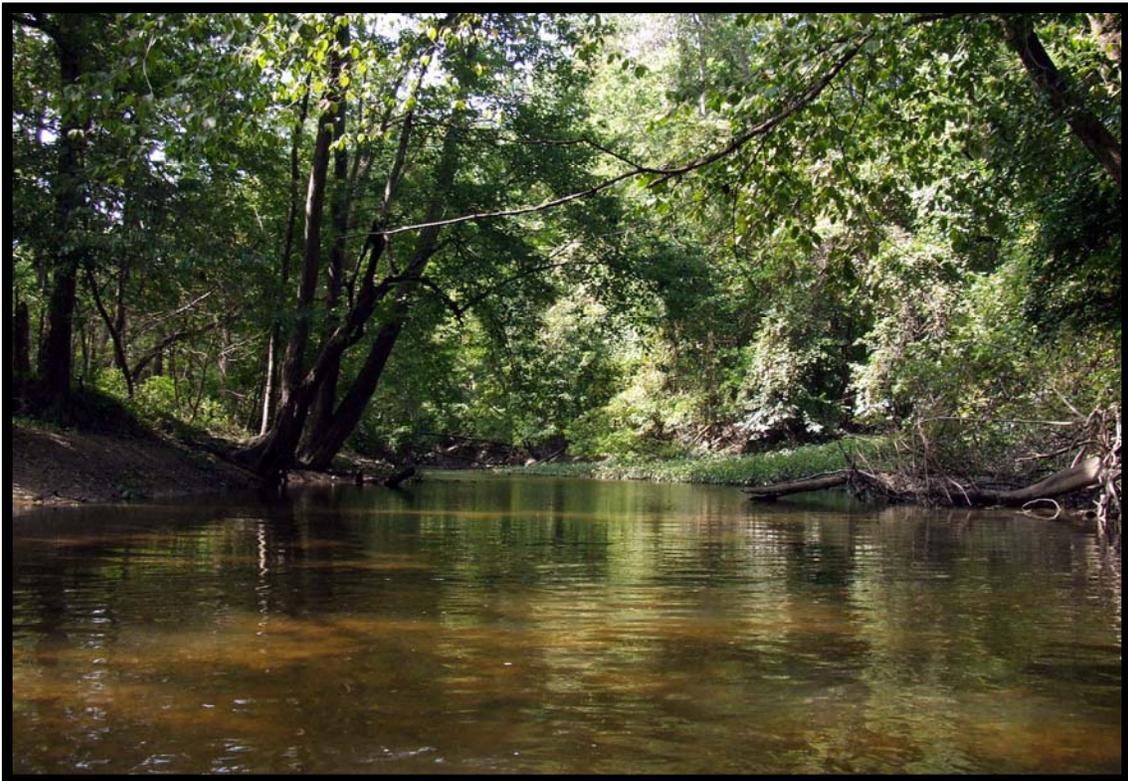

Swan Creek Watershed Balanced Growth Plan

Final Report of the Swan Creek Watershed Pilot Project

June, 2009



This document was prepared with funding provided by the Ohio Lake Erie Commission, with matching funds from the Lucas Soil & Water Conservation District, and members of the Toledo Metropolitan Area Council of Governments.

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1.0 Executive Summary

Purpose of the Balanced Growth Initiative and the Content of the Final Report

The Swan Creek Watershed Balanced Growth Initiative and Swan Creek Watershed Balanced Growth Plan (Swan Creek BGP) are a watershed-scale land use planning activity designed to protect water quality in Lake Erie and improve the quality of life and ensure economic growth throughout the watershed. These planning activities are part of a four-pilot project of the Ohio Lake Erie Commission whose goal is to begin to link land-use planning to the health of watersheds in general and the Lake Erie watershed in particular, primarily by local governments determining the most appropriate land uses for their jurisdictions. The value of these priorities is not only to guide local land use decisions but also to guide state agency activities in offering incentives to support those future land use priorities through existing programs.

This final report is in partial fulfillment of the requirements of the grant from the Lake Erie Commission and the Ohio Water Development Authority which graciously funded the project. It provides Priority Area maps for the watershed in three categories: Priority Agricultural Areas (PAAs), Priority Conservation Areas (PCAs), and Priority Development Areas (PDAs). The text of the Swan Creek BGP makes recommendations on how to implement these Priority Areas and maintain the maps to keep them relevant to changing conditions. This report covers the background of the Lake Erie Commission's *Lake Erie Protection & Restoration Plan*, the Balanced Growth Blue Ribbon Task Force and its creation of the Balanced Growth Plan process, and the benefits of watershed planning. The Swan Creek BGP describes Priority Areas, and Special Priority Areas, and the importance of the Watershed Planning Partnership and its advisory Technical Committee. It gives an overview of the plan's public education and participation program and GIS methodology and modeling, and provides a technical manual so that updates and revisions can be made to the plan. For the benefit of future plan creators, it discusses unresolved issues and lessons learned during the creation of the plan. Most importantly, it lays out the local jurisdictional responsibilities in implementing the plan through local and regional cooperation, the reactions of the local jurisdictions to the Swan Creek BGP, staff recommendations on implementing the plan, and tools to implement the plan.

The Project Area and Development of the Priority Areas

Swan Creek is a tributary of the Maumee River, which itself drains into Lake Erie. Swan Creek is 40 miles long; its watershed includes more than 200 miles of smaller streams, draining 204 square miles of Lucas, Fulton, and Henry counties in northwest Ohio. The watershed includes all or part of 23 political jurisdictions: three counties, two cities, five villages, and 13 townships. The wide range of land use and broad spectrum of interests made it imperative that a well-rounded Technical Committee be established. This committee was formed from invitees of local governments, the private sector, and governmental and nonprofit agencies. Products resulting from the work of the Technical Committee are watershed maps of Priority Areas for future Agriculture, Conservation, or Development (PAAs, PCAs, PDAs).

The initial Priority Area maps were developed using a computer geographic information system (GIS) model. The model evaluated many factors that indicate the suitability of a specific location for

agriculture, conservation, or development. Two principal factors were especially influential in recommending Priority Areas throughout the watershed: soil type, which identifies floodplains, possible wetlands, habitat supporting rare species, productive agricultural land, and soil capacity for onsite sewage treatment; and existing infrastructure such as major roads and intersections/interchanges, existing water service, existing sanitary sewer service. These criteria were key for all types of future land use activity. Additional criteria geared to specific land uses were also used. PAA development included criteria that indicate productive farm land and PCAs included criteria that supported natural habitat and processes. Future development areas were evaluated for residential, commercial or industrial development. Although each of these types of development have their own infrastructure, market, or access needs and used their own unique criteria, they were aggregated into a final Combined PDA map.

Priority Area Review and Endorsement

Draft Priority Areas were first presented to jurisdictions at a public meeting in June 2007. In late 2007 and through 2008, direct presentations were given to the 20 jurisdictions that accepted staff offers. At these presentations, staff asked for input from the jurisdiction, and requested their formal endorsement. Following the meetings, staff worked with the jurisdictions to address any concerns and coordinate map changes with the Technical Committee. The Ohio Lake Erie Commission requires formal endorsements by 75% of the jurisdictions based on number, area, and population before it will accept a Balanced Growth Initiative Plan for implementation. The Swan Creek BGP has been endorsed by 20 of the 23 jurisdictions (86.9%). The specific breakdown of endorsements includes more than 97% of the watershed's population, and 91% of the watershed's land area and 87% of the jurisdictions.

Recommendations

This report makes the following recommendations:

- That the TMACOG Board of Trustees and Ohio Lake Erie Commission accept the Priority Areas in this report.
- That Ohio state agencies provide incentives through existing programs to support the watershed's future land use priorities.
- That Ohio state agency incentives provide benefits designed to reach public and private sector entities whose actions affect land use decisions.
- That the TMACOG Board of Trustees establishes a standing Swan Creek Watershed Committee reporting to the TMACOG Environmental Council. The committee's process would focus on decision-making on a watershed basis with active representation from the political jurisdictions. Its purposes would be twofold: to review specific projects in the Swan Creek watershed and make recommendations to state agencies for incentives; and to update the priority areas to reflect changing conditions.
- That all endorsing jurisdictions be invited to formally appoint a voting representative to the Swan Creek Watershed Committee, along with specifically identified local government agencies representing agriculture, conservation, and development.

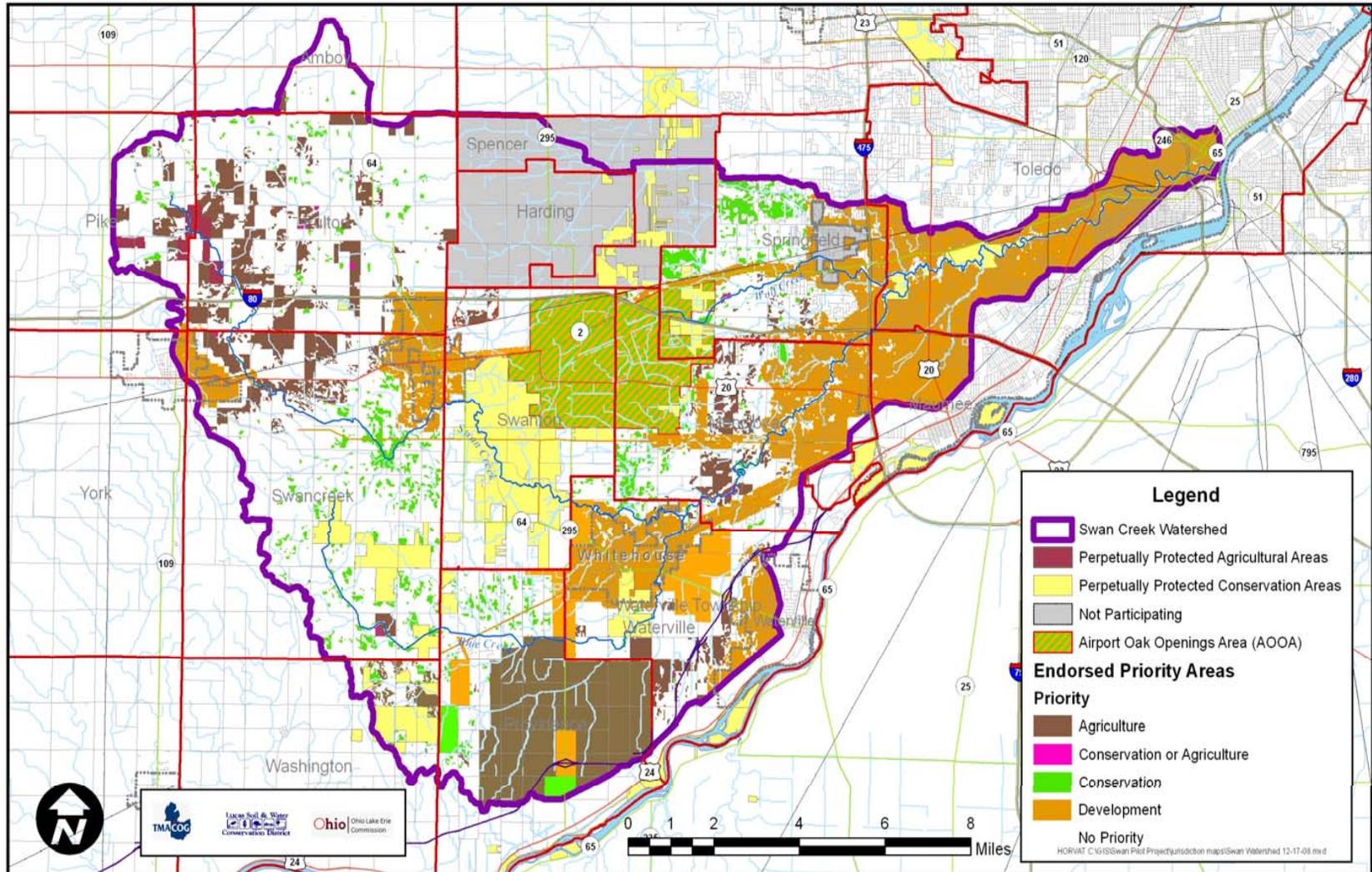
- That the Swan Creek Watershed Committee actions on modifying Priority Areas be based on majority vote with a quorum present *and* support of the jurisdictions for changes within their boundaries.
- That the Swan Creek Watershed Committee be charged with recommending watershed Priority Area updates through the TMACOG Environmental Council to the TMACOG Board of Trustees.
- That the Swan Creek Watershed Committee consult with state agencies on projects in the watershed that may qualify for the Balanced Growth program.
- That a funding source or mechanism be identified for Swan Creek Watershed Committee facilitation and updating of Priority Area maps. The administrative process should be streamlined and simplified to the greatest degree possible in order to minimize costs.

The final Priority Areas recommended are shown on the map, *Swan Creek Watershed Priority Areas* (Map M-A). It consolidates priority agricultural, conservation, and development areas; and the special Airport / Oak Openings Area (AOOA), as endorsed by political jurisdictions of the watershed. Jurisdictions that have chosen not to endorse this balanced growth plan are shown in gray, indicating no Priority Areas. The recommendations of this report and implementation of the Balanced Growth Initiative do not apply to non-endorsing jurisdictions.

The Technical Committee greatly appreciates the support and funding from the Ohio Lake Erie Commission and the Ohio Water Development Authority, as well as the support of our agencies, the Toledo Metropolitan Area Council of Governments (TMACOG) and the Lucas Soil & Water Conservation District (LSWCD), without which the project staff could not have completed the Swan Creek Watershed Balanced Growth Plan.

MAP M-A See enclosed CD for high-resolution map.

Endorsed Swan Creek Watershed Priority Areas (12-17-2008)



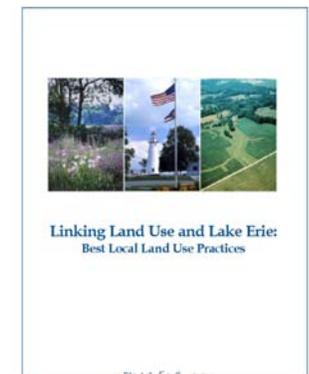
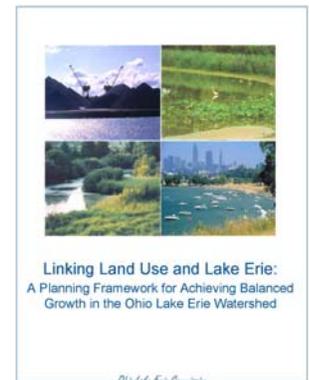
2. Introduction

2.1. Lake Erie Protection & Restoration Plan Goals

The Swan Creek Watershed Balanced Growth Initiative and its Balanced Growth Plan (Swan Creek BGP) are a watershed-scale land use planning activity designed to protect water quality in Lake Erie and, therefore, improve the quality of life and ensure economic growth throughout the watershed. The four Pilot Watersheds – Chagrin River, Chippewa Creek, Rocky River, and Swan Creek – were one part of a multi-faceted, statewide effort to improve and protect our Great Lake, its watershed, its inhabitants and the environment that supports them all.

In 2004, a Balanced Growth Blue Ribbon Task Force comprised of various experts and stakeholders advised the Ohio Lake Erie Commission on how to “develop strategies that will balance the protection of Lake Erie with continued economic growth.” This task force was created in response to findings of the *Lake Erie Protection and Restoration Plan* issued in 2000 that outlined serious problems which still existed that diminish the health of the lake and limit its benefits to the people of Ohio. It looked at ways to solve some of the significant problems which result from how we have used the land. Members met for over two years and submitted recommendations, accepted by the Commission in April 2004, which provide a voluntary, incentive-driven means for the state to encourage and support orderly growth and change at the local level. These recommendations are contained in two documents: *Linking Land Use and Lake Erie: A Planning Framework for Achieving Balanced Growth in the Ohio Lake Erie Watershed* and *Linking Land Use and Lake Erie: Best Local Land Use Practices*. The documents’ four major recommendations included:

- A. Using a regional focus for land use and development planning in the Lake Erie basin.
- B. Creating local Watershed Planning Partnerships to designate Priority Conservation Areas and Priority Development Areas. This recommendation was the basis for the creation of the four Watershed Pilot Watersheds and their associated Balanced Growth Plans.
- C. Aligning state policies, incentives, funding, and other resources to support watershed balanced growth planning and implementation. This resulted in the creation of a State Balanced Growth Incentives Strategy and became the responsibility of a newly formed State Assistance Working Group (SAWG).
- D. Implementing recommended model regulations to help promote best local land use practices that minimize impacts on water quality and provide for well-planned development efficiently served by infrastructure. This recommendation drove the creation and implementation of the Best Local Land Use Practices program and its eleven governance documents.



The goal of the project is to begin to link land-use planning to the health of watersheds in general and the Lake Erie watershed in particular. The project would be implemented by locally created Watershed Planning Partnerships composed of local governments, planning agencies, nonprofit organizations and other affected parties in each watershed. Participation in these partnerships would be voluntary but encouraged by state incentives. In collaboration with an advisory Technical Committee, these partnerships would create watershed balanced growth plans which would be a framework for coordinated, locally based decision-making about how growth and conservation should be promoted by local and state policies and investments at a watershed scale. These plans would identify Priority Conservation Areas (PCAs), Priority Development Areas (PDAs) and, in the case of the Swan Creek BGP, Priority Agricultural Areas (PAAs). PCAs are existing or potential natural areas which have critically important ecological, recreational, heritage, public access, or other environmentally critical benefits. PDAs are areas with existing road or utility infrastructure, areas of rapid human growth, development, urbanization or exhibiting other human-desired characteristics – proximity to recreation or commercial areas – in which (re)development should be supported. Finally, PAAs are areas which exhibit natural characteristics (prime or well-drained soils) or built characteristics (large farm size or producer participation in agricultural programs) that lend themselves to productive and viable agricultural operations.

2.2. Benefits of Watershed Planning

Focusing on watershed-scale land use, the Swan Creek BGP accounts for both the natural and built environments, striving to protect and enhance existing natural areas and focus future development to take advantage of existing infrastructure:

- Providing natural floodwater attenuation and protecting wildlife by protecting floodplains and riparian corridors.
- Creating and maintaining wildlife and wildplant habitat, floodwater buffer areas, groundwater recharge areas and toxin filtering and uptake by protecting wetlands and associated uplands.
- Improving cross-jurisdictional infrastructure and economic development by promoting communication and collaboration between governmental entities which are already competing for limited private and public funding.
- Reducing infrastructure costs and impact on surrounding agricultural and natural areas by maximally utilizing existing and planned road and utility infrastructure as well as promoting conservation development and better site design.

Understanding this concept, the balanced growth task force recommended that the state of Ohio support the implementation of these balanced growth plans by creating special strategic initiatives, as well as in the implementation of its regular activities. The fundamental principle to guide the actions of state agencies is that if local governments can agree on areas where development is to be encouraged (PDAs) and areas which are to be conserved (PCAs), the state of Ohio will support those decisions by aligning state programs – both financial and logistical – to support those decisions. In establishing the program, the commission stated that the pilot watersheds must garner agreement of their proposed plan by at least 75% of its watershed constituents – in number, area, and population in order for the state to accept their plans. This locally generated Swan Creek BGP would then provide the necessary vision and direction to local and state governments, public officials, planning

organizations and any group that influences land development in the Lake Erie basin so that decisions they make embody the 10 Guiding Principles outlined in the *Lake Erie Protection and Restoration Plan*:

1. Maximize investment in existing core urban areas, transportation, and infrastructure networks to enhance the economic vitality of existing communities.
2. Minimize the conversion of green space and the loss of critical habitat areas, farmland, forest and open spaces.
3. Limit any net increase in the loading of pollutants or transfer of pollution leading from one medium to another.
4. To the extent feasible, protect and restore the natural hydrology of the watershed and flow characteristics of its streams, tributaries, and wetlands.
5. Restore the physical habitat and chemical water quality of the watershed to protect and restore diverse and thriving plant communities and preserve rare and endangered species.
6. Encourage the inclusion of all economic and environmental factors into cost/benefit accounting in land use and development decisions.
7. Avoid development decisions that shift economic benefits or environmental burdens from one location to the other.
8. Establish and maintain a safe, efficient, and accessible transportation system that integrates highway, rail, air, transit, water, and pedestrian networks to foster economic growth and personal travel.
9. Encourage all new development and redevelopment initiatives to address the need to protect and preserve access to historic, cultural, and scenic resources.
10. Promote public access to and enjoyment of our natural resources for all Ohioans.

It is the belief of the members of the Swan Creek watershed Technical Committee that the designation of Priority Conservation Areas, Priority Development Areas, and Priority Agricultural Areas will give local, state and federal decision-makers and land users the information necessary to direct, fund, and implement land development and conservation projects that are compatible with improving and protecting Lake Erie water quality and the environmental, economic, and cultural benefits that depend on it.

2.3. Watershed Description

Located in the Western Lake Erie Basin (Figure 1.), Swan Creek is a major tributary of the lower Maumee River. Although Swan Creek itself is only approximately 40 miles long, over 200 miles of creeks and ditches drain this 204-square mile (130,257 acres) watershed located in Fulton, Henry and Lucas counties in northwest Ohio. Its gradient is similar to the Maumee River with a drop of 2.1 feet per mile. The headwaters of Swan Creek flow southeasterly from Fulton County and join with Blue Creek in Lucas County to flow in a northeasterly direction toward downtown Toledo and the Maumee River. The major streams that feed Swan Creek are Ai Creek, Blue Creek and Blystone Ditch. Tributaries to Swan Creek that have extensive floodplain lands are Wolf Creek, Blystone Ditch, Stone Ditch, Cairl Creek, Drennan Ditch and Heilman Ditch.



Figure 1. Ohio Lake Erie Watershed

Shown in Map M-B, the watershed includes the majority of the Oak Openings Region, an area of globally rare ecosystems with the highest number of state-listed species in Ohio, further highlighting the necessity for determining Priority Conservation Areas which would facilitate the protection and restoration of these ecosystems and the habitat they provide to their threatened and endangered species. Many conservation organizations operate in the watershed, including The Nature Conservancy, the Metropolitan Park District of the Toledo Area, the Black Swamp Conservancy, and the

Divisions of Natural Areas and Preserves, Wildlife and Forestry of the Ohio Department of Natural Resources. The watershed includes parts of 23 jurisdictions: 3 counties, 13 townships, 2 cities and 5 villages. These jurisdictions vary in their governance structure, area, population, land use, and land cover (Table 1).

MAP M-B See enclosed CD for high-resolution map.

Swan Creek Watershed and the Oak Openings Region

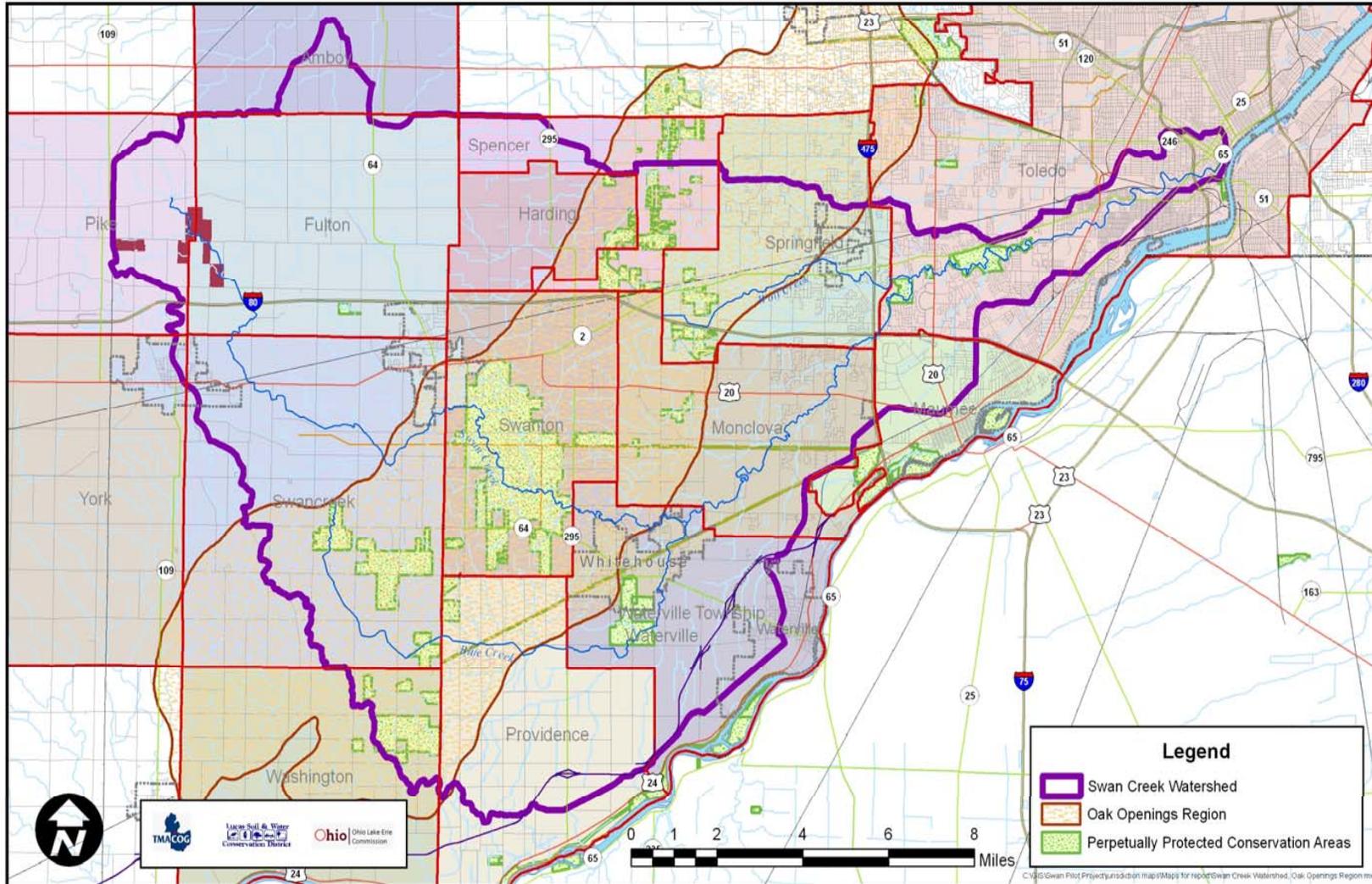


Table 1 Swan Creek Watershed Jurisdictions

		County	Population	% of Watershed Population	Area (acres)	% of Watershed Area	support
1	<i>Fulton County</i>	Fulton	12,406	11.03%	44,995	34.49%	yes
2	<i>Henry County</i>	Henry	609	0.54%	2,437	1.87%	yes
3	<i>Lucas County</i>	Lucas	99,523	88.44%	83,114	63.65%	yes
	County Totals		13,015	11.57%	47,432	36.36%	
4	<i>Harding Township</i>	Lucas	724	0.64%	6,009	4.60%	no
5	<i>Spencer Township</i>	Lucas	1,362	1.21%	5,367	4.11%	no
6	<i>Village of Holland</i>	Lucas	1,306	1.16%	618	0.47%	no
7	Amboy Township	Fulton	335	0.30%	1,747	1.34%	yes
8	City of Maumee	Lucas	5,228	4.65%	2,341	1.79%	yes
9	City of Toledo	Lucas	54,981	48.86%	8,288	6.35%	yes
10	Fulton Township	Fulton	1,618	1.44%	17,657	13.53%	yes
11	Monclova Township	Lucas	6,472	5.75%	13,160	10.08%	yes
12	Pike Township	Fulton	454	0.40%	3,782	2.90%	yes
13	Providence Township	Lucas	3,005	2.67%	12,389	9.49%	yes
14	Springfield Township	Lucas	16,364	14.54%	9,623	7.37%	yes
15	Swan creek Township	Fulton	5,457	4.85%	19,030	14.58%	yes
16	Swanton Township	Lucas	3,330	2.96%	13,680	10.48%	yes
17	Village of Delta	Fulton	1,145	1.02%	687	0.53%	yes
18	Village of Swanton	Fulton	3,307	2.94%	2,055	1.58%	yes
19	Village of Waterville	Lucas	2,465	2.19%	881	0.67%	yes
20	Village of Whitehouse	Lucas	2,733	2.43%	2,477	1.90%	yes
21	Washington Township	Henry	609	0.54%	2,437	1.87%	yes
22	Waterville Township	Lucas	1,553	1.38%	8,281	6.34%	yes
23	York Township	Fulton	90	0.08%	37	0.03%	yes
	SUPPORT:			97.00%		90.83%	86.96%

Figure 2

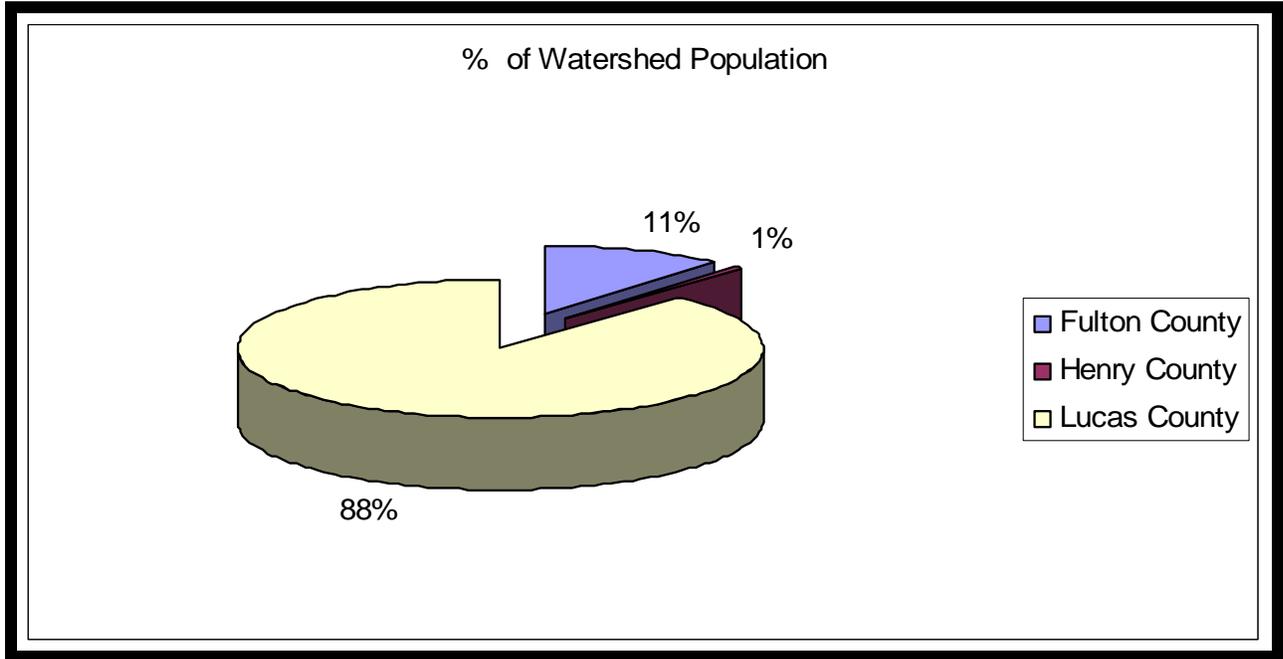
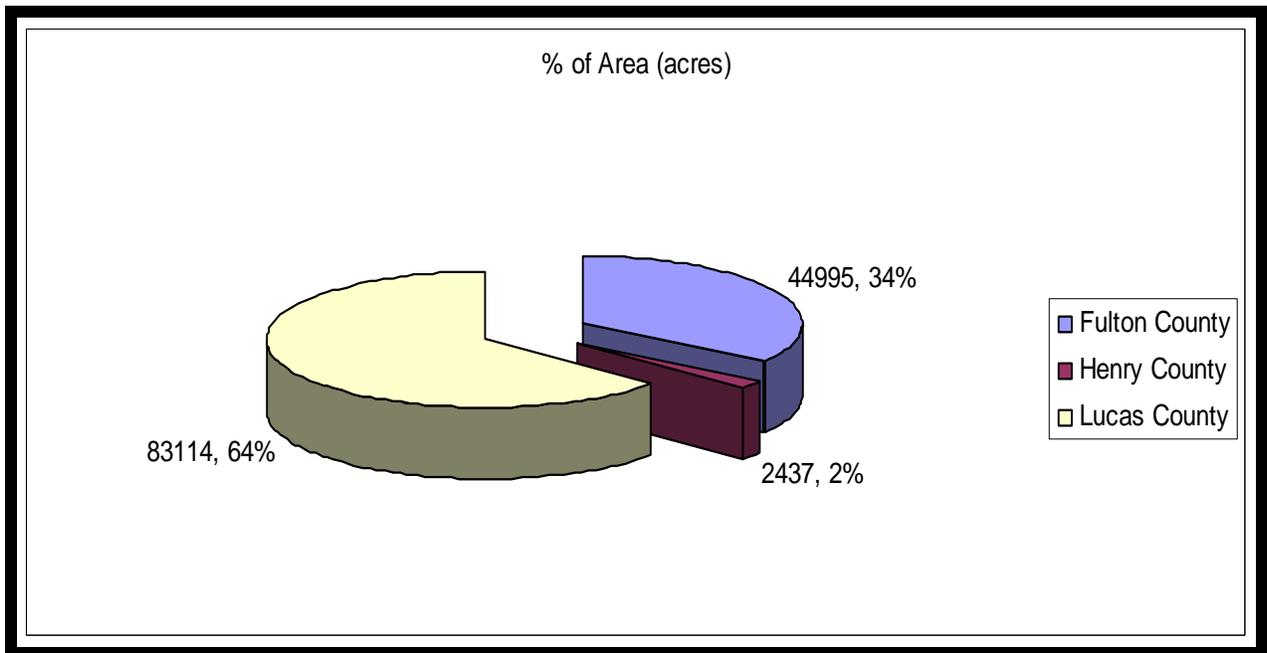


Figure 3



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3. Priority Areas

The methodology behind the selection of the Priority Area criteria, as well as the Geographical Information System (GIS) modeling methodology use, is discussed in more detail in Appendix F. But is summarized here. In addition, a Technical Manual for revising and updating the model is included as Appendix C.

