TWO CITIES, ONE RIVER

Master Plan for the
Wabash River Urban Corridor

City of Lafayette
City of West Lafayette

A Project of
The Wabash River Enhancement Corporation

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To the Citizens of the Wabash River Valley,

Over the past several years, we have had the privilege of working with many of you to develop a vision: Two Cities, One River. Supported by local philanthropy and guided by the Wabash River Enhancement Corporation (WREC), we now have a plan to leverage one of our region’s greatest assets—the Wabash River.

Historically, the Wabash River was a bustling channel of commerce for the City of Lafayette, which was laid out by river trader William Digby in 1825. However, as the railroad gained national prominence in the 19th and 20th centuries, shipping and development turned their backs on the Wabash River. Successive shifts in the economy left a natural resource with great potential just waiting to be tapped. Enhancement of the Wabash River corridor was identified in Vision 2020—a Lafayette-West Lafayette/Tippacanoe County community-visioning process completed in 2001—as the most important multi-jurisdictional community development project facing the region. A restored river ecology and new recreational amenities can ignite a new regional economy that values quality of life.

Building on recent successes our cities and Tippacanoe County have had with orienting new development to the river and providing access to and along the river’s edge, a community coordinating committee led by North Central Health Services (NCHS) was formed to identify a successful strategy to accomplish river corridor enhancement. Building on the river’s beauty, the plan seeks to restore a healthy river ecosystem, create recreation and related amenities, and sustainable economic development to create a unique quality of life and make the region a place of choice for all, especially those in the region’s identified growth sectors of high technology and the bio-life sciences.

We both serve on the board of WREC with our Tippecanoe County and Purdue colleagues and have been privileged to lead and participate in the planning effort that produced the vision and plan in this document. Under the guidance of WREC’s Executive Director Stanton Lambert, the planning process produced city, county, and regional plans. As elected officials and citizens, we are proud of the 20-year vision in Two Cities, One River. We stand ready to help promote the enormous potential of the Wabash as a source of economic and environmental invigoration for the cities of Lafayette and West Lafayette—improving water quality, removing barriers to waterfront access, adding public waterfront recreation, removing derelict waterfront uses, and adding sustainable development to valuable waterfront property.

Through a process of broad community participation, with focus group meetings, a series of public input workshops, and presentations of the vision, the two sides of the river came together to support goals that will continue to guide the implementation of the plan. These five overarching goals are to: Access the river from both cities, Cultivate healthy ecosystems and create a healthy balance between economic development and environmental management, Engage the whole community, Connect the cities to each other, and Elevate the area to create a sustainable place of choice. These words serve as the outline of a story yet to unfold—a story that we believe paints a bright future for our citizens:

Our work does not end with the publication of this document. Rather, the vision is a starting point for continuing dialogue and specific actions, which we believe are the keys to realizing the Wabash River’s sparkling potential. It lays out a framework for public spaces and growth that can help us continue to prosper well into the 21st century.

Tony Roswarski
Mayor, City of Lafayette
President, Wabash River Enhancement Corp.

John Dennis
Mayor, City of West Lafayette
Treasurer, Wabash River Enhancement Corp.
Executive Summary
Vision
Goals
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VISION

Two Cities, One River, is not just an expression of our two cities’ desire to connect to the river, but also a vision of the future where the River is transformed into a healthy, beautiful centerpiece of a whole, interconnected community.

This vision informed the following conceptual plan to enhance the urban corridor over the next 20 years as resources and opportunities arise. The plan sets forth comprehensive enhancements for the Wabash River corridor as well as short term priority projects.

While the residents of the region and WREC are sensitive to current financial challenges, river enhancement is viewed as an essential investment in making the region more economically competitive. Building on the river’s beauty, the plan seeks to restore a healthy river ecosystem and create recreation and related amenities to create a unique quality of life and make the region a place of choice—especially for attracting and retaining employees in the high technology and bio-life sciences sectors.

SUSTAINABLE, INTEGRATED PLANNING

The broad experience and multi-jurisdictional perspective of the WREC board and staff led them to recognize the importance of taking a comprehensive approach to understanding the conditions and opportunities of the region. Therefore, WREC undertook development of a set of plans at the different scales necessary to address interrelated issues of the cities, county, and region. This plan, Two Cities, One River, for the urban reach of the Wabash within Tippecanoe County is one of that set, which also includes:

- Master Plan for the Wabash River Greenway
- The Region of the Great Bend of the Wabash River Watershed Management Plan

WREC’s strategic plan includes a long-range goal of extending the project into adjacent Warren, Fountain, and Carroll counties. A multi-county extension of the project would require corresponding additions to project leadership and changes in organizational structure. With these changes, further corridor enhancements in those counties could be undertaken.

GOALS

During the early stages of community outreach and input, the community identified 5 widely supported goals that guided development of the plan. Each plan recommendation is framed in support of these goals and expresses a desire for an environmentally and economically responsible approach to effecting change along the Wabash.

- Goal 1: Access from the cities to the river, and create a healthy balance.
- Goal 2: Cultivate healthy ecosystems.
- Goal 3: Engage the whole community.
- Goal 4: Connect the cities to each other.
- Goal 5: Elevate the area to a sustainable place of choice.
TWO CITIES, ONE RIVER

PLAN PRIORITIES
Through public meetings, surveys, and interviews, the community indicated a preference for projects that lie at the heart of the urban section for the first phases of work. They expressed a desire to reconnect Lafayette and West Lafayette by repaving and, literally and figuratively, bridging the fabric of central city development on both sides of the river.

PLAN REACHES
This plan articulates three reaches along the urban section of the Lafayette/West Lafayette stretch of the Wabash River—the Northern Reach, the Central Reach, and the Southern Reach. The Two Cities, One River vision is carried through in recommendations of the plan by reach, offering several significant projects within each of these reaches and community preferences reinforcing the vision by giving priority to those projects that serve to connect.

THE NORTHERN REACH – US 52 BRIDGE TO HARRISON BRIDGE
The Northern Reach includes significant recreational resources, of great value to the region but still underdeveloped. In several key areas, land use does not capitalize on the value of its proximity to well-maintained parkland. The plan seeks to create more optimal relationships between public and private investment.

The shape of the river bank in the Northern Reach is highly dynamic, undermining existing pathways and preventing ecological and recreational investments in the lowest parts of the floodplain. Over the long term, the Northern Reach presents great opportunity for ecological, educational, and recreational enhancements as well as major investments in neighborhood development, allowing the urban core of the region to capture more of its appropriate share of future development.

THE CENTRAL REACH – HARRISON BRIDGE TO RAIL BRIDGE
The Central Reach includes the civic cores of Lafayette and West Lafayette and their important assets. The first opportunities to enhance the identity of this region are here, in the heart of the community. Two Cities, One River expresses the sense of connection and shared identity the residents on both sides aspire to.

There are enormous opportunities to improve the relationship of the civic cores to the riverfront, the connectivity between the two cities, and the benefits they offer one another. New riverfront development, world class design for the riverfront open spaces, and critical new pedestrian connections across the river are among the opportunities to enhance the economies and quality of life in both cities.

THE SOUTHERN REACH – RAIL BRIDGE TO US 231 BRIDGE
This reach offers many potential dramatic enhancements grown from the rich historic roots of Lafayette and West Lafayette. Achieving those dramatic opportunities will require a long view—and appreciation for the extensive current uses and future interim uses the area offers.

The Southern Reach includes key resources: the historic Wabash Avenue neighborhood, Shamrock Park, and waterfront properties newly acquired for enhancement by WREC. As with the other reaches, there is great potential for interpretation of historical features such as the canal trace and development and park activities. The Southern Reach also brings opportunities for a full spectrum of community-enhancing investments—ecological restoration, environmental education, and recreation.
Public Participation Process

Project Goals

Existing Conditions and Site Analysis

Issues and Opportunities

Summary of Existing Conditions

Key Considerations

Market and Economics
PUBLIC PARTICIPATION PROCESS

The residents and other stakeholders of Lafayette and West Lafayette collaborated through public meetings, stakeholder interviews, and questionnaires, supported by an informational project website.

PROJECT GOALS

Project goals were distilled from surveys and breakout group discussions during the first public meeting. Additional input was solicited via the project website. Project goals were confirmed with participants in subsequent public meetings.

The public’s goals for the Wabash River corridor reflect a commitment to ecological, economic, and social enhancements. Connectivity—to the river, between the cities, and among the entire community—was a recurring theme throughout public engagement. The public’s goals are to:

- Provide access from the cities to the river, and create a healthy balance.
- Cultivate healthy ecosystems.
- Engage the whole community.
- Connect the cities to each other.
- Connect Lafayette and West Lafayette through vibrant, compact, mixed-use development supported by a coherent network of walkable streets and public transportation.
- Focus on elevating the area to a sustainable place of choice.
- Enhance and develop sustainable attractions, amenities, and infrastructure, creating an enduring, prosperous place of choice.

The words in all caps and the icons that follow them will be used throughout the document to show how plan recommendations work toward achieving these goals.

EXISTING CONDITIONS & SITE ANALYSIS

HISTORIC CONTEXT

Prior to European and American settlement, various tribes of the Miami tribe inhabited Indiana with a tribe known as the “Wea” inhabiting what is now Tippecanoe County. The Miami called their river “waapaasiki”, meaning “it shines white.” The name suggests a clarity of the river water that allowed the Miami to see the river’s limestone bottom. Today, the river’s limestone bottom is not visible because of pollution and sediment.

In the early 1700s, French explorers, missionaries, and fur traders came to the area. The French distorted the indigenous name for the river into “Ouabache”, which later became “Wabash” in English. The French contribution to local Wabash River history is commemorated through a present day nationally renowned living history event—Feast of the Hunters’ Moon—celebrating the annual Fall Rendezvous held among the French fur traders and the Miamis during this era. With French trade along the river, the Wabash became an important link in the trade route between Canada and the Gulf of Mexico.

The Wabash River Corridor’s plentiful natural resources and its role as a significant trade route led to a series of conflicts between various nations and peoples—starting with it being a flash point in the worldwide conflict between France and England that was fought in part on the North American continent in the early, mid 1700’s, then between England and her American colonies in the mid 1700’s, and finally between the United States, England, and the Native American population in the late 1700’s and early 1800’s. Several battles were fought along the Wabash River through these different eras of conflict including the decisive battle between U.S. and Native American forces in Indiana, “The Battle of Tippecanoe.” This battle, which occurred at present day Battleground, IN, Tippecanoe County in 1811, ended all Native American hopes for retaining the Wabash River Valley.

Following these conflicts, Indiana was opened for settlement. Lafayette was founded in 1825 by William Digby, a river boatman. He had determined that this location was the navigational headwaters for steamboats on the Wabash River, and he platted and sold the town, naming it after General Lafayette, an American Revolutionary War hero then touring the nation. It flourished as a river port town and continued to thrive when the Wabash and Erie Canal was built in the 1840’s, with the community serving as a river and canal port. This success based on river and canal commerce was short lived, as the railroad arrived in the 1850’s and Lafayette’s commerce and industry focus shifted from the river and canal to the railroad.

West Lafayette was created in 1888 through the merging of three small communities—Chaucoma, Oakwood, and Kington—prosperring as the home for Purdue University. Purdue University was founded in 1869 as the state’s land grant university through the generosity of a prominent Lafayette mercantilist, John Purdue, who made his fortune via shipping goods into and out of Tippecanoe County on the Wabash River. Purdue University has grown to world prominence for its engineering and high technology research and education.

Through the 19th and 20th centuries, the river gradually became a place to dump waste. The river and canal heritage continued to serve as a significant cultural landmark in the region, even as the river lost its prominence in everyday life of the community. Now as the community seeks to re-invoke its economic and community development focus, Lafayette-West Lafayette and Tippecanoe County are looking to re-engage with their river.
HISTORIC SITES

Both Lafayette and West Lafayette possess large historic districts of national significance, such as the Chauncey—Stadium Avenues Historic District, and the Hills and Dales Historic District in West Lafayette, the Centennial Neighborhood District, the Perrin Historic District, and the Downtown Lafayette Historic District in Lafayette.

Additionally, Lafayette has several remarkable districts of local historic significance and sites that are on or eligible for the National Register of Historic Places. These sites, like the Big Four Depot, help to define the area’s image and experience.

The preponderance of historic assets and the cultural significance of Purdue’s campus are mutually beneficial. Making stronger connections among these assets can elevate the character of the entire region.

Historic Sites Map
SITE ANALYSIS

Over time, the river’s alignment and floodplains have shifted due to changes in land use and associated large floodwater volumes. Just as flooding results from runoff originating everywhere in the watershed, watershed-wide collaboration is necessary when developing mitigation solutions.

SURFACE WATER

The Wabash River’s hydrological conditions and patterns constrain the use of adjacent land within Lafayette and West Lafayette. The depth and volume of flow in the River is highly variable. In the summer, base flow can be quite low, particularly when rainfall is below average. These drier summer conditions frequently leave sand bars exposed along some of the banks. However, flooding can be extreme, especially in the spring when the River can rise as much as nine or more feet in any given year. A large portion of the project area is within the 100-year floodplain, and additional land is within the 500-year floodplain. When the river floods, the quick-moving water can scour and destabilize riverbanks, destroy riparian plantings, and damage other investments. Flooding can also lead to the deposition of sand and other debris along riverbanks and in the floodplain.

Surface Water Map
STORMWATER
While practices within the study area alone cannot prevent future flooding, measures to manage stormwater locally may help to reduce flooding and associated damage, improve water quality, and maintain river base flows—if applied at sufficient scale along the corridor. Due to current frequent flooding, investments in bank restoration and floodplain ecological restoration are likely to be lost during flood events.

River Channel Map

Legend
- Downtown River Segment Study Area
- Potential Areas for Inclusion in the Downtown River Segment Study Area
  - 1929 Wabash River Channel
  - 2007 Wabash River Channel

Between 1929 – 2007 the channel has not changed significantly as indicated by the map.
SURFACE GEOLOGY
The significant cover of alluvium and outwash fan deposits along the Wabash speaks of its glacial history. An outwash fan is formed when sediment that was locked in a glacier is deposited in a fan shape as the glacier melts. Beyond the outwash fan deposits, the loam till that covers most of Lafayette/West Lafayette is capable of supporting highly productive agriculture. The soils within the watershed all generally support stormwater management techniques that encourage local infiltration.

LANDSCAPE ECOLOGY
Forests and prairies were the predominant landscape systems in the Wabash River watershed prior to European settlement. Most of the study area was prairieland. The exception is the northwestern part of the study area, which was primarily forested. Over time, agriculture and development have removed most of the natural communities. Happy Hollow and Mascouten Parks are remnants of these forests that were preserved because of their difficult topography.
ZONING

Current zoning conflicts with existing land use and does not necessarily reflect desirable uses. It is therefore important to nurture a regulatory context that supports the public's goals, this plan's framework of enhancements, and development opportunities within the study area. With the right regulatory support and investment in public amenities, the region can attract development and encourage economic growth in the urban core rather than in exurban areas.

Zoning Map

- CB: Central Business
- CBW: Central Business
- GB: General Business
- NB: Neighborhood Business
- NBL: Neighborhood Business
- PSKM: Mixed-Use Planned Development
- PRNN: Nonresidential Planned Development
- PRKS: Residential Planned Development
- R1: Single-Family Residential
- R1U: Single-Family Residential
- R2U: Single- and Two-Family Residential
- R3: Single-, Two- and Multi-Family Residential
- R3W: Single-, Two- and Multi-family Residential
- R3U: Single-, Two- and Multi-family Residential
- I1: Industrial
- I2: Industrial
- I3: Industrial
- A: Agriculture
- FP: Floodplain
**LAND USE AND OWNERSHIP**

Updated zoning maps will provide a useful implementation tool for this plan. Zoning in the central study area should support the public’s goals, this plan’s framework of enhancements, and development opportunities. This can be accomplished by rezoning the central study area using either existing zoning districts or developing and using a new zoning district tailored specifically to implement this plan. With the right regulatory support and investment in public amenities, the region can attract development and encourage economic growth in the urban core rather than in exurban areas.

The parkland and open space along the river provide amenities that can leverage economic potential. Conversely, commercial and light industrial properties that do not stimulate public activity—like those along 9th Street and in the Levee Plaza area—can stymie investment in surrounding areas.

**Land Use and Ownership Map**
PARKLAND, TRAILS, AND ACCESS

The majority of existing parkland in the study area is in the Northern Reach. Happy Hollow Park in West Lafayette is heavily used and in need of significant restoration. Lafayette Municipal Golf Course has an active youth program, but its grounds require significant maintenance. Its low elevation results in frequent flooding, requiring significant pumping efforts to mitigate and reduce the impact of the flooding on the course. Of particular concern is the potential drainage of fertilizers and other maintenance chemicals into the Wabash through regular practices and during flood events. Significant parkland/civic space in the Central and Southern Reaches, respectively, includes: Riehle Plaza, and Shannon Park in Lafayette’s Wabash Avenue neighborhood. These spaces have prime locations and draw people to the river. With enhancements, these parks could be even greater amenities. In addition to opportunities for enhancement of existing parks, there are opportunities for development of new large parks.

