WETLANDIA
FINAL REPORT
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THE OHIO STATE UNIVERSITY
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BACKGROUND

Municipalities

Physical Boundaries
The 4,080 acre Wetlandia area is located on the western edge of the City of Columbus and is located primarily to the south of the Broad Street Corridor. The western boundary of the site is the Helbrach Run tributary which feeds into the Big Darby River. The City of Columbus has been expanding outward to the west over the past decade, and this site represents the fringe of the city. Though development has slowed considerably since the 2008 recession, future development within this area is likely.

Government Boundaries
The study area is controlled by three separate government bodies: The City of Columbus, Prairie Township, and Pleasant Township. Of those, only the City of Columbus is incorporated.

Population and Character
The population of the area was estimated to be 5,500 people, assuming 2.5 residents per household. This includes just under 2,000 single family units and 600 multi-family units. The existing area can be described as primarily agricultural land use with single family homes along country roads, and pockets of concentrated single family developments scattered throughout. The Broad Street corridor has a small amount of commercial development, as well as some residential units. The small village of Galloway is located approximately halfway down the study area, and is comprised of a handful of houses, a church, a school, and some light commercial uses. The village is significantly older than the rest of the development in the study area.
Key Findings

- Lots of environmentally sensitive features exist in the study area including 10% floodplains and 9% wetlands.
- Open space is plentiful in the area comprising 22% of land-use.
- Soils are structurally sound for building and development but have low rates permeability presenting possible flooding issues.

NATURAL ENVIRONMENT

Prime Agricultural Soils

The primary soil type for the area is Miamian-Kokomo. Consisting mainly of clay and silt-loam, Miamian soil is considered structurally sound for building and development. Categorized as hydric, Miamian soil has an extremely low permeability rate due to its high percentage of clay. Due to its poor ability to permeate water, topographically low areas retain water longer and create flood zones.

Stream and Riparian Corridors

Hellbranch Run flows along the area’s western boundary, carrying an abundance of ecological biodiversity. The Ohio EPA among other local organizations developed advisable criteria to protect the stream and its surrounding riparian edge.

100-Year Floodplain

Ten percent of the subarea rests within the 100 year floodplain. Floodplains not only provide adequate real estate for the flooding of waterways but recharge the groundwater table. Developing within a floodplain zone can negatively alter the water quality unless proper stormwater management methods are achieved.

Woodlands and Wetlands

Nine percent of the subarea are categorized as wetlands. Groundwater is recharged through the percolation of surface stormwater. Wetlands provide natural filtration for the hydrologic cycle thus enhancing the overall water quality.

Open Space

Greenspaces and parks make up 22 percent of the subarea. The parks, however, often are underdeveloped and lack sufficient maintenance. Being located at the core of neighborhood developments, these parks have significant potential to benefit the community.
**NATURAL ENVIRONMENT**

**HYDROLOGY**

The Darby watershed, located in Central Ohio, drains 555.6 square miles into six counties. The majority of the land in the watershed is agricultural and wooded at 74 percent and 22 percent respectively. It is important to note that a large percentage of wetland area consist of man-made ponds.

The watershed is a freshwater aquatic ecosystem and is consistently monitored for quality control. Ecological risk assessment evaluates factors such as sedimentation, changes in water flow, and chemical contamination to name a few. The Big Darby watershed resource managers use risk assessment to evaluate biological changes in the environment and can then determine suitable adjustments in planning and development.

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**Key Findings**

- 10% of the study area is within the Hellbranch Run floodplain
- Large amounts of wetlands still exist in the study area
Key Findings
- Just over half of our study area is considered environmentally sensitive.
- Large swaths of land mainly in the Tier 3 zones are suitable for conservation-type development.

NATURAL ENVIRONMENT

Big Darby Accord

Protected Zones
Conservation efforts from ODNR, Metro Parks and other organizations provided a multi-tiered protection policy regarding the Big Darby watershed. These tiers identify specific levels of land protection for means of preservation and development.

Tier 1 Zones
Floodplains, riparian zones, wetlands and critical recharge zones have primary protection. Development is prohibited from this zone.

Tier 2 Zones
Highly erodible soils and wooded lots over three acres have secondary protection. Development is strongly discouraged in this zone.

Tier 3 Zones
This zone creates linkages amongst tier 1 and tier 2 zones to help protect the most environmentally sensitive areas. Recreational uses and conservation development are permissible in this zone.