3.1. Priority Agricultural Areas

A *Priority Agricultural Area (PAA)* is a locally designated area targeted for continued, expanded and/or intensified agricultural activities due to possession of naturally occurring or human-created traits which make it conducive to highly productive agriculture, silviculture or other natural product creation processes. These may include commodity foodstuffs (wheat, corn, and soybeans), specialty crops (fruit, vineyards, herb gardens, and flower fields), timber areas, livestock pastures or other production areas.

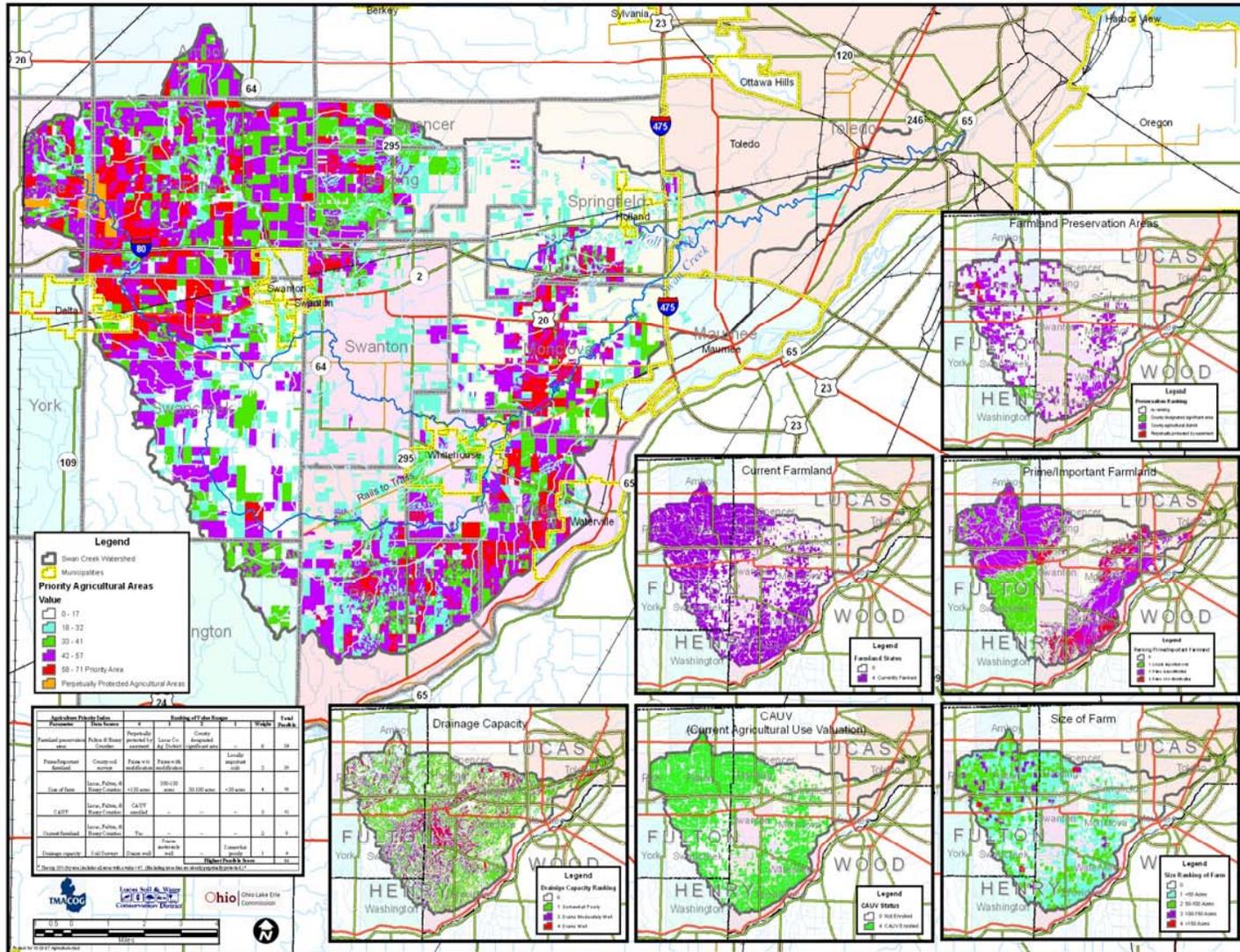
Fifty-six criteria were initially considered for use in selecting the PAAs (Appendix D). The Technical Committee selected the criteria most critical for delineating the best agricultural land to arrive at six criteria used to select PAAs:

- Designated Farmland Preservation Areas, including Agricultural Districts and Agricultural Security Areas.
- Prime and locally important farmland soils, as designated by the USDA or local authorities.
- Size of existing farms.
- Enrollment in the Current Agriculture Use Value (CAUV) taxation program.
- Current farm usage.
- Soil drainage capacity.

The Swan Creek Watershed PAAs developed through this process are shown in Map M-C.

MAP M-C See enclosed CD for high-resolution map.

Model Generated - Swan Creek Watershed Priority Agricultural Areas - Data Layers



3.2. Priority Conservation Areas

A *Priority Conservation Area* (PCA) is a locally designated area targeted for protection and restoration of existing or restorable natural resources. These land areas should be managed to protect critically important ecological, recreational, heritage, public access and other critical areas. These may include parks, forests, wildlife refuges, wilderness areas, scenic areas, and aquatic preserves, areas of critical habitat for endangered or threatened species, rivers, marshes, swamps, fens, floodplains, lakes, estuaries, aquifer recharge areas, geologically hazardous areas, coastal and riparian lands, recreation areas, and other environmentally sensitive areas in the watershed.

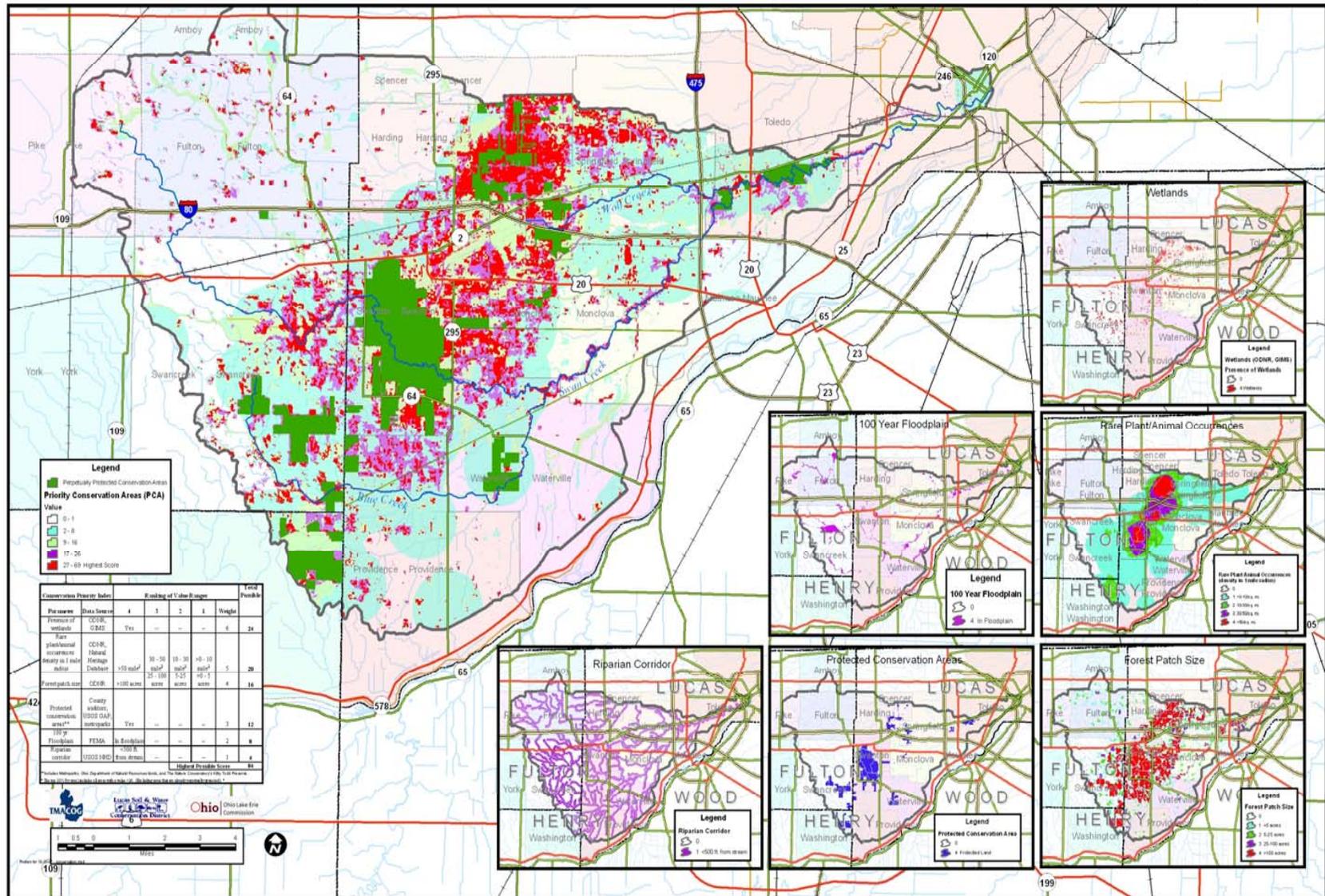
Fifty-six criteria were initially considered for use in selecting the PCAs (Appendix D). The Technical Committee selected the criteria most critical for delineating the best conservation land to arrive at six criteria used to select PCAs:

- presence of wetlands
- reported occurrences of endangered, threatened, rare or listed plants or animals
- forests
- high quality riparian or protected conservation areas
- floodplains
- riparian corridors

The Swan Creek Watershed PCAs developed through this process are shown in Map M-D.

MAP M-D See enclosed CD for high-resolution map.

Model Generated - Swan Creek Watershed Priority Conservation Areas - Data Layers



3.3. Priority Development Areas

A *Priority Development Area* (PDA) is a locally designated area where growth / redevelopment should be promoted to maximize development potential, efficiently utilize existing infrastructure, revitalize communities, and contribute to the restoration of Lake Erie. This would encourage preservation / reuse of urban infrastructure while protecting agricultural and forest lands, scenic areas, and other living and nonliving natural resources from urban sprawl. Examples of PDAs include existing urban areas, industrial parks, special development districts, ports, brownfields, areas with existing or committed infrastructure projects, and undeveloped areas designated for future growth. It may also include the development of facilities that are complementary to human quality of life, such as proximity to natural areas, the interconnection of recreational corridors and alternative transportation systems.

The Technical Committee concluded that there are essentially three different types of development – commercial, industrial, residential – each of which is influenced by both similar and different characteristics of the built environment. The Technical Committee analyzed each of the three land uses separately; generating Priority Commercial Development (PcDAs), Priority Industrial Development (PiDAs) and Priority Residential Development (PrDAs,) respectively (Appendix D). Once these individual types of development areas were identified, they were combined into a single Combined PDA.

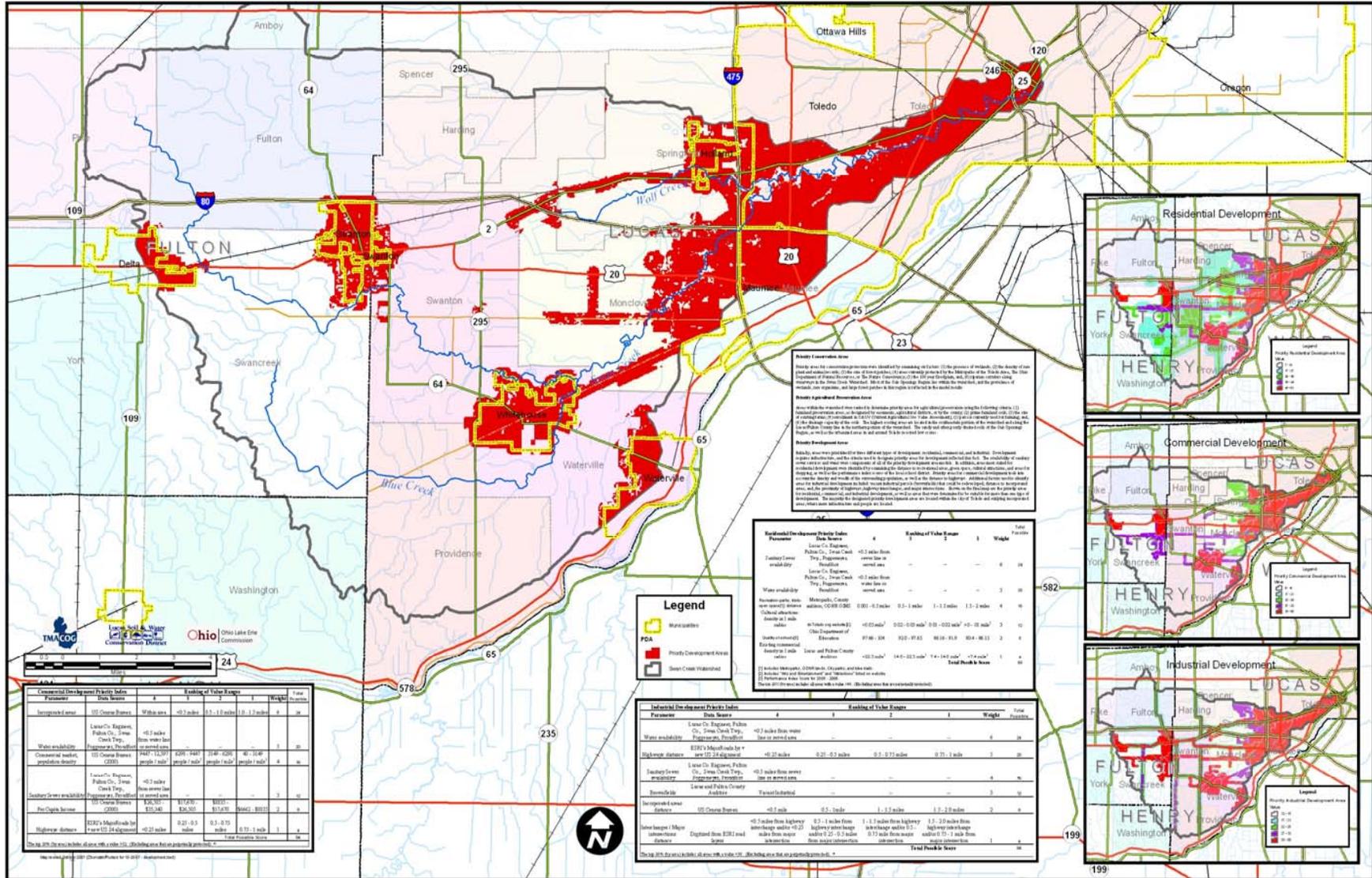
Over 50 criteria were considered in selecting the PDAs. The Technical Committee selected six criteria most critical for delineating the best development land for each of the three of PDA categories:

- Commercial
 - Proximity to incorporated areas
 - Existing water lines
 - Current commercial market
 - Existing sewer lines
 - Income level of residents
 - Existing highways
- Industrial
 - Existing water lines
 - Existing highways
 - Existing sewer lines
 - Existing brownfields
 - Proximity to incorporated areas
 - Existing interchanges and major intersections
- Residential
 - Existing sewer lines
 - Existing water lines
 - Recreational areas, parks, trails, open space
 - Cultural attractions
 - Quality of schools
 - Existing commercial resources

The Swan Creek Watershed PCAs developed through this process are shown in Maps M-E and M-F.

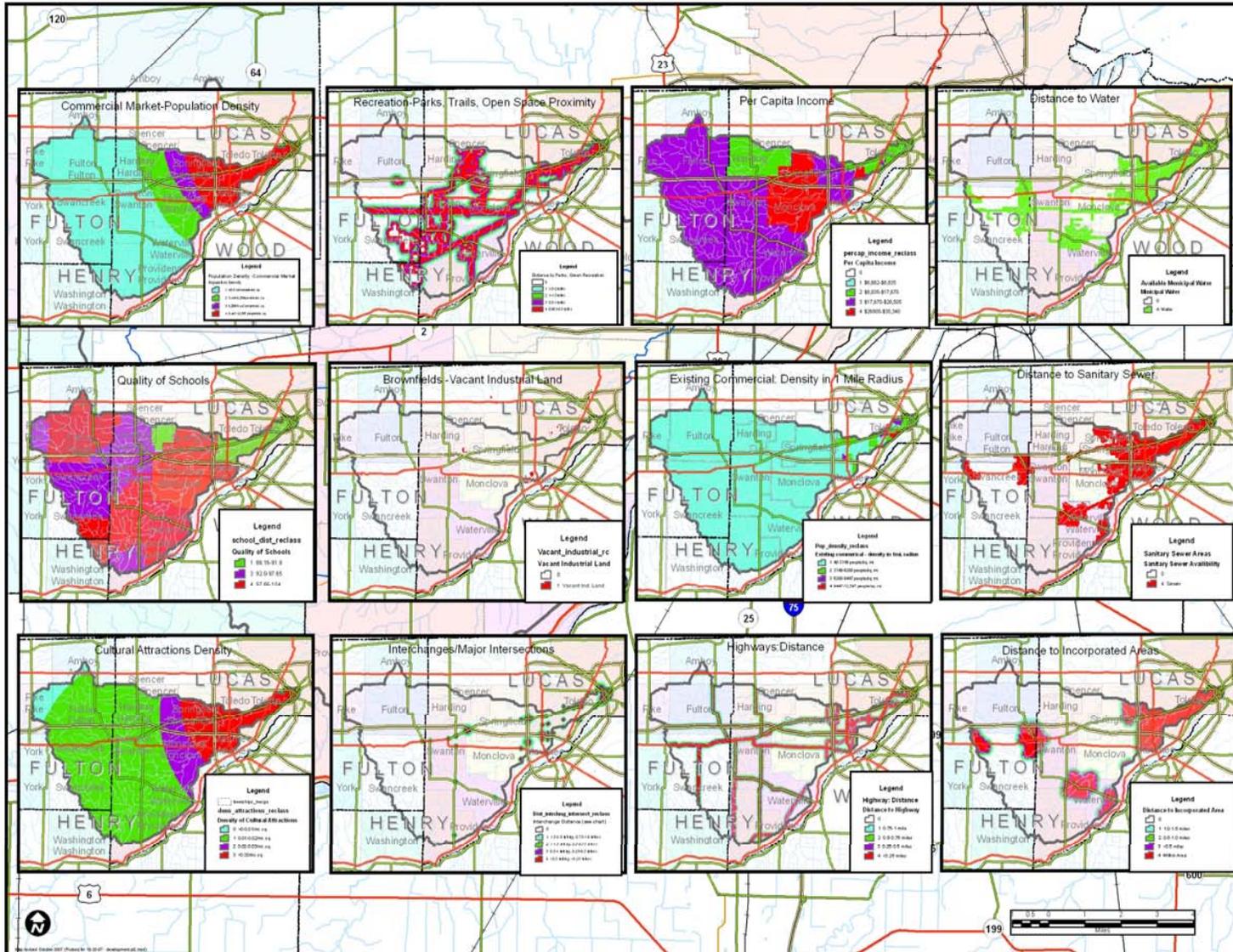
MAP M-E See enclosed CD for high-resolution map.

Model Generated - Swan Creek Watershed Priority Development Areas - Data Layers



MAP M-F See enclosed CD for high-resolution map.

Swan Creek Watershed Priority Development Areas - Parameters, Input Data Layers



3.4. Special Priority Areas

Some areas of the watershed required special consideration either because of unique single land uses or current or future collaborative planning projects. These include the Airport Oak Openings Area (AOOA) and the Waterville / Waterville Township / Whitehouse Area (WWWA).

3.4.1. Airport Oak Openings Area (AOOA).

The area surrounding the Toledo Express Airport offers great opportunity, both in the areas of development and conservation. Besides being a regional passenger air terminal, it is a hub for air freight and, with rail and a turnpike interchange close by, Toledo Express serves as a major intermodal freight facility. The airport is in the heart of the Oak Openings Region. There are existing wetlands within and adjacent to the airport complex and the soils and hydrology of the surrounding areas are amenable to supporting Oak Openings flora and fauna. The presence of an airport had been considered as a criterion to define PDAs. It was not used as a watershed-wide criterion because there is only one airport, and is a special case.

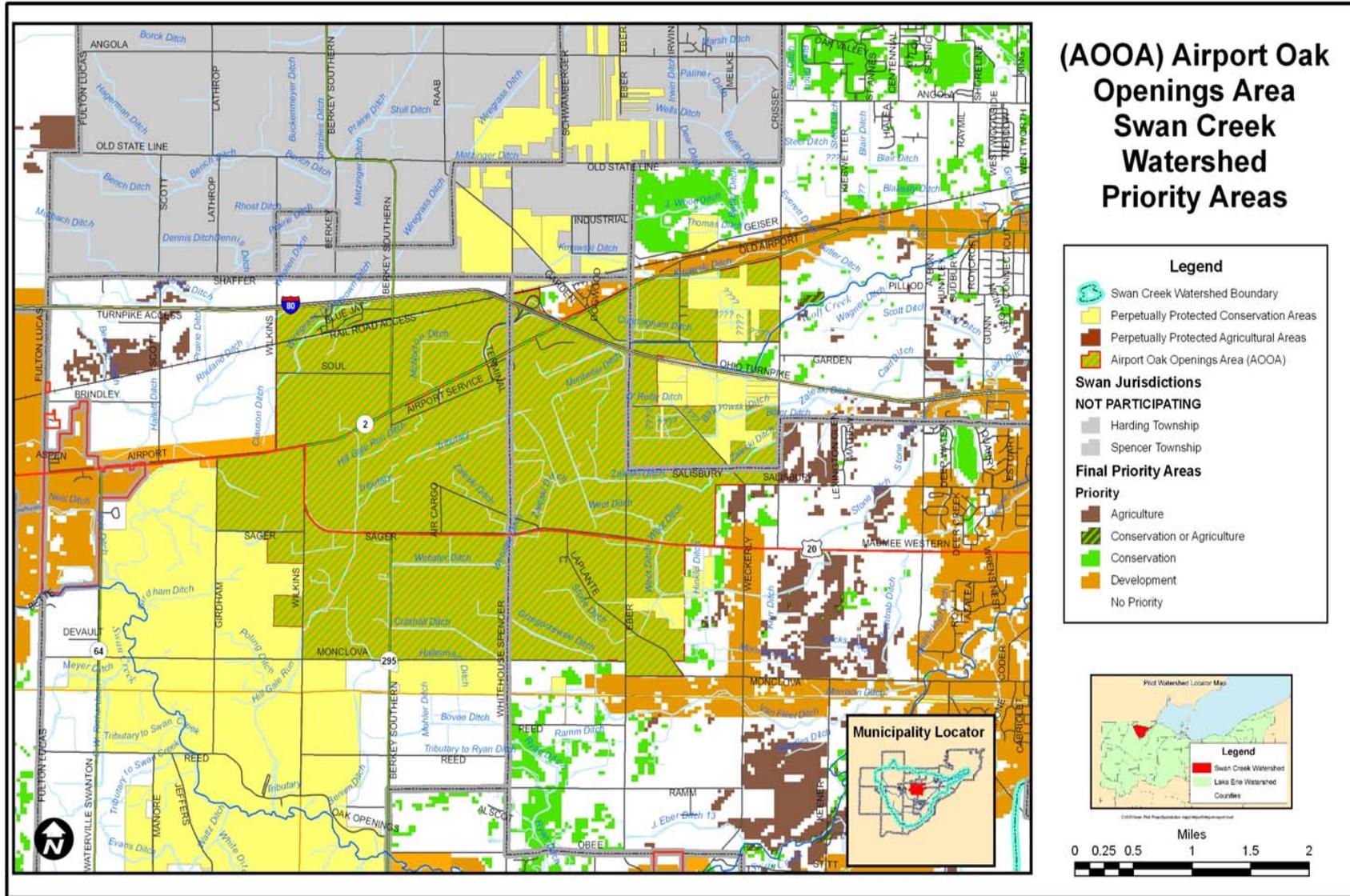
With high value development and conservation areas in close proximity, and often overlapping, labeling the AOOA– the existing airport property and designated expansion areas – as either only PDA or PCA is not the highest and best use of the land. Even accepting the model-generated PCAs and PDAs may result in inhibiting either conservation or development projects from being pursued due to the unintentionally dichotomous “either-or” situation that future project proposers may feel these designations invoke. The plan therefore recognizes it as a unique area where development and conservation should be coordinated to their mutual benefit. At the time of the publication, a Joint Economic Development District (JEDD) was in development for this area. The JEDD or an adjunct board could be established to manage habitat conservation and restoration, especially as mitigation within the AOOA. The following guiding principles are recommended for the AOOA:

- Develop and maintain conservation/development plan for the AOOA with a goal of identifying development areas, and habitat areas to preserve and restore:
 - AOOA conservation areas are intended to be preserved and/or enhanced as mitigation for the development areas.
 - Promote economic development opportunities that capitalize on efficient use and extension of existing infrastructure.
 - Follow priorities recommended for this balanced growth plan in identifying PCAs and PDAs.
 - Conservation areas in the AOOA should preserve the highest quality wetlands to the greatest extent possible. They should preserve, conserve and restore connected Oak Openings habitat corridors and should include areas where habitat restoration is most feasible based on soil type and hydrology.
- Establish a mitigation or wetland banking system to match development and conservation opportunities with willing property owners amenable to permanent land conservation commitments.
- Habitat mitigation for development within the AOOA should be applied following this hierarchy: first, mitigate onsite; second, mitigate within the AOOA; finally, mitigate within the Swan Creek watershed.
- Establish a mechanism to compensate host jurisdictions for loss of revenues resulting from removal of property from tax rolls.