Currently, the John T. Myers Pedestrian Bridge is the only dedicated pedestrian bridge over the Wabash in the study area, though pedestrians may cross the river on sidewalks using the Harrison and State Road 26 Bridges and on the shoulder on the US 231 Bridge or the US 52 Bridge. On the Lafayette side or the east end of the bridge, although an elevator is available, there is no accessible ramp to the Myers Bridge, which reduces convenience and consequently may limit the bridge’s use by pedestrians and bicyclists. The existing stairs do provide a steep, narrow bike ramp along the side, however it is not user friendly and the stairs are not practical for the typical cyclist to use.

There are insufficient on-road and off-road trails for bicyclists in the study area, but there are great opportunities for extending riverfront trails on both sides of the river. Private ownership and infrastructure, including roads and rail lines, have made connections to the river difficult from many neighborhoods and limited public access. However, these are not insurmountable problems.

Parkland, Trails and Access Map
TRANSPORTATION

Generally, traffic congestion is not a significant issue in the study area, but support for all modes of circulation is a significant issue. Greater support is needed for those who cannot drive or who choose not to use automobiles — children, the elderly, pedestrians, bicyclists, and transit riders.

Long range transportation improvements are coordinated and planned by the Area Plan Commission of Tippecanoe County. In West Lafayette, many of the proposed roadway changes are related to long range circulation planning in the county with the goal of clarifying movement to, through, and around the Purdue University campus. The importance of proposed enhancements to State Street cannot be overstated, given its critical role in connecting West Lafayette and Lafayette. State Street is perhaps one of the most problematic areas for multi-modal circulation, especially where it connects Purdue to Wabash Landing and the river. The high speed of vehicular travel in combination with poor pedestrian infrastructure, large mega-blocks, poor visual quality, suburban style development, and a lack of trees discourages pedestrian activity and connectivity between Lafayette and West Lafayette.

Transportation Problem Areas Map
TRANSPORTATION

Roadways near the Wabash present a range of issues and opportunities. When the west section of Harrison Memorial Bridge is delisted as part of US 231 highway system in 2013, there is an opportunity to enhance bridge programming to include riverfront trail connections and recreation access between Fowler and Wiggins Avenues in West Lafayette and Union and Salem Streets in Lafayette.

Flooding is a significant issue for low-lying segments of roads and trails within the floodplain. When these circulation routes, such as River Road, are flooded, they are temporarily unusable and break critical linkages. Flooding is also likely to damage transportation infrastructure and increase maintenance requirements. Still, the scenic qualities of River Road are clear. The Wabash River Enhancement Corporation’s recent project achievements include having River Road with portions of Division Road, US 231, and IN 43 designated as a State Scenic Byway.

Lafayette has an important intermodal hub in the Big Four Depot, which houses facilities for Amtrak, Greyhound Bus, and CityBus transportation services. As part of the Rail Relocation Project, the Big Four Depot was moved from its original location at Second and South Streets to its current location. Rehie Plaza was built in front of the Big Four Depot as it was being restored. Adjacent to the Amtrak station is the primary station area for CityBus, or the Greater Lafayette Public Transportation Corporation (GLPTC)—a municipal corporation led by a board of directors appointed by the mayors and city councils of Lafayette and West Lafayette. Currently, CityBus provides about 5 million rides per year and is planning to expand services and facilities, with potential mixed use, transit-oriented development in the intermodal hub area in downtown Lafayette. The proposed Centennial Village Transit Plaza will consist of a new transit hub, plaza, and mixed-use facilities for residential, secondary education class space, and business/retail uses. The Transit Village will connect the corridor and the Lafayette-West Lafayette communities via public and alternate transportation systems. This will provide area residents access to existing and proposed green space, parks, and trails along the corridor.

The Wabash River Enhancement Corporation has also followed through on a Vision 2020 initiative to have the vehicular route on the west side of the river starting south of the project area in the county and passing through West Lafayette ending at the I-65 interchange designated as a State Scenic Byway. The Byway starts at its south terminus at Ross Hill County Park on Division Road, moving north and east becoming South River Road; it then intersects and continues north onto US 231/IN 83 Road at its north terminus at the I-65 interchange. The State Scenic Byway program is a component of the National Scenic Byway program (NSB) administered by the Federal Highway Administration’s U.S. Department of Transportation. The goals of the NSB program are congruent to the Wabash River Corridor Enhancement project. The Byway designation provides excellent potential for developing and funding future enhancement projects along the Byway and as a part of the overall corridor enhancement project. A prerequisite for being eligible for NSB funding is to have an approved Byway Management Plan. The planning team recommends developing this plan as a first phase corridor enhancement project.
UTILITIES
The majority of the study area gets potable water from wells, making wellhead protection an important issue. Planning and collaboration on issues such as land uses, hazardous material practices, and education are key to stewardship of water resources. West Lafayette has a more complex network of utility service than Lafayette. West Lafayette is partially served by individual wells, but a part of the city water is distributed by Indiana American Water, a subsidiary of American Water. Additionally, Purdue’s West Lafayette Campus Water Works distributes water for the campus. Water is drawn from wells on the west side of campus that has as its source the Wabash River Valley Aquifer, also known as the Teays River Valley Aquifer.

Another utility concern is the negative visual impact created by large transmission towers within West Lafayette and other segments of the river corridor. Visual impact should continue to be a consideration as future utilities are built, including tall infrastructure like wind turbines. If in the future the opportunity arises to relocate or redesign the placement of the large transmission lines to reduce or eliminate their impact on corridor this should be done.

Utilities Map
Combined Sewer Outfalls and Treatment Plant Effluent Map

Lafayette and West Lafayette have combined sanitary and stormwater sewer systems wherein during heavy rain events, the capacity of the system is overwhelmed, causing mixed stormwater and untreated sewage to discharge into the Wabash. Neither city has met regulators’ clean water targets for the Wabash, but both are working to reduce the number of combined sewer discharges.

Lafayette recently completed a major stormwater interceptor that holds stormwater and delays its release. The interceptor, called the Pearl River CSO Project, begins on Second Street north of Riehle Plaza and continues south to the Pearl River Lift Station, just south of downtown.

Lafayette has also piloted the use of green infrastructure best management practices — practices that detain stormwater locally and that promote infiltration and recharge of the groundwater table. In downtown Lafayette, stormwater “bump-outs,” also called raingardens, have been implemented to test the survivability and maintenance of vegetation as well as the effectiveness of the design used in detaining stormwater.

Both cities’ sewage treatment facilities are in the southern half of the study area, and they release treated water directly into the Wabash. West Lafayette treats approximately 9 million gallons per day, and Lafayette treats approximately 17 million gallons per day. The release of effluent directly into the Wabash means that the cleansed water is not being used as a resource for water recharge or any direct use. The most challenging obstacles to re-use of the effluent appear to be: identifying users with very high volume source water needs and building the infrastructure to transport the water to the users and identifying large enough areas to surface-apply effluent while meeting Indiana Department of Environmental Management requirements for access and pre-application treatment.

West Lafayette has built a new western interceptor on its southwest side to address CSO issues on its side of the river.

Despite these challenges, finding areas for polishing the plant effluent through constructed wetlands and prairies should be an on-going area of research, especially as new opportunities arise.

Promoting water conservation to reduce wastewater flow to the treatment plants is important in reducing effluent output into the Wabash. Reducing stormwater inputs to the combined sewer system could have an even larger impact on reducing flows to the treatment plants as well as reducing overflows of untreated sewage to the Wabash. Stormwater inputs to the combined sewers could be greatly reduced through use of green infrastructure techniques such as porous pavement, green roofs, rainwater harvesting, and bioretention rain gardens integrated into street rights-of-way, parks, and most other landscape areas.

A large portion of treated sludge created at both plants is distributed for agricultural use. In addition to this use, further efficiencies in the waste and energy cycle should be an ongoing goal for both plants.

The following section is a graphic primer for stormwater management for consideration in implementing the recommendations contained in the plan.
A GRAPHIC PRIMER ON STORMWATER MANAGEMENT

If the amount of stormwater and debris that inundates the Wabash can be lessened over time by employing green stormwater infrastructure, an expansive range of benefits becomes possible—clean water, places to gather and play, places to invest safely, habitat—the list goes on. Green stormwater infrastructure investments have immediate benefits as well. Planting trees and installing rain barrels and green roofs saves property owners money and makes buildings and neighborhoods more comfortable and valuable. Wetlands, meadows, and woodlands filter our air and water, give respite from compact urban neighborhoods, and offer home and food to animals. All of those measures, and others such as pervious paving, help to replenish the underlying water table, securing future drinking water.

Although some parts of the study area may feel disconnected from the Wabash because of limited access or views, all neighborhoods in the study area drain to the river and must share responsibility for its health.

WHAT IS A WATERSHED?
A watershed is a drainage basin within which all water flows to a single location.

Some creeks are no longer visible because they have been enclosed in pipes and integrated into the sewer system which end up in the sewage treatment facility and, or the Wabash River.

All the stormwater exits at an outlet that is typically at the lowest elevation of the watershed into another body of water, in our case, the Wabash River.

Stormwater flows in opposite directions on each side of a ridge.

Creeks form in the valleys between ridges.

DEGRADED WATERWAYS

RESTORED WATERWAY
STORMWATER INNOVATION

A TYPICAL urban watershed has negative effects on its creeks:

- Overuse of water for household and personal needs adds additional stress to the municipal water system
- Roof runoff drains quickly; does not absorb into the ground
- Too few street trees to retain stormwater through canopy and root system catchment
- Stormwater drains quickly; does not absorb into the ground
- Water table/creek base flow level is lower due to reduced infiltration of stormwater
- Creek banks degrade and lose native plants due to runoff and frequent flooding; become overwhelmed with aggressive invasive plants
- Frequent overflows release untreated sewage and unfiltered stormwater into creek
- High flow velocities erode and widen creek and make it less habitable for fish, wildlife, plants and people

A more SUSTAINABLE approach to stormwater will positively affect the watershed:

- More efficient household and personal water use reduces stress on the municipal water system
- Rain barrels and cisterns retain and slow stormwater drainage
- Green roofs collect and divert runoff from the municipal water system
- Permeable paving in parking lanes reduces road runoff
- Larger, enhanced street tree networks filter and store runoff
- Groves and swales in parking lots filter and slow runoff
- Water table/creek base flow level is higher, ensuring drinking water supply
- Permeable parking surfaces near the creek reduce runoff
- Reduced runoff and contamination and fewer flood events allow banks to host native plants and wildlife
- Fewer combined sewer overflow events
- Reduced runoff permits slower creek flows, more naturalized channels, and a healthier creek environment
**RIPARIAN BUFFERS**

Riparian vegetation is a forested strip along waterways that helps protect a stream from the impact of adjacent land uses. The vegetation acts as a buffer that intercepts sediment, nutrients, pesticides, and other materials in surface runoff before it reaches the water body. These buffers also reduce nutrients and other pollutants in shallow subsurface water flow, in addition to reducing erosion by providing stream bank stabilization. Riparian vegetation serves as a habitat and wildlife corridor while providing shade, cooling the water, and increasing biodiversity and habitat quality.

**STORMWATER TREE TRENCH**

A stormwater tree trench is a system of trees that is connected by an underground infiltration structure. On the surface, a stormwater tree trench looks like a series of street tree pits. However, under the sidewalk, an engineered system manages the incoming runoff. This system is composed of a trench dug along the sidewalk, lined with permeable geotextile fabric, filled with stone or gravel, and topped off with soil and trees. Stormwater runoff flows through a special inlet (storm drain), leading to the stormwater tree trench. The trench is stored in the spaces between the stories, washing the trees and slowly infiltrating through the bottom. If the capacity of this system is exceeded, stormwater runoff can bypass it entirely and flow into an existing street inlet.

**GREEN ROOF**

A green roof is a roof or section of roof that is vegetated. A green roof system is composed of multiple layers including waterproofing, a drainage layer, an engineered planting media, and specially selected plants. Green roofs can be installed on many types of roofs, from small slanting roofs to large commercial flat roofs. Two basic types of green roofs have been developed: extensive and intensive. An extensive green roof system is thin, usually less than 6 inches, lighter-weight, and planted predominantly with drought-tolerant succulent plants and grasses. An extensive green roof is a lighter, less expensive system designed to sustain more complex landscapes. A green roof is effective in reducing the volume and velocity of stormwater runoff from roofs by temporarily storing stormwater, lowering excess stormwater release into the combined sewer system, and promoting evapotranspiration.

**RAIN BARREL**

A rain barrel or cistern is a structure that collects and stores stormwater runoff from rooftops. The collected rain water can be used for irrigation to water lawns, gardens, window boxes or street trees. By temporarily holding the stormwater runoff during a rain event, more capacity can be added to the city’s sewer system. However, rain barrels and cisterns only serve an effective stormwater control function if the stored water is used or emptied between storm events so that there is free storage volume for the next storm. Rain barrels are designed to overflow into the sewer system through the existing downspout connection in large storm events. Although these systems only store a small volume of stormwater collectively, they can be effective at preventing large volumes of runoff from entering the sewer system.

**FLOW-THROUGH PLANTER**

A flow-through planter is a structure that is designed to allow stormwater from roof gutters to flow through and be used by the plants. Flow-through planters are filled with gravel, soil, vegetation, and a connection to the roof downspout to let water flow in. They temporarily store stormwater runoff on top of the soil and filter sediment and pollutants as water infiltrates down through the planter. They are typically waterproofed, and the bottom of the planter is normally impermeable. The planter volume is designed to infiltrate runoff into the ground, rather than rely on evapotranspiration and short-term storage to manage stormwater. Excess water can overflow into the existing downspout connection. Flow-through planters can be constructed in many sizes and shapes, and with various materials, including concrete, brick, plastic lumber or wood.

**RAIN GARDEN**

A rain garden is a garden designed to collect runoff from impervious surfaces such as roofs, walkways, and parking lots, allowing water to infiltrate into the ground. The garden is typically modestly depressed (lower than the surrounding ground level), with the bottom layer filled with stone so runoff can collect and pond within it. The site is graded appropriately to cause stormwater to flow into the rain garden area from the nearby impervious area. The stormwater pond on the surface is sized for that portion of evaporation, and infiltrates into the subsurface storage and soil. Rain gardens can be connected to sewers systems through an overflow structure, but usually they are used to infiltrate the collected stormwater runoff within 72 hours. Flexible and easy to incorporate into landscaped areas, rain gardens are suitable for many types and sizes of development and retrofit. Rain gardens are effective at removing pollutants and reducing stormwater runoff volume.

**PERVIOUS PAVING**

Pervious pavement is a specially designed pavement system that allows water to infiltrate through the pavement and prevents it from becoming runoff. This system provides the structural support of conventional pavement, but it is made up of a pervious, less expensive system designed to sustain more complex landscapes. A pervious pavement is a deeper, heavier system designed to sustain more complex landscapes. Pervious pavement is a specially designed pavement system that allows water to infiltrate through the pavement and prevents it from becoming runoff. This system provides the structural support of conventional pavement, but it is made up of a pervious, less expensive system designed to sustain more complex landscapes.

**STORMWATER WETLAND**

A stormwater wetland is a man-made shallow marsh system that is engineered to serve as both a temporary storage location as well as a natural filter for stormwater runoff. Each wetland is composed of various depths of storage areas, including surface, shallow, and deep areas, and a complex mix of wetland-appropriate landscaping. Stormwater wetlands are one of the best stormwater management tools for pollutant removal and can provide considerable aesthetic and wildlife benefits.
IDENTIFICATION OF REACHES, ENHANCEMENT AREAS, AND RISK LEVELS OF INVESTMENTS

Prior to development of plan recommendations and identification of possible strategic projects, the urban section was assessed for:

- General corridor reaches, areas with the same general physical characteristics of land use, density, and vegetation
- Landscape sub-zones based on the extent of floodplains and their potential for enhancement (at a finer level than general corridor reaches)
- Levels of risk and suitable levels of investments associated with each floodplain

Those assessments are described in the following three sections. It is important to note that the analyses inform plan development but are subject to interpretation and coherence with overall plan recommendations.

IDENTIFICATION OF REACHES

The 4-mile length of the study area has been characterized as having three reaches - the Northern, Central, and Southern. These reaches are later used to organize plan recommendations.

NORTHERN REACH – US 52 BRIDGE TO HARRISON BRIDGE

The Northern Reach includes significant recreational resources such as Happy Hollow Park, Mascouten Park, with its popular boat launch on the West Lafayette side, and McAllister Park, containing Lafayette Municipal Golf Course on the Lafayette side. In several key areas along McAllister Park, adjacent land uses do not capitalize upon the potential value of being near well maintained parkland. Bank morphology is dynamic along the banks of the Northern Reach, with scouring and siltation occurring irregularly, undermining existing pathways and preventing a range of ecological and recreational investments in the lower floodplains. Over the long term, the Northern Reach presents great opportunity for ecological, educational, and recreational enhancements, as well as investments in neighborhood development.
CENTRAL REACH – HARRISON BRIDGE TO RAIL BRIDGE

The Central Reach includes the civic cores of Lafayette and West Lafayette with key assets such as Tapawingo Park, Wabash Landing, John T. Myers Pedestrian Bridge, downtown Lafayette, historic Big Four Depot – which serves the Amtrak, Greyhound and CityBus, and adjacent James F. Riehle Plaza. Direct connectivity and sightlines to the Wabash River are much stronger on the West Lafayette side than on the Lafayette side. Even with the presence of the rail line along the Lafayette side and the virtual barrier that the Levee Plaza area currently presents on the West Lafayette side, there are enormous opportunities to enhance the relationship of the civic cores to the riverfront, the connectivity between the two cities and benefits they offer one another. WREC working with North Central Health Services has already acquired 20+ acres in the Central Reach.

