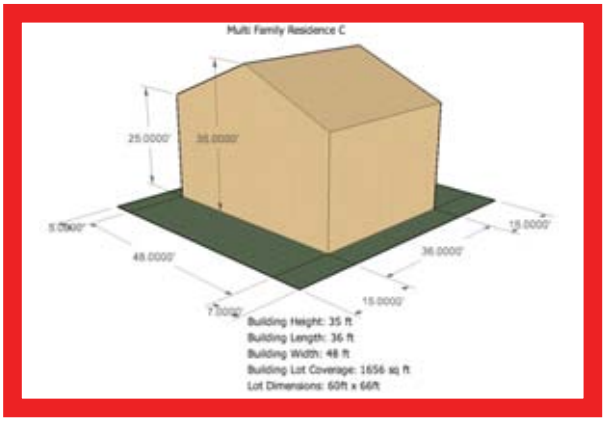
Source: Yellow Springs Ordinance 1250



Land Use Figure 4.
Source: Jessica Garrow, using SketchUp



Land Use Figure 5.
Source: Jessica Garrow, using SketchUp



Land Use Figure 6.
Source: Jessica Garrow, using SketchUp

housing in this part of the Village is an asset and should be addressed in any residential standard updates. Current land use patterns can be seen in Land Use Figure 7.

Overall, the Village's residential zoning provides for a variety of densities and housing types. However, single-family zoning (Residential Category A) remains the dominant residential zone. In order to achieve the Village's goal of increase housing diversity – both in residential type and price – revisions to these codes is necessary. Specifically, eliminating restrictions on the number of stories could be necessary if the Village is to promote residential development in the CBD. Additionally, the promotion of Residential B and C categories could increase the diversity of housing options in the Village.

Affordable Housing

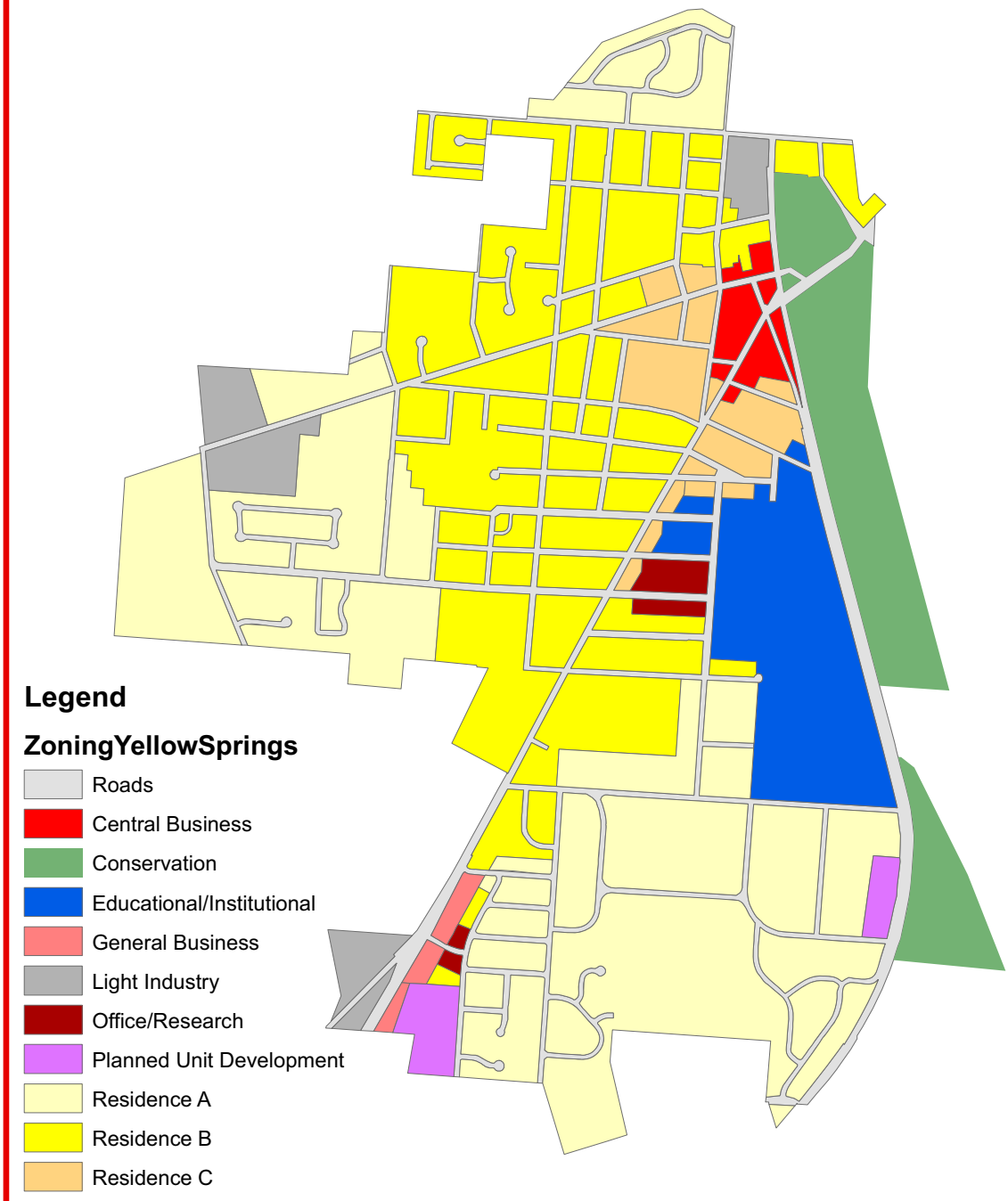
Yellow Springs, as residents and community leaders attest to, is one of the most expensive places to live in the Miami Valley region (U.S. Census Bureau). There is limited available housing in general, creating a need for planned moderate growth in housing (Village of Yellow Springs 2002). Given this situation, the Village has established a Moderately Priced Dwelling Unit Ordinance in their code (Yellow Springs Codified Ordinances Chapter 1267). This ordinance defines an eligible household as one whose income does not exceed 80% of the Village's average median income which is $51,984 according to the 2000 census (Yellow Springs Codified Ordinances Chapter 1267; U.S. Census Bureau). As Land Use Table 4 indicates, a household making $41,587

Land Use Table 3
Multi Family Residential Standards

Permitted Uses by District	Minimum Lot Coverage	Minimum Zoning Lot		Minimum Setbacks			Maximum Height	
		Lot Area per Dwelling (Sq. Ft.)	Lot Width (Feet)	Front	Side	Rear	Feet	Number of Stories
A				NOT PERMITTED				
B	40%			Site Plan Only 6,000 sq. ft. per unit				
C	50%	4,000	60	15	12	15	35	2.5

Source: Yellow Springs Ordinance 1250

Village of Yellow Springs
Zoning Map



Land Use Figure 7.
Source: Curtis Baker, using Greene County GIS Data

or less would qualify for Village affordable housing.

When examining the Yellow Springs residential code and PUD code (Yellow Springs Codified Ordinances 1250 and 2004-45), there is no requirement that new development include Moderately Priced Dwelling Units. From conversations with Village staff, it is clear that the Village does not want to mandate affordable/moderately priced housing units in new development, and instead hopes to focus on creating incentives for its inclusion (P. Hawkey, pers. comm.; E. Amhrein, pers. comm.; E. Swanson, pers. comm.)

Because there are no requirements for this kind of housing, it has historically been included in Village development because of dedicated Village residents (E. Amrhein, pers. comm.). Once these individuals are no longer working in the development field, there is no guarantee that the development of moderately priced dwelling units will continue. All units classified as Moderately Priced Dwelling Units (either sales or rentals) must remain at an affordable rate, as determined by the Village Manager or the Manager's designee, for ten years – once this so-called "control period" ends, there is no requirement that the housing remain affordable or that other developments add affordable units to remediate the loss of units (Yellow Springs Codified Ordinances Chapter 1267).

Moreover, the code does not provide any incentives for inclusion of moderately priced units in individual development projects. In 2000, the Village established the Housing Initiative Fund (HIF) and Committee "to encourage the maintenance and creation of affordable housing in the Village" (Yellow Springs Codified Ordinances Chapter 1267.05). There is no indication that the HIF has increased the amount of affordable housing within the Village. The code calls for the Village Council to establish a five-member committee to oversee the fund, but this committee does not appear to have been created (E. Amrhein, pers. comm.). This is an opportunity for the Village to better utilize its existing code. As the Village moves towards maintaining and promoting sustainable housing and land use practices, changes to the Moderate Priced Dwelling Units code may be necessary as well.

Land Use Table 4

Median Income Levels for Affordable Housing

	Median Household Income (1999)	Median Family Income (1999)
Median	$51,984.00	$67,857.00
30% of Median	$15,595.20	$20,357.10
40% of Median	$20,793.60	$27,142.80
50% of Median	$25,992.00	$33,928.50
60% of Median	$31,190.40	$40,714.20
70% of Median	$36,388.80	$47,499.90
80% of Median	$41,587.20	$54,285.60

Source: U.S. Census Bureau

According to the 2002 Comprehensive Plan, there have been gradual rises in housing costs due to increased public service costs and the high market value for Village property. As identified by the plan, "the desirability of living in Yellow Springs and the lack of housing development causes competition for housing" (Village of Yellow Springs 2002). Within the plan, two goals are identified:

1. **Goal**: Provide an adequate choice of housing options to serve a socially and economically diverse population. To help meet this goal,
   - Identify housing needs by physical elements -- desired size, amenities, location, etc.
   - Identify housing needs by economic and social elements -- price, finance options, neighborhood location in relation to other services/uses, etc.
   - Identify means for creating housing stock that would fulfill the needs of those who presently work in the Village but do not live here due to cost and limited options.

2. **Goal**: Ensure that housing suitable for a variety of incomes is available on a continual basis.
   - Implement changes in housing provisions based on continual monitoring of existing stock, including vacancy rate, type of occupancy, conversions, etc.
   - At present affordable housing for middle income families is needed.
   - Implement moderate priced dwelling unit ordinance and re-evaluate 50 foot lot zoning.

As indicated previously, the Moderately Priced Dwelling Unit ordinance has been implemented, but re-evaluation of its effectiveness is needed. To date, its inclusion in the code has not enabled the 2002 Comprehensive Plan goals to be realized.

Low Impact Development (LID)

There is no Low Impact Development code in Yellow Springs. Low Impact development is an emerging way to control stormwater pollution while protecting watersheds and other natural resources. LID integrates green space, native plant species, and natural hydrologic functions to decrease runoff generated from developed land (NRDC).

Yellow Springs does have a Planed Unit Development (PUD) ordinance dealing with residential, business, and industrial uses (Yellow Springs Ordinance 2004-45). The PUD zone is a floating, permissive zone within the Village that deals with some of the same environmental aspects that LID codes do. For this section's purposes, only the residential section of the PUD ordinance is examined. It is important to note that Yellow Springs' overall sustainability is dependent on the success of each zoning classification in dealing with environmental and site design considerations.

The purpose of the PUD ordinance is to:

1. Facilitate the implementation of the Village Comprehensive Plan
2. Take advantage of advances in technology, architectural design, and functional land use design
3. Deviate from the rigid established patterns of land use, controlled by defined policies, standards and objectives
4. Produce a comprehensive development equal to or better than that resulting from traditional lot-by-lot land use development
5. Permit flexibility of design in the placement, height and uses of buildings and open space, circulation facilities and off-street parking areas
6. More efficiently utilize potentials of a site characterized by special features of geography, topography, size or shape
7. Encourage a mixture of residential and non-residential development in a responsible and creative manner
8. Encourage innovations in residential development so that demands for housing at all economic levels may be met by greater variety in type, design and citing of dwellings, and by conservation through more efficient use of land in such developments (Yellow Springs Codified Ordinances 2004-45).

For PUD-R, there is no minimum lot area provided there is a 200 sq. ft. privacy yard, and no more than 75% of any individual lot may consist of an impervious surface. Density requirements in a PUD-R are 8 du/acre for single-family and two-family dwellings, and 12 du/acre for multi-family dwellings (Yellow Springs Codified Ordinances 2004-45). Overall in a PUD, a minimum of 25% must be dedicated to common open space. Common open space can include woodlands, floodplains, wetlands, riparian areas, agricultural uses, retention/detention ponds, public areas, and unimproved paths/trails (Yellow Springs Codified Ordinances 2004-45).

While low impact development techniques, like retention/detention ponds, are permitted within a PUD, there is no specific part of

the code requiring or incentivizing their use. This failure to specifically address stormwater management is a weakness in the Yellow Springs code, providing a distinct opportunity to increase the Village's sustainability. Additionally, the residential standards in a PUD are not significantly different from the regular residential code standards. This does not provide developers with an incentive to use the PUD zoning in new developments.

Non-Residential Uses

Non-residential uses constitute over 30% of the Village's area (Village of Yellow Springs 2002). These include commercial, industrial, and agricultural uses. This non-residential opportunity assessment measures the Village's land use strengths and weaknesses in terms of vacant lands, parking requirements outside the CBD, conservation easements, Big Box retail, and the balance of non-residential uses.

Vacant Lands

Infill development is something that is certainly encouraged in Yellow Springs, though no incentives exist for developing these lands. Access to a list of available property can be found on the Village website, under the Economic Development section, and are related to commercial and industrial spaces. Currently, there are six properties available for development, four of which are located in the central business district (Economic Development). Land Use Table 5 lists these available properties.

Land Use Figure 8.
Source: Justin Milam

Land Use Figure 9.
Source: Justin Milam

Having a listing of vacant properties courtesy of the Village government provides potential businesses the opportunity to examine possible locations within Yellow Springs. Shops, offices and restaurant owners have the opportunity to locate in the Central Business District, while industrial uses could be found elsewhere. Land Use Figures 8 and 9 show two vacant parcels available for development in the Yellow Springs

Land Use Table 5

Commercial/Industrial Properties in Yellow Springs

Address	Zone	Location	Size
1475 Xenia Ave	Restaurant/Retail/Office	Southwest	9,000 sq. feet
875 Dayton St	Light Industrial	West	10,000 sq. feet
314 Dayton St	Office	CBD	800 sq. feet
102 Dayton St	Retail/Office/Residential	CBD	1 acre
108 Cliff St	Light Industrial	CBD	.67 acres
34-136 Dayton St	Retail	CBD	3,376 sq. feet

Source: Yellow Springs website

CBD. This list enables Village government to determine what zoning changes may be necessary to encourage development of these vacant parcels.

Non-residential Parking Requirements

Non-residential parking requirements are fairly strict throughout the Village (E. Amhrein, pers. comm.). The existing code allows for an excess of parking throughout the Village. Moreover, the parking requirements in Yellow Springs are commensurate with those of a major suburb, despite the Village's small size. For example, the non-residential requirements are almost identical to the city of Westerville, Ohio, a 37,000 resident suburb of Columbus (Westerville Codified Ordinance 2006). The standards should be less restrictive and simpler, with requirements established for a small town, instead of a major suburb. At present, they are set up in a way to encourage use of the automobile, instead of discouraging its use in favor of alternative methods of transportation. An example model to follow can be found in Davidson, North Carolina, which has revised their code to better accommodate residents and visitors. (See Davidson Parking Requirements Sidebar)

As the Yellow Springs standards currently exist, retail uses require 1 space per 200 square feet while office uses require 1 space for every 300 square feet, with a 2 space minimum. Banks require 1 space per 400 square feet, bars need 1 space per 50 square feet, and restaurants are broken down by carry-out, drive-in, sit-down, and a mixture of the three. Industrial uses require 1 space per 300 square feet (Yellow Springs Parking Standards).

Parking requirements for non-residential areas in the Village should be designed to minimize breaks in the pedestrian environment and create a safe and comfortable passage for them. The requirements must provide adequate spaces to meet the needs of the building,

Land Use Figure 10. Conservation Easements on the southern border of the Village.
Source: Justin Milam

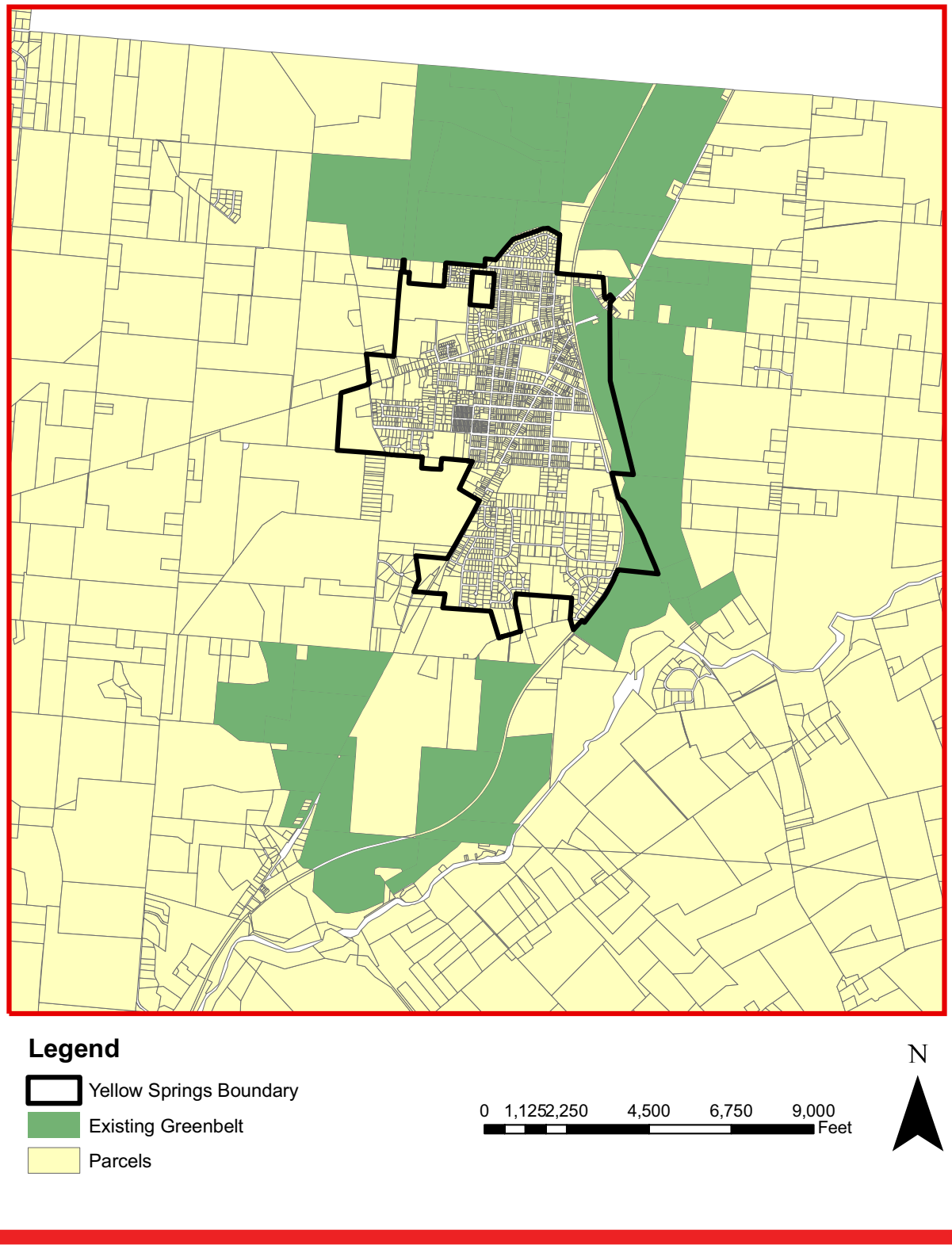
while fulfilling needs of non-motorized transportation. This is a current weakness in the Village code, which must be addressed.

Conservation Easements

A conservation easement is a legal agreement between a landowner and a land trust or government agency that permanently limits uses of the land in order to protect its conservation values. The easement allows the landowner to continue to own and use the land, or to sell it or pass it on to heirs, while certain rights associated with the land would be given up (Land Trust Alliance).

A green belt for Yellow Springs was first mentioned in the 1967 Comprehensive Plan, as means to provide a buffer of open space from surrounding communities and to protect environmentally sensitive areas. The target area for land preservation is toward the west, around Jacoby Creek. At

Davidson Parking Requirements
With a population slightly over 7,000 residents, Davidson, North Carolina has adapted their parking standards to accommodate residents, tourists and Davidson College students. Non-residential standards are broken into 1,000 square foot increments and into commercial use, retail use, and warehouse use. (Davidson Planning Ordinance 2006)



Land Use Figure 11.
Source: Justin Milam and Curtis Baker, using Greene County GIS Data

present, the green belt is not fully complete (Hilliard 2002). Land Use Figure 10 provides an example of an existing conservation easement along the Village's southern border.

Yellow Springs has approximately 2,244 acres of protected lands through conservation easements. Land Use Table 6 details the property owner, the number of acres, and where the property is located within Yellow Springs (Hilliard 2002).

These conservation easements are being used to help close the green belt that is anticipated to surround the Village in the near future. The Marsh, Bean, and Hammond properties block development pressures coming from the southwest and the Glen Helen Nature Preserve and Country Commons block pressures from the east. The Whitehall Farm blocks pressures from the north. The existing green belt can be seen in Land Use Figure 11. Future easements and protected land needs to be in both the southeast and northeast corners of Yellow Springs if the greenbelt is to be completed.

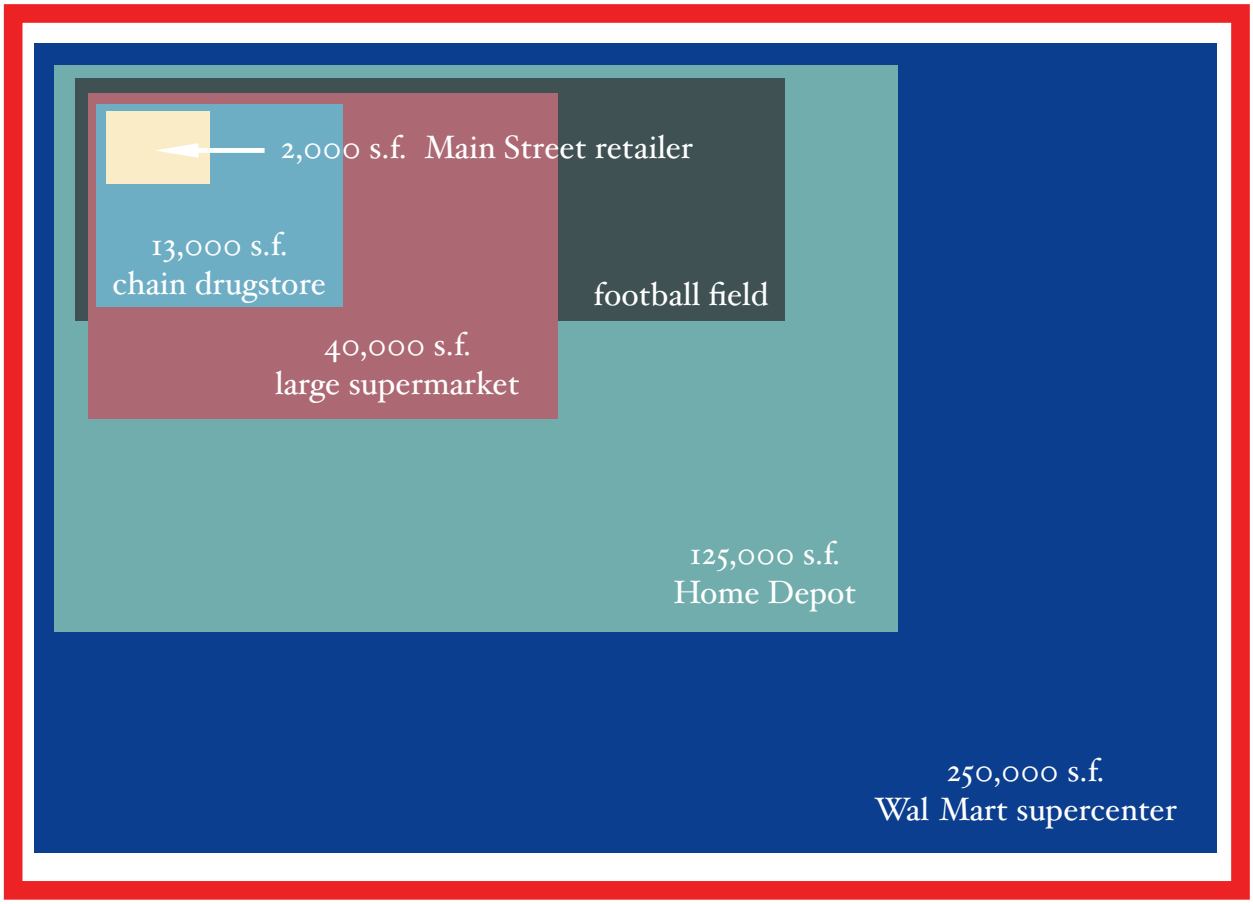
Land Use Table 6
Conservation Easements in Yellow Springs

Property Name	Location	# of Acres
Whitehall Farm	North	906
Glen Helen Nature Preserve	East	900
Country Commons	East	111
Marsh Property	Southwest	81
Bean Property	Southwest	135
Hammond Property	South	111

Source: Hilliard

Big Box Retail

Big Box retailers such as Wal-Mart, Target and Home Depot have opened stores in small towns and villages across America. A growing of number of cities and towns are beginning to adopt store size caps in hopes of getting a handle on new retail development.



Land Use Figure 12. "How Big is too Big" illustrates the size of neighborhood stores compared to Big Box stores.
Source: The Hometown Advantage 2006

Most of these communities choose an upper limit of between 35,000 and 75,000 square feet. Traditional Wal-Mart and Target Supercenters range from 180,000 to 250,000 square feet in size, and take up between 4.1 and 5.7 acres (The Hometown Advantage 2006).

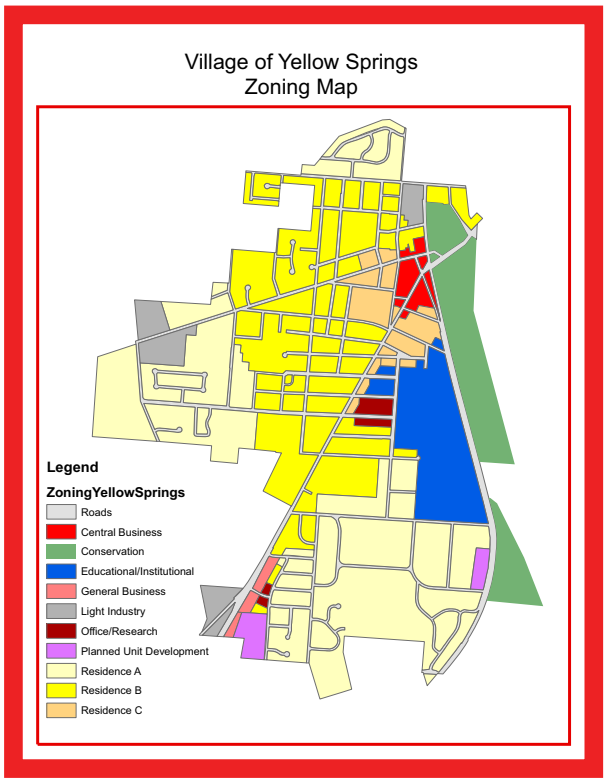
Yellow Springs has a size restriction on retail businesses. The Central Business District code has a maximum footprint of 5,000 square feet, with a total lot area being between 5,000 and 8,000 square feet. In the General Business District, the total lot area must be between 7,500 square feet and one acre, or 43,560 square feet. In the Mixed Commerce District, the minimum lot size is 25,000 square feet, with the maximum being 20 percent of the contiguous area of the Mixed Commerce District. If Big Box were to enter Yellow Springs, they would have to be located within the General Business District (Yellow Springs Codified Ordinances 2004). It is appropriate to retain different size standards in these areas, as they vary in geographic size and in character. The size standards, however, have the effect of prohibiting other development Yellow Springs may want, especially in the CBD.

Land Use Figure 12 illustrates the difference between the Main Street shop, the chain drugstore, the large supermarket, a football field, and a Big Box retail store.

While the Village has effectively kept big box stores outside its boundaries, the existing regulations impact its ability to attract other types of business development. Changes to the zoning code that would make development within the Central Business District easier would help increase its economic viability and is a significant opportunity for Yellow Springs.

<u>Balance of Non-Residential Uses</u>

Maintaining a diversity of land uses within the Village will help ensure Yellow Springs' community character and economic viability. The balance between residential and non-residential uses is important, as over 70% of the Village is zoned for residential use. Of the remaining land, 36 acres are zoned as industrial, 59 acres are zoned as retail, and 52 acres are zoned for agricultural use. The limited land available for these uses creates increased need for maintaining or improving this balance (Village of Yellow Springs 2002). Land Use Figure 13 illustrates the Village's existing zoning.



Land Use Figure 13.
Source: Curtis Baker, using Greene County GIS Data

Within the Village zoning code, a diversity of non-residential land use is promoted. Title Four offers a variety of zoning classifications allowing for a mix of non-residential land uses that include light industrial, mixed commerce district, general business district, office uses, educational uses, agricultural, and conservation districts (Village of Yellow Springs Codified Ordinances 2004).

The comprehensive plan recognizes the uniqueness of non-residential uses within Yellow Springs and the limited land within the Village to expand these uses. The plan states that zoning should be used to attract

businesses that can function in an area that is designed to serve pedestrian traffic (Village of Yellow Springs 2002). While this strategy is focused mainly on the Central Business District, it could also be used on lands that are zoned commercial in the General Business District on the southern portion of Xenia Avenue. This would help encourage more development in that area.

Central Business District

The central business district (CBD) is an integral part of the Village of Yellow Springs: the district acts as the Village's commercial center and as the central hub for residents to interact and visitors to enjoy. According to the 2002 Comprehensive Plan, the downtown is a vibrant mixture of commercial, social and cultural activities. This environment is treasured by the community and methods of supporting and encouraging that role should be pursued (Village of Yellow Springs 2002). Figure 14 shows the boundaries of the CBD.

Land Use Figure 14.
Source: Curtis Backer, using Greene County GIS Data

In assessing the strength of the CBD in terms of sustainability, three topic areas are explored: the CBD zoning code, the CBD parking standards, and public spaces.

Central Business District Zoning Code

According to the Yellow Springs Village Code, the purpose of CBD is to serve as the focal point for the social and commercial activities of the Village (Village of Yellow Springs 2004). A variety of business, institutional, public, quasi-public, cultural, residential and other related uses are encouraged to support both local and regional commercial and cultural activities. An appropriate mix of activities to retain a vital environment is encouraged. According to the Village code, activities occurring in this district are, for the most part, pedestrian oriented, and therefore, the safety, mobility and well-being of persons using this area shall be protected and supported by the regulations (Village of Yellow Springs 2004).

The strength of the central business district code is that it has a clear vision of what the commercial center will look like. It places an emphasis on being a pedestrian friendly, diverse center with a mix of uses. The code includes written in protection for the CBD: if the zoning administrator deems a plan will significantly change the CBD, the plan must go in front of the Planning Commission for review (Village of Yellow Springs 2004). Figures 15 and 16 illustrate the unique character of Yellow Springs' downtown (Urban Ohio).

However, the code has weaknesses. As mentioned in the discussion on Big Box, site restrictions in the code make it very difficult for redevelopment in the CBD to take place. If the entire district burned down, the code would not allow it to be built to original form (Planning Commission Meeting 2006). Some elements of the code that limit redevelopment in the CBD include lot size, setbacks, and frontage. The minimum lot area for a building in the commercial center is 5000 ft2, but shall not exceed 8000 ft2 (Village of Yellow Springs Codified Ordinances Chapter

Land Use Figure 15. Yellow Springs' Historic Ye Old Trail Tavern
Source: Urban Ohio

Land Use Figure 16. Yellow Springs' Little Art Theater
Source: Urban Ohio

1256). An analysis of the Village's parcels using Greene County GIS shows that current lot sizes in the CBD range from 3000 ft2 to larger than 10,000 ft2. While current code limitations were put in place to keep larger chain stores from entering the central business district (CBD), they has also have the effect of hampering other redevelopment efforts (P. Hawkey, pers. comm.).

Height, setbacks, and frontage restrictions can also be limiting for the Village, but for the most part are inline with the CBD design. The height restriction is 35 ft, which seems appropriate with the current scale of the CBD, but could be altered to allow for more innovative design. The frontage requirement of 25 ft is slightly restrictive considering some buildings now have less than that. However, the code does allow for buildings with shorter frontage if half the lots on the block are also less than 25 ft (Village of Yellow Springs 2004). Side setbacks are required to be 15 ft, yet many buildings in the CBD have side setbacks shorter than 15 ft (Village of Yellow Springs 2004).

An opportunity exists for the Village of Yellow Springs to remedy unintended effects of its zoning code. The Planning officials of the Village have a genuine interest and desire to improve these regulations. The main problem with updating codes is the length of time it takes to author them. There exists a sense of urgency to do so, and a CBD zoning code update would be a major benefit to the Village.

<u>Central Business District Parking Standards</u>
Tourism has generated an intense demand for CBD parking during holidays and weekends (Village of Yellow Springs 2002). However, average daily demand for parking is being met, and there are no plans to provide more parking for peak demand (Village of Yellow Springs 2002). While the district benefits from on street parking, there isn't much in the way on off street parking. Commercial parking regulations attempt to solve that problem by requiring off street parking spaces; however, there is not enough land in the CBD to satisfy those requirements. Land Use Figure 17 shows existing on street parking in Yellow Springs.

The weakness of the parking regulations is that it requires too many off street parking spots for commercial development. Part of the problem is that the CBD does not have its own parking code, and instead defers to the standard parking code for the Village (Tellow Springs Codified Ordinances 1256 and 1268). Barbershops require 2 spaces per service chair; restaurants require 1 space per 90 ft2; and theaters require 1 space per 4 seats (Yellow Springs 2004). In a dense central business district the amount of land need for those parking spaces does not exist.

Land Use Figure 17. On-Street Parking in the CBD
Source: Urban Ohio

According to the *Yellow Springs News*, the Village of Yellow Springs Board of Zoning Appeals recently approved a variance that allowed a downtown development to provide 27 parking spaces for a project rather than the 59 parking spaces required by the code (Heaton 2006 2006). The plan was approved because Planning Board members realized the regulations were in conflict with Yellow Springs Comprehensive Plan (Heaton 2006 2006). If the Village is to encourage redevelopment and more effective use of the land in the CBD, the parking requirements must be made less restrictive.

While parking spaces are limited in the CBD, one of the Village's strengths is its walkability. The on street parking and sidewalks in the CBD make it easy to walk from block to block. This means that during days of average demand, ample parking should be available within walking distance of the destination. Yellow Springs is not a suburban community and does not want to be, but because of its density, parking requirements will remain an issue. In order to maintain the CBD's pedestrian friendly environment, numerous parking lots and the multiple curb cuts required of them would not be beneficial to the community.

Public Spaces

The CBD offers entertainment experiences, dining opportunities, and serves as the primary venus various types of cultural entertainment in the Village. The Bryan Center, which serves as a multi-purpose building housing municipal services in addition to exhibiting area art, offers a public gymnasium. This serves the indoor needs of the community but does not offer an area of central focus outdoors for people to gather (Hilliard 2002). Additionally, a variety of coffee and wine shops line Xenia Street in addition to a senior center and a community theatre for live performances (E. Amhrein, pers. comm.). These destinations in addition to a variety of retail opportunities promote an eclectic and mixed-use ambiance to the CBD.

The CBD, as mentioned in the Comprehensive Plan, is a vibrant place, attracting residents and tourists alike. The CBD has maintained this vibrancy despite the lack of any defined public space. Short Street is often used as a make shift plaza location for community events and festivals (E. Amhrein, pers. comm.). The success of the CBD is tied to the success of such festivals and community events, as these events attract new visitors, increase revenue streams, and add to the overall ambiance of the Village. While it currently does a good job using these places for the betterment of the community, the Village could better utilize its existing spaces to attract visitors.

Accessibility

Yellow Springs is two square miles in area, making trips within the village relatively short, compared to larger villages and cities. Little effort however, has been made to encourage non-motorized modes of transportation due in part to its somewhat rural nature and lack of public transportation access. Importantly, physical characteristics and policies do not promote bicycling and walking as modes of transportation. This opportunity assessment examines the Village's sustainability in terms of bicycling opportunities and connections and pedestrian friendliness.

Bicycling

The Miami Valley bikeway passes along the eastern edge of the Village. There are connections to this bikeway at several points along the Village's street grid, one of which is shown in Land Use Figure 18. These connections facilitate travel to the bikeway and points beyond Yellow Springs. These connections also facilitate bike travel from the bikeway into the Village. There are 2.5 miles of the Miami Valley bikeway within the Village (as measured by this sustainability study); this is the Village's only dedicated bikeway. As for bicycles facilities on existing roadways, there are zero miles of bike lanes in the Village.

The Yellow Springs Codified Ordinances regulate the operation of bicycles within the village. Recognizing there are no bikes lanes and limited dedicated bikeways, bicycles are allowed on the majority of roadways and sidewalks. The following is an assessment of bicycles' permissibility on roadways, bikeways and sidewalks according to Yellow Springs Codified Ordinances Chapter 444:

Roadways: Bicycles are permitted on roadways generally, but must yield to automobiles. Cyclists must follow all rules that apply to automobiles. The Village requires certain behaviors when cyclists ride on a roadway. The Codified Ordinance outlines regulations regarding cyclists riding abreast, passing and visibility.