- A partnership of PCAs and PDAs within the Airport/Oak Openings Area must benefit both development and conservation.
 - Development is streamlined and simplified by having a mitigation plan established in advance.
 - Conservation is promoted by the development providing funding and agreements to preserve the best habitat areas.
 - An element of flexibility is important to accommodate changing conditions and opportunities for both development (proposed projects) and conservation (willing property sellers).

At the time of publication, no changes had yet been requested from the AOOA jurisdictions. It has been designated on the map as a green/orange hatched Priority Conservation/Development Area shown as Map M-R.

MAP M-R See enclosed CD for high-resolution map.



3.4.2. Waterville / Waterville Township / Whitehouse Area (WWWA)

After several presentations of the model-generated Priority Areas to various committees of the Village of Waterville, the Village Council offered a resolution of support. When staff gave a presentation later to the Village of Whitehouse, the township commented that Waterville Village had a mutual annexation area with Waterville Township, and were developing a Joint Economic Development District (JEDD). The Township provided annexation area and proposed JEDD area maps to staff, and asked that they be incorporated into the Swan Creek BGI Plan as PDAs. A portion of the JEDD was along SR 295 south of Whitehouse, primarily within Providence Township. A later presentation to that township was attended by the Whitehouse Village Administrator, who strongly encouraged the Township trustees to get involved in the BGP process.

The original model-generated priority area map for this region is shown in MAP M-H. The current requested jurisdictional changes in the Waterville/Waterville Township/Whitehouse Area are reflected in (Maps M-K and M-L, Appendix E) and include:

- Expansion of the PDA around the Village of Whitehouse to match the extent of the Mutual Annexation Area between the Village and Waterville Township, and
- Creation of PDA corridors southeast from the Village of Whitehouse along Waterville-Swanton Road (SR 64) and south from the Village of Whitehouse along Berkey-Southern Road (SR 295).

The Technical Committee reported to the Village of Whitehouse that changes may only be requested by the officials of the jurisdiction in which the changes are being made. Therefore, Waterville Township would have to request the annexation area changes outside the Village's corporation limits and the JEDD-changes along SR 64 and SR 295. Similarly, Providence Township would have to request the PDA changes further south on SR 295 down to River Road (US 24). Waterville Township subsequently submitted those requests which were then affirmatively recommended by the committee, although there was significant debate as to the conversion of such a substantial portion of No Priority Area and Priority Agricultural Area to Priority Development Area.

3.5. Final Swan Creek Watershed Priority Area Map

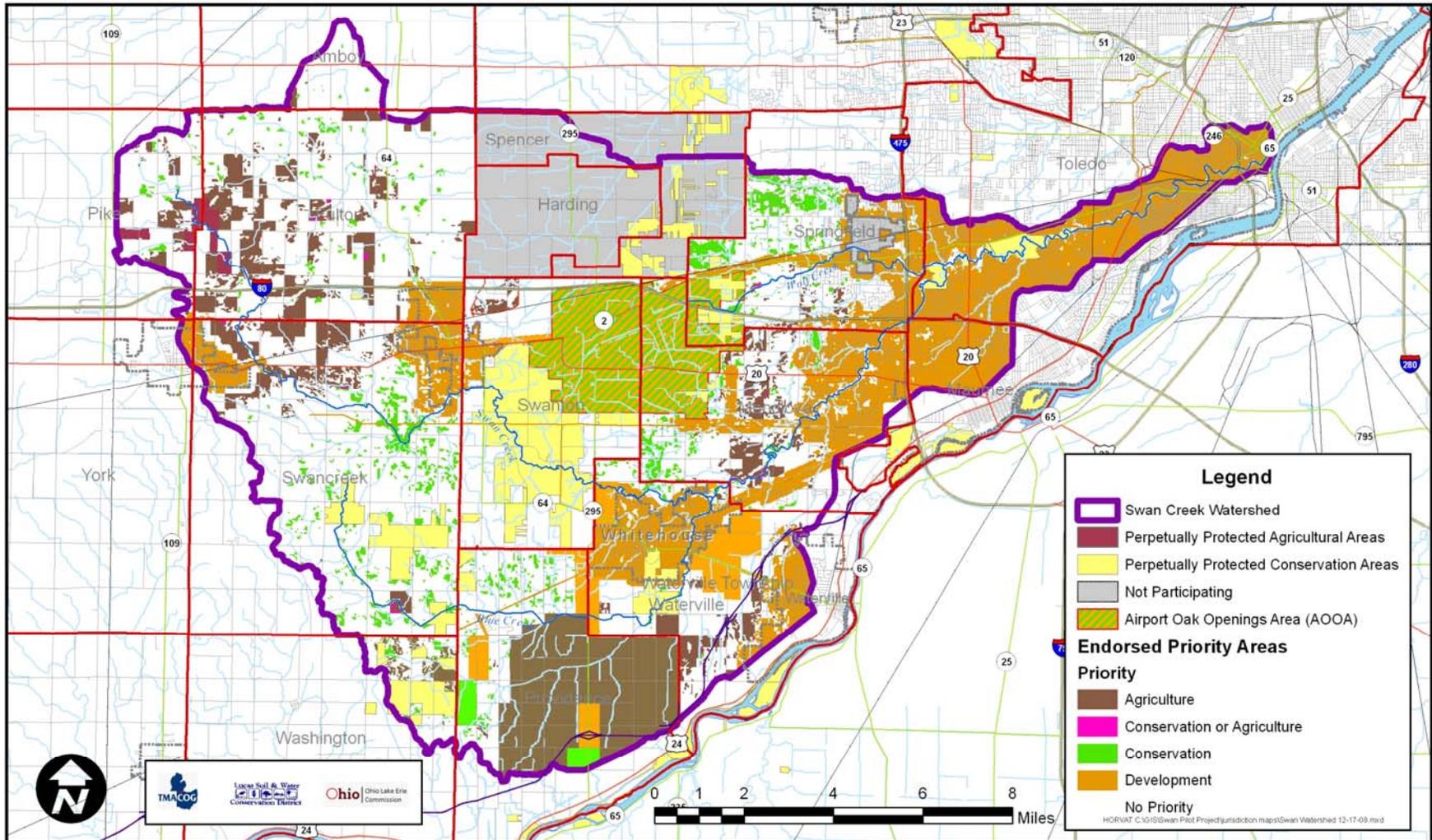
The final watershed priority areas is presented as Map M-G. The map includes:

- PAAs as generated by the watershed data model.
- PCAs as generated by the watershed data model.
- Combined residential, commercial, and industrial PDAs as generated by the watershed data model.
- The Airport – Oak Openings Area is shown as a special priority area.
- Model-generated priority areas have been modified by priorities requested by the local jurisdictions and supported by the Swan Creek Technical Committee. Locally requested priorities are discussed in Sections 3.4.1 (AOOA), the Waterville / Waterville Township / Whitehouse Area in Section 3.4.2, and individual jurisdictional priorities in Sections 6.2-6.4. Map M-H, in Appendix E, shows the model-generated priorities without the two special priority areas or priorities from local jurisdictions.

The Map M-R represents watershed priorities that are recommended for implementation support by Ohio state programs through the Balanced Growth Initiative.

MAP M-G See enclosed CD for high-resolution map.

Endorsed Swan Creek Watershed Priority Areas (12-17-2008)



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4. Watershed Planning Partnership

4.1. Overview

As outlined in the Ohio Lake Erie Commission’s document “Lake Erie Balanced Growth Program – Local Government Roles,” the Watershed Planning Partnerships were to be comprised of local governments, including townships, villages, cities, counties, special districts, planning commissions, and regional councils. A local government organization could become the lead agency in organizing a Watershed Planning Partnership and all local governments were encouraged to participate in the watershed planning process. The Watershed Planning Partnership’s individual members’ primary planning roles were to identify PAAs, PCAs and PDAs they wanted to bring forth in the planning process at the watershed level and, to this end, to provide data about their own jurisdiction and technical planning assistance in their roles as watershed partners.

In the course of creating a plan, the Watershed Planning Partnership was to coordinate with the local governments, both within and outside the partnership for two reasons: to inform them of, and receive feedback on, the designation of PAAs, PCAs and PDAs and their size, location and configuration; and to ensure their early and continuous public participation in the designation process.

After a plan was successfully adopted, the Watershed Planning Partnership’s implementation roles would include collaboration among the local jurisdictions:

- As existing land use plans are updated, work collaboratively with TMACOG and the Swan Creek Committee to review and take into consideration the Swan Creek BGP and establish consistency amongst individual land use plans.
- If no comprehensive or master land use plan exists, consider developing such plans to the extent necessary to support implementation of the Swan Creek BGP.
- As agricultural, conservation, or development projects are proposed within the watershed, support those that are consistent with the Swan Creek BGP by recommending incentives through state agencies.

The proposal for the Swan Creek BGP was initiated by the Toledo Metropolitan Area Council of Governments (TMACOG), the regional council of governments encompassing most of the Swan Creek watershed. Project staff included members of TMACOG and Lucas Soil & Water Conservation District (SWCD). The plan goal was to invite participation from elected and appointed decision-makers from local governmental Jurisdictions: county commissioners, township trustees, city and village mayors, planning councils, and special district directors. A watershed-level discussion by the elected decision-makers would result in a consensus-based watershed-scale land use plan that could be implemented without conflict because all of the affected parties had been involved from the beginning. However, participation in watershed meetings did not represent a quorum of the jurisdictions. See further discussion of the watershed planning process in Appendix F.

4.2 Technical Committee

In addition to local decision-makers representing local jurisdictions, there are many other watershed stakeholders with expertise in conservation land protection, development, public health, water and transportation infrastructure, zoning enforcement to name several key examples. The Swan Creek

Technical Committee would be created to provide special expertise to the Watershed Planning Partnership. Political jurisdictions were invited to participate in the Technical Committee, and several did. For a list of Technical Committee members, see Appendix B.

The Technical Committee served to develop criteria to identify priority areas for conservation, development, and agriculture in the watershed, and recommend priority areas that followed those criteria. Because a watershed committee of the political jurisdictions did not form, priority area maps that the Technical Committee recommended were submitted to all political jurisdictions for formal action, and a request for endorsement was made to each jurisdiction.

5. Plan Methodology

5.1. Membership Participation and State Agency Coordination

As stated earlier, every effort was made to attract and secure participation by the local governments in the Watershed Planning Partnership :

- Personal invitations were sent to county commissioners, township trustees, village and city mayors and council members, other various elected and appointed officials.
- Information was sent to these officials on the Balanced Growth Initiative and the Swan Creek BGP and the importance of these programs to Lake Erie water quality and the quality of life in the watershed.
- Multiple watershed-level meetings were held.
- Information was available on TMACOG's "Swan Creek Watershed Balanced Growth Plan" website.
- Press releases and articles were written and distributed.
- Individual presentations were offered and given at the individual jurisdiction's public meetings.

Plan staff were much more successful in securing the participation of a broad spectrum of experts into the Technical Committee: planning commission staff members, public works and engineering department staff and officials, zoning officials, private sector developers and realtors, environmental consultants, conservation agency and not-for-profit organizational staff, park district staff, etc. (Appendix B). In addition, several members of the general public came to the regularly scheduled Technical Committee meetings, stating their concerns and offering their opinions. Many of these citizens had learned of the plan at the individual presentations staff made at public meetings at the townships and municipalities.

The staff was generally successful in either coordinating with or involving state agencies directly into the Technical Committee. Agencies which participated included the Ohio Lake Erie Commission, the ODNR Division of Forestry, the Ohio Department of Transportation and the USDA Natural Resources Conservation Service. The Ohio Environmental Protection Agency was invited as well, and the Ohio Department of Development was briefed during the plan's creation.

5.2. Collaboration with Pilot Watersheds Committee and the Ohio Lake Erie Commission

One of the more useful components of the Balanced Growth Program was the pilot watersheds committee. This group included staff of the four pilot watersheds; Ed Hammett, Executive Director of the Ohio Lake Erie Commission; Chris Riddle, Environmental Specialist with the Commission; and Sandra Kosek-Sills, ODNR Office of Coastal Management. These regularly scheduled meetings allowed an opportunity for Ohio Lake Erie Commission to update the pilot watersheds with program developments, including the incentives programs, State Advisory Working Group (SAWG) activities, grant requirements and expectations, and answer questions. It also provided an opportunity for pilot staff to discuss strategies and experiences in securing jurisdictional support, exchange data sources and modeling techniques, and implementation methods. Because staff came from a variety of backgrounds and duties – agricultural, planning, infrastructure, biology, engineering – there was a very broad and deep range of skill sets from which individual members could benefit.

5.3. Project Timeline

The Swan Creek BGP process included an extensive outreach program to invite input and participation. In general, it included:

- Regular Technical Committee meetings to develop priority area recommendations. Throughout most of the program, the committee met monthly.
- Public watersheds meetings, with direct invitations extended to all political jurisdictions
- Presentations to political jurisdictions, groups of jurisdictions, or jurisdiction planning / zoning committees
- Presentations to other interested groups
- Public information using the media and TMACOG's website

A detailed project timeline is presented in Appendix F.

5.4. Priority Area Criteria Selection and GIS Modeling

5.4.1. Creation of Plan Using Geographic Information Systems (GIS)

The Technical Committee elected to develop a watershed balanced growth plan using a computer model. Its purpose was to identify areas of the watershed that met criteria for agricultural, conservation, and development priority areas. The input into this model was data on various characteristics of the watershed including physiographic features, infrastructure systems, demographic characteristics, and other relevant traits.

The model used a scoring system to select the highest priority areas across the watershed for agriculture, conservation, and development. Where areas qualified as high priority for more than one use (e.g., both conservation and development) it resolved the conflict by selecting the higher-scoring priority. The modeling and criterion prioritization process is discussed in Appendix D.

5.4.2. Addition of Priority Agricultural Areas

The original BGP goals requested by the Ohio Lake Erie Commission called for development of just two kinds of priority areas for the pilot watersheds: PCAs and PDAs, which PCAs including "conservation" in both its agricultural and habitat preservation senses. At one of the earliest watershed meetings, Fulton County representatives requested that the Swan Creek BGP include a third kind priority area — PAAs. Conservation of habitat, such as unique Oak Openings Region calls for special measures to ensure the protection and conservation of habitat and non-human populations. This would require measures much different from those designed to preserve and conserve farmland and other agricultural areas. The Technical Committee agreed, and incorporated PAAs into the Swan Creek BGP.

5.5. Balanced Growth Plan Endorsement Process

5.5.1. Importance of Watershed Planning Partnership

The originally planned watershed committee with representatives from all jurisdictions did not form. Decisions on endorsement were made in formal meetings of the jurisdiction (i.e., Village/City Council, Board of Township Trustees, Board of County Commissioners). This procedure follows the standard process local jurisdictions use to make decisions.

The result was that while endorsements were made by individual jurisdictions, there was more consultation with staff than with the other jurisdictions on a watershed basis. As the Swan Creek BGP moves into its implementation phase, fostering communication among elected officials with a watershed perspective will be a high priority.

5.5.2. Approval Process

Approval of resolutions of support for a Swan Creek BGP were adopted by the jurisdictions at meetings complying with Ohio's open meetings laws. In most cases, TMACOG and Lucas SWCD staff made presentations to each jurisdiction, usually at evening meetings.

Fulton County's Regional Planning Commission, made up of a representative from each jurisdiction, was an effective forum for communication. Staff gave a presentation before the Fulton County Regional Plan Commission, and the Plan Commission staff was able to follow up and secure resolutions of support from all but one of the jurisdictions.

Where a county did not have a Regional Planning Commission, it worked better to present to each township, and then approach the County Commissioners for support once the townships had agreed.

Staff provided informational handouts to each jurisdiction in advance. A clerk of council or fiscal officer usually distributed materials to elected officials in advance of their meeting. The handouts included:

- Consolidated Priority Area map of the watershed (all maps in color)
- Consolidated Priority Area map of the jurisdiction, 11 x 17
- PCA, PDA, and PAA maps of the jurisdiction in a layout that showed the underlying data (11x17)
- Ohio Lake Erie Commission fact sheet on incentives
- Swan BGP fact sheet
- Swan BGP bullet points
- Proposed endorsement resolution language

Jurisdictions were asked to provide formal resolutions of endorsement by February of 2009. The Ohio Lake Erie Commission set an endorsement target of 75% of the watershed's jurisdictions covering 75%

of its land area and representing 75% of the population as demonstration of broad-based support. The Swan Creek BGP met these targets. Figure 4 shows which jurisdictions did or did not approve resolutions of support. In addition to municipalities and townships, all three Boards of County Commissioners voted to endorse the Swan Creek BGP.

After meeting the endorsement targets of local jurisdictions, the TMACOG Environmental Council recommended supporting the Swan Creek BGP at its March 26, 2009. That recommendation next goes before TMACOG's Board of Trustees. Finally, the Swan Creek BGP will go before the Ohio Lake Erie Commission for its endorsement.

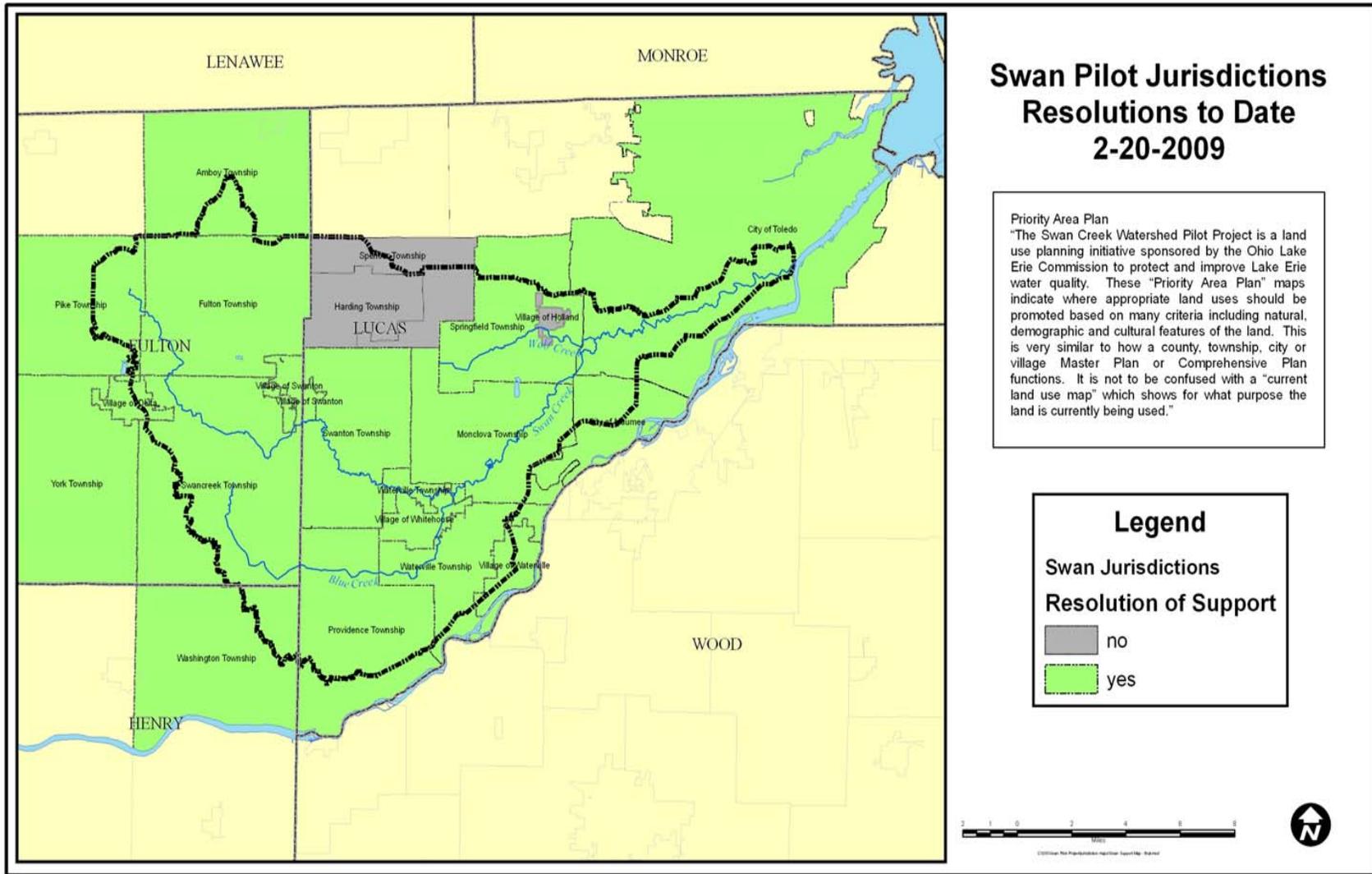


Figure 4. Jurisdictional Support

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6. Priority Area Implementation

6.1. Jurisdictional Support and Responsibility

The objective of both the Balanced Growth Initiative and its balanced growth plans is that local jurisdictions are asked to define, for themselves, their objectives and priorities regarding land use and development. Included in this charge are the locations, types and intensities of the various major land use types. These objectives are being voiced at the local level not only to the other jurisdictions within the watershed but also to the state of Ohio where, it is hoped, State-level agencies will support these priorities through their programs. The support of local jurisdictions for the plan does not end at their initial and final resolutions of support for the plan, but extends to the future implementation of the plan into implementation of on-the-ground projects and, hopefully, interpretation of the plan into future land use decisions and policy.

Although many large, complicated land use and resource management decisions are carried out at the state level, the majority of land use decisions are made at the county, municipal, and township levels. Therefore, the primary responsibility for the implementation of a locally adopted balanced growth plan lies with those jurisdictions which initially adopted it: the local level is where the quickest, surest implementation is possible, and allows the quickest adaptive management when programs or projects need to be modified to meet changing needs and/or conditions.

In addition to initial and future support of the plan's goals and objectives by the individual jurisdictions for their own particular portion of the plan, the jurisdictions need to cooperate with the other watershed jurisdictions as well as the citizens of the watershed, other watershed agencies and organizations, and higher state and federal levels of government. As cooperation and compromise are increased, so will the efficiency and effectiveness of the plan be increased, resulting in better land use planning and implementation and maximum improvement of the Lake Erie watershed and its water quality.

6.2. Fulton County

The Fulton County Regional Planning Commission, made up of members of the various township and municipality planning and zoning commission, voted to support the plan. Six jurisdictions endorsed the Swan Creek BGP soon afterward. After further presentations and discussion the one remaining township also endorsed it, and then so did the county commissioners. None of the jurisdictions requested modifications to the model-generated Priority Areas, shown in MAP M-H, Appendix E.

6.3. Henry County

Washington Township, the sole Henry County jurisdiction within the Swan Creek watershed, requested additional designated Priority Agricultural Areas be added to the model-generated Priority Area map (MAP M-H, Appendix E) to reflect the wealth of agricultural resources and the importance of agriculture to the township. The staff and Technical Committee consulted with the Henry County Soil & Water Conservation District and suggested proposing the designation of another soil as Locally Important, thereby enlarging the PAAs (MAP M-Y). A Resolution of Support was passed by Washington Township, Henry County in late February.

6.4. Lucas County

Lucas County requested that the Swan Creek BGP be presented to individual jurisdictions for their review and requested endorsement before presentation to the Board of County Commissioners. The results of these jurisdiction presentations are outlined below.

- Several jurisdictions passed resolutions of support, accepting the model-generated Priority Areas without any requests for changes other than minor corrections, such as those to reflect recent annexations: City of Maumee; City of Toledo; Monclova Township; Springfield Township; Village of Waterville. These maps are shown in Appendix E.
- Several jurisdictions requested changes to their model-generated Priority Areas. The Village of Whitehouse and Waterville Township requested changes to their model-generated Priority Areas (MAP M-H) to reflect their mutual annexation agreement and pending JEDD. These requested changes would be in concordance with the Whitehouse Village Land Use Plan and Waterville Township Future Land Use Map. The cooperation of these two jurisdictions with the Village of Waterville led to the creation of the Waterville/Waterville Township/Whitehouse Special Priority Area (MAPS M-K, M-L) which was supported by the Technical Committee, although concerns were expressed regarding the change of No Priority and PAA areas to PDA. With these changes the village and township supported the plan.
- Multiple presentations were made to the Swanton Township Trustees and Zoning Board and concerns voiced by officials and citizens were over local control of planning and zoning, and a consensus that a large portion of the Township was already owned by conservation organizations, and off the tax rolls. Swanton Township asked that:
 - The Airport Highway (SR 2) and Berkey-Southern Road (SR 295) corridors – and the area of Toledo Express Airport located between the two roads – be designated PDAs
 - Eliminate PCAs that were not already in areas protected through easement or ownership
 - Swanton Township had no objection to retaining the model-generated PAAs in the township.
 - Swanton Township endorsed the Swan Creek Watershed Plan with these changes.
- Discussions with the airport area JEDD group, which includes Swanton and Monclova townships, led to creation of the AOOA as a special priority area (see section 3.4.1). The Technical Committee supported this concept. Staff prepared a new priority area map that incorporated the AOOA with the PDAs, PCAs, and PAAs which the Springfield, Swanton and Monclova Township trustees had already endorsed (MAPS M, O, S, and R in Appendix E). Monclova and Springfield Township trustees, reconfirmed their endorsement with the AOOA concept included. Swanton Township reviewed the AOOA concept at a trustee meeting and took no action to modify the resolution of endorsement.

- Providence Township requested changes to their model-generated Priority Area map by adding PAAs and the PDA along Berkey-Southern Road (SR 295). With these changes the priority areas for Providence Township more closely reflected their land use plan. The Providence Township priority areas are shown in MAP M-T, Appendix E.
- Harding Township did not request specific priority changes, but suggested that additional PAAs may be beneficial. The Harding Township priority areas are shown in MAP M-Q, Appendix E. To date, Harding Township has taken no action on a resolution of endorsement for the Swan Creek Watershed BGP.
- Village of Holland council members expressed strong concern about the potential for the BGP to delay projects and add a layer of government. The Village of Holland’s map is shown as Map M-N, Appendix E. Holland did not endorse the Swan Creek Watershed BGP.
- Spencer Township was concerned about potential governmental regulation of land use; and like Swanton Township, felt that too much of the Township was already owned by conservation organizations. The Spencer Township priority areas are shown as MAP M-P, Appendix E. Spencer Township did not endorse the Swan Creek Watershed BGP.

6.5. Implementation Recommendations

6.5.1. Guiding Principles

This report recommends Priority Areas of the Swan Creek Watershed for agriculture, conservation and development. Determining whether a proposed project is consistent with Priority Areas should be based on the following “guiding principles”:

Priority consistency should be determined by land use function, rather than categorization. For example:

- Proposed projects may be compatible within multiple Priority Area designations. A park project may be consistent with PCA goals if the park preserves and/or enhances natural habitat. However, a park may also be consistent with PDA goals because one of the selected residential PDA criteria is proximity to recreational facilities. In this case, being close to a park, natural area, or trail supports PDA goals. Such a park may preserve and/or enhance natural habitat, or it may be developed facility with playground equipment or ball fields.
- Development Projects within PCAs. It is the intention of this plan that conservation developments – a subdivision design concept which preserves existing natural features by clustering/grouping structures and minimizing infrastructure and impervious areas – located in PCAs and comprised of not less than 40% natural area, should qualify for PDA incentives.
- Conservation Projects within PDAs. It is also possible that a conservation project may be proposed within a designated PDA. Although the majority of the area may be designated as a PDA, or development may be the “highest and best use” of the land, the project should be permitted, if not given funding associated with a designated PCA, as long as the project will not significantly interfere with existing or future development in the underlying PDA. One example would be designating small PCAs or allowing PCA-type wetland conservation or restoration

projects between or outside runway areas on a PDA-designated airport complex. Another example would be establishing small PCAs or allowing PCA-type floodplain creation in a large-scale residential or commercial subdivision to provide necessary stormwater retention, as well as wildlife/wildplant habitat.

Proposed projects should be reviewed for compatibility with Priority Areas. Priority Areas generated for this plan through GIS analysis are often very irregular shapes dictated by overlapping contours of different soil types, existing land uses, and/or proximity to existing infrastructure. Actual projects proposed for the watershed, especially water, sewer, and road projects, are likely to be linear. Therefore we anticipate that many of these linear projects will run through single-designation Priority Areas, multiple-designation Priority Areas and/or No Priority Areas. A proposed project should be deemed consistent with a Priority Area when that project promotes preserving habitat in a PCA or promoting development in a PDA. Consideration should be given to limiting access to infrastructure through conflicting Priority Areas. As a hypothetical example, consider an isolated PDA for which a development project is proposed. To develop the site, it is necessary to build a road with a water line and sewer line through No Priority Areas, and through a PCA.

- If the owner of the PCA property is willing to sell it, or accept a conservation easement, preserve the PCA as a mitigation site.
- Limit access by other development – both existing and future – to the new infrastructure as it passes through the PCA. This may entail limiting the number of allowed curb cuts off the road, and/or restricting water and sewer taps.
- Projects that benefit a large area or system may require individual consideration. For example, improvements to a water or wastewater treatment plant benefit an entire service area which includes PCAs, PDAs, and No Priority Areas.

Target PDA environmental impact mitigation within PCAs. When mitigation is required for negative environmental impacts related to a PDA project, mitigation should be directed, whenever possible, to PCAs of the same watershed.

6.5.2. Watershed Review and Update Process

An underlying principle of a watershed plan is coordination and communication among the political jurisdictions and other stakeholders. As development, infrastructure construction, and natural area preservation occur in the watershed, and as jurisdictions update their land use plans, priorities reflected by the Swan Creek Watershed BGP will need to be updated.