SOUTHERN REACH – RAIL BRIDGE TO US 231 BRIDGE

The Southern Reach includes both cities’ wastewater treatment plants; large open fields and wetlands on the West Lafayette side; and on the Lafayette side, the Wabash Avenue neighborhood, Shamrock Park and key waterfront properties newly acquired by WREC (through funding by North Central Health Services) between the rail bridge and Shamrock Park. As with the other reaches, there is great potential for interpretation of historical features and activities. The Southern Reach also offers exciting and significant opportunities for other cultural features, ecological enhancement, environmental education, and recreation.

Together, these reaches constitute a strategically significant investment area. Purdue, West Lafayette, and Lafayette comprise a community of high capacity and cohesion. The civic, educational, and non-profit leaders of the community are active in soliciting and shepherding the community’s shared vision of its future.
RISK AND SUITABILITY OF INVESTMENT BY FLOODPLAIN ELEVATION ZONE

A large majority of the study area is within the 100- and 500-year floodplains. Because of this, and the great impacts of flooding in the area, it is necessary to gauge the risk of any investments against the probability of flooding. The 100- and 500-year floodplain boundaries are too coarse to guide the assessment of risk associated with park and other improvements. Therefore, the study area is subdivided into a finer grain of flood elevation zones, from the active zone up to the 500-year floodplain. Investment risk for planting / environmental assets and building investments are assessed, and an estimate of suitable types and cost of planting and building is provided.

The following are descriptions of each floodplain elevation zone and recommended ranges of investment (per 2010 values):
**Floodplain Stages: 0- to 2-Year Floodplain**

- **US 231 Bridge**
- **Harrison Bridge**
- **Myers Bridge**
- **SR 26 Bridges**

**Floodplain Stages: 2- to 5-Year Floodplain**

- **US 231 Bridge**
- **Harrison Bridge**
- **Myers Bridge**
- **SR 26 Bridges**

Denotes River Channel Location
Floodplain Stages: 25- to 100-Year Floodplain

- **Normal River Elevation Zone**
  - High quality near-stream species, likely to be tolerant of water level fluctuations.
  - No major management issues expected.

- **25- to 100-Year Floodplain**
  - High quality near-stream species, similar to the previous stage, but soil may be subject to erosion.
  - Management required to prevent erosion and sedimentation.

- **Suitable Landscape Types**
  - High quality near-stream species, similar to the previous stage, but soil may be subject to erosion.
  - Management required to prevent erosion and sedimentation.

- **5-Year Planning Costs**
  - No major management issues expected.

- **Investment Risk**
  - Low risk

---

Floodplain Stages: 100- to 500-Year Floodplain

- **Normal River Elevation Zone**
  - High quality near-stream species, similar to the previous stage, but soil may be subject to erosion.
  - Management required to prevent erosion and sedimentation.

- **100- to 500-Year Floodplain**
  - High quality near-stream species, similar to the previous stage, but soil may be subject to erosion.
  - Management required to prevent erosion and sedimentation.

- **Suitable Landscape Types**
  - High quality near-stream species, similar to the previous stage, but soil may be subject to erosion.
  - Management required to prevent erosion and sedimentation.

- **5-Year Planning Costs**
  - No major management issues expected.

- **Investment Risk**
  - Low risk
The Lafayette–West Lafayette area is much more than a college town with charming and livable neighborhoods. It is an important cultural, research, and economic center of the Midwest, with institutions like Acro, Caterpillar, Fairfield Manufacturing, Wabash National, Subaru of Indiana Automotive, Evonik Industries, Tate & Lyle, TRW, Landis+Gyr, and Purdue University.

The area is connected to the national rail system via Amtrak’s Cardinal and Hoosier State routes. The Cardinal route connects Chicago to New York City, running through Indiana, Ohio, Kentucky, West Virginia, and Virginia, then up the east coast to New York. The region is also well served by the CityBus system, whose investments in the area are expanding. In addition, the trail system continues to improve and bicycle use is relatively high, partially due to the high percentage of students.

The role of the region in American history has been significant and diverse. The Feast of the Hunters’ Moon, a significant, local, annual living history event held at Fort Ouiatenon Park (historically, a site of these gatherings in the 1700s) celebrates the annual fall gatherings typical to the mid-1700s French/European/Native American fur trading economy of the region. Tippecanoe Battlefield and Prophetstown State Park mark the site where western forces overtook a nascent confedency of Native Americans and its capital, Prophet’s Town. There are also many homes and sites of historic and architectural significance, contributing to a rich and layered historic context.

Places of cultural and horticultural interest in the greater Lafayette region include Jerry E. Clegg Botanic Garden, the Horticulture Gardens at Purdue University, Wolf Park, and Columbian Park and Zoo. There is not yet a fully interconnected and comprehensive parks and trails system along the Wabash, but existing parks offer places for fishing, occasional boating, golfing, picnicking, skating, cross country skiing, performance spaces, trails, a dog run, and playgrounds. Rowing became a part of the recreational mix when Purdue Crew opened its rowing facility in 2010.

The Wabash is not currently at the center of community life. It is not even visible from many places along the corridor. The edges of the river are frayed, in terms of development patterns, recreation access, and ecological function. However, the Wabash is a key feature at Tapawingo Park and the Myers Bridge. It is there that one can get a glimpse of the river and its potential.

With poor land and stormwater management practices upriver, the Wabash is an unreliable source of recreation and is often of poor visual quality. Runoff and subsequent sedimentation in the river give it a muddy appearance. In wet weather, it can overwhelm its banks and bring significant destruction. In dry weather, it can be virtually travered by foot. Advocates, including Purdue, WREC, the Living Laboratory on the Wabash, a Purdue University research center and partner with WREC, Lafayette, West Lafayette, and Tippecanoe County are collaborating to improve the hydrology and ecology of the Wabash including addressing combined sewer overflow issues, and water quality research and remediation projects. Most importantly, area residents have great ambitions and support necessary investments in education, environmental stewardship, and economic development.

KEY CONSIDERATIONS

Key considerations that arose in the review of the existing conditions include:

- The importance of coordination with concurrent and related planning efforts—such as the relevance of past visioning efforts such as the Purdue-led River Vision: The Wabash, Our River, Our Community.
- The exceptional motivation of the Lafayette and West Lafayette community to enhance the Wabash River corridor.
- The vulnerability of the project area, with the great majority of the area within the floodplain.
- The limited degree of connections to the waterfront, with many barriers such as rail, roadways, topography, and limited public ownership.
- The large volume of treated sanitary effluent discharged by Lafayette and West Lafayette wastewater treatment plants, with an average daily discharge of approximately 26 million gallons/day.
- The prioritization of sites based upon the opportunities for enhancement they offer, as well as the reasonableness of risk for investment.
MARKET AND ECONOMICS

INTRODUCTION

Since 2008, the Washington, D.C. office of ERM/ARCOM (formerly Economics Research Associates) has prepared the market and economic elements of a 20-year vision plan for the Wabash River corridor in Tippecanoe County, Indiana. These studies, which were prepared for Wallace, Roberts and Todd (WRT) of Philadelphia on behalf of the Wabash River Enhancement Corporation (WREC), have tested market potentials, financial feasibility, and economic impacts associated with general development opportunities for three planning areas identified as the Northern Reach, the Central Reach, and the Southern Reach that, collectively, comprise approximately 972 acres of land on both sides of the river in Lafayette and West Lafayette. The economic studies also tested the feasibility of mixed-use development concepts for two, small prototype sites in the core area of the river corridor.

Why a Market Analysis?

The market analysis, completed in 2008-09, examines how much of Tippecanoe County’s anticipated future growth could be focused in these three areas along the river corridor. As such, the market analysis is intended to frame the economic fundamentals of Tippecanoe County—and more specifically Lafayette and West Lafayette. The market analysis includes three key elements:

• A profile of demographic and economic characteristics that measures factors driving fundamental demand for real estate, such as population and employment growth, consumer retail spending, and other indicators;
• A review of historic and current real estate market conditions across Tippecanoe County in housing, “workplace” uses such as professional office and industrial, and supporting services such as commercial retail and lodging to understand how historic and current economic conditions may affect near-term development opportunities in the river corridor; and
• A “demand analysis” that translates future growth in Tippecanoe County into demand for new real estate development through a series of economic models. Key inputs include market factors and assumptions such as “capture” rates, or estimates of future growth that each of the three planning areas could potentially capture based on various assumptions.

Moreover, the market study is intended to guide the many critical policy decisions required by WREC as well as the cities of Lafayette and West Lafayette to ensure that the recommendations contained throughout the plan are realized. We note that the market analysis is not a regional or local economic development strategy per se. However, several recommendations characteristic of such a strategy may be required to maximize economic potentials of the river corridor and the three planning areas. Such critical next steps are noted in this chapter, they include, but are not limited to:

• Implementing appropriate zoning and land use regulations designed to meet key planning objectives noted in the master plan;
• Outlining specific approaches to real estate development on priority parcels—whether under private or public ownership. This may range from land acquisition strategies to partnerships with qualified developers of specific uses to build-to-suit approaches for specific users;
• Defining marketing strategies and tenant recruitment efforts, particularly for new retail and office/research and development uses due to significant competition from other areas in Tippecanoe County, including State Road 26 (the region’s primary retail corridor) and Purdue Research Park (the region’s premiere research and development campus);
• Conducting additional economic studies, including financial feasibility, to measure the overall investment viability of proposed projects to understand whether funding gaps exist and to identify the type and magnitude of public incentives; and
• Identifying a “toolkit” of financial and/or other regulatory incentives that may be needed to attract specific uses and/or tenants to the planning areas generally and to specific locations such as priority sites within the planning areas.

Tippecanoe County serves as a regional economic destination among 12 largely rural, surrounding counties that comprise a regional “trade area” of 489,000 residents.

Table 1: Regional Population Forecasts, 2005—2040

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Tippecanoe</td>
<td>153,875</td>
<td>157,524</td>
<td>164,589</td>
<td>174,919</td>
<td>182,992</td>
<td>29,117 0.5%</td>
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<tr>
<td>As % of Region</td>
<td>77%</td>
<td>77%</td>
<td>78%</td>
<td>79%</td>
<td>80%</td>
<td></td>
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<tr>
<td>Warren</td>
<td>8,785</td>
<td>9,040</td>
<td>9,238</td>
<td>9,119</td>
<td>8,825</td>
<td>40 0.0%</td>
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<tr>
<td>Carroll</td>
<td>20,426</td>
<td>20,428</td>
<td>20,705</td>
<td>20,966</td>
<td>20,769</td>
<td>343 0.0%</td>
</tr>
<tr>
<td>Fountain</td>
<td>17,462</td>
<td>16,897</td>
<td>16,419</td>
<td>16,709</td>
<td>16,804</td>
<td>638 0.1%</td>
</tr>
<tr>
<td>Total-Region</td>
<td>200,548</td>
<td>203,889</td>
<td>210,991</td>
<td>221,713</td>
<td>229,390</td>
<td>28,842 0.4%</td>
</tr>
</tbody>
</table>

*Compound Annual Growth Rate

Source: Stats Indiana; Economics Research Associates, July 2008

Figure 1: Households by Income, Tippecanoe County, 2007—2012

Figure 2: Population by Age Cohort, Tippecanoe County, 2007-2012
Key Market Findings

Key findings from the market analysis are summarized below:

**Purdue Research Park**

The park, which is operated by the Purdue Research Foundation, contains 52 buildings comprising 1.3 million sq. ft. of owned or leased space occupied by 160 companies providing 3,700 jobs. The park contains 364,000 sq. ft. of business incubation space, the largest university-affiliated complex in the United States.

Purdue Research Park was designated an Indiana Certified Technology Park in 2003, allowing local option and state income taxes collected from employees to be placed in a fund to finance future improvements. It has also won several other awards.

The region’s diversifying economy is reflected in the fact that there are over 100 high-tech and life sciences companies in Lafayette-West Lafayette, many of which are located in the Purdue Research Park, including Lake View Technology Center, and the recently opened Innovation Center, an 80,000 sq. ft. facility.

**Job Growth**

Changes in a region’s labor force are a key driver of demand for various types of workplace real estate such as office space, retail centers and industrial parks. A profile of occupational and employment characteristics in Tippecanoe County was prepared based on available data.

As illustrated in Table 2, key findings suggest that:

- Since 2001, job growth in Tippecanoe County has been uneven— with declines in Manufacturing offsetting gains primarily in the Government and Services sectors. Job growth has occurred in education, medical/health care (with projects such as Franciscan St. Elizabeth Health – Lafayette Central and Lafayette East, IU Health Arnett Medical Center, and Lafayette Medical Park), lodging (Baymont Inn & Suites, Residence Inn), and professional and business services.
- Concentrated efforts among economic development entities such as the Greater Lafayette Commerce (at the local level) to Midwest Indiana Economic Development (at the regional level) to diversify Tippecanoe’s economy are paying off: 3,300 new jobs have been created since 2001. However, the loss of over 3,100 jobs in Manufacturing and several other sectors resulted in a net gain of 2,200 new jobs in Tippecanoe County during this eight-year period.
- More recently, the impacts of the national economic downturn have resulted in additional job losses and furloughs across many sectors of the county’s economy.

As noted, new jobs will translate into demand for workplace real estate such as industrial parks, professional office space, and retail centers. Woods & Poole, Inc., a demographic forecasting service based in Washington, D.C., is the only service that prepares long-term employment forecasts for every county in the United States. Its forecasts for Tippecanoe County are also illustrated in Table 2.

These forecasts suggest that continued economic expansion in Tippecanoe County will produce 35,000 new jobs by 2030. We note that these forecasts include both part-time and self-employed individuals. Such jobs may not necessarily demand new workplace real estate if such individuals work at home or can be accommodated in existing vacant space, for example.

**Economic Characteristics**

The economic profile examined key indices in Tippecanoe County’s overall economy— focusing on business expansion, household consumer retail spending, and job growth in specific sectors of the economy to understand and measure development potentials for the planning areas.

**Demographics**

Changes in population and households are a key metric of demand for new housing, and characteristics of the labor force and specific population indices such as age and education are critical measures in a jurisdiction’s ability to attract economic growth and expansion.

Tippecanoe County serves as a regional economic destination among 12 largely rural, surrounding counties that comprise a regional “trade area” of 489,000 residents. The county’s historic growth patterns over the past 25 years are characterized of a rural-to-suburban evolution— with new growth occurring on greenfields sites in outlying locations.

Ready access to I-65 coupled with low land costs are contributing factors to this trend and are a consideration in estimating the amount of future growth that could be captured in the three planning areas:

- According to Stats Indiana, between 2000 and 2007, Tippecanoe County’s population increased by 12,000 new residents in 4,800 new households, a period of significant new growth generated by surging national and local economies and new job creation. At this pace, sustained annual growth averaged 850 households (units) per year across the county. In response, new residential development surged—with an annual pace of 1,200 permits per year issued countywide during this period.

- When the market study was prepared in 2008-09, Tippecanoe County contained 161,000 residents in 62,000 households. At the municipal level, Lafayette, the county’s largest city, contains 63,700 residents (39 percent of the county) and West Lafayette has a population of slightly more than 31,000 residents (19 percent).

- As illustrated in Table 1, population growth forecasts prepared by Stats Indiana suggest that Tippecanoe County will gain 29,100 new residents in 12,300 new households between 2007 and 2040. Presuming this forecast materializes, this equates to sustained average annual growth of 350 households (units) per year over the 35-year forecast period. Interestingly, state forecasts suggest that average growth over the next 35 years will occur at a more moderate pace than the rapid rate of growth that took place between 2000 and 2007.

- Interviews with local officials during the market analysis suggested that state population forecasts may be conservative given recent trends.