Bikeways: Bicycles are permitted on dedicated bikeways and are designated as the primary users of these paths. Pedestrians are permitted to use these paths but must yield to bicycles.

Sidewalks: Bicycles are generally permitted on sidewalks, but must yield to pedestrians. Bicyclists are prohibited from riding on sidewalks in the central business district and in areas where a dedicated bikeway is provided. Under these two circumstances, bicyclists must use the roadway or the bikeway, respectively.

The existence of the 2.5 miles of dedicated bikeway bodes well for increasing bicycle-friendly transportation options in the future, including additional dedicated bikeways and the development of bike lanes on existing roadways. The existence of the dedicated bikeway acts as a sort of demonstration project, showing Village residents and officials the compatibility and desirability of transportation by bicycle.

Pedestrians

While some roads in Yellow Springs have sidewalks, many lack paved sidewalks or pedestrian paths of any kind. On some streets, the sidewalks are of inconsistent quality. Other streets have sidewalks on only one side of the street. In the CBD for example, sidewalks are abundant and wide enough for two or more people to walk abreast. In still other areas, the sidewalks are only 40 inches wide, enough only for single-file movement. In the far northern,

Land Use Figure 18. The Miami Valley trail is a dedicated bikeway facilitating non-motorized transportation in the village
Source: Justin Milam

Sidewalk Assessment Results

High demand areas: Some compliance
Most sidewalks too narrow

Medium demand areas: Over half of segments lack sidewalks, many others too narrow

Low demand areas: Over half of segments lack sidewalks, many too narrow. Curvilinear streets increase trip distance for pedestrians

western and far southern areas of the Village, there are no sidewalks at all.

Secondly, many areas of the Village have sidewalks that allow direct routes to activity centers, but some of the others do not. In the northern and western areas of the Village, for example, pedestrians are forced to walk from neighborhood streets to main roads in order to reach an activity center. This is particularly prevalent in subdivisions in the far south and far west that have interior cul-de-sacs. The sidewalk routes to the main roads force some pedestrians to walk in the opposite direction of the activity center. These conditions in the south of the Village on Mercer Ct., Southview Dr. and Morgan Hill Ct. Direct pedestrian movement is hampered in the west of the Village also, particularly on Omar Cir. and Paxson Dr. The resulting increased walking distance discourages walking as a mode of transportation.

Yellow Springs' subdivision regulations require 4-foot sidewalks on both sides of all streets except estate streets. The regulations however, provide for exceptions to the both-sides requirement for local streets. An example of 4-foot sidewalks is shown in Land Use Figure 19.

Estate streets serve subdivisions with lots at least 100 feet wide. The subdivisions also must have a Village-approved storm water management plan. The Yellow Springs Planning Commission has the discretion

Land Use Figure 19. Narrow sidewalks allow only single-file movement and discourage pedestrian activity
Source: Justin Milam

to require sidewalks on estate streets, but sidewalks are not generally required (Yellow Springs Codified Ordinances Chapter 1226).

As part of this analysis, a comprehensive sidewalk inventory was conducted. This included data on sidewalk presence and width. The data was evaluated against the standards established in the Indicators

Land Use Figure 20. Wide sidewalks in heavy demand areas are pedestrian friendly
Photo Credit: Justin Milam

Land Use Figure 21. Corry Street features a dedicated bikeway parallel to the roadway
Source: Justin Milam

section. For street segments not clearly within in a single zoning district (one district on either side of the street), the higher level of service was used for the evaluation. The results reveal the majority of the Village sidewalks do not meet the standards set forth by the indicator measure. Non-compliance was present in all three categories: high demand, medium demand and low demand.

High demand areas account for the smallest proportion of segments, 20 percent, but demand the closest scrutiny. High demand areas are used frequently by pedestrians and the quality of sidewalks must be closely examined. In high demand areas, sidewalks should be at least 8 feet wide and on both sides of the street, as shown in Land Use Figure 20. While a few segments met the standards, the majority did not. Of those that did not meet the standards, sidewalks were present but of insufficient width, specifically 4 or 5 feet. Particularly concerning were the few segments that had no sidewalks whatsoever or where sidewalks were only 40 inches wide. Overall, 11 percent of sidewalk segments meet the standards. Absent or very narrow sidewalks are wholly insufficient for a high demand area. These areas are densely trafficked by pedestrians and require wide sidewalks to facilitate circulation. Table 7 lists the segments in the high demand area along with their zoning classification.

Medium demand areas account for nearly half all segments examined. These areas have a substantial non-compliance rate. Although these segments are expected to have a moderate level of pedestrian demand, over half of these segments have no sidewalks whatsoever. Of those that have sidewalks, only two segments were in compliance. The others were too narrow (40 inches) or had sidewalks on only one side. Overall, 5 percent of sidewalk segments

Land Use Table 7

High Demand Segments

Segment	Sub section, if applicable	Width	Side of Street	Compliant
Xenia Ave	Corry St to Limestone St	9 ft	both	YES
Dayton St	Stafford St to Corry St	8 ft	both	YES
Elm St		5 ft	both	NO
Walnut St	Dayton St to Elm St	5 ft	both	NO
Short St		5 ft	both	NO
Phillips St		4 ft	both	NO
Xenia Ave	Bike path to Corry St	4 ft	both	NO
Xenia Ave	Limestone St to Herman St	4 ft	both	NO
Walnut St	Yellow Springs-Fairfield Rd to Dayton St	4 ft	both	NO
Walnut St	Elm St to Limestone St	4 ft	both	NO
Corry St	Dayton St to Glen St	4 ft	both	NO
Dayton St	Corry St to Railroad St	4 ft	both	NO
Corry St	Glen St to Whiteman St	4 ft	one	NO
Limestone St	Stafford St to Corry St	40 in	both	NO
Winter St	Pleasant St to Dayton St	40 in	both	NO
Glen St		40 in	both	NO
Center College	Xenia Ave to Livermore St	none		NO
Whiteman St	Xenia Ave to President St	none		NO

Source: Curtis Baker and Ben Weiner

Land Use Table 8

Medium Demand Segments

Section	Sub section, if applicable	Width	Side of Street	Compliant
Corry St	Whiteman St to President St	none	bike	YES
Dayton St	High St to Stafford St	5 ft	both	YES
Davis St		4 ft	both	NO
Xenia Ave	Herman St to Allen St	4 ft	one	NO
Allen St		40 in	both	NO
Center College	High St. to Xenia Ave	40 in	both	NO
High St	Dayton St to South College St	40 in	one	NO
nonerth College St	High St. to Xenia Ave	40 in	both	NO
nonerth College St	Xenia Ave to Livermore St	40 in	both	NO
South College St	High St. to Xenia Ave	40 in	both	NO
Whiteman St	High St to Xenia Ave	40 in	both	NO
Dayton St	Enonen Rd to High St	40 in	both	NO
Xenia Ave	Allen St to South Village Limits	40 in	one	NO
Stafford St	Dayton St. to Davis St	40 in	both	NO
Livermore St	Whiteman St to South College St	40 in	one	NO
Green St		none		NO
Wright St		none		NO
Yellow Springs-Fairfield Rd		none		NO
Center College	Green St. to High St	none		NO
Herman St		none		NO
High St	Yellow Springs-Fairfield Rd to Dayton St	none		NO
High St	South College St to Herman St	none		NO
Limestone St	Dayton St to Stafford St	none		NO
Livermore St	South College St to Herman St	none		NO
Marshall St		none		NO
nonerth College St	Green St. to High St	none		NO
South College St	Xenia Ave to Livermore St	none		NO
Tower		none		NO
Tully		none		NO
Cliff St		none		NO
King St		none		NO
Lincoln Ct		none		NO
Park Place		none		NO
Pleasant St		none		NO
Stafford St	Yellow Springs-Fairfield Rd to Dayton St	none		NO
Union St		none		NO
Winter St	Yellow Springs-Fairfield Rd to Pleasant St	none		NO
Yellow Springs-Fairfield Rd		none		NO
Suncrest Dr		none		NO
Green St		none		NO
Lawson Pl		none		NO
Cemetery Rd		none		NO

met the standards. One segment on Corry Street has no sidewalks but is parallel to the dedicated bikeway, as shown in Land Use Figure 21. This segment is therefore judged to be in compliance. Table 8 lists the segments in the medium demand area along with their zoning classification.

Low demand areas make up one-third of the road segments. Although nearly half of the low demand segments have sidewalks, all were 40 inches wide and thus too narrow. None of the segments meets the standards.

Many street segments lack sidewalks, as illustrated in Land Use Figure 22. Elsewhere, sidewalks 40 inches wide do not sufficiently promote pedestrian usage since they allow only single-file use. Additionally, low demand areas of the Village are more likely to have curvilinear streets, which often force pedestrians from residential streets onto a main road, requiring them walk longer distances to reach destinations. This, in conjunction with the parking standards discussed in the non-residential and CBD

Land Use Table 9

Low Demand Segments

Section	Sub section, if applicable	Width	Side of Street	Compliant
Birch St		40 in	both	NO
Edgefield Dr		40 in	both	NO
Glenview Dr	Birch St to Corry St.	40 in	both	NO
Lisa Ln		40 in	both	NO
Mercer Ct		40 in	both	NO
Miami Dr		40 in	both	NO
Randall Rd		40 in	both	NO
Southview Dr		40 in	both	NO
Enonen Rd		40 in	both	NO
Paxson Dr		40 in	both	NO
South College St	Green St. to High St	40 in	both	NO
Corry St	President St to Hyde Rd	40 in	both	NO
Glenview Dr	President St to Birch st	none		NO
Meadow Ln		none		NO
Orton Rd		none		NO
President St		none		NO
Rice Rd		none		NO
Southgate Ave		none		NO
Spillan Rd		none		NO
Barbara St		none		NO
Omar Cir		none		NO
Talus Dr		none		NO
Union St		none		NO
Nonerthwood Dr		none		NO
Gardendale		none		NO
Whitehall Dr		none		NO
Fair Acres		none		NO
Walnut St	North Village Limits to Yellow Springs Fairfield Rd	none		NO
Brookside Dr				NO

Source: Curtis Baker and Ben Weiner

Land Use Figure 22. Streets without sidewalks are dangerous and foreboding to pedestrians
Source: Justin Milam

opportunity assessments, discourages walking and encourages automobile use. Table 9 lists the segments in the low demand area. All segments are in the Residence A zoning district.

SUSTAINABILITY ANALYSIS

The opportunity assessment reported existing conditions relating to Land Use and Urban Ecology in Yellow Springs. Additionally, efforts to encourage Conservation Easements and Affordable Housing were highlighted. The sustainability analysis outlines recommendations to support this project's vision statement for sustainable Land Use and Urban Ecology in Yellow Springs.

Residential Uses

Traditional Residential Land Uses

The recommendations in this section are designed to encourage collaboration with surrounding governments and to encourage diversity of land uses. These are two of the land use and urban ecology goals set forth for the Village. Implementing the following recommendations will increase the levels of two of the land use related indicators: Diversity of Land Uses; and Affordable Housing and Moderately Priced Dwelling Units.

Recommendation: Conduct a Build-Out Analysis

Build-out analyses can help a community understand the impact existing land use codes will have on the community's physical development patterns. A build-out analysis visually demonstrates – through maps, models, and computer graphics – what the community will look like if current development trends and regulations continue. Using the information from this analysis, Yellow Springs can determine what kind of zoning code changes, especially in the residential land use category, are necessary. Given time and monetary constraints facing the Village, the following time frames are recommended to conduct such an analysis.

- Short Term (6 months – 2 years)
  - The Village Planning, Building, and Zoning Department, with the help of the Village Manager and Village Council should gather information on developed and developable land, and create a base map. The incorporation of Aerial Photos and GIS data is useful here. The Village currently does not use GIS, but Greene County and the Miami Valley Regional Planning Commission (MVRPC) both have GIS capabilities. In the short term, it is recommended that the Village work with these governments to map out developed and developable land in the Village. This coordination could take a variety of forms, including partnering with their GIS departments for mapping responsibilities, or working with planners in these governments who may have more financial and technological resources than Village staff. While this report contains a simple land use base map, a build out analysis would need to include more specific information.
  - The base map should:
    - Include the perimeter of the Village, existing roads, and surface water.
    - Delineate land that cannot be developed due to environmental conditions (floodplains, wetlands, steep slopes, etc.), public ownership, deed restrictions, etc.
    - Delineate undeveloped land which may be developed.
    - Delineate land which has been developed with existing structures and lot lines.
  - Using this information, calculations on acres available for development, the percentage of land in the Village that is developable, etc can be made. GIS is the best way to calculate this information
  - Demographic information should also be gathered using census data, and MVRPC population estimates. This data is updated yearly by MVRPC and is available upon request.

- Using information in the base map, the basic zoning standards must be applied to each undeveloped parcel. This should include road standards, minimum lot size and frontage requirements, etc for all land uses (residential, commercial, industrial, etc).
- For each parcel that has already undergone some kind of development, determinations must be made on future development capability. This includes determining if the lot can be subdivided, if the development can be expanded physically (especially if it is a business), and if a use can be converted to another use (i.e. a house converted to a restaurant, auto body shop, etc).

- Medium Term (2 years – 3 years)
  - In the medium term, the quantitative analysis should be completed by the MVRPC, Greene County, and Yellow Springs Planning Staffs. The Village government, or MVRPC planning staff can do these calculations with the help of a program with statistical capabilities such as Excel, and GIS. These calculations should include changes in:
    - Percentage impermeable surfaces
    - Acreage farmed
    - Population / number of school-aged children
    - Housing units / housing density
    - Traffic
    - Tax revenues
    - Infrastructure demands / impacts (i.e. sewage, utilities, roads, emergency services, etc.)
    - Increases in residential units
    - Increases in commercial and industrial square footage
  - Using this information, the Village should determine any zoning code changes that should be made.

- Long Term (3+ years)
  - Conduct public process to make necessary zoning changes. This can be done by the Village itself, or in conjunction with MVRPC or Greene County.

Recommendation: Promote Diversity of Housing Stock

Current residential zoning does not encourage a diverse housing stock, or diverse housing design. The minimum standards regarding setbacks, height requirements, and limits on the number of stories, do not encourage innovation in residential development or create a sense of community. For example, a majority of land in the southern part of town is zoned as "Residence A," which does not permit town center style development. Town center development helps create a sense of place in a community, by creating walkable areas, and allowing gathering places and community commercial uses in an area. The General Business District, dominated by auto-oriented businesses, is the closest "town center" kind of development in this area. Additionally, while the area is near the Greenbelt, there is no community park currently in this area. As outlined in the accessibility opportunity assessment, this part of the village is the least walkable. Indeed, this area of the Village is not conducive to creating a sense of place or a walkable area for residents. Following the timeline below, the Village can promote more diverse housing and a sense of community in residential zones.

- Short Term (6 months – 2 years)
  - Examine and inventory conditional uses in each residential zone. According to Yellow Springs Code 1250, churches, cemeteries, schools, and parks, are conditional uses in residential zones. A more exhaustive inventory is necessary to determine if other kinds of development is permissive in these zones.
  - Examine altering minimum residential zoning requirements, including the 35 foot limit on all building heights,

the setbacks, and story limits in each residential zone. The residential opportunity assessment illustrated how current standards dictate lot configurations. The Village Council, Manager, and Planning staff should determine if this type of development is desired for the Village. This determination can be made through public meetings, staff meetings, or through information from the Build-Out Analysis.

- Medium – Long term (2 + years)
  - Encourage diverse housing stock by changing maximum height requirements in areas where "town center" style development is encouraged (i.e. in the CBD and in any area in the Southern part of town currently zoned "Residence A"). At a minimum, 3 stories should be permitted in these areas. Should the Village determine code changes are not necessary (as called for in the Short Term recommendations) the Village could encourage diverse building materials, an increase in park land, or increased pedestrian access, as is addressed in the Accessibility Sustainability Analysis.
  - Encourage diversity of housing types, especially in Residence B and C zones, by decreasing setback requirements to allow development closer to the street. When used in conjunction with pedestrian amenities and taller building heights, development that is closer to the street can create a better sense of community.
  - Changes called for in this recommendation are directed at Yellow Springs Codified Ordinances Chapter 1250.

Affordable Housing

The recommendations in this section are designed to provide a diversity of housing options that are affordable to a broad range of residents; to encourage a balanced community with a broad social mix of incomes, religions, races, and cultures; and to encourage Infill development in CBD. Implementation of the recommendations will help to increase the land use indicator of number and availability of affordable homes.

Pitkin County, City of Aspen, CO: Impact Fees for Affordable Workforce Housing

The City of Aspen and Pitkin County governments have begun a program that requires new residential and nonresidential development provide employee housing to pay a fee based on building square footage. Fee amounts have not been passed by City Council, but current estimates would require a 7,000 square foot house pay $93,457 in impact fees, and a 12,000 square foot house pay $177,155 in impact fees. While these fees are higher than they would be in Yellow Springs due to Aspen's high median home price ($1 million), the program principles are transferable (Aspen Pitkin). More information on this program is available at: www.aspenpitkin.com.

Recommendation: Evaluate and Update the Housing Initiative Fund

The Village created a Housing Initiative Fund (HIF) in 2000 to encourage the creating of Affordable Housing. No evidence of the funds use has been found in research for this report. To encourage affordable housing, incentives must be effective.

- Short Term (6 months – 1 year)
  - Because the five-member committee has not been established, establishing this committee, as provided for the Yellow Springs Ordinance Chapter 1267, is the first step. As set forth in the ordinance, the Village Council must appoint these individuals after the Village Manager establishes the fund. When creating the committee, it is advised the council appoint a current affordable housing developer, a developer not engaged in affordable housing construction, and a Village government representative from the Planning, Zoning, and Building department. These members are

recommended because of the expertise they have in their individual fields. By brining these individuals together, the Village will come away with a better understanding of why certain developers engage in affordable housing construction, and how village ordinances hamper or encourage the process.

- Following the formation of the committee, the committee should engage in discussions with affordable housing developers, and other political jurisdictions in the Miami Valley Region to determine what funds they use to encourage affordable housing construction in their communities. Continued participation in the Greater Dayton Compact could also prove useful for this effort, as knowledge can easily be exchanged between compact members.
- Determine state, federal, and non-profit funds that are available for affordable housing through coordination with MVRPC and Greene County. These funds can be placed in the HIF to increase its use. One such example is found in Appendix 2. Coordination with MVRPC and HUD will enable the Village to effectively obtain these kinds of funds.

- Medium Term (2 years – 3 years)
  - Using inventory information, the Committee should examine ways to work with other existing programs to encourage affordable housing.
  - Analyze possibility of creating an Affordable Housing Impact Fees (see sidebar) on all new non-affordable residential development. Money from this impact fee could be funneled to the HIF to encourage construction of affordable units in the Village.

Recommendation: Institute an Incentive–Based Approach to Affordable Housing

The Moderately Priced Dwelling Unit ordinance is a first step towards establishing affordable housing as a long term Village element. However, there are people employed in the Village who are unable to afford housing in Yellow Springs, indicating a need for more units that are affordable (E. Amrhein, pers. comm.; P. Hawkey, pers. comm.). If the Village is to achieve the housing goals stated in the 2002 Comprehensive Plan, it must adopt a more incentive based approach to housing affordability. Without incentives for the construction of affordable housing, it remains more appealing for developers to continue traditional residential development that does not accommodate individuals and families of more moderate means. By following the time line below, affordable housing construction in Yellow Springs will be more attractive to developers.

- Short Term (6 month – 1 year)
  - Inventory the number of affordable homes in the Village, and the developers who built them. This inventory should be completed by the HIF committee, as outlined in the previous recommendation.
  - Conduct an analysis of other affordable housing developments in the region, using MVRPC and Greene County as a resource. Determine what incentives have been used in these developments. Again, this should be the responsibility of the HIF committee.

- Medium Term (2 years – 3 years)
  - When barriers to development are eliminated, affordable housing becomes more appealing to developers. Delays in the development permitting process is one such barrier. In the medium term, the Village should make the permitting process easier for developments that include affordable housing. This can be done by ensuring all developments with affordable housing are allowed to undergo an expedited permitting process. By making affordable housing easier to build than traditional residential

San Diego, California: Expedited Permitting Process for Affordable Housing
In order to encourage affordable housing construction in the city, the San Diego City Council passed policy 600-27, which creates an expedited permitting process for all affordable housing projects if the developer desires it. The faster timeline is achieved by a mandatory preliminary staff review, and a public hearing after the third review cycle. By requiring an early staff review, the process timeline can be cut by months. This optional process requires an additional $500 fee, which Yellow Springs could decide to adopt or not. The key component of this program for the Village is the effort on the part of the city of San Diego to make affordable housing construction a viable option for developers (City of San Diego 2006). More information on the project is available at: http://www.sandiego.gov/development-services/news/ah.shtml.

development, the Village will likely increase the number of units that are affordable to Village workers. San Diego has recently updated their permitting process to allow for such an expedited process. This process is outlined in the San Diego sidebar.

- Allow for density bonuses in certain areas of the Village when development incorporates affordable housing. This could be especially useful in the Central Business District where the Village is looking to encourage residential development. One example of such density bonuses is outlined in the King County sidebar. Other examples can be found at: http://www.planning.org/smartgrowthcodes/pdf/section44.pdf

King County, Washington: Density Bonuses for Affordable Housing
King County's Density Bonus program is an incentive program attempting to encourage developers to build affordable housing. For every affordable unit a developer builds, they are allowed to build a calculated number of market rate units over the amount that would normally be allowed (King County 2006). More information on this program is available at: http://www.metrokc.gov/dchs/csd/housing/Affordable.htm#Density

Low Impact Development (LID)

The recommendations in this section are designed to encourage diversity of land uses, encourage environmentally friendly development improve the energy efficiency of the built environment, and maximize the reuse and recycling of wastes. These are land use and urban ecology and energy and waste sections goals set forth for Yellow Springs. Implementing the following recommendations should help Yellow Springs reduce the indicators of Total Water Consumption and Total Waste Water Treated and Amount of Inflow and Infiltration. It will also increase the Diversity of Land Uses indicator.

Recommendation: Establish a Low Impact Development Code

The Village, as mentioned in the Opportunity Assessment, does not have a specific stormwater management policy. One way to effectively address this issue is to implement a series of Low Impact Development (LID) regulations. LID strategies result in a built landscape that more closely resembles the natural landscape prior to development than a traditional development pattern does through the following runoff control strategies (Prince George's County 1999):

1. Minimize disturbance
2. Preserve and recreate natural landscape features
3. Reduce effective impervious cover
4. Increase hydrologic disconnects
5. Increase drainage flow paths
6. Enhance off-line storage
7. Facilitate detention and infiltration opportunities

LID is often less expensive than traditional development because it requires less infrastructure. (NRDC) Additionally, the flexibility in LID creates a number of opportunities for developers and local governments that do not exist in traditional development patterns. A good online resource for LID information is available from the Whole Building Design Guide at http://

Ten Common Low Impact Development Practices

1. Rain Gardens and Bioretention
2. Rooftop Gardens
3. Sidewalk Storage
4. Vegetated Swales, Buffers, and Stripes; Tree Preservation
5. Roof Leader Disconnection
6. Rain Barrels and Cisterns
7. Permeable Pavers
8. Soil Amendments
9. Impervious Surface Reduction and Disconnections
10. Pollution Prevention and Good Housekeeping

Source: NRDC

www.wbdg.org/design/lidsitedesign.php. (Guillette 2006)

- Short Term (1 year – 2 years)
  - LID includes integrating land and infrastructure management. In the short term, therefore, the Village must examine ways to integrate Low Impact Development practices with Village infrastructure. This includes activities such as street-sweeping, low-impact landscaping along roads, and cleaning of catch basins. The Village Manager, Public Works Department, and Planning, Zoning, and Building Department should work together to determine ways to integrate these functions. Integration will require up front maintenance costs, but will result in long term cost savings for the Village.

- Medium Term (2 years – 3 years)
  - Current PUD regulations encourage limiting the amount of impervious surface in development. In the medium term, specific requirements for impervious materials in all new and infill residential development should be added to this ordinance. This could include use of gravel instead of concrete in driveways or neighborhood walking paths. By requiring the use of impervious materials in existing permissive zoning (i.e. PUD-R zoning classification), the Village can increase the effectiveness of existing regulations. Bioretention strategies would also help increase the ordinance's effectiveness.

- Long Term (3+ years)
  - As development pressures increase in Yellow Springs, it will be important to ensure development is done in a manner respective of the natural processes. All new development, therefore, should be required to follow a Low Impact Development Code adopted by the Village. This LID code could include a provision allowing developers to not use LID practices in their development, provided they pay an impact fee to the Village in order to create LID practices elsewhere in the city.

Non-Residential Uses

Vacant Land

The recommendation in this section is designed to encourage infill development in the Central Business District, and encourage the diversity of land uses in the Village. These are two of the land use and urban ecology goals set forth for the Village. Implementing the following recommendation should help Yellow Springs increase the Diversity of Land Use indicator while reducing the Number of vacant lots and areas in the Central Business District indicator.

Trumwater, WA: Zero Effect Drainage
In 2000, the City of Trumwater enacted a Zero Effect Drainage Ordinance (Title 13, Chapter 13.22), allowing developers to use zero impact development practices in commercial and residential projects. Zero Effect Drainage developments adhere to a 65/0 standard (65% forest cover preserved/zero effective impervious surface). While no official cost analysis was conducted, officials indicate developers can save money thorough the use of the ordinance (City of Trumwater 2006).

Recommendation: Establish Infill Strategies to Encourage Utilization of Vacant Land

Vacant properties are an issue in Yellow Springs, and the Village has done a good job of maintaining a list of vacant spaces in the town. As stated in the vacant land opportunity assessment, this list can be located via the village website.

These properties create an opportunity for development and these recommendations should help development take place.

- Short Term (6 Months – 2 Years)
  - The Economic Development Department should continue to update the existing list of vacant spaces. The list should be revised as properties become available, continuing with the current update schedule.

- Medium Term (2 years – 3 years)
  - The Village should establish a split-rate property tax to encourage investment in vacant areas. A split-rate tax shifts the tax burden to the property, and away from improvements that are needed. By reducing the tax on buildings and improvements, and increasing the tax on the land, the tax encourages building rehabilitation, historic renovations, and development of vacant land. There is, therefore, more incentive for landowners to have the property in a functioning state rather than leaving it vacant. More information on split-rate taxes can be found at: http://www.earthrights.net/docs/success.html.

Non-Residential Parking Standards

The recommendation in this section is designed to meet the goal of utilizing existing parking availability in Yellow Springs.

Recommendation: Reduce the Number of Non-residential Parking Space Requirements

In general, the parking standards need to be reduced in the commercial and industrial areas. A good example of simple standards can be found in Davidson, North Carolina's code. (Davidson Planning Ordinance 2006) Their standards should be used as a guide and not identically followed, mainly because their population is double that of Yellow Springs.

As the standards stand, Davidson desires the following:

- 3.5 spaces per 1,000 square feet for all commercial uses except retail
- 5 spaces per 1,000 square feet for retail use
- 2 spaces per 1,000 square feet of commercial use minimum
- 0.25 spaces per 1,000 square feet of warehouse use

The standards are simple and easy to understand, and could be applied to Yellow Springs very easily. It would just take some time to figure out the right fit for each use, and should be under the responsibility of the Planning, Zoning and Building Department.

Proposed parking standards for non-residential uses, excluding the CBD, in Yellow Springs are as follows:

- 3 spaces per 1,000 square feet for all commercial uses except retail
- 3.5 spaces per 1,000 square feet for retail use
- 2 spaces per 1,000 square feet of commercial use minimum
- 1 space per 1,000 square feet of industrial use

These standards would help reduce the amount of required parking spaces for commercial and industrial uses.

- Short Term (6 Months – 2 Years)
  - The Yellow Springs Planning Commission should evaluate the number of required parking spaces for non-commercial uses outside the Central Business District. Since industrial use makes up the smallest percentage of land use, it would be ideal to start with them. Addressing existing industrial uses and their parking lot capacity can help

determine the appropriate balance to be used. This could take up to three or four Planning Commission sessions. Upon conclusion of the industrial use update, commercial and retail uses should follow. The same method should be followed as the industrial use, with this taking approximately three to four Planning Commission sessions.

- Medium Term (2 Years – 3 Years)
  - With the new standards being established in the short term, the Planning Commission, Village Planning, Zoning, and Building department, and Village residents should review the standards to ensure they continue to address the needs of the Village. Updates may be required and should be evaluated in any comprehensive plan process.

Conservation Easements

The conservation easement recommendation will help meet the goal to expand and close the greenbelt in Yellow Springs. Implementing the following recommendation will increase the indicator of number of acres of parks and open space per resident.

Recommendation: Encourage the Use of Conservation Easements

Conservation easements should be encouraged and directed toward the western edges of the Village. This would help address the existing gap in the greenbelt. The Village government, specifically the Parks and Recreation department and Planning, Zoning, and Building department should be responsible for this.

- Short Term (6 Months – 2 Years)
  - The Village should establish an open space fee that is assessed on new development within the Village. With this, a certain percentage of development fees would be directed toward the acquisition of open space lands through a conservation easement fund. This could be a certain percentage of the total cost of development, or could be a flat fee, as is used in Saco, Maine (see sidebar).
  - Funding and other help could also be obtained from the Ohio Department of Agriculture via Farmland Preservation, the American Farmland Trust, and the Trust for Public Land. Both groups have been working to save farmland and preserve rural communities in Ohio.

- Medium Term (2+ years)
  - The second way is to impose a mandatory sales tax fee on purchases within the Village, rather than the existing voluntary one percent fee that supports the Tecumseh Land Trust. Those dollars would then be directed to an open space and conservation fund, jointly managed by the Village and Land Trust. A mandatory tax would need to be voted on by Village residents before being instituted. This could require lobby campaigns by the Village and supportive residents. This process, then, could take some time due to the community buy-in necessary top pass the tax.

Big Box Retail

The recommendations in this section are designed to encourage the diversity of land uses and to encourage infill development in the Central Business District. These are two goals for sustainable land use in Yellow Spring

Saco, Maine Open Space Impact Fee

The city of Saco, Maine, with a population of approximately 17,000 residents, charges a per capita impact fee on new residential development in the city. The city uses standards of 3.2 people per single-family unit and between 1.2 and 3 people per multi-family units to base its impact fee assessment. Saco charges a per capita impact fee of $531, with a total of $156, or almost 30 percent, going toward the acquisition of open space lands. The ordinance was adopted in September 2002. (City of Saco 2002)

What is a "Formula Business"?
"A business which is required by contractual or other arrangement to maintain one or more of the following items: standardized ("formula") array of services and/or merchandise, trademark, logo, service mark, symbol, decor, architecture, layout, uniform, or similar standardized features and which causes it to be substantially identical to more than five (5) other businesses regardless of ownership or location. Formula businesses can include, but are not limited to: restaurants, retail stores, banks, real estate sales offices, spas, hair and nail salons, and hotel/motel/inn/B&B" (definition from Town of Bristol, Rhode Island, Ordinance 2004-11, amending Chapter 28 of the Bristol Zoning Code).

Implementing the following recommendations should help Yellow Springs achieve the sustainability indicators of decreasing the number of vacant lots and areas, and increasing the diversity of land use in the Village.

Recommendation: Expand Big Box Regulations

One of the main reasons jurisdictions establish Big Box codes is to keep formula businesses out of their town (see sidebar). Standards can address the size of businesses, as well as these formula businesses. By addressing big boxes in a tiered manner, the overall code can be more effective in attracting new businesses while retaining Village character.

- Short Term (6 months – 1 year)
  - Village Council, with the help of the Village Planning, Zoning, and Building Department, should begin code revisions addressing Formula Businesses. These revisions should specifically address Chapters 1256, 1258, and 1259, by adding a formula business code. York, Maine recently adopted such a code, which could serve as an example for Yellow Springs (see sidebar).

- Medium Term (2 years – 3 years)
  - Following the adoption of a formula business code, the Village Council, with the assistance of the Village Planning, Zoning, and Building Department should address site criteria for large businesses. While it is appropriate to have different size standards in the Village's different business areas, the existing size standards make it difficult for Big Box and non-Big Box businesses alike to locate in the Village. As such, the Village Council should change the existing size limitations to address formula businesses and permitting

York, Maine: Prohibiting Formula Restaurants
Residents of York, Maine, a town of 13,000 ten miles north of the New Hampshire boarder, voted in May 2004 to amend York's zoning ordinance to prohibit formula restaurants. The Board of Selectmen, who endorsed the measure along with the Planning Board, noted that the town's numerous historic buildings and locally owned businesses were important to the town's character, and "collective identity as a community." The measure applies to the entire town (Town of York 2004). A copy of the measure is available at: http://www.yorkmaine.org/Default.aspx?tabid=103

Bristol, Rhode Island: Prohibiting Formula Business in Historic Downtown
In May 2004, Bristol, Rhode Island (population 23,000) adopted an ordinance prohibiting formula businesses that occupy more than 65 feet of street frontage or that are larger than 2,500 square feet from locating in the town's Historic Downtown. The ordinance was intended to maintain the character and history of the area, and includes a provision that if a national business is able to locate in the area, that it may be prohibited from displaying corporate logos. A copy of the ordinance (number 2004-11) is available at: http://www.onlinebristol.com/.

Taos, New Mexico: Limiting Big Box through Size Caps
In 1999, the town of Taos, New Mexico instituted an ordinance limiting new big box stores. The ordinance bans outright all stores exceeding 80,000 square feet, and requires a special permit for all stores exceeding 30,000 square feet. A copy of the ordinance (Section 5-2) is available at http://www.sterlingcodifiers.com/NM/Taos/index.htm by choosing Chapter 16.

Bennington, Vermont: Retail Economic Impact Analysis
In January 2005, the town of Bennington, Vermont (population 9,200) enacted an ordinance requiring a community impact review for all proposed stores over 30,000 square feet. The review is to be done by an independent consultant, at the expense of the developer. If the review indicates that the community impact will be negative (by looking at things like infrastructure and service costs), the project is not approved.

requirements when the stores exceed a certain square footage. Two such examples (Bristol, Rhode Island and Taos, New Mexico) are in the Sidebar.

- Long Term (3+years)
  - Following zoning code changes, the Village should explore requiring Economic Impact Analyses for all new development that exceeds a certain square footage. This square footage should be determined through Village Council and Resident input. An example of such an Economic Impact Analysis from Bennington, Vermont can be seen in the sidebar.

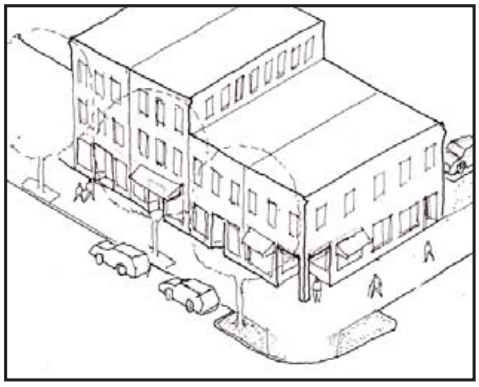
Central Business District
The recommendations in this section are designed to meet the sustainable land use goals of preserving the Yellow Spring's CBD as a community hub and encouraging infill development in CBD. Implementing the following recommendations should help Yellow Springs increase the indicator of Diversity of Land Uses, while decreasing the indicator Vacant Lots and Areas

Form Based Code: Davidson, NC
With a population just over 7,000 people, Davidson is somewhat comparable to Yellow Springs (U.S. Census Bureau). Davidson's design guidelines are a good example of how using pictures and sketches to define the physical elements of development can create an effective code. Land Use Figure 23 is one example of a sketch from the Davidson, NC code. (City of Davidson) These guidelines can be accessed in their entirety at http://www.ci.davidson.nc.us/units/planning/ordinance/pdfs/09-DesignRegulations-hd.pdf

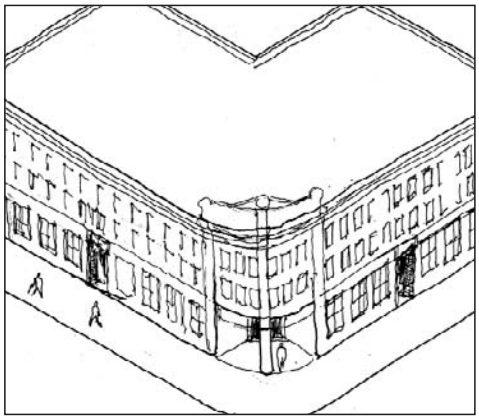
Recommendation: Encourage Infill and Development in the CBD
The Village of Yellow Springs central business district (CBD) is one of the Village's most important districts. The CBD must remain a viable place for business and encourage redevelopment. Currently, the Village zoning code makes redevelopment difficult, as the code is unreasonably restrictive (P. Hawkey, pers. comm.).

Form based code places less emphasis on the use of the building and more emphasis on how the building fits in to the streetscape. Form based code addresses building setback, size, and height from the neighborhood perspective, ensuring that new development fits in with current development (see sidebar). These codes do not have to be strict or mandate certain aesthetics, but can focus on what is permitted and can give flexibility to redevelopment. Because the code does not focus on uses, it would create a market for more mixed use in Yellow Springs. This could possibly include live/work spaces or retail/office use, and would enable buildings in the CBD to become more flexible.