This plan recommends establishment of a standing Swan Creek Watershed Committee within TMACOG. Its purposes will be:

- Review and make recommendations on potential balanced growth projects within participating jurisdictions of the Swan Creek watershed
- Recommend updates to the priority areas
- Consult with state agencies on implementation of the BGP program

All Swan Creek watershed jurisdictions that have endorsed the BGP plan will be invited to participate and appoint representatives. Establishing the committee will start with developing operating procedures to define membership. It is recommended that:

- Every endorsing jurisdiction appoint a voting member
- Jurisdictions that have not endorsed the BGP plan may at a future date endorse it and join the committee.
- Provide participation for watershed stakeholders for an inclusive list of interests, such as development, conservation, business, realty, special districts such as Metroparks and the Toledo-Lucas County Port Authority, SWCDs, and state agencies.
- Provide participation for agencies responsible for public infrastructure. Include liaison with the TMACOG “208” Areawide Water Quality Management Plan and Transportation Improvement Program (TIP). Include similar representation for transportation and water infrastructure from Henry and Fulton Counties, which are outside the 208 and TIP areas.
- Actions to update priority areas be based on majority vote with a quorum present and support of the jurisdictions for changes within their boundaries.

6.6. Implementation Tools

There is a wide range of tools for implementing the Swan Creek BGP but they range widely in availability, application and utility. Some tools are available to some groups of people, organizations or levels of government, some are available to others. Some are currently available with existing funding pools, others are potentially available if jurisdictions wish to enact enabling legislation and create a funding pool, others are great ideas but may not be feasibly implemented due to lack of enabling authority and/or funding.

6.6.1. Locally Implemented, Currently Available

Several tools are currently available and already used at the local level which, if guided by the balanced growth plan, may be very effective in implementing the goals of the plan. Comprehensive land use plans and master plans are long-range planning documents political jurisdictions use to express their vision for their community. Although they carry no legally binding powers by themselves, they are helpful to the jurisdiction when defending themselves in a court of law against claims that denial of rezoning requests has been “arbitrary and capricious.” Currently, all three counties and many of the municipalities and townships have a long-range plan. These land use and master plans can be updated using the information in the Swan Creek BGP to guide where the community would like to see future agriculture, conservation and development and, therefore, should be aligned with an accepted growth plan’s designated Priority Areas.

Zoning resolutions and ordinances are locally available and currently used tools which can effectively implement the Swan Creek BGP. In contrast to master and land use plans, they *do* carry legal authority and can legally direct where current and future conservation and development can be carried out, in both specific use, performance and construction. The zoning resolution can reflect both an existing

comprehensive or master plan *and* the Swan Creek BGP. Currently, zoning authority is available and used by both townships and municipalities; the county does not exercise zoning authority.

Various special ordinances and resolutions can also be used at different local levels to implement the plan. Both the City of Toledo and Lucas County enforce their local floodplain damage prevention regulations which dictate what types of development may occur, and under what conditions or restrictions, within the regulatory floodway and floodplain.

Riparian setback ordinances or resolutions can be implemented by municipalities, townships or counties to restrict non-conservation practices within a stream or river corridor area, helping implement PCA activities. Lucas County does exercise a riparian setback within the language of its floodplain damage regulations.

Sediment and erosion control ordinances or resolutions can be implemented by municipalities and counties and also built into subdivision regulations and building regulations; townships may work with counties to support their work in implementing a sediment and erosion control resolution. These ordinances control construction and other land development activities through stormwater best management practices (BMPs) to reduce or eliminate surface erosion and the resulting sedimentation that ends up in waterways. Currently, Lucas County follows standard sediment and erosion control BMP guidelines within its building regulations. Model language is available in the TMACOG *Stormwater Management Standards Manual* for both riparian setbacks and sediment and erosion control.

6.6.2. Regionally Implemented, Currently and Potentially Available

Many tools are currently available but implemented at higher levels of government. The majority of these are state and federal regulations and funding mechanisms for agriculture, conservation and development activities. Examples of these are, respectively, Clean Ohio Fund grants for farmland preservation, Ohio EPA NatureWorks funds for wetland restoration projects, and Ohio Water Development Authority funds for new water infrastructure. Although projects may be proposed locally, funding is dependent on these higher levels of government agreeing with the appropriateness and importance of the proposed project, and, in the case of the Swan Creek BGP, its compliance with designated Priority Areas. Documents prepared by the Ohio Lake Erie Commission detail these programs and how they may be used or modified to support the goals of the plan and are included in the Lake Erie Balanced Growth Program: SAWG, State Program Inventory, State Incentives, Financial and Technical Special Incentives, and Streamlining and Predictability Incentives.

6.6.3. Currently Available, Not Locally Implemented

Many of the tools already discussed are not implemented watershed-wide. If they were, attainment of the plan's goals would be more possible. Not all political subdivisions have a comprehensive or master land use plan and, therefore, do not express an accepted vision of their community to either themselves or potential developers. Not all townships are currently zoned; adoption of a zoning resolution would help protect residents from incompatible land uses and promote compatible uses, as well as supporting the goals of both the jurisdiction and the plan. One of the most-often cited reasons for not having a particular regulation is the lack, or perceived lack, of enabling authority. Up until September of 2008, townships were restricted to those powers which regulated the "public health,

safety and morals” of their jurisdiction while municipalities could exercise powers regulating “public health, safety, convenience, comfort, prosperity or general welfare.” A recent lawsuit resulted in townships gaining general welfare authority which greatly expands their ability to regulate land use activities (Chagrin Valley Times, September 3, 2008).

Conservation developments and better site design are two concepts that may be codified into ordinances or resolutions. These concepts are based on focusing development activities *around* existing natural resources rather than *over* them. For example, rather than first laying roads and utilities and then plotting out house lots, a developer would first exclude significant natural features such as waterways, floodplains, wetlands, meadows, and historic areas. Then the house lots would be laid out, usually with smaller building setbacks and minimum lot sizes in order to maintain the same number of lots. Finally, roads and utilities would be designed, minimizing widths and lengths to reduce land disturbance as well as cost. Many jurisdictions currently use planned unit developments, (PUD) in their zoning code, a concept which gives the jurisdiction greater oversight on the subdivision development process. Although similar to conservation developments, they do not have conservation as their primary focus and, as such, are less effective in implementing PCAs. Model language is currently available in the TMACOG *Stormwater Management Standards Manual* for conservation development ordinances and resolutions. In addition to the language in the *Stormwater Management Standards Manual*, model regulatory language is available in the *Best Local Land Use Practices* document mentioned in section 2.1 for stormwater management and riparian/wetland protection, coastal protection and meadow protection. The practices document also provides guidance documents on the following subjects: conservation development, compact development, source water protection, agricultural lands protection, tree and woodland protection, scenic protection, historic preservation, steep slopes protection, transfer of development rights (TDR), brownfields redevelopment, and access management.

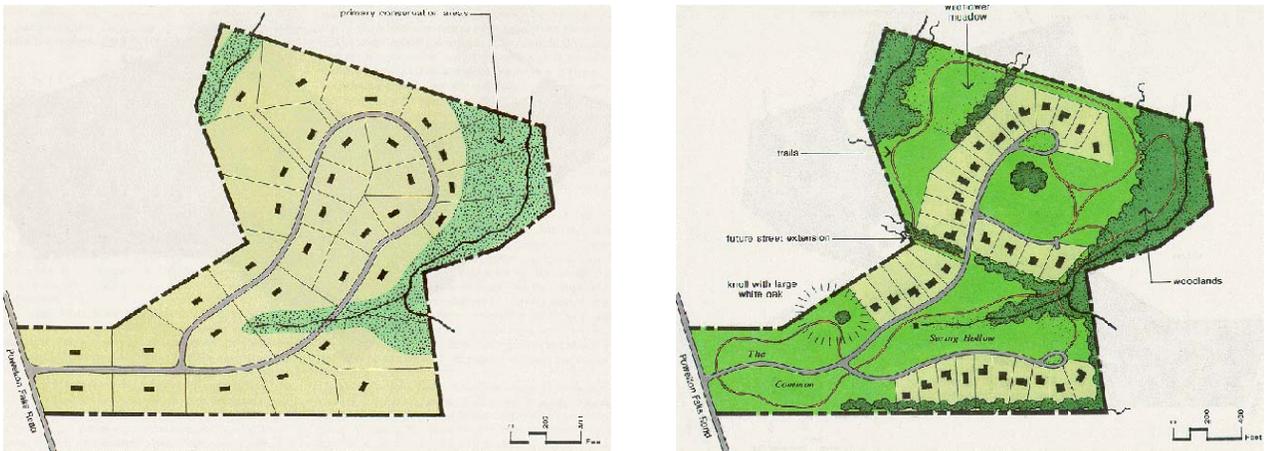


Figure 5. Subdivision design: traditional (L) vs. conservation (R). (From Randall Arendt’s Conservation Design Subdivision)

6.7. Preliminary Schedule of Projects

A projects list is included and will be maintained as an appendix to this document (Appendix H). As projects are completed and more are developed the list can be updated without changing this document, thereby maintaining the original resolutions of support for the Swan Creek BGP. When possible, projects will be referenced to the Priority Areas, however some projects are difficult to determine their exact location. An example of this is some of the sewer line and water supply projects that are often scheduled.

APPENDICES

APPENDIX A

ACRONYMS

List of Acronyms

BGP	Balanced Growth Plan
LEPR	Lake Erie Protection & Restoration Plan (2000)
OLEC	Ohio Lake Erie Commission
PA	Priority Areas (any type or all combined)
PAA	Priority Agricultural Area
PCA	Priority Conservation Area
PcDA	Priority Commercial Development Areas
PDA	Priority Development Area
PiDA	Priority Industrial Development Areas
PrDA	Priority Residential Development Areas
Plans	Balanced Growth Plans
SAWG	State Assistance Working Group
SWCD	Soil and Water Conservation District
TC	Technical Committee
TMACOG	Toledo Metropolitan Area Council of Governments
USDA NRCS	United States Department of Agriculture, Natural Resources Conservation Service
WPP	Watershed Planning Partnership

APPENDIX B

Staff & Technical Committee Members

Staff & Technical Committee Members

Staff

Kurt Erichsen, TMACOG, Vice-President of Environmental Planning (Lead)

Matt Horvat, TMACOG, Maumee River Coordinator

Jeff Grabarkiewicz, Lucas Soil & Water Conservation District (SWCD), Urban Stormwater Specialist

Marcus Ricci, Lucas SWCD, Urban Conservation Specialist

Greg Lipps, Gregory Lipps, LLC, President (GIS Consultant)

Members

Pete Gerken, Commissioner Lucas County (Chair)

Steve Brown, Fulton County Planning Commission Director (Vice-Chair)

Peter Bick, URS

Lara Kurtz, URS

Anne Cooke, Regulatory Compliance Administrator, Andersons, Inc.

Les Disher, Waterville Township Trustee

Pete Emerson, citizen

Richard Bryan, Green Ribbon Initiative & Lucas SWCD Supervisor

William Burkett, Hull & Associates

Regina Collins & Beatrice Miringu, City of Toledo, Dept. of Public Utilities, Division of Environmental Services

Keith Earley, Lucas County Engineer

Don Feller, Feller-Finch & Associates

Charlie Griffith, Washington Township Trustee

Gary Haase & Kelli Paige, The Nature Conservancy

Jim Irmen, Swanton Township Trustee

John Jaeger, Tim Schetter & Emily Zeigler, Metropolitan Park District of the Toledo Area

Leslie Kohli, Springfield Township Administrator

John Kusnier & Tim Walters, Mannik & Smith Group

Mike Ligibel, Ohio Department of Transportation, District Two

Molly Maguire, Toledo-Lucas County Planning Commission

Joel Mazur, City of Toledo, Department of Public Utilities, Division of Environmental Services

Brian Miller, Lucas County Engineer's Office

Ken Pheils, Spencer Township Zoning Inspector

Dennis Recker & Steve Pilcher, Village of Whitehouse Administrator & Public Works Director

Nick Rettig, Henry County Planning Commission Director

Cheryl Rice, USDA NRCS Urban Resource Conservationist

Chris Riddle, Ohio Lake Erie Commission

Leitha Sackmann, Fulton County Planner

Don Schmenk, ODNR Division of Forestry

Scott Sibley, City of Toledo, Department of Public Utilities, Division of Engineering Services

Paul Toth, Toledo-Lucas County Port Authority

Eric Wagner, Monclova Township Zoning Inspector

Sally Wylie, Toledo Board of Realtors

APPENDIX C

GIS Modeling Technical Manual

GIS Modeling Technical Manual

The modeling process was significantly improved by using ESRI's Model Builder extension. This tool allows for easy reiteration of the model as well as inclusion of additional or updated data sets. Individual processes can be added, deleted or modified. An example of the Model Builder process for the designation of Priority Conservation Areas is shown in Figure. C-3. The model shows the processes to be performed when the model is run. Input data ("parameters") are shown as blue circles (those added by the user) or green circles (those created by the model). Actions to be performed ("tools") are shown as yellow rectangles. Lines with arrows connect the parameters and tools and show the direction in which the model runs. More than one parameter may be connected to a tool, and a parameter may be connected to more than one tool. Although the more technical details including modification and revision of the GIS model are provided in Appendix C, GIS Technical Manual, the process is summarized here:

- 1) Datasets were collected: hardcopy, electronic and vector and raster files.
 - a) hardcopy databases and images are converted into electronic databases or images, respectively, and then converted into vector or raster datasets and inputted into the GIS model.
 - b) electronic databases are converted into vector or raster datasets and inputted into the GIS model.
 - c) after checking each vector and raster dataset for proper datum (NAD83) and projection (Ohio State Plane North, feet) and converting them, if necessary, they are inputted into the GIS model. For example, see C-3: inputting 100-year floodplain "Swan_100yr_floodpl" vector dataset.
 - d) all vector datasets are rasterized using the "Feature to Raster" tool to create raster new datasets with a 30 meter pixel size; some used "point-density" or "Euclidean distance" or other special processes to create a value-based raster dataset. For example, see Figure 3., box 1d.: creating new "Fldpln_rast" raster dataset.
- 2) Raster (ESRI grid) files were processed.
 - a) to reflect the level of characteristic presence, each raster dataset was ranked using the "Reclassify" tool to a range of 0 (complete characteristic absent) to 4 (highest characteristic presence), creating a new raster dataset. See tables 4-8 for reclassification values. For example, see C-3: creating reclassified "Floodpln_reclass" raster dataset.
 - b) to reflect the characteristic's relative importance, each dataset was then weighted using the "Single Output Map Algebra" tool, creating a new raster dataset with a value range of 0-24. See tables 4-8, for weighting values. For example, see C-3: creating weighted "Floodpln_weighted" raster dataset.

- c) to reflect the total of all of the characteristics of each pixel in the landscape, all of the ranked and weighted datasets were then summed using the “Single Output Map Algebra” tool, adding the individual raster datasets’ values and creating a new dataset with a value range of 0-84. For example, see C-3 creating summed re-valued/weighted “PCA_results_8Dec07” raster dataset.
- d) The attribute table of each results dataset was analyzed in Excel to determine the appropriate threshold value for the top 10%-scoring area (PCA and PAA) or 20% (PcDA, PiDA, and PrDA) in the watershed (90th percentile). In a separate model, five new datasets were created (one for each of the models), with the highest-scoring areas for each priority receiving a unique identifying value, and the remainder of the watershed assigned a value of “0.”
- e) to make the model useful for land use planning, the Priority Areas were required to be a minimum of approximately five acres or more. this was accomplished by using the Spatial Analyst > Block Statistics > Majority function and selecting a 5 pixel X 5 pixel neighborhood for analysis and selection of the land use which corresponded with the majority of that selected neighborhood.

This methodology created five Priority Area maps – agriculture, conservation, commercial development, industrial development, and residential development – shown in MAPS M-C, M-D, M-E, M-F.

GIS Post-Processing

The production of the data-based Priority Area maps was only the first step in the process of creating the final Priority Area Map. The initial maps, of course, gave a point value for each land use to each 30m² section of the watershed. The final objective of the project, however, was to assign only one land use – the “best land use” – for any given portion of the watershed.

One option was to select the land use with the highest score for each pixel; this could easily be accomplished using the “maximum” tool in GIS which would scan all five datasets for the highest value for each pixel and create a new dataset reflecting those high scores. The issue with this was that it was highly possible that the majority of the watershed might naturally being suited to a given land use, resulting in a disproportionately large area for that land use, i.e., if 80% of the watershed had the highest score for development due to the existence of a ubiquitous infrastructure system, then the recommendation would be that this 80% area should be dedicated to development regardless of other unique features such as rare species and habitat or prime farmland soils. This would not be desirable because the objective was to create a “Balanced” Growth Plan.

The other problem with this option was that every pixel of land would be designated as some Priority Area. The Technical Committee believed that if every acre of land was designated a “priority” that it significantly detracted from the concept of prioritization: it would be more difficult to target incentives and programs if every acre was eligible.

The Technical Committee opted to designate the top 10%-scoring area, i.e., the 90th percentile, as the Priority Area for that particular land use. Data analysis in Excel determined the point score threshold

corresponding to the 90th percentile. ArcGIS then was used to create Priority Area maps corresponding to this top 10% area. However, the Technical Committee decided that those areas that were already protected conservation areas should not be included in the PCA designation: there was no need to designate something for conservation that had already been conserved. Similarly, the Technical Committee decided that those agricultural areas that had already been substantially protected through long-term/perpetual easements should not be included in the PAA designation. This led several members of the Technical Committee to assert that the designation process was now biased against development: even though “current protected conservation” and “current protected agriculture” were being excluded from the modeling, allowing their allotted 10% to be expanded elsewhere, the modeling was still including “current developed areas.” For the development analysis, however, it was not sensible to exclude these already-developed areas from the designation process because these infill areas are often more important targets of funding due to the desire to improve, expand or intensify existing urban areas rather than expanding into undeveloped or less-developed areas. In addition, exclusion of “currently developed” areas from the analysis would essentially mean that the top 10%-scoring areas could only be, by definition, non-developed areas, increasing the possibility that these PDAs might also be designated by the model as PCAs and/or PAAs. Therefore, the Committee decided to designate the top 20%-scoring areas – or 80th percentile – of commercial, industrial and residential development as PcDAs, PiDAs and PrDAs, respectively.

Conflict Areas

It frequently occurred that a particular area of land exhibited characteristics for multiple land uses. For example, it could have prime farmland soils, contain both a wetland and a floodplain, and have roads and public water and sewer running through it, making it possible for it to be in the 90th-percentile for two or even all three major land uses. One of the requirements of the Ohio Lake Erie Commission was that the plan would provide a single map with, at most, one Priority Area designation for any given piece of land. This required that all conflicts be resolved by the Technical Committee. Using the 80th and 90th percentile methodology eliminated many of the potential conflicts. Many of the PDAs fell into two or three of the finer PDA designations of Priority Commercial, Industrial or Residential Development. This multiple PDA-designation was not considered a conflict but as an opportunity for a wider range of development activities that would be in compliance with the plan’s purpose. The Technical Committee decided that, for the purposes of the state’s reporting requirements, it would submit the Combined PDA designation but would provide the finer maps for the benefit of future planning by the jurisdictions. Additionally, it was decided that agriculture and conservation were not necessarily mutually exclusive land uses and, therefore, a green/brown hatched “Priority Conservation/Agriculture Area” designation was used for those few areas that met both sets of criteria.

Introduction

This guide was developed to accompany the data and models used to develop Priority Areas for agriculture, conservation and development (commercial, industrial and residential), in the Swan Creek watershed. All of the modeling was completed in ESRI’s ArcGIS 9.0 using the Spatial Analyst and Model Builder extensions. Users of this guide are expected to have a working knowledge of ArcGIS, including Spatial Analyst and Model Builder.

In ArcGIS, a model is a way in which a user can automate their work flow and keep track of geoprocessing tasks. A model consists of multiple processes strung together. A process consists of a tool—a system tool or a custom tool—and its parameter values. Examples of parameter values include input and output data, a cluster tolerance, and a reclassification table. A model allows you to perform a work flow, modify it, and repeat it over and over with a single click. (Adapted from ArcGIS help file.)

For the Swan Creek Watershed, five models were constructed:

- 1) **PCA: Priority Conservation Areas**
- 2) **PrDA: Priority Residential Development Areas**
- 3) **PcDA: Priority Commercial Development Areas**
- 4) **PiDA: Priority Industrial Development Areas**
- 5) **PAPA: Priority Agricultural Preservation Areas** (also known as Priority Agricultural Areas)

In addition, a sixth model was constructed to combine the results of the five above models into one “final” Priority Areas dataset.

Loading Data from the Disk

The ArcGIS data and models referred to are located on the accompanying disk. Follow the steps below for moving this information onto your local machine.

- 1) Unzip the file “GIS.zip” to a temporary location on your hard drive. Next, on your hard drive (C:) create a folder named “Swan_Creek.” (C:\Swan_Creek). Copy the contents of the folder “GIS_Data” directly into this folder. Do not copy the folder itself, just all of its contents.
- 2) Copy the contents of the folder “Models” directly into your My Toolboxes folder. This is stored at: C:\Documents and Settings\\Application Data\ESRI\ArcToolbox>My Toolboxes. Do not copy the “Models” folder, just the contents (a single file titled “Swan_Creek.tbx”).
- 3) Start ArcGIS and open ArcToolbox. Right-click on ArcToolbox. Click “Add Toolbox...” Navigate to the folder where you placed the Swan_Creek.tbx file. Single-click on this file and click “Open.”

File Structure

Each of the models calls upon its own geodatabase for both the input files and as the working directory (where output files are written). The six geodatabases are named: PCA, PrDA, PcDA, PiDA, PAPA, and Model_Results. Files to be used in any of the models should be first imported into the appropriate geodatabase.

7.5.1. Datum North American Datum 1983 (“NAD_1983”)

7.5.2. Coordinate System Ohio State Plane North (“StatePlane_Ohio_North_FIPS_3401_Feet”)

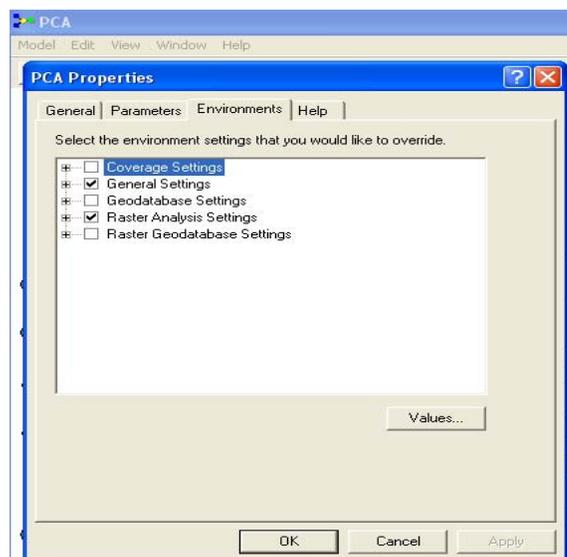


Figure. C-1. Model properties dialog box.

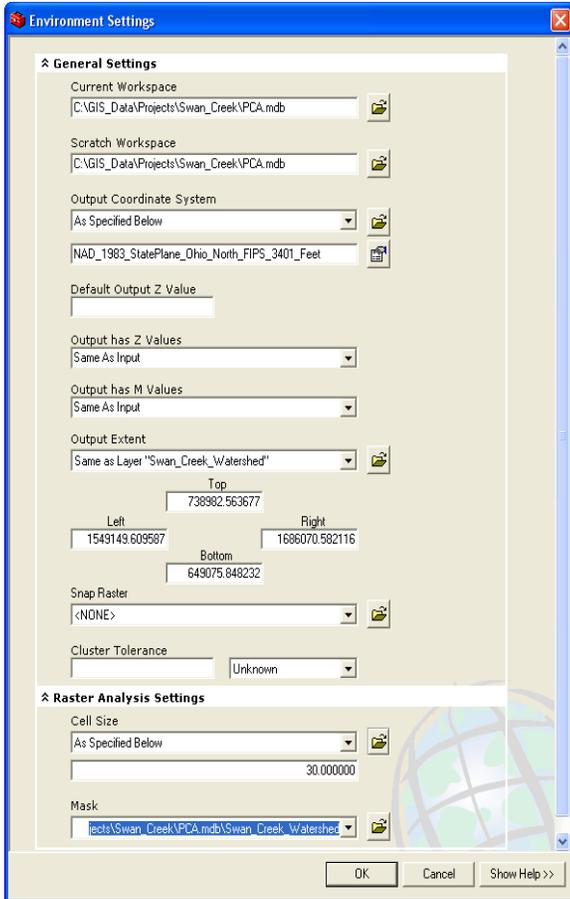


Figure. C-2. Environment Settings dialog box in Model Builder.

7.5.3. Model Properties *(These should already be set.)*

Model>Model Properties>Environments tab (C-1). Check the boxes for General Settings and Raster Analysis Settings. Click the “Values...” button.

Under the General Settings (**Figure. C-2**), Output Extent: Same as layer “Swan_Creek_Watershed.”

Under the General Settings (Figure. C-2):

Current workspace: point to the relevant geodatabase.

Output coordinate system:
same as above (NAD83 OH St Plane North Feet).

Under the Raster Analysis Settings:

Cell Size: 30.00000000.

Mask: point to “Swan_Creek_Watershed” shapefile.

Working with the Models

To view a model, expand the Toolbox labeled “Swan_Creek” by clicking on the “+” sign to the left of the Toolbox. Right-click one of the models, and choose “Edit.” A window will open showing the graphical layout of the model. Choosing “PCA” should open a window identical to **Figure C-3**. The

model shows the processes to be performed when the model is run. Input data (“parameters”) are shown as blue circles (those added by the user) or green circles (those created by the model). Actions to be performed (“tools”) are shown as yellow rectangles. Lines with arrows connect the parameters and tools and show the direction in which the model runs. More than one parameter may be connected to a tool and a parameter may be connected to more than one tool.

Adding Data to the Models

There are several ways to add data to a model. The easiest is to drag data from the ArcMap table of contents to the model window. Similarly, tools can be dragged from the ArcToolbox window to the window. Another way to add data is to add a tool, then use its dialog box to point to the appropriate parameter. Model Builder will automatically add the parameter to the model window.

Updating Data used in the Models.

If a newer version of an existing data layer is to be used, *first* add it to the appropriate geodatabase. Then add it to the ArcMap table of contents and drag it to the Model Builder window. Delete the old data layer (blue circle), and connect the newer layer to the tool.

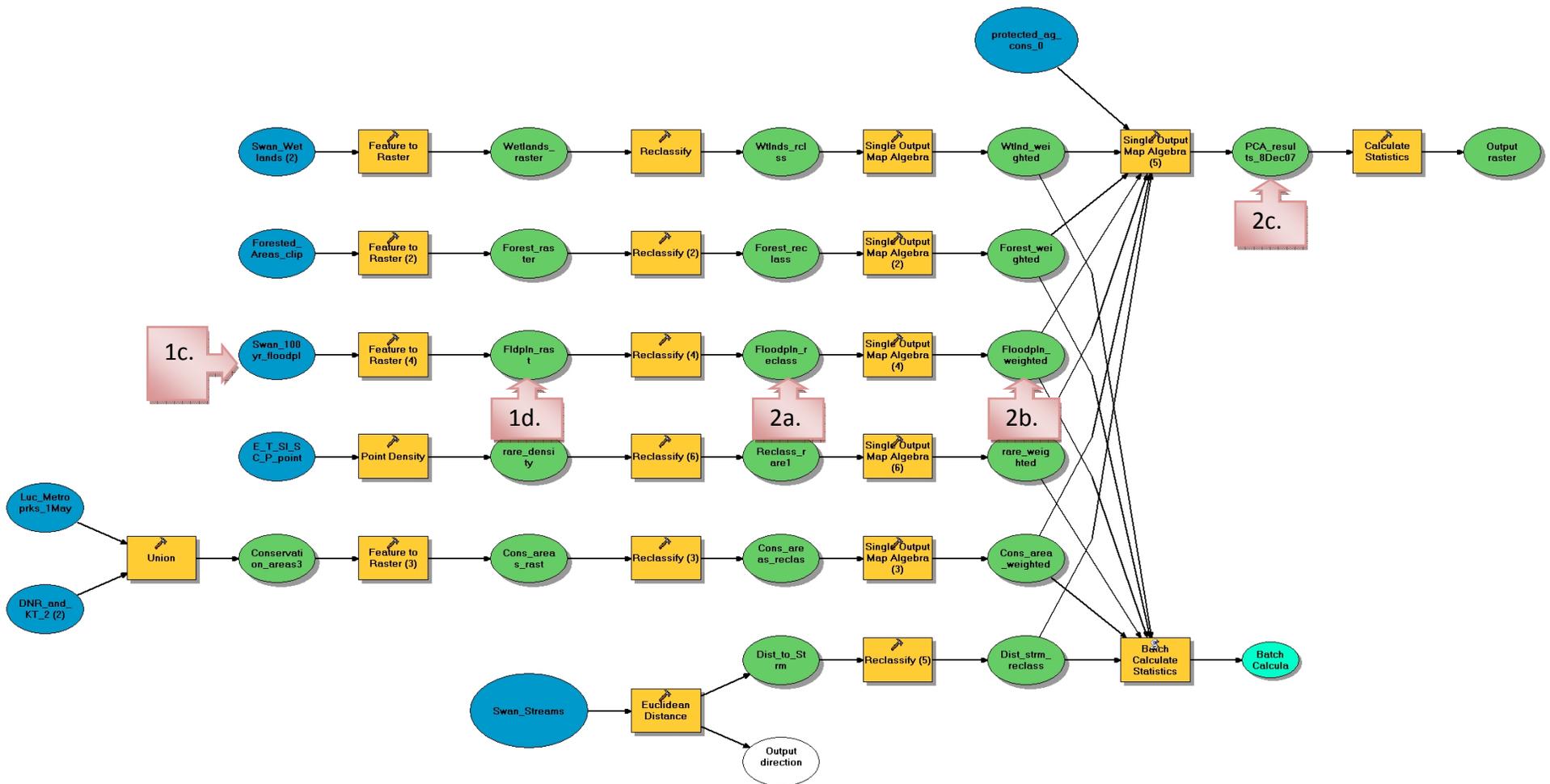


Figure C-3. Model Builder flowchart for determining Priority Conservation Area

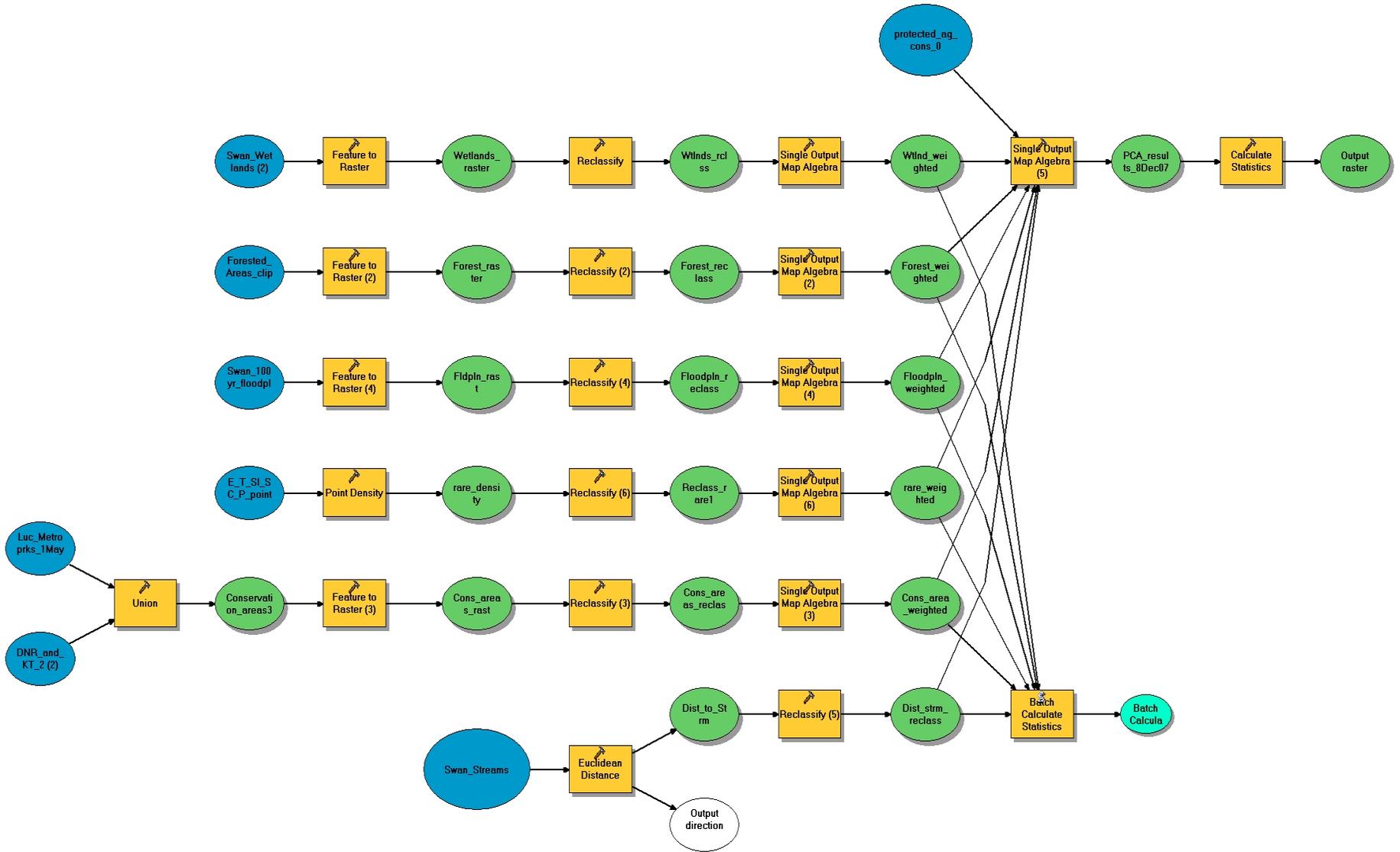


Figure C-4. Graphical representation of the Priority Conservation Areas (PCA) model. A separate model was developed for each of the priorities.