These forecasts suggest that continued economic expansion in Tippecanoe County will produce 35,000 new jobs by 2030.
Table 2: Employment Trends & Forecasts, Tippecanoe County, 2000—2030

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Tippecanoe County</td>
<td>4,793</td>
<td>4,965</td>
<td>5,490</td>
<td>6,307</td>
<td>7,274</td>
<td>172</td>
<td>72</td>
<td>967</td>
</tr>
<tr>
<td>Mining &amp; Construction</td>
<td>18,186</td>
<td>15,255</td>
<td>15,301</td>
<td>15,169</td>
<td>15,443</td>
<td>(3,131)</td>
<td>114</td>
<td>74</td>
</tr>
<tr>
<td>Wholesale &amp; Retail Trade</td>
<td>20,194</td>
<td>20,304</td>
<td>21,921</td>
<td>24,434</td>
<td>27,428</td>
<td>110</td>
<td>4,130</td>
<td>2,994</td>
</tr>
<tr>
<td>Finance/Institution</td>
<td>5,676</td>
<td>5,737</td>
<td>5,722</td>
<td>5,677</td>
<td>5,985</td>
<td>61</td>
<td>60</td>
<td>92</td>
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<tr>
<td>Real Estate</td>
<td>24,140</td>
<td>27,227</td>
<td>30,386</td>
<td>35,059</td>
<td>40,174</td>
<td>3,087</td>
<td>7,832</td>
<td>5,115</td>
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</table>

Table 3: Residential Permit Activity, 2000—2007

<table>
<thead>
<tr>
<th>Total new Jobs (2007-2030)</th>
<th>35,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Increase (Rounded)</td>
<td>1,400</td>
</tr>
</tbody>
</table>

Table 4: Regional Office Market Conditions

<table>
<thead>
<tr>
<th>City/</th>
<th>Supermarket</th>
<th>Rentable Bldg. Area</th>
<th>% Share</th>
<th>Sq. Ft. Available</th>
<th>% Vacant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lafayette</td>
<td>14,314,314</td>
<td>78%</td>
<td>35,000</td>
<td>25.1%</td>
<td></td>
</tr>
<tr>
<td>West Lafayette</td>
<td>4,131,107</td>
<td>22%</td>
<td>45,567</td>
<td>11.0%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18,445,421</td>
<td>100%</td>
<td>405,582</td>
<td>22.0%</td>
<td></td>
</tr>
</tbody>
</table>

Source: CoStar Realty Information; Economics Research Associates, December 2008

Speculative/Multi-tenant Office

ERA/AECOM also examined market conditions and trends among workplace uses in Tippecanoe County. Notably, specific data on leasing/absorption activity—a key barometer in evaluating market strengths and weaknesses as well as development opportunities for such uses—is not available.

In addition to the area’s key economic generators of manufacturing, life sciences and education, demand for office space in Tippecanoe County is fueled by its role as a regional financial center. There are 14 banks, two credit unions, the headquarters of Lafayette Life Insurance Company (215 employees), and State Farm Insurance has a regional office (175 employees).

Limited information on the area office market was obtained from CoStar Realty, a national database that tracks market conditions in office, retail and industrial real estate for localities across the United States. However, CoStar does not track historic absorption activity in Tippecanoe County.

Available information is illustrated in Table 4 and noted as follows:

- Data indicate that Lafayette contains the majority of the region’s office space, with 1.4 million sq. ft. of inventory.
- Recently-delivered office buildings include Renaissance Place, a $25 million mixed-use project in downtown Lafayette, and Cascada Business Park, a suburban business park located on McCarty Lane. Other office buildings are located in the Purdue Research Park, INTEK Business Park, Sagamore Parkway, and in historic buildings in downtown Lafayette, several of which have been restored.
- There are a reported 360,000 sq. ft. of vacant space in Lafayette, which translates into a 25 percent vacancy rate.
Table 5: Regional Retail Market Conditions

<table>
<thead>
<tr>
<th></th>
<th>Total RBA (In Sq. Ft.)</th>
<th>Sq. Ft. Available</th>
<th>Occupancy</th>
<th>Average Asking Rents ( Per Sq. Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Lafayette</td>
<td>1,106,698</td>
<td>100,289</td>
<td>90.9%</td>
<td>$11.87</td>
</tr>
<tr>
<td>Lafayette</td>
<td>6,446,110</td>
<td>816,551</td>
<td>87.3%</td>
<td>$14.62</td>
</tr>
<tr>
<td>Other</td>
<td>57,741</td>
<td>12,200</td>
<td>68.7%</td>
<td>$14.62</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7,590,549</strong></td>
<td><strong>929,040</strong></td>
<td><strong>87.8%</strong></td>
<td><strong>$12.36</strong></td>
</tr>
</tbody>
</table>

ERA notes that historical trend information (occupancy, absorption, supply) for the Tippecanoe retail market is not available from CoStar or local market sources. Source: CoStar Realty Information; Economics Research Associates, July 2008

- By comparison, the office inventory in West Lafayette is significantly smaller, with 413,000 sq. ft. of multi-tenant office space. It is also a stronger market, with a reported 45,600 sq. ft. of vacant space (11 percent). In combination, the region’s 1.8 million sq. ft. of office space has a vacancy rate of 12 percent.
- Regional market dynamics suggest that short-term opportunities for new office development will be limited. Capital markets seek sustained annual occupancies in the range of 90 percent or higher as a threshold in financing new office development.

Commercial Retail
Tippecanoe County serves as a regional retail hub for the surrounding rural counties, with a regional inventory totaling 7.5 million sq. ft. of retail space among neighborhood and community shopping centers, power centers, and a regional mall. The State Road 26 corridor serves as the region’s primary retail cluster, and State Road 52/Sagamore Parkway and State Road 38 are also retail concentrations.

The region’s 930,000 sq. ft. of vacant retail space (12 percent) is scattered across multiple locations. However, key vacancies include several empty “Big Box” retailers such as K-mart, the shuttered center adjacent to Tippecanoe Mall, and others. Vacancy rates have increased with the economic downturn, as the retail industry contracts due to bankruptcies, mergers and consolidations, and reduced consumer spending.

The county’s largest retail venues include:
- Tippecanoe Mall with 840,000 sq. ft. anchored by Macy’s, Kohl’s, Sears, J.C. Penney, HH Gregg and Dick’s Sporting Goods, with 100 inline retailers,
- Lafayette Pavilions, a 350,700 sq. ft. power center on a 32-acre site on State Road 26 delivered in 2006. Anchors include: Hobby Lobby, T.J. Maxx, and Gordman’s department store. The center contains several pad retail sites, and has relatively low vacancy.

Hotel/Lodging
According to the Greater Lafayette Convention and Visitors Bureau, Lafayette and West Lafayette attract 3.5 million visitors annually. These visitors generate more than $200 million in indirect expenditures on lodging, food, retail, entertainment, and other spending. Some of the area’s attractions include the sports and cultural venues associated with Purdue University, Civic Theatre of Greater Lafayette, Wolf Park, NAWPF, Prophetstown State Park, Historic Prophetstown, the City of Lafayette’s community zoo and aquatic park, the Long Center for the Performing Arts, Imagination Station and Wildcat Creek Winery.

The area contains a range of full- and limited-service and extended-stay hotel properties, such as Holiday Inn City Centre, Best Western Lafayette Executive Plaza & Conference Center, Hilton Garden Inn, and Homewood Suites. According to the Convention and Visitors Bureau, there are more than 2,600 hotel rooms in Tippecanoe County. Market dynamics during the market analysis in 2008 are illustrated in Table 6. In addition, several hotel/lodging projects were announced at the time the market analysis was completed, including:
- Candlewood Suites announced plans in December 2007 to build an 81-suite, 12,500 sq. ft. hotel on Meijer Drive (project was delayed as of December 2008);
- Courtyard Lafayette by Marriott, a $10 million, three-story, 90-room and suite hotel on State Road 26 (opened March 2009); and
- Spring Hill Suites plans a $16 million, 151-room hotel on Tapawingo Drive in West Lafayette. The project has been delayed due to the economic downturn, and no timeline is available.

ERA/AECOM examined hotel market dynamics based on data provided by Smith Travel Research, a national lodging database that tracks performance characteristics for properties across the United States. The regional hotel market has exhibited fluctuating market dynamics over the past five years. In fact, for both full- and limited-service properties, average daily rates jumped between 17 and 19 percent; and, revenue per available room (REVPAR) increased between 33 and 38 percent.

According to the Greater Lafayette Convention and Visitors Bureau, Lafayette and West Lafayette attract 3.5 million visitors annually.
## Table 6: Hotel Market Dynamics, 2003—2008

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>YTD 2008</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full-Service Properties</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available Roomnights</td>
<td>—</td>
<td>—</td>
<td>26,545</td>
<td>267,545</td>
<td>267,545</td>
<td>267,545</td>
<td>0.0%</td>
</tr>
<tr>
<td>Occupied Roomnights</td>
<td>—</td>
<td>—</td>
<td>137,055</td>
<td>147,707</td>
<td>161,908</td>
<td>153,733</td>
<td>12.2%</td>
</tr>
<tr>
<td>Annual Occupancy (%)</td>
<td>$ —</td>
<td>$ —</td>
<td>$ 84.50</td>
<td>$ 86.57</td>
<td>$ 93.20</td>
<td>$ 100.43</td>
<td>18.9%</td>
</tr>
<tr>
<td>Average Daily Rate</td>
<td>$ —</td>
<td>$ —</td>
<td>$ 43.28</td>
<td>$ 47.80</td>
<td>$ 56.40</td>
<td>$ 57.70</td>
<td>33.3%</td>
</tr>
<tr>
<td>Year-to-Year Growth</td>
<td>7.8%</td>
<td>9.6%</td>
<td>-5.0%</td>
<td>17%</td>
<td>17%</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td><strong>Limited-Service Properties</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available Roomnights</td>
<td>226,665</td>
<td>226,665</td>
<td>226,665</td>
<td>226,665</td>
<td>226,665</td>
<td>226,665</td>
<td>0%</td>
</tr>
<tr>
<td>Occupied Roomnights</td>
<td>137,161</td>
<td>135,528</td>
<td>136,460</td>
<td>134,469</td>
<td>155,570</td>
<td>161,099</td>
<td>17%</td>
</tr>
<tr>
<td>Annual Occupancy (%)</td>
<td>60.51%</td>
<td>59.79%</td>
<td>59.3%</td>
<td>68.6%</td>
<td>71.1%</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>Average Daily Rate</td>
<td>$ 75.82</td>
<td>$ 76.15</td>
<td>$ 78.32</td>
<td>$ 80.63</td>
<td>$ 82.25</td>
<td>$ 89.08</td>
<td>17%</td>
</tr>
<tr>
<td>Revenue/Available Room</td>
<td>$ 45.88</td>
<td>$ 45.53</td>
<td>$ 47.15</td>
<td>$ 47.83</td>
<td>$ 56.45</td>
<td>$ 63.31</td>
<td>38%</td>
</tr>
<tr>
<td>Year-to-Year Growth</td>
<td>-1.2%</td>
<td>0.7%</td>
<td>-1.5%</td>
<td>15.7%</td>
<td>3.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Smith Travel Research; Economics Research Associates, August 2008

### Value Created by Recreational Amenities & Open Space

A key element of the plan for the Wabash River corridor includes recommendations regarding investment in recreational amenities, open space, and other public realm improvements intended to enhance the overall quality-of-life along the river corridor. Moreover, as has been documented in places across the United States that have implemented similar projects, such public realm improvements frequently enhance land and property values of surrounding real estate. A summary of the literature examining such initiatives indicates the following:

- Trails and greenways generally add a premium of six percent to nine percent in value for adjacent and nearby properties;
- Greenbelts add a premium of six percent to 12 percent for adjacent properties;
- Open space and recreational amenities are important considerations in corporate site selection;
- Construction and operating costs of public realm improvements can be offset or mitigated by increases in property values, particularly if a special assessment district is created that allocates annual incremental fees (such as tax increment financing) to debt service payments for infrastructure costs;
- Residential lot premiums vary by distance, view, type of amenity, with the highest premiums typically commanded by water views and “long” views over golf courses. Secondary premiums created by partial and unobstructed golf or water views.

### Development Potentials

Based on the information and analysis completed as part of the market study, the following examines how much of Tippecanoe County’s anticipated future growth can be focused in the three planning areas located along the Wabash River corridor.

![Figure 5: Impacts of Park & Recreational Amenities on Property Values](image)

Market-rate Residential

There are several overarching issues affecting the amount of new housing that can allocated to the three planning areas. As noted, the focus of new residential development in Tippecanoe County over the past 25+ years has been on greenfields sites in outlying locations. While the introduction of new housing in the downtown core (such as Renaissance Place) is positive, it is incremental and has resulted in a very small capture of overall demand for new housing.

Therefore, to induce new housing to the three planning areas, this trend will need to shift, with resources and public policies tailored to attract an increasing share of new housing to the core areas of Lafayette and West Lafayette. Notably, area planners suggest that state enabling legislation regarding land use controls in Indiana is weak, which may hinder regulations such as urban growth boundaries that could redirect new residential development to the core. As a result, incentives—both regulatory and financial—may be necessary to enhance or induce market potentials for new residential development in the three planning areas.

Moreover, another factor affecting housing potentials in the planning areas includes the amount of growth expected to occur in unincorporated parts of Tippecanoe County, that is, in those areas where land costs are lowest. Municipal officials in Lafayette and West Lafayette will have to compare the fiscal costs and impacts of annexation in outlying locations (such as the costs of providing new municipal infrastructure for new development) against the fiscal benefits created (such as new tax revenues). As part of this analysis, it is recommended that each municipality also compare similar costs and benefits generated by policies that direct new growth to the planning areas, including the costs of incentives, to derive the net fiscal impacts of each growth scenario.

The analysis in Table 7 distributes new housing based on the current pattern of construction by unit type. If current patterns continue the lion’s share of new housing (7,500 units) by 2040 would be single-family detached. As low-density sprawl will reduce the amount of land available for new development, infill sites such as the core areas could become increasingly attractive, particularly with the provision of incentives that redirect development to such locations. In addition, as Tippecanoe urbanizes, it is likely that new housing will be built at higher densities, shifting the focus away from low-density single-family to a mix of moderate- to higher-density product that would characterize infill sites such as the core areas.
On the other hand, since high land costs (and other potential challenges such as environmental remediation) of core area sites may hinder overall marketability, additional studies will be necessary to identify appropriate financial incentives and other land use strategies to enhance overall market potentials. Mechanisms designed to reduce potential funding gaps in project feasibility, including the use of tax abatements, are appropriate incentives and should be examined further.

Planning Targets: New Housing

Market potentials for new housing are illustrated in Table 7.

- Population and household growth forecasts prepared by Stats Indiana suggest 29,000+ new residents by 2040, which would translate into 12,300+ new households based on current occupancy patterns. Over the next 35 years, this equates to average demand for 350 new housing units per year across Tippecanoe County.

- The “Carrying capacity” studies conducted during the planning process suggested that the three planning areas have sufficient land to accommodate more than 8,000+ units, or fully 66 percent of the 12,300 total units generated by household growth by 2040. This would require average densities of 26 units per acre across the estimated 389 acres of net developable land based on WRT’s studies. However, given the amount of land available to accommodate new development elsewhere in Tippecanoe County, as well as development patterns that reflect generally low densities across the county, capturing fully two-thirds of future countywide housing demand in the three planning areas is unlikely.

- Based on ERA/ACEDC’s national experience in urban redvelvet, a more reasonable baseline capture is in the range of 18 percent—or 1,200 units. Successful, appropriate incentives tailored to attract additional residential development to the core—coupled with ongoing economic development initiatives that enhance job creation—could serve to induce demand—with a capture of up to 20 percent—or 2,500 units. This would reflect average densities ranging from four to eight units per acre on the net developable acreage.

- By comparison, in cities across the United States the rule of thumb is that one to three percent of a metropolitan area’s population will reside in a downtown core, although it ranges from 10 percent or more in several high-density Northeastern cities.

- As specific projects move forward, detailed feasibility studies will be required to determine phasing, appropriate unit mix, and tenure opportunities (i.e., owner vs. renter) as market demand warrants.

Commercial—Multi-tenant/Professional Office

Job growth is the predominant driver of demand for new workplace uses such as office buildings, retail centers and industrial parks. Continuing diversification of Tippecanoe County’s economy will be critical for long-term growth and for ensuring that the 2000 forecasts of 35,000 new jobs materialize.

We note that the Woods & Poole forecasts include both part-time and self-employed individuals. As a result, some portion of these may not necessarily translate into new office buildings if, for example, a self-employed individual works at home. Current weakened market conditions, including limited absorption, an existing vacant inventory of over 400,000 sq. ft, and the presence of functional/physical obsolescence that could be expected to result in redevelopment opportunities at some future point in time will necessitate careful testing of market opportunities and financial feasibility as specific projects are identified.