This recommendation will be carried out by the Planning, Zoning and Building Department. Because the zoning changes can be done in-house, there are virtually no outside costs to this recommendation. The



Storefront building type



Workplace building type

Live/Work building type

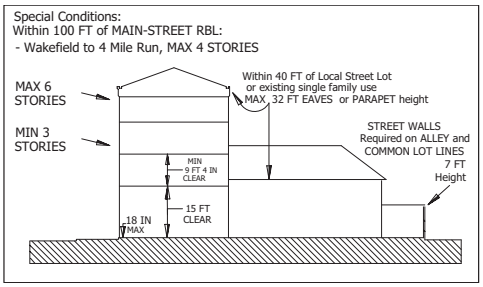
Land Use Figure 23.
Davidson, NC Parking Regulations

biggest factor in updating the CBD code will be time, as the public participation process can be lengthy

- Short Term (6 months – 1 year)
  - The Local Government Commission is a nonprofit, nonpartisan, membership organization that provides inspiration, technical assistance, and networking to local elected officials and other dedicated community leaders who are working to create healthy, walkable, and resource-efficient communities (Local Government Commission). The Village Planning Commission and Planning, Zoning, and Building department are responsible for following the process laid out by the Local Government Commission to generate form based code for the CBD (Local Government Commission 2006).
    - Existing conditions analysis and inventory: Analyze types of streets, buildings, blocks, open space, and natural resources
    - Public visioning and charette: Use public participation to create a vision of the district
    - Determine spatial basis for regulations: The spatial basis will be CBD
    - Develop urban standards: Set standards for blocks, building placement, setbacks, types of uses
    - Develop architectural standards: Using the information from public participation, the village can decide

Form Based Code: Arlington, VA
While Arlington is not comparable in population or economic characteristics to Yellow Springs, this example is significant because it used a form-based code to encourage redevelopment in a commercial corridor called Columbia Pike. Columbia Pike, in the 1960's, was considered Arlington's main street. However, when a planned metro rail corridor was not built, Columbia Pike began to lose its appeal. Columbia Pike citizens wanted to preserve and enhance the richness of their community, while ensuring none of the long-time local businesses would be replaced (Miller 2004). The city chose to use a form-based code approach for their revitalization effort, creating over $30 million in development between 1998 and 2002 (Miller 2004). Land Use Figure 24 illustrates part of the Columbia Pike code (City of Arlington). The Columbia Pike guidelines can be accessed in their entirety at http://www.arlingtonva.us/Departments/CPHD/Forums/columbia/current/CPHDForumsColumbiaCurrentCurrentStatus.aspx

B. Building Envelope Standards: Main-street Sites



Height Specifications

Height Specifications

Building Height

1. Principal building height is measured in stories. These parameters preserve appropriate street-space and allow for greater variety in building height.

2. Each building shall be between 3 and 6 stories in height, except where otherwise noted here or in the Regulating Plan.

Parking Structure Height

No parking structure within the block shall exceed the eave height of any building (built after 2002) within 40 feet of the parking structure.

Ground Story Height

1. The ground story floor elevation shall be between 6 inches below and 24 inches above the sidewalk elevation at the front of the building. The maximum floor-to-floor story height limit for the ground floor is 24 feet

2. The ground floor shall have at least 15 feet clear (floor to ceiling) height for at least 1/3 of its area contiguous to RBL frontage.

Upper Stories Height

1. The maximum floor-to-floor story height limit for Stories other than the Ground Story is 14 feet.

2. At least 80 percent of the upper stories shall each have at least 9 feet 4 inches clear (floor to ceiling) height.

Mezzanines and Podiums

Mezzanines and podiums greater than 2/3 of the floor area footprint shall be counted as full stories.

Street Wall Height

1. Any unbuilt alley and/or common lot line frontage shall have a street wall built along it, 7 feet in height.

2. Street wall heights are measured relative to the adjacent sidewalk or to the ground elevation when not fronting a sidewalk.

Other

Where a Main-street site is within 40 feet of a Local Site, Neighborhood Site or a single-family home, the maximum height for that portion is 32 feet to the eaves or parapet

Land Use Figure 24.
Columbia Pike Building Envelope Standards

what, if any, architectural standards need to be put in place

- Allocate and illustrate standards: Create graphics to display new zoning standards

- Medium Term 1+years
  - Village Council adopts new form based code for CBD

Form based code is a good way for the Village to revise its current zoning code. Examples of form based code in Virginia and North Carolina are shown in the sidebars and offer options for the Village to explore.

Estimating the costs for this recommendation is difficult. The key component is time. The process outlined above requires a serious time commitment to ensure the code is well written and effective. This task falls under the purview of the Planning, Zoning and Building Department. The estimated time from start to finish for this recommendation is 1 year.

Recommendation: Update Parking Standards in the Central Business District

In the CBD, parking requirements are high for commercial use in a Village the size of Yellow Springs, which makes redevelopment difficult. Updated parking requirements that are consist with the land use vision would help increase the CBD's vitality and viability. This recommendation is intended for the short term and expected to be completed in one to two years.

Parking standards need to be reduced for the CBD. These standards could be updated along with the CBD zoning, but could also be done separately.

- Short Term (6 months – 1 year)
  - Update code to minimize parking requirements

It is up to the Village of Yellow Springs to decide how best to update its parking

Parking Standards: Davidson, NC
Davidson, NC does not have a parking standard for its Central Business District. While it might not be beneficial to Yellow Springs to consider such extreme action, Davidson offers an example of one way to preserve downtown land for uses other than parking (City of Davidson 2004). Davidson, NC's parking ordinance can be accessed at http://www.ci.davidson.nc.us/units/planning/ordinance/pdfs/10-Parking-hd.pdf

Parking Standards: American Planning Association
The American Planning Association created Smart Growth model codes that offer a good example for how parking should be regulated in town centers. In the APA model code, non residential uses have no parking requirement unless the floor area exceeds twice the area of the lot. If the gross floor area exceeds twice the area of the lot, then an off street parking space is required for every 1,000 ft that it exceeds (APA 2006). This model code can be found at http://www.planning.org/smartgrowthcodes/pdf/section43.pdf

regulations. The examples in the sidebars are options for the Village to consider.

While revising parking standards will not be as time consuming as reworking the CBD zoning codes, it can take some time. Again, it would be the responsibility of the Planning, Zoning and Building department to revise the parking standards. The estimated time to revise the parking standards is 3 months.

Recommendation: Establish a Permanent Public Square along Short Street
The CBD is the heart of Yellow Springs. As such, it deserves a high quality gathering place for visitors and residents alike. Short Street functions in this capacity, often closing for festivals and community events. This recommendation is intended for the short term and expected to be completed in five to seven.

One possible supplemental funding approach to create such an area would be to create a SID or Special Improvement District within the CBD and to apply for community arts grants. Appendix 3 shows an example of a Special Improvement District Program created in the Ohio State University area. The SID fact sheet was provided by Steve Sterrett, a staff member of Campus Partners, a non-profit organization involved in the establishment of a SID near The Ohio State University campus. The costs associated with the SID are aimed at the campus area and can be altered to meet the needs or abilities of Yellow Springs.

Additionally, numerous grants are available for communities interested in initiating public art projects. One such example would be the Grant for Arts Projects: Access to Artistic Excellence (Grants.Gov 2006). Through this grant, programs offering opportunity to artists refine, exhibit, and create works of culture are supported. (Grants.Gov 2006). This grant and grants like it can be found by accessing grants.gov, a government website offering grant information on an ongoing basis. A number of other funding opportunities exist as well but are always changing and will therefore need to be investigated often.

Suggestions for change are as follows:

- Short Term (1 year – 2 years)
  - Village Council should establish State Street as an area to become a permanent plaza. In addition, some decisions should be made about whether or not a SID would be useful for the CBD area or if grants will be the main funding source for the district. If a SID will be created, some money should be allocated within the SID guidelines for the Short Street Plaza. Otherwise or in tandem, grant-funding opportunities should be reviewed.
  - The Village Council could establish a fund that residents and visitors could donate money to in order to add immediate term improvements to the Short Street area. These improvements could include planters, or permanent pieces of art. Additionally, the Village Council could create an art contest in the Village, where the winning piece of art would be donated by the artist to the Village, and would remain on display in the Village plaza area. The Parks and Recreation Department and Yellow Springs Art Council would be responsible for carrying out this part of the recommendation.

Sculpture in the Park: Loveland, CO
Since 1984, Loveland Colorado has been home to the Benson Park "Sculpture in the Park." The event is a collaboration between the city government and the High Plains Art Council. The event, which is now the largest outdoor juried sculpture show in the county, averages sales of $1 million for the art pieces. The city charges a $100 fee to all artists and $5 admission fee to help put on the show. This money also helps the city purchase sculpture pieces for permanent display in Beson Park. More information on this event is available at: http://www.sculptureinthepark.org/.

- Medium Term (3 years – 5 years)
  - By this time the City should be in an organizing phase for a SID. This phase will be based around creating the design for the plaza area and implementing the SID or securing grant monies.
  - The Village Council, in conjunction with the Yellow Springs art Council should establish a permanent sculpture show in the Village. Because the Village is relatively small, the show could take place throughout the Village, but should be primarily focused in the CBD. The money raised from the show would enable the Village to purchase pieces from artists the world over. This art show could be modeled off of similar ones, including Loveland, Colorado's "Sculpture in the Park" (see sidebar.)

- Long Term (5+ years)
  - Now Short Street Plaza construction should begin, the SID should be "paying" off and grant funds should be established and in use.

The suggestion of the SID could also be used in tandem with zoning regulation that enforcements dealing with conforming to the design standards already present within the Village.

Accessibility

The recommendations in this section are designed to expand and close Greenbelt, encourage non-motorized transportation options, and encourage collaboration with surrounding governments. These are three of the land use and urban ecology goals set forth forYellow Springs. Implementing the following recommendations should help Yellow Springs achieve an increase in the indicators of Number of Miles of Bike Lanes or Dedicated Bikeways and Percentage of Streets Meeting Sidewalk Guidelines. They should also help increase the diversity of Transportation Modes.

Bicycling

To encourage non-motorized vehicle transportation in the village, bicycling experiences must be enhanced. Providing a consistent network of bicycle-friendly streets will establish cycling as an attractive, respected and widespread mode of transportation in the Village. The following recommendation detail actions necessary to encourage bicycling in the Village:

Recommendation: Develop Network of Bicycle Facilities

- Short and Medium term (1 to 3 years)
  - The Village will assemble interested stakeholders in drafting a bike facilities plan. Possible stakeholders include the Village Public Works Department, the Village Planning, Zoning and Building Department, Village Parks and Recreation Department, MVRPC, bicycle recreation and advocacy groups, business owners, land owners and the general public
    - The Stakeholders group will develop a plan that identifies roads with sufficient bike traffic to warrant bike lanes. Determination of eligible roads will include:
      - ◊ Roads used often by participating bicyclists
      - ◊ Recommendations from other stakeholders
      - ◊ Bicycle traffic count assessment performed by the Village, or by

another group with the Village's cooperation

- For each road with significant bicycle demand and identified as eligible for treatment, the Stakeholders group will recommend lane striping, or shoulder enhancement or other treatments as necessary.
  - Lane striping will be used where the right-of-way can accommodate a bicycle lane. An illustration of lane striping is shown in Land Use Figure 25. The possibility of reducing on-street parking should be examined as part of this process
  - Shoulder enhancement, as illustrated in Land Use Figure 26, will be used primarily on non-curbed roads where bicycle demand exists. Existing gravel shoulder can be paved or existing paved shoulder can be repaired or widened as needed
  - Other enhancements to improve bicycling attractiveness and safety will be used in areas where striping or shoulder enhancements are not feasible. These enhancements can include:
    - Signs notifying motorists of bicycle traffic
    - Physical traffic calming features such as curb bump-outs, intersection center treatments or speed humps to slow motorized vehicles
    - Speed limit reductions to slow motorized vehicles

Funding for the plan's implementation should seek to maximize Federal funding of projects and minimize local contributions. One financial program the Village should attempt to participate in is the Safe Routes to School (SRTS) program established as part of the 2006 Federal SAFETEA-LU transportation bill. Eligible projects must be within 2 miles of a school, making the entire Village eligible. Projects can include those that improve the ability of students to walk or bike to school, and can be used for on and off-street bicycle facilities, bicycle crossing improvements and traffic calming on any public road or pathway. The program does not require local matching funds and sets aside at least 10 percent of the funds for public awareness campaigns and outreach (FHWA 2006b).

Funds from the Recreational Trails Program, also part of SAFETEA-LU, should also be pursued. These funds can be used to construct new facilities, maintain existing facilities, acquire property and easements, and develop and disseminate information on trail safety. Ohio was awarded $3.3 million in RT funds for fiscal year 2007 (SAFETEA-

Land Use Figure 25. Lane striping establishes designated road area for bicyclists
Source: Ped Bike Images

Land Use Figure 26. Paved shoulders enable safe bicycling in areas with lower cycling demand
Source: Ped Bike Images

LU Highway Authorizations). As with SRTS, no local matches are required.

- Long term (4+ years)
  - The Village should develop dedicated bikeways on Village periphery to build off the existing Miami Valley bikeway. These bikeways are acceptable in conservation areas and will aid efforts to keep green areas in conservation. This plan should be developed in conjunction with the bike facilities plan described in the short-term timeline. This longer time-frame with allow interested parties to secure funding, as described above
  - Costs for paved, 12-foot wide dedicated bikeways are $200,000 to $300,000 (Brown University).
  - With the eastern segment complete, the Village should aim to construct dedicated bikeways along or near on the northern, western and southern village limits
  - Approximate mileage for each of these segments are
    - Northern segment: 1.5 miles
    - Western segment: 2.5 miles
    - Southern segment 1.5 miles

<u>Sidewalks</u>

Providing sufficient sidewalks in the Village will encourage walking as a mode of transportation and will enhance the pedestrian experience for all Villagers. Many areas of Village have narrow sidewalks that force pedestrians to walk single-file. New subdivisions require narrow 4-foot sidewalks, as shown in Land Use Figure 27. Other areas have no sidewalks whatsoever. The following recommendation establishes a plan and schedule for improving Village sidewalks, thereby enhancing pedestrian activity. This recommendation should be overseen by the Village Public Works and the Village Planning, Zoning, and Building departments.

<u>Recommendation: Improve sidewalks</u>

- Short term (1-2 years)

Land Use Figure 27. Subdivision regulations should require 5-foot sidewalks instead of 4-feet, as shown here *Source: Justin Milam*

  - Modify subdivision regulations to require wider sidewalks
    - Currently, 4-foot sidewalks are required, except on estate streets where no sidewalks are required (YS Ordinances 1226.06)
    - Increase minimum sidewalk width to 5 feet
    - Require sidewalks on both sides of the street except in Residence A zoning district
    - Require 8-foot sidewalks in Central Business and Residence C zoning districts

- Medium term (3-5 years)
  - Pursue Federal funding to install sidewalks through Safe Routes to School Program (SRTS)
    - SRTS funds sidewalk improvements and pedestrian crossing improvements
    - Funds are available on any public thoroughfare within 2 miles of a school, thus the entire village is eligible
    - No local matching funds are required
  - Once Federal funds are exhausted, consider property tax assessment
    - This funding method should be used as a last resort
    - To minimize opposition, homeowners must be engaged and willing to

fund a portion of the sidewalk improvement
    - To increase palatability to owners, investigate option of spreading property tax assessments over 20 or 30 year time horizon
- Achieve 80 percent compliance rate in high demand areas
    - Install 8-foot sidewalks in high demand areas
    - Existing 40 inch, 4- and 5-foot sidewalks may be widened
    - Install sidewalks on two street segments that lack them
- Achieve 60 percent compliance rate in medium demand areas
    - Prioritize segments currently lacking sidewalks
    - Install 5-foot sidewalks on segments without any sidewalks
    - Widen 40-inch sidewalks
    - Prioritize widening one side of the street at a time
    - As money becomes available, widen other side of street

• Long term (beyond 5 years)
- Seek Federal funds under next transportation authorization bill (due in 2010)
- Achieve 100 percent compliance in high and medium demand areas
    - Provide 8-foot sidewalks in high demand areas
    - Provide 5-foot sidewalks in medium demand areas
- Achieve 100 percent compliance in low demand areas
    - Provide 5-foot sidewalks on one side of street
    - Avoid granting variances that eliminate sidewalks

INTRODUCTION

Rapidly growing consumption of non-renewable energy and materials is a global concern. Smaller communities such as Yellow Springs have an opportunity to reduce energy consumption and waste production because many decisions that affect energy and waste are made locally. Energy and waste moves through communities in a continual stream of resources flowing in and out of the system. A sustainable community will move toward a closed-loop system where wastes are reused or recycled locally and consumption is reduced (Wheeler 2004, 74).

VISION

Yellow Springs is a community that seeks to minimize energy consumption and waste production. Residents, businesses, and government work together to identify mutual chains of benefit and close the resource loop of incoming energy and outgoing waste. Sustainable energy and waste systems support a healthy ecosystem, a thriving economy, and a diverse community while conserving resources for future generations.

GOALS

The following goals will direct Yellow Springs toward achieving the vision of a sustainable energy and waste system:

- Encourage the development of renewable energy resources
- Improve the energy efficiency of the built environment
- Utilize alternate modes of transportation
- Maximize the reuse and recycling of wastes
- Encourage local reuse and recycling of wastes
- Develop a cost-effective waste and recycling program to reduce total solid waste
- Reduce water consumption per user
- Monitor and reduce the amount of potential pollutants entering the water source
- Ensure the financial sustainability of the drinking water system
- Improve the efficiency of the wastewater treatment plant
- Understand the nature of water consumption and wastewater generation in the Village
- Encourage the development and use of technologies that allow for reuse of wastewater

OPPORTUNITY ASSESSMENT

The opportunity assessment for energy and waste identifies current practices in the following areas: energy consumption and conservation, solid waste and recycling, water consumption, and wastewater management. The purpose is to identify activities that support the vision statement for a sustainable energy and waste system in Yellow Springs, and also to identify opportunities for improvement. While many positive actions were certainly overlooked due to the limited scope of this study, the opportunity assessment provides an initial exploration of some of the energy and waste issues to consider when planning for sustainable development.

Energy Consumption and Conservation

The two types of energy considered in this section are electricity and natural gas. The Village owns the electric distribution system, but all power is purchased from AMP-Ohio and then resold to consumers through the Village Utility Billing Office. Because the Village owns the electric utility and has more control over it, the main focus of this section is on electricity infrastructure and consumption. Natural gas in Yellow Springs is provided directly from Vectren, a private energy company. Natural gas is primarily used for heating; therefore, the discussion of natural gas will focus on conservation measures through improvements in the thermal efficiency of structures. Commuting patterns of Yellow Springs residents are also briefly discussed in order to address energy used for transportation.

According to Kelley Fox, manager of water and electric infrastructure, ownership of the electric infrastructure is an important asset for the Village because they are able to provide exceptional service to residents and businesses. If an outage were to occur, the Village can respond within 15-20 minutes, compared to response times of up to four hours by the regional investor-owned utility (K. Fox, pers. comm.).

The loss of the Vernay plant caused electricity consumption in the Village to drop by approximately 50 percent (K. Fox, pers. comm.). This recent loss of revenue creates a significant obstacle for the Village to perform the necessary updates to infrastructure. In addition to the necessary updates, Fox suggests that adding a substation would save revenue by allowing the Village to purchase cheaper, higher voltage electricity from AMP-Ohio.

Consumers pay a rate for electricity distribution which is determined by the Village Council. The current rate is considered below the average for similar communities in the area (Yellow Springs Cost of Living Report 2002, 34). Increasing rates would help offset the costs of operating the Village electric utility. The largest consumers of electricity are Antioch College, Yellow Springs Instruments

Energy Table 1

Electricity Consumption by Sector, 2004

SECTOR	Consumption (MWh)	Number of users	Consumption per user (MWh)
Residential	12,761	1,808	7.06
Commercial	6,611	217	30.47
Industrial	14,544	16	909.01
TOTAL	33,917	2,041	16.62

Source: Julia Blankenship, AMP-Ohio

Energy Figure 1. Straw-bale house built by Andy Holyoke
Source: Tim Burgener

(YSI), the Antioch Company, and the local schools (K. Fox, pers. comm.). Residents also represent a large portion of the total electricity consumption because of the number of users, but the consumption per household is low. Average household electricity consumption in Ohio was about 11 MWh in 2004 (AEP Ohio 2005), compared to 7.06 MWh in Yellow Springs. Electricity consumption by the residential, commercial, and industrial sectors in Yellow Springs is shown in Energy Table 1.

The Village is not currently generating electricity from renewable sources. Building a generation facility is too costly at this time. However, residents have installed individual systems to provide some of their heating and hot water needs from renewable sources, including geothermal systems and solar collectors (A. Holyoke, pers. comm.). These measures help to reduce the amount of natural gas and electricity required for heating and cooling.

Energy Figure 2. Andy Holyoke (left) describing the local materials used for this straw-bale house
Source: Tim Burgener

Energy Figure 3. Solar collectors added during a remodel of an older home
Source: Tim Burgener

Three straw-bale structures have been built in Yellow Springs by a local builder, Andy Holyoke, including two homes and a garage. His method of green architecture is accepted by the Village, as he does not encounter administrative resistance (A. Holyoke, pers. comm.). The advantages of straw-bale architecture translate to direct energy savings for the consumer. Mr. Holyoke indicated that a straw-bale structure similar to the one seen in Energy Figure 1, with a radiant heating system and solar collectors, had an annual gas bill of $200 last year. Construction costs are about $100/square foot, which is comparable to a conventional-style house (A. Holyoke, pers. comm.).

An additional benefit of the straw-bale house is that many local materials can be used, and fewer timber products are required. The straw bales that form the house shown in Energy Figure 2 were finished with stucco made from clay. The local clay material was a previously unused byproduct from a quarry in Xenia (A. Holyoke, pers. comm.). Other construction measures such as solar collectors can be added during renovations of older structures, as seen in Mr. Holyoke's current project (Energy Figure 3).

In addition to energy consumed by homes, businesses, and residences, it is important to consider energy consumption for transportation. Because it is impractical to measure fuel usage by Village residents and businesses, this study focuses on commuting patterns to evaluate energy use for transportation. As a result, some positive efforts such as the use of fuel-efficient vehicles and other conservation measures are overlooked within the scope of this study.

As of the 2000 census, 72 percent of Yellow Springs residents commuted to work in a personal automobile (U.S. Census Bureau). While alternative modes of transit from Yellow Springs are admittedly limited, participation in the regional carpool system, RideShare, is low in the Village. Currently only 11 of the 1,886 commuters from Yellow Springs are enrolled in the program (U.S. Census Bureau; T. Lee, pers. comm.). Almost twice as many people (21) use the program to commute into Yellow Springs (T. Lee, pers. comm.). An increase in the use of the carpool program could significantly reduce gasoline consumption by commuters from the Village.

Green Construction Spotlight: Straw-bale housing

Straw is a viable building alternative, plentiful and inexpensive. Straw-bale buildings boast super-insulated walls (R-50), simple construction, low costs, and the conversion of an agricultural byproduct into a valued building material. Properly constructed and maintained, the straw-bale walls, stucco exterior and plaster interior remain waterproof, fire resistant, and pest free.

People have built homes using straw, grass, or reed throughout history. These materials were used because they were reliable and easy to obtain. European houses built of straw or reed are now over two hundred years old.

Straw, the stalks remaining after the harvest of grain, is a renewable resource, grown annually. Each year, 200 million tons of straw are under utilized or just wasted in this country alone. Wheat, oats, barley, rice, rye, and flax are all desirable straws for bale walls.

http://www.eere.energy.gov/buildings/info/components/envelope/framing/strawbale.html

Solid Waste and Recycling

In 2005, Yellow Springs generated 1,822 tons of solid waste, or about one-half ton per resident. About 28 percent of that waste was recycled in 2005, an increase of 4 percent since 2002 (M. McNelly, pers. comm.). In June of 2004, the Village Council accepted a new three-year contract with Rumpke Waste Removal and Recycling of Dayton to continue to provide garbage collection and recycling services in the Village (M. McNelly, pers. comm.)

The Village adopted a pay-as-you-throw (PAYT) program in 1999, in order to provide an incentive to reduce solid waste and increase the recycling rate. Recycling is free under this system, while rates for garbage

Energy Figure 4. Curbside trash and recycling collection bins in Yellow Springs
Source: Tim Burgener

are determined by the amount generated by each household. Both garbage and recycling are picked up at the curb (Energy Figure 4). "The point of pay-as-you-throw programs is to encourage people to produce less waste through an incentive: saving money. According to the U.S. EPA, 78 communities in Ohio, and more than 5,000 nationwide, have some sort of pay-as-you-throw system in place" (Mihalek 2004).

Different kinds of PAYT programs are used in Ohio. The Village uses a hybrid system. In this system, residents pay a fixed fee for a base level of service. If the residents have more waste to dump they are required to buy special bags or stickers. The rate system is based on three tiers of waste volume: 30 gallons, 60 gallons, and 90 gallons. Under this system, the larger volumes "subsidize" the small volumes. "The rates are structured in a way so those signed up for 30 gallons pay less, per gallon, than those in the 60 gallon tier; and those in the 60 gallon tier pay less than those in the 90 gallon category" (Mihalek 2004). While abuses do occur under this system, Matthew McNelly, Municipal Representative from Rumpke, suggests that it is the best system for Yellow Springs because it has produced exceptional results (pers. comm.).

In addition to residential curbside collection, there are several recycling and trash containers in the public spaces of Yellow Springs, especially in the main business district on Xenia Avenue. These containers are important because they are used to collect much of the waste from tourists and other non-residents of the Village. However, the containers are not well-marked and have been observed to be used improperly. While trash and recycling containers are conveniently located next to each other, it is difficult to see which container is for trash and which is for recycling. Energy Figure 5 shows a view of two containers from the sidewalk. Energy Figure 6 shows the same containers from the street, where a person would have to walk to see which is for recycling. Energy Figure 7 shows that

Energy Figure 5. Trash and recycling containers on Xenia Ave., from the sidewalk
Source: Tim Burgener

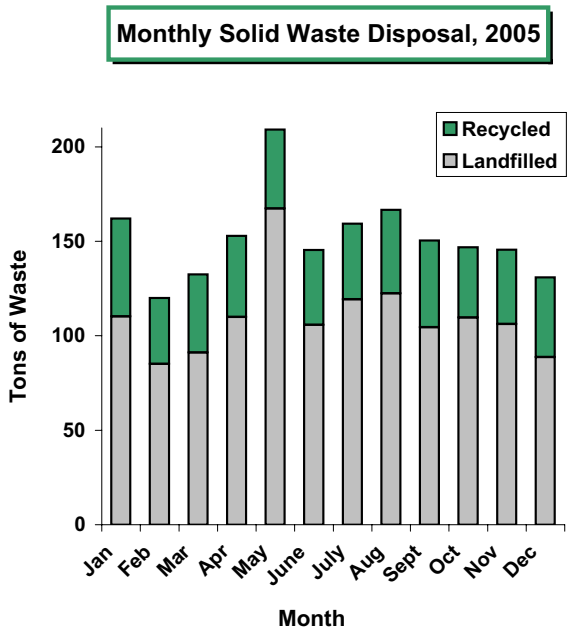
Energy Figure 6. The same containers on Xenia Ave., but from the street
Source: Tim Burgener

Energy Figure 7. Labels identify the materials that can be recycled, but many are missing or in poor condition
Source: Tim Burgener

Energy Figure 8. Much of the waste seen in this recycling bin is not recyclable
Source: Tim Burgener

some of the containers are labeled on the top as well, but the labels can only be seen from one side and are in poor condition. The recycling containers are not serving their intended purpose (Energy Figure 8).

The Village has an opportunity to improve the recycling rate by altering the containers on Xenia Avenue so that they are more clearly identified. These containers are likely to be used heavily by visitors to Yellow Springs. Therefore, the recycling containers need to be visible and clearly labeled for users who are not familiar with the system in Yellow Springs.



Energy Figure 9. Waste generation spiked in May, while the recycling rate decreased
Source: Matthew McNelly, Rumpke

As seen in Energy Figure 9, the amount of solid waste generated by the Village increased in May, a month in which many events that attract visitors are held. Furthermore, the recycling rate dropped below 20 percent in May, compared to an average of over 28 percent for the year. According to Mr. McNelly, the main cause of the change in May is the influx of visitors who are unfamiliar with the system in Yellow Springs, and who may not care as much as the residents do about recycling. Rumpke is willing to work with the Village to improve the collection of trash and recycling during special events (pers. comm.).

Water Consumption

The Village of Yellow Springs provides a constant water supply to all of its residents, businesses, and industries. The water supply comes from an underground aquifer that is continuously being recharged through percolation of rainfall and surface water. The water needed for consumption is pumped into the water treatment plant from the aquifer through five wells located near the Little Miami River (Energy Figure 10).

Energy Figure 10. Water entering the treatment plant
Source: Tim Burgener

The wells vary from 60 to 130 feet in depth (Village of Yellow Springs 2002, 11).

From these wells, the raw water is pumped to the Village water treatment plant where it is filtered, disinfected, and treated with chlorine and fluoride prior to being pumped to the two water towers. The Village has plentiful storage capacity, with each tower holding 1 million gallons of water (Energy Figure 11). The water then flows from the towers to consumers in the Village. The water treatment plant is designed to treat up to one million gallons of water a day, but normally handles less than half of that total for everyday consumption (T. Dunevant, pers. comm.).

To progress toward sustainability, the Village needs to continue to monitor the quality of the water and ensure that drinking water is safe for consumption. The Village must also continue to monitor the supply of the water and make certain that future development and potential contamination does not destroy the integrity of the water source.

The Village is ensuring that the water is of the highest quality for the consumers and that it wants to reduce any possible health effects from contaminants. Every year the Village reports any findings of water contaminants in a water quality report. For the 2004 report, the Village water treatment plant operator conducted over 1,500 tests for over 70 contaminants and concluded that the drinking water had no signs of possible health risks and successfully met or surpassed all current federal and state standards (Village of Yellow Springs 2004).

Ted Dunevant, the water plant operator, estimated that Village water consumption has dropped by roughly 20 percent over the past ten years based on the amount of water being pumped to the water towers (pers. comm.). In addition, based on data compiled by the Ohio EPA, consumption dropped by 6.4 percent from 2002-2005 (Hines 2006). This lower consumption rate can be related to a loss of industry within the Village in recent years.

The Village is interested in increasing water consumption to bring in more revenue while continuing to lower operating costs and produce cleaner water (T. Dunevant, pers. comm.). Currently, the Village has an average water cost of $96.30 per 3,000 cubic feet of water (City of Oakwood 2006). This rate is a little above the average cost in neighboring communities of $83.31 per 3,000 cubic feet. The Village may look to lower the consumption of water per user but increase the number of users, especially industrial users, in order to run the water plant at a higher capacity and generate more revenue.

Energy Figure 11. Yellow Springs' water towers
Source: Tim Burgener

Lastly, through the Wellhead Protection Management Plan, the Village has performed several studies to determine the sources of water that recharge the aquifer. Once the sources have been determined, they can be monitored and protected from contamination by the surrounding development, farmland, and industry (Bennett & Williams Environmental Consultants, Inc. 2001).

Wastewater Management

Wastewater is generated in Yellow Springs primarily through residential use (about 75 percent) and the rest small commercial use (J. Bates, pers. comm.). The Village operates its own water treatment plant which handles all the wastewater generated from the Village at an average rate of 600,000 gallons a day. The minimum and maximum flows recorded for the plant range from 400,000 gallons up to almost a full pipe capacity of 3.8 million gallons (J. Bates, pers. comm.). The maximum wastewater flow occurs during rain events in combination with heavy peak use and inflow and infiltration of stormwater. Common stormwater infiltration points are at manhole covers and cracks throughout the collection system. The sewers in the Village are generally in poor shape with many leaks that contribute to infiltration, but the money to address this issue has not been available (K. Fox, pers. comm.).

The Yellow Springs wastewater treatment plant operates as most small community plants do in the U.S. Except for one lift station, the flow of wastewater is gravity-fed to the plant, requiring minimal energy for operation. Once the waste reaches the plant, it follows a typical treatment process before being discharged into a nearby stream, as shown in Energy Figure 12. The water is regularly tested to ensure compliance with the plant's permit under the National Pollution Discharge Elimination System (J. Bates, pers. comm.).

Yellow Springs meets EPA guidelines 98 percent of the time but still needs to

Energy Figure 12. Treated wastewater leaves the plant and enters a local stream
Source: Tim Burgener

make upgrades to the treatment plant to continue compliance with EPA water quality regulations (J. Bates, pers. comm.). During days of exceptionally high flow, the discharge into the stream has higher concentrations of phosphorus, nitrogen, and bacteria than EPA standards permit. The Village acknowledges that there are maintenance concerns such as the condition of the sewer pipes and rainwater infiltration. However, the funds needed to address these concerns currently are not available (J. Bates, pers. comm.)

Overall, water consumption and treatment actually generates a surplus in revenue which offsets the following year's operational costs and is also dispersed to other Village activities (Bates 2006). However, the Village still owes on the loan that paid for the upgrades to the wastewater treatment plant and 18 percent of the budget goes to service that loan (Bates 2006). As of September 2008, the EPA will demand additional upgrades to stay in compliance with the discharge permit, which will likely require the Village to take out another loan (J. Bates, pers. comm.).

Joe Bates, Yellow Springs Superintendent of Water and Wastewater, is experimenting with small operational changes to see what kind of energy and cost savings can be generated. For example, Mr. Bates turns off the blowers at the plant about three hours a day at non-peak times (Energy Figure 13).

He also suggests incorporating a variable frequency drive which would turn the blowers off automatically when they are not needed. Mr. Bates used these drives at his previous place of employment and the energy savings were about 40 percent (J. Bates, pers. comm.). With the current level of use, more money is expended to keep the blowers running at the maximum level for smaller capacities of sewage instead of adjusting to those capacities. Though the cost to buy this technology would be an upfront investment, it would pay for itself over five years in energy cost savings (J. Bates, pers. comm.).

The sludge produced from the treatment process is currently taken out by a waste disposal firm. Mr. Bates would like to treat this residual sludge locally to be used as an organic fertilizer. This could be done by bringing in a press that mixes polymers into the sludge to lower the water concentration and produce 13 percent more solids. This process would be handled by signing a contract with a firm called Cinagrow who would bring the portable press, compress the sludge to create the fertilizer, and then haul the final contents to a local farmer who is working with Mr. Bates and has agreed to use the contents. Currently the sludge is taken to the city of Xenia to be processed at a cost of 0.09 cents per gallon. Switching to the Cinagrow method would lower costs to 0.0725 cents per gallon resulting in an annual savings of $1,750 for the Village. The process would also provide a recycled fertilizer at no cost to a local farmer, with fewer harmful chemicals associated with commercial fertilizers (J. Bates, pers. comm.).

Energy Figure 13. These blowers are the main source of energy consumption at the sewer plant
Source: Tim Burgener

SUSTAINABILITY ANALYSIS

The opportunity assessment reported current levels of energy and water consumption and waste generation in Yellow Springs. In addition, some of the ongoing efforts to reduce consumption and improve efficiency were highlighted. The sustainability analysis outlines recommendations to support this project's vision statement for a sustainable energy and waste system in Yellow Springs.

Energy Consumption and Conservation
Recommendations in this section are designed to meet the following goals for sustainable energy in Yellow Springs:

- Encourage the development of renewable energy resources
- Improve the energy efficiency of the built environment
- Utilize alternate modes of transportation

Implementing the following recommendations should lead to progress toward sustainability as measured by the indicators of electricity consumption and commuting transportation mode.

<u>Recommendation: Create a Resource Center for Green Construction Practices and Materials</u>

There is a presence of home building practices focused on energy conservation in Yellow Springs. Local builder Andy Holyoke has been involved in the construction of three straw-bale structures in the Village. Other homes have incorporated passive solar heating and alternative heating and cooling systems. With enhanced support and encouragement, new construction practices which embrace efficiency would not only increase the long-term sustainability of Yellow Springs, but would also publicly establish the environmental consciousness of the community to the residents and businesses it hopes to attract.

The Village Council can provide materials in the form of a pamphlet or booklet for all applicants of new construction, addition, and renovation permits on how to incorporate green construction into their projects. Contact information of local and regional "green" contractors and suppliers may be stored electronically and accessed via the Village website at no cost. Further, a simple booklet may be created using standard publishing software and printed on an as-needed basis to reduce cost. Booklets should also be printed on recycled paper in order to emphasize the objective of providing these resources.

A valuable directory of such resources is available through the Columbus Green Building Forum. This organization has compiled a spreadsheet of some commonly used and readily available sustainable products within 500 miles of central Ohio. The spreadsheet can be downloaded at no cost from the Columbus Green Building Forum website: http://www.cgbf.org/links.html. Through cooperative marketing, private businesses and public organizations which are devoted to such building practices may become connected through the Village Council's permit process.

The Village Council may also serve as an information conduit for financial assistance available to residents interested in building green. Permit applicants may be directed to state and federal grant programs specially designed for green construction projects. Residents should be made aware of the many incentives (see sidebar) available to them if they incorporate energy conservation into their projects (Green Energy Ohio 2006).