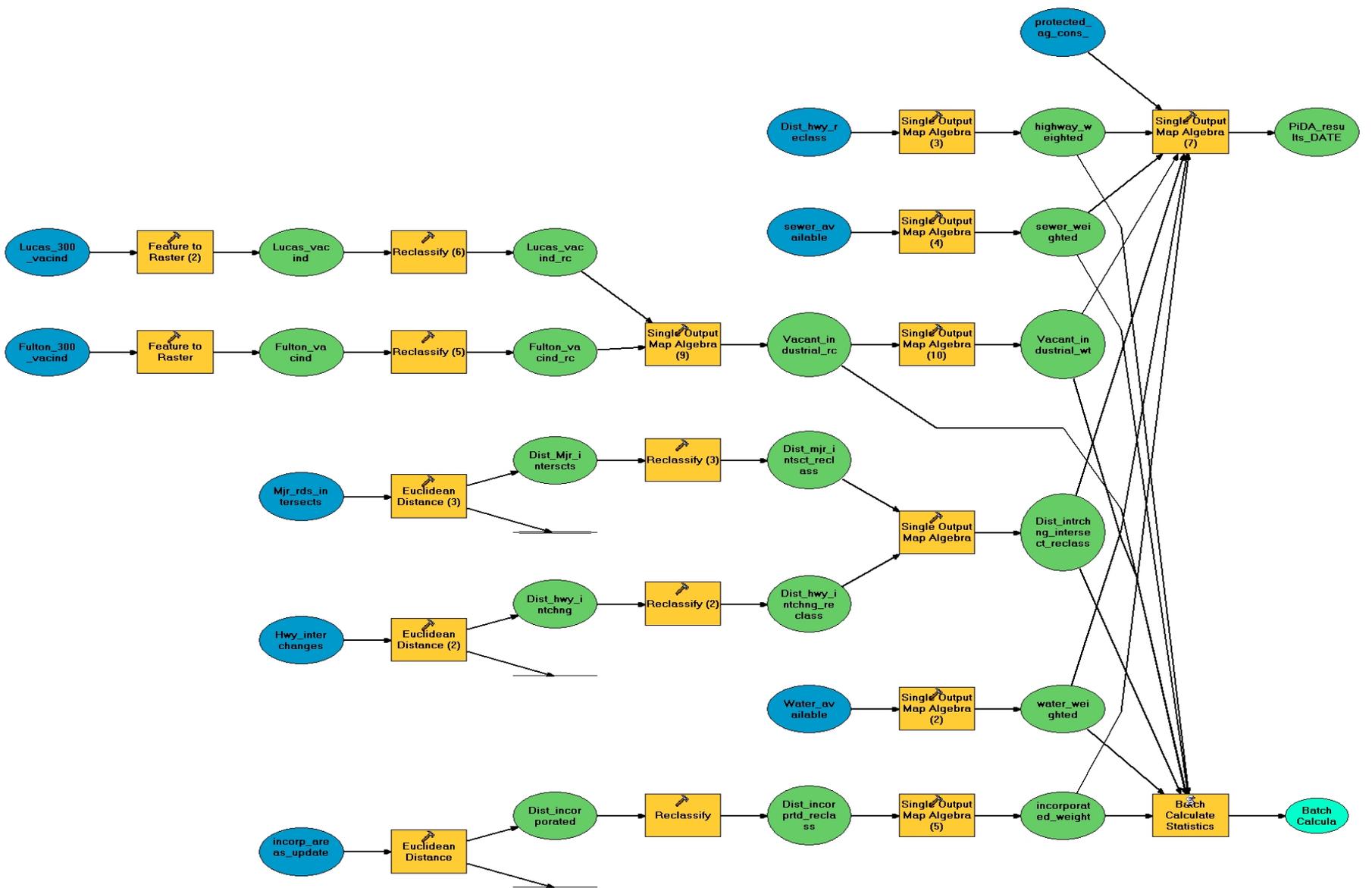


Figure C-6 Graphical representation of the Priority Industrial Development Areas (PiDA) model.

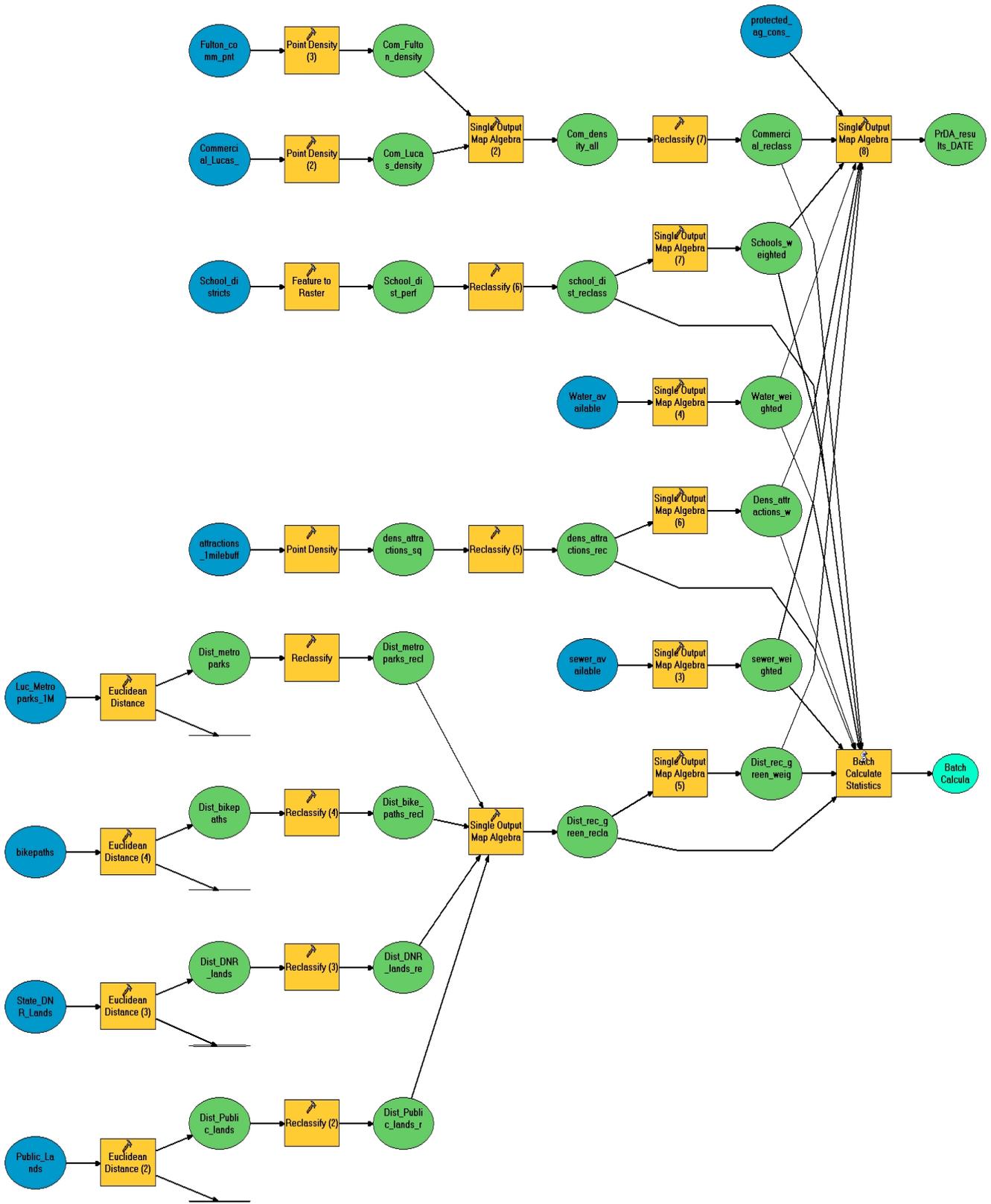


Figure C-7. Graphical representation of the Priority Residential Development Areas (PrDA) model.

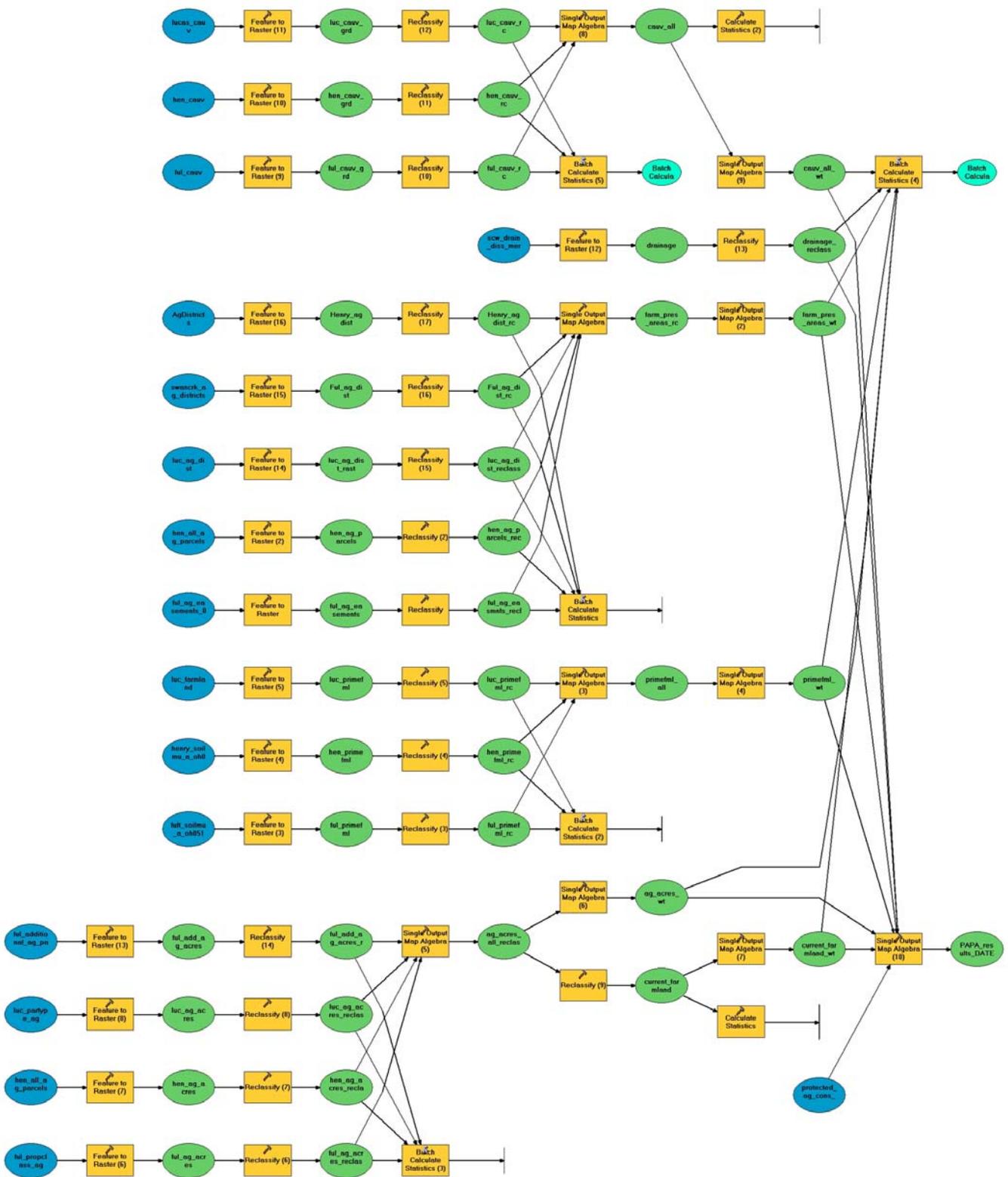


Figure C-8. Graphical representation of the Priority Agricultural Areas (PAA) model.

Viewing Tool Settings

To view the settings used by any of the tools, double-click one of the tools (yellow rectangles) to bring up that tool's dialog box. Note that if the tool will be working on a data layer that has yet to be created, some options may not be available. For instance, a reclassify tool will not have the table populated with values to be reclassified if the input data has not yet been created.

Running the Model

It is highly recommended that before running the model, you change the name of the results file within the model to prevent overwriting earlier model results. By default, the results file is named "MODEL_results_DATE," where MODEL is the name of the model (PCA, PrDA, PiDA, PcDA, or PAA). Right-click on the model and choose "Edit." Find the results file (a green circle) and double-click. Change the "DATE" to today's date. Go to Model>Save.

Before running the model, first validate the model by clicking on Model>Validate Entire Model in the model window. If any of the parameters or tool settings are incorrect, the circle or rectangle will become hollow (no color). Some tools have optional outputs and if these are not chosen then the output circles will remain hollow.

Assuming there is nothing invalid, run the model by selecting Model>Run in the model window. Alternatively, you can choose Model>Run Entire Model to force Model Builder to run the entire model. Choosing "Run" will cause only those tools/parameters that have been changed to run, as well as the subsequent parts of the model that rely on the output of those processes. You can also run individual segments of the model by right-clicking on a tool and choosing "Run." If you have changed a parameter or tool be sure the next time the model is run these processes are completed, or, to be safe, choose "Run Entire Model."

Reclassified Data

While the input data used to construct the Swan Creek models may be in feature or raster formats, all of the model outputs are in raster (ESRI grid) format with 30 meter pixels. In each of the models, the data is reclassified to reflect a rank or score that reflects its suitability for the given priority land use. This score ranges from 0 - 4 and can be found in the tables of Final Priority Area Selection Criteria (tables 4-8). Reclassified data, reflecting these scores, generally end with "rc," "reclass," or "rclas" in the file name.

Weighted Data

Data layers were also weighted to reflect their importance in the model. These weightings consisted of multiplying the reclassified layers by a factor of 2 - 6. Weighted layers generally end with "weighted" in the file name. Note that the variable with the lowest weighting (= 1) for each model was not multiplied. Weightings can be found in the tables of Final Priority Area Selection Criteria (tables 4-8).

Summing the Weighted Data

The six weighted layers are summed using the Single Map Algebra tool to create the final priority layer for each model. In addition, a layer entitled “protected_ag_cons_0” is multiplied to the final product. This causes all areas that are perpetually protected (permanent agricultural easements and protected conservation areas) to receive a score of 0, essentially eliminating these areas from being considered as a Priority Area for any land use.

Calculate Statistics

The Calculate Statistics tool is used throughout the model, as this is often necessary to perform certain tasks in ArcMap or ArcCatalog, such as applying a contrast stretch or classifying the data.

Model Graphics and Criteria

Model Builder provides a graphical representation of the data and processes involved in each model (C-3). Parameters, data sources, scoring, and weighting follow the criteria developed by the Technical Committee (tables 4-8). Note that the Priority Residential Development Areas (PrDA) and Priority Industrial Development Areas (PiDA) models rely on two data layers (water available and sewer available) created by the Priority Commercial Development Areas (PcDA) model.

Determining Threshold Values for Priorities

The results of each of the five models results in every 30 meter pixel within the watershed being assigned a value according to the model parameters. The higher the resulting value, the more influential it is for that land use (e.g., conservation, residential development, etc.). Before combining these individual results, it is first necessary to determine the threshold value that returns the top 10% or 20% of the watershed (by area). The current model utilizes a 10% threshold value for Priority Conservation and Priority Agricultural Areas, and 20% for each of the three Priority Development Areas.

	B	C	D	E
1	Value	Count	Cumulative Percent	
20	23	8087.000000000000	54.8047	
21	24	157693.000000000000	54.6766	
22	25	100768.000000000000	52.1786	
23	26	2811.000000000000	50.5824	
24	27	192148.000000000000	50.5379	
25	28	90511.000000000000	47.4942	
26	29	84656.000000000000	46.0605	
27	30	35195.000000000000	44.7195	
28	31	42651.000000000000	44.1620	
29	32	87311.000000000000	43.4864	
30	33	49109.000000000000	42.1033	
31	34	27011.000000000000	41.3254	
32	35	6409.000000000000	40.8976	
33	36	71372.000000000000	40.7961	
34	37	6485.000000000000	39.6655	
35	38	5848.000000000000	39.5628	
36	39	50685.000000000000	39.4701	
37	40	128548.000000000000	31.4414	
38	41	1660.000000000000	29.4051	
39	42	48618.000000000000	29.3788	
40	43	358197.000000000000	28.6087	
41	44	86874.000000000000	22.9347	
42	45	110361.000000000000	21.5586	
43	46	47921.000000000000	19.8104	
44	47	127166.000000000000	19.0513	
45	48	49147.000000000000	17.0370	
46	49	35219.000000000000	16.2585	
47	50	46920.000000000000	15.7006	
48	51	57724.000000000000	14.9574	
49	52	37967.000000000000	14.0430	
50	53	3238.000000000000	13.4416	
51	54	48963.000000000000	13.3903	
52	55	1309.000000000000	12.6147	
53	56	1796.000000000000	12.5940	
54	57	278325.000000000000	12.5655	
55	58	69768.000000000000	8.1567	
56	59	3146.000000000000	7.0516	
57	60	8275.000000000000	7.0018	
58	61	231162.000000000000	6.8707	
59	62	62178.000000000000	3.2090	
60	63	53797.000000000000	2.2241	
61	64	11694.000000000000	1.3719	
62	65	39541.000000000000	1.1867	
63	66	11114.000000000000	0.5603	
64	67	15386.000000000000	0.3843	
65	68	1542.000000000000	0.1405	
66	69	4358.000000000000	0.1161	

Figure C-9. Top 10% Priority Agricultural Preservation Area calculation. Threshold values are determined in Excel. In this example, pixels scoring > 57 will be designated PAPAs.

Begin by exporting the attribute table from each of the results datasets. Open each table in Excel. Add a column to calculate the cumulative percent of pixels meeting or exceeding each value. Below the heading in this new column (cell D2) type the following formula:

$$((SUM(C2:C$68))/SUM(C$2:C$68))*100$$

Note that this formula assumes a table of 68 rows and should be adjusted accordingly (e.g., for a table of 112 rows, replace 68 with 112). Drag the bottom right corner of D2 to fill the remainder of the column. This column returns the percentage of pixels that have a value equal or greater to the given value. For example, 12.6% of the pixels in the watershed received a PAA value ≥ 57 , and 8.2% a value ≥ 57 (C-9). From this, we determine that pixels with a value > 57 are the in the 90th percentile (top 10%) of PAA scores. Therefore, we use a threshold value of 57 for the PAA model.

Table C-10. Priority Area threshold and reassigned

Priority	Threshold Value	Reassigned Value
Agriculture (PAA)	57	50,000
Conservation (PCA)	26	4000
Commercial Development	32	300
Industrial Development (PiDA)	30	20
Residential Development	48	1

Table C-11. Values Resulting from the Combination of the Five Priority Land Use

Value	Priority Land Use Designation				
	PAA	PCA	PcDA	PiDA	PrDA
0					
1					X
20				X	
21				X	X
300			X		
301			X		X
320			X	X	
321			X	X	X
4000		X			
4001		X			X
4020		X		X	
4021		X		X	X
4300		X	X		
4301		X	X		X
4320		X	X	X	
4321		X	X	X	X
50000	X				
50001	X				X
50020	X			X	
50021	X			X	X
50300	X		X		
50320	X		X	X	
50321	X		X	X	X
54000	X	X			
54001	X	X			X
54020	X	X		X	
54321	X	X	X	X	X

values are shown in C-10, p.C-15.

The next process in the “Priorities_Swan_Creek” model is combining the five priority datasets into a single dataset using the Single Output Map Algebra tool. By adding the datasets together, a single dataset is created (“Combined_Priorities_DATE”) with each pixel in the dataset assigned a value according to its inclusion in one or more of the priority land uses. Pixels not exceeding any of the

Combining the Model Results

After running each of the five individual models and determining threshold values for each, the next step is to combine these results into one single layer. Open the model “Priorities_Swan_Creek” by right-clicking the model and choosing it (C-12,p. C-18). This model uses the results of each of the models, named by default “Model_results_DATE.” First, change these input files so that they point to the appropriate file. For instance, if the latest PAA result is titled “PAPA_results_20Jan2008,” then double-click the green circle (“PAPA_results_DATE”) and either manually change the name or use the browse function to point to the 20Jan2008 file. Do this for each of the five green circles.

An examination of the Reclassify processes in the “Priorities_Swan_Creek” model reveals that each pixel is being scored according to the appropriate threshold value previously determined. Double-click on the Reclassify process connected to “PAPA_results_DATA.” This process reclassifies all pixels with a score ≥ 57 to a value of 50,000. All pixels with a score < 57 are scored 0. The resulting file will consist of pixels with two values: 50,000 or 0. Those with a value of 50,000 represent the top 10% (highest-scoring) areas in the Priority Agricultural Preservation Areas. The threshold values and reclassified values for those exceeding the respective threshold

threshold values receive a value of "0" and those exceeding the threshold value for multiple priorities are denoted by multiple X's in Table C-11, p. C-16.

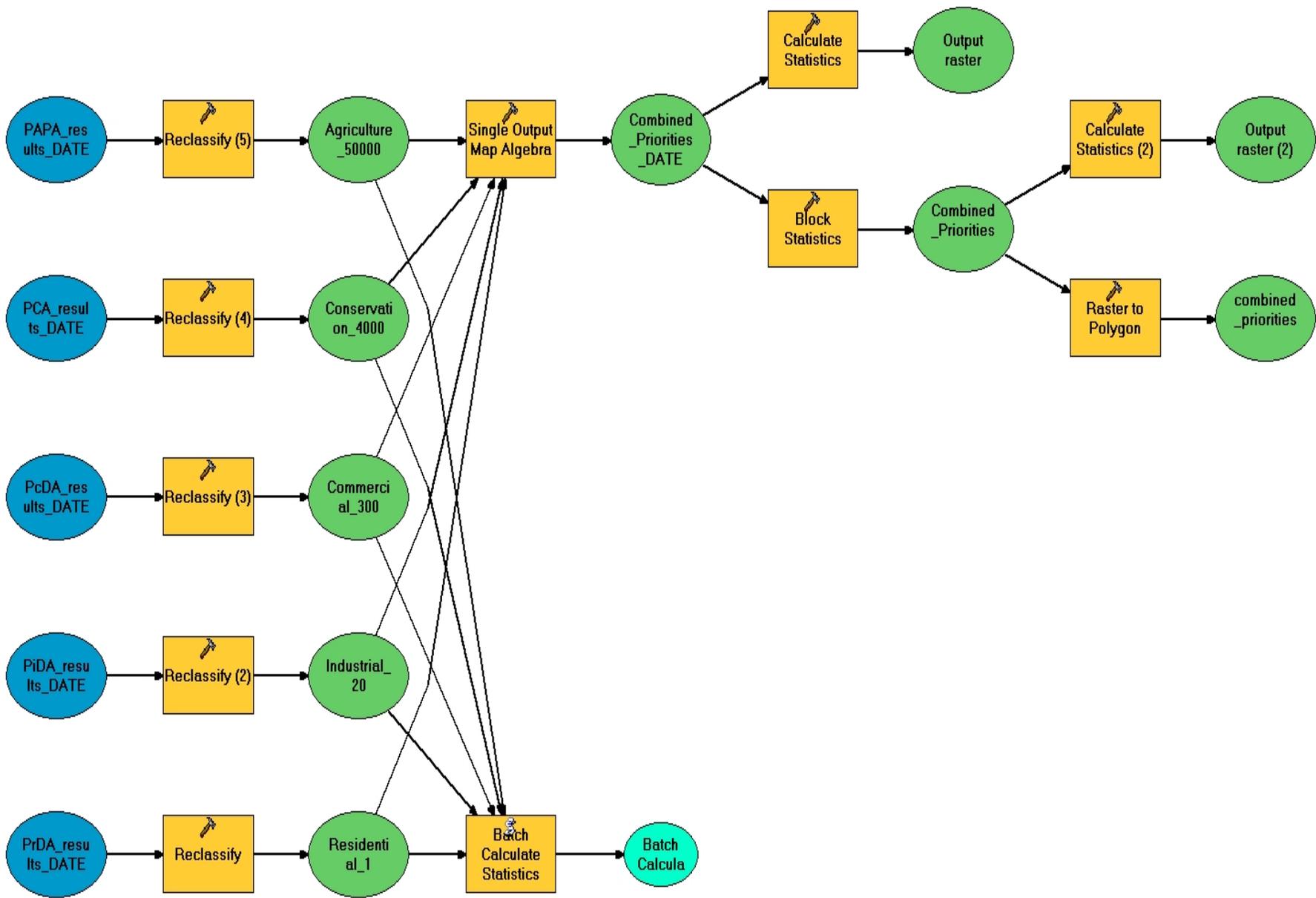


Figure C-12 Graphical Representation of the Priorities_Swan_Creek Model.

The final two processes in the “Priorities_Swan_Creek” model are designed to smooth the resulting dataset, creating a minimum area for designating priority land uses and creating a more user-friendly final dataset. The first process uses the Spatial Analyst>Block Statistics>Majority function to perform a neighborhood analysis on each 5 pixel X 5 pixel neighborhood, assigning all of the pixels the majority value. This neighborhood corresponds to an area of approximately 5.5 acres. Finally, the raster dataset is converted into a shapefile using the Raster to Polygon tool and using the “Simplify polygons” option for this tool. The resulting final dataset is titled “combined_priorities_plygn_DATE.”

Prior to running the “Priorities_Swan_Creek” model, file names ending with “_DATE” should be renamed with the current date. After completing these steps, go to Model>Save, then Model>Validate Entire Model. Assuming the model is validated (no hollow figures), go to Model>Run Entire Model. When the model finishes running, add the dataset “combined_priorities_plygn” located in the geodatabase “Model_Results.”

To simplify the viewing of the final layer, you may wish to use the prepared layer file. Double-click the file “combined_priorities_plygn” in the table of contents, go to the Symbology tab, and in the dropdown value field, choose “GRIDCODE” (C-13, p. C -19). Next, click on the “Import...” button on the top right of the box and click the folder button to browse for the file “combined_priorities_plygn.lyr” Click “OK” and “OK” again. This will display only those areas where conflicts in priority land use designations do not exist. You can further simplify the display by manually changing the color scheme used to display the categories (e.g., displaying all areas as priorities for development as one color).

Jurisdictional Modifications

Jurisdictional modifications are local changes in priority land use designations that are requested by a local political subdivision. There are several reasons why jurisdictional modifications are kept separate from, and treated differently than, the model results. First, it is not possible to simply “force” these changes in the modeling environment described above without also affecting other areas of the watershed. Second, directly editing these changes into the model results will only provide a temporary solution, as these edits will be lost when they are written over with subsequent runs of the model.