Figure 6: Distribution of Housing Units, by Planning Areas

Another critical issue in understanding market potentials for new office development in the planning areas is that demand for new office space can be satisfied in several other competitive locations across Lafayette and West Lafayette. These include:

- Purdue Research Park—which has over 500 acres of land available to accommodate new office and research and development/ laboratory uses

- Other “innov” sites—outside of the three planning areas such as the highway corridors of State Roads 26, 38 and 52. Such locations could become increasingly competitive as functional and physical obsolescence in aging commercial buildings warrants redevelopment

- Undeveloped suburban sites—such as parcels on McCarty Lane, Creasy Lane and other locations; Cascadia Business Park exemplifies new, competitive office space on suburban sites

- Existing vacant office space—as noted, there are over 405,000 sq. ft. of vacant office space in Lafayette and West Lafayette available for leasing

Table 7: Housing Market Potentials, 2040

<table>
<thead>
<tr>
<th>Estimated Housing Demand</th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tippecanoe County</td>
<td>153,875</td>
<td>170,754</td>
<td>161,474</td>
<td>164,989</td>
<td>174,919</td>
<td>182,992</td>
<td>12,338</td>
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<tr>
<td>Population Forecast</td>
<td>(1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29,117</td>
</tr>
<tr>
<td>No. of Housing Units</td>
<td>(2)</td>
<td>65,201</td>
<td>74,201</td>
<td>58,193</td>
<td>151,392</td>
<td>342,192</td>
<td>60,050</td>
</tr>
<tr>
<td>Estimated Vacancy</td>
<td>7.9%</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>68</td>
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<tr>
<td>Net Occupied Housing Units</td>
<td>—</td>
<td>60,050</td>
<td>68,050</td>
<td>50,000</td>
<td>139,000</td>
<td>340,000</td>
<td>54,000</td>
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<tr>
<td>Estimated Persons/HH</td>
<td>2.36</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>392</td>
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</table>

Net New Housing Units

<table>
<thead>
<tr>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,546</td>
<td>1,674</td>
<td>1,320</td>
<td>4,377</td>
<td>3,421</td>
<td>12,338</td>
<td>61,000</td>
</tr>
</tbody>
</table>

Annual Average

<table>
<thead>
<tr>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>509</td>
<td>526</td>
<td>452</td>
<td>1,309</td>
<td>1,023</td>
<td>2,936</td>
<td>61,000</td>
</tr>
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</table>

Revenue/Available Room

<table>
<thead>
<tr>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>TOTAL</th>
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<tr>
<td>10.4%</td>
<td>—</td>
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<td>—</td>
<td>—</td>
<td>—</td>
<td>10.4%</td>
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</tbody>
</table>

Distribution by Product Type

<table>
<thead>
<tr>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>61.0%</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>61.0%</td>
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</tbody>
</table>

Planning Areas | Baseline | Induced |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Reach</td>
<td>400</td>
<td>800</td>
</tr>
<tr>
<td>Central Reach (both sides of river)</td>
<td>600</td>
<td>1,400</td>
</tr>
<tr>
<td>Southern Reach</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>Total</td>
<td>1,200</td>
<td>2,500</td>
</tr>
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</table>

Assumed Average Unit Size

<table>
<thead>
<tr>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,500</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1,500</td>
</tr>
</tbody>
</table>

Estimated WRT “Carrying Capacity” (Units): 8,098

Required Market Penetration (As % of Growth Potential)

<table>
<thead>
<tr>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>65.6%</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>65.6%</td>
</tr>
</tbody>
</table>

Total Units by Period: — 1,546 1,674 1,320 4,377 3,421 1,200 2,500 5,073 4,940 12,338 12,338

Core Area Market Potentials

<table>
<thead>
<tr>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

WRT “Buildout Area of use” (All Sites)

<table>
<thead>
<tr>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>12,146,413</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>12,146,413</td>
</tr>
</tbody>
</table>

64 | 65
Planning Targets: New Office

Market potentials for new office space are illustrated in Table 8:

- If 35,000 new jobs are created by 2030, new jobs in office-using sectors suggest countywide demand for up to 2.7 million gross sq. ft.; this includes vacancy and cumulative replacement adjustments, which reflect tenant movement in the marketplace as well as buildings removed from inventory due to obsolescence.
- From a financing perspective, some portion of the large amount of vacant office space (over 400,000 sq. ft.) would have to be leased prior to financing new office development. We assume that fully 75 percent would require pre-leasing (344,000 sq. ft.). In addition, some portion of new job growth will be part-time and self-employed individuals not requiring speculative office space; this could further reduce demand by an estimated 20 percent (335,000 sq. ft.), leaving countywide net demand due to job growth at roughly 1.8 million sq. ft. by 2030.

Lafayette

- Currently, Lafayette contains 78 percent of the region’s office inventory. We estimate that will decline to 75 percent (as development of Purdue Research Park increases West Lafayette’s share), resulting in the potential for up to 1.37 million sq. ft. of new office development in Lafayette by 2030.
- We estimate that the Lafayette side of the three planning areas could capture between 25 and 50 percent—a potentially significant capture that may be achievable (particularly in the Central Reach because it is the Central Business District). Combined with the provision of specific incentives (to be determined), the potential exists for the Northern and Central Reaches in Lafayette to capture between 350,000 and 700,000 sq. ft. of new office space by 2030.
- As illustrated in Figure 7, the majority of new office development in both the Baseline and Induced scenarios should be located in the Central Reach. This will serve to expand the CBD and reinforce its role as the region’s primary economic activity generator. Secondary office space can also be located on those blocks at the south end of the Northern Reach (adjacent to the CBD).
- Thus, the unallocated office space could be built anywhere else in the city—considering redevelopment potentials along the highway corridors, additional development capacity on suburban sites like Cascada, potential medical office development surrounding the two new hospitals, etc.

West Lafayette

- Currently, West Lafayette contains 22 percent of the region’s office inventory. We estimate that will increase to 25 percent, resulting in the potential for up to 450,000 sq. ft. of new office development in West Lafayette by 2030. West Lafayette’s increasing share is primarily a result of the availability of over 500 acres of land at Purdue Research Park, which could potentially capture all of the future demand for new office space in West Lafayette if marketing and recruitment efforts are successful.

As a result, this would suggest that new office development elsewhere in West Lafayette would be oriented to smaller, price-sensitive professional services tenants, and product oriented to smaller Class B “garden” office buildings. Conversely, new office development at Purdue Research Park would be oriented to owner-users in Class A, or “signature”, higher-priced buildings.

- We estimate that the West Lafayette side of the three planning areas could capture between 20 and 30 percent of office demand. Sites in the Central Reach, such as Luehr Plaza, are the best locations to accommodate the estimated 90,000 to 140,000 sq. ft. of new office development in West Lafayette by 2030.
- Other site considerations affecting the overall marketability of new office development in all planning areas include: site size, street frontage, visibility, adequate levels of parking (typically in the range of three spaces per 1,000 gross sq. ft., financial feasibility, etc.

Commercial—General Retail

Retail uses require a concentration of disposable income from nearby households, residents of appropriate surrounding trade areas, employees and/or visitors; strong visibility and extensive frontage; adequate parking, a clear competitive role for the retail center in the trade area; and, market identity. Moreover, supporting tenants oftentimes require an anchor tenant—such as a grocery store—to supplement consumer traffic.

The retail analysis uses an assumed trade area comprised of Carroll, Warren, Fountain and Tippecanoe counties.

Commercial—General Retail

Retail uses require a concentration of disposable income from nearby households, residents of appropriate surrounding trade areas, employees and/or visitors; strong visibility and extensive frontage; adequate parking, a clear competitive role for the retail center in the trade area; and, market identity. Moreover, supporting tenants oftentimes require an anchor tenant—such as a grocery store—to supplement consumer traffic.

The retail analysis uses an assumed trade area comprised of Carroll, Warren, Fountain and Tippecanoe counties.

Table 8: Office Market Potentials, 2030

<table>
<thead>
<tr>
<th>Industry Sector</th>
<th>New Jobs 2007-2030</th>
<th>% Office-Using</th>
<th>SF Occupancy Factor</th>
<th>Potential Countywide Demand (Sq. Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tippecanoe County</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mining &amp; Construction</td>
<td>514</td>
<td>25%</td>
<td>175</td>
<td>86,800</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>188</td>
<td>10%</td>
<td>165</td>
<td>3,100</td>
</tr>
<tr>
<td>TCPU I</td>
<td>540</td>
<td>25%</td>
<td>185</td>
<td>23,000</td>
</tr>
<tr>
<td>Wholesale &amp; Retail Trade</td>
<td>7,124</td>
<td>15%</td>
<td>200</td>
<td>213,700</td>
</tr>
<tr>
<td>Finance/Insurance/Real Estate</td>
<td>(152)</td>
<td>85%</td>
<td>250</td>
<td>(52,000)</td>
</tr>
<tr>
<td>Services</td>
<td>12,947</td>
<td>40%</td>
<td>250</td>
<td>1,294,700</td>
</tr>
<tr>
<td>Government</td>
<td>12,008</td>
<td>40%</td>
<td>165</td>
<td>792,500</td>
</tr>
<tr>
<td>Total or Weighted Average</td>
<td>34,964</td>
<td>33%</td>
<td>204</td>
<td>2,377,900</td>
</tr>
</tbody>
</table>

| + Vacancy Adjustment @           | (2)               | 5.0%          |                    | 118,900                              |
| + Cumulative Replacement Demand  | (3)               | 7.5%          |                    | 178,300                              |
| Total Gross Demand (In Sq. Ft)   |                   |               |                    | 2,675,100                            |
| - Existing Vacant Office Space   | (4)               |               |                    | 304,179                              |
| Self Employed/Part-time Employment| (5)               |               |                    | 535,020                              |
| Total Net Demand (Rounded, In Sq. Ft.) |           |               |                    | 1,835,900                            |

Core Area Market Potential

Buildout Area of use (All Sites) | 3,706,169 |
Required Market Penetration (As % of Growth Potentials) | 202% |

(1) Reflects office-using employees in each employment sector.
(2) This allows for a 5% “friction” vacancy factor in new space delivered to the market.
(3) This represents new space required by existing businesses to replace obsolete or otherwise unsuitable space.
(4) Assumes that 50% of existing vacant office space is leased.
(5) Assumes that 20% of new jobs will be self-employed/part-time not requiring new office space.
(6) As estimated by WRT, exclusive of respective parking for office uses.
Table 8: Office Market Potentials, 2030

<table>
<thead>
<tr>
<th>Industry Sector</th>
<th>New Jobs 2007-2030</th>
<th>% Office-Using</th>
<th>SF Occupancy Factor</th>
<th>Potential Countywide Demand (Sq. Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Capture of Future Growth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Lafayette (7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of County Office Space</td>
<td>75%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal-City of Lafayette (Rounded, In Sq. Ft.)</td>
<td>1,376,900</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline Market Capture @ 25%</td>
<td></td>
<td></td>
<td>344,000</td>
<td></td>
</tr>
<tr>
<td>Induced Market Capture @ 50%</td>
<td></td>
<td></td>
<td>688,000</td>
<td></td>
</tr>
</tbody>
</table>

| City of West Lafayette (8) | | | | |
| Share of County Office Space | 25% | | | |
| Subtotal-City of West Lafayette (Rounded, In Sq. Ft.) | 459,000 | | | |
| Baseline Market Capture @ 20% | | | 93,000 | |
| Induced Market Capture @ 30% | | | 138,000 | |

Planning Targets: New Retail

Market potentials for new office space are illustrated in Table 9.

- As noted previously in Table 5, Tippecanoe County contains 7.5 million sq. ft. of retail space. This equates to 47 sq. ft. of retail space per county resident and 38 sq. ft. of retail space for each resident of Tippecanoe and the three surrounding counties. This is significantly above the national average of 26 sq. ft. per person, and reflects the fact that Tippecanoe County is a regional (retail) destination serving a largely rural surrounding trade area.

- State forecasts suggest a net gain of more than 28,000 new residents in the trade area by 2040. Using the 38 sq. ft. per capita retail factor translates into almost 1.1 million sq. ft. of gross retail demand by 2040. This could be supplemented by “multipliers”, that is, additional spending by students and visitors to the region, resulting in additional demand estimated at 273,000 sq. ft.

- The analysis also accounts for vacant space. There is 910,000 sq. ft. of vacant retail space in Tippecanoe County. The analysis assumes that 50 percent of this space would have to be leased prior to financing construction of new retail space. This yields net demand for 459,000 sq. ft. of new retail space across the trade area by 2040.

Lafayette

- Currently, Lafayette contains 85 percent of the region’s retail inventory. We estimate that will decline slightly to 80 percent, resulting in the potential for up to 720,000 sq. ft. of new retail development in Lafayette by 2040.

- We estimate that the capture of new retail space on the Lafayette side of the three planning areas will be limited because of the critical mass/clustering effect of a significant amount of retail elsewhere in the city—such as the 26, 52 and 38 commercial corridors.

- A limited capture ranging from 10 to 15 percent yields demand for 72,000 to 108,000 sq. ft. by 2040, which suggests two to three small neighborhood centers providing new residents of the Northern and Central Reaches with supporting convenience and service retail options. Alternatively, a small grocery-anchored community center of 50,000 to 75,000 sq. ft. could be centrally located proximate to new residential clusters in both of these planning areas.

- Market support for supporting retail in the Southern Reach will be largely determined by the number of new housing units in this planning area; however, it is likely to be limited.

West Lafayette

- Currently, West Lafayette contains 15 percent of the region’s retail inventory. We estimate that the city’s market share has the potential to increase to 20 percent, as Purdue Research Park, expansion of Purdue University, and redevelopment of the core enhance overall prospects for new retail development in the city.

- This could produce demand for up to 180,000 sq. ft. of new retail uses in West Lafayette by 2040.

- We estimate that the three planning areas in West Lafayette could capture between 30 and 60 percent or more of this future retail demand. Other locations competing for market share will include the Chauncey retail district as well as Purdue Research Park, which is likely to provide supporting amenities such as retail as on-site employment increases over time.

- West Lafayette sites in the Central Reach, such as LoVe Plaza, are the best locations to cluster new retail development in mixed-use projects. Incremental retail development in the Southern Reach will be largely determined by access, visibility and frontage of sites that could be developed along the parkway/bypass road extending to the Purdue campus. However, such sites will require uses such as new residential or office development to support any retail space in this location. In total, the Central and Northern Reaches are able to best accommodate the estimated 54,000 to 108,000 sq. ft. of new retail development in West Lafayette by 2040.

Figure 8: Distribution of Retail Space, by Planning Areas

<table>
<thead>
<tr>
<th>Planning Areas</th>
<th>Baseline</th>
<th>Induced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lafayette</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Reach</td>
<td>35,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Central Reach</td>
<td>35,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Southern Reach</td>
<td>2,000</td>
<td>3,000</td>
</tr>
<tr>
<td>Total</td>
<td>72,000</td>
<td>108,000</td>
</tr>
<tr>
<td>West Lafayette</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Reach</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Central Reach</td>
<td>50,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Southern Reach</td>
<td>4,000</td>
<td>8,000</td>
</tr>
<tr>
<td>Total</td>
<td>54,000</td>
<td>108,000</td>
</tr>
</tbody>
</table>

Continuing diversification of Tippecanoe County’s economy will be critical for long-term growth and for ensuring that the 2030 forecasts of 35,000 new jobs materialize.
Table 9: Retail Market Potentials, 2040

<table>
<thead>
<tr>
<th>Tippecanoe</th>
<th>&amp; 4-County Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Retail Space (In Sq. Ft.)</td>
<td>7,590,549</td>
</tr>
<tr>
<td>Current Population</td>
<td>160,816</td>
</tr>
<tr>
<td>Retail Space Per Capita (In Sq. Ft.):</td>
<td>47</td>
</tr>
</tbody>
</table>

- **Net Population Growth (2005-2040)**: 28,842
- **Assumed Retail Space Per Household (Sq. Ft.)**: 38
- **Total Gross Demand (Rounded, In Sq. Ft.)**: 1,092,000
  - + Inflow @ 25%: 273,000
  - - Existing Vacant Retail Space (3): 464,500
  - Total Net Demand (Rounded, In Sq. Ft.): 900,500

**Core Area Market Potentials**
- WRT “Buildout Area of use” (All Sites): 118,900
- Required Market Penetration (As % of Growth Potentials): 535,020

**Total Net Demand (Rounded, In Sq. Ft.)**: 1,835,900

**Target Capture of Future Growth**

<table>
<thead>
<tr>
<th>City of Lafayette</th>
<th>City of West Lafayette</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of County Retail Space</td>
<td>80%</td>
</tr>
<tr>
<td>Subtotal-City of Lafayette</td>
<td>720,400</td>
</tr>
<tr>
<td>Baseline Market Capture @ 10%</td>
<td>72,000</td>
</tr>
<tr>
<td>Induced Market Capture @ 15%</td>
<td>108,000</td>
</tr>
<tr>
<td>City of West Lafayette</td>
<td></td>
</tr>
<tr>
<td>Share of County Retail Space</td>
<td>20%</td>
</tr>
<tr>
<td>Subtotal-City of West Lafayette</td>
<td>180,100</td>
</tr>
<tr>
<td>Baseline Market Capture @ 30%</td>
<td>54,000</td>
</tr>
<tr>
<td>Induced Market Capture @ 60%</td>
<td>108,000</td>
</tr>
</tbody>
</table>

(1) Based on population forecasts for the four-county region (“trade area”) as prepared by Stats Indiana.
(2) Inflow reflects estimated additional retail spending generated by visitors to Tippecanoe County, college students, etc.
(3) Assumes that 50% of the estimated 980,000 sq. ft. of vacant retail space released prior to new construction.
(4) Assumes incremental capture of future retail to core area (i.e., retail corridors such as State Road 26 & 52 will remain the predominant retail clusters in Lafayette).
(5) Higher capture assumes continued redevelopment surrounding Wabash Landing with mixed-use retail uses to reinforce identity/role of West Lafayette core areas. Remaining demand allocated to other areas such as Churubusco/Wabash district.

Source: CoStar Realty; Stats Indiana; Economics Research Associates, updated September 2010.
Plan Development

Alternative Development Scenarios
The Preferred Plan: A 20 Year Vision for the Wabash
The Central Reach
The Northern Reach
The Southern Reach
Plan Development

Before drafting plan recommendations, two development scenarios were created to examine site potential. Desirable attributes of both alternatives were later synthesized—along with ideas from stakeholder and public meetings—into a preferred plan, as outlined in following sections.