Green Building Financial Resources

Ohio Department of Development
http://www.odod.state.oh.us/cdd/oee/OhioGreenCommunitiesEnergyGrants.htm

Ohio Green Communities
http://www.greencommunitiesonline.org

HUD Energy Efficient Mortgages Program
http://www.hud.gov/offices/hsg/sfh/eem/energy-r.cfm

The Village should also provide information to prospective builders and homeowners about opportunities for financing green renovation and enhancement projects through the U.S. Department of Housing and Urban Development (HUD). The Energy Efficient Mortgages Program seeks to help achieve national energy-efficiency goals while reducing pollution and providing better housing for people who might not otherwise be able to afford it (HUD 2001).

Website development serves as an inexpensive and efficient information portal. The same information being provided to applicants of construction permits should be available electronically for all of the residents of Yellow Springs. The County of San Mateo, California, could serve as a model for an additional link on the Village website about green construction: http://www.recycleworks.org/greenbuilding/index.html. This example illustrates how interested residents can be provided with information and encouragement to develop and construct in a sustainable fashion, at little or no cost to the Village.

The Green Construction Resource Center could be implemented in Yellow Springs along the following timeline:

- Short term (1-2 years)
  - The Environmental Commission contacts local organizations (i.e. The Community Solution), local builders, contractors, architects, and engineers that may be interested in submitting information regarding the economic and environmental benefits of green construction
  - A volunteer organization (The Community Solution or others) compiles materials (inserts, pamphlets, booklets, etc.) and the Village planning office distributes materials to applicants as they pick up permit applications from the Village
- Medium Term (3-5 years)
  - Materials are updated as financing and product information is changed and submitted to the Village planning office for distribution
  - The Environmental Commission conducts a follow-up evaluation to measure the effectiveness of the material by surveying participating companies, agencies, builders, etc.
- Long Term (5+ years)
  - The Resource Center is expanded into a Village office or kiosk where voluntary consultation is provided on green development in the community
  - Area students, faculty, Village officials, and local organizational leaders contribute time and services in order to facilitate a strong relationship between builders and community members in Yellow Springs
  - The Chamber of Commerce promotes the Resource Center as an incentive to do business in Yellow Springs
  - The Village provides a storage area for salvaged construction materials to be reused

Successful implementation of this recommendation supports the goals of reducing energy consumption and waste generation, and should lead to progress in the indicator of renewable and non-renewable electricity consumption by decreasing consumption and favoring renewable resources.

<u>Recommendation: Create a Green Rating System for Buildings in Yellow Springs</u>
Similar to the U.S. Green Building Council's LEED program, guidelines could be established that showcase energy conservation characteristics for both new construction projects and existing dwellings. A point system would lead to incentives outlined by the Village such as tax abatements during construction or reduced fees for utility connection (see sidebar).

Unlike the national LEED program, a community-based green construction program would be a much easier process to navigate for local builders while delivering a more tangible incentive to build green. Points could be awarded based on the energy-saving performance compared to conventional construction. Guidelines could be adopted based on LEED or those established in other communities (see

Arlington, VA "Green Rewards"
Fee waivers and bonuses are an example of green building incentives which can be applied at any level of government. Programs such as these are designed to not only encourage green construction, but to help developers offset any potential cost increases that may otherwise deter them from building green.

Yellow Springs can emulate the same incentive programs already in place in other communities. Arlington, Virginia presents an example of a bonus structure offered to developers. The program allows a private developer to apply for additional density allowances if the project achieves LEED certification. In addition to the bonus, developers are required to pay a fee into a green building fund if they do not seek LEED certification.

http://www.arlingtonva.us/Departments/EnvironmentalServices/epo/EnvironmentalServicesEpoIncentiveProgram.aspx

Energy Conservation Certification Programs
Conservation certification programs are widely adopted at all levels of government. Below are two examples of such programs.

EarthCraft House in Atlanta
The Greater Atlanta Home Builders Association has created a voluntary green building program called EarthCraft House. This program serves as a blueprint for healthy, comfortable homes that reduce utility bills and protect the environment. Any size or style of new home can be certified under the program by meeting the EarthCraft House guidelines. These guidelines are flexible to allow for a variety of approaches to environmental construction (Southface Energy Institute 2005).

Built Green in King County, WA
This certification program was created through a partnership of the Master Builder's Association of King and Snohomish counties, local agencies, and the counties themselves. The logo assures that a structure contains selected Built Green features and meets the criteria on the Built Green checklist, available at http://www.builtgreen.net. This website provides consumers with easy-to-understand rating systems, which quantify environmentally friendly building practices for remodeling and new home construction.

sidebar). Affordable green guidelines are found at www.designadvisor.org. The actual LEED checklist is available at no cost on the United States Green Building Council website: www.usgbc.org.

The development of energy-efficient guidelines to become certified by the Village of Yellow Springs could be implemented along the following timeline:

- Short Term (1-2 years)
  - The Village planning office reviews guidelines already set forth in other communities that offer similar programs
  - Village Council, under recommendation of the Planning Commission, selects the final guidelines that will be part of the incentive program
  - Incentives are also selected in the form of development bonuses and applicable fee and tax credits
  - The program is made available to local residents and builders
- Medium Term (3-5 years)
  - The Planning Commission evaluates the program's guidelines and incentives
  - A collaboration of community organizations holds an event showcasing the energy-efficient elements and technologies in the structures that have participated in the program
- Long Term (5+ years)
  - Guidelines are adjusted to keep pace with enhanced technology
  - The program focuses on making existing dwellings more energy-efficient

Successful implementation of this recommendation supports the goal of reducing energy consumption, and should lead to progress in the indicator of renewable and non-renewable electricity consumption by reducing overall consumption.

<u>Recommendation: Join AMP-Ohio's Green Pricing Program</u>
Yellow Springs purchases all of its electricity from AMP-Ohio, and therefore has little control over the fuel source used to generate this electricity. However, AMP-Ohio offers an opportunity for communities to encourage the development of renewable energy sources through its Green Pricing Program (see sidebar).

The Green Pricing Program is free for the Village and enrollment is voluntary for each customer. The Village must elect to join the

Green Power Purchasing in Bowling Green
Bowling Green was the first community in Ohio to offer a green power option to its electricity customers. Since joining the AMP-Ohio program in 2004, about 3.4 percent of the City's customers have enrolled, including 25 businesses, generating over $25,000 per year to reinvest in renewable energy development. The Green Pricing Program has helped to finance the installation of 7.2 MW of wind power generation in Bowling Green, and funds may be used in the future to produce electricity from methane gas at the county landfill (U.S. DOE 2006).

program. Once the Village has joined, the electric customers within Yellow Springs then have a choice to purchase green energy credits by paying a slightly higher rate for electricity. The current green price is 1.3 cents/kWh over the normal rate, or an estimated $10/month added to the average household electricity bill (J. Blankenship, pers. comm.). Proceeds from the sale of renewable energy credits have been used by AMP-Ohio to develop electricity generation facilities that use landfill gas, low-impact hydroelectric power, and wind power.

AMP-Ohio is currently producing more green energy credits through its renewable electricity generation assets than it is selling to its customers. The program is in need of additional customers in order to further develop renewable energy resources in Ohio (J. Blankenship, pers. comm.). AMP-Ohio assists the member community in promoting the program by providing bill inserts, advertisements, direct mail, and other resources (AMP-Ohio 2005).

The Green Pricing Program could be implemented in Yellow Springs along the following timeline:

- Short term (1-2 years)
  - Village Council agrees to enroll the community in the program
  - The Village Environmental Commission works with AMP-Ohio to promote the program through the existing AMP-Ohio process, at no cost to the Village
  - The Village Utility Billing Office inserts free educational materials provided by AMP-Ohio into electric bills
- Medium term (3-5 years)
  - The Utility Billing Office reports on the level of enrollment in the program
  - The Environmental Council continues to promote the program, targeting sectors with the lowest enrollment (i.e. residential, commercial, or industrial)
- Long term (5+ years)
  - The Village enrolls itself in the program and purchases green power for the Village-owned buildings, subject to available finances
  - The Utility Billing Office reports on the level of enrollment in the program
  - The Environmental Council evaluates the program's effectiveness

Successful implementation of this recommendation supports the goal of encouraging the development of renewable energy resources, and would lead to reduced non-renewable energy consumption.

<u>Recommendation: Expand usage of the MVRPC's RideShare Program</u>

As stated previously, 72 percent of commuters in Yellow Springs drive alone to work. While there is a lack of public transit options for commuters from Yellow Springs, more commuters could take advantage of the RideShare program offered by the Miami Valley Regional Planning Commission. RideShare matches commuters in the Miami Valley region who have similar work destinations and schedules (MVRPC). Of the 1,887 commuters from Yellow Springs only 11 are enrolled in RideShare (U.S. Census Bureau; T. Lee, pers. comm.). Over 70 percent of all workers from Yellow Springs commute within Greene and Montgomery counties, suggesting that there would be many opportunities for residents to establish carpools through the RideShare program (U.S. Census Bureau). RideShare is free for all residents of Greene County, and participants can sign up online at http://www.mvrpc.org/mvrs/rideshareapp.php.

This recommendation requires personal action by individual residents of Yellow Springs. However, the Village Environmental Commission or a local non-profit could become more involved in promoting the program within the Village. Because this is an ongoing activity that requires little organization by the Village, there are no specific tasks outlined for different time frames. If more residents enroll in the program, the Village should see progress in the indicator of commuting transportation

mode, with fewer commuters driving alone to work.

Solid Waste and Recycling
Recommendations in this section are designed to meet the following goals for sustainable waste management in Yellow Springs:

- Maximize the reuse and recycling of wastes
- Encourage local reuse and recycling of wastes
- Develop a cost-effective waste and recycling program to reduce total solid waste

Implementing the following recommendations should lead to reductions in total solid waste generated and an increase in the proportion of waste that is recycled, as measured by the sustainability indicator of total solid waste generated and percent recycled.

<u>Recommendation: Participate in the Greene County's Adopt-A-Spot Program</u>
The Greene County Solid Waste Management District encourages voluntary groups in the county to participate in the Adopt-A-Spot program. The program provides an opportunity for residents to maintain the Village bike paths, roadways, and parks as litter-free areas. Public areas are adopted for a two-year period. The County supplies trash bags, and will collect the bags after a clean up, which should occur at least four times a year. Signs are placed in the adopted areas in order to identify the participating organization and the area (Energy Figure 14), and each specific area can be adopted by up to four organizations (Greene County 2006).

The potential benefit of the program is that it can provide an opportunity for volunteer groups to participate in anti-litter efforts that reduce costs for the Village. The environmental commitment of participating community groups is recognized, while promoting litter awareness, enhancing the appearance of public areas, and providing a service that would normally be paid for by the Village (Green County 2006).

Energy Figure 14. Adopt-A-Spot sign is displayed in the area
Source: City of Norfolk

The Greene County Adopt-A-Spot Program could be implemented in Yellow Springs along the following timeline:

- Short term (1-2 years)
  - Information about the Adopt-A-Spot Program is distributed through local newspaper articles (which would be at no cost) or promotional ads
  - The Village Environmental Commission identifies areas to be adopted and works with community groups to find volunteers
  - Interested community groups adopt the areas identified by the Commission

- Medium term (3-5 years)
  - The program has a two-year agreement with each volunteer group. After these two years, each volunteer group can determine whether to continue the program.

Successful implementation of this recommendation supports the goal of developing a cost-effective waste and recycling program.

Recommendation: Improve Waste and Recycling Collection in Public Places and During Events

Confusion about the waste and recycling bins on Xenia Avenue negatively impacts participation in the recycling program by visitors to the Village. As discussed in the opportunity assessment, these containers are difficult to identify and are used improperly. Trash and recycling containers are located adjacent to each other for convenience, but it can be difficult to identify which is for recycling and which is for trash. Clear labels on the recycling bins could encourage proper use, especially by visitors. The most cost-effective way to implement this recommendation is to retrofit the existing bins. Blue paint and a few recycling labels could go a long way in making the recycling bins more distinguishable from the trash containers (see Energy Figures 15 and 16).

According to Matthew McNelly, Municipal Representative from Rumpke, visitors during events are major contributors to the increased amount of solid waste because the visitors are unfamiliar with the Village's recycling system (pers. comm.). Mr. McNelly mentioned that Rumpke is willing to work with the Village to reduce the amount of solid waste generated during events. There is an additional opportunity to increase recycling of bottles and cans during special events. The Village can borrow recycling collection bins for special events through a program called "We Got Plans for Your Bottles and Cans", through the Ohio Department of Natural Resources. Program participants can borrow up to twenty recycling bins like the one seen in Energy Figure 17 for up to seven days. This recycling bin can help to increase the rate of bottle and can collection during events. More information can be found at http://www.dnr.state.oh.us/recycling/awareness/binloan.asp.

Waste and recycling bin recommendations could be implemented in Yellow Springs along the following timeline:

- Short term (1-2 years)
  - Yellow Springs public works managers conduct an inventory of the number,

Energy Figure 15. Current trash & recycling bins on Xenia Ave., from the sidewalk
Source: Tim Burgener

Energy Figure 16. Recycling bins could be painted to make them more easily identified
Photo manipulation by Kate Huss

Energy Figure 17. Bins like this could be used at special events to encourage recycling
Source: ODNR

location, and condition of recycling containers
  - The Environmental Commission recruits volunteers to make improvements to the recycling containers
  - The Environmental Commission works with Rumpke to coordinate waste collection during special events and utilizes the ODNR container program
- Medium Term (3-5 years)
  - The Environmental Commission evaluates waste collection data to see if there is any improvement in the amount of waste collected and recycled during events
  - Yellow Springs public works managers update the inventory of containers to see where additional improvements need to be made

Successful implementation of this recommendation would contribute to progress in the indicator of total solid waste generated and percent recycled by improving the recycling rate at special events.

Water Consumption

The opportunity assessment for water consumption examined the procedures that are being undertaken by the Village to effectively monitor and control its water usage and supply. This sustainability analysis will focus on recommendations that the Village could undertake to meet the following goals:

- Reduce water consumption per user
- Monitor and reduce the amount of potential pollutants entering the water source
- Ensure the financial sustainability of the drinking water system

Implementing the following recommendations should lead to progress in the sustainability indicator of total water consumption by increasing individual user efficiency.

<u>Recommendation: Educate Village Residents on Water Conservation</u>

Water conservation is an important component of a sustainable future. In the past, the Village has acknowledged and should continue to acknowledge the importance of water conservation to its residents. By conserving water, residents can not only lower their monthly water bills but can help the community save money on the energy used to produce water and chemicals used to treat the water. The Village should build upon a conservation effort with a more comprehensive conservation approach based on public education and involvement. It is important for Village residents to understand that their efforts to conserve water will not only benefit the environment but also will benefit themselves.

Several communities have set up water conservation education programs (see

Vancouver's Water Conservation Program
The City of Vancouver, B.C. has a water conservation program called "Water Works". This program provides public education on water conservation and usage. The program has several initiatives that range from an elementary school theater presentation, a Rain Barrel Program, "grow natural" lawn care program, and industrial water conservation programs. Through these programs, the City hopes to educate the public on water conservation techniques and practices (City of Vancouver 2006).

sidebar). These programs are designed to provide residents and especially children with positive educational resources on water use and conservation techniques. For such programs, the Village may apply for funding from the Ohio EPA's Environmental Education Fund, which "enables grants for use for educators, environmental organizations, industrial organizations and others to increase the awareness and understanding all Ohioans need to work together to solve the complex environmental problems affecting our lives and the lives of future Ohioans" (Ohio EPA 2006). More information about this fund can be found at www.epa.state.oh.us/oeef/.

A water conservation program could be enabled within the following timeframe:

- Short term (1-2 years)
  - Joe Bates, Superintendent of Water and Wastewater, applies for funding from the Ohio Environmental Education Fund
  - The Village Utility Billing Office places small water conservation tips on water and sewer bills and the Village website
- Medium term (3-5 years)
  - The Village Environmental Commission continues to expand the education efforts throughout the Village, including but not limited to schools, community groups, industrial users, and the Village government agencies
- Long term (5+ years)
  - The Utility Billing Office prepares an annual report about the Village water usage which is sent to residents and placed on the Village website, so that residents can see the trend of water usage and read about conservation techniques
  - The Village Environmental Commission promotes innovative conservation techniques to showcase to the residents, such as the rainwater collector seen in Energy Figure 18

Successful implementation of this recommendation supports the goal of reducing water consumption per user and should lead to progress in the indicator of total water consumption.

<u>Recommendation: Create a Village Stormwater Utility</u>
A stormwater utility is a special district created to generate a stable funding source

Energy Figure 18. This barrel at a local residence collects rainwater from the downspout for reuse
Source: Tim Burgener

Stormwater Utility in Union, OH
In 1987, the city of Union, OH (population ~6,400) realized the need for a stormwater utility shortly after the runoff water of a storm event demolished a major road. The City decided to incorporate the utility and charge a flat rate of $3 for residents, $6 for commercial, and $9 for industries and included these rates on their monthly water and sewer bills. Since introducing the stormwater utility fee, the City has created revenues annually of around $72,000 and is using the revenue in conjunction with state grants to fund any future improvement projects to the City's infrastructure system (Center for Urban Policy and the Environment 2002).

for stormwater management across a specific region. Funds for the stormwater utility come from a user fee that can be used to address local efforts such as stormwater runoff mitigation or infrastructure upgrades. A stormwater utility is also a good way to create incentives for smart growth developments (U.S. EPA 2004, 32). The Village of Yellow Springs has expressed interest in creating a stormwater utility in the past to help address their stormwater issues without increasing the budget deficit (E. Amrhein, pers. comm.).

There are several ways to determine a stormwater utility fee, but the more popular method is to base the fees on the percentage of impervious surfaces of developed land. Many communities have also developed a fee plan that consists of a flat rate that differs between residential, commercial, and industrial land uses (see sidebar). Regardless, the user fee can be quite small (around $2-3 dollars a household per month) and can be assessed through a monthly sewer or water bill.

A stormwater utility could be implemented within the Village of Yellow Springs along the following timeline:

- Short term (1-2 years)
  - The Utility Billing Office notifies the public about the possibility of a stormwater fee
  - The Utility Billing Office determines how to handle the assessment and management of the user fees, initially recommending the model from Union, Ohio
  - The Village Manager establishes a list of projects to be funded through the fee
- Medium term (3-5 years)
  - The Village Council establishes a stormwater utility fee
  - The Utility Billing Office begins the assessment and management of the user fees, reporting all figures
- Long term (5+ years)
  - The Village documents the revenue created and assesses any repairs or upgrades that may need to be made to the existing infrastructure

Implementation of this recommendation supports the goal of ensuring a financially sustainable water system.

<u>Recommendation: Increase Water Consumption through Economic Development</u>

As described in the opportunity assessment, the Village's annual water consumption has dropped significantly over the past ten years. The decrease in water consumption is mainly due to the loss of industry within the Village limits (T. Dunevant, pers. comm.). The largest consumers of water are industrial, commercial, and institutional users, representing approximately 60 percent of total consumption (T. Dunevant, pers. comm.). While water conservation remains an important component of a sustainable future, the Village also needs to encourage usage. However, this usage is not through wasteful practices but instead through additional industrial users.

In order to increase the economic viability of the water utility, economic development must play a major role for the Village. With the loss of the Vernay plant, the Village's consumption is down by about 75,000 gallons per day (T. Dunevant, pers.

comm.). This amount of consumption can be regained through reclaiming industry (see the Economic Development section of this report).

According to the Village's Comprehensive Plan (2002) there is ample water for an increase in consumption. The plant has the capacity to treat one million gallons of water a day and currently is treating roughly 375,000 gallons a day (T. Dunevant, pers. comm.). The wastewater treatment plant also is well under capacity. It is designed to treat up to 1.2 million gallons of water a day but currently only treats about 600,000 gallons a day (Village of Yellow Springs 2002). A plan should focus on bringing more industry to Yellow Springs to provide more revenue and increase the efficiency of the Village water and sewer systems. The Village could promote its capacity to provide water as an incentive for industries to locate in Yellow Springs. Successful implementation of this recommendation supports the goal of ensuring a financially sustainable water system.

Recommendation: Continue to Protect the Water Source as Outlined in the Wellhead Protection Management Plan

The Wellhead Protection Management Plan (2001) goes into great detail about the source aquifer and what the Village is doing to protect it. The Plan provides information to address education and public involvement, pollution control strategies for identified potential pollution sources and future potential pollution sources, and establishes a water quality monitoring program as well as contingency planning options (Bennett & Williams Environmental Consultants, Inc. 2001). Through this plan, the Village can continue to monitor the integrity of the water source and provide feedback as to how to limit potential harm to the source.

The Plan has several strategies listed to provide protection, education, and improvements to the wellhead area. Some examples include conducting a potential pollution source inventory, developing new management strategies, providing public participation strategies, and initiating a water quality monitoring program (Bennett & Williams Environmental Consultants, Inc. 2001). It is strongly recommended that the Village take the necessary steps to continue with the Wellhead Protection Management Plan effort, mainly to ensure that the potential pollution sources be identified and eliminated as quickly as possible. These continuing efforts will help the Village to educate residents about water pollution and will help control the amount of potential pollution that could go into the source.

Wastewater Management

Achieving a sustainable wastewater system requires two parts: (1) source reduction of pollution, and (2) treatment systems which recycle the nutrients and energy available in waste products. Therefore, the recommendations in this section are designed to meet the following goals for sustainable wastewater treatment:

- Understand the nature of water consumption and wastewater generation in the Village
- Encourage the development and use of technologies that allow for reuse of wastewater
- Improve the efficiency of the wastewater treatment plant

Implementing the following recommendations should lead to progress in the sustainability indicators of total water consumption and total wastewater treated.

Recommendation: Conduct a Survey to Determine Water Usage Patterns

A survey specifically targeting how residences and businesses use water would help the Village understand where and what kind of reductions can be made. Survey questions would include asking how often individuals wash dishes, run dishwashers, flush the toilet, shower and for how long, use the laundry, and details about what kind of a shower head is used and the efficiency

of household appliances, etc. Wastewater standards assume that typical use is about "100 gallons per person per day. But Yellow Springs is different than most communities since its citizens are concerned about such impacts, and it would be interesting to see if the amount consumed was at that level or a lot less" (J. Bates, pers. comm.).

This survey could be administered in several ways including engaging Antioch College students in conjunction with statistics classes, or requesting local high school honors students with a local administrator or teacher spearheading the project. The survey may be distributed through the mail, at community meetings, and also through the school system via kids to their parents (perhaps a contest between classrooms to see who can have their parents fill out the surveys the fastest). This survey would serve not only to enlighten the Village on where to focus its efforts but also as an outreach tool in making the community aware of water and wastewater issues and encouraging involvement in Yellow Springs' sustainability initiative.

The water use survey could be implemented in Yellow Springs under the following timeline:

- Short term (1-2 years)
  - The Village Superintendent of Water and Wastewater, Joe Bates, proposes this project to Antioch College's Environmental Studies and/or Statistics Department and works with instructors and students to develop survey questions
  - The Village Environmental Commission asks the local high schools to participate in distributing the survey
  - The Village Utility Billing Office inserts survey materials into water and sewage bills in two phases at a three month interval to promote greater participation
  - The surveying body publishes the results for the community
- Medium term (3-5 years)
  - The Environmental Commission recommends water conservation efforts based on results of the survey

Successful implementation of this recommendation supports the goal of understanding the nature of water consumption and wastewater generation, and would potentially reduce the amount of total water consumption in the Village.

<u>Recommendation: Facilitate the Installation of Alternative Technologies</u>

Reducing water consumption in activities that generate wastewater is one of the keystones behind sustainable water use. Just as straw-bale houses are an alternative design to improve energy efficiency, water consumption can be reduced through a variety of alternative technology approaches. This recommendation focuses on toilet technologies that can be instituted on an individual or governmental level for water reduction.

There are several toilet types that reduce water consumption: half-flush and full-flush options, waterless urinals, urine separating toilets, composting toilets, or foam flush toilets, all of which require less water than regular flush toilets but are currently not in widespread use in the U.S. The costs for implementing these technologies range from $200 to $5,000 depending on the

Urine-separating toilets in Tanum Municipality, Sweden

The local government council in Tanum, Sweden, decided to initiate a progressive water sanitation policy and has decided that, whenever possible, urine separation toilets are to be installed in new houses. While the initiative has been taken on solely by Tanum Municipality, the implementation of the policy has involved several stakeholders at the local level, such as farmers, private entrepreneurs, and the general public. By 2001, 426 urine separation permits had been granted in the municipality, mostly at private properties, although the local public library and high school also have urine separating systems. (Jönsson 2001)

building size and scope of the alteration (Crosby 2002). These technologies can be bought from such manufacturers as Caroma, Ecovita, and Clivusmultrum.

The urine-separating toilet appears similar to a conventional toilet, but the bowl is separated into two sections by a central wall. The front bowl collects urine and the rear bowl is for solid waste. Each bowl can be flushed independently. The effects of the urine-separating toilet on water consumption are dramatic. In a village in Sweden (see sidebar), total water use in toilets dropped by 50 percent.

The separated urine is stored in tanks, for periods of up to eight months at a time. When the tanks are full urine is removed by the solid waste authority and taken to be sprayed onto fields. Urine is a particularly good source of ammonia/ammonium which in its natural form can pass directly to plants and is much lower in contaminants than commercial fertilizers.

Waterless Urinals in Chicago

Although water-free urinals have been around for many years in Europe, the technology is still relatively new in the U.S. "I know people who have been in the industry for years and still have either never heard of them or have no idea how they work," says Bruce Fleisher, vice president of sales and marketing for Falcon Waterfree Technologies. "They look just like any other standard urinal; they just don't use water," says Fleisher.

Waterless urinals were recently installed in the Social Security Administration Building (SSA) in Chicago. The amount of water saved annually in the building will amount to a staggering 2 million gallons per year. A more extensive analysis of water usage found that it was costing the SSA approximately $4 for every 1,000 gallons used in the old water urinals. By eliminating this operating cost, the facility will be able to save more than $7,000 per year! In addition, the facility will recoup another $7,000 per year it formerly spent on plumbing repair costs. Meanwhile, the initial expense to install the water-free urinal units was about $150 to $200 less per fixture because water-free urinals require less plumbing. (Kravitz 2005)

The solid waste passes through a septic tank and into a sludge composter. The resulting sludge is removed from the composter, dried, frozen, and composted further. After this treatment, it is then suitable for use on fields as fertilizer and as a soil enricher (Fujita Research 1998). Other options include waterless urinals which have reduced water consumption and generated substantial utility savings (see sidebar).

While much of this technology would be left to individuals to adopt, the Village can urge residents to consider these technologies and offer permits to those who wish to incorporate them into their households if current zoning does not permit such things. Grants are available for municipalities who want to incorporate new ecological technologies (J. Bates, pers. comm.). The Village can use these grants and serve as an example to the community by instituting some of these technologies in its own buildings.

Introducing and installing toilet technologies could be implemented in Yellow Springs along the following timeline:

- Short term (1-2 years)
  - The Village Utility Billing Office develops and inserts promotional and informational materials into water and sewage bills discussing water reducing options
  - The Village Council grants permits for those who wish to incorporate urine separating tanks and composting systems
- Medium term (3-5 years)
  - The Village works with local businesses on finding and writing grants to fund the installation of one or more such toilets in a public building
- Long term (5+ years)
  - The Village encourages new housing developments to incorporate these kinds of technologies in future housing sites

- The Village replaces any outdated toilets with waterless urinals and urine separating toilets in their municipal buildings

Successful implementation of this recommendation supports the goal of using water reductive technologies and improving water efficiency, and would lead to reductions in the indicators for water consumption and total wastewater treated.

Recommendation: Use Biological Systems to Treat Wastewater

The Village wastewater treatment plant treats incoming water through primary and secondary treatments, but it does not have the capacity to do tertiary treatment. Tertiary treatment calls for the final removal of phosphorus and nitrogen which are agents in eutrophication (Simeral 1998). The EPA is asking the Village to make at least over $30,000 in upgrades as of 2008 to treat these elements since there are occasions that the plant fails to meet EPA standards for these nutrients. Constructed wetlands offer an alternative to run the treated water for the final stage in cleaning at the lowest cost of roughly $10,000 for construction per acre (Earthbound Services LLC 2005). The negative impact of these systems is that they can require a large amount of land, depending on the wastewater load, soil type, and species variation (see sidebar).

Constructed Wetlands and Reedbeds in the U.S. & Canada

Constructed wetlands are still not in widespread use as treatment systems for wastewater. A 1996 survey of the U.S. and Canada showed 176 wetland treatment sites in use, with South Dakota as having the greatest number of cold-temperate installations that can treat domestic, municipal, agricultural, and industrial wastewater to very high standards (40 sites). The majority of wetlands in cold-temperate zones were of the Free Water Flow (FWF) type where effluent flows freely above the sand/gravel bed in which the reeds are planted, and there may be patches of open water. In FWF-type wetlands, effluent is treated by plant stems, leaves, and rhizomes. Such FWF wetlands are densely planted and typically have water-depths of less than 0.4 meters (Fujita Research 1998). Reedbed systems are individually-designed, robust, and self-maintaining, and consist of a series of shallow outdoor ponds, fringed with various species of emergent plants, and are linked by areas of aggregate-filled constructed wetlands. Systems can be built for as few as five and as many as 3,000 people. Land requirements are approximately 35 sq. ft. per person (Living Technologies LTD 1998).

Wetlands act as nature's kidneys or filters, purifying runoff containing fertilizers, animal waste from agriculture, and pollutants from the urban environment. High levels of nutrients such as nitrogen and phosphorous from these wastes can cause algae to flourish and bloom in lakes and streams, using up all available oxygen in the water (Simeral 1998). However, if the nutrient-rich runoff flows through a wetland first, wetland bacteria can remove up to 90 percent of the nitrogen and phosphorus from the water before it reaches the stream or lake (Gelt 1997). Wetlands also have been likened to giant sponges because of the way they absorb stormwater runoff. Wetland plants trap the water and slow down the flow, forcing the water to seep through the soil and roots of wetland plants rather than rushing downstream (Simeral 1998).

Joe Bates stated that Yellow Springs has considered this idea, but integrating it into the current sewer system as well as finding the funding has been an issue (J. Bates, pers. comm.). Another obstacle is the lack of available land near the treatment plant that would be suitable for incorporating this design. The Village currently has an agreement with Antioch to release treated wastewater into Glen Helen. This recommendation therefore asks the Village to work with Antioch College, with possible faculty sponsors in the Environmental Studies Department. A constructed wetland offers environmental education opportunities since it provides habitat and a potential base for an ecological center. Grants are available for these types of projects, and the EPA has worked with communities using state revolving loan funds.

The Village should consider allowing some areas to have decentralized wastewater treatment in proposed developments. Many of the biological treatment systems are scalable and allow creation of a "cluster system" that would serve multiple homes and businesses (Rocky Mountain Institute). These decentralized systems can use constructed wetlands or other biological treatment systems including reedbeds and swales (Living Technologies LTD 1998). These systems have been used on scales ranging from one small business to communities of 50,000 or more. Decentralized systems will typically utilize alternative collection technologies such as small-diameter, pressurized lines, which are much cheaper to install than conventional gravity sewers (Rocky Mountain Institute). Under this proposal, solid waste would still be sent to the wastewater treatment plant, while gray water would be separated through a series of screens and then circulated to local wetlands (Tredwell and Nelson 2002).

Working to find funding and the right people for implementation of this recommendation in Yellow Springs could occur under the following timeline:

- Short term (1-2 years)
  - The Village Superintendent of Water and Wastewater, Joe Bates, proposes a study project to Antioch College's Environmental Studies Department to develop a grant proposal and designate an area for a constructed wetland on their lands adjacent to the wastewater treatment plant
  - The Environmental Commission looks for additional funding sources by working with the EPA to get grant and loan funding for constructing a wetland that could substitute for other required structural upgrades
- Medium term (3-5 years)
  - Development and construction of the wetland site begins, subject to available incoming grant and loan funding
- Long term (5+ years)
  - Discharge from the treatment plant is redirected to the wetland and the tertiary treatment is monitored for removal of pollutants
  - Antioch is in partnership and students participate in monitoring the progress

Successful implementation of this recommendation supports the goals of encouraging the development and use of technologies that allow for reuse of wastewater, and improving the efficiency of the wastewater treatment plant. Implementation should improve the measure of total wastewater treated.

INTRODUCTION

Sustainability, as a concept in economic development, encourages the development of enterprises that enhance their environment and leave a small ecological footprint. While not simply reaching one goal, the idea of sustainability is one that adapts and considers its surroundings and acts in a responsible manner. The role of sustainable economic development is to meet the needs for people in a manner that protects the environment. A strong local economy is important because it is jobs that allow people to satisfy their basic needs. The shift in the global economy has resulted in shifts in local and regional economies as well. Many local economies are still transitioning from an industrial based economy to a knowledge-based economy. New global connections made possible through technology continue to change employment dynamics. "Strategies to create strong, diversified local economics are needed to weather and take advantage of fundamental shifts in national and international economics. The communities that prosper will be those that develop strategies to make the unique strengths of their people and their place a source of competitive advantage (Sitarz 1998, 249)."

In order to enhance the economic development of a region; the three "E's" of sustainable development: environment, economy, and equity must be considered. According to Berke and Conroy (2000), the major goal of sustainable development is intergenerational equity. The term intergenerational equity suggests that current standards of available natural capital and resources are maintained for future generations. Furthermore, the core values of social equity are to minimize human suffering and eradicate poverty. Social equity seeks to address these needs by ensuring that the cultural and social diversity of all individuals and groups are respected, and that economic development activities benefit and include all members of society.

VISION

Yellow Springs is a community that seeks to direct its economic development in a planned and sustainable manner while enhancing the social equity of its residents. It is a community where people want to live, work and play, where opportunities for many critical aspects of their life are met within the village boundaries and satisfied in a manner that does not compromise future residents' ability to enjoy the same benefits.

GOALS

The following goals will direct Yellow Springs toward achieving the vision of a sustainable economic development and social equity environment:

Provide an enjoyable and sustainable living environment.

- Provide a diversity of housing options that are affordable to a broad range of residents.
- Encourage a balanced community with a broad social mix of incomes, religions, races, and cultures.
- Provide a safe and harmonious living environment.

Provide a community where residents are able to find employment within the village boundaries.

- Encourage and provide to the extent possible a business base supported by a range of economic possibilities with a diversity of businesses that embrace environmental protection of natural features
- Provide opportunities for the establishment and growth of new and existing businesses.

Provide a community where residents' social and cultural needs are fulfilled.

- Encourage an abundance of cultural opportunities.
- Provide opportunities for expression and growth for local talent and interests.
- Protect and preserve local environmental features for present and future generations.

OPPORTUNITY ASSESSMENT

The opportunity assessment for economic development and social equity identifies current practices in the following areas: business climate, brownfields, and social composition and programs. The purpose is to identify activities that support the vision statement for a sustainable economic development and social equity environment in Yellow Springs, and also to identify opportunities for improvement. While many positive actions were certainly overlooked due to the limited scope of this study, the opportunity assessment provides an initial exploration of some of the issues to consider when planning for sustainable development.

Business Climate

While sustainability concepts are manifest in many aspects of the community, the Village of Yellow Springs is currently facing several challenges with regard to its economy and financial situation. Due to an aging population, infra, and a significant loss of industrial jobs, there has been a sharp reduction in the amount of tax revenue generated by the village. To remedy this situation and enable the community to remain a viable village where residents are able to live, work and play, Yellow Springs needs to develop a plan to increase the number of jobs available within its boundaries. It has the opportunity to choose environmentally friendly or green businesses as it grows its business base. The village has demonstrated its commitment to improving its economic standing by attracting environmentally friendly businesses, such as Yellow Springs Instruments, Inc. (YSI), which specializes in monitoring, measuring and providing data on water quality around the world, as well as through its comprehensive plan and other studies it has initiated such as the quality of life study. For Yellow Springs to realize these goals, a more creative economic development strategy is needed.

The value of investing in sustainable industries has been recognized even on Wall Street. Acknowledging sustainability in the corporate world led the Dow Jones

investment company to create a new sustainability index allowing investments in "sustainable companies," determined by their ratings in economic, environmental and social categories (SAM Indexes 2003). For a village like Yellow Springs, which seeks to maintain its cultural integrity, the expansion and addition of high-tech businesses, office and research businesses, professional services (consulting, engineering, healthcare), small-scale light manufacturing and entrepreneurial efforts, will be the best strategy to increase tax revenues and rejuvenate their economic endeavors.

Compared to other small towns with similar economic struggles, Yellow Springs has certain economic advantages including its existing manufacturing base and the fact that it has a college located within its boundaries. Antioch College is a unique establishment of higher education that has been a part of the Yellow Springs community since 1852. It has distinguished itself from other universities due to its ultra liberal philosophies and dedication to social justice. Ingrained in the tradition of Antioch College is the Cooperative Education curriculum that is a part of each student's scholastic program. Each student at Antioch College is required, as a part of their curriculum, to participate in a cooperative education program where they alternate between semesters on and off-campus. While off-campus, the students take full time jobs with employers who help to develop the students' appreciation and understanding of the world of work. A college which requires this type of on the job training is unique and provides Yellow Springs with an excellent opportunity to establish a cooperative on the job training program with Antioch. Antioch College is a resource for the Village, in that it provides Yellow Springs with a population of young citizens who could spark the economy through start up business and entrepreneurial efforts, a history it currently holds with businesses in the village including the Yellow Springs Instrument Company and The Antioch Company. The partnership between the College and the Village must continue to be strong. If young graduates of the college become integrated into the business community in Yellow Springs, the chances of regenerating a young and energized citizenry would thus increase as well. According to Callie Cary Director of Antioch College Alumni Relations, most graduates move away from Yellow Springs (C. Cary, email comm.). She did mention however, that there are 600 Antioch Alumni in the Springfield, Dayton, Yellow Springs area. Developing start up companies will give more Antioch graduates the opportunity to stay in town and contribute to Yellow Springs' economy.