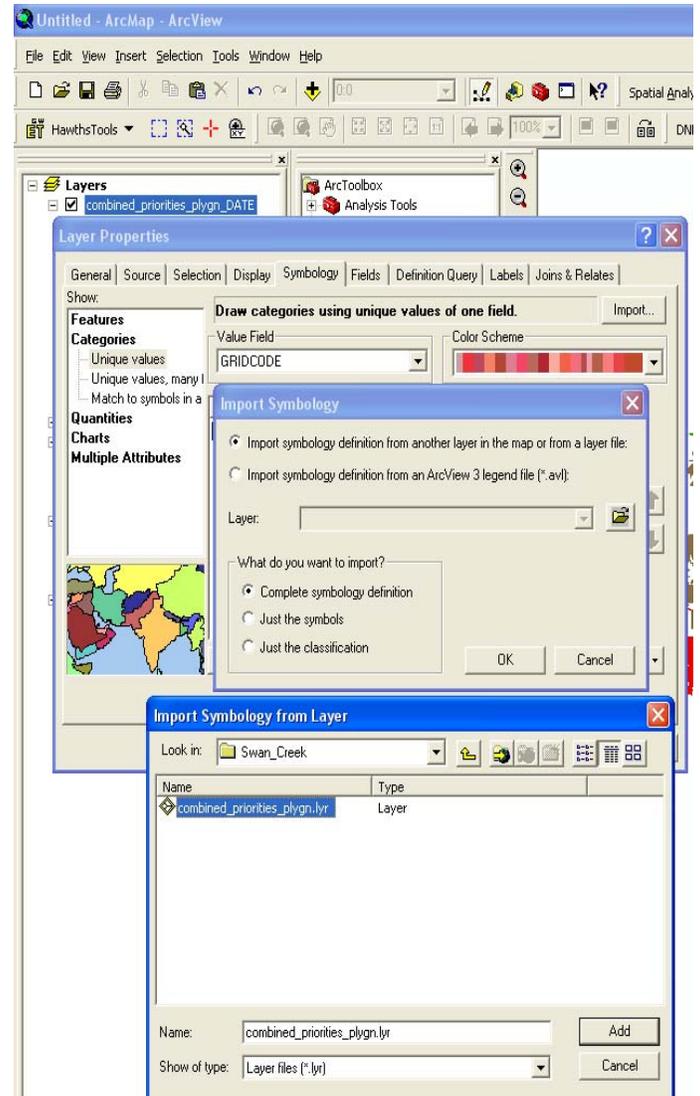


Figure C-13. Importing the Provided layer File for Simplified Viewing of the Final

Finally, it is desirable to keep a transparent record of the objective outputs of the GIS models versus subjective changes made to these computer-derived priorities based on subsequent input from local jurisdictions.

The “Jurisdiction_modifications” dataset is a GIS shapefile that is placed over the model results (“combined_priorities_plygn”) dataset in order to override model-derived priorities. It is important to note that this dataset is simply a cartographic tool for displaying the priority land uses. For our purposes, this “mask” works well, but the user is cautioned that this does result in some tradeoffs in GIS functionality.

7.5.4. Manually Editing the Jurisdiction Modifications

Suppose you have decided to change an area originally designated as a Priority Conservation Area (PCA) to a Priority Development Area (PDA). This small area is located between an area designated as PDA to the east, and a road to the west (C-14). Remember, this change will be recorded in a separate dataset, not in the original “combined_priorities_plygn” dataset.

Add the file “Jurisdiction_modifications.lyr” to the ArcMap table of contents. Go to the Editor toolbar and click on “Start Editing.” In the box that appears, choose “C:\Swan_Creek” (the folder that contains the file), then click “OK.” Be sure the Target dropdown box in the Editor toolbar reads “Jurisdiction_modifications” and Task dropdown box, “Create new feature.” Return to the Editor toolbar, and click on “Snapping.” In the Snapping Environment Window, choose which layers you want the new feature to be “snapped” to. You can also change the order in which snapping will occur by dragging the layers up or down in the box. For this example, we want to snap the vertex and edge of the new feature to the combined_priorities_plygn layer first, then to a local roads layer. Additional snapping options are found at Editor>Options under the General tab.

Click on the Sketch tool, then trace the area you wish to change (C-18, p. C-22). When you complete the sketch, double-click on the final vertex. Open the attribute table for “Jurisdiction_modifications.” Scroll to the bottom, where the record you just added is highlighted. In this example, you would type Conservation in the Priority column, as a record of what is being changed. Next, type Development in the Political column, and the name of the jurisdiction requesting the change in the final column (C-17, p. C-21).

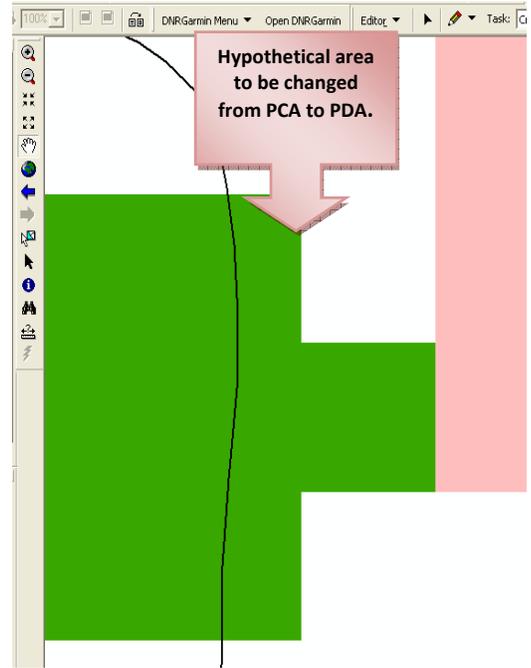


Figure C-14. Hypothetical Area of PCA Between a Road (line) and PDA.

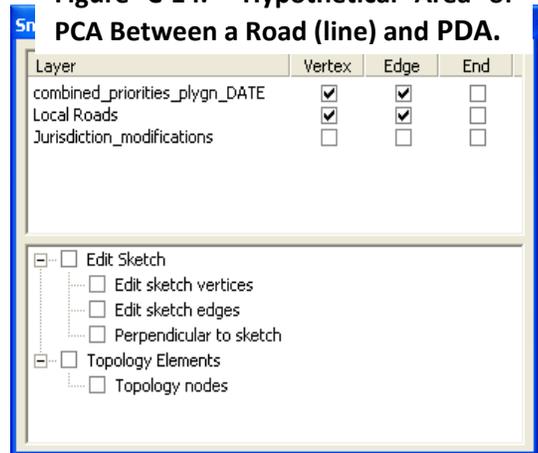


Figure C-15. Snapping

Return to the Editor toolbar and click on “Save Edits.” Refresh the view and you should now see your changes. (p. C-19, p. C-22) Remember, the “Jurisdiction_modifications” layer must be loaded above the “combined_priorities_plygn” dataset in ArcMap’s table of contents in order to mask over the priority of the model output.

Priority	Political	Jurisdicti
No priority	Conservation	Providence Twp
No priority	Development	Providence Twp
No priority	Development	Providence Twp
No priority	Development	Providence Twp
Agriculture	Agriculture	Providence Twp
No priority	Development	Providence Twp
Conservation	Development	Made up Twp.

Record: 1 Show: All Selected Records (1 out of 3657 Selected.) Options

Figure C-17. Editing the Attribute Table of the “Jurisdiction_Modifications” Layer.

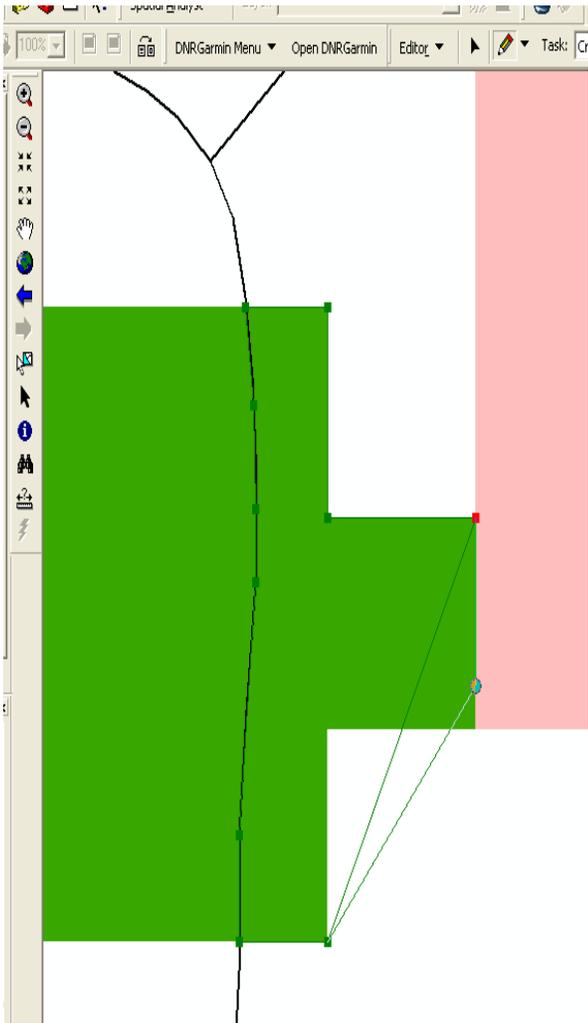


Fig. C-18. Sketching the area to be changed from PCA to PDA, simplified by snapping the sketch to the features of the other layers.

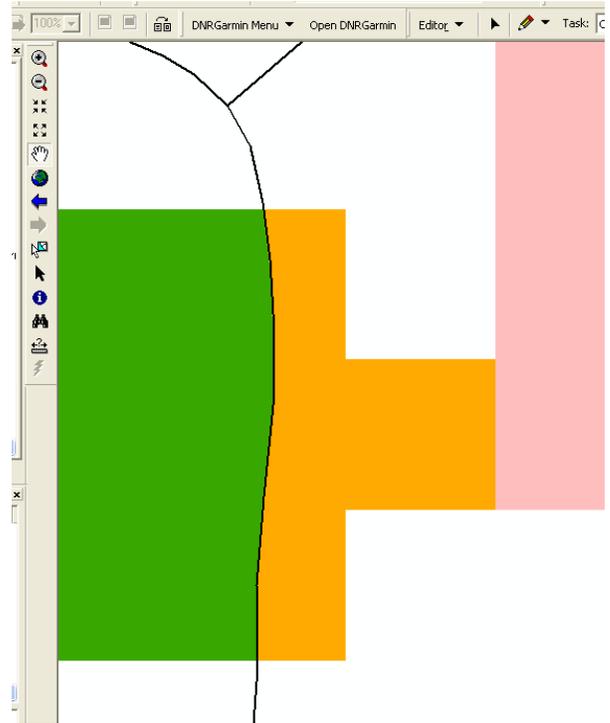


Figure C-19. Completed modification of the “Jurisdiction_modifications” layer.

APPENDIX D

Priority Area Selection Criteria

D.1. Priority Area Criteria Selection and GIS Modeling

D.1.1. Creation of Plan Using Geographic Information Systems (GIS)

Planners and other land use policy-makers make decisions every day on where different activities, in their best judgment, should occur. These decisions are based on several factors: their knowledge of the land, its surroundings and the natural resources and processes in those areas; their knowledge of the population, its needs and desires; their knowledge of the economy, the built infrastructure and past, current and future development and politics. Most important – and the most difficult – to know and understand is the impact that the change in any of one of the factors, by humans or by the non-human environment, will have on the other factors and the system as a whole. Depending on their individual or collective knowledge and skill set, an individual planner or planning team may make decisions based on their experience or intuition on maps showing individual natural, infrastructure or demographic characteristics, on multiple-factor maps, or on complicated computer models that reflect changes in the region over time.

The Technical Committee and its staff, however elected to create a watershed balanced growth plan using GIS to create a computer model which would provide initial recommendations on the location, size and configuration of the various Priority Areas. The input into this model would be data on various characteristics of the watershed including physiographic features, infrastructure systems, demographic characteristics, and other relevant traits that the Technical Committee felt that, in their expert opinion, were most influential in determining the most appropriate locations for the major land uses.

D.1.2. Criteria Selection Process

At the beginning of the planning process, the staff of the pilot watersheds attended a presentation by members of EcoCity Cleveland which included both information on the usefulness of GIS to the planning process as well as some guidance on which land use characteristics may be helpful in creating a GIS model. They presented a slate of 56 criteria which covered all land uses and was overly broad and, sometimes, irrelevant for a particular land use (Table 2). For example, although the location of prime or locally important farmland soils do influence the designation of a PCA *indirectly* by the inappropriateness of creating a nature preserve in an area with prime agricultural soils, it *directly* influences where a PAA should be designated to promote intensification of agriculture. The Technical Committee members were asked to rate each of the characteristics' importance to each of the three major land uses – agriculture, conservation, development as either high, medium, low or not applicable. Ratings of high were given three points, medium two points, low one point, and not applicable was given zero points. The scores for the individual land uses and aggregate totals are shown in Table 2.

The Technical Committee members then voted on each of the criteria as to whether or not it was important to that particular land use, to see if any of the characteristics dropped out completely. As a result of this vote, the criteria were separated into three categories, reducing the number of criteria to 11 for agriculture, 24 for conservation and 33 for development, shown in Table 3. with the original vote scores in the “original” column. During this process, they also reconsidered the criteria, making some broader, some narrower, clarifying some, combining some and dropping those in each major land use that were not useful (“soils”) or that

had received few votes (“historical value”). Most of the selected characteristics were of existing and fairly permanent nature such as physiographic features (floodplains, wetlands) and current land use (existing development) and infrastructure (water, sewer, roads). Some of these features (existing development, infrastructure), as well as other human-related features (per capita income, quality of schools, corporate boundaries), would likely be expanded in the future or varied within a small range on a fairly infrequent basis. Other characteristics (zoning, future infrastructure) were fairly flexible and could change from election cycle to election cycle or as budgets grew and shrank. Although the GIS model was being designed to allow for the inclusion of additional data or updated data, it would lose its effectiveness if characteristics were included that had a low level of long-term certainty, such as zoning and future infrastructure projects. Therefore, the Technical Committee members decided to restrict characteristic selection to those that were fairly permanent, those with low variability and, in the case of infrastructure, existing systems or those that had enabling legislation and/or allocated budgets. This resulted in the exclusion of current zoning, land use plan and comprehensive plan designations and future expansion plans of water and sewer districts and similar long-range infrastructure expansion plans from the slate of selection criteria. At this point, staff began a data search to find existing data for these characteristics, attempting to find datasets that were current, had accuracy (resolution) of 30 meters or less, and, preferably, were in a format allowing easy integration into the GIS model. Data selection will be discussed in further detail later in this section.

The final selection of criteria resulted from the Technical Committee members voting on which three characteristics they felt were the most important in each of the five land uses. These vote totals are shown in Table 3, in the “revised” column and the top-scoring criteria have been shown in **bold-underline**. For development, only the top-scoring residential development has been emphasized. Tables 4-8, list the six top-scoring criteria for the five land uses but they are summarized in Table 3.

Priority Area Selection Criteria

Table 2. Initial Priority Area Selection Criteria

Total score	PCA pts.	PDA pts.	PAA pts.	Criterion Affecting Land Use
49	21	10	18	existing conservation easements
46	16	8	22	existing farmland preservation areas
46	14	13	19	soil infiltrative capacity (drainage capability)
45	16	6	23	designated Prime or Locally Important Farmland
45	13	12	20	soil types
45	23	11	11	currently protected natural/conservation areas
45	12	19	14	current Land Use Plan or Comprehensive Plan designations
43	20	8	15	riparian corridors
42	23	7	12	floodplains
42	10	19	13	zoning classification, subdivision regulation restrictions
42	14	21	7	proximity to recreation (parks, trails, open space)
40	10	9	21	current farmland
40	8	23	9	existing stormwater outfall (existing drainage capacity for future development)
39	16	11	12	hydric soils
39	21	8	10	large forest areas
39	13	22	4	current quality of schools
38	23	7	8	wetlands
37	19	10	8	conservation-industrial interface (buffers around high quality stream areas)
37	11	14	12	current water table elevation
37	8	22	7	potential for profitable development
36	8	19	9	current housing market
36	14	15	7	current area income levels
35	5	20	10	proximity to infrastructure
35	5	21	9	existing roads, by category
35	14	15	6	land aesthetics
34	18	9	7	steep topography
34	6	20	8	existing waterlines
34	7	20	7	existing natural gas lines
34	8	18	8	current commercial market
33	8	11	14	current well yields (shows dry well areas)
33	7	12	14	existing ditches (current elevation and drainage capacity, clean out history)
33	7	16	10	current tax abatement areas
32	6	21	5	existing sanitary sewers
32	4	20	8	future waterlines
32	4	20	8	existing rail lines
31	5	22	4	existing public water and sewer capable of handling subdivisions with lots <1 acre
31	3	20	8	future sanitary sewers
31	5	19	7	existing highways
31	5	20	6	existing high pressure natural gas mains or easements
31	8	16	7	job opportunities, especially for young adults
30	11	10	9	soil types suitable for construction (sandy)
30	9	13	8	NPDES Phase II Stormwater-regulated communities
30	5	18	7	existing interchanges and major intersections
30	5	22	3	existing fiber optic lines
30	5	19	6	existing major electricity transmission lines
30	7	16	7	areas not conducive to industry (lack of utilities, presence of wetlands)
26	8	13	5	current noise levels
24	5	10	9	designated Water District areas
15	5	5	5	current residential property tax rates
6	0	3	3	current level of farm investment, stewardship, CAUV enrollment, size of farm
3	3	0	0	historical value
3	3	0	0	strategic value of open space
3	3	0	0	known ecological value/ rare species
3	3	0	0	rare plant and/or animal species
3	3	0	0	proximity to currently protected areas

Table 3. Revised Priority Area Selection Criteria: Agriculture, Conservation, Development

orig. pts.	rev. pts.	Criterion affecting agriculture
23	10	<u>designated Prime or Locally important Farmland</u>
22	14	<u>existing farmland preservation areas</u>
21	9	<u>current farmland</u>
14	4	current well yields (dry well areas)
14	7	existing ditches (current elevation and <u>drainage capacity</u> , clean out history)
12	4	current water table elevation
9	2	existing roads, by category
8	0	existing rail lines
7	0	existing highways
7	0	existing interchanges and major intersections
3	12	level of farm investment, stewardship, <u>CAUV, size</u>

orig. pts.	rev. pts.	Criterion affecting conservation
23	6	<u>currently protected natural/conservation areas</u>
23	5	<u>floodplains</u>
23	12	<u>wetlands</u>
21	3	<u>existing perpetual conservation easements</u>
21	9	<u>large forest areas</u>
20	4	<u>riparian corridors</u>
19	6	<u>high-quality riparian/conservation area buffers</u>
18	3	steep topography
16	0	hydric soils
14	1	infiltrative capacity and/or /groundwater pollution potential
14	2	proximity to recreation (parks, trails, open space)
13	1	soil types suitable for construction (sandy)
13	0	quality of schools
12	0	current Land Use or Comprehensive Plan designations
11	0	current water table elevation
10	-	zoning classifications, subdivision regulation restrictions
8	0	current well yields (shows dry well areas)
8	0	current noise levels
3	3	historical value
3	1	strategic value of open space
3	10	<u>known ecological value/rare species</u>
3	-	rare plant and/or animal species
3	3	proximity to currently protected areas
0	1	level of farm investment, stewardship, CAUV, size

orig. pts.	rev. pts.	Criterion affecting development
23	1	existing stormwater outfall (existing drainage capacity for future development)
22	-	existing fiber optic lines
22	8	<u>current quality of schools</u>
21	9	<u>existing sewers</u>
21	2	existing roads, by category

21	8	<u>proximity to recreation (parks, trails, open space)</u>
20	9	<u>existing waterlines</u>
20	1	future water lines
20	1	future sanitary sewers
20	-	existing rail lines
20	1	existing gas lines
20	-	existing high pressure natural gas mains or easements
19	0	existing highways
19	-	existing major electricity transmission lines
19	4	zoning classifications, subdivision regulation restrictions
19	3	current Land Use or Comprehensive Plan designations
19	4	current housing market
18	0	existing interchanges and major intersections
18	7	<u>current commercial market: proximity to</u>
16	-	current tax abatement areas
15	2	current area income levels
14	0	current water table elevation
13	0	NPDES Phase II Stormwater-regulated communities
13	1	current noise levels
12	1	existing ditches (current elevation and drainage capacity, clean out history)
10	1	soil types suitable for construction (sandy)
10	1	designated Water district areas
8	0	proximity to large forest areas
7	1	proximity to floodplains
7	0	Proximity to wetlands
5	3	current residential property tax rates
0	5	proximity to incorporated areas
0	0	historical value
-	8	<u>proximity to cultural attractions</u>
-	0	brownfields

note: 3rd-cut criteria shown only for residential development

Table 4. Final Priority Area Selection Criteria with Metadata, Ranking and Weighting: Agriculture

Agriculture Priority Index		Ranking of Value Ranges				
Parameter	Data Source	4	3	2	1	Weight
Farmland preservation areas	Fulton, Henry, & Lucas Counties	Perpetually protected by easement	Agricultural District	County designated significant area	--	6
Prime/Important farmland	County soil surveys	Prime w/o modification	Prime with modification	--	Locally important soils	5
Size of farm	Lucas, Fulton, & Henry Counties	>150 acres	100-150 acres	50-100 acres	<50 acres	4
CAUV	Lucas, Fulton, & Henry Counties	CAUV enrolled	--	--	--	3
Current farmland	Lucas, Fulton, & Henry Counties	Yes	--	--	--	2
Drainage capacity	Soil Surveys	Drains well	Drains moderately well	--	Somewhat poorly	1

note: The top 10% (by area) includes all areas with a value >47. (Excluding areas that are already perpetually protected)

Table 5. Final Priority Area Selection Criteria with Metadata, Ranking and Weighting: Conservation

Conservation Priority Index		Ranking of Value Ranges				
Parameter	Data Source	4	3	2	1	Weight
Presence of wetlands	ODNR, GIMS (TMACOG)	Yes	--	--	--	6
Rare plant/animal occurrences: density in 1 mile radius	ODNR, Natural Heritage Database	>50 Mile ²	30 - 50 mile ²	10 - 30 mile ²	>0 - 10 mile ²	5
Forest patch size	ODNR (TMACOG)	>100 acres	25 - 100 acres	5 - 25 acres	>0 - 5 acres	4
Protected conservation areas*	County auditors; USGS GAP; MetroParks	Yes	--	--	--	3
100 yr. Floodplain	FEMA (TMACOG)	In floodplain	--	--	--	2
Riparian corridor	USGS NHD	<500 ft. from stream	--	--	--	1

notes: The top 10% (by area) includes all areas with a value >26. (Excluding areas that are already perpetually protected).

Includes Metroparks, Ohio Department of Natural Resources lands, and The Nature Conservancy's Kitty Todd Preserve

Table 6. Final Priority Area Selection Criteria with Metadata, Ranking and Weighting: Commercial Development

Commercial Development Priority Index		Ranking of Value Ranges				
Parameter	Data Source	4	3	2	1	Weight
Incorporated areas	US Census Bureau	Within area	<0.5 miles	0.5 - 1.0 miles	1.0 - 1.5 miles	6
Water availability	Lucas Co. Engineer, Fulton Co., Swancreek Twp., Poggemeyer, Proudfoot	<0.5 miles from water line or served area	--	--	--	5
Commercial market; population density	US Census Bureau (2000)	9447 - 12,597 people / mile ²	6298 - 9447 people / mile ²	3149 - 6298 people / mile ²	40 - 3149 people / mile ²	4
Sanitary Sewer availability	Lucas Co. Engineer, Fulton Co., Swancreek Twp., Poggemeyer, Proudfoot	<0.5 miles from sewer line or served area	--	--	--	3
Per Capita Income	US Census Bureau (2000)	\$26,505 - \$35,340	\$17,670 - \$26,505	\$8835 - \$17,670	\$6662 - \$8835	2
Highways: distance	ESRI's MajorRoads.lyr + new US 24 alignment	<0.25 miles	0.25 - 0.5 miles	0.5 - 0.75 miles	0.75 - 1 mile	1

note: The top 20% (by area) includes all areas with a value >32. (Excluding areas that are perpetually protected).

Table 7. Final Priority Area Selection Criteria with Metadata, Ranking and Weighting: Industrial Development

Industrial Development Priority Index		Ranking of Value Ranges				
Parameter	Data Source	4	3	2	1	Weight
Water availability	Lucas Co. Engineer, Fulton Co., Swancreek Twp., Poggemeyer, Proudfoot	<0.5 miles from water line or served area	--	--	--	6
Highways: distance	ESRI's MajorRoads.lyr + new US 24 alignment	<0.25 miles	0.25 - 0.5 miles	0.5 - 0.75 miles	0.75 - 1 mile	5
Sanitary Sewer availability	Lucas Co. Engineer, Fulton Co., Swancreek Twp., Poggemeyer, Proudfoot	<0.5 miles from sewer line or served area	--	--	--	4
Brownfields	Lucas and Fulton County Auditors	Vacant Industrial	--	--	--	3
Incorporated areas: distance	US Census Bureau	<0.5 mile	0.5 - 1 mile	1 - 1.5 miles	1.5 - 2.0 miles	2
Interchanges / Major intersections: distance	Digitized from ESRI road layers	<0.5 miles from highway interchange and/or <0.25 miles from major intersection	0.5 - 1 miles from highway interchange and/or 0.25 - 0.5 miles from major intersection	1 - 1.5 miles from highway interchange and/or 0.5 - 0.75 mile from major intersection	1.5 - 2.0 miles from highway interchange and/or 0.75 - 1 mile from major intersection	1

note: The top 20% (by area) includes all areas with a value >30. (Excluding areas that are perpetually protected).

Table 8. Final Priority Area Selection Criteria with Metadata, Ranking and Weighting: Residential Development

Residential Development Priority Index		Ranking of Value Ranges				
Parameter	Data Source	4	3	2	1	Weight
Sanitary Sewer availability	Lucas Co. Engineer, Fulton Co., Swancreek Twp., Poggemeyer, Proudfoot	<0.5 miles from sewer line or served area	--	--	--	6
Water availability	Lucas Co. Engineer, Fulton Co., Swancreek Twp., Poggemeyer, Proudfoot	<0.5 miles from water line or served area	--	--	--	5
Recreation-parks, trails-open space ¹ : distance	Metroparks, County auditors, ODNR GIMS	0.001 - 0.5 miles	0.5 - 1 miles	1 - 1.5 miles	1.5 - 2 miles	4
Cultural attractions: density in 1 mile radius	doToledo.org website ²	>0.03 mile ²	0.02 - 0.03 mile ²	0.01 - 0.02 mile ²	>0 - .01 mile ²	3
Quality of schools ³	Ohio Department of Education	97.66 - 104	92.0 - 97.65	86.16 - 91.9	80.4 - 86.15	2
Existing commercial: density in 1 mile radius	Lucas and Fulton County Auditors	>22.3 mile ²	14.8 - 22.3 mile ²	7.4 - 14.8 mile ²	<7.4 mile ²	1

¹ Includes Metroparks, ODNR lands, City parks, and bike trails.

² Includes “Arts and Entertainment” and “Attractions” listed on website.

³ Performance Index Score for 2005 - 2006.

note: The top 20% (by area) includes all areas with a value >48. (Excluding areas that are perpetually protected).

D.1.3. Data Collection, Selection, Manipulation

Data was collected from many sources: from individuals and agencies; in person, via email or mail; from staff libraries; from online databases or websites. Often, many options were available to choose from for a particular criteria and it was up to the staff to determine which was most appropriate, based on many factors:

- Similarity to the intended characteristic
- Most recent dataset and/or frequency of updates
- Resolution: fine enough and similar to the other datasets' resolution
- Most reliable collection methodology and supporting documentation (metadata)
- Dataset format: media (paper, computer disk, electronic file [.pdf, .xls, etc.]); GIS-compatibility (incompatible, scannable, ready [raster vs. vector])

Data collection began around September of 2006 and was substantially done by December of 2007, although missing data and updates were included as late as spring of 2008. The sources and metadata for the final criteria are listed in tables 4-8. Because most of the soils and other data acquired from government agencies had similar and useful characteristics, staff decided to attempt to collect data in the following format: electronic (versus paper); 30 meter resolution; raster (ESRI grid) and vector GIS datasets; Excel (.xls) or Access (.mdb or .dbf) databases; North American Datum 1983 (NAD83); projection of Ohio State Plane North, feet units (OSPN). Because the GIS model would be classifying the value of each piece of land for each characteristic, raster data was more useful.

As discussed above, the top six criteria to select priority areas were selected for PCAs, PAAs, and each of the three types of PDAs. These criteria are summarized in Table 10.

Table 10. Priority Area Selection Criteria Summary

Priority Agricultural Areas	Priority Conservation Areas
farmland preservation areas (including easements)	wetland presence
Prime or Locally Important farmland	rare plant/animal occurrences
farm size (reflecting “investment level”)	forest patch size
CAUV enrollment (for “investment level”)	protected conservation areas (excluded from PCAs)
current farmland	floodplain presence
drainage capacity (for “existing ditches”)	riparian corridor (replaced “high-quality buffers”)
Priority Commercial Development Areas	Priority Industrial Development
distance to incorporated areas	public water availability
public water availability	distance to highways
population density (for “current commercial market”)	public sanitary sewer availability
public sanitary sewer availability	brownfield presence
per capita income	distance to incorporated areas
distance to highways	distance to interchanges and major intersections
Priority Residential Development Areas	
public sanitary sewer availability	
public water availability	
distance to recreation attractions	
density of cultural attractions	
quality of schools	
commercial resources	

D.1.3. GIS Analysis

The basic concept of the modeling process was that the watershed would be analyzed using the ESRI ArcGIS 9.1 software, pixel by pixel, for each of the selection criteria to determine the value of that characteristic for that 900 m² piece of landscape. Based on the described selection process, it was evident that some characteristics were more influential to whether or not an area should be designated a Priority Area. After much deliberation and many votes, the Technical Committee recommended that a weighting process be applied to the six criteria selected for each of the five land uses. This would be a relative weighting process from a multiplier for the most influential down to a multiplier for the least influential; these weights would not reflect the actual number of votes for any given characteristic (Tables 4-8).