Plan alternatives considered overall project goals, in addition to:

- achieving the highest long-term return on investment
- employing best environmental practices (even though local impacts are at least partially caused by upstream conditions)
- aligning projects with feasible funding sources
- creating livable, sustainable neighborhoods

Certain ideas that surfaced in previous community visioning discussions were not explored in alternatives development. One such idea is the creation of a dam in this section of the Wabash. Since the Wabash has a highly variable flow, fluctuating between exposed sand bars in the summer and frequent flooding in spring months, recreational use is somewhat unpredictable. Some members of the community have advocated for a dam that would keep the water level more constant, helping to support more water-based recreation on the river. Project research showed very little federal support and funding opportunities for recreational dams, particularly given the negative impact they can have on fish passage and other ecological functions. For these reasons, there are significant regulatory obstacles to constructing dams. Several concepts, such as the dam, were vetted against the considerations listed above and were discussed in meetings with residents and stakeholders.

Phasing, and immediate feasibility were not primary considerations at this stage because the alternatives represented planning “sketches” of long-term site potential. One of the most critical considerations before any investments are made to any given site in the future should be vulnerability to flooding. Flood potential will change along the corridor over time, and a few of the far future proposals for lower elevations may not be feasible in coming decades.

Alternative Development Scenarios

The Connected Community

The Connected Community scenario offers a robust approach to open space and connective elements including:

- a series of new cross-river, city-to-city connections envisioned to connect neighborhoods and key cultural and recreational features using:
  - new signature pedestrian/bike bridges and
  - pedestrian infrastructure retrofits on existing bridges, such as the US 52 and US 231 bridges
- several possible connections across, under, and over the Amtrak line
- continuous riverfront trails on both sides of the river
- a series of signature parks along both sides of the river
- significant riparian buffers along the Wabash
- slope restoration in areas such as Happy Hollow Park
- transformation of the West Lafayette bridge piers north of the Harrison Bridge into boating basins with adjacent boathouses
- reconfiguration of 9th Street at its connection with Greenbush Street
- connecting the former ‘Box Board Paper Mill’ and Midwest Rentals sites to the downtown area

The proposed open space framework provides a physical structure for organizing development and the amenities needed to support high quality, enduring investment. Areas for investment—in either new development or enhancement of existing development—are largely concentrated in the core of both cities and east of Ninth Street in the Northern Reach of the study area.

The Learning Community

The Learning Community focuses on increasing educational resources by integrating environmental, cultural, and economic enhancements and showcasing models of regenerative design and development.

This alternative is organized by broad enhancement areas described by general themes. The enhancement areas are:

- The Civic Showcase: the central portion of both cities, connected by pedestrian/bike bridges, trails, and a dense offering of cultural and civic assets
- Water as a Resource: featuring reuse and infiltration of treated water from both sanitary water plants through wetlands and other features
- Living Laboratory on the Wabash (LLW) Agricultural and Green Technology Demonstration Area: providing an environmental research and education interface for the community and region; providing a research base for the interdisciplinary LLOW consortium; showcasing best practices in low-lying agriculture, buffer management, wetland creation, stormwater management, possible location of a large public gathering space

- Canal Interpretation and Neighborhood Heritage Interpretation of some of the area’s greatest assets—its history and unique neighborhoods. The historic canal is generally aligned with current public rights-of-way and has great potential for interpretation and providing distinctive character to the area
- The Green City and Demonstration Projects: focuses on the long-term opportunity to promote smart growth and development in the urbanized area by creating appealing and sustainable neighborhoods
- Ravine Ecology and Landscape Games: focuses on the range of environmental restoration opportunities present in the Happy Hollow area and potential recreational enhancements that capitalize on the site’s terrain and trees

The ornate Tippecanoe County Courthouse in Lafayette, listed in the National Register of Historic Places, is one of the area’s architectural icons. Image | WRT

The Connected Community scenario sought to maintain connections between neighborhoods, amenities, and the river

The Learning Community Scenario focused on “learning landscapes” in the northern and southern reaches, connected by the trail system
THE PREFERRED PLAN: A 20 YEAR VISION FOR THE WABASH

This vision is a conceptual plan to enhance the corridor over a period of 20 years as resources and opportunities arise. The preferred plan represents a combination of the two alternative development scenarios and has been named the Two Cities, One River concept. The proposed open space framework provides a physical structure for organizing development and the amenities needed to leverage high quality, enduring investment and increases educational resources by integrating environmental, cultural, and economic enhancements and showcasing models of regenerative design and development. Areas for investment—in either new development or enhancement of existing development—are largely concentrated in the core of both cities east of Ninth Street in the Northern Reach of the study area.

The preferred plan is organized and presented in the following section in three reaches—Central, Northern, and Southern.

Central Reach
- Connections focus on new and enhanced pedestrian/bike bridges at the Rail, SR 26, and Myers Bridges and at Brown Street, as well as an expanded network of trails, which link a dense offering of civic, cultural and recreational features across the river.
- Open Space expansion of Tapawingo Park to the north connects to the recommended Brown Street Pedestrian Bridge and trails in the Northern Reach.
- Development leverages recommended connections and open space development, focusing on the redevelopment of the area surrounding Wabash landing in West Lafayette and in Downtown Lafayette around Rhiele Plaza and around the proposed CityBus Transit Plaza.

Northern Reach
- Connections focus on new and enhanced pedestrian/bike bridges at Harrison Bridge, Mascouten Park, and US 52 Bridge and new trails, which link enhanced recreational features and northern neighborhoods across the river.
- Open Space development includes enhancement to Happy Hollow Park and the expansion of Mascouten Park to include water recreation in boat basins and a series of parks that integrates the Lafayette Municipal Golf Course.
- Development leverages recommended connections and open space development along the North Ninth Street Corridor and focuses on a concept of Green City Development that showcases the best practices in sustainable building and site development.

Southern Reach
- Connections focus on new and enhanced pedestrian/bike bridges at the US 231, SR 26, Sycamore Avenue and Rail Bridges, that better connect the two sides of the river and link to the Central Reach and trails that connect along the river to the south.
- Open Space development includes an expansion of Shamrock Park, with a trail extension, stormwater management, and interpretation of the historic canal trace and the establishment of the Living Laboratory on the Wabash (LOW) Water Resource Education and Research Center.

- Development of waterfront just south of the Downtown Lafayette leverages recommended connections and park expansion and provides a unique residential location with easy access to Downtown amenities and direct access to the river.

The Lafayette–West Lafayette area has an opportunity to be one of the country’s most desirable centers of education and commerce, offering a high quality of life. Other such desirable areas—like Boulder, Colorado; Athens, Georgia; Austin, Texas; and Eugene, Oregon—are located within distinctive settings that provide an exceptional range of recreational and cultural experiences. The next sections recommend investments over 25 to 30 years that seek to define a more distinctive, notable, and sustainable setting for the communities and institutions of the Lafayette-West Lafayette area.

The Lafayette-West Lafayette area has the makings of a safe, culturally and recreationally rich environment. Within a relatively compact area, there is potential for a remarkable variety of experiences. Trails and walkable streets can connect historic neighborhoods, educational institutions, shopping, golf, rowing, canal paths, sculpture gardens, birding, and exemplary agricultural and wetland areas. Strategic investments can enhance the character of the Wabash to make it memorable and distinctive. A series of pedestrian bridges can create unique and enjoyable places that help define the profile of the corridor and provide critical connections between the cities. Public art in parks and open spaces can engage visitors with thematic relationships among pieces.

For the region to build on its potential and weave together the threads of history, ecology, and commerce along the Wabash corridor, it must rely on strong partnerships to support building and strategic phasing of investments. These partnerships should also foster stewardship and drive change by promoting use. This can be done by offering a range of seasonal activities and educational opportunities that provide immediate community benefits as well as critical investment in the future. At the same time, the region should continue to build on watershed partnerships and management of water resources but not invest heavily in areas of high flooding risk. For each of the three reaches, the following sections will provide an overview of the reach and enhancement recommendations. These enhancement recommendations fall into the general categories of public sector investment, for transportation, circulation access and trails (Connections) and parks and recreation (Open Space) and private sector investment (Development). As stated previously strong partnerships will be critical to the plan’s success with public sector investment leveraging private sector investments that provide higher value to development.
The three reaches of the river, as defined previously, are integral to realizing the community’s vision. Each offers a different set of potential activities and development. The success of each is ultimately linked to the success of the others. During community meetings, a wide range of landscape programs were discussed, and participants identified activities and features they would most like to see along the Wabash.

The program elements ranked highest by the public were:

**Active Recreation**
1. Canoeing/Kayaking/Sculling
2. Bicycling/Mountain Biking
3. Splash Park
4. Fishing
5. Skateboarding
6. Running/Jogging

**Passive Recreation**
1. Overlooks/Viewing
2. Picnicking (Tables & Grills)
3. Community Gardening

**Commercial Activities**
1. Restaurants/Cafes
2. Canoe/Kayak Operators
3. Art Shows
4. Farmers’ Market
5. Bike Shop/Rentals
6. Zip Line

**Education/Historical Interpretation**
1. Tours/Trails
2. Canal Interpretation
3. Arboretum/Botanical Garden
4. Agronomic/Environmental Studies
5. Water Management Interpretation
6. Bridge Interpretation/Lighting

**Cultural**
1. Amphitheater (dance/music/drama)
2. Sculpture/Earth Sculpture
3. Four Season Festivals
4. Light Show/Fireworks

A cornfield in the Wabash River flood plain immediately north of the urban project area.
**THE CENTRAL REACH**

**OVERVIEW**
The Central Reach encompasses an area roughly between the Harrison Bridge and the Rail Bridge. It includes the downtowns of Lafayette and West Lafayette, which together form a foundation for transforming the study area. This section of the corridor also includes key assets such as Tippecanoe County Courthouse, Myers Pedestrian Bridge, Riehle Plaza, Big Four Depot: home to Amtrak, Greyhound, and CityBus, Tapawingo Park, the Purdue crew building and Wabash Landing.

The major challenges in this area are auto-oriented streets and development, particularly the area surrounding Wabash Landing and the SR 26 and Harrison Bridges. Commercial and, or industrial uses along the river north of Tapawingo Park and in Lafayette’s Wabash Avenue neighborhood are also challenges to general connectivity, an issue that became the focus of the planning process, with many in the community prioritizing reconnecting at Brown Street, where there once stood a bridge over the river.

**Central Reach Recommendations**
The recommended public and private sector investments for the Central Reach are outlined below, illustrated in the aerial view and described in more detail on the following pages. As stated previously the public sector investments of Connections and Open Space are planned to leverage the private investments of Development.

- **Connections** focus on new and enhanced pedestrian/bike bridges at the Rail, SR 26, and Myers Bridges and at Brown Street, as well as an expanded network of trails, which link a dense offering of civic, cultural and recreational features across the river.

  - New Brown Street Pedestrian Bridge
  - Myers Bridge & Riverside Promenade
  - SR 26 Bridges Pedestrian Enhancements
  - Rail Bridge Pedestrian Enhancements
  - Scenic Byway Enhancement – Develop River Road in support of its State Scenic Byway designation – Trails, Pull Offs, Interpretive Features etc.

- **Open Space** expansion of Tapawingo Park to the north connects to the recommended Brown Street Pedestrian Bridge and trails in the Northern Reach.

  - Tapawingo Park Enhancement & Expansion

- **Development** leverages recommended connections and open space development, focusing on the redevelopment the area surrounding Wabash Landing in West Lafayette and in Downtown Lafayette around Riehle Plaza and around the proposed CityBus Transit Plaza.

  - West Lafayette Development
  - Lafayette Downtown Redevelopment
  - Riehle Plaza Redevelopment
Providing more opportunities for bikes and pedestrians along and crossing the Wabash River will create increased accessibility in the downtowns of each city and add value to the development. Many community members who used the now removed Brown Street Bridge recall positive associations. A new pedestrian bridge along the historic alignment offers the potential for a new civic landmark—a signature feature that is iconic and exciting. With this new bridge, there can be more direct access between the neighborhoods near downtown Lafayette, Tapawingo Park, adjacent retail, and West Lafayette. The bridge would also enhance a “loop” network of trails. In public meetings, the Brown Street Pedestrian Bridge received more support than any other proposal.

New pedestrian bridges across the Wabash are a key opportunity to create prominent civic symbols, demonstrating the engineering prowess and cultural interests of the community. The image shows a Cable Stay design bridge as an example of a design for the proposed Brown St. Bike/Pedestrian Bridge. This design would eliminate the need for new bridge piers in the river. Image | WRT

The site for the proposed Brown St. Bike/Pedestrian Bridge as it appears today. Image | Stanton Lambert

Seti Wawasan Bridge, Putrajaya, Malaysia. Image | Flickr (spOt_ON / Heng Hau Hoo)
Formerly the Main Street vehicular bridge, Myers Bridge is a pedestrian bridge that connects downtown Lafayette to Tapawingo Park and Wabash Landing in West Lafayette. The bridge was converted to pedestrian use because of structural constraints to carrying vehicular traffic. At the Lafayette end of the Myers bridge, users must traverse stairs or use an elevator to breach the change in grade between the Myers bridge and the Reihle Plaza surrounding the historic rail station in order to cross over the rail corridor which runs along the river. A partially enclosed, circular ramp and stair area terminates the West Lafayette end of the bridge, providing access in the westerly direction and north down to the ice rink in Tapawingo Park.

The bridge should be enhanced to encourage greater use and more visual appeal. Potential enhancements, pending further structural assessment, include lightweight shade or kiosk structures, distinctive lighting, easier access at both ends, and better integration with Tapawingo Park—expanding the civic stair and bringing pedestrians easily into the park.

The eastern end of Myers Bridge is proposed to connect to a raised Riverside Promenade for bike/pedestrian access extending the bridge landing south along and above the rail corridor to visually connect the visitor with the river and to connect to the SR 26 Bridges and the proposed bike/pedestrian railroad crossing bridge which would connect Downtown Lafayette to the Wabash Avenue neighborhood at Sycamore Avenue. This promenade would cross highway SR 26 at the grade of the bridges. The Wabash River Heritage Trail will be extended south from Myers Bridge, running under SR 26 bridges into the Wabash Ave Neighborhood. The Myers Bridge Pedestrian improvements, Riverside Promenade, and Wabash River Heritage Trail Extension, will create a looped connection from the bridge into Wabash Avenue Neighborhood. These improvements will connect the neighborhood to the Lafayette downtown, the Wabash River Heritage Trail, the proposed City Bus TOD, and West Lafayette and Tapawingo Park. The proposed dual use Rail/Bike/Ped. Bridge and the Brown St. Bike/Pedestrian Bridge also presented in the Central Reach section, will further enhance this loop. The planning team studied vehicular access to the Wabash Avenue Neighborhood and could not come up with a realistic option as necessary modifications to existing infrastructure would be prohibitively expensive. Future traffic engineering studies can revisit the issue if existing conditions change.
Currently, only half the rail bridge just south of the SR 26 Bridge is tracked for train use. By installing guard rails of sufficient height for safety, the other half could be decked over and used as a pedestrian and bicycle trail. The bridge has the structural capacity to support this additional use, but operations must be coordinated with the railroad.

The rail bridge could also provide an important conveyance function for treated sanitary water from the West Lafayette side to feed the canal interpretation area and its proposed water polishing chambers. This proposal is discussed in a later section.
Tapawingo Park’s central location and existing ice rink, park building, and play area give it the potential to be a multi-season destination park. Enhancements that could elevate Tapawingo Park into a regional asset include an amphitheater, park expansion to the north and south, connecting trails, public art, small boat/dock access, and a signature cultural building north of the existing park. Ranked very highly by the public, the features that many people would like to see are listed to the right, with examples from around the world shown on the following two pages.

**Active Recreation**
1. Splash Park
2. Canoeing/Kayaking/Sculling
3. Bicycling/Mountain Biking

**Passive Recreation**
1. Picnicking (Tables & Grills)
2. Overlooks/Viewing

**Commercial Activities**
1. Restaurants/Cafes
2. Art Shows
3. Canoe/Kayak Operators

**Education/Historical Interpretation**
1. Bridge Interpretation/Lighting
2. Tours/Trails

**Cultural**
1. Sculpture/Earth Sculpture
2. Light Shows/Fireworks
3. Amphitheater (dance/music/drama)
Examples of Recommended Enhancements for Tapawingo Park

- A spray park and water feature engages children in Nashville, Tennessee's Nashville Public Square. Image | WRT

- The Swarthmore College amphitheater in Swarthmore, Pennsylvania incorporated existing mature trees into its design. Image | Flickr (Colin Purrington / Colin Purrington)

- The Red Ribbon that snakes through Tanghe River Park in Qinhuangdao City, Hebei Province, China is a signature design element. Image | Flickr (eabartley / Elizabeth Bartley)

- Menashe Kadishman's "Suspended" is one of many sculptures on display at the Storm King Art Center in Mountainville, New York. Image | Flickr (blkdrama / Bonnie Kaplan)

- Increased use of the Riverside Skating Center as a concert space is recommended. Image | Stanton Lambert

- The Burnham Pavilion in Chicago is one of Millennium Park's iconic structures, serving as a usable space and a piece of art. Image | Zaha Hadid Architects

- Brown Park in Saint Matthews, KY, designed by WRT. Image | WRT

- Bicen Park in Saint Matthews, KY, designed by WRT. Image | WRT
Surrounding Wabash Landing, there is potential for dense mixed-use development that capitalizes on adjacent park areas. Currently, this area has significant gaps in the urban fabric—lack of a traditional grid, large-scale blocks, and suburban-style development—which limits circulation and discourages use. New residential, retail, and hotel development could complement Wabash Landing, support greater connectivity between the Purdue area, downtown West Lafayette, and Lafayette; and provide a more extensive, better connected, and logical network of “complete” streets—streets that are designed to accommodate all modes of travel. All new development and redevelopment should include integrated stormwater management measures such as permeable paving, bioretention rain gardens, green roofs, and rainwater collection and reuse systems.