In addition to good relationships with the College and an existing manufacturing base, Yellow Springs is also a community where environmental preservation and locally owned businesses are common. This dedication to homegrown industries is evident when speaking to local leaders such as Ed Amrhein and Karin Wintrow. Also, a development proposal called "Agraria" for life after peak oil, has been developed by Community Service, a local group with ties to a national grassroots organization which encourages sustainable development strategies (Community Solution). These are just a few examples where local leaders and community organizations such as Community Resources and Community Service have demonstrated their support for the existence and further development of a local, self sustaining economy. A locally owned and supported economy is one of Yellow Springs' unique and identifying traits. It is something that separates it from other communities and makes it special. The citizens and local government in Yellow Springs strive to support its businesses and their owners.

Since growth and expansion of the economy is a necessity and locally owned business is also a core tenet of Yellow Springs' social values, growth must come from within,

Community Resources
Community Resources is a non-profit community improvement corporation (CIC) for Miami Township and Yellow Springs. The board, comprised of 15 members, works on projects to promote a healthy economic base for the community. It works to retain local businesses and aid those that may need it.

"The mission of the Yellow Springs and Miami Township CIC is to provide leadership in the creation and implementation of strategies to address the need for economic development that are congruent with the values of the community (Community Resources 2000)."

Community Resources bought the 45 acre parcel to develop the Center for Business and Education. The land has been annexed into Yellow Springs and at the time of this report, the group was awaiting engineering studies to seek a PUD zoning for the site. The PUD zoning would allow a flexible site plan and would maintain 25% of the land as green space.

Community Resources has sponsored the community forums in conjunction with Community Round Table, and its president also sits on the board for the Greene County CIC. (Community Resources 2006) (C. Gasho, pers. comm.).

or must be carefully regulated if from an outside source. Due to the strong dedication to these values, Yellow Springs is a community where entrepreneurs and small start up companies have an opportunity to thrive and be successful. The opportunity for this kind of endeavor is enhanced by the cooperative nature of the town. Yellow Springs has shown its commitment to the growth and retention of its local businesses through the development of Community Resources, the Community Round Table, a group that encourages citizen involvement in the community; the participation of citizens and business owners in two community forums in 2004 and 2005; and its social conscience (see Social Equity, infra).

The Village's commitment to economic development, in keeping with its dedication to the environment, is detailed in the 2002 Village Comprehensive Plan. The Plan is a way to project the community's desires and create objectives and goals for their implementation.

One of the plan's objectives addresses the community's desire to stay the same size. Although this has been stressed many times in the past, there is now an understanding that this may not be possible or even desirable. The Village has decided that "it is more appropriate to modify the desire to "stay the same" in to actions that identify valued assets, services, programs, and amenities of the community and express a willingness to incorporate changes and growth that preserve and enhance those assets" (Plan, 2002).

Another objective is the importance of supporting a healthy downtown as a commercial center as well as a place for social interaction. This is an important issue in keeping with the identity and character of the Village, but it is also important to remember that commerce supports the Village economically. The Plan understands the significance of locally-owned and operated businesses and seeks to continue to encourage them as much as possible.

Tourism is another objective identified in the Plan. As stated in this section "There is no evidence of Village consensus on whether or not tourism itself should be encouraged or discouraged, though there seems to be widespread acceptance of the fact that if the Village is charming and interesting, people will want to visit." (Plan, 2002) The Plan recognizes the fact that is it difficult to identify direct by-products of tourism, therefore it has focused on issues that may or may not be products of tourism, such as limited parking, the need for additional public facilities, and economic development. (Plan, 2002)

The Plan contains an industrial subsection, which identifies three goals. The first focuses on providing an economic climate and support for new and existing industries. According to Ed Amrhein, Planning Assistant, there is a possibility of getting Wi-Fi in the Village. (E. Amrhein, pers. comm.)

Amrhein believes it would be an incentive in trying to get new businesses to locate in the area. There are financial aspects of the proposal that must be considered in light of a tight Village budget, however. The second part of the first goal highlights the encouragement of environmentally sustainable industries and consideration of the existing commercial/industrial sites as well as remaining open to new zones. Karen Wintrow, President of the Village Chamber of Congress, notes the importance of not only trying to attract new business with new development, but the importance of maintaining and improving the already existing buildings (K. Wintrow, pers. comm.). The second goal of the industrial subsection of the Plan is to recognize local business and industrial activity as an integral part of the community, including cooperation from the Village government, industry and Antioch College.

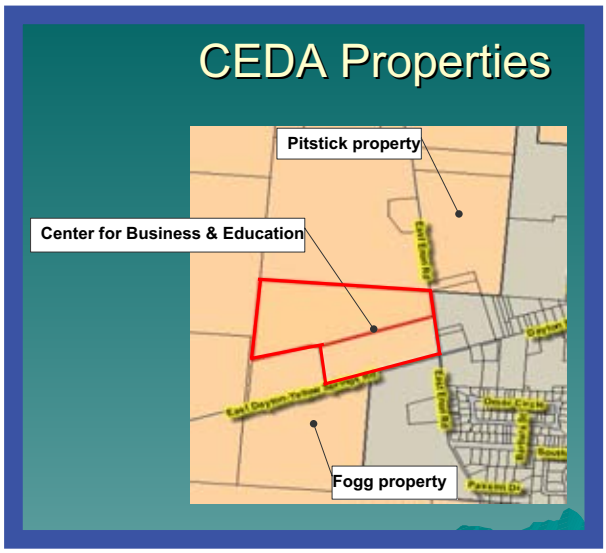
Other strengths present in the village include the diversity of businesses within the village, which have maintained a steady presence. A diverse business base helps maintain stability when the economy takes a downturn (see business diversity indicator, supra). Finally, the environmental commitment already shown by some of businesses is a positive sign for future sustainability. This commitment dates back to the founding of some local companies. A pair of Antioch College students through creativity and aversion to waste began one of the local businesses, Antioch Company, in 1926. Working after hours and using the college's press, the students created decorative bookplates on the waste from the paper reams utilized in the printing business. Today the company, which has holdings in Canada and the United Kingdom, retains its dedication to community ideals. Its website notes that, "Through decades of growth the company has kept alive the community-oriented spirit and human-centered values of its founder through recycling programs, a charitable foundation and employee profit-sharing plans (Antioch Company 2006)." Another local company, YSI Inc., makes instruments and software used in environmental monitoring and testing. It holds ecological sustainability as one of its core values (YSI Corporate 2006), and publishes a sustainability report along with its annual report. Its corporate tagline is, "Who's Minding the Planet?" The company was started by former Antioch students and enjoys a global presence. The company states that its purpose "is to be a global company which provides tools and technology for ecosystem protection" (YSI Corporate 2006). Being involved in monitoring the environment gives the company "the ability to apply both technology and free-market mechanisms to recognize the economic value that derives from ecological sustainability (YSI Corporate 2006).

Soil and groundwater contamination at its Yellow Springs site led the company to work with state agencies, environmental consultants and the community to complete the environmental investigation and remediation, and cites the experience as "a lesson in business and environmental stewardship for the Company (YSI Sustainability Report 2004)."

Future business growth plans are underway at the Center for Business and Education on the northern side of the Village with Antioch McGregor serving as its anchor tenant. This center will also accommodate other professional businesses, light manufacturing, and educational organizations. The addition of new businesses will help to combat the decrease in tax revenue the Village currently faces, as they will be sources of property and income tax revenue (Village of Yellow Springs). If marketed correctly this center has the opportunity to attract small businesses and entrepreneurial endeavors. These are the types of organizations which are conducive to the unique social and business climate of Yellow Springs.

The Village enjoys a highly educated workforce, with more than 58% of its residents over the age of 25 having a bachelor's degree or higher (Yellow Springs Cost of Living Report 2002). The residents are also deeply committed to the community, as evidenced in their philanthropy and participation in community activities. The community's dedication to the arts and environment are marketable attributes and not only make the community a desirable place to live, but could be attractive to potential employers as well. This is a trend that is emerging due to advances in transportation and technology. Traditionally people have gone where the jobs are. This is not the case today, because most businesses can operate from anywhere. More and more people are following a "quality of life model", where they choose where to live based on the amenities a community has to offer rather than the jobs available there (USDA). Yellow Springs, with its dedication to environmental preservation and open space can use these assets to attract future residents and eventually future business.

Another tool in Yellow Springs which will help to streamline economic development efforts in the Village is the Cooperative Economic Development Agreement (CEDA) which was established in 2002. CEDA is an agreement between Yellow Springs and Miami Township that helps to make the annexation process and the extension of utilities to CEDA properties easier. The CEDA agreement has enabled three properties, originally a part of Miami Township, to be annexed to Yellow Springs. This agreement was established to enable the village and the township "to more easily cooperate in creating and preserving jobs and employment opportunities, and to cooperate in inducing and fostering economic development within the State of Ohio, and more particularly within the territories to which this Agreement pertains" (Cooperative Economic Development Agreement 2002). As outlined in the CEDA document the



ED & SE Figure 1. Map of CEDA properties
Source: Village of Yellow Springs

village and township are dedicated to smart and sustainable growth patterns and are willing to cooperate to accomplish these shared goals. This cooperative effort provides an opportunity to get things accomplished with regard to economic development initiatives. ED & SE Figure 1 shows a map which highlights the three properties in Yellow Springs which are currently a part of the CEDA agreement.

An issue which goes hand in hand with an increase in jobs is the availability of decent and affordable housing options for employees. This is currently a major concern for the Village of Yellow Springs. Due to a shortage of developable land, providing affordable living options for prospective employees will require creative development strategies. This is not currently an issue within the village, but as new businesses are created in Yellow Springs, more housing will be needed to meet the needs of their employees. The focus for future development will need to be on multi-use properties which communicate the progressive and creative nature of the village. This development must be attractive to prospective residents interested in relocating to Yellow Springs. It will be very important that these new properties are aesthetically pleasing and meet the needs of a wide range of citizens.

It is currently difficult for people who are economically limited to find a place to live in Yellow Springs. Efforts must be made by city officials to incorporate housing options for people of all income levels into the zoning code.

Four special planning areas were identified as important components of the Village Plan because of their size, physical location and potential for mixed use development. They are (1) the central business district, (2) the Dayton-Yellow Springs and East Enon Roads area, (3) the King Street and Fairfield Pike area, and (4) the US Route 68 and Hyde Road area. The Plan states that a performance-based approach should be considered for any type of development within these areas. One serious issue Yellow Springs faces in their central business district is their lack of available space. The Plan states that the rule-of-thumb in the region is 1 acre of land in the CBD should be provided per 100 residents

The importance of attracting environmentally friendly industries to the village and the trepidation villagers may feel about new industries is exemplified in the abandoned and contaminated Vernay Laboratories plant. Vernay Labs specialized in manufacturing rubber components for the automotive and medical industries. The 10 acre, two building site remains empty while the company retains its headquarters in Yellow Springs. The EPA completed a study on the site in year, where it found volatile organic compounds in the soil and groundwater on the property, but found the current health risks low (Chiddister 2006) According to the EPA, Vernay is to conduct a study to determine the type of contaminants involved and the extent of contamination (EPA 2006).

Many residents rallied after Vernay's departure and recognized the need for additional development in the Village. A weekend symposiums focused on economic development and core community values and visioning was held in March 2004 and in

ED & SE Figure 2. Model of Center for Business and Education
Source: Village of Yellow Springs

2005. The 2005 forum attracted more than 100 attendees. The forums were organized by residents who formulated a group named the Community Round Table which developed a plan centered on education and development in the community. That forum, as well as previous efforts in establishing a vision that took place in 1970, 1990 and 2005, identified core community values of diversity, education, green space and a small town size of less than 5,000 people (Community Round Table 2006).

"Communities should adopt an approach to community-wide economic development which promotes maximum resource and energy efficiency. A central factor of any local development strategy is encouraging those businesses and industries that are at the forefront of environmental economic opportunities (Sitarz 1998, 250)"

The Center for Business and Education planned for the 45-acre parcel along East Dayton-Yellow Springs Road and East Enon Road is a project already in motion to improve the economic well being of the village. Anchored by Antioch McGregor, the site could be developed as an eco-industrial Park, and has the opportunity to attract environmentally-friendly businesses to the community. This new park will bring with

it new employment opportunities which will help to combat economic problems currently faced by Yellow Springs. ED & SE Figure 2 shows the model of what the Center for Business and Education will look like.

Yellow Springs does face some threats to its community in the forms of a declining work force, loss of population, decreasing school enrollment, loss of diversity in the community, threats to the green space along its western edge in Miami Township, lack of housing that is affordable to families and loss of industry. (Community Round Table 2005) These threats were the impetus for the community forums and ongoing work throughout the community.

Brownfields

The US EPA estimates there are more than 450,000 brownfields across the country. "Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment.

"With certain legal exclusions and additions, the term `brownfield site' means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant." (U.S. EPA 2006)

The EPA established its Brownfield Program in 1995 to aid local communities and states in the prevention, assessment, clean-up and sustainable reuse of such properties. The EPA notes that "cleaning up and reinvesting in these properties increases local tax bases, facilitates job growth, utilizes existing infrastructure, takes development pressures off of undeveloped, open land and both improves and protects the environment" (U.S. EPA 2006).

Benefits of brownfield remediation and reuse are felt by both the private and public sectors, and are outlined in a report for the city of Toledo in 2002. Such benefits include higher tax revenues from the increased economic activity at the site and surrounding area, job creation, better environmental quality after the site has been remediated, better public health, renewal and reuse of existing facilities, reduced urban sprawl helping to preserve greenfields that otherwise might be developed (McCarthy 2001).

Currently the Village of Yellow Springs has two businesses, YSI Inc, and Vernay Labs, which are listed on the USEPA Superfund site. Both businesses are currently working on clean up procedures. See Appendix 4 for the process being followed at the Vernay plant.

Social Composition and Programming

"The Yellow Springs community is known for its recreational attractions, wonderful downtown shops and unique restaurants. The community is culturally diverse and

ED & SE Table 1

Village of Yellow Springs: General Demographics		
	1990 Census	2000 Census
Total Population	3,973	3761
Median Age	-	41.4
Total Households	1592	1587
Average Household Size	-	2.11
Total Housing Units	1641	1676
Tenure of Occupied Units:		
Owner Occupied	966	1005
Renter Occupied	626	582

Source: U.S. Census Bureau

ED & SE Table 2

Village of Yellow Springs: Educational Attainment

	1990 Census	2000 Census
Less Than 9th Grade	1.92%	2.02%
Some High School (No Diploma)	5.43%	2.30%
High School Graduate or Equivalent	13.41%	15.20%
Some College (No Degree)	14.78%	17.74%
Associate Degree	3.71%	3.81%
Bachelor's Degree	34.40%	27.06%
Graduate or Professional Degree	26.35%	31.87%

Source: U.S. Census Bureau

represents a wide range of political and social views with an emphasis on being open and friendly" (Village of Yellow Springs). As demonstrated by the Village's own web site, Yellow Springs prides itself on its diverse community. Indeed, according to the 2000 Census, minorities constitute almost a quarter of Yellow Spring's total population. That is well above the minority population for both the State of Ohio and Greene County (see Appendix 5). Not only is the percentage of persons in a racial minority fairly high for the Village as a whole, but the distribution of the minority population in Yellow Springs is geographically diverse as well, suggesting that spatial segregation is minimal throughout the Village.

As seen in ED & SE Table 1, the Village's median age is 41. In fact, 40% of its population is between the ages of 25-54 (see Appendix 6). While the Village maintains generational diversity, it is getting older. According to the U.S. Census, its median age in 1970 was only 23 and only 10% of the Village's population was older than 55. In 1980, the Village's median age rose to 29. By 1990, it rose to almost 36. At that time, almost 21% of the Village's population was older than 55. And now, over 24% of its population is older than 55.

The Village is also an extremely well-educated community (see ED & SE Table 2). Nearly 60% of residents have either a college degree or a post-college degree, up from only 42% in 1970. That is more than double the average for the State of Ohio. In addition to being a highly educated community Yellow Springs is a fairly well-off community, with a 2000 Census median household income in excess of $51,000, compared to Ohio's median household income of almost $41,000 (see ED & SE Table 3). In relation to this, the percentage of people living below the poverty line is relatively low. In 2000 only 7% of the community was living below the poverty line, a slightly lower proportion than the State of Ohio as a whole. Unfortunately, unemployment increased sharply between 1990 and 2000, jumping from under 2% to over 8%.

Two additional social equity indicators, percent of the population that is disabled and zero-car households are shown in ED & SE Table 4. The significant increase in disabled persons in Yellow Springs seems to fit with the aging of the population describe

ED & SE Table 3

Village of Yellow Springs: Income Characteristics

	1990 Census	2000 Census
Per Capita Income	$17,019	$27,062
Median Household Income	$32,500	$51,984
% of Population Living in Poverty	7.80%	6.98%
% of Population Unemployed	1.91%	8.38%

Source: U.S. Census Bureau

ED & SE Table 4

Village of Yellow Springs: Income Characteristics		
	1990 Census	2000 Census
% of Population Disabled	10.70%	27.98%
% of Households with Zero Cars	8.49%	6.68%

Source: U.S. Census Bureau

above. Households without access to a personal vehicle is an important indicator as persons in these households face an often overlooked set of constraints, including significantly reduced employment options and restricted access to key community resources. As diverse as Yellow Springs is, the village faces some serious challenges to maintaining that diversity. This report will focus on the strength and weaknesses of the Village and the opportunities and threats to maintaining its diversity.

Yellow Springs has obvious advantages for it to maintain its diversity and increase its young population. Education may be the Village's greatest strength with regards to culture and diversity. Not only do the residents of the community have unusually high levels of educational attainment, but Antioch College promotes and fosters diversity through its student body. Yellow Springs also has a very good public school system, as rated by the Ohio Department of Education (Ohio Department of Education). While important, education is hardly the only social equity strength Yellow Springs posses. There are numerous cultural and social service organizations that provide assistance to those in need in the Village. The Village is also a very safe community (SOCDS Crime Data). In 2003, Yellow Spring's violent crime and property crime rates were lower than the near-by Dayton-Springfield area. There were no reported murders in the Village from 1998 to the present; there is also an abundance of parks and nature preserves within a close distance to Yellow Springs as well as the Miami Valley Bike Trail that runs through the village. Finally, the downtown area of the Village, offers a unique small-town atmosphere with a variety of retail and dining options.

Despite the many strengths listed above, some weaknesses exist as well that must be recognized. Yellow Springs suffers from rising housing costs (see low-income housing indicator) which may preclude many potential residents, especially young families just starting out, from being able to afford a home in Yellow Springs. The median value of a house in the Village is $151,000, well above Ohio's median home value of $103,000. Yellow Springs' housing is also significantly more expensive than nearby communities (Cost of Living Report). Additionally, rent as a proportion of income is increasing. According to the 2000 U.S. Census, 31% of people renting in the Village are paying more than 30% of their income to rent. .This issue highlights the need for more diverse housing options, and should be considered in conjunction with future job creation that occurs within the Village. Job availability is another weakness to be drawn from the social equity indicators shown above. With an increase of over six percent in unemployment between 1990 and 2000 it seems apparent that job opportunities are lacking in Yellow Springs, a problem that inevitably leads to additional social hardships. Future land use and economic development planning should focus on creating diverse work opportunities for residents across the employment spectrum, and on developing affordable housing options for existing and new residents in the Village.

Some of the same characteristics that were described as weaknesses for Yellow Springs, socially speaking, should be considered opportunities as well. The high property values, as compared to the State average, within the Village limits show that demand is high, that people desire to live in Yellow Springs. Significant opportunities exist for

the Village to attract new and retain current residents and businesses by offering its unique charm in conjunction with office and high tech/low impact industrial space. In this way Yellow Springs can continue to assert itself as a progressive, diverse community. Recent administrative changes at Antioch College also present opportunities for the Village and the school to work together to attract more young people to the area and to remain in the village upon their graduation.

Despite having a history of diversity, Yellow Springs has seen a once large racial minority population (28%) that it enjoyed decrease in every U.S. census since 1970. Housing in the area is also becoming increasingly unaffordable to most of the Village. The population is also growing older, with those over 55 making up more than a quarter of Yellow Springs' population (see Appendix 6), an increase of 5% since 1990 and more than double the number in 1970. The median age of Yellow Springs, now 41, was only 29 in 1980. This aging population will have repercussions on the community in terms of reducing young employees for new businesses and increasing the demand for community services. Compounding the age issue is that the average number of people per household has reduced from 2.84 in 1970 to 2.11 in 2000, in line with the rest of Ohio, suggesting that there are fewer children in Yellow Springs. This is demonstrated by the 38% drop in students in the Yellow Springs Public Schools (Chiddister 2005). Therefore, perhaps the greatest threat to the social well-being of Yellow Springs at this time is the aging core of the community. Yellow Springs is faced with replacing those roles in the workforce and in the community in general. The rise in the percentage of elderly calls for the devotion of more social services to those elderly who will need such services. This not only poses a threat in that already tight budgets must be stretched even further, but devoting services to this sector of society means that fewer can be devoted to services that might attract young families to Yellow Springs. This poses a difficult dilemma as Yellow Springs works toward improving the economic status of the Village as a whole.

Access and availability of human services in communities and neighborhoods is integral in the development and capacity-building of individual's and families. Persons served by human service agencies have capacities, abilities, and gifts, which makes the community stronger (Kretzman and McKnight 1993). In return, communities must be safe and healthy environments in which individuals and families are able to grow and produce positive assets to be utilized by future generations. Yellow Springs is one such community with an abundance of resources and environmental strengths of which future generations will be able to access and maintain. Specifically, the Village of Yellow Springs is rich in social and cultural heritage, which includes a rich philanthropic base, a comprehensive social service support system, and culturally relevant medical and skilled nursing facilities.

Access, as it relates to human service programming and health care, is a wide-ranging term. A sustainable and comprehensive social service system seeks to provide culturally competent service and access to individuals and families of all socio-economic backgrounds, age, ethnicity, sexual orientation, and is inclusive to individuals with disabilities. The Village of Yellow Springs is currently made up of a comprehensive social service system that includes strengths and opportunities in addition to weaknesses and threats, in its effort to provide the residents of Yellow Springs with a sustainable comprehensive social service support system.

Access to adequate and culturally relevant healthcare is a major indicator of a comprehensive social service support system. In a community context, Yellow Springs

must sustain the health of individuals by providing adequate and accessible healthcare for residents of all ages as well as suit the medical needs of a diverse population. The *2005 Yellow Springs Community Health Project*, a two-year assessment of the health and well-being of the community of Yellow Springs conducted by Ann Filemeyer and Monica Vargas of Antioch College with support from the Supplemental Environmental Projects grant from the State of Ohio and the Village of Yellow Springs, provides insight into the healthcare needs of the community. 238 households with a total of 543 household members were surveyed out of 3,761 total residents (U.S. Census). Specifically, one in seven Yellow Spring's residents are accounted for in the survey. This survey examined the access to insurance and physician care by Yellow Spring's residents. A summary of the report *Access & Approaches to Health* findings are outlined below:

- Nearly 6% of the total survey sample was uninsured (percentage was 15.7 in 2004 for the United States). (U.S. Census).
- 1 out of 4 Yellow Springs' residents in the survey sample ages 18-24. Antioch University students are required to enroll in the student health insurance plan if another insurance company does not cover the students.
- 1% of children are reported as uninsured in the survey, and no seniors are reported as uninsured.
- 5.2% of the Black/African American survey respondents were uninsured while 6.3% of the White survey respondents were uninsured finding no significant disparity.
- Medicaid covers 8.6% of the survey sample.
- 50% of the survey respondents think that Yellow Springs provides adequate health resources.
- More than 80% of the survey respondents report that they have a primary healthcare provider.

A diverse group of medical practitioners make up the types of primary healthcare providers available in Yellow Springs. A combination of Medical Doctors (M.D.), Holistic Practitioners, Traditional Healers, and Doctors of Osteopathy (D.O.) exist to meet the needs of the diverse population. Close to Thirty-nine Holistic Practitioners, 1 hospital (Greene Memorial Hospital) eight miles away in Xenia, Ohio, and nearly twenty Medical Doctors and Doctors of Osteopathy are represented in and around Yellow Springs (Yellow Springs Community Directory 2006).

Human service programs necessary to meet the needs of the aging population in Yellow Springs are numerous. The Yellow Springs Senior Center has been a gathering place for social and recreational activities for its members since 1959. Located at 227 Xenia Avenue in the business district of Yellow Springs, the Senior Center provides both office-based and community-based services. In the early years of the Senior Center, the majority of the programs funding came from government agencies and foundations. Currently, the Center is financially supported by the Greene County Senior Services Levy, donations from residents, and fundraising (Yellow Springs Senior Center 2006). Highly supported by funds from the community, the Yellow Springs Senior Center assists seniors with maintaining independently in their homes. Services include: transportation, homemaker services, grocery services, and volunteer services. According to Rodney Bean, Director of the Yellow Springs Senior Center, community volunteers play a major role in the daily operation of the center, which provides over 100 volunteer opportunities within the agency (Yellow Springs Senior Center 2006). These volunteers are necessary to assist with the daily activities and tasks to serve the needs of the senior community (R. Bean, pers. comm.). The Yellow Springs Senior Center continues to seek out interested residents for volunteer opportunities within their many

programs. Future funding opportunities are a concern to the Senior Center staff. The Senior's for Tomorrow Endowment Campaign works to build a strong financial base for an increasing senior population in Yellow Springs through the generous giving of local residents and corporations (Yellow Springs Senior Center).

Friends Care Community, an alternative for seniors who cannot remain in their homes, offers services ranging from extended care to independent living. Friends Care Community of Yellow Springs is a private non-profit senior living community founded in 1977 under the Friends Health Care Association. The Friends Care Community has progressively expanded its services over the years with the help of fundraising and the committed volunteer base the organization has developed. Assisted living services, extended care center (skilled nursing facility), and independent living services are available through Friends Care Community. Friends Care Community's services are essential to the senior population and must be maintained and continue to grow in light of the increasing aging population. As outlined in the Social Equity Indicator section of this report, the 2000 U.S. Census reports that the village's population over the age of 65 is nearly 16%, up 4% from 1990 (see Appendix 6). Furthermore, there was a significant increase in institutionalized village residents from 1980 when there were zero, to 2000 in which 71 people were institutionalized.

According to the 2000 United States Census, the Village of Yellow Springs has nearly 63 families living below the poverty level. The percentage of families living below the poverty level in Yellow Springs is 7.3% in comparison to the percentage of families in the United States living below the poverty level (9.2%) (U.S. Census). Access to social services is necessary in order for these families to maintain financially, socially, and physically in the Village of Yellow Springs. According to the *2005 Yellow Springs Community Health Project*, nearly 60% of the survey respondents reported that they have had to rely on the help of another person in the Village of Yellow Springs. Survey respondents reported that they needed help primarily with physical and mental health concerns and were able to receive that help at least 94% of the time. This statistic provides minimal insight as to the role of access and availability issues experienced by the survey respondents. To assist families living below the poverty level Greene County Job and Family Services provides the following services to eligible Greene County residents: employment and training, cash assistance, food stamps, transportation, childcare, medical assistance, and child support enforcement (Greene County Job and Family Services). The location of these services is within eleven miles of Yellow Springs and may not be easily accessible to Yellow Springs' residents who are without access to transportation. This lack of information presents an opportunity for the Greene County Job and Family Services and the Village of Yellow Springs to collaborate on a survey project that attempts to determine the level of satisfaction and accessibility of the supportive services offered by Greene County Job and Family Services.

The median household income for the Village of Yellow Springs in 2000 as reported by the U.S. Census was $51,984. Therefore, the majority of the Village of Yellow Springs families live above the median family income reported for the United States ($50,046). This relative affluence manifests itself in charitable donations by Village citizens. According to the Yellow Springs Chamber of Commerce, philanthropic giving is major part of the Yellow Springs lifestyle (K. Wintrow, pers. comm.).

The Yellow Springs Community Foundation, for example, is a public charitable foundation that supports the citizens and the community of Yellow Springs and Miami Township by promoting the arts and other cultural activities and assisting the sick, elderly, and socially disadvantaged.

The work of the Yellow Springs Community Foundation is a resource to the community, residents, and many human service organizations in Yellow Springs. Through continued financial support to the foundation, many residents and organizations will continue to receive financial assistance to maintain and increase their capacity. ED & SE Table 5 illustrates the Yellow Springs Community Foundation's allocated funds in 2004. ED & SE Figure 3 provides insight into the General Foundation Funding Patterns, 2004 for the United States.

The role of mutual aid in tight-knit communities like Yellow Springs can be identified as both strength and an opportunity as it relates to creating a sustainable community. Mutual aid in the Yellow Springs community includes neighbors, formal or informal groups, and churches assisting a Village resident financially, socially, or physically. One such example of mutual aid in the form of a committee is the Yellow Springs Emergency Welfare Committee. Through the provision of temporary and emergency assistance to residents who are experiencing a financial crisis, the Yellow Springs Emergency Welfare Committee mobilizes to assist the individual or family and refer them to ongoing support through appropriate county and local agencies. When mutual aid of this type continues successfully in tight-knit communities such as Yellow Springs, it thrives and coexists with existing formal institutions and services. In the case where mutual aid fails to act a resource to existing formal institutions, formal institutions tend to tolerate them, view mutual aid as a resource and work collaboratively, or attempt to control or suppress them (Burns and Taylor 1998). It is necessary to view mutual aid as a resource to formal institutions which have the ability to provide ongoing support and are able to track the quality and quantity of services provided to Yellow Spring's residents. The Village of Yellow Springs is a community in which mutual aid and philanthropic giving is a high priority, as proof is in the high percentage of community funding to the local community foundations.

In the last decade, there has been a shift in approach to community and youth development from a needs-focused approach to a capacity-focused approach (Kretzman and McKnight 1993). Positive recreation and social activities for youth between the ages of 13 and 17 are an essential part of positive individual and community development versus merely eliminating risky individual behaviors (Innovation Center for Community

ED & SE Table 5

Yellow Springs Community Foundation's Allocated Funds in 2004

Classification	Total Funded
Civic	$124,527
Senior Citizen Activities	$25,901
Nature Educational Programs	$9,152
Governmental	$4,753
Education	$4,200
Personal Scholarships (Youth)	$4,100
Arts	$2,973
Oper. Support. Capital improve.	$585
Total	$180,228

Source: Yellow Springs Community Foundation

General Foundation Funding Patterns, 2004

Subject	Amount	%	No. of Grants	%
Arts and Culture	$ 1,979,541	12.8	18,516	14.6
Education	3,625,448	23.4	25,689	20.3
Environment and Animals	813,320	5.3	7,374	5.8
Health	3,447,203	22.3	16,208	12.8
Human Services	2,146,396	13.9	32,294	25.5
International Affairs, Development, and Peace	419,965	2.7	2,796	2.2
Public Affairs/Society Benefit[1]	2,004,661	13.0	16,097	12.7
Science and Technology	454,848	2.9	2,214	1.8
Social Sciences	214,842	1.4	1,307	1.0
Religion	362,044	2.3	3,907	3.1
Other	9,329	0.1	95	0.1
Total	$15,477,595	100.0	126,497	100.0

Source: The Foundation Center, *Foundation Giving Trends*, 2006. Based on a sample of 1,172 larger foundations. Dollar figures in thousands; due to rounding, figures may not add up.

[1]Includes Civil Rights and Social Action, Community Improvement and Development, Philanthropy and Voluntarism, and Public Affairs.

ED & SE Figure 3. National Foundation Funding Patterns
Source: The Foundation Center

The *Yellow Springs External Perceptions Survey* (2005) was initiated by the Community Information Project, a coalition of Yellow Springs' leaders. This study set out to determine the perceptions of the Yellow Springs community by residents outside of the village. All residents living within a 15-mile radius were given the opportunity to participate through a random digital dialed telephone survey (RDD). A total of 538 respondents were interviewed. Dayton and Springfield had the most survey respondents at 94 and 92 respectively.

and Youth Development 1999). Examples of positive recreation and social activities outlined in the Innovation Center for Community and Youth Development's 1999 study include: additional artist space for youth, skateboarding parks, and numerous other capacity-building activities for youth. Recreation and social activities can be experienced through the arts, environmental and natural features of the village, or through organized sports and clubs.

According to the *Yellow Springs External Perceptions Survey* (2005) conducted by the Center for Public Affairs at Wright State University, survey respondents identified Yellow Springs as a great place to shop and participate in recreational activities. Oppositely, survey respondents did not identify Yellow Springs as a community in which educational and employment opportunities were available for young residents looking to remain in the community. The village fared well behind other Miami Valley Communities in this category of residents under 35 years old. Although recreation activities for youth were not identified specifically in this survey as an area needing improvement within the village, an article published in the Yellow Springs News in 2003, identified concerns with vandalism and disruptive behaviors were a direct result of "needing something exciting to do." Furthermore, parents interviewed for this article identified the need for a "hang out" location in the village in which youth can meet and socialize with friends under the supervision of a young adult. Teens interviewed for this article argued that youth in the village are not likely to utilize a facility of this type due to the structured nature and supervision. Currently, it is unclear as to whether or not these conflicting opinions between the adults and youth in the village have been resolved. Evidence of youth forums, discussions, or surveys related to this topic is not easily accessible. Examples of current organized programming include Boy Scouts, Cub Scouts, 4-H Club, Youth Soccer, and Youth Orchestra are available options that are highly organized and well-attended (Yellow Springs Community Directory 2006). Examples of potential recreational opportunities should be determined by asking the youth residing in Yellow Springs.

SUSTAINABILITY ANALYSIS

The opportunity assessment reported current conditions surrounding the business climate, brownfields, housing, community, and social programs. The sustainability analysis outlines recommendations to support this project's vision statement for a sustainable economic development and social equity system in Yellow Springs.

Business Climate

Recommendations in this section are designed to meet the following goals for sustainable economic development in Yellow Springs:

- Encourage and provide to the extent possible a business base supported by a range of economic possibilities with a diversity of businesses that embrace

environmental protection of natural features
- Provide opportunities for the establishment and growth of new and existing businesses.
- Encourage a balanced community with a broad social mix of incomes, religions, races, and cultures.
- Provide opportunities for expression and growth for local talent and interests.
- Protect and preserve local environmental features for present and future generations.

The recommendations that follow are aimed at achieving noted improvements in the following indicators: business diversity, occupation, renewable and non-renewable energy consumption, total solid waste generated and percent recycled, total water consumption, total wastewater treated and amount of inflow and infiltration, and diversity of land uses.

Recommendation: Education Options and Positive PR and Marketing Tools for the Village

"Going Green is Good PR"

Why go green? A green community encourages sustainable land use, practices waste minimization and pollution prevention, promotes diversity, locally-owned and operated sustainable businesses, mixed use residential areas with open space, ensures public action are sustainable, and provides adequate and efficient infrastructure among other benefits. One way in which communities support green efforts is through LEED certified building practices. LEED stands for Leadership in Energy and Environmental Design. "It is a leading edge system for designing, building, and certifying the world's greenest building" (USGBC). The US Green Building Coalition developed LEED and is responsible for the LEED accreditation exam. The benefits of green building techniques are seen in the environment, the economy, the health and safety of occupants and the community. Green buildings can increase a building's value, decrease vacancy, improve retention, optimize the economic life cycle of the building, improve productivity, reduce liability and reduce absenteeism.

At the local, state and national level, "going green" is the hot topic. The Village of Yellow Springs prides itself on their diversity of political and social views and forward thinking. Now it is time to make more people aware of the Village and what they are doing to make a difference.

Short-term tasks (1-2 years)

Create a marketing plan. Yellow Springs needs to take advantage of and make others aware of their progressive Village. The village needs to understand the importance of using their sustainable growth techniques, education programs, and other environmental initiatives as a source of positive PR. Press releases about initiatives, projects, policies, meetings etc. can bring the kind of positive knowledge, awareness and attention that Yellow Springs needs. The Village of Yellow Springs website should be updated to include a section on sustainability. The website for the city of Eugene, OR is a good example. In order to save money, the city could hire an intern from Antioch to lead this project. The website could include links to LEED education materials, the LEED directory, Press Releases, and other tools that could be used to educate and market the Village.

Medium-term tasks (3-5 years)

To obtain LEED accreditation, one must take and pass an exam administered by the U.S. Green Building Council (USGBC). Prometric testing centers located throughout the United States facilitate the tests Monday through Saturday at all of their 250 locations. The exam is $250.00 for USGBC members and $350 for non-members. There are many benefits to being a LEED accredited. Benefits include receiving a LEED accredited professional certificate, being listed in the USGBC's LEED Accredited Professional

Directory, using it as a marketable credential on your resume, being eligible for projects mandating LEED accredited individuals and more. For a Village the size of Yellow Springs it would be a great marketing tool to have one or more architect(s), builder(s), etc to be LEED accredited. Their names would be in the directory giving them nation wide identification. This could also be a way for Yellow Springs to receive recognition as a leader in sustainability, smart growth techniques, and environmental education. When it comes time for a LEED certified building in Yellow Springs, these individuals could be at the forefront of the project.