Depending on the characteristic, the pixel's characteristic value might be binary (wetland presence, CAUV enrollment), nominal (prime soils with modification/prime without modification/locally important, soil drainage capacity) or integer (distance to highways or incorporated areas). Because of this, the Technical Committee concluded that the range of possible values of the characteristics often reflected a range of influence of that value on the determination of whether or not the area in question should be designated a Priority Area, e.g., a "prime soil without modification" was more influential than a "prime soil with modification" or a "locally important soil." Therefore, in addition to the ranking system, the Technical Committee recommended creating a ranking system from four (4x) to one (1x) for each characteristic (Tables 4-8).

This "ranking and weighting" system is used regularly in habitat selection models. With this system, for each of the five land uses, each pixel could score from zero (0) for not exhibiting any level of any of the six characteristics to 84 for exhibiting the highest value for each of the six characteristics: 24 points for the 1st-ranked characteristic, 20 for the 2nd, 16 for the 3rd, 12 for the 4th, 8 for the 5th, and 4 for the 6th. This 0-84 range variability was a result of the 144 possible characteristic-value combinations (6 criteria X 6 weights X 4 ranks).

APPENDIX E

Priority Area Maps of Individual Political Jurisdictions

E.1. Priority Area Maps

This appendix contains additional maps showing details of the priority areas. The maps are listed below.

Map	Description
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M-H	Model-generated priority areas without changes from individual jurisdictions
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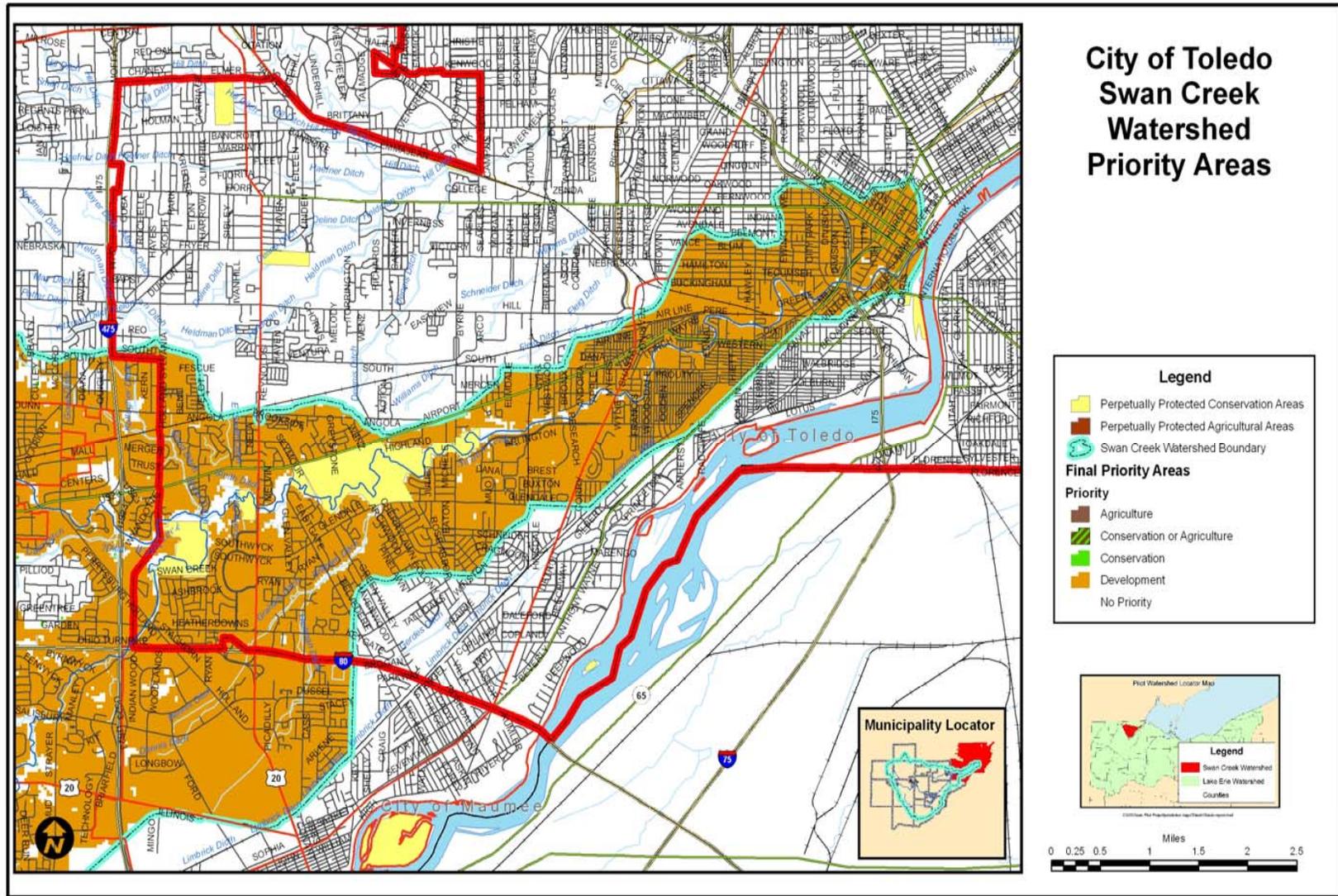
This map shows the combined priority areas for conservation, agriculture, and development solely based on the GIS model using criteria selected by the technical committee.

All the rest of the maps in this appendix are final priority areas and reflect changes requested by the jurisdictions. These maps are the same as the watershed-wide priority area map (M-A); the only difference is that these maps show the same priority areas, but zoomed into individual jurisdictions. All these maps have been endorsed by local jurisdictions, except where labeled “not participating.”

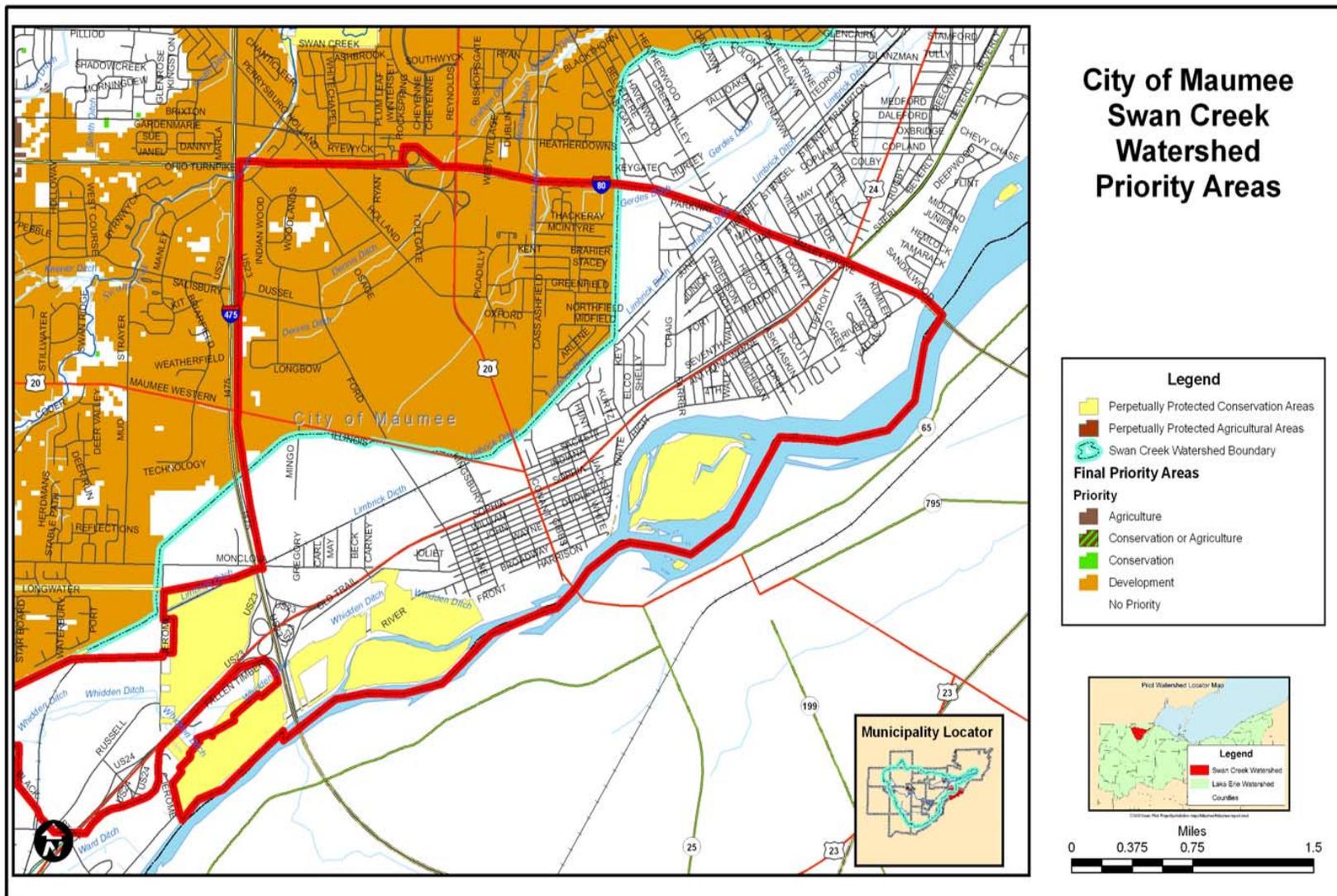
Map	Description
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M-I	City of Toledo
M-J	City of Maumee
M-K	Waterville Township
M-L	Villages of Waterville and Whitehouse
M-M	Springfield Township
M-N	Village of Holland [not participating]
M-O	Monclova Township
M-P	Spencer Township [not participating]
M-Q	Hardin Township [not participating]
M-R	Airport – Oak Openings Area (AOOA)
M-S	Swanton Township
M-T	Providence Township
M-U	Village of Swanton
M-V	Swan creek Township
M-W	York Township and Village of Delta
M-X	Fulton, Amboy, and Pike Townships
M-Y	Washington Township

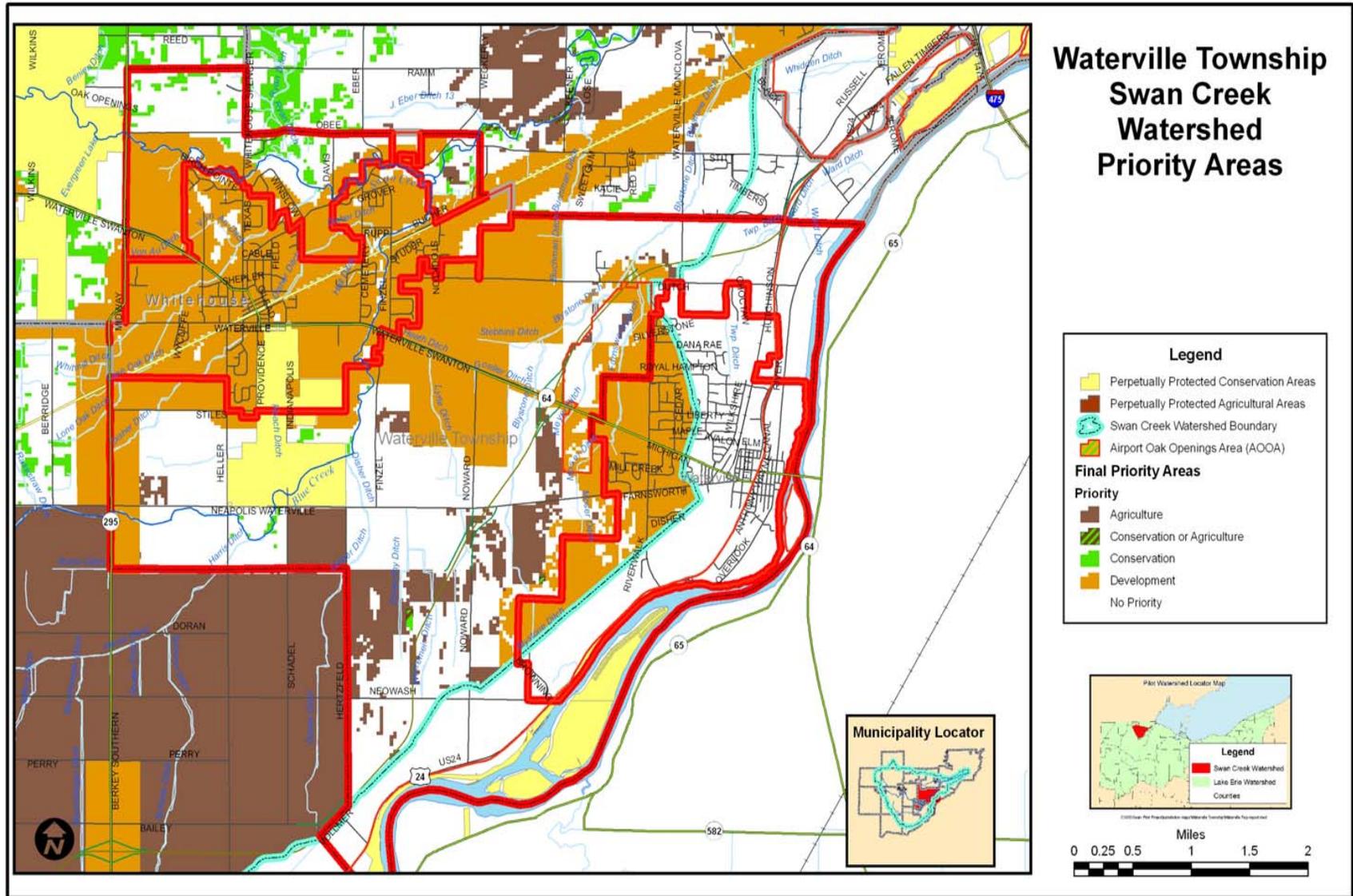
MAP M-I See enclosed CD for high-resolution map.



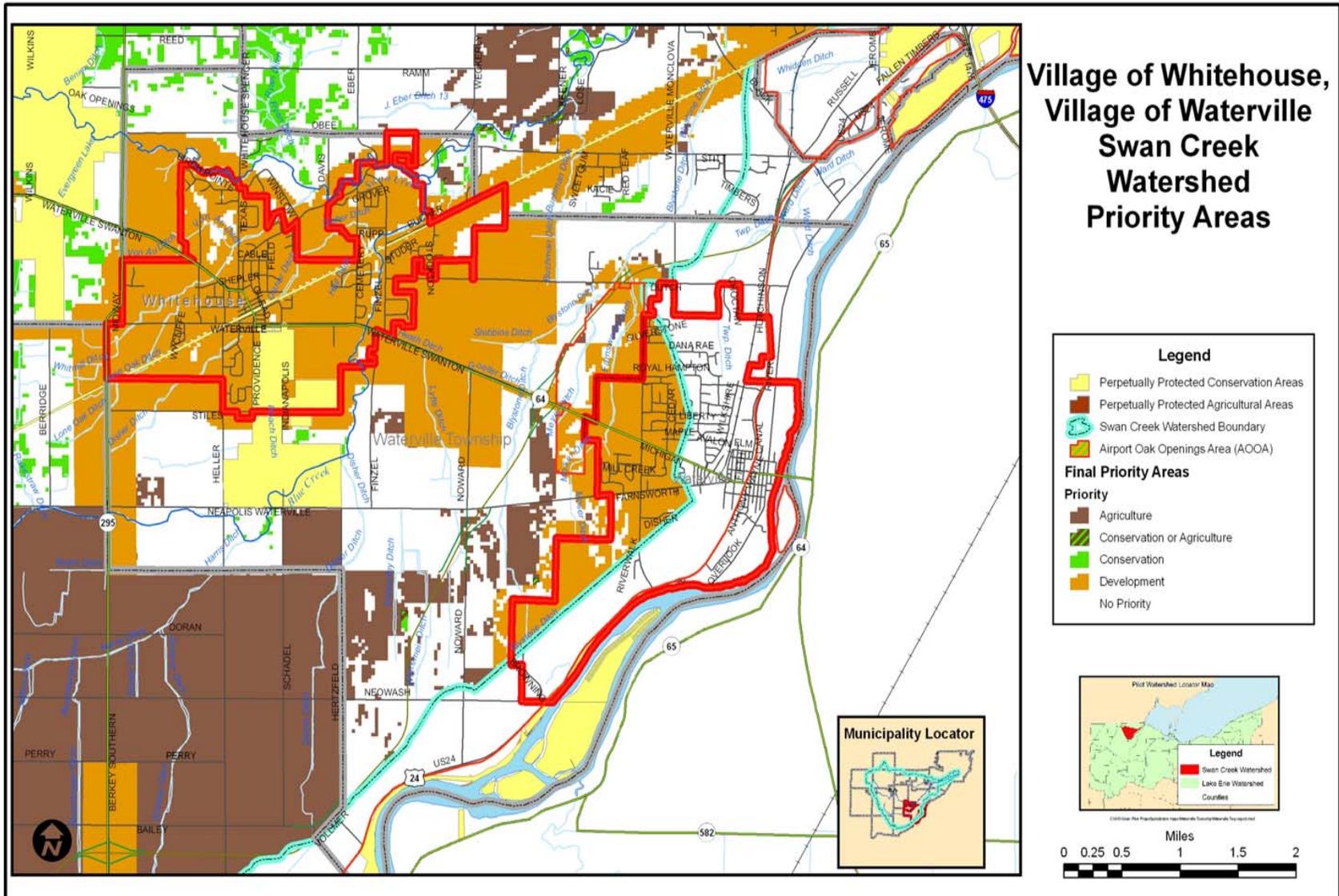
MAP M-J See enclosed CD for high-resolution map.



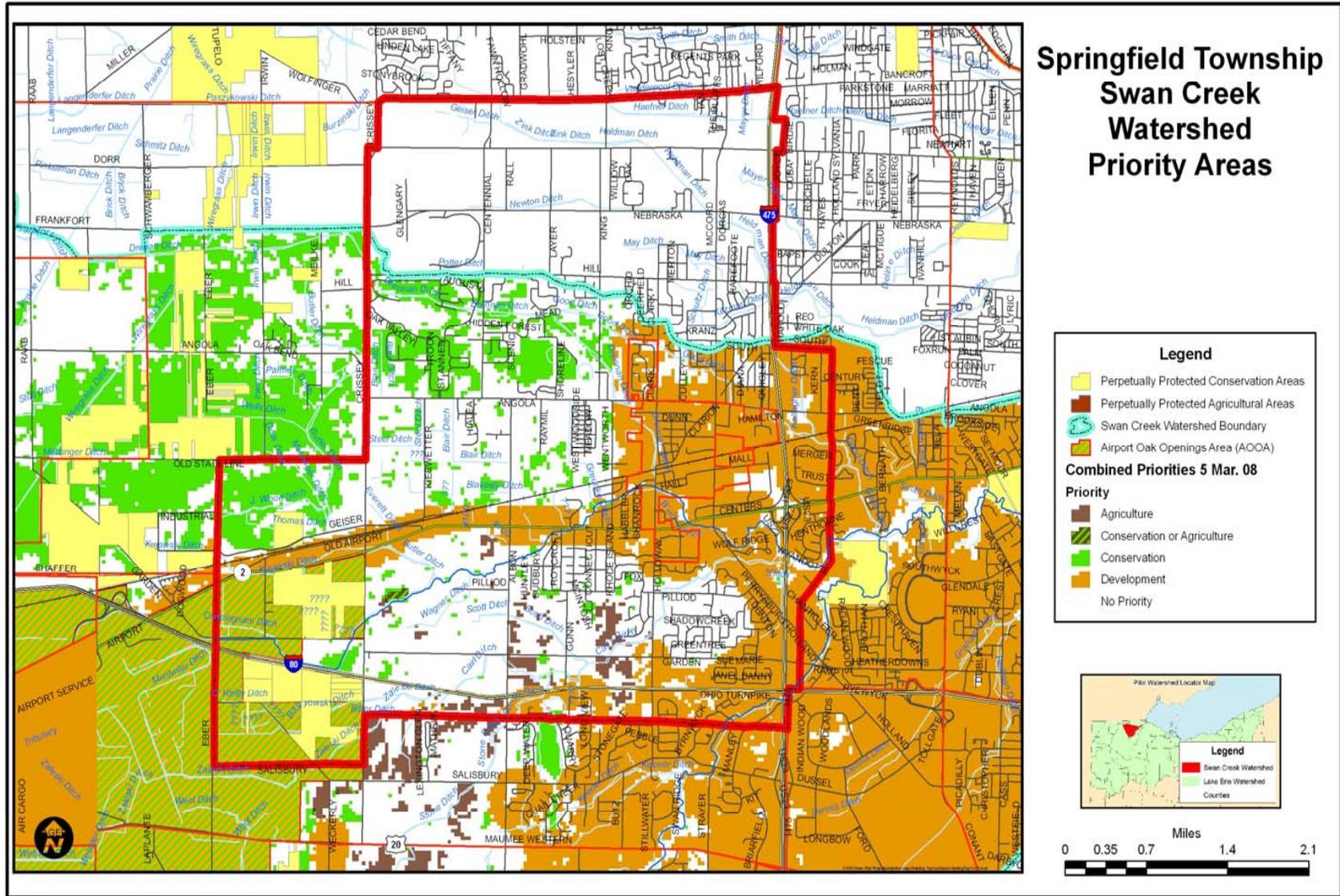
MAP M-K See enclosed CD for high-resolution map.



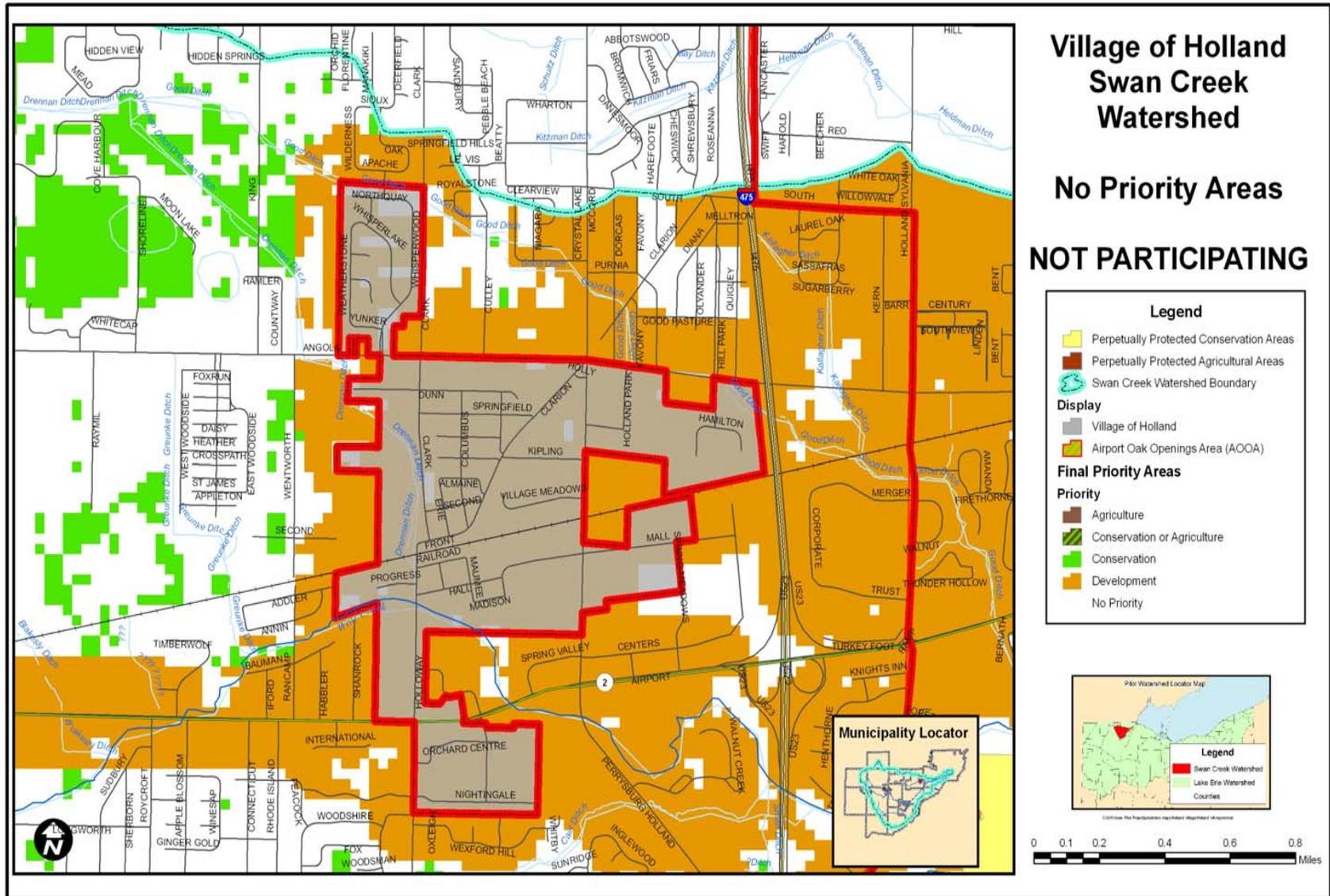
MAP M-L See enclosed CD for high-resolution map.



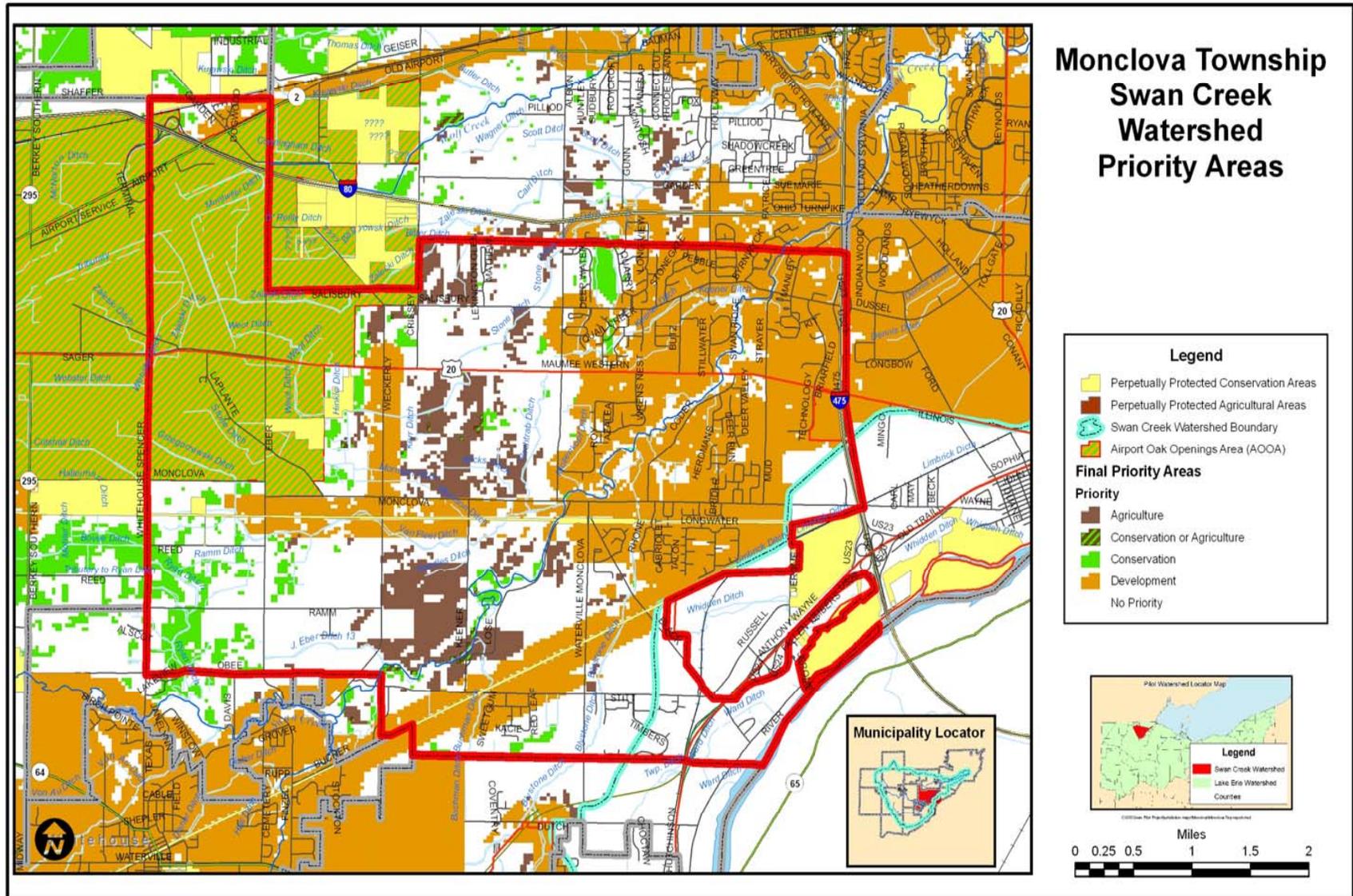
MAP M-M See enclosed CD for high-resolution map.