Legend
- Protected Area
- Tier-1 Zone
- Tier-2 Zone
- Tier-3 Zone
- Accord Boundary

Legend
- Protected
- Tier 1
- Tier 2
- Tier 3
- Non-Sensitive Land

PROTECTED 10%
Tier 1 8%
Tier 2 3%
Tier 3 30%
Non-Sensitive Land 49%
**BUILT ENVIRONMENT**

**Transportation System**

**Highway**
Wetlandia ranges from 2.6 to 6.9 miles from I-270, Columbus’s outerbelt interstate. A connection to I-70 can be accessed within 4.2 miles.

**Roads**
US 40/Broad Street traverses through Wetlandia and is the main arterial that links the area to the city of Columbus.

**Sidewalks**
Existing neighborhoods and recently developed subdivisions generally possess sidewalks in good condition. Sidewalks however are usually not available on arterial roads and sometimes absent in subdivision streets.

**Bikeways**
Bikeways are limited to Broad Street and subdivision sidewalks. A regional connector that will enable bike access to Cincinnati along the Camp Chase railway is planned and is scheduled for construction in 2012.

**Transit**
Modes of transportation within the area are limited to auto vehicles. COTA ends its Broad Street service westward a quarter mile shy of wetlandia.

**Key Findings**
- Sidewalks are generally connected in subdivision pods yet do not connect with the larger street network.
- Modes of transportation other than automobiles are significantly limited.
Key Findings

- Just under half of the study area is agricultural land.
- Any future development needs to be assessed on its future effects on the environmentally sensitive Darby Water Shed and elimination of open space and agricultural uses.

BUILT ENVIRONMENT

Existing Land Use

Conflicts Between Land Uses
Agricultural land makes up 44% of Wetlandia. Single-family housing acquires 22% of the existing land use. Retail uses only comprise 4% of total land use and exist in clusters along Broad Street and are scattered sparingly throughout the area. Since industrial uses are almost non-existent in the study area, conflicting land uses are not very prevalent. There may, however, be some minor conflicts between adjacent areas of residential and agricultural uses throughout the area. Also a multi-family subdivision on the northern extreme of the study area is located directly next to a Norfolk-Southern rail line.

Complementary Land Uses
In the study area residents likely desire to be in close proximity to riparian corridors and scenic areas such as agricultural uses and open spaces. While these uses are seemingly complementary, they also contain challenges. Significant residential development may create environmental problems if located too closely to environmentally sensitive areas and could erase the desirable scenic character of the area by eliminating agricultural areas and open space.
**BUILT ENVIRONMENT**

**Existing Zoning**

**Method**

Since the study area falls within the boundary of several governmental entities, the zoning classifications varied considerably. The classifications shown on the map to the right represent a simplification of the existing zoning for all areas involved.

The simplified zoning classifications were commercial, which represents neighborhood commercial, community commercial, and city center boundary. Single family is seen in the light beige, and can range from large lot sizes down to quarter acre subdivision lots. Multi-family zoning is present in one small pocket on the eastern edge of the site. The City of Columbus zoned a large portion of the southeast edge of the study area as manufacturing, which is located just adjacent to the Bolton Field airport. Planned Unit Development areas are scattered throughout the site, mostly notably with a multi-family development on the northern border of the site. Rural and agricultural zoned land make up the rest of the study area.

**Zoning Impact**

Much of the existing development seen in the area conforms to the existing zoning classifications seen here. As seen by the zoning, there are large portions of land where development is expected to occur, such as a large expansion of single family housing, a large area of manufacturing, and plans for a commercial center just to the north of Galloway Village. Full utilization of all the zoned areas would increase the burden on the existing transportation network, as well as the possibility of endangering ecologically sensitive areas along the Hellbranch Run tributary.

**Key Findings**

- Significant areas of land are zoned single-family foreshadowing a boom in single-family construction
- Future development will impact the transportation network and the environmentally sensitive Hellbranch Run
**Key Findings**

- Existence of riparian corridor governs the capacity and methods of urban development.
- Incentive programs for executing sustainable land uses are a result of environmental protection policies.

**Urban Form**

Wetlandia consists mainly of vast open agricultural spaces with an eclectic variety of residential housing typology. The prominence of Hellbranch Run brings forth the issue of protecting the watershed from environmentally irresponsible development. With the demand and sprawling of newly developed subdivisions, developmental practices such as LEED should be acknowledged to maintain environmental quality.