It is important for the local schools to create awareness in the youth of Yellow Springs with the idea of "going green" and the things that they can do to get involved. In the future green building techniques are not going to option; they are going to be a requirement. The EPA offers a variety of educational resources all of which can be accessed through their website, http://www.epa.gov.

USEPA Educational Resources:

- Kids (Ages 4-10, Pre-K through 4th grade) - U.S. EPA Environmental Kids Club - Projects, Games, Art and Helpful Tips
- Students (Grades 5-8) - U.S. EPA Student Center - Environmental Concepts, Activities and Tips
- High School (Grades 9-12) - U.S. EPA High School Environmental Center
- Teachers (for classroom and non-traditional educators) - Environmental Education Center - Basic Environmental Concepts and Teaching Aids
- Office of Environmental Education - Grants, training, fellowships, and the President's Environmental Youth Awards

Long-term tasks (5+ years)

Proactively search out LEED certified projects which could be located in Yellow Springs.

Recommendation: Yellow Springs Green Business Coalition

Business development and retention is vital to the economic well-being of the Yellow Springs community; however, this development must take place in an environmentally responsible manner if true sustainability is to be achieved. While many existing businesses in the Village already promote environmental and global responsibility (through the sale of organic foods, Fair Trade goods, recycling, etc.), there is no monitoring or certification system in place to encourage businesses to participate in such practices. A green business certification program developed and run by the Yellow Springs Chamber of Commerce would provide set guidelines for environmental performance to be achieved by companies who wish to participate in the program, without requiring scarce municipal resources in the form of incentives. This concept coincides perfectly with the Village Council's desire to "implement policies 'to enact eco-friendly practices without costing us up front' with financial incentives" (Mihalek 2004). The fact that so many businesses in Yellow Springs voluntarily engage in environmentally sustainable practices suggests that the idea would be well received and many businesses could join with little adjustment to their current operating procedures. As more and more companies recognize that consumers make conscious decisions to support environmentally friendly businesses, there is increased incentive to focus on an organization's "greenness" in advertising efforts. The right to display the logo of and advertise membership in the Yellow Springs Green Business Coalition would serve as just one of numerous incentives for companies to join the program. Other incentives could include member meetings as well as information sharing with other green business groups across the country, aid in attaining financial benefits for good environmental performance, not to mention providing a positive impact on the health of

the community. This program essentially provides local businesses with "a 'tool kit' of information on eco-friendly, or sustainable practices, including material on energy efficient programs" as suggested by the Village Council (Mihalek 2004).

Short-term tasks (1-2 years)

The development of a green business coalition must begin with organization and visioning by the Chamber of Commerce. This process primarily involves development of a name for the program (Yellow Springs Green Business Coalition is just an example), creation of a recognizable, marketable logo, determination of performance standards to be met by participating members, attainment of initial funding for the project, and advertisement and kick-off of the program.

As the Village is home to many artists, the Chamber may find it prudent to hold a name and logo contest for the program. This tactic would provide a free logo for the program, serve as a source of advertising, and give ownership of the project to the community.

The most important task to the success of this project will be the creation of environmental performance criteria for participation in the program. The Chamber of Commerce will ultimately be responsible for setting the standards, but other entities such as public utility providers, the Village planning office, as well as state and federal agencies should be consulted. It would be advisable to draw on existing standards set forth other similar groups across the country. One such group is the Bay Area Green Business Program. While this is a vastly larger organization, businesses wishing to join are still evaluated individually based on set criteria. Basing the program on a large established organization, such as the Bay Area Green Business Program, ensures that the standards used are well researched and environmentally relevant. Furthermore, this program's website contains a page entitled "For Government" which is designed to help public agencies develop similar programs of their own.

Bay Area Green Business Program
http://www.greenbiz.ca.gov/index.html
This program, initiated by local, state, and federal agencies, along with interested private parties, promotes environmentally responsible practices by certifying qualifying businesses as "green." Members join on a volunteer basis and must meet criteria in three categories: conserving resources, preventing pollution and minimizing waste. Member businesses are provided with a detailed framework for meeting requirements as well as ongoing information and resources to achieve environmental sustainability. The program covers seven counties in Northern California, with a Green Business Coordinator in each county. Since the program started in 1996, over 625 members have joined (Bay Area Green Business Program 2006).

Identifying and obtaining funding can be the most difficult step in the development of any program or organization, yet it is necessary for the project to get off the ground. The preliminary organizational steps listed above will require minimal funding to complete and are designed to provide the Chamber of Commerce with a well articulated, tangible model to market to potential funding sources. Non-profit environmental groups should be sought out as potential sources of start-up funds to help pay for marketing and costs associated with initiating the program. Examples and estimates of these initial costs include the following:

- Creation of 250 tri-color, circular, 4" window decals - $500 (MaverickLabel.)
- Website based on template design - $450 (Expedite Media Group)
- Printing 250 four-color, tri-fold brochures - $400 (Printingforless.com)

Organizations such as the Strategic Environmental Project Pipeline (StEPP) are ideal sources of funding as they allocate funds to public, private, and non-profit entities seeking to implement environmentally protective programs. This specific program is based in Colorado and has currently only funded in-state projects, but their website stresses a desire

to fund projects across the country (StEPP Foundation). StEPP's project submittal process focuses on projects that are ready to be implemented and that will have wide-reaching environmental impacts for the greater good, characteristics which the Yellow Springs Green Business Coalition embodies. The clear organization of requirement standards for businesses wanting to join the coalition and the logo created by a resident of the community will go a long way in demonstrating that this is a well planned project that will serve the community as a whole, and is therefore deserving of organizational funding. More information about StEPP can be found at http://www.steppfoundation.org/main.htm. After attaining initial funding to get the program started, membership dues can be relied upon for ongoing support. The cost of dues can be more than made up for through financial incentives for improved environmental performance, such as those set forth in the Energy Policy Act of 2005, which provides tax credits and deductions for increased energy efficiency by businesses and residences (U.S. DOE 2006).

Mid-term tasks (3-5 years)

During this period the program should focus on maintaining a strong base membership in the coalition, while also expanding and fostering new membership. One criteria for membership in the Bay Area Green Business Program is that member companies "Assist at least one other business in learning about the Green Business Program and encourage them to enroll" (Bay Area Green Business Program 2006). In this way the program continues to expand, and new businesses come into the coalition already informed of the requirements and benefits of participation.

Self-reporting by members and a limited performance review by the Chamber of Commerce should be conducted on an annual basis to ensure the fulfillment of membership requirements. In the event that enrollment in the program exceeds the capabilities of the Chamber, a governing body should be formed from members of the coalition. In addition to annual performance reviews, a reevaluation of performance criteria should be conducted by the fifth year of the program at the latest to ensure that they still meet leading environmental standards, and that member businesses remain innovative in their practices as this program should require more than the status quo.

Long-term tasks (5+ years)

After five years of existence the green business program will be a stable, self-sufficient entity that benefits the environment, local businesses, and the greater community. Funding for the organization should now be almost entirely from member fees, with some supplemental income from state and federal programs such as those relied on by the Bay Area Green Business Program. While it is important to conduct annual monitoring to ensure compliance with performance standards, it is also crucial for the coalition to be able to quantify the positive environmental and financial impacts that have accrued over time as a result of company participation in the program. For this reason, a larger scale audit should be conducted periodically (every five or ten years depending on availability of information) that measures larger scale environmental and economic trends. Such an audit could be based on the following indicators described earlier in this report: renewable and non-renewable energy consumption, total solid waste generated and percent recycled, total water consumption, and total wastewater treated and amount of inflow and infiltration, or on a separate list of indicators determined by coalition members.

<u>Recommendation: Establish an Eco-Industrial Park at the Education and Commerce Park</u>

An eco-industrial park lessens the environmental impact of businesses gathered in the development area. It can

be defined as "a group of businesses that work together and with the community to efficiently share resources (materials, water, energy, infrastructure, natural habitat and information: enhance economic prosperity, and improve the environment" (Sitarz 1998, 75). There are generally two models of eco-industrial parks. One is a planned center where each business in the park is engaged in an environmentally friendly activity. The second is a center where the businesses that are located there are linked by their relationship to one another, using one another's material flows as inputs to their systems (Portney 2003, 115). "The idea is that the eco-industrial park creates a closed loop for the factors of production, maximizes industrial recycling, minimizes the flows of materials into and out of the city, and produces less opportunity for the city's residents to be exposed to possible environmental hazards, particularly in transit" (Portney 2003, 116). Establishment of an eco-industrial park would also contribute to a more diversified local economy.

A Green Technology Park, which capitalizes on the growing market for clean technologies, may be ideally suited to the site. "Here, eco-industrial strategies would include shared roads, energy or pollution control infrastructures, but no material exchanges. These sorts of EIP arrangements hold great promise for helping firms and local regulators cope with emerging environmental challenges" (USC 2002, 5). Firms that would locate in such a park would be seeking shared services and focus on pollution prevention, clean manufacturing processes, and incorporate waste minimization and green building and site design (USC 2002, 16).

Short term (1-2 years)

Community Resources should establish that the business element in the education and commerce park would be developed as an Eco-Industrial Park. Businesses wishing to locate there would have to follow guidelines developed as part of the aforementioned green business coalition. A marketing strategy outlining the formation of a Green Technology Park should be constructed by Community Resources.

The site should be listed on the Economic Development Directory for Ohio. Community Resources could have the site listed at no cost by accessing the website at http://www.ecodevdirectory.com/ohio.htm and following the directions for listing your site under the Southeastern Ohio inventory.

Funding opportunities for an EIP should be secured. Some ideas for funding an EIP were explored as part of a study conducted by the University of Southern California for the Economic Development Administration (2002). Identified programs available at the federal level through the Department of Commerce – Small Business Administration include the Small Business Innovation Research (SBIR) Program, Small Business Technology Transfer (STTR) Program, and Pollution Control Loans (USC 2002, 60). More information may be found at http://www.sba.gov/sbir/indexsbir-sttr.html. The Department of Commerce – Economic Development Agency has grants available through the Public Works and Infrastructure Development grants program and the Special Economic Development Grants program, as well as the Local Technical Assistance Program (USC 2002, 60). These programs are detailed online at http://www.eda.gov/AboutEDA/Programs.xml. Programs through HUD include the Joint Community Development Program, which assists higher education institutions to undertake activities eligible under the CDBG Program (USC 2002, 60).

The U.S. Department of Energy encourages the use of renewable energy and energy efficiency technologies and offers financial assistance opportunities, which may be found at http://www.eere.energy.gov/financing/. The EPA has created a resource for communities looking

to fund environmental programs and more information on a host of programs available may be found at http://www.epa.gov/efinpage/. There is also a "Guide to Financial Resources for Eco-Industrial Parks," produced for the EPA that is available online at http://www.smartgrowth.org/library/eipfinguide.html.

Medium term (3-5 years)
As Antioch McGregor becomes established, and additional tenants are secured for the EIP, additional interest in firms locating within the park may be generated by initial successes. The Chamber of Commerce in conjunction with Community Resources should highlight the initial success of the project by seeking media coverage in the local media outlets as well as Dayton and Columbus. Community Resources should also list the EIP on the Greene County Business Development Site for potential business development. Business development should continue to follow the building guidelines and as more businesses establish themselves, the business diversity indicator will reflect the growing mix of industry.

Long term (5+ years)
Once the Vernay site has met all clean-up recommendations and is ready to be utilized, Community Resources should acquire the property and develop it in conjunction with the Eco-Industrial Park. Additional funding sources may be secured to redevelop this site. As the park fills, the site should be utilized to show other small rural communities how they could achieve a successful, environmentally friendly business and commerce park. The attention drawn to the site through both the educational component at Antioch McGregor, as well as the EIP, could attract more entrepreneurial individuals who may be interested in locating within Yellow Springs. Attracting innovative companies that could in turn rely on the highly educated local workforce as well as the advantages of the education component of the park would be ideal.

<u>Recommendation: Develop an Economic Gardening Approach to Economic Development</u>
There are many small towns across America which have been struck with a change in their economic climate. The economic landscape of small town rural America has changed drastically in the past decade due to the out migration of industrial and commercial jobs from their periphery. These industries were the backbone of American rural economies. Due to their flight from small town America, new economic strategies are needed to ensure the sustainability of these towns. Yellow Springs is an example of a small town which needs to develop new economic plans that will allow it to thrive in the twenty first century.

It is important to realize that the industries of the past are not coming back and that a totally new vision is needed to spur economic growth. A trend that is spreading rapidly across the United States today in small rural communities is the emergence of entrepreneurial economies. Due to the internet and other technological advancements, physically being in an office or driving to the nearest metropolis for work is no longer necessary. This kind of strategy requires the town to look outside the framework of the past and to imagine a lifestyle different from what they are accustomed to. Yellow Springs, with its educated and creative citizenry is a perfect place for this kind of "economic gardening" to be realized. The term economic gardening implies that the community develops and sustains its economy from the inside, in contrast to the traditional method for economic development of "economic hunting", where a community tries to get outside businesses to relocate in their town. Creating diversity in the business climate can only help to improve the culture and social quality already present in the Village.

According to the vision statement presented in this study, Yellow Springs seeks a community where its residents can live,

"Silicorn Valley"
Fairfield, Iowa has established it's self as the silicon valley of the Midwest, due to the number of start up companies and entrepreneurial endeavors that have been started there in the past 15 years. Fairfield is home to the Maharishi University of Management. Students of the university have played a part in many of these new entrepreneurial efforts. In fact "Professor Keith Levi says many of his students in computer science have either started their own companies or found jobs with the half-dozen or more software companies in town" (www.alltm.org). Additional information can be found about Fairfield, Iowa at (www.fairfieldiowa.com).

work and play within the village boundaries. Building upon the entrepreneurial endeavors already present in the Yellow Springs will further encourage people to work and live in Yellow Springs rather than treat it as a bedroom community where residents only come to sleep. Yellow Springs has a clear advantage over many other small towns because the Village already has an established identity as a unique and quirky place. This is a very important step in the process of deciding what economic strategy most clearly communicates the personality of the community. Economic gardening and energizing entrepreneurial efforts are the best and most realistic economic development strategies available to the village of Yellow Springs. Traditional economic development strategies are no longer feasible solutions in our changing world: "Routine manufacturing, agriculture and natural resource based activities have struggled to remain competitive in the face of increased global competition. As a consequence, the traditional economic development strategies of industrial recruitment and retention/ expansion have yielded fewer favorable outcomes in rural places" (Markley 2006).

Yellow Springs already has a great framework from which this economic strategy can build from. The Village is a cooperative town which seeks to improve the quality of life of its residents. The proposed plan of economic gardening needs to take this established community cohesion to the next level. The citizens and local government must work together to develop programs that further encourage entrepreneurship and self sustainability. Education of the community and social discussion must happen for this kind of plan to be successful. The concept of economic gardening is relatively new and has been developed by communities that have been in similar economic situations as Yellow Springs. One such town is Fairfield, Iowa, a town of roughly 10,000 people, who has seen the development of 400 new companies and the creation of 2,000 new jobs since 1988.

One thing that makes this strategy so appealing and fitting for Yellow Springs is the established plan of the Center for Business and Education. Although the completion of this plan is a few years away, it serves as a strong base around which to formulate entrepreneurial efforts. The Center for Business and Education can serve as a home base or incubator location for some of the proposed start up companies that Yellow Springs can develop through this economic gardening plan. Having infrastructure in the works for this business strategy gives the Village a head start when comparing it to other communities who are in the infant stages of developing an economic strategy. In addition to being a place where businesses can locate, it will also serve as a place where residents can be educated about entrepreneurial efforts and the effects that they can have on their community.

Arkansas, Venture Capital Act of 2001
"The (Arkansas) Venture Capital Act of 2001 allows the Arkansas Development Finance Authority to support investments in venture capital firms that actively look for deals in Arkansas. The Arkansas Capital Corporation created the Commerce Capital Development Company under new state legislation authorizing a 33 percent state tax credit for investors who financially support Arkansas ventures" (www.southern.org).

Another existing resource that the Village must take advantage of is the presence of Antioch College and its existing curriculum which encourages cooperative endeavors. As reported by Callie Cary, Director of Alumni Relations, Antioch used to have a summer program where entrepreneurial endeavors were taught. This program has since been abandoned. The Village should work with the College to redevelop programs that will make it easy for students who are prospective entrepreneurs to realize the possibility of owning and operating their own business. Additionally, the Village should get involved with The Center for Community Engagement at Antioch. This organization is dedicated to "community service and providing curricular and co-curricular service learning opportunities" (Antioch College). The College and the Village need to join together and identify different sources where financial capital can be raised and invested in such programs. Ohio has economic development policies but none are geared specifically toward entrepreneurial growth. Other states such as Arkansas with its Venture Capital Act of 2001 (Southern Growth Policies Board) and Kansas with its Kansas Economic Growth Act of 2004, (Entreworks Consulting) have legislation that encourages and funds entrepreneurial endeavors. Ohio does not have legislation as of yet for these kinds of businesses. However, there is no time like the present to start to petition state legislators for these kinds of economic development incentives. A breakdown of the village time line for this economic development strategy is as follows.

Short-term tasks (1-2 years)

The Yellow Springs Chamber of Commerce should spearhead the effort to further develop the entrepreneurial environment of the Village. The chamber should begin this process by collaborating with such groups as Community Resources, The Yellow Springs Men's Group, and Community Solutions to develop a program to educate the village about entrepreneurial businesses and what they can do for a small town. Organizing and Educating the public about entrepreneurship can be done through community forums like the previous symposiums held for Smart Growth for a Small Town. Additionally Yellow Springs should work with The Center for Community Engagement at Antioch College and try to develop a community group that helps to spread the word through the village about entrepreneurship. Also in collaboration with the College, The Yellow Springs Chamber of Commerce should work with Antioch to develop a curriculum or extra curricular group that is geared toward entrepreneurship. The program at Antioch College which would be most consistent with this plan is the Economics Department. If the college and Village can work together to receive funds through venture capital organizations or through Third Frontier grants, the possibilities for start up businesses are endless. In their effort to educate the public The Chamber of Commerce also must work with local schools to integrate an entrepreneurial education program into their curriculum. An example of a school working entrepreneurship into its curriculum is E-Prep or (Entrepreneurial Prep), a charter school in Cleveland Ohio. While Yellow Springs should not develop a new school, they should make entrepreneurial education apart of the students' everyday curriculum.

> This summer, the Cleveland Municipal School District will introduce a new charter school that promises that every one of its sixth-graders will gain acceptance to a four-year college by the time they graduate. The Entrepreneurship Preparatory School, which will operate year-round, will teach 125 students the skills they need to work toward an individual enterprise. It plans to add a grade each year and grow to 500 students by 2013. Commonly referred to as E Prep, the school is an outgrowth of the E CITY after-school and summer program for children from low-income families, which was founded by John Zitzner, former president and CEO of Bradley Company, a Cleveland-based software firm. (www.ed.gov)

Ohio Venture Capital Firms

- Adena Ventures – (www.adenaventures.com)
- Blue Chip Venture Company – (www.bcvc.com)
- Brantley Partners – (www.brantleypartners.com)
- Equitek Capital – (www.equitekcapital.com)
- Morgenthaler – (www.morgenthaler.com)
- NCIC Capital Fund – (www.ncicfund.com)
- Nationwide Mutual Capital – (www.nationwide.com)
- Primus Venture Partners – (www.primusventure.com)

Since there is no direct funding available from the State of Ohio at this time for Entrepreneurial Businesses, funding will need to be secured from other resources. Currently there are several venture capital firms which seek to invest in new start up business in Ohio. The Yellow Springs Chamber of Commerce as well as Yellow Springs City Officials should contact some of these organizations in order to get a feel for what the village would need to do in order to secure some of these funds.

Medium-term tasks (3-5 years)
Upon completion of the Center for Business and Education, Community Resources should remain the key player in this effort and seek new businesses to fill the site. By this time the educational efforts put forth by the village should have sparked some new business ideas by local residents and funding for these businesses should be secured through venture capital or governmental sources as outlined previously. Community Resources should be the leader in this effort, but should be supported by Village leaders as well as all other community organizations. This is a huge undertaking for the Village and everyone will need to come together to make it happen.

With the completion of the Center for Business and Education will be the establishment of Antioch McGregor as the anchor tenant of this location. City officials as well as local community groups need to work together with Antioch officials to establish an entrepreneurial curriculum that can be offered as a feature of the management program currently offered by the school. Having entrepreneurial education classes and businesses in the same location will create excitement and certainly an opportunity for students and employers to benefit from the existence of the other. These are the kinds of cooperative efforts that have made towns like Fairfield, Iowa so successful and able to retain more of their educated population.

Long-term tasks (5+ years)
As more entrepreneurial businesses come to Yellow Springs people will begin to realize that you can work there as well as live there. In order for word to spread about Yellow Springs and their new businesses a marketing strategy must be established. The new economic aspect of Yellow Springs as a haven for entrepreneurial businesses should be packaged with its dedication to green businesses and ecological preservation. As mentioned earlier, this marketing could be done thought local television and radio networks throughout Ohio. Another advertising method which may reach other well educated individuals is to advertise on college radio stations and possibly even National Public Radio. Yellow Springs needs to establish it's self as an innovator in Ohio with regard to its economic and environmental philosophies. In the long run it could even generate national attention, like Fairfield, Iowa, as a small town which has accepted the changing economic climate and has adapted to thrive in

A realistic goal for Yellow Springs is to develop 10 to 15 new businesses in the village in the next 5 years. Some will be able to locate in the Center for Business and Education and others will be able to operate from homes or cooperative establishments that are available in the

Advantage Valley Receives $2 Million from W.K. Kellogg Foundation for Entrepreneurship Development Collaborative.
The W.K. Kellog Foundation granted $2 million grant for the Advantage Valley Entrepreneurship Development System Collaborative. "This award is a huge gain for the region and shows how regional cooperation results in a win-win situation for all concerned. No single agency would have met the requirements to compete successfully. By coming together, they accomplished what none could do on their own. The Advantage Valley Board believes this is just the first win resulting from regional cooperation." (www.advantagevalleyels.com)

village. The establishment of 10 to 15 new businesses in this time frame will allow area residents to see that this type of an economic development strategy is feasible and able to succeed in a rural area like Yellow Springs. Success of local businesses will breed additional interest in such endeavors and should serve as a catalyst for future development of similar businesses.

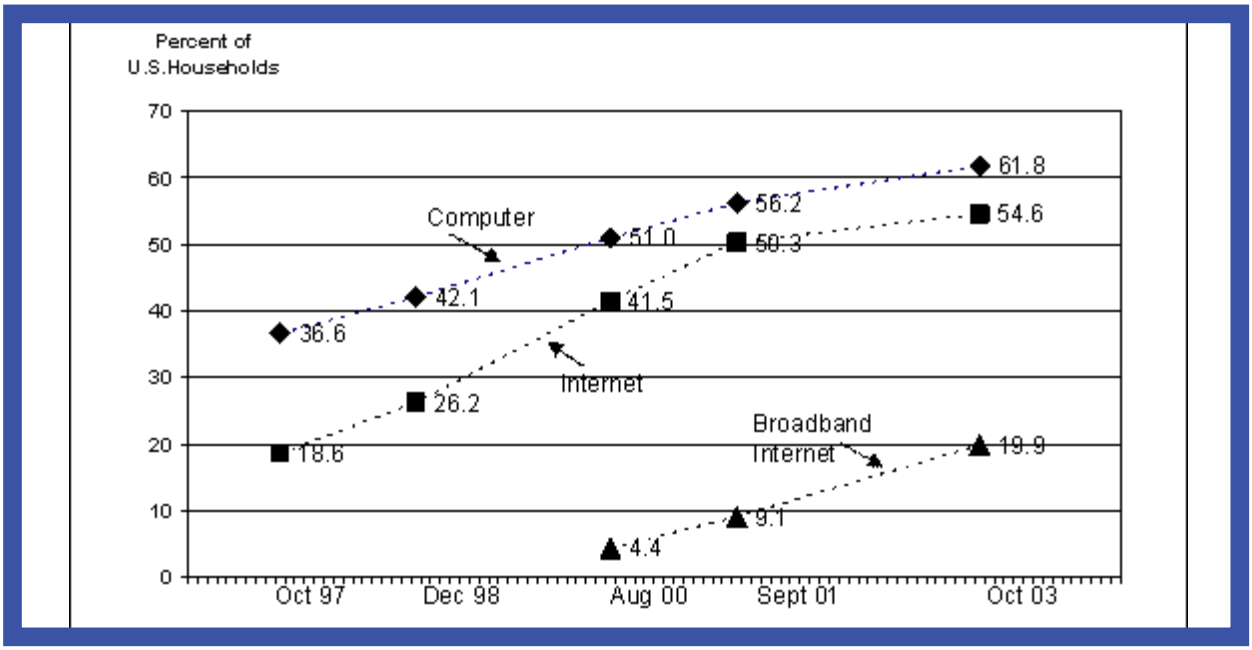
At the 5 to 10 year range the Village and the Chamber of Commerce should develop a support system for local and regional entrepreneurs. These types of support systems build power for your region when trying to obtain money from national entrepreneurial resources. An example of an organization who has joined together to cooperate across regional and state boundaries is the Advantage Valley Entrepreneurial League System (ELS). The ELS is made up of 12 counties in Ohio, West Virginia, and Kentucky. These areas were originally in need of much financial assistance but formed this alliance and are now thriving economically. It is a testament to working together with you neighbors to meet a common goal. This could be a possibility in the Miami Valley region after Yellow Springs has established it's self as the area leader in entrepreneurial endeavors. Joining together with area communities to try and secure further funding for start up business and locally owned economies will be much easier if working with the entire region.

Recommendation: Development of a Wireless Internet Network

Traditional internet connections, such as the dial-up modem, a DSL, cable modem, and T1 lines require a wired connection to a computer. Wireless fidelity, or Wi-fi for short, provides high-speed broadband internet connections without the physical connection required by the other internet connections. Wi-fi works by placing a series of antennas throughout an area. Each antenna broadcasts a "bubble" of connectivity, overlapping with the other antennas in the area, forming a "cloud" of connectivity in the area. Any PC, laptop or wireless device can connect to the internet using the connectivity provided by the Wi-fi (Scott and Chesly 2005). The antennas used for Wi-fi connections are small and (relatively) inexpensive. They can be placed on top of city lights, buildings, or even silos (Scott and Chesly 2005). The more number of antennas, the stronger the network will be. In Philadelphia, Pennsylvania, it was estimated that anywhere from 8-16 antennas would be needed in a square mile, depending on the land and its topology (Scott and Chesly 2005).

The internet has changed the everyday lives of Americans and the World. As of October 2003, 54.6% of U.S. households had an internet connection, and 20% had a high-speed or broadband connection. (U.S. Dept. of Commerce 2004).

Broadband connections, allowing individuals to download information much faster than a dial-up or DSL connection, are much less common in rural area of the U.S. than in urban areas. As demonstrated by these charts. 22% of rural households with a dial-up connection say that a high-speed connection is not available, compared to only 5% of the same people in urban settings.

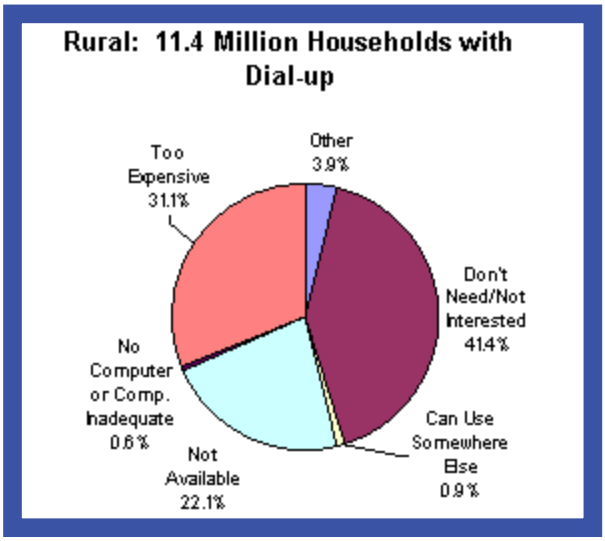


ED & SE Figure 4. Percent of Households with Computers and Internet Connections
Source: A Nation Online: Entering the Broadband Age

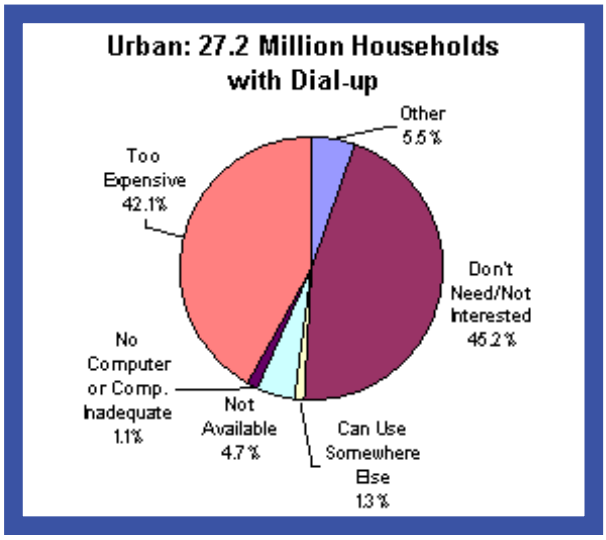
There are a variety of reasons why high-speed internet connections are less likely to serve rural areas. Because of this unavailability, many small municipalities are installing and operating their own broadband networks for their citizens. In fact, rural, outlying municipalities, for so many years without fast internet service, have been at the forefront of municipally-owned or operated Wi-fi networks. The networks provide inexpensive internet access for those who otherwise could not access it, or could not afford it (Gnatek 2006). Additionally, municipal networks are concerned about community needs and interest in a way that large internet providers can not be (Feld and Rose 2005).

Some examples of small municipally-owned or operated wireless networks include:

- Chaska, Minnesota, population 18,000, 16 square miles. The city installed its own wireless network for somewhere between $600,000 and $800,000. It sells access to its residents for $15.99 a month and had a 20% market share



ED & SE Figure 5. Rural Broadband Usage
Source: A Nation Online: Entering the Broadband Age



ED & SE Figure 6. Urban Broadband Usage
Source: A Nation Online: Entering the Broadband Age

within the first year (Tropos Network 2004).

- Granbury, Texas, population 5,700, 9 square miles. The city contracted with an outside entity to install a wireless network. The city paid $305,000 for the entity to install and operate it. The city's residents pay $19.95 a month for the service (Tropos Network 2004).
- Scottsburg, Indiana, population 6,000, 5 square miles. The city installed and operates its own wireless network. It costs the city $385,000. Residents pay $35.00 a month for basic Wi-fi connection (MuniWireless 2006).

A Wi-fi network is incredibly less expensive to install then the alternative of fiber optics for a city-wide network (Dandin Group 2005). There is an obvious large cost at the beginning of the process to install the antennas used for the wireless connections. This cost has been estimated by one study to be $60,000 per square mile (Scott and Chesley 2005). Yellow Springs is only 2 square miles. Therefore, while the initial costs will be a lot in these tight times, it will be smaller than the other cities listed above, likely somewhere between $150,000 and 250,000. There would, of course, also be ongoing costs associated with the upkeep of the network, should Yellow Springs decide to maintain its own network, as we will encourage it to do later. The USDA Rural Broadband Access Loan and Loan Guarantee Program does provide loans and loan guarantees for the construction and acquisition of facilities and equipment for the development of broadband services in rural communities. This program is eligible to communities with populations less then 20,000.

The benefits to a municipally-owned wireless network are numerous. First, Yellow Springs can provide internet access to its own citizens for a small fee. This accomplishes two things. First, it provides monthly income to the city, which can be used to maintain the network and to repay the costs of the network. Second, high-speed internet is available to Yellow Springs for no less than $45.00 from ATT/SBC or Time Warner (pers. comm.). The Village could offer its network for half of that amount, and its citizens would no longer have to spend all this money on internet access to out-of-town providers, thus keeping more money within the Village, hopefully to be spent within the city as well. In a related vein, it would allow the Village's citizens to use incredibly fast internet connections.

Public safety is made more efficient due to the wireless networks. Wireless networks allow for more efficient processing of paperwork and connection between various departments within a city, allowing for faster communication. The city of Granbury reduced its police force salary and overtime by $78,000 in its first eight months of wireless networks (MuniWireless). Maybe most importantly, Wi-fi provides the base for the development of economic growth within a city. George Ford and Thomas Koutsky studied the economic development effect of municipally-owned networks (in this case fiber optics). They looked at a city in Florida (Lake County) that began offering a broadband network to its residents and businesses in 2001. They compared Lake County to similar cities that lacked the municipally-owned broadband networks. In their study, they found that compared to those other cities, Lake Charles experienced a dramatic increase in economic growth since offering its municipally-owned broadband service (Ford and Koutsky). A similar study reviewed the economic growth of Cedar Falls and Waterloo, Iowa. (Kelley 2004). The cities are adjoining communities. Waterloo has a population of 69,000 while Cedar Falls' population is only 36,000. However, Cedar Falls installed a citywide fiber optic network in 1996 (again, not Wi-fi, but comparable in that it brought high speed internet to the community) and Waterloo's internet service is provided through the private sector. Although not a scientific study, the

figures reveal that Cedar Falls has not lost a business to relocation, while a number of businesses in Waterloo relocated or expanded to Cedar Falls (Kelley 2004). Also, in 2002, new construction in Cedar Falls doubled that in Waterloo. Between 2003 and 2004, Cedar Falls added 15 businesses in one of its industrial and technology parks. Finally, a report on South Dundas, a county in Ontario, Canada, revealed that its fiber optic network generated 62 new jobs, 2.1 million dollars in commercial expansion, and $105,000 in increased revenues and cost-savings (Curri 2003). These studies demonstrate the significant effect municipally-owned networks (Wi-fi or fiber optic) have on a city's economic growth.

In order to provide opportunities for the establishment and growth of new and existing businesses, we recommend that Yellow Springs provide its citizens a municipal Wi-fi network. There are alternative methods to accomplish this goal. First, the Village could do it by itself. This is how the city of Scottsburg, Indiana started its network. A loan from the USDA program would help the Village afford this route. The obvious advantage to this method is to retain ownership of the network. Alternatively, Yellow Springs could partner up with another entity, such as Antioch College, or other nearby cities/counties, and enter into a joint venture to bring Wi-fi to the area. The city of Cumberland, Maryland did this to create its municipally-owned network. It formed a joint venture with the surrounding county, the local school board, and the public libraries to provide its citizens with a local network (Dandin Group 2005). Finally, the Village could contract with an outside entity that would install and/or run the network.

We recommend the Village to contract out the installation of the network but to retain ownership of the Wi-fi network, much like it owns its other utilities. By retaining ownership Yellow Springs can react to its residents' concerns and provide them with quality service.

Short-Term Goals (1-2 years)
In order to begin the process for installing a wireless network, the Village should create a position to oversee the network, or assign the duties to an existing employee. Bids must be set out for the installation of the Wi-fi network. The Village also must apply for USDA loans. Inquiries should be made to possible local groups or organizations who may express interest in helping to pay for the network.

Medium-Term Goals (3-5 years)
Once a network is up and running, the Village should attempt to sign up its local residents onto the network and to promote efficiency in its public services through the use of the network. This can include placing lap-tops in police cars as well as better communications for public officials.

Long-Range (5+ years)
In the long run, the Village should measure to determine whether the network has created new business growth and development and increased employment in the Village.

Brownfields
Instead of simply redeveloping a brownfield site to its most economically efficient use, the EPA in 1998 began to encourage their conversion to a more sustainable context and established guidelines for achieving that goal. It suggests that "as communities decide the use of the property; they must consider how the proposed use will contribute to ecological, economic, and social integrity" (Portney 2003, 91). In keeping with the vision of providing a business base supported by a range of economic possibilities with a diversity of businesses that embrace environmental protection, it is important to guide the direction of the remediation and reuse of the Vernay plant, and prevent, to the extent possible, any new contamination from emerging. The recommendation pertaining to brownfields seeks to address the following stated goals:

- Provide a safe and harmonious living environment.
- Encourage and provide to the extent possible a business base supported by a range of economic possibilities with a diversity of businesses that embrace environmental protection of natural features
- Provide opportunities for the establishment and growth of new and existing businesses.
- Protect and preserve local environmental features for present and future generations.

By implementing the following brownfield recommendation positive progress should be seen in the indicators for business diversity, brownfields, and vacant lots and areas.

Recommendation: Monitor, Remediate and Redevelop Brownfields.

Short term (1-2 years)

The Chamber of Commerce in conjunction with Community Resources should establish a listing of brownfield sites, as well as a listing of current industrial or manufacturing operations that could potentially become brownfields. By having the list readily available, as businesses move, expand or close, the community would be aware of potential problems that could be incurred if the property were abandoned. Knowing where a problem might develop would allow the city to take a proactive approach with current owners to ensure that proper environmental procedures were followed if the business were to relocate or close.

Establishing an inventory of brownfield sites may be difficult due to the reluctance of property owners revealing possible contamination. However, using information gather from a variety of sources such as official environmental information, formal non-environmental information, and informal information (Coffin 2003). Data gathering for such a list includes gathering tax records to determine if the property is delinquent and noting the type of business and cross listing the information. More information may be found at http://cepm.louisville.edu/Pubs_WPapers/PDF_Docs/brownfield_nformation.pdf.