Pedestrian-oriented development in Chauncey Village serves as an example to potential development around Wabash Landing. Image | Alesa Rubendall, Fermi Hara

New mixed-use development around Wabash Landing could enhance connectivity and encourage use. Image | Tippecanoe County

Proposed development around Wabash Landing. Image | WRT
Lafayette Development

Main Street (left) and North 3rd Street (bottom right) in Lafayette are local examples of the type of pedestrian-oriented development that could enhance areas like Riehle Plaza.

Image | Alesa Rubendall

Visitors enjoying the views along North 3rd Street in downtown Lafayette. Image | Alesa Rubendall

Lafayette’s downtown has a rich historic building stock and, generally, a coherent urban fabric. Places where the urban fabric breaks down include the areas immediately north and south of Riehle Plaza and the area north of downtown along Third and Fourth Streets. Characterized by parking lots and auto-oriented uses, the redevelopment of these areas presents significant potential to extend and enhance the existing urban fabric and have a great impact.

Given the critical gateway functions of this transit-rich area with the Amtrak and CityBus stations, the design of new investments must be carefully considered. New development should reinforce the urban center of Riehle Plaza and complement the scale and character of the existing city. It should be oriented with views to the river and integrate bridge landings into the flow of trails, walkways, and park areas. It should provide for trees and other landscape enhancements. With an upper level promenade, development in this area can also provide connectivity to the former boxboard paper mill site in the Wabash Ave. neighborhood. The proposed mixed-use Centennial Village Transit Plaza will consist of a new transit hub, plaza, and mixed-use facilities for residential, secondary education class space, and business/retail uses.

All new development and redevelopment should include integrated stormwater management measures such as permeable paving, bioscience green roofs, and rainwater collection and reuse systems.
Riehle Plaza

Together with Courthouse Square, Riehle Plaza could be the civic heart of Lafayette. Currently, it is the city’s transportation hub and the site of well-attended concerts and events. However, its daily usage could be expanded. The Riehle Plaza experience could be significantly enhanced through denser development that is well oriented to the plaza, along its perimeter and that helps to define it spatially. Smart development along the edges of Riehle Plaza, in turn, would bring more residents to the urban core. Riehle Plaza itself provides an opportunity to manage stormwater for the plaza and potentially surrounding streets.
OVERVIEW
The Northern Reach encompasses the area between Harrison Bridge and the US 52 Bridge. It includes the Lafayette Golf Course and the North 9th Street corridor on the east side of the river and the borrow pits, River Road corridor, and Happy Hollow and Mascouten Parks in West Lafayette. The key assets include large tracts of public land along the Lafayette riverfront, which includes the golf course and boat access.

Northern Reach Recommendations
The recommended public and private sector investments for the Northern Reach are outlined below, illustrated in the aerial view and described in more detail on the following pages. As stated previously the public sector investments of Connections and Open Space are planned to leverage the private investments of Development.

- **Connections** focus on new and enhanced pedestrian/bike bridges at Harrison Bridge, Mascouten Park, and US 52 Bridge and new trails, which link enhanced recreational features and northern neighborhoods across the river.
  - US 52 Bridge Pedestrian Enhancements
  - New Mascouten Pedestrian Bridge
  - Harrison Bridge Pedestrian Enhancements
  - New Pedestrian Bridge Over Railroad
  - Scenic Byway Enhancement – Develop River Road in support of its State Scenic Byway designation – Trails, Pull Offs, Interpretive Features etc.

- **Open Space** development includes enhancement to Happy Hollow Park and the expansion of Mascouten Park to include water recreation in boat basins and a series of parks that integrates the Lafayette Municipal Golf Course.
  - New Boat Basins
  - Happy Hollow & Mascouten Parks Enhancements
  - Golf Course & Recreation Enhancements
  - New Kids Zone & Overlook Park
  - New Signature Park

- **Development** leverages recommended connections and open space development along the North 9th Street Corridor and focuses on a concept of Green City Development that showcases the best practices in sustainable building and site development.
  - North 9th Street / Green City Development
THE NORTHERN REACH

- US 52 Bridge
- N 9th Street / Green City Development
- Golf Course and Recreation
- Pedestrian Bridge
- Kids Zone & Overlook Park
- Signature Park
- Harrison Bridge
- Mascouten Park Bike Pedestrian Bridge
- Mascouten Park
- Happy Hollow Park
- West Lafayette
- Purdue
- Boat Basins
- Boat Basins
- State Scenic Byway
- Purdue
- Lafayette
At the northernmost end of the study area, the US 52 Bridge offers an opportunity for a new pedestrian/bicycle connection across the Wabash. Given the structure of the US 52 Bridge, it appears feasible to add a pedestrian/bicycle path structure separated from the vehicular traffic by either suspending it from the underside or cantilevering it from the side of the existing bridge structure. The eastbound lane of the US 52 Bridge is scheduled for replacement, providing another opportunity to include pedestrian/bicycle access to the bridge.
Mascouten Pedestrian Bridge

A proposed pedestrian bridge at Mascouten Park would provide residents on each side of the river easier access to resources on the other side—supporting the goal of connecting the cities to each other. This new pedestrian bridge along with new pedestrian bridges at Brown Street and the proposed Rail Bridge, provides for looping opportunities along the corridor trail system.

For residents of West Lafayette, the bridge would mean more convenient access to the Lafayette Golf Course. For residents of Lafayette, the bridge would mean more convenient access to Happy Hollow and Mascouten Parks. The design of the bridge could make it a visual signature element, strengthening the region’s identity, and provide an additional link to knit the two sides of the river together. The connectivity of a new bridge would make it attractive for new investment, as area assets would be more accessible.

The Wabash River as seen from the Mascouten boat launch area. Image | Mami Hara

Living Bridge - University of Limerick, Ireland. Image | Flickr (Ragnorak)
After Harrison Bridge is delisted from the Indiana State Highway System as a part of the State Highway US 231 Re-Location Project starting in 2013, the bridge deck and ramp system can be modified to enhance pedestrian and bicycle connectivity across the river. Because it will no longer be subject to State highway standards, the existing bridge deck can be reconfigured with narrower travel lanes and the addition of bicycle lanes. In West Lafayette, the relocation of US 231 in 2013 will significantly alter traffic demand related to the ramp system, at which time reconfiguring the bridge landings can support boat house and trail development, as will be discussed in more detail in a subsequent section. Re-location of US 231 and the resulting potential impacts on the access ramps leading to and from Harrison Bridge may also open up potential access opportunities to and through what is now the Levee Plaza area.
A gently-sloping pedestrian bridge on the University of Minnesota campus provides a continuous link from Northrop Mall over Washington Avenue to the Mississippi River while preserving river views. Image | Ryan companies US, Inc.

The northern Lafayette neighborhoods have no direct access to the river across the railroad tracks between the 9th Street underpass and US 32—a distance of over 1 mile. This situation hinders connectivity and waterfront access, and can be remedied by constructing a pedestrian bridge at Underwood Street (or at a location to be determined in the future) along with access to park amenities, the Lafayette urban core, and the new Centennial Village transit Hub.
Boat Basins

The borrow pits along the river in West Lafayette were created as part of adjacent land development and have the potential to be converted into boating basins. When the Harrison Bridge is delisted as a part of the State highway system and US 231 is relocated to the west, the ramps can be modified to provide boating access and allow boathouse development lining the basins. The boat basins could use bladder dams to retain water during low water periods.

This location provides a unique opportunity to capitalize on the optimal rowing stretch on the Wabash with the development of a boathouse. Improving this area will enable additional trail improvements and connections to be made. Together, Happy Hollow and Mascouten Parks and the boating basins will act as an integrated recreation and ecological area, with significant connections to surrounding trails.
Happy Hollow & Mascouten Parks

The experience enjoyed by the many recreational users of Happy Hollow Park may be significantly enhanced through environmental restoration of the sensitive and steeply sloping landscape. Managing stormwater on site in the areas above Happy Hollow Park and reducing the flow to the ravine; thinning the tree canopy to allow sunlight to reach the ground layer so that an herbaceous understory may thrive; and planting deep-rooted herbaceous species at the top of the slope at Happy Hollow can help stabilize currently eroding slopes. Working with owners of the properties above, Happy Hollow Park will require outreach and education efforts.

Enhancements to Mascouten Park, achieved by expanding access along the river and locating parking down river, can create a gateway to the proposed adjacent boat basins. Together, Happy Hollow Park and Mascouten Parks and the boating basins can act as an integrated recreation and ecological area, with significant connections to surrounding trails.
The Lafayette Golf Course is located on low-lying land adjacent to the Wabash River. Because of its elevation, the course is frequently inundated during and after rain events, and water must be pumped back into the river to keep it operable. Reconfiguring the golf course and employing best environmental practices can allow it to co-exist with a river subject to frequent flooding. Such enhancements include significantly raising the elevations of the tee boxes and greens (as has already been done) and lowering and naturalizing areas between the fairways to reduce the frequency of flooding of those features most subject to damage; integrating of wetlands with naturalized drain- age ways to help the water drain off the course more quickly after the flood events and contribute to improved water quality; and extending the course into the well field protection areas. Reducing the impact of the golf course on water resources and improving its habitat value by following Audubon guidelines are other potential enhancements that can help cultivate healthy ecosystems and improve sustainability.

Enhancements can make these significant open spaces amenities for investment, with enormous long-term potential for residential development. Streetscape enhancements to North 9th Street and creation of a network of “complete streets” will be an important part of supporting new, valuable, and sustainable investments.

There is also an opportunity to create an interpretive stormwater feature along the historic Wabash & Erie Canal route through the northern part of the study area.
By relocating the fields in Lyboult Field to another location within the city, the waterfront site can be used for an overlook park with commercial recreation and site remediation. The community was captivated by the potential of this site to provide views of the river and to expand the range of recreation opportunities available in the Lafayette/West Lafayette area.

Types of recreation sought here include:

Active Recreation
1. Canoeing/Kayaking/Scullying
2. Bicycling/Mountain Biking
3. Fishing

Passive Recreation
1. Overlooks/Viewing
2. Community Gardening
3. Picnicking (Tables & Grills)

Commercial Activities
1. Zip Line
2. Farmer’s Market
3. Restaurants/Cafes
4. Canoe/Kayak Operators

Education/Historical Interpretation
1. Tours/Trails
2. Canal Interpretation
3. Arboretum/Botanical Garden

Cultural
1. Amphitheater (dance/music/drama)
2. Sculpture/Earth Sculpture

This site could also include natural area restoration, trails, historic interpretation of the canal, and ecological interpretation of the Wabash and aboriginal people.
Signature Park

Over the long term, a new waterfront park for downtown Lafayette would provide recreation adjacent to downtown, used by office workers in the daytime and neighborhood residents during the evening and on weekends. It would also provide an important link between downtown and north side of Lafayette and provide an important connection to riverside trails. Enhancing access to the area should be considered in the design of all future trails, enhancements to the Harrison Bridge, and adjacent development.

Feasible design elements may include features such as large boulders for seating, pathways mown into meadow (maintained through annual burns) and art installations that either resist or interact with the cycles of site flooding.

Grove Prairie at the Sugar Grove Nature Center in Funks Grove, Illinois is the largest intact prairie in Illinois. Image | Flickr (tlindenbaum)
N 9th Street / Green City Development

**Private Sector Component**

With future public investments in the open space around North 9th Street, a high level of amenity will be available to anchor and spur investment. This area has great opportunity for smart growth that can foster a new neighborhood of sustainable buildings that have high ecological performance. In addition to new residential mixed use, there is also potential for new office mixed use. As indicated in the images, integrated rainwater management should be included as a significant design theme for the Green City Development.
THE SOUTHERN REACH

OVERVIEW
The Southern Reach is an area with great ecological and neighborhood enhancement potential that stretches from the rail bridge south of the SR 26 Bridge to the US 231 Bridge. It includes low-lying agriculture land and the West Lafayette and Lafayette waste water treatment facilities. To the east, the Southern Reach includes the Wabash Avenue neighborhood of Lafayette.

Southern Reach Recommendations

The recommended public and private sector investments for the Southern Reach are outlined below, illustrated in the aerial view and described in more detail on the following pages. As stated previously the public sector investments of Connections and Open Space are planned to leverage the private investments of Development.

- **Connections** focus on new and enhanced pedestrian/bike bridges, at the US 231, SR 26, Sycamore Avenue and Rail Bridges, that better connect the two sides of the river and link to the Central Reach and trails that connect along the river to the south.
  - Rail Bridge Pedestrian Enhancements
  - US 231 Bridge Pedestrian Enhancements
  - Scenic Byway Enhancement – Develop River Road in support of its State Scenic Byway designation – Trails, Pull Offs, Interpretive Features etc.

- **Open Space** development includes an expansion of Shamrock Park, with a trail extension, stormwater management, and interpretation of the historic canal trace and the establishment of the Living Laboratory on the Wabash (LLOW) Water Resource Research and Education Center.
  - Canal Trace Park
  - Water as Resource Park Element
  - Environmental Park
  - Great Lawn
  - Living Laboratory on the Wabash

- **Development** of waterfront just south of the Downtown Lafayette leverages recommended connections and park expansion and provides a unique residential location with easy access to Downtown amenities and direct access to the river.
  - Residential Mixed Use
THE SOUTHERN REACH

TWO CITIES, ONE RIVER

Master Plan for the Wabash River Urban Corridor

The Southern Reach

Former Box Board Paper Mill Area

Rail Bridge

Water as Resource

Water Treatment Facility

Residential Mixed-Use

Interpretive Canal Trace Park

Great Lawn

Shamrock Park

US 231 Bridge

West Lafayette

Lafayette

State Scenic Byway

Environmental Park

LLOW
Rail Bridge

The unused portion of the rail bridge could be used for a pedestrian and bicycle connection, with proper safety structures. Image | WRT

This also appears in the Central section and is described there.

The rail bridge just south of SR 26 as seen from West Lafayette. Image | Stanton Lambert
The US 231 Bridge provides a vehicular connection at the southern end of the study area. There may be insufficient clearance above the river to suspend a pedestrian bridge under the US 231 Bridge, as recommended for the US 52 Bridge. However, this bridge has steel plate girders, so it may be possible to widen it to provide pedestrian accommodations.
Proposed Canal Trace Park area. Image | WRT

The former boxboard paper mill site in the area adjacent to the Wabash Avenue neighborhood has enormous potential due to its proximity to the river and because it is mostly outside the 100-year floodplain. Currently, the area is physically separated from the rest of Lafayette by both road and rail infrastructure. Proposed new connections, including the rail bridge and the Riverside Promenade, will stitch the area back into the fabric of the city and make this location more accessible, creating distinctive development and park expansion opportunities. The location of the historic Wabash & Erie Canal along Sycamore Avenue and the investments in around Shamrock Park provide the foundation for the recommended expansion of Shamrock Park along the entire Southern Reach to create a Canal Trace Park and continuous trail access.

The wide right-of-way along Sycamore Street provides an opportunity for the new interpretation of the historic Wabash & Erie Canal and an innovative stormwater management approach. Effluent from the West Lafayette Water Treatment Facility can be piped over the river along the rail bridge and used to provide flow to a water feature associated with canal interpretation. A system of subsurface flow through a vegetated gravel bed along with flowing surface water in the canal would provide polishing of treated waste through biological activity in the gravel to remove nutrients, promote oxygenation, and further break down waste. However, additional treatment—like virus removal—may be necessary before public access can be permitted. Community preference for activities and feature in this area include:

**Active Recreation**
1. Bicycling/Mountain Biking
2. Fishing
3. Canoeing/Kayaking/Sculling

**Passive Recreation**
1. Community Gardening

**Commercial Activities**
1. Restaurants/Cafes

**Education/Historical Interpretation**
1. Tours/Trails
2. Canal Interpretation

**Cultural**
1. Four Seasons Festivals
2. Amphitheater (dance/music/drama)
The concept of Water as Resource is a comprehensive approach to utilizing water as a design feature of park development and providing ecological function and educational opportunities along the entire length of the historical canal trace. This concept will include a series of park features, such as waterfalls in the north as the water is collected from the West Lafayette Water Treatment Facility, planted swales along the canal trace and wetland parks in the south at the Lafayette Water Treatment Facility.

For ecological and educational purposes, the canal trace through the former Boxboard area is proposed to filter and polish a fraction of the effluent from the West Lafayette treatment plant. Typically, constructed wetland treatment systems are subsurface, where the water flows through a gravel bed that is vegetated with wetland plants. However, the canal trace could use a modified design to make the water visible at the surface. Though the canal would polish less than 10% of the effluent by volume, it would provide significant demonstration value.