Housing types exhibit a dynamic range in both built square footage and lot size. Neighborhood subdivisions are predominantly ubiquitous at the eastern boundary of the study area. Older farmhouses lie closer to the rural edge. There is also a subdivision for large estates of at least 2 acre lots on the southern edge of the study area.

The formal analysis of urban development can be categorized as scattered. This may be due to a frayed network of transportation and the large amount of non-developable land throughout the area due to environmental restrictions. The future of transportation corridor improvements will dictate the ability to develop more functional urban settings.
DEVELOPMENT CONSTRAINTS AND OPPORTUNITIES

Constraints
As can be seen from the map to the right, areas restraining development are mostly located on the western side of the study area and on existing residential subdivisions. The western side of the study area is where Hellbranch Run resides.

Natural Features
The existence of Hellbranch Run and its surrounding floodplain limit the capacity and ability to develop due to the preservation of green infrastructure and protection of environmentally sensitive areas. The 100 year floodplain constitutes 10% of the subarea as well as undevelopable wetlands covering 9%. In 2002, the Hellbranch Watershed Forum was created to develop guidelines and policies for stormwater regulations and restoration projects in support of environmental protection.

Existing Land Use
Developmental constraints on existing land use predominantly rest on lack of a robust transportation network. Single lane roads consume a majority of the travel system, offering little in terms of vehicular capacity. Access to city sewers is conflicting with development sprawl. The expansion of sewer infrastructure would prove expensive for development.

Sewer and Water Service
The presence or absence of sewer and water service will determine the extent of development. Lack of water or sewer will create a minimum lot size of five acres (unless exceptions can be made for conservation development), while the presence of these services will encourage development.

Existing Neighborhoods
It is unlikely that existing development can be modified. This is especially true with single family uses. It also may prove difficult to implement suggestions for more LEED homes in existing neighborhoods as suggested by the Darby Accord Plan since altering older buildings is challenging. LEED certified construction will likely need to be new construction.

Opportunities
Underdeveloped
Opportunities mainly reside on agricultural, vacant land, and open space. Since the study area is composed of 44% agricultural uses developable land represents a large portion of the study area. However, it may not be advisable to develop on all agricultural land since this would eliminate the rural character of the area and could possibly alter the ecology of the Hellbranch Run.

Areas which are labeled somewhat suitable or least suitable for development require conservation techniques of development or the exclusion of any development since these areas are important to maintaining the viability of the Darby Watershed Ecosystem.
VISION STATEMENT

The Wetlandia vision will accommodate for both new development and the preservation of existing rural character and environmentally sensitive areas. It will serve as a transition zone between the edge of the City of Columbus and the rural areas starting west of Hellbranch Run.

New residential development will embrace the natural characteristics of the watershed without significant disruption of the existing natural systems. Housing located either on or adjacent to environmentally sensitive areas will become conservation development using numerous low impact development standards and be developed as "conservation clusters". Future land use will continue existing uses in areas already developed and envision the future use of open space and agriculture as either conventional suburban development or conservation development. This depends on whether the use is located in environmentally sensitive areas as cited in the Darby Accord. All efforts should be made to create an interlinked system of recreational areas in conservation developments and areas prohibited from development due to their environmental sensitivity. This provides both a buffer for the natural areas and increases access to recreational amenities for surrounding housing developments. A traditional neighborhood developed will be planned east of Galloway improving its village character and taking advantage of possible tourism traffic from the newly developed bike path, which will run through its core.

GOALS, OBJECTIVES, POLICIES AND STRATEGIES

In this section we describe how we plan to implement our future land use map. These are broken down into two portions Policy Foundation and Implementation. The Policy Foundation includes both goals and objectives. Our plan includes four goals which are broken down into three objectives. Each goal serves as the broadest policy statement for what we are trying to achieve for our area. Each goal is further refined by a number of objectives that provide additional policy guidance and can be quantifiable to some degree.

The implementation portion identifies a specific course of action for implementation. This portion contains two components: policies and strategies. These two components break out the course of action of each objective. Our plan includes at least one policy and strategy for each objective. Policies are the broader of the two and can be defined as a principle or rule to guide decisions. Strategies get more specific into exactly how each objective will be implemented. It is the plan of action.
The future land use map advises the majority of land use changes to occur in areas which are not already built-up. Existing built-up developments did not change from the existing conditions map since any changes are highly unlikely and infeasible. Existing areas which are either open space or agriculture are either rezoned conservation development or as conventional suburban development. Conservation development has the base zoning of low density since at the gross scale the unit density will be between 2-4 units per acre. Overlay on top of the conservation developments are green diagonal hash marks indicating that these areas will be rezoned as the Hellbranch Run Overlay District in Columbus. A similar district is recommended in the few areas still remaining in township jurisdictions. All new conventional suburban developments are zoned as low-medium density where densities would range between four to six units per acre.