Community Resources or the Chamber should also monitor progress on the remediation at the two current sites listed on the Superfund site, Vernay Labs and YSI Inc. Both sites are already undergoing clean-up procedures under the auspices of the EPA.

Medium term (3-5 years)

Community Resources and the Chamber should continue to monitor Superfund sites as necessary. The groups should also work with existing business enterprises to discourage practices that would potentially harm the environment or lead to the site becoming a brownfield.

When the Vernay property is cleared by the EPA for redevelopment, Community Resources should acquire the property for redevelopment as part of a Green Technology Park.

In determining the future use of the Vernay plant, Community Resources should register with a new system that helps determine feasible options on brownfield sites. The new system is being developed in conjunction with the EPA, called SMARTe. It stands for Sustainable Management Approaches and Revitalization Tools. It is a free, web-based decision support system that aids in evaluating future reuse scenarios of contaminated land, encompassing all aspects of the revitalization including planning, environmental, economic, and social concerns (SMARTe). The EPA states that “the tool is intended to be used by brownfield project stakeholders for assessing both market and non-market costs and benefits of redevelopment options, clarifying both private and public financing options, evaluating and communicating environmental risks, and easing access to pertinent state-specific information related to specific projects. SMARTe will provide the

analytical tools needed to implement and integrate each component of the decision process" (U.S. EPA 206). It is expected to be fully operational by October 2007.

Other funding sources in brownfield remediation include the Clean Ohio Revitalization Fund, which provides money for brownfield clean up activities and is implemented through the Ohio Department of Development through its Office of Urban Development in consultation with the Ohio EPA. http://www.odod.state.oh.us/ud/CORF.htm

Long-term tasks (5+ years)
As Yellow Springs embraces sustainable development through the recommendations outlined in this plan, the requirements for new businesses meeting environmental guidelines should help ensure that no new brownfields occur in Yellow Springs. Continued monitoring of existing businesses through the green business coalition will help to this end.

If new brownfields are identified, additional funding resources can be found through the EPA's 2005 Federal Program Guide, which can be found online at http://www.epa.gov/swerosps/bf/partners/2005_fpg.pdf. The guide outlines technical and financial federal opportunities for cleanup and redevelopment.

Social Composition and Programming
The following recommendations relating to social composition and programming are intended to achieve the following stated sustainability goals:

- Encourage a balanced community with a broad social mix of incomes, religions, races, and cultures.
- Provide a safe and harmonious living environment.
- Provide opportunities for the establishment and growth of new and existing businesses.
- Encourage an abundance of cultural opportunities.
- Provide opportunities for expression and growth for local talent and interests.

Implementation of the following recommendations will lead to progress in the indicators of business diversity, racial diversity, age, occupation, charitable donations by Yellow Springs residents retained locally, and social service activities.

The goal of the Village of Yellow Springs as it relates to sustainable economic development is to encourage and provide a business base supported by a range of economic possibilities with a diversity of businesses that embrace environmental protection. For communities to ensure that their resource uses do not exceed the replacements, consideration of numerous sustainable economic development concepts should be explored (Serageldin 1994). To meet the economic needs of current and future generations, each generation must consider its consumption of assets (i.e. natural resources, physical capital, and human capital) in order to make investments sufficient enough to increase assets for future generations. In the case of Yellow Springs, philanthropic giving and mutual aid is of high importance to the residents. Residents are always eager to contribute their talents, expertise, and finances to projects that are in line with the mission of the Village. Much of the philanthropy and charitable giving within the village has been directed towards the nonprofit, arts, and education sectors of the economy (K. Wintrow, pers. comm.). Generally, philanthropic giving supports local social service agencies, funds higher education opportunities, provides affordable housing options, and promotes and overall higher quality of life for all residents. The Yellow Springs Chamber of Commerce is currently undertaking a strategic planning process in which the Chamber of Commerce will further define their role as it relates to managing and analyzing data and statistics of their member organizations (K. Wintrow, pers. comm.).

Therefore, it is currently unclear if there have been any previous attempts to quantify the social indicator: charitable donations by Yellow Springs' residents retained locally. This measure is important because the amount of volunteer and philanthropic giving by residents of the village is an essential indicator of current and future giving as one of many efforts necessary to sustain the local economy in Yellow Springs. Furthermore, this measure also seeks to determine the extent to which nonprofit organizations depend on funds from local foundations as a means to financially sustaining their organizations. The Village of Yellow Springs Community Foundation provides the following financial support to local nonprofits.

- YS Community Foundation provided 10 local nonprofit agencies with grant funding in 2004.
- 95% of the foundations assets are direct donations from Yellow Spring's residents as referenced in the opportunity assessment. (Yellow Springs Community Foundation).
- In 2004, the foundation reported that of $180,228 allocated to community organizations, 100% of the funds were allocated to local organizations.

In order to meet the sustainable economic development goals of the Village of Yellow Springs, local nonprofit and community organizations should continue to be a presence in the village. These organizations provide services, which include: emergency assistance, affordable housing, transportation, and youth programming. It is imperative that the local community foundations and other grant making organizations continue to provide funds to local nonprofits in a manner that promotes sustainability.

Recommendation: Charitable Donations by Yellow Springs Residents Retained Locally

Short-term tasks (1-2 years)

Quantify the total dollar amount of funds allocated to local nonprofit organizations by charitable organizations.

Local charitable organizations, philanthropists, and local grant makers must collaborate to quantify the total dollar amount of funds allocated to local nonprofit organizations. Furthermore, this group will determine from that figure the type of programming/activities receiving the most funds, areas for improvement, and means to sustain or increase the capacity of local organizations. The Yellow Springs Community Foundation and the Morgan Family Foundation and the key stakeholders outlined above should form a consortium that meets twice yearly to gather the data and form a detailed report of philanthropic giving in the Village of Yellow Springs. Financial statements, IRS 990 forms, and local endowment funds are available data resources necessary to examine historical giving trends. This information can be tracked through the use of an Access database and the research skills of an Antioch University Student. This analysis could be conducted by individual undergraduate or graduate level students or as a group research project either option would provide students with course credit for the work. The key stakeholders would be responsible for meeting with the student to provide pertinent financial information and historical data relevant to the organizations giving. This recommendation seeks to be comprehensive; therefore all identified individual, private, and public charitable organizations will be requested to participate. The Yellow Springs Chamber of Commerce should become involved in maintaining hard copies of the data and the identified college student(s) should provide the chamber with access to the database and the necessary training to update the database.

Mid-term tasks (3-5 years)
Develop a Yellow Springs Annual Report of Philanthropic Giving

Based on the quantitative data collected from the above stated projects, a budget should be developed by local community foundations and nonprofit organizations regarding the costs of developing an annual report. This report will serve as a reference guide for village residents and national foundations as to the state of philanthropic giving in the Village of Yellow Springs. A similar report was developed in North Carolina (2004) entitled: *Philanthropy in North Carolina Is a Work in Progress in a State of Change*. Community organizations, nonprofits, residents, local government, and community foundations collaborated to develop a comprehensive report detailing the historical, current, and future progression of philanthropic giving. Leading this project should be 3-4 agencies in the village that benefited from funding from local foundations. These agencies should volunteer to begin the planning process for this project. Local residents and agencies will be asked to submit essays, artwork, photographs, and program highlights to the planning committee to be incorporated into the annual report. Local community foundations will play a major role in guiding the process as well as promoting fundraising to support the project financially. A Street Fair hosted by local community and nonprofit organizations could potentially serve as a fundraiser in which crafts and independent services could be auctioned off. In order to sustain the funding of this report yearly, local foundations could plan an annual benefit and presentation in which community service awards and honors are given to residents, organizations, beneficiaries, and donors.

Long-term tasks (5+ years)
Market the Yellow Springs Annual Report of Philanthropic Giving.

Z. Smith Reynolds Foundations
In 2004, the Z. Smith Reynolds Foundation trustees and staff spent time trying to better understand the changing face of philanthropy in the state, particularly identifying where gaps in giving patterns exist as correlated to the population and known needs.
The title of the 2004 Annual Report is Philanthropy in North Carolina Is a Work in Progress in a State of Change. Its contents include several essays that describe various kinds of philanthropic giving in North Carolina, including a lead essay by Todd Cohen, Editor of The Philanthropy Journal. Also included are grants made in 2004 and guidelines regarding the Foundation's new application (Z. Smith Reynolds Foundation, 2004 Annual Report).

The process of developing an annual report and analysis of philanthropic giving in the Village of Yellow Springs can become a catalyst to promoting the success of the village to other cities and states. Developing a strategic planning committee to construct goals for continued marketing of the Yellow Springs Annual Report of Philanthropic Giving is key to this process. This strategic planning committee should be comprised of local residents with marketing expertise, the chamber of commerce, and the local foundations.

<u>Recommendation: Build Capacity of Local Nonprofit Organizations</u>
The sustainable economic development goal for the Village of Yellow Springs is to encourage and provide a business base supported by a range of economic possibilities with a diversity of businesses that embrace environmental protection. Nonprofit organizations in general are fairly undercapitalized due to the fact that they are oftentimes limited to one funding source- the charitable donation (Kretzman and McKnight 1993). Charitable organizations, community foundations, and private foundations are becoming more conscious of innovative ways in which nonprofits can become self-sustaining and self-reliant (In Business Magazine 2000). The term self-sustaining, as it relates to nonprofit organizations,

oftentimes allude to the business terms of entrepreneurial thinking and funding diversity. Funding for the majority of nonprofits is already diverse in which much of their budget is comprised of charitable contributions, government grants, and other sources. The Yellow Springs Community Foundation promotes self-sustaining nonprofits through the provision of funding for organizational capacity-building activities such as leadership development, technology assistance, and training, purchasing land or office space. Of the $160,793 dollars in discretionary grants allocated to local organizations in 2004, $122,556 (76%) was allocated to capacity-building activities that will improve the organizations ability to become self-sustaining.

Determining the number of dollars devoted to capacity -building activities of local nonprofit organizations is an imperative measure as it relates to the sustainability of effective and productive organizations. These measures will support decision-making of the residents in continued giving and provide them with additional information on the manner in which their funds were used. This information can be easily provided to the residents through the reporting of capacity-building measures by local nonprofits and human service agencies. However, it is not the sole responsibility of local foundations and grant makers to provide funds to build the capacity and infrastructure of local agencies. Developing an entity or program that serves the local nonprofits and grass-roots organizations with technical assistance, mini grants, developing management information systems, tracking capacity-building outcomes, and developing management and financial plans is essential. Currently, much of this work is being ignored and many nonprofits in the United States do not have enough money to focus on these aspects of their organizations (In Business Magazine 2000). Community Resources, a nonprofit community improvement corporation (CIC), aims to foster and support economic and cultural life in the community by coordinating and supporting the efforts of local government, community organizations and local businesses (Community Resources 2006). Community Resources currently maintains an online database of community resources located in Yellow Springs.

Short-term tasks (1-2 years)
Develop a community survey of nonprofit and community organizations.

The Yellow Springs Chamber of Commerce should develop a community survey of local nonprofit organizations to determine the dollar amount of local funding to nonprofit and community organizations. This survey can be developed by using free or low –cost online survey programs including surveymonkey.com and coolsurvey.com. This survey should be developed by the Chamber of Commerce because of its implications to sustainable economic development. Survey results should be reported to the public by Community Resources and the Chamber of Commerce websites.

Mid-term tasks (3-5 years)
Develop a Nonprofit Assistance Program

In order for charitable organizations to promote self-sustaining nonprofit organizations, priorities for funding should support nonprofits build their organizational skills in the realms of board development, technology, fund-raising, financial management and business planning (In Business Magazine 2000). Community Resources in collaboration with the Village of Yellow Springs should seek to fund a yearly student intern/resident position charged with developing the assistance program which will provide management consulting, workshops, and technical assistance to smaller agencies serving residents of the village, as well as human service, and nonprofit agencies. Upgrading the capacity and infrastructure of these smaller agencies is expected to bring about a measurable increase and improvement in the services

Nonprofit Assistance Center
Several local foundations in Seattle (Neighbor to Neighbor and Family Leadership Funds of the Seattle Foundation, Kongsgaard-Goldman Foundation, et al) have also collaborated to create the Non Profit Assistance Center. Since 1998, the city of Seattle has been taking a leadership role in this change. But the leadership it has modeled is not of the "take charge" or "know it all" variety. Instead, the city has done its utmost to connect with the vast resources already available and foster links among capital, expertise and opportunity in the nonprofit and for-profit sectors (In Business Magazine 2000).

they deliver, particularly when they involve social enterprise (In Business Magazine 2000). Startup funds for this project can be obtained by applying for grant funding from the Yellow Springs Community Foundation. This type of project would alleviate many of the foundations responsibility in granting funding to local nonprofits because much of the work of the Nonprofit Assistance Program will be to build the agencies and make them more technologically and developmentally prepared to sustain themselves.

Long-term tasks (5+ years)
Develop a Nonprofit Assistance Center

The development of a center in which much of the needs of nonprofits, grassroots, and community organizations are met is a long-term recommendation. Essentially, expansion of the existing program into a center in which local foundations and federal grant funding could support is the primary goal. The Center will establish and build the capacity of local nonprofits and subsequently assist in developing new grassroots organizations or programs. The Nonprofit Assistance Center will serve as the hub for information, research, and resources of local organizations in the community. Sargent and Maytum (2004), found that in researching Mission-Driven Development, or projects which in most cases are not subsidized by the public sector; but with a combination of financing from public, private, and the nonprofit sector. The Village Manager of Yellow Springs can identify vacant and available properties for purchase for the Center. An ideal location would be downtown with a space large enough for multiple office buildings and community gatherings. Donation of an existing property to this cause is also a recommendation that would increase the ability of the Center to fund paid support positions. The process of determining the feasibility of such project for the Village of Yellow Springs should be undertaken by a consultant and a local task force made up of local residents and nonprofits be formed to discuss the leadership and mission of this type of center.

Ninth Street Media Arts, Consortium, San Francisco
A public/private partnership, the first of its kind in California, to demonstrate how nonprofits can own real estate. With the help of private investors as equal partners in the building (with the option to be bought out in 5 years) and the community as a whole, $3million of public and private funding was secured. The building space is a shared space for the arts and media as well as local nonprofits and for profit organizations who lease space from the center (Sargent and Maytum 2004).

CONCLUSIONS AND RECOMMENDATIONS

Land Use and Urban Ecology Conclusions
As a unique community in Ohio, Yellow Springs provides residents and tourists with a number of amenities, making it a regional draw. Land use in the Village, however, does not always promote these unique features. Currently the Village is almost entirely surrounded by a green belt of protected lands. Village residents and officials often discuss the need to close this green belt, yet the zoning code does not provide incentives for easements. Partnerships with interest groups, like the Tecumseh Land Trust, are a step towards ensuring sustainable land uses, but more could be done through the Village code.

Additionally, the Central Business District (CBD), the heart of Yellow Springs, is not protected through the zoning code. Despite the identification by residents, officials, and in the Comprehensive Plan that the character of the CBD should be preserved, it could not be rebuilt as it looks today due to lot design and parking requirements (E. Amrhein, pers. comm.; P. Hawkey, pers. comm.; Planning Commission 2006). Similarly, existing PUD regulations do not address important sustainable principles like Low Impact Development. While having a PUD ordinance is a step in the right direction, the code could go further in allowing certain development deviations in order to better preserve the natural ecological systems.

In terms of housing, Yellow Springs is one of the Miami Valley region's more expensive jurisdictions to reside in, making housing affordability a concern (U.S. Census). With the exception of a number of local residents working to encourage affordable housing, the Village's Moderately Priced Dwelling Unit Ordinance does not provide incentives or benefits to developers of affordable housing (Yellow Springs Ordinance Title 12, Chapter 1267). Indeed, the code calls for a Housing Initiative Fund to help increase the number of affordable homes in the Village, yet the fund and the committee called for to oversee the fund has not been established (E. Amrhein, pers. comm.).

Energy and Waste Conclusions
The Village provides most of the utility services to its residents. Ownership of the utilities is an asset to the Village because of the level of service provided and the opportunity to control infrastructure expansion as a mechanism to guide future growth. However, necessary updates to infrastructure are putting a serious strain on the Village finances. Attracting new industry to increase consumption of electricity and water would help fund some improvements. In addition, utility rates for residents and connection fees for developers need to be increased in order to offset some of the costs of updating infrastructure. Balancing the increase in fees with the desire to maintain a level of affordability in the Village will require creative solutions. With rising energy costs, communities everywhere are currently facing this challenge.

Consumption of electricity is relatively low in Yellow Springs. Average household consumption is about 35 percent lower than the average in Ohio (AEP Ohio 2005; J. Blankenship, pers. comm.). Some individual measures have been taken to reduce household energy consumption and utilize renewable energy resources, including incorporation of passive solar heating and construction of straw-bale houses that minimize heat loss. The Village could take measures to recognize and encourage more of these efforts.

Energy consumption for transportation is difficult to measure at the municipal level, however commuting patterns provide some indication of where improvements could be made. In the year 2000, 72 percent of all commuters from Yellow Springs drove

alone to work (U.S. Census Bureau). The regional carpool program, RideShare, has only 11 participants from Yellow Springs (T. Lee, pers. comm.). Considering that almost 70 percent of commuters from the Village remain within Greene County (55%) and Montgomery County (14.5%), there should be many opportunities for commuters to form a carpool through RideShare (U.S. Census Bureau).

The Village has a very successful solid waste program. Curbside pickup of recycling and a pay-as-you-throw system for trash have helped to encourage a relatively high recycling rate of 28 percent (M. McNelly, pers. comm.). However, data from 2002-2005 show a significant peak of solid waste generated in the month of May, with the recycling rate dropping to 20 percent (M. McNelly, pers. comm.). There are many public events that draw visitors in May, and special attention should be taken to improve waste collection at events and upgrade recycling containers in public places so that visitors are aware of the opportunity to recycle in Yellow Springs.

Water consumption has been dropping in the Village over the past decade, primarily due to the loss of industry. This drop in consumption has put a financial strain on the water and sewer system, both of which are operating at about one-half of their capacity (T. Dunevant and J. Bates, pers. comm.). Protection of the water supply is a priority that is being addressed through the Wellhead Protection Management Plan.

A primary concern for the sewer system is the large volume of inflow and infiltration of stormwater that occurs during heavy rainfall events. About one-third of all wastewater treated in 2005 can be attributed to inflow and infiltration (Hines 2006). An additional concern is the need to upgrade the wastewater treatment plant in order to meet EPA permit requirements, which will likely require the Village to take out a loan in 2008 (J. Bates, pers. comm.). Other opportunities that are being explored at the wastewater treatment plant include upgrading the blowers to reduce energy consumption and treating sewer sludge at the plant to lower costs and provide a natural fertilizer to local farmers.

Economic Development and Social Equity Conclusions

Yellow Springs currently contains a diverse mix of businesses for a municipality of its size, which bodes well for the future economic sustainability of the Village. Despite this diversity, recent threats to the economic stability of the Village have surfaced, due in part to a declining industrial sector. Yellow Springs is thus presented with a dilemma that threatens municipalities of all sizes; the need to transition from an economy based on manufacturing to one that can attract high-tech industry.

The need to attract new businesses to the Village is not the only economic hurdle faced by residents. Preservation and protection of existing environmental resources requires that Yellow Springs be conscientious of the types of businesses it attracts. The two brownfield sites present in the Village represent significant obstacles to achieving economic and environmental sustainability, considering the anticipated time and resources required to remediate the sites.

The social composition and diversity of Yellow Springs is likely one of its strongest and most attractive characteristics. The vast cultural opportunities present in the Village reflect a wide acceptance of values, norms, and beliefs. Two key areas of concern for sustainability of this attribute are the aging and declining population of Village residents and the lack of affordable housing options. Attempts must be made to attract young residents to the Village to balance out the existing age disparity and remove the perception that Yellow Springs is simply a place for young people to visit, rather than a place to live and work. The social network available throughout the

Village to those in need is extensive, yet even individuals working in professional sector jobs are unable to afford the housing costs in Yellow Springs. This lack of access to the Village represents a significant threat to the sustainability in terms of social diversity in Yellow Springs.

Land Use and Urban Ecology Recommendations

While the Village suffers from a number of zoning code inadequacies, the will exists to make necessary changes. The Land Use and Urban Ecology section includes fourteen recommendations to help the Village become more sustainable in its land use. All of the land use recommendations aim to reinvent the zoning code to better reflect the values, goals, and hopes of Village officials and residents.

The current code needs to be thoroughly examined through a public process. Each of the Land Use and Urban Ecology recommendations are individual steps towards improving certain aspects of the code, but do not take all nuances into account. With financial support and collaboration from community organizations, business leaders, and other jurisdictions in the region, Yellow Springs can undertake this exhaustive process.

Energy and Waste Recommendations

Residents and businesses in Yellow Springs have made serious efforts to reduce energy consumption and waste production. The Energy and Waste section includes thirteen recommendations for the Village to further encourage such efforts through education and facilitation. Most of the recommendations are voluntary, no-cost or low-cost measures to improve the sustainability of the energy, water, and waste systems in Yellow Springs.

Green construction in the Village can be further encouraged by connecting local developers and builders with resources during the permit process and creating a certification program to provide incentives for energy-efficient buildings. A renewable energy option can be provided to residents and businesses through Village enrollment in the AMP-Ohio Green Pricing Program.

Solid waste collection can be improved through upgrades to existing containers, especially on Xenia Avenue, and by working with Rumpke to improve collection during events. In addition, the Village can take advantage of free programs provided by the Greene County Solid Waste Management District in order to control litter, properly dispose of large items and hazardous wastes, and recycle yard wastes.

Water and wastewater programs can be funded by establishing a stormwater utility. The Village can facilitate installation of alternative technologies that reduce water consumption and wastewater production. Installation of biological systems will help to reduce inflow and infiltration and provide tertiary treatment of wastewater. The Village can take the lead by implementing sustainable technologies and practices in public buildings and educating residents through surveys, bill inserts, and technology showcases.

Economic Development and Social Equity Recommendations

The recommendations for sustainable economic development address two issues that are most prominent for Yellow Springs: the “greening” of new and existing companies, and attracting high-tech business to the Village. A comprehensive approach is suggested to improve the environmental performance of existing businesses and ensure sustainability of new businesses. By focusing on education and guidance toward environmentally-sensitive practices, the Village can market sustainability without committing significant incentive funds to the effort. The opportunity to transform informal, voluntary, environmentally-conscious practices by local residents and businesses

into institutionalized programs that become the norm should not be allowed to pass. In the long term, the development of the Eco-Industrial Park and proactive efforts regarding brownfield remediation will help to increase both jobs and the Village's tax base.

Some in Yellow Springs have recognized that the changing nature of the economy will preclude replacement of lost manufacturing jobs (E. Amrhein, pers. comm.; K. Wintrow, pers. comm.). To this end, efforts must be made to identify and attract new industries to the Village that will replace the lost tax base. By focusing on attracting small, entrepreneurial businesses that require limited space and start-up costs, the Village can market its downtown as an office destination and offer business solutions to its highly educated citizenry. Investment in high-tech infrastructure, while costly upfront, will position Yellow Springs as a regional and even national leader in technology and will be instrumental in attracting new business development.

Efforts to maintain and improve the social equity of Yellow Springs should focus on provision of services and capitalizing on residents' philanthropic predispositions. Collaboration of individuals, community organizations, and the Village is critical to the success of both of these objectives. A future-oriented approach to community resources and gifts should be adopted which first seeks to quantify contributions within, then works to plan and build capacity of local organizations. In this way local resources can be utilized most efficiently to meet the needs of all Yellow Springs residents and protect the future diversity of the Village.

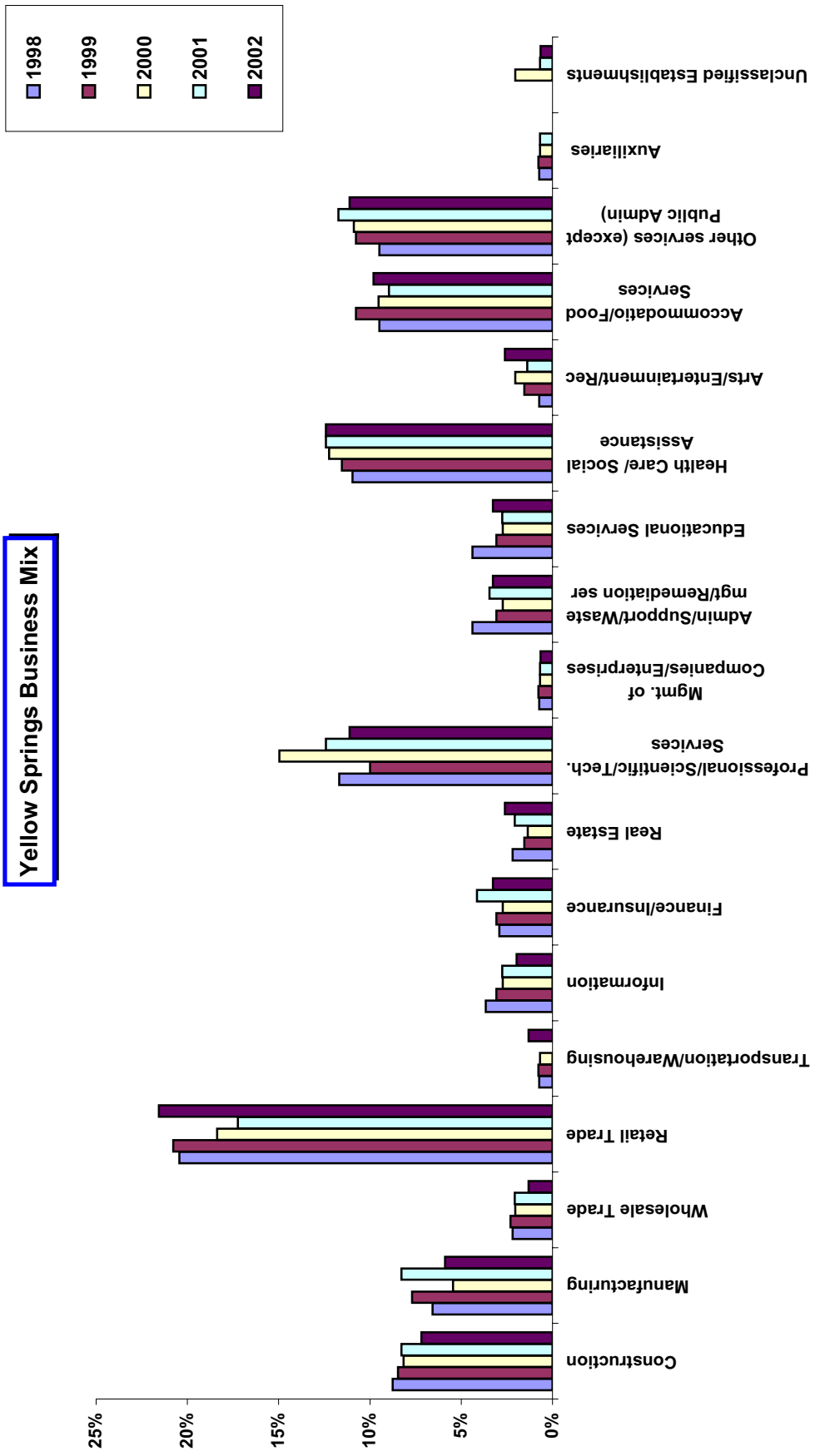
Final Conclusions and Recommendations

The recommendations in this study are not intended to be a comprehensive list, and are limited by the scope of the study. Recommendations are particularly limited by the fact that the authors are not part of the community and have only limited knowledge of the functions of various community organizations and government offices in the Village. It is likely that we have overlooked key persons or groups when suggesting implementation timelines for recommendations. However, we have attempted to identify persons or groups that could take action to implement these recommendations.

If the community were to take on sustainable development as a framework for planning, we recommend that the Village create a commission that would coordinate community efforts toward sustainability. One of the key elements of sustainable development planning is taking a holistic approach that integrates economic development, ecology, and equity. A "Sustainable Development Commission" would be charged with integrating community actions to ensure a balanced approach to development. This commission could be created through the existing Environmental Commission sponsored by the Village, or as a coalition of existing community organizations that are already working separately on various issues related to sustainability.

Yellow Springs is facing many of the same problems that small communities are seeing all over the country. Encroaching sprawl, rising energy and waste disposal costs, and a dwindling economic and social base are threatening small towns today. However, the existing institutions and the commitment of an active citizenry in the Village create a unique opportunity for sustainable development. Many actions are already underway, but a comprehensive planning approach with the overarching goal of sustainability could unite these efforts and improve the long-term possibilities for a Sustainable Yellow Springs.

Appendix 1



Source: U.S. Census Bureau, County Business Patterns 1998-2002

Appendix 2

HOME Program Summary

HOME is authorized under Title II of the Cranston-Gonzalez National Affordable Housing Act, as amended. Program regulations are at 24 CFR Part 92. The HOME program final rule is available electronically. Additional information about the HOME program can be found by visiting the HOME program web pages.

HOME provides formula grants to States and localities that communities use—often in partnership with local nonprofit groups—to fund a wide range of activities that build, buy, and/or rehabilitate affordable housing for rent or homeownership or provide direct rental assistance to low-income people.

Purpose

HOME is the largest Federal block grant to State and local governments designed exclusively to create affordable housing for low-income households. Each year it allocates approximately $2 billion among the States and hundreds of localities nationwide. The program was designed to reinforce several important values and principles of community development:

- HOME's flexibility empowers people and communities to design and implement strategies tailored to their own needs and priorities.
- HOME's emphasis on consolidated planning expands and strengthens partnerships among all levels of government and the private sector in the development of affordable housing.
- HOME's technical assistance activities and set-aside for qualified community-based nonprofit housing groups builds the capacity of these partners.
- HOME's requirement that participating jurisdictions (PJs) match 25 cents of every dollar in program funds mobilizes community resources in support of affordable housing.

Types of Assistance

HOME funds are awarded annually as formula grants to participating jurisdictions. HUD establishes HOME Investment Trust Funds for each grantee, providing a line of credit that the jurisdiction may draw upon as needed. The program's flexibility allows States and local governments to use HOME funds for grants, direct loans, loan guarantees or other forms of credit enhancement, or rental assistance or security deposits.

Eligible Grantees

States are automatically eligible for HOME funds and receive either their formula allocation or $3 million, whichever is greater. Local jurisdictions eligible for at least $500,000 under the formula ($335,000 in years when Congress appropriates less than $1.5 billion for HOME) also can receive an allocation. Communities that do not qualify for an individual allocation under the formula can join with one or more neighboring localities in a legally binding consortium whose members' combined allocation would meet the threshold for direct funding. Other localities may participate in HOME by applying for program funds made available by their State. Congress sets aside a pool of funding, equivalent to the greater of $750,000 or 0.2 percent of appropriated funds, which HUD distributes among insular areas.

Eligible Customers

The eligibility of households for HOME assistance varies with the nature of the funded activity. For rental housing and rental assistance, at least 90 percent of benefiting families must have incomes that are no more than 60 percent of the HUD-adjusted median family income for the area. In rental projects with five or more assisted units, at least 20% of the units must

be occupied by families with incomes that do not exceed 50% of the HUD-adjusted median. The incomes of households receiving HUD assistance must not exceed 80 percent of the area median. HOME income limits are published each year by HUD.

Eligible Activities

Participating jurisdictions may choose among a broad range of eligible activities, using HOME funds to provide home purchase or rehabilitation financing assistance to eligible homeowners and new homebuyers; build or rehabilitate housing for rent or ownership; or for "other reasonable and necessary expenses related to the development of non-luxury housing," including site acquisition or improvement, demolition of dilapidated housing to make way for HOME-assisted development, and payment of relocation expenses. PJs may use HOME funds to provide tenant-based rental assistance contracts of up to 2 years if such activity is consistent with their Consolidated Plan and justified under local market conditions. This assistance may be renewed. Up to 10 percent of the PJ's annual allocation may be used for program planning and administration.

HOME-assisted rental housing must comply with certain rent limitations. HOME rent limits are published each year by HUD. The program also establishes maximum per unit subsidy limits and maximum purchase-price limits.

Some special conditions apply to the use of HOME funds. PJs must match every dollar of HOME funds used (except for administrative costs) with 25 cents from nonfederal sources, which may include donated materials or labor, the value of donated property, proceeds from bond financing, and other resources. The match requirement may be reduced if the PJ is distressed or has suffered a Presidentially declared disaster. In addition, PJs must reserve at least 15 percent of their allocations to fund housing to be owned, developed, or sponsored by experienced, community-driven nonprofit groups designated as Community Housing Development Organizations (CHDOs). PJs must ensure that HOME-funded housing units remain affordable in the long term (20 years for new construction of rental housing; 5-15 years for construction of homeownership housing and housing rehabilitation, depending on the amount of HOME subsidy). PJs have two years to commit funds (including reserving funds for CHDOs) and five years to spend funds.

Application

Program funds are allocated to units of general local government on the basis of a formula that considers the relative inadequacy of each jurisdiction's housing supply, its incidence of poverty, its fiscal distress, and other factors. Shortly after HOME funds become available each year, HUD informs eligible jurisdictions of the amounts earmarked for them. Participating jurisdictions must have a current and approved Consolidated Plan, which will include an action plan that describes how the jurisdiction will use its HOME funds. A newly eligible jurisdiction also must formally notify HUD of its intent to participate in the program

ALSO: check this out: http://columbus.bizjournals.com/columbus/stories/2006/05/15/daily29.html

Appendix 3

University Uptown Improvement District

What is a special improvement district (SID)?

Under Ohio law, a city or township may establish a special improvement district (SID) by a petition of property owners who agree to assess themselves to provide supplemental public services and improvements in a specific geographic area. The SID is accountable to the property owners, who elect the corporation's board. Services typically include maintenance, cleaning, security and marketing. The SID combines dependable funding with private management and accountability.

Why create a SID for High Street in the University District?

High Street in the University District is failing to achieve its inherent market potential. The factors most often cited are:

- Cleanliness
- Safety

These factors keep away potential customers and residents and discourage investment in the area. At the same time, High Street in the University District faces competition from an ever-increasing number of retail, entertainment and housing options in suburban locations and new urban developments, which are generally perceived as cleaner, safer environments.

What is proposed for High Street in the University District?

Property and business owners are proposing a SID – called the University Uptown Improvement District – to address important concerns of safety, cleanliness, parking and marketing. A Steering Committee, chaired by Wayne Garland of Buckeye Real Estate and Paul Watkins of SBX, has been working with property owners to identify the area for the SID, the services needed and the method and level of assessment. As proposed, the SID will encompass High Street from East Eighth/West 10th avenues to East Norwich/West Northwood avenues. The goal is to establish the SID by January 2004.
The SID's business plan outlines the following services:

- Maintain the High Street area through regular litter pick-up, removal of handbills and graffiti, snow removal from sidewalks, care of the street trees, etc.
- Contract with the Community Crime Patrol for an increased presence of patrollers.
- Market the University District's unique assets.
- Unite property owners and businesses to solve problems and to more effectively address issues, such as on- and off-street parking.

What will the SID cost?

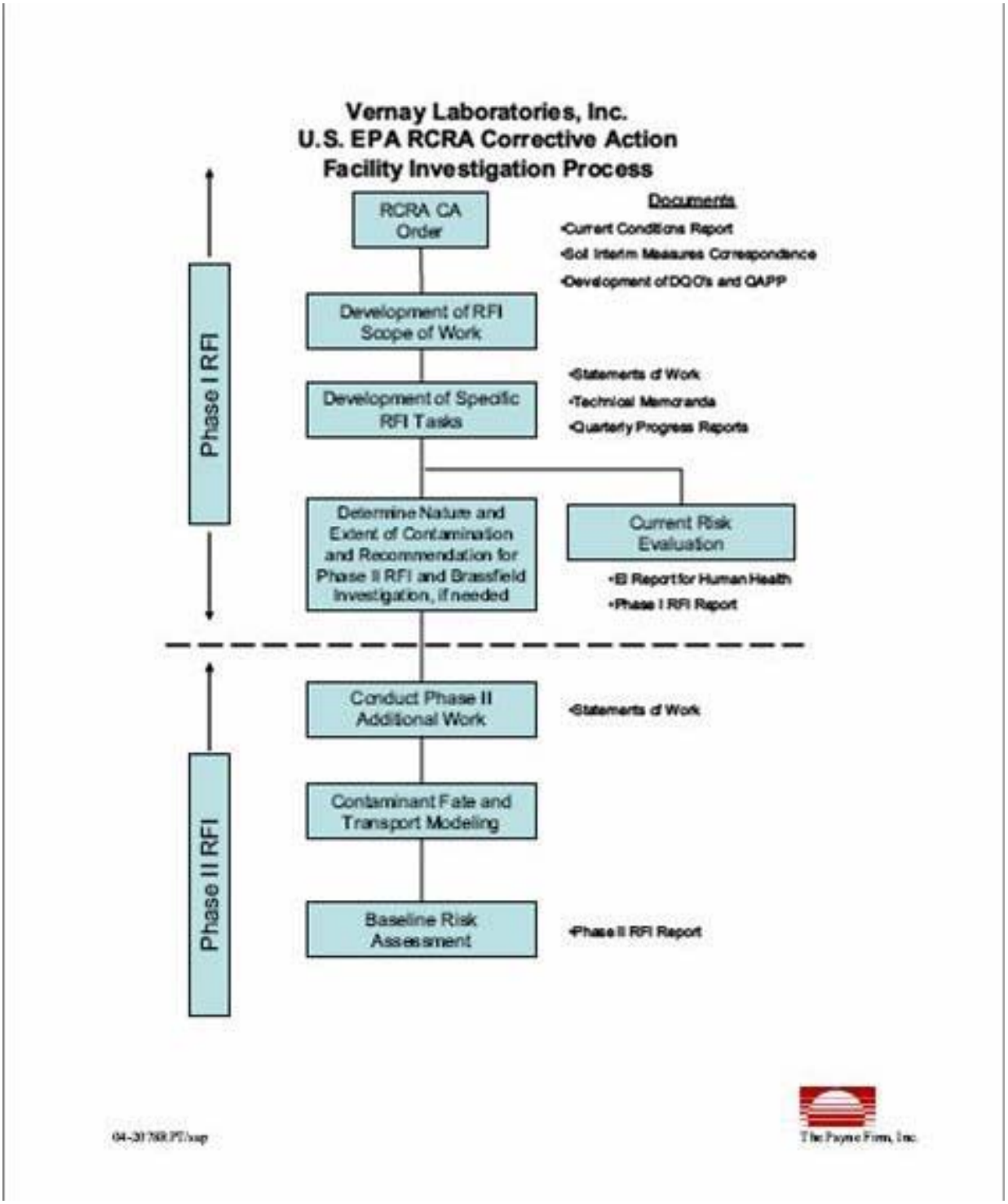
The proposed annual budget for the SID for the first five years is approximately $290,000 with $210,000 collected in assessments from property owners and expected annual contributions of $40,000 each from The Ohio State University and the City of Columbus. The Steering Committee proposes that the assessment be calculated on the square footage of lot area of each tax parcel. The annual rate would be 20 cents per square foot for the first five years of the SID and 22 cents per square foot for the second five years.