The cleansed water will flow down the canal trace to the Lafayette Water Treatment Facility, where it will discharge to the Wabash. In the Water as Resource area, existing natural wetlands will be preserved and enhanced to develop a system of wetlands that can polish and utilize treated effluent flows in an overall effort to restore natural hydrology and biodiversity to the river corridor. Trails and passive recreation areas can be integrated throughout and provide opportunities for environmental education.
The confluence of broad public support for re-engagement with and restoration of Wabash River landscapes; locally-based, world-class environmental/water resource researchers; and a variety of landscape typologies along the local reaches of the Wabash creates an unusually strong case for engaging the local riparian environment for water resource research and education. The research possible along Lafayette and West Lafayette could be of immense value to communities along the Wabash and possibly provide national models for floodplain management.

WREC formed a strong partnership with Purdue University at the outset of this project through various corridor planning projects conducted in partnership with the Department of Horticulture and Landscape Architecture and the Forestry and Natural Resources Department. These efforts led to the creation of an interdisciplinary Research Center - The Living Laboratory on the Wabash River (LLOW). Based out of the Center for the Environment in Purdue University’s Discovery Park, LLOW’s research focus is the health of the Wabash River and its corridor. The WREC/LLOW partnership is ongoing and has already applied for and received over $2,000,000 in grants to develop a watershed management plan for the Region of the Great Bend of the Wabash River (a sub watershed section of the Wabash River Watershed), obtain implementation funding in support of the now completed management plan, secure funding to continue water quality monitoring and education and outreach work, and develop and implement a management plan for the Deer Creek-Sugar Creek watershed (another sub section of the Wabash River Watershed). The ongoing WREC/LLOW partnership can serve as a catalyst for implementing the recommendations outlined here.

Broad research opportunity areas include land based practices for improvement of water quality, floodplain ecology, rehabilitation of post-industrial sites, integration of recreation with stormwater best management practices, agrarian hydrology, neighborhood development and civic engagement around environmental issues.

The development of a Water Resource Education and Research Station – in combination with an environmental park that would support public access and observation – was very highly supported during public planning meetings. The actual location of such a center, its research partners and research areas will be contingent upon future resources and opportunities. Possible research and project partners to explore opportunities for development of the research center and environmental park in addition to the existing WREC/LLOW partnership, include the National Fish and Wildlife Agency (along with other agencies in Federal Departments such as the Dept. of Interior and Dept. of Agriculture), the Indiana Department of Natural Resources, and various national and regional private and public foundations.
The Environmental Park adjacent to the proposed location for LLOW is envisioned to be a location where the community can engage in environmental education—a place where the knowledge gained from research done at LLOW can be passed on to the public and the scientific and engineering community. This new park amenity can promote both environmental and cultural heritage education, focusing on best practices in land management for stormwater, flood, and agricultural uses. Flood-resistant park design should anticipate and accommodate flood events and help improve water quality for the Wabash. This is also an ideal place to integrate treated effluent from the wastewater plant or stormwater integrated with ecological water landscapes, agriculture, aquaculture, and education. Combined with the Great Lawn and LLOW, the Environmental Park was ranked second in places to make public investments.
A Great Lawn just south of the West Lafayette water treatment plant is envisioned to connect by an existing or upgraded trail to Tapawingo Park. Combined with LLLOW and the Environmental Park, the Great Lawn was ranked second in places to make public investments, indicating a strong desire for a place to support large civic gatherings and events at a greater scale than is currently possible in the area. The susceptibility to flooding of the area greatly limits the degree of feasible investment but several alternatives may be considered:

- Development of a chemical-free lawn, subject to flooding and requiring post-flooding maintenance.
- Provision of a boardwalk trail above the 100 year floodplain, connecting this area with Tapawingo Park. The boardwalk design and location would need to consider the impacts of flooding and large, associated debris as well as a review of the condition and maintenance of the boardwalk trail near the Lafayette Golf Course.
- Balancing cut and fill of the site overall, but creating an upper tier or tiers that bring more site area above the current elevations.
The Wabash Avenue Neighborhood has great long term potential for development, due to its proximity to downtown Lafayette and available property along the river on its western edge (19+ acres above the 100 year flood plain). However for this potential to be realized, the physical barrier imposed by the rail corridor along its north and east borders must be addressed. The rail corridor separates the neighborhood physically providing a respite from the high traffic in the downtown area, but also serving to disconnect these adjoining areas that are physically very close due to difficulty in access caused by the rail corridor. Well-considered inducements must be initiated to enhance the neighborhood environment and entice future investment to occur that can take advantage of the developable space along the river and the neighborhoods close proximity to the Lafayette downtown.

Much like the Wabash, the lower reaches of the Chicago River in the City of Chicago were a patchwork of vacant industrial land, that now has low- and mid-rise residential development along a seawall. In Chicago access to the river for pleasure craft is essential to the marketability of the new development. Image | Nando Micale

With a proposed Canal Trace Park as a major amenity in the Wabash Avenue Neighborhood and the Rail Bridge trail connection to the north, mixed-use residential development is recommended for the former Box Board Paper Mill Area. Image | WRT

The property south of the rail bridge includes the former Box Board Paper Mill Site which is proposed for residential development; a seawall, that connects segments of the riverfront trail; a new linear park along Sycamore Street, that interprets the trace of the historic canal; and an expansion of Shamrock Park that connects the site to the south. Image | Stanton Lambert

Residential
Mixed Use

ACCESS
ELEVATE

GOALS
TWO CITIES, ONE RIVER

Phasing

General Approach

Phasing Plan

Partnerships
At the second community meeting, participants were asked for which enhancement projects they would favor public investment. The community visioning process led the consultant team and the WREC Board to focus on the Brown Street Pedestrian Bridge and Tapawingo Park as first phase investments. While the Great Lawn and the Living Laboratories on the Wabash Environmental Park were identified in the public meetings as a higher priority than Tapawingo Park, the consultant team and the WREC Board determined that their low elevation in the floodplain would make enhancements there an expensive investment due to the need for continual flood maintenance.

The market assessment and development financing testing conducted by the consultant team concluded that the areas of highest amenization are in the core areas of Downtown Lafayette and West Lafayette. These areas have the highest level of accessibility—with transit service, the road network, and pedestrian trail access converging in the core. On the Lafayette side, the Amtrak and CityBus transit hub located in the Big Four Depot at Rhetie Plaza, which connects to the riverfront trails and the Myers Pedestrian Bridge, provides excellent multi-modal access for mixed-use development. On the West Lafayette side, highway access, a captive university market, Tapawingo Park, access to Lafayette via the Myers Bridge, and other retail and entertainment amenities position underperforming properties for redevelopment. WREC has been working with the US Army Corps of Engineers (USACE) to plan and implement corridor enhancement. USACE’s established goals are:

- to protect navigation and prevent obstructions in the nation’s waters;
- to provide strong protection of the nation’s aquatic environment, including wetlands;
- to efficiently administer its regulatory program; and
- to provide the regulated public with fair and reasonable decisions.

An effective partnership with USACE will entail sustained alignment with USACE planning and implementation goals and the agency’s regulatory and operational requirements. USACE river projects must follow a four phase process:

1. Reconnaissance Study – a corridor or project master plan and determination of federal interest in participation in future projects. Future participation by the USACE will be determined through an ongoing USACE conducted Reconnaissance Study and leadership from Indiana’s Congressional Delegation. Current national economic and fiscal conditions will necessitate coordination of the river front project with national priorities and require WREC and its partners to develop a long term strategy and outlook in order to accomplish this plan.

2. Feasibility Study – a report including evaluation of alternative solutions, estimation of costs and benefits of alternatives, and a letter of intent by a state or local entity to financially participate in implementation. (sometimes combined with the Design phase, particularly if USACE feels the feasibility of a project has been confirmed during the Reconnaissance Study)

3. Design – includes all design phases/submissions of increasing percentage of completion (sometimes combined with the Feasibility Study phase)


The following outlines the benefits for the Phase 1 investments:

- Improves connectivity to Myers Bridge, the trails to the north and south.
- Retains and enhances a naturalized edge along the river to improve water quality and enhance river bank stability. Due to stabilizing aquatic and wetter prairie species along the river require significant sunlight.
Centennial Transit Village mixed use development component. Available funding may enable the proposed CityBus TOD to be phased in during Phase 1.

**PHASE 2 (YEARS 5–15)**
Based on the consultant team’s market assessment and development feasibility, in Phase 2 private sector development is expected to be underway in the downtowns and potentially in the Wabash Avenue neighborhood. This would include the redevelopments of Levee Plaza, the proposed CityBus TOD, and the redevelopment of the ‘Box Board Paper Mill’ and Midwest Rental sites for mixed-use. Public-private partnerships will be crucial to the success of Phase 2 redevelopment efforts. Park amenities will serve to induce the market to high value development.

Phase 2 continues investment in the core that builds off land the WREC partnership controls and positions for the downtown neighborhoods. Phase 2 investments include the Wabash Avenue Neighborhood Signature Park on the former Box Board Paper Mill site, and the extension of Tapawingo Park to the Harrison Bridge. Each of these investments expands connectivity, increases access to the river and provides opportunities for the restoration of the river’s edge.

The following outlines the benefits for the key Phase 2 investments:

**TAPAWINGO EXTENSION**
- **Amenity**
  - Expands on the amenities to development (Levee Plaza) to include cultural amenities and paddle craft access.
- **Connectivity**
  - Extends trails to the north to connect to the “borrow pits” and the future boat basin development.
- **Tree Buffer**
  - Retains and enhances the tree buffer above the line where trees are able to survive extraordinary flood events. This is important both for water quality and the quality of vegetative areas that protect the river bank’s integrity.

**LAFAYETTE RIVERFRONT LANDSCAPE RESTORATION**
- **Project Amenity**
  - Creates a new park amenity by expanding and enhancing the existing Shamrock Park with cultural heritage interpretation in the canal interpretation feature, which serves as a stormwater management feature.
- **Connectivity**
  - Creates a network of green streets that connect the new park to the neighborhood and upland neighborhoods via the existing pedestrian rail bridge.
- **Water**
  - Includes low investment open space, such as playfields and passive parks, to allow for flood event storage capacity. The integration of stormwater management elements will help improve water quality for the Wabash.

**CONTINGENT ON PRIVATE SECTOR DEVELOPMENT**
Investments that are contingent on the private sector development include:
- Rail Road Bridge Benefits
  - Canal Interpretation
  - Lafayette Promenade
  - Lafayette Central Area Green Streets
  - Lafayette Southern Area Green Streets
  - West Lafayette Central Area Green Streets

**PHASE 3 (YEARS 15–25)**
Phase 3 investments seek to expand the communities’ views of the Wabash both for recreation and for environmental education. The consultant team believes that at this stage the balancing of investments on both sides of the river is important. The Living Laboratory on the Wabash Environmental Park on the west, the Overlook Park on the east, and the pedestrian bridge at Mascouten Park are key to expanding connectivity and use along the Wabash.

**PEDESTRIAN BRIDGE AT MASCOUTEN PARK**
- **Landmark**
  - Provides a distinctive visual landmark.
- **Connectivity**
  - Creates another direct neighborhood-to-neighborhood, civic-place-to-civic-place connection by enhancing the pedestrian and bicycle network.

**OVERLOOK PARK**
- **Amenity**
  - Creates a new active park amenity that restores previously contaminated riverfront property and is accessible to both sides of the Wabash via the Mascouten Pedestrian Bridge.
- **Connectivity**
  - Enhances the trail connection along the Wabash.

**WABASH ENVIRONMENTAL PARK, RIVERFRONT TRAIL AND LOW PARTNERSHIP**
- **Amenity**
  - Creates a new park amenity with both environmental and cultural heritage education, focusing on best practices in land management for stormwater, flood, and agricultural uses.
- **Connectivity**
  - Enhances the trail connection along the Wabash.
- **Water**
  - Includes low investment open space to allow for flood event storage capacity. The integration of stormwater management elements will help improve water quality for the Wabash.

**PHASE 4 (YEARS 25+)**
The remaining phases are subject to funding, political and social interest, private sector development interest, and success of the first three phases of development. Investments in Phase 4 include expansion of the Wabash Avenue Neighborhood Signature Park to Shamrock Park and beyond along the Old Tow Path Road, redevelopment of the Golf Course, enhancement and expansion of Happy Hollow and Mascouten Parks, and the Great Lawn south of Tapawingo Park.

**PARTNERSHIPS**

**KEY PARTNERS**
North Central Health Services
City of Lafayette
City of West Lafayette
Tippecanoe County
Tippecanoe County Area Plan Commission
Tippecanoe County Soil and Water Conservation District
Natural Resource Conservation Service
Purdue University
Purdue Research Foundation
Community Foundation of Greater Lafayette
Greater Lafayette Commerce and its members
State of Indiana
- Department of Natural Resources
- Department of Environmental Management
- Department of Transportation
- Department of Commerce
- Office of Tourism Development
United States Army Corps of Engineers
Federal Highway Administration – Department of Transportation
United States Environmental Protection Agency
U. S. Department of Housing and Urban Development
U. S. National Park Service
The Wabash River Enhancement Corporation (WREC) is a non-profit agency that was formed in 2004 to guide enhancement of the Wabash River corridor. WREC began operations in 2005 when the first executive director, Stanton Lambert, was hired. WREC’s mission is to enhance the quality of life in the Wabash River corridor by providing sustainable opportunities to improve health, recreation, education, economic development, and environmental management. WREC developed an agency strategic plan in 2006 to guide its efforts to enhance the corridor. Its initial funding came through a generous $500,000 grant from North Central Health Services (NCHS)—a regional non-profit organization that provides community health services and grants to address community health and community development issues. NCHS continues to actively support WREC and Wabash River Corridor Enhancement through funding planning, development, and land acquisition projects. Efforts undertaken by WREC include:

- Designation of River Road and Division Road in West Lafayette and Tippecanoe County as a State Scenic Byway
- Completion of a United States Army Corps of Engineers Hydraulic Study of the Wabash River Corridor in Tippecanoe County to update flood maps
- Completion of a United States Environmental Protection Agency grant to conduct Environmental Assessments of corridor properties
- Development of a Corridor Master Plan for the Lafayette-West Lafayette Urban Riverfront Section of the Wabash River in Tippecanoe County
- Development of the Tippecanoe County Master Plan for the Wabash River Greenway
- Completion of a United States Geological Survey pilot project to map the bottom of the Wabash River
- Development of a watershed management plan for the Region of the Great Bend of the Wabash River
- Acquired two key properties in the Lafayette Urban Core.
- Worked with North Central Health Services to have NCHS acquire the Box Board Paper Mill property.

NCHS’s leadership and vision are invaluable to the long-term success of this effort.

CREDITS

PROJECT CREDITS

FUNDERS
- North Central Health Services
- City of Lafayette
- Tippecanoe County
- Community Foundation of Greater Lafayette
- Duke Energy Foundation
- Alcoa Foundation
- Tippecanoe County Park and Recreation Foundation
- Lafayette Urban Enterprise Association
- Purdue Research Foundation
- Caterpillar
- Lilly Tippecanoe Laboratories

BOARD
- Wabash River Enhancement Corporation Board of Directors:
  - Tony Roswarski
    Board President
    Mayor, City of Lafayette
  - Tom Murtough
    Board Vice President
    Tippecanoe County Commissioner Representative
  - John Dennis
    Board Treasurer
    Mayor, City of West Lafayette
  - John Collier
    Board Secretary
    Director of Campus Master Planning, Purdue University
    Designated Representative for Purdue University President
  - Andy Gutwein
    Tippecanoe County Council Representative

- Ted Bumbleburg
  Superintendent of Parks and Recreation
  City of Lafayette Park and Recreation Board Representative

- Richard Shockley
  City of West Lafayette Park and Recreation Board Representative

- John Gamsb
  Tippecanoe County Park and Recreation Board Representative

- Norman Neiburger
  Wabash River Parkway Commission Representative

- Former Board members who served during the project:
  - K.D. Benson
  - Jeff Kemper
  - Mike Dana
  - Jan Mills
  - Kathy Vernon

- Executive Director
  - Stanton Lambert

- Watershed Coordinator
  - Sara Peel

- Board Attorney
  - David Luhman

TECHNICAL ADVISORY COMMITTEE
- Dennis Carson — Director of LUEA & Com Dev. Dept./City of Lafayette
- Gene Hatke — Wabash River Parkway Commission
- Liz Solberg — Community Leader
- Sallie Falhey — APC Executive Dir.
- Joe Seaman — IED, Greater Lafayette Commerce
- Jo Wade — President, Tippecanoe County Convention and Visitors Bureau
- Joe Payne — City of West Laf. Sup’t of Parks & Recreation
- Allen Nail — Tippecanoe Co. Sup’t of Parks & Recreation
- Kim Wilson — Purdue University – Professor, Dept. of Horticulture and Landscape Architecture
- Duke Energy Staff representative
- United States Army Corps of Engineers Staff

LOCAL GOVERNMENT PARTICIPANTS
- City of Lafayette
  - Department of Parks and Recreation
  - Department of Water Pollution Control
  - Department of Water Works
  - Department of Engineering
  - Department of Community Development
- City of West Lafayette
  - Department of Parks and Recreation
  - Department of Development
  - Department of Engineering
- Tippecanoe County
  - Area Plan Commission
  - Department of Parks and Recreation
  - Department of Highways
  - Department of Information Technology

CONSULTANTS
- WRT
- CDF
- HTNB
- AECOM