Extremely environmentally sensitive areas including protected and tier 1 locations determined by the Darby Account plan are prohibited from development. This is represented in the future land use map by areas overlaid by a shadow. You will notice that recommended uses beneath the shadow are often existing uses or planned conservation developments. Since it is legally not feasible to zone these areas as open space, since that would be considered a taking, the plan calls for these areas to eventually be bought out. When these areas are located in conservation developments they will be preserved as open space as part of the larger development plan. Lastly, the diagonal blue hashes represent the New Gallaway Planned Unit Development. This area is planned as a mixed-use neighborhood development and will include a town center surrounding the planned bike path, open space preserved in the environmentally sensitive areas, and road connections linking the new development with the Village of Galloway and existing development to the east of the site.
GOAL 1  NATURAL AREAS
To Preserve and Enhance the Rural and Natural Character of the Area

OBJECTIVE 1A
Set aside land either on or adjacent to environmentally sensitive areas as conservation development

POLICY 1A-1
Areas determined as Tier 2 or Tier 3 by the Darby Accord should be developed as Conservation Development

STRATEGIES
1A-1.1 Tier 2 and Tier 3 areas within the City of Columbus should be rezoned according to the Hellbranch Run Watershed Overlay District
(1-3 years)
1A-1.2 Prairie and Pleasant Townships should work together and develop a Conservation Overlay District for areas within Tier 2 and Tier 3
(3-5 years)
1A-1.3 Permit shared septic systems within conservation developments
(5+ years)

OBJECTIVE 1B
The most environmentally sensitive areas should be preserved as open space

POLICY 1B-1
Protected and Tier 1 areas as directed by the Darby Accord areas should be preserved as open space

STRATEGIES
1B-1.1 Development will be prohibited in the protected areas through enforcement of Columbus’ Floodplain District
(1-3 years)
1B-1.2 Funds acquired in the development of the Town Center will be used to purchase Tier 1 property and preserve it as open space and recreational opportunities
(3-5 years)
1B-1.3 Encourage Columbus Metro parks to purchase Tier 1 property and preserve them as recreational areas
(3-5 years)

OBJECTIVE 1C
Establish open space standards for land set aside for conservation development

POLICY 1C-1
A network of connected open space should be established within and between adjacent conservation developments

STRATEGIES
1C-1.1 At least 50% of all space within conservation developments should be preserved as open space
(3-5 years)
1C-1.2 At least 75% of open space in conservation development should be contiguous
(5+ years)
1C-1.3 Provide density bonuses and tax abatements to developers who provide contiguous open space and preserve scenic view sheds
(5+ years)
GOAL 2  NEW DEVELOPMENT
Promote Responsible and Appropriate Development Throughout the Area

OBJECTIVE 2A
Promote low impact development throughout the area

POLICY 2A-1
Low impact development standards should be established for all new development

STRATEGIES
2A-1.1 Require all new road construction to be pervious pavement in the areas determined as environmentally sensitive by the Darby Accord (5+ years)
2A-1.2 Create an incentive program which pays up to 25% of the costs for installing pervious driveways (5+ years)
2A-1.3 Create a rain barrel incentive program (1-3 years)
2A-1.4 Require a system of bioretention swales in all new development (3-5 years)

OBJECTIVE 2B
Promote Traditional Neighborhood Development adjacent to Galloway which connects to the existing road network

POLICY 2B-1
A PUD district should be created to the east of Galloway incorporating principles of Traditional Neighborhood Development

STRATEGIES
2B-1.1 Write into the development code of the PUD district requirements which incorporate Traditional Neighborhood Design
Narrow Streets, Front Porches, Net Density of at least 8 units per acre, Areas of mixed-use, Extensive pedestrian and bicycle paths, Provision of parks and centralized squares (1-3 years)

OBJECTIVE 2C
Limit the extent and intensity of conventional suburban development

POLICY 2C-1
Traditional conventional suburban development should only be permitted in non-environmentally sensitive areas

STRATEGY
2C-1.1 Prohibit conventional suburban development from protected, tier 1, tier 2, and tier 3 areas as stated in the Big Darby Watershed Accord (1-3 years)
2C-1.2 Restrict further sewer service within environmentally sensitive areas (3-5 years)
GOAL 3  TRANSPORTATION
Enhance Connectivity to Adjacent Compatible Land Uses for Multiple Modes of Transportation

OBJECTIVE 3A
Minimize the burden future development will place on existing roadways

POLICY 3A-1
All new development should include collector roads connecting local roads and existing roadways.