For a typical High Street property with 9,000 square feet of lot area, this translates into $1,800 per year, or about $5 a day – the cost of a hamburger with fries and a drink at Wendy's. Many properties have multiple tenants, and this cost typically would be passed through to tenants and be shared proportionally, similar to a common area maintenance charge.

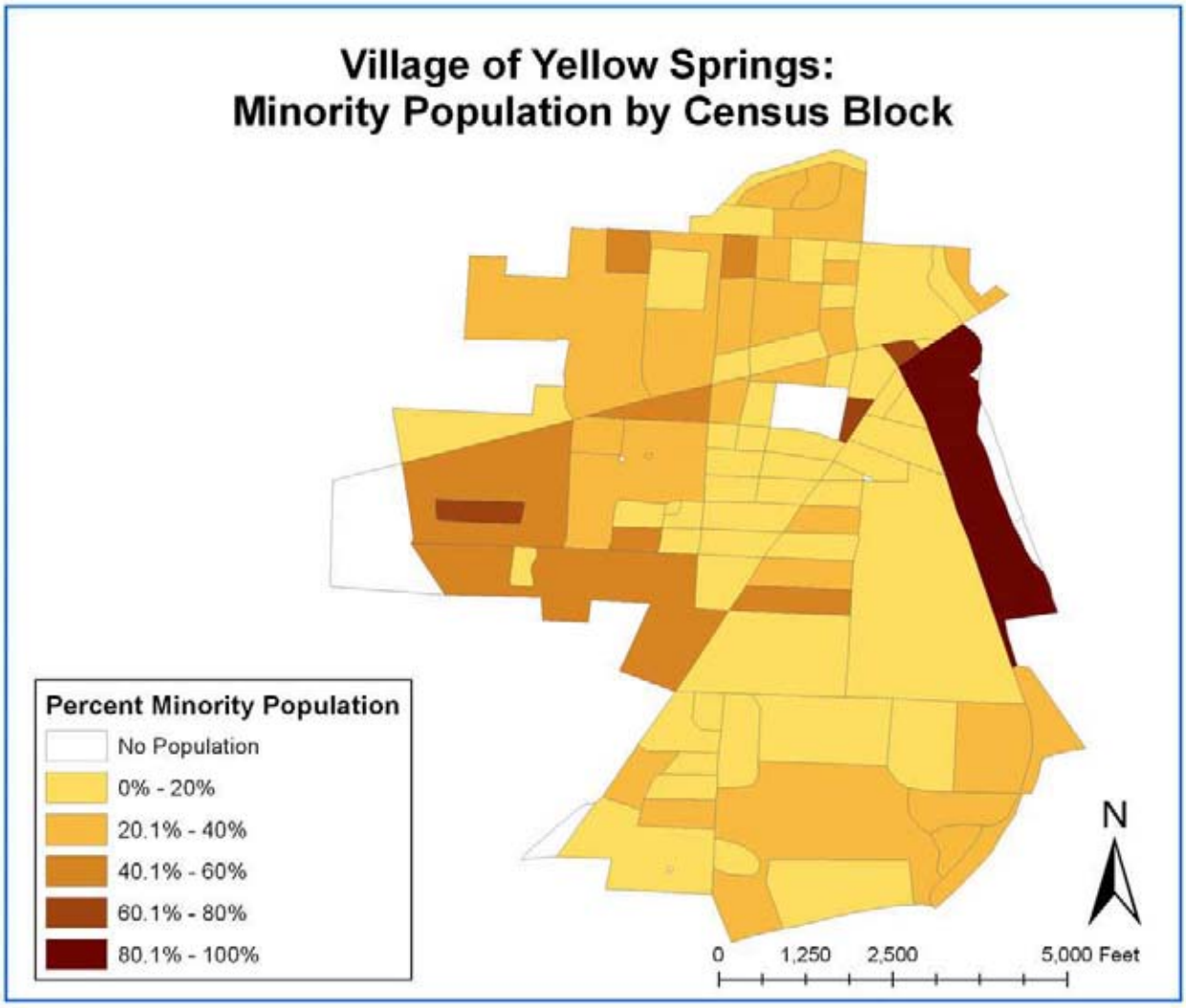
Why should property owners contribute to the cost of the SID?

- Improves the business climate and maintains property values.
- Eliminates or reduces your cost for graffiti removal, litter pick-up and related services.
- Leverages expected annual contributions of $40,000 each from the university and the city to address safety and appearance issues.
- Creates a cost-effective tool that you control to supplement public services and reverse urban decay. (At the University of Pennsylvania in Philadelphia, the improvement district has significantly reduced crime and greatly improved the appearance of the neighborhood.)

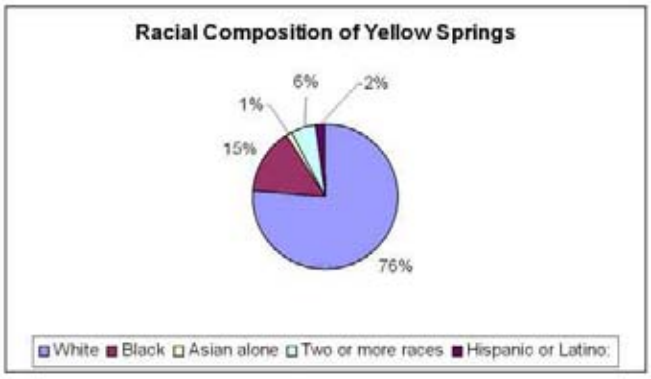
University Uptown Improvement District
c/o University Community Business Association, 8 E. 12th Ave., Columbus, OH 43201
(614) 299-2866
May 2003


Vernay Laboratories, Inc.
U.S. EPA RCRA Corrective Action
Facility Investigation Process
Phase I RFI
RCRA CA Order
Documents
•Current Conditions Report
•Soil Interim Measures Correspondence
•Development of DQO's and QAPP
Development of RFI Scope of Work
Development of Specific RFI Tasks
•Statements of Work
•Technical Memoranda
•Quarterly Progress Reports
Determine Nature and Extent of Contamination and Recommendation for Phase II RFI and Brassfield Investigation, if needed
Current Risk Evaluation
•EI Report for Human Health
•Phase I RFI Report
Phase II RFI
Conduct Phase II Additional Work
•Statements of Work
Contaminant Fate and Transport Modeling
Baseline Risk Assessment
•Phase II RFI Report
The Payne Firm, Inc.

Appendix 5

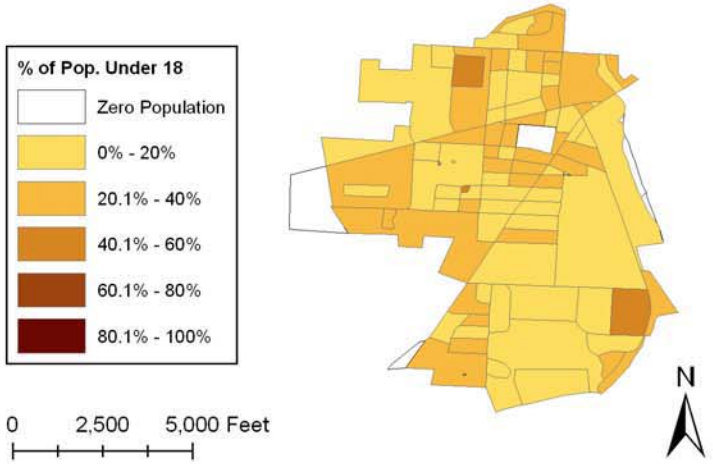


Additional Racial Characteristics

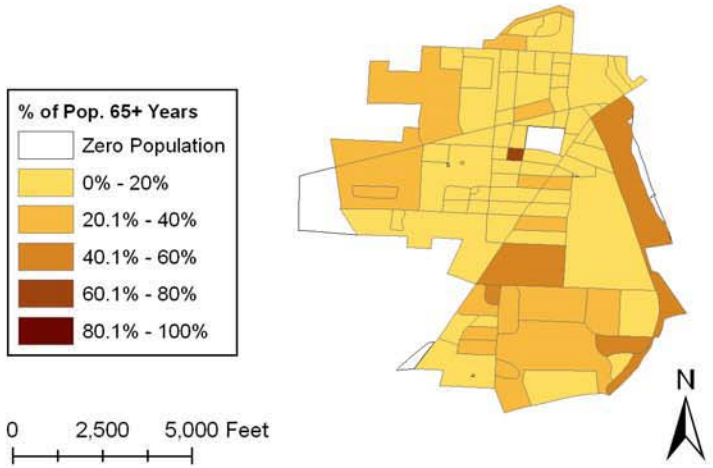


Percent of Population in the Racial Minority	
United States	31%
State of Ohio	16%
Greene County	12%
Village of Yellow Springs	24%

Village of Yellow Springs: Youth Population by Census Block



Village of Yellow Springs: Elderly Population by Census Block



Village of Yellow Springs: Population by Age and Sex

	Male	Female
Total Population	1,672	2,089
Under 5 years	68	68
5 to 9 years	106	86
10 to 14 years	115	95
15 to 17 years	87	68
18 and 19 years	80	112
20 years	26	49
21 years	38	59
22 to 24 years	74	91
25 to 29 years	96	93
30 to 34 years	68	104
35 to 39 years	108	111
40 to 44 years	128	176
45 to 49 years	141	198
50 to 54 years	123	172
55 to 59 years	92	123
60 and 61 years	30	40
62 to 64 years	40	65
65 and 66 years	35	30
67 to 69 years	37	63
70 to 74 years	79	96
75 to 79 years	56	79
80 to 84 years	29	55
85 years and over	16	56

REFERENCES

Introduction and Indicators

Los Angeles Housing Department. Building healthy communities 101: Getting the facts > Housing affordability. http://www.lacity.org/lahd/curriculum/gettingfacts/affordability/housing-income.html.

Sustainable Cincinnati. 2005. *Regional Indicators: Measuring the Economic, Environmental, and Social Health of the Tri-State Metropolitan Area.* http://www.sustainablecincinnati.org/sc_2005.pdf.

Wheeler, Stephen M. 2004. *Planning for sustainability: Creating livable, equitable, and ecological communities*. New York: Routledge.

Willapa Alliance. 1995. *Willapa Indicators for a Sustainable Community*. Quoted from http://www.tidepool.org/wiscweb/willapa.indicators.'98.html.

Land Use and Urban Ecology

American Planning Association. 2006. *Model Smart Land Development Regulations*. http://www.planning.org/smartgrowthcodes/pdf/section43.pdf.

Amhrein, Ed. Planning Assistant, Village of Yellow Springs. In-person interview with Curtis Baker, Seth Dannemiller, Jessica Garrow, Justin Milam, Bethany Miller, and Ben Weiner. April 6, 2006.

Ammons, David. 2001. *Municipal benchmarks*. Thousand Oaks: Sage Publishing.

City of Arlington. 2004. *Codified Ordinances*. http://www.arlingtonva.us/departments/CPHD/forums/columbia/current/CPHDForumsColumbiaCurrentCurrentStatus.aspx.

City of Aspen and Pitkin County. Homepage. http://www.aspenpitkin.com.

City of Davidson. 2004. *Codified Ordinances*. http://www.ci.davidson.nc.us/units/planning/ordinance/pdfs/10-Parking-hd.pdf.

City of Saco. 2002. Article 16 – Impact Fees. http://www.sacomaine.org/departments/cityplanner/zoning16.pdf.

City of San Diego. 2006. Affordable housing requirements and expedite program. http://www.sandiego.gov/development-services/news/ah.shtml.

City of Tumwater. Homepage. http://www.ci.tumwater.wa.us/.

City of Westerville. *Codified Ordinances*, Chapter 1171, Off-Street Parking and Loading Facilities. http://www.conwaygreene.com/Westerville/lpext.dll?f=templates&fn=main-h.htm&2.0.

Federal Highway Administration. 1998. *Improving Conditions for Bicycling and Safety*. http://safety.fhwa.dot.gov/ped_bike/docs/intro.pdf.

-------. 2006a. *Fact Sheets on Highway Provisions: Recreational Trails Program*. http://www.fhwa.dot.gov/safetealu/factsheets/rectrails.htm.

-------. 2006b. *Fact Sheets on Highway Provisions: Safe Routes to School Program*. http://www.fhwa.dot.gov/safetealu/factsheets/saferoutes.htm.

-------. 2006c. *SAFETEA-LU Highway Authorizations*. http://www.fhwa.dot.gov/safetealu/safetea-lu_authorizations.xls.

Federal Highway Administration Office of Safety. 2006. *How to Develop a Pedestrian Safety Action Plan*. http://www.walkinginfo.org/pp/howtoguide2006.pdf.

Florida Center for Urban Transportation Research. Transportation, land use and sustainability. http://www.fccdr.usf.edu/upload/projects/tlushtml/tlus110.htm.

Grants.Gov. 2006. Grants for arts projects: Access to artistic excellence, deadline 2. http://www.grants.gov/search.do?mode=VIEW&oppId=7558.

Guillette, Anne. 2006. Achieving sustainable site design through low impact development practices. *Whole Building Design Guide*. http://www.wbdg.org/design/lidsitedesign.php.

Hartzok, Allana. 1998. Pennsylvania's success with local property tax reform: The split rate tax. http://www.earthrights.net/docs/success.html.

Hawkey, Phil. City Planner, Village of Yellow Springs. In-person interview with Curtis Baker, Jessica Garrow, and Ben Weiner. April 25, 2006.

Heaton, Lauren. BZA approves plans for downtown development. *Yellow Springs News*, May 4, 2006. http://www.ysnews.com/stories/2006/05/050406_BZAdowntown.html.

Hilliard, Rob. 2002. Comprehensive Land Use Planning in Yellow Springs (presentation). http://www.yso.com/council/comp_plan.pdf.

Kwok, Rachel, and Michael Dema. 2002. Wickford Junction bicycle path assessment. http://envstudies.brown.edu/Classes/ES201/2002/Bike/costs.htm.

The Hometown Advantage. 2006. How big is too big? http://www.newrules.org/retail/howbigisbig.html.

Institute of Transportation Engineers. 1998. *Design and Safety of Pedestrian Facilities*. http://safety.fhwa.dot.gov/ped_bike/docs/designsafety.pdf.

King County. 2006. Density bonus program for affordable housing. http://www.metrokc.gov/dchs/csd/housing/Affordable.htm#Density.

Land Trust Alliance. What is a conservation easement? http://www.lta.org/conserve/easement.htm.

Local Government Commission. 2006. Form based codes: Implementing smart growth. http://www.lgc.org/freepub/land_use/factsheets/form_based_codes.html.

Loveland High Plains Art Council. 2006. 23rd Annual Sculpture in the Park. http://www.sculptureinthepark.org.

Miller, Jason. 2004. Smart codes smart places. http://www.realtor.org/SG3.nsf/Pages/summer04sm?OpenDocument.

NRDC. 2006. Stormwater strategies. http://www.nrdc.org/water/pollution/storm/chap12.asp.

Prince George's County. 1999. *Low-Impact Development Design Strategies: An Integrated Design Approach*. Department of Environmental Resources Programs and Planning Division. http://www.epa.gov/owow/nps/lid/lidnatl.pdf.

Project for Public Spaces. Ten principles for creating successful squares. http://www.pps.org/parks_plazaz_squares/info/parks_plazas_squares_articles/squares_principles.

State of Georgia Department of Community Affairs. *Urban Service Areas*. http://www.dca.state.ga.us/intra_nonpub/Toolkit/Guides/BrbnSrvcAreas.pdf.

Sterrett, Steve. Community Relations Director, Campus Partners. In-person interview with Bethany Miller. May 12, 2006.

Swansen, Eric. Village Manager, Village of Yellow Springs. In-person interview with Curtis Baker, Jessica Garrow, Ben Weiner. April 20, 2006.

Tecumseh Land Trust. 2006. 1% for Green Space: Tecumseh Land Trust. http://www.tecumsehlandtrust.org/index.htm.

Town of Bristol. 2004. *Local Code of Ordinances*. http://www.municode.com/Resources/gateway.asp?pid=10105&sid=39.

Town of York. 2004. *Codified Ordinances*. http://www.yorkmaine.org/Default.aspx?tabid=103.

Urban Ohio. Yellow Springs. http://www.urbanohio.com/YellowSprings.htm.

U.S. Census Bureau. 2000. Table generated on May 4, 2006, using American FactFinder: http://factfinder.census.gov.

Village of Deer Park. 2006. Planning and zoning. http://www.village.deer-park.il.us/Plan%20Commission/planning_zoning.htm.

Village of Yellow Springs. Economic development. http://www.yso.com/economic_development/economic_dev.html.

-------. 2002. *Yellow Springs Comprehensive Plan*. http://www.45387.org/docs/growth/compplan/compplan.htm.

-------. 2004. *Village of Yellow Springs Codified Ordinances*. http://www.yso.com/ordinances/ordinances.html.

Village of Yellow Springs Planning Commission. Commission Meeting. April 10, 2006.

Energy and Waste

AEP Ohio. 2005. *AEP Ohio Fact Sheet*. http://www.aepohio.com/about/serviceTerritory/docs/AEP_Ohio_fact_sheets1205.pdf.

AMP-Ohio. 2005. Green pricing program. http://www.amp-ohio.org/services-greenpricing.html.

Amrhein, Ed. Planning Assistant, Village of Yellow Springs. In-person interview with Tim Burgener. April 6, 2006.

Bates, Joe. 2006. *Operating Statement-Budgetary Statement Sewer Fund*.

-------. Superintendent of Water and Wastewater, Village of Yellow Springs. In-person interview with Ela Kakde and Jim Koenig. April 13, 2006.

Bennett & Williams Environmental Consultants, Inc. 2001. *Wellhead Protection Management Plan*. http://www.yso.com/wellhead/wellhead_protection.pdf.

Blankenship, Julia. Manager of clean energy development and sustainability, AMP-Ohio. Phone interview with Tim Burgener. May 10, 2006.

Center for Urban Policy and the Environment. 2002. *Stormwater Management Financing Case Study: Union, Ohio*. http://stormwaterfinance.urbancenter.iupui.edu/PDFs/UnionOhio.pdf.

City of Oakwood. 2006. *2006 Water & Sewer Rate Survey*. http://www.englewood.oh.us/Departments/Finance/water_sewer_survey_2006.pdf.

City of Vancouver. 2006. Water conservation program. http://www.city.vancouver.bc.ca/engsvcs/watersewers/water/conservation/index.htm.

Crosby, R.L. 2002. A low cost site-built composting toilet system. Biorealis Systems, Inc. http://biorealis.com/composter/carousel/carousel.html.

Dunevant, Ted. Operator of water treatment plant, Village of Yellow Springs. In-person interview with Jim Koenig. April 27, 2006.

Earthbound Services LLC. 2005. Alternative septic systems. http://www.earthboundservices.com/septicsystems.asp.

Energy Information Administration. 2004. Transportation energy use. http://www.eia.doe.gov/kids/energyfacts/uses/transportation.html.

Fox, Kelley. Public Works, Village of Yellow Springs. In-person interview with Tim Burgener. April 13, 2006.

Fujita Research. 1998. Wastewater. http://www.fujitaresearch.com/reports/wastewater.html.

Gelt, Joe. 1997. Constructed wetlands: Using human ingenuity, natural processes to treat water, build habitat. *Arroyo*. http://ag.arizona.edu/AZWATER/arroyo/094wet.html.

Green Energy Ohio. 2006. Ohio clean energy incentives. http://www.greenenergyohio.org/page.cfm?pageID=319.

Greene County. 2006. *Adopt-A-Spot*. Greene County Solid Waste Management District. http://www.co.greene.oh.us/saneng/environmental/adoptaspot/adopt-a-spot_brochure_2004.pdf.

Hines, Jeff. 2006. Village of Yellow Springs Water Plant Production Database. Provided by Jeff Hines, Ohio EPA Southwest District Office.

Holyoke, Andy. Local builder and resident. In-person interview with Dave Reierson. April 13, 2006.

HUD. 2001. Energy efficient mortgages program. http://www.hud.gov/offices/hsg/sfh/eem/energy-r.cfm.

Jönsson, Håkan. 2001. *Urine Separating Toilets – Swedish Experiences*. Swedish University of Agricultural Sciences. http://www.agsci.kvl.dk/njf327/papers/reviewedJonsson.pdf.

Jones, James. Marketing Director, Vectren Gas-Ohio. Phone interview with Tim Burgener. May 11, 2006.

Kravitz, Robert. 2005. Restrooms go green. *Environmental Design and Construction*. http://www.envirovaluation.org/index.php?title=environmental_design_and_construction_ww&more=1&c=1&tb=1&pb=1.

Lee, Tonya. Accounting Technician, Miami Valley Regional Planning Commission. E-mail message to Tim Burgener. May 8, 2006.

Living Technologies LTD. 1998. Reedbeds. http://www.ltluk.com/reedbeds.html#Anchor-Sustainable-11481.

McNelly, Matthew. Municipal Representative, Rumpke. In-person interview with Hwashik Jang. May 15, 2006.

Mihalek, Robert. 2004. Good decision on garbage rates. *Yellow Springs News*, March 25, 2004. http://www.ysnews.com/stories/2004/03/032504_edit.html.

MVRPC. RideShare: It can really take you places. http://www.miamivalleyrideshare.org.

Nelson, Mark, and Robyn Tredwell. 2002. *New Paradigms: Wastewater Gardens, Creating Urban Oases and Greenbelts by Productive Use of the Nutrients and Water in Domestic Sewage*. http://www.wastewatergardens.com/pdf/NELSON_UNEP.pdf.

Ohio EPA. 2006. Ohio environmental education fund. http://www.epa.state.oh.us/oeef/about_oeef.html.

Rocky Mountain Institute. Wastewater treatment systems. http://www.rmi.org/sitepages/pid288.php.

Simeral, Kenneth D. 1998. Using constructed wetlands for removing contaminants from livestock wastewater. The Ohio State University Fact Sheet. http://ohioline.osu.edu/a-fact/0005.html.

Southface Energy Institute. 2005. Responsible solutions for environmental living. http://www.southface.org/.

Swansen, Eric. 2005. *Village of Yellow Springs 2005 Budget*. http://www.yso.com/council/budget/2005Budget.pdf.

U.S. Census Bureau. 2000. Summary File 3. Table generated by Tim Burgener on May 8, 2006, using American FactFinder: http://factfinder.census.gov.

U.S. DOE. 2006. Green pricing: American Municipal Power-Ohio. http://www.eere.energy.gov/greenpower/markets/pricing.shtml?page=2&companyid=42.

U.S. EPA. 2004. *Protecting Water Resources with Smart Growth*. http://www.epa.gov/smartgrowth/pdf/waterresources_with_sg.pdf.

Village of Yellow Springs. 2002. *Yellow Springs Comprehensive Plan*. http://www.45387.org/docs/growth/compplan/compplan.htm.

-------. 2004. *Water Quality Report*.

References

Wheeler, Stephen M. 2004. *Planning for sustainability: Creating livable, equitable, and ecological communities*. New York: Routledge.

Yellow Springs Cost of Living Report. 2002. The Yellow Springs Men's Group, Inc. http://www.45387.org/docs/finance/colr/Yellow%20Springs%20Cost%20of%20Living%20Report.pdf.

Economic Development and Social Equity

Advantage Valley Entrepreneurial League System. http://www.advantagevalleyels.com/.

Amrhein, Ed. Planning Assistant, Village of Yellow Springs. In-person interview with Ellen Marrison, Sophia Corna, Marquetta Pittman, Brett Lieberman, Aaron Schill and Ryan Edwards. April 19, 2006.

Anderson, Louise. 2006. Jack Schultz: A Man with 7 ½ keys to small town success. *Economic Development America*: 10-15. http://www.eda.gov/.

Antioch College. Homepage. http://www.antioch-college.edu/.

Antioch Company. 2006. Company history. http://antiochcompany.com/beginning.htm.

Antioch University McGregor. Homepage. http://www.mcgregor.edu/.

Bay Area Green Business Program. Homepage. http://www.greenbiz.ca.gov/index.html.

Bean, R. Executive Director, Yellow Springs Senior Center. In-Person interview with Marquetta Pittman. April 19, 2006.

Burns, D., and M. Taylor. 1998. *Mutual aid and self-help: Coping strategies for excluded communities*. Bristol, England: The Policy Press.

Callie, Cary. Director of Alumni Relations, Antioch College. E-Mail correspondence with Ryan Edwards. May 19, 2006.

Center for Rural Entrepreneurship. Homepage. http://www.ruraleship.org/.

Centre for Community Enterprise (Mark Pomerantz). 2000. Municipal involvement in social enterprise. *Making Waves: Canada's Community Economic Development Magazine*. http://www.cedworks.com/customer/product.php?productid=4425&cat=31&page=1.

Chiddister, Diane. 2002. Vernay, EPA finalize plan for Dayton St. site cleanup. *Yellow Springs News*, October 17, 2002. http://www.ysnews.com/stories/2002/october/101702_vernay.html.

-------. 2005. Villagers name goals for Yellow Springs at community forum. *Yellow Springs News*, March 31, 2005. http://www.ysnews.com/stories/2005/03/033105_YSgoals.html.

-------. 2006. EPA says health risk low at Vernay Dayton Street plant. *Yellow Springs News*, March 9, 2006. http://www.ysnews.com/stories/2006/03/030906_EPAvernay.html.

City of Eugene. Sustainable Eugene. http://www.eugene-or.gov.

City of Fairfield. Homepage. http://cityoffairfieldiowa.com.

City of Littleton. Economic gardening. http://www.littletongov.org/bia/economicgardening/.

Coffin, Sara L. 2003. Closing the Brownfield Information Gap: Some Practical Methods for Identifying Brownfields. Center for Environmental Policy and Management, University of Louisville. http://cepm.louisville.edu/Pubs_WPapers/PDF_Docs/brownfield_nformation.pdf.

Community Resources. About Community Resources. http://www.yellowsprings.com/cr/about.asp.

Community Round Table. 2005 Workshop reports: Executive summary: Introduction. http://www.45387.org/forum/ws_report2005_exec.html.

The Community Solution. Agraria. http://www.communitysolution.org/.

Cool Town Studios. Economic gardening. http://www.cooltownstudios.com.

Cunningham, Storm. 2006. Economic growth without destruction. In *Cities and nature: A handbook for renewal*, 261-265. Jefferson, NC: McFarland & Company, Inc.

Curri, Michael. 2003. *Economic Impact Study of the South Dundas Township Fibre Network*. U.K. Department of Trade and Industry.

Customer Service Representatives, Time Warner Cable and SBC Ameritech. Phone interviews with Brett Lieberman. May 18, 2006.

The Dandin Group, Inc. 2005. *Technical Plan for the Broadband Infrastructure and for Pilot Development Projects for Sandoval County, New Mexico*.

Earth. Business. Community. Progressive/Green Business, Going green is good PR. http://www.forums.thinkhost.com/.

Entrepreneur.com. Homepage. http://www.entrepreneur.com/.

Entreworks Consulting. http://www.entreworks.net/.

Expedite Media Group. Template Website design. http://www.expeditemg.com/htm/templatewebdesign.htm.

Fairfield, Iowa Chamber of Commerce. http://www.fairfieldiowa.com/.

Feld, H., Rose, G., Cooper, M., and B. Scott. 2005. *Connecting the Public: The Truth about Municipal Broadband*. http://www.freepress.net/docs/mb_white_paper.pdf.

Ford, G., and T. Koutsky. 2005. Broadband and economic development: A municipal case study from Florida. *Applied Economic Studies*, April 2005: 1-17.

The Foundation Center. *Highlights of Foundation Giving Trends 2006*. Foundations Today Series. http://fdncenter.org/gainknowledge/research/pdf/fgt06highlights.pdf.

Gasho, Carol. President, Community Resources. Phone interview with Ellen Marrison. May 15, 2006.

Gnatek, Tim. Switchboard in the sky. *The New York Times*, May 3, 2006.

Greene County Job and Family Services. Services provided. http://www.co.greene.oh.us/job_family_serv.htm.

Greene County Metropolitan Housing Authority. Section 8: Housing program overview. http://www.gmha.net/section.htm.

Guide to Yellow Springs. 2005. Yellow Springs News.

Innovation Center for Community and Youth Development. *Resources for Youth and Community Development in Isolated Communities: Stories from Ten Communities*. http://www.ssrc.msstate.edu/Publications/Policy&Rural/PDF%20Files/Spangler,%20Kristen1.pdf.

Kelley, D. 2004. *A Study of the Economic and Community Benefits of Cedar Falls, Iowa's Municipal Telecommunications Network*. http://www.iprovo.net/projectInfoDocs/economicAndCommunityBenefitsStudy.pdf.

Kretzman, J., and J. McKnight. 1993. *Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets. ACTA Publications*. Northwestern University: Center for Urban Affairs and Policy Research.

Linnell, Deborah. 2003. *Evaluation of Capacity Building: Lessons from the Field*. Washington, DC: Alliance for Nonprofit Management.

Maharishi University of Management. http://www.alltm.org.

Markley, Deborah M. 2006. A Framework for developing rural entrepreneurship. *Economic Development America*, Winter 2006: 4-6. http://www.eda.gov/.

MaverickLabel.com. Instant quoter. http://www.mavericklabel.com/quoters.html.

McCarthy, Linda. 2001. *Brownfield Redevelopment: A Resource Guide for Toledo and Other Ohio Governments, Developers, and Communities*. The University of Toledo. http://uac.utoledo.edu/Publications/brownfield-redevelopment.pdf.

References

Mihalek, Robert. 2003. Editorial: The first plant closes at Vernay. *Yellow Springs News*, June 26, 2003. http://www.ysnews.com/stories/2003/june/062603_edit.html.

-------. 2004. Council withholds support for eco-friendly park. *Yellow Springs News*, April 1, 2004. http://www.ysnews.com/stories/2004/04/040104_ecofriendlynixed.html.

MuniWireless. 2006. Scottsburg, Indiana wireless network saves the community. http://muniwireless.com/archives/projects/295.

National Vacant Properties Campaign. *Smart growth*. http://www.vacantproperties.org/issues/smartgrowth.html.

Ohio Department of Development. Business incentives loans and grants. http://www.odod.state.oh.us/EDD/Loans_Grants.htm.

Ohio Department of Education. District local report card information. http://dnet01.ode.state.oh.us/DistrictRankings.

Planetizen. Economic gardening. http://www.planetizen.com/node/7.

Portney, Kent E. 2003. *Taking sustainable cities seriously*. Cambridge: The MIT Press.

Printingforless.com. Brochure instant pricing. http://printingforless.com/brochures.html.

SAM Indexes. 2003. Criteria and weightings: Corporate sustainability assessment criteria. Dow Jones Sustainability Indexes. http://www.sustainability-indexes.com/htmle/assessment/criteria.html.

Sargent, T., and M. Maytum. 2004. Mission-driven development. *Urban Land*, March 2004: 47-53.

Schultz, J. 2004. *Boomtown USA: The 7½ keys to big success in small towns*. National Association of Industrial and Office Properties.

Scott, Ben, Ryan E. Chelsley, and Naveen Lakshmipathy. 2005. *Profiles of Municipal and Community Broadband Networks*. http://www.newamerica.net/Download_Docs/pdfs/Doc_File_2245_1.pdf.

Serageldin, I. 1994. *Making Development Sustainable: From Concepts to Actions*. Washington, D.C.: The World Bank.

Sitarz, Daniel, ed. 1998. *Sustainable America*. Carbondale, IL: Earthpress.

SMARTe. 2006. What is SMARTe? http://www.smarte.org/smarte/home/index.xml.

SOCDS Crime Data. Output for Yellow Springs, OH. http://socds.huduser.org/FBI.

Social Enterprise Alliance. Leading a community for sustainable nonprofits. http://www.se-alliance.org/.

Southern Growth Policies Board. Homepage. http://www.southern.org/.

StEPP Foundation. Homepage. http://www.steppfoundation.org/main.htm.

Sustainable marketing: Green marketing, organic marketing, and environmental marketing. *Green Marketing News*. http://www.sustainablemarketing.com/content/view/154/152/.

Tropos Networks. 2004. *Metro-scale Wi-Fi as City Service chaska.net, Chaska, Minnesota*. http://www.tropos.com/pdf/chaska_casestudy.pdf.

-------. 2005. *Public Safety and Public Access: Granbury, Texas and Frontier Broadband*. http://www.tropos.com/pdf/casestudy_granbury.pdf.

University of Southern California. 2002. *Resource Manual on Infrastructure for Eco-Industrial Development*. http://www.usc.edu/schools/sppd/research/NCEID/Infrastructure.pdf.

Urban Coalition Minneapolis. Children, youth, and family consortium. http://www.cyfc.umn.edu/adolescents/research/IF1001.html.

U.S. Census Bureau. County Business Patterns 1998-2002. Chart generated by Ellen Marrison on April 10, 2006. http://www.census.gov/epcd/cbp/view/cbpview.html.

-------. 1990. Summary Files 1 and 3. Tables generated by Aaron Schill on April 8, 2006, using American FactFinder: http://factfinder.census.gov.

-------. 2000. Summary Files 1 and 3. Tables generated by Aaron Schill on April 8, 2006, using American FactFinder: http://factfinder.census.gov.
U.S. Department of Commerce. 2004. A Nation online: Entering the broadband age. http://www.ntia.doc.gov/reports/anol/NationOnlineBroadband04.htm.
U.S. Department of Education. Homepage. http://www.ed.gov.
U.S. Department of Housing and Urban Development. Office of Policy Development and Research. Welfare reform impacts on the public housing program: A Preliminary forecast. http://www.huduser.org/publications/pubasst/welrefor.html.
U.S. EPA. 2006. Brownfields cleanup and redevelopment. http://www.epa.gov/swerosps/bf/.
-------. 2006. CERCLIS Database. http://www.epa.gov/superfund/sites/cursites/.
-------. 2006. SITE-Specific Management Approaches and Redevelopment Tools (SMARTE). http://www.epa.gov/ORD/NRMRL/lrpcd/rr/projects/81423.htm.
-------. Cleanup sites, Vernay Laboratories Inc.: Background. http://www.epa.gov/Region5/sites/vernay/background.htm.
-------. Green communities. http://www.epa.gov.
U.S. EPA Region 8. 2003. Brownfields and sustainability: Making the link. http://env1.kangwon.ac.kr/project/sdwr2004/litsurv/intwebsites/epa-ost/epa.gov/region8/land_waste/bfhome/bfsd.html.
U.S. Green Building Council. Homepage. http://www.usgbc.org/.
Vernay Corporate. Homepage. http://www.vernay.com/corporate/corporat.htm.
Village of Yellow Springs. Economic Development. http://www.yso.com/economic_development/economic_dev.html.
Wintrow, Karin. President, Yellow Springs Chamber of Commerce. In-Person interview with Ellen Marrison, Sophia Corna, Marquetta Pittman, Brett Lieberman, Aaron Schill and Ryan Edwards. April 19, 2006.
Yellow Springs Chamber of Commerce. Homepage. http://www.yellowspringsohio.org/.
Yellow Springs Community Directory. 2006. Yellow Springs News.
Yellow Springs Cost of Living Report. 2002. The Yellow Springs Men's Group, Inc. http://www.45387.org/docs/finance/colr/Yellow%20Springs%20Cost%20of%20Living%20Report.pdf.
Yellow Springs External Perceptions Survey. 2005. Center for Public Affairs at Wright State University.
YSI Corporate. 2006. *2004 Sustainability report*. http://www.ysi.com/corporate.htm.
Z. Smith Reynolds Foundations. *2004 Annual report*. http://www.zsr.org/forms-and-publications/annual-reports.