STRATEGY
3A-1.1 Do not approve proposed subdivisions which do not have connecting collector roads (3-5 years)

OBJECTIVE 3B
Develop a network of bicycle and walking paths for pedestrians and bicyclists to travel effectively within and between land uses.

POLICY 3B-1
All new development should include sidewalks within the development and sidewalks connecting to collector and county roads servicing the development.

STRATEGY
3B-1.1 Do not approve proposed subdivisions which do not include sidewalks along all proposed streets nor connect to collector and county roads servicing the subdivision (1-3 years)

POLICY 3B-2
Easements should be created for bicycle and pedestrian paths linking to adjacent or nearby land uses.

STRATEGY
3B-2.1 During the review of subdivision permits easements for bicycle and pedestrian paths should be considered (3-5 years)

OBJECTIVE 3C
Provide more road connections between land uses.

POLICY 3C-1
When possible roads shall be connected by two other roads.

STRATEGY
3C-1.1 Prohibit cul-de-sacs in all proposed subdivisions (3-5 years)

POLICY 3C-2
The possibility for future road connections must be preserved in all new developments.

STRATEGIES
3C-2.1 When reviewing subdivision proposals stubbed streets must be provided to adjacent land which is developable in the foreseeable future (3-5 years)
GOAL 4 COMMERCIAL AREAS
Enhance the Viability of Commercial Areas

OBJECTIVE 4A
Take advantage of development opportunities with the proposed regional bike path cutting across Galloway Village

POLICY 4A-1
Uses which attract tourism and a sense of place should be developed near Galloway Village adjacent to the future bike path

STRATEGY
4A-1.1 Develop a mixed-use town center through a planned-unit development which creates a village like square and promotes businesses which cater to bike traffic generated by the proposed bike path (5+ years)

OBJECTIVE 4B
Set guidelines for responsible commercial development along the Broad Street Corridor.

POLICY 4B-1
Use access management techniques to increase safety and overall aesthetic quality along the corridor

STRATEGIES
4B-1.1 Curb access should be limited along Broad Street (3-5 years)
4B-1.2 Commercial access should be steered to side-streets and back alleyways (3-5 years)
4B-1.3 A center medium should be constructed to limit left-hand turns (5+ years)

POLICY 4B-2
A more intensive design review should accompany any proposed developments or modifications along Broad Street focusing on higher aesthetic quality and ensuring access management strategies are implemented.

STRATEGY
4B-2.1 A Design Review Board should be established by the Westland Area Commission for the Broad Street Corridor (3-5 years)

OBJECTIVE 4C
Integrate neighborhood commercial throughout developed portions of the area

POLICY 4C-1
Commercial uses should be within a half-mile of every resident in the area

STRATEGY
4C-1.1 Where possible rezone major intersections as neighborhood commercial (1-3 years)
4C-1.2 Set aside small pockets of neighborhood commercial within proposed developments (1-3 years)
NEW GALLOWAY TOWN CENTER

The Darby watershed exhibits natural buffers and zones that should be protected and preserved. The land conservation efforts of this plan recognize and respect the protected tiers of the Darby watershed. The PUD district east of Galloway presents a unique opportunity to design and develop a conservation development. The design included in this document represents the new ideal in development surrounding environmentally sensitive areas.

The new urban core connects sprawling traditional urban developments on the east to newer conservation developments near the watershed boundary. The connecting core represents a mixed use zone providing residents with connective transportation, retail, housing and recreation.
The diagrams to the right demonstrate how the greenway connector system could work. A network of greenspace and parkland containing biking and walking trails would connect to larger nodes within the area. The greenways would connect to the built portion of conservation developments, and connect to the required greenspaces within traditional suburban developments.

These greenway connectors would act as a secondary transportation system for cyclists and pedestrians, as well as providing a network of parkland throughout Wetlandia.