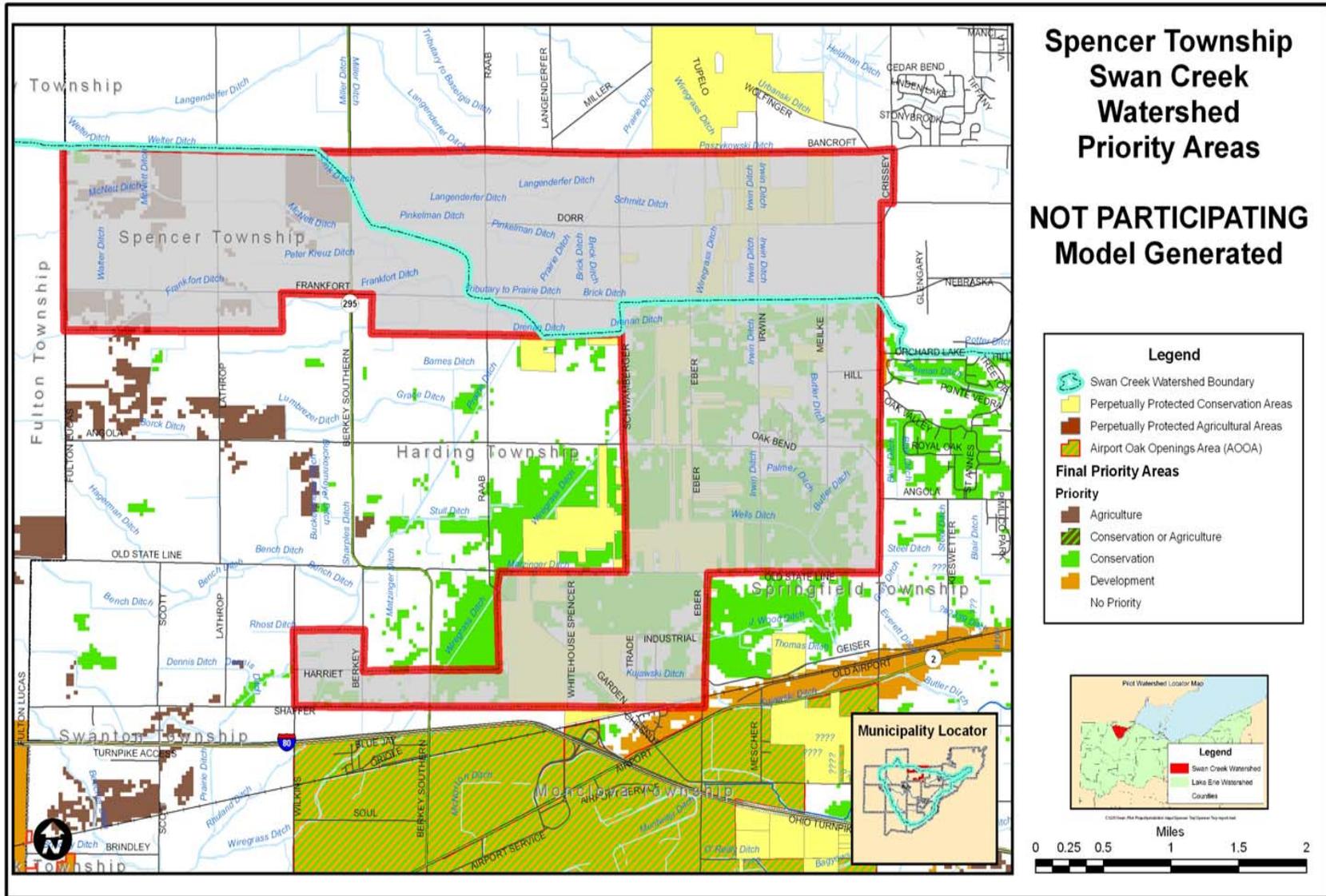
MAP M-N See enclosed CD for high-resolution map.



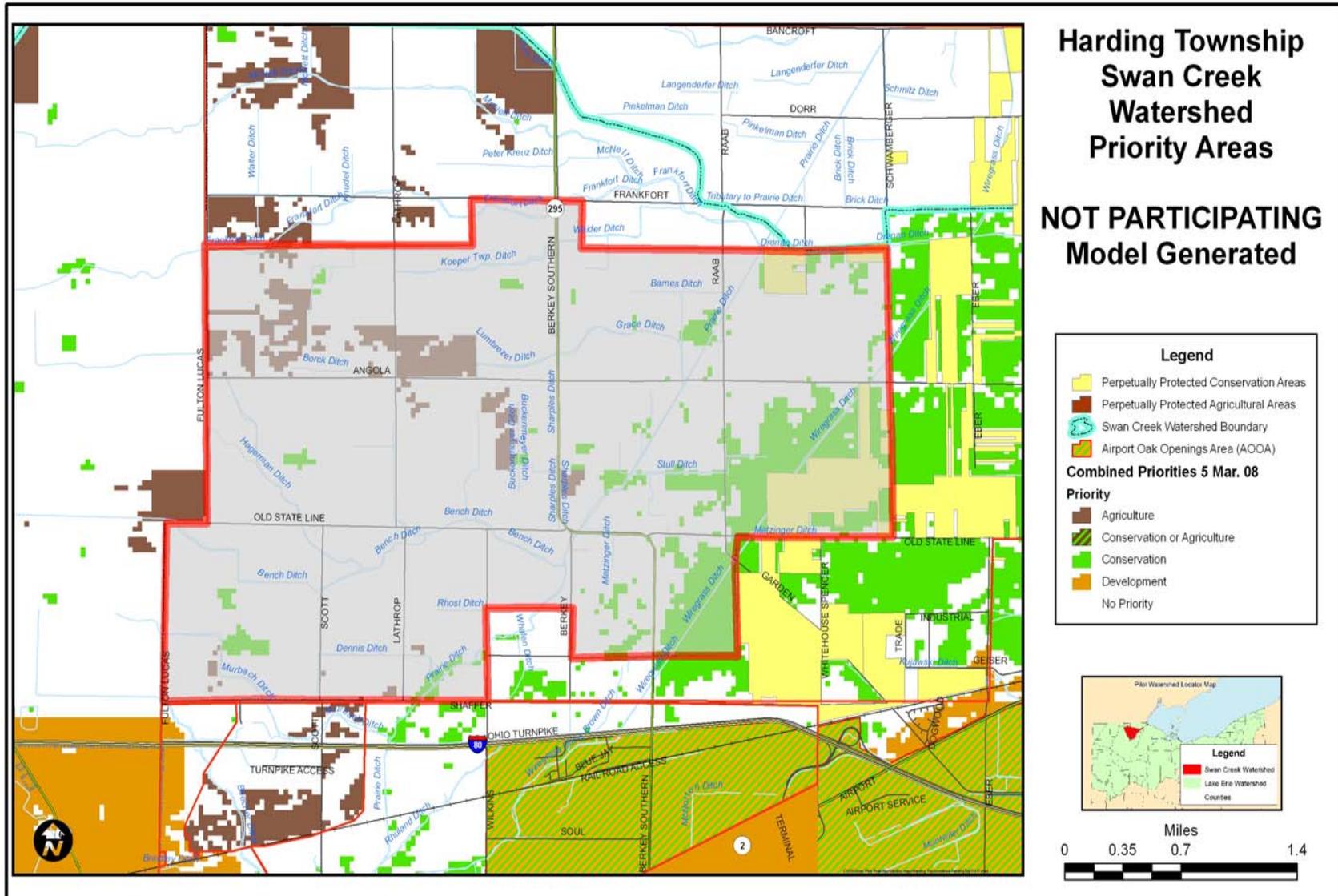
MAP M-O See enclosed CD for high-resolution map



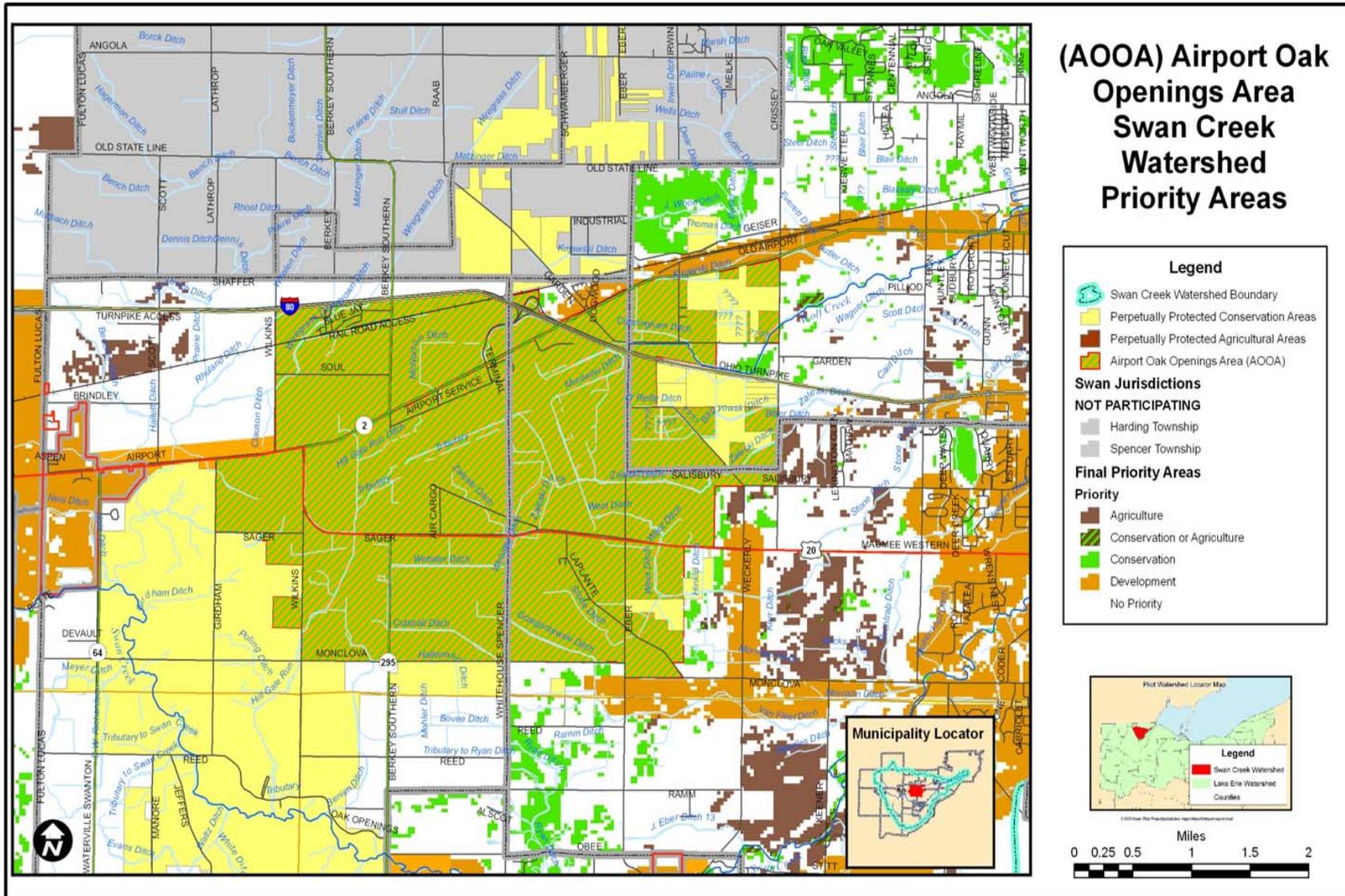
MAP M-P See enclosed CD for high-resolution map.



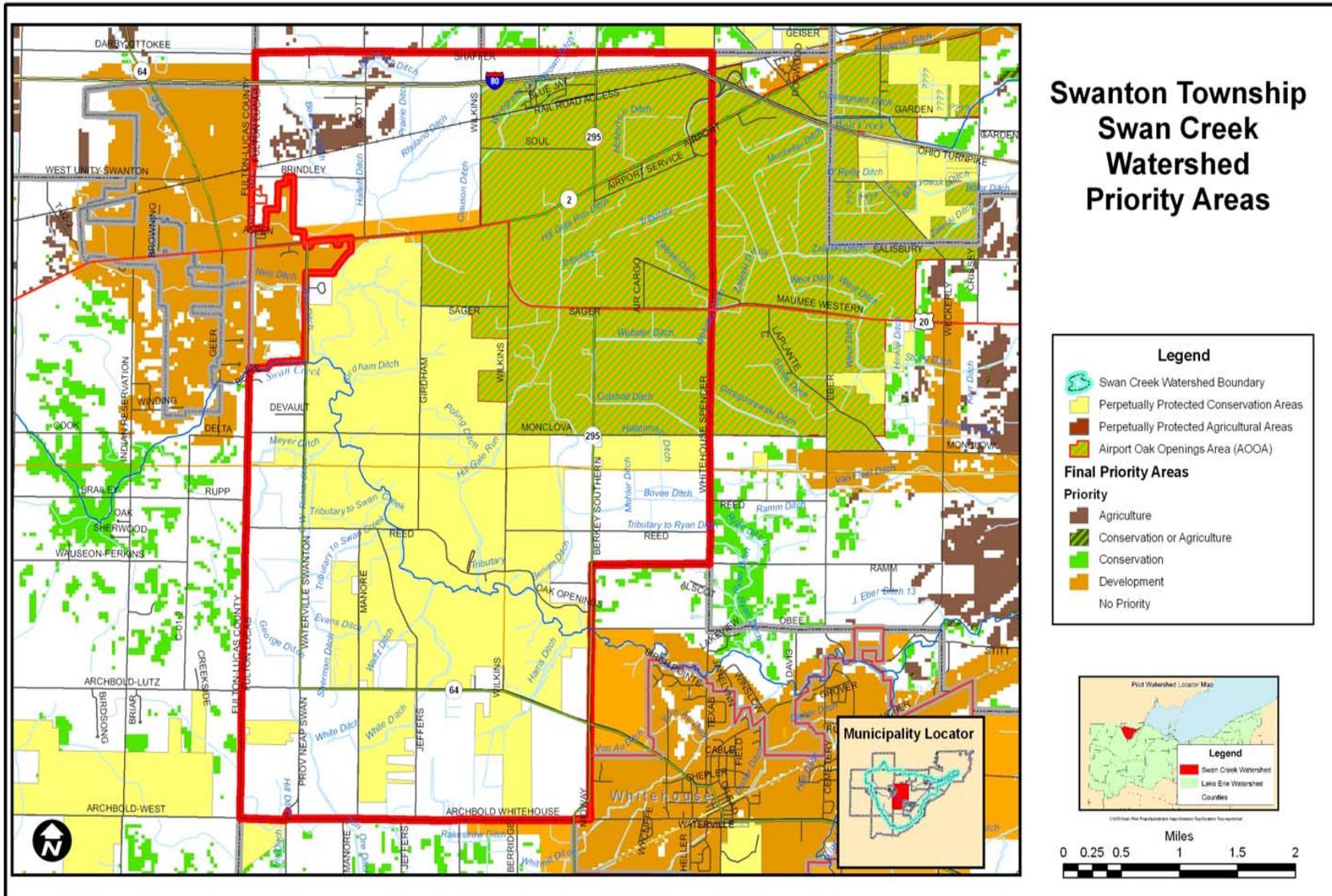
MAP M-Q See enclosed CD for high-resolution map.



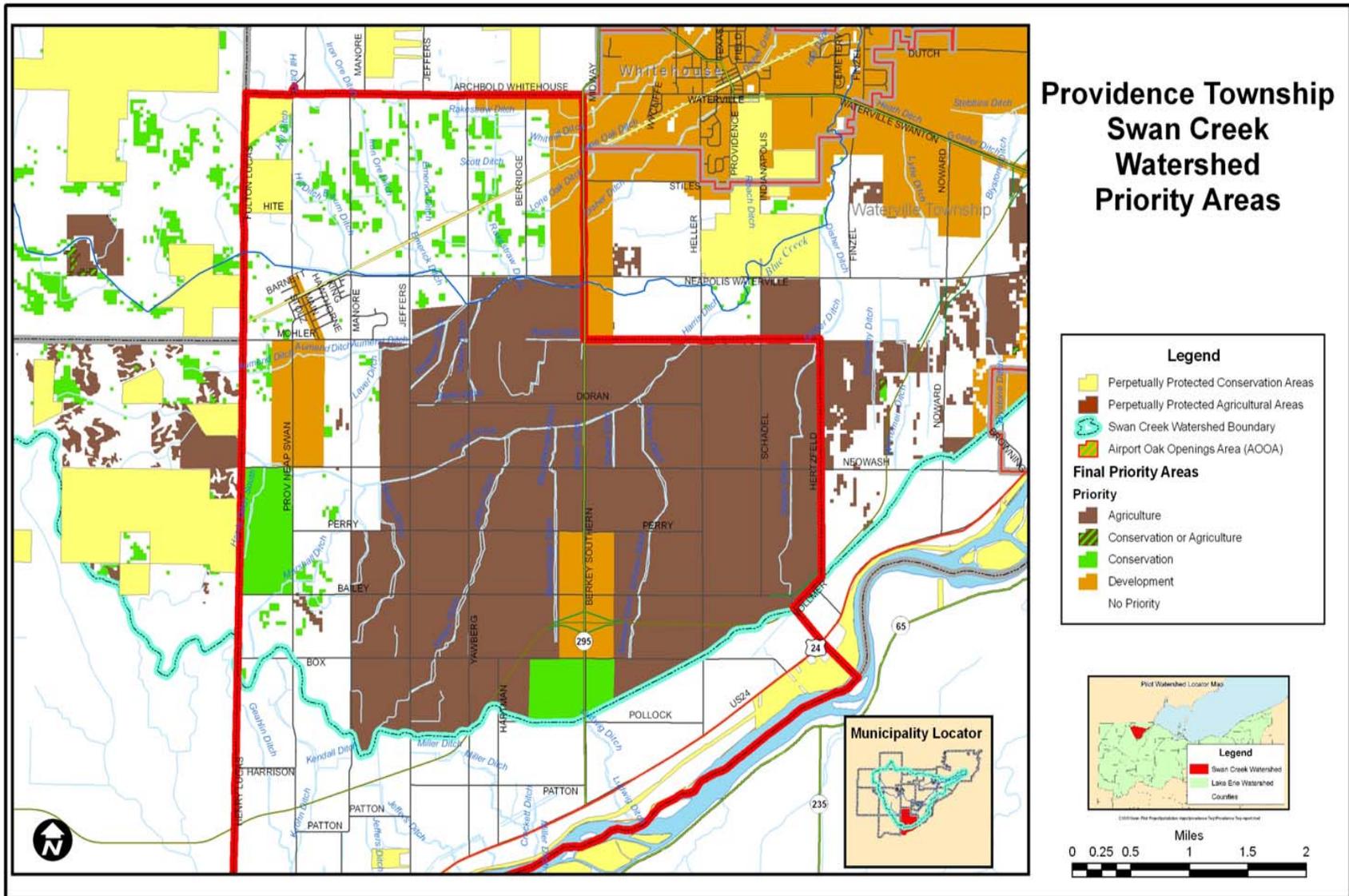
MAP M-R See enclosed CD for high-resolution map.



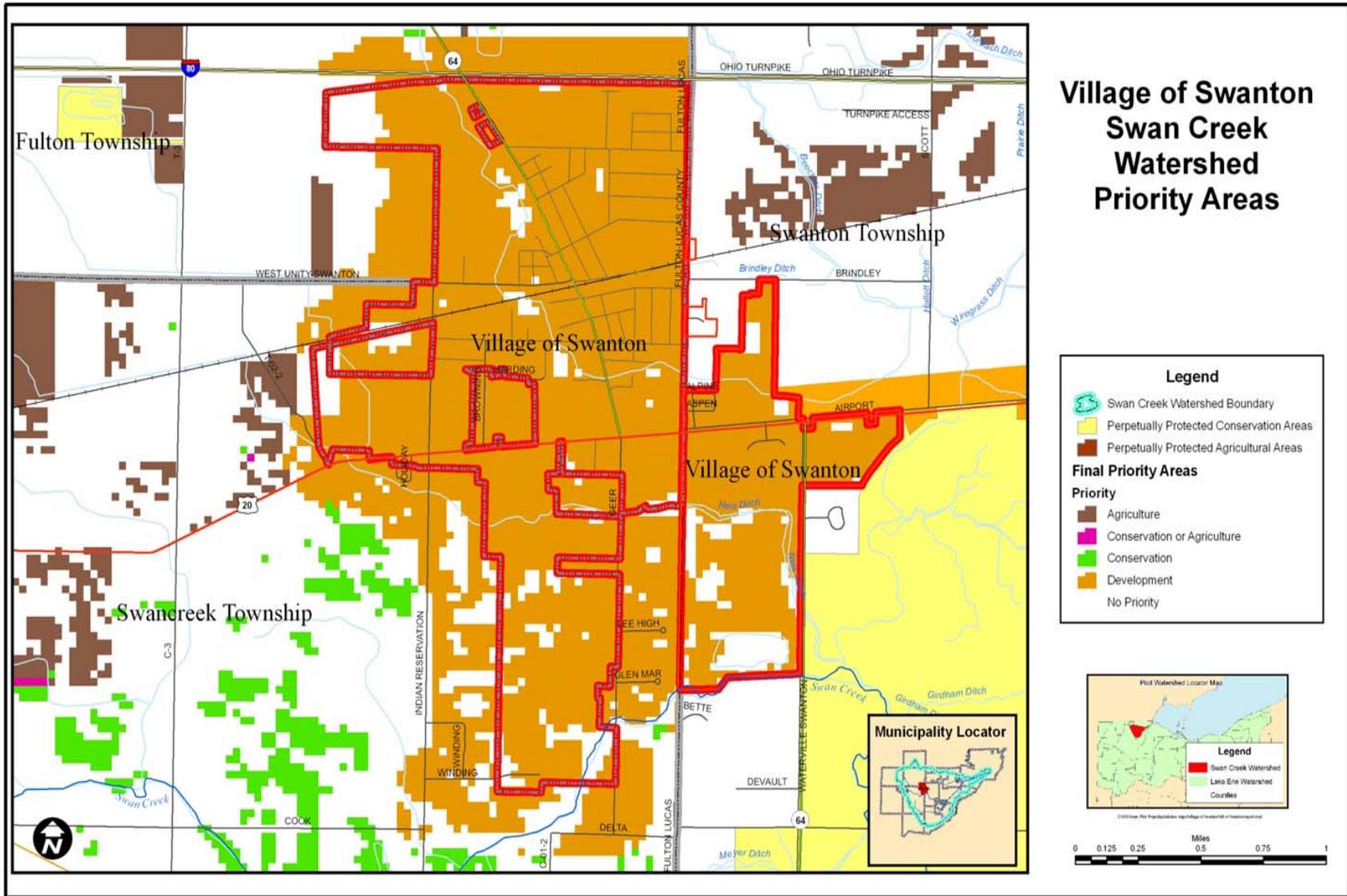
MAP M-S See enclosed CD for high-resolution map.



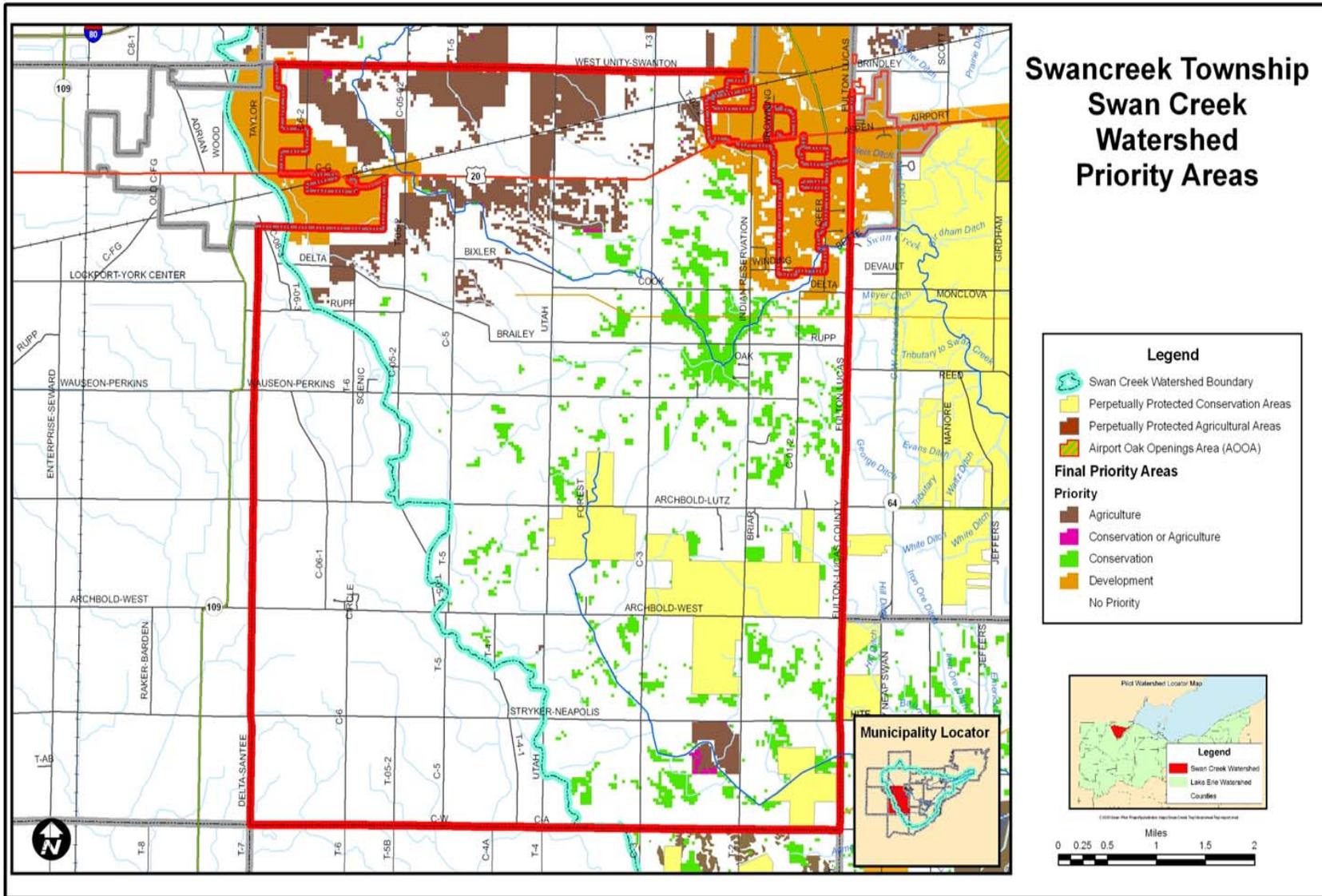
MAP M-T See enclosed CD for high-resolution map.



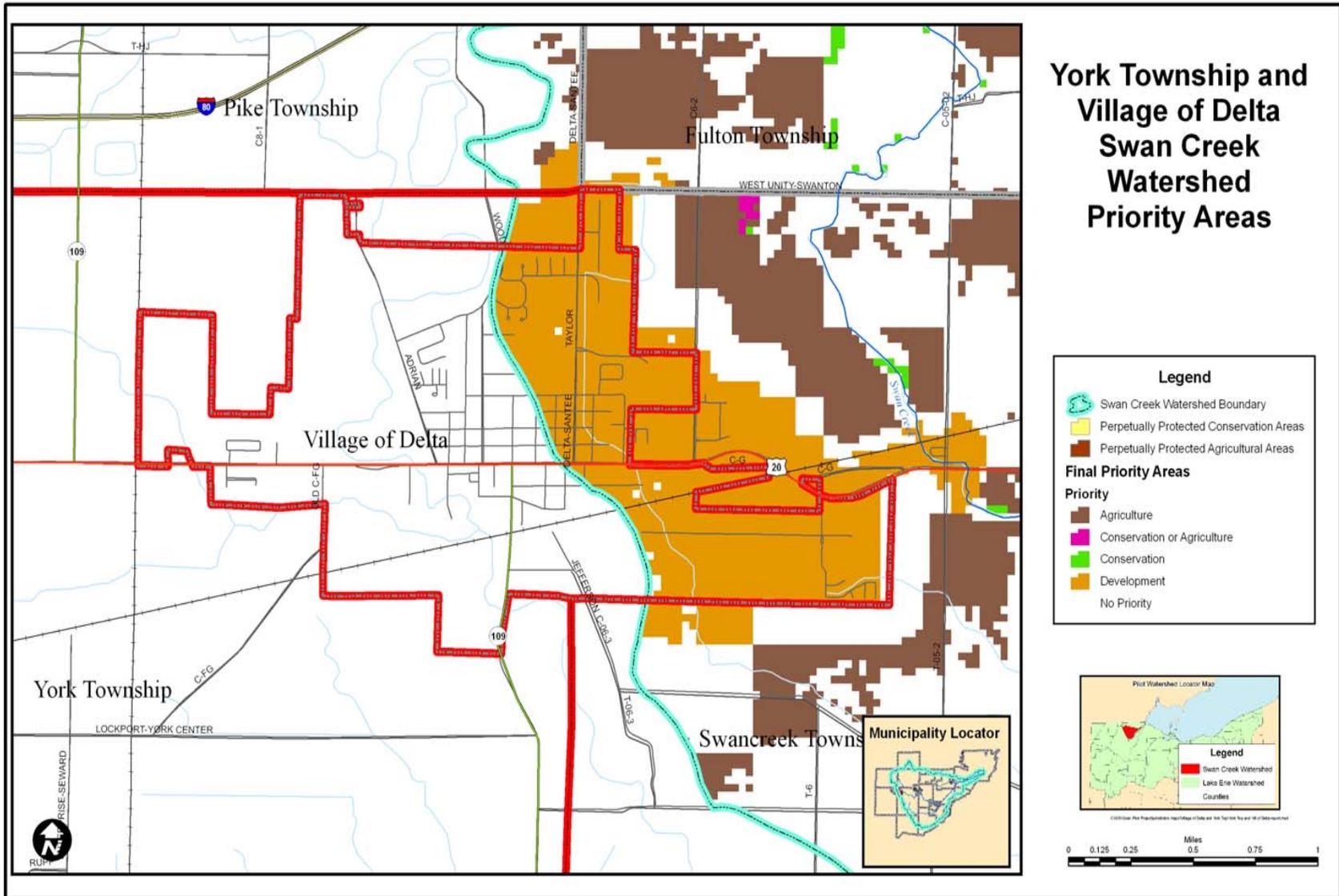
Map M-U See enclosed CD for high-resolution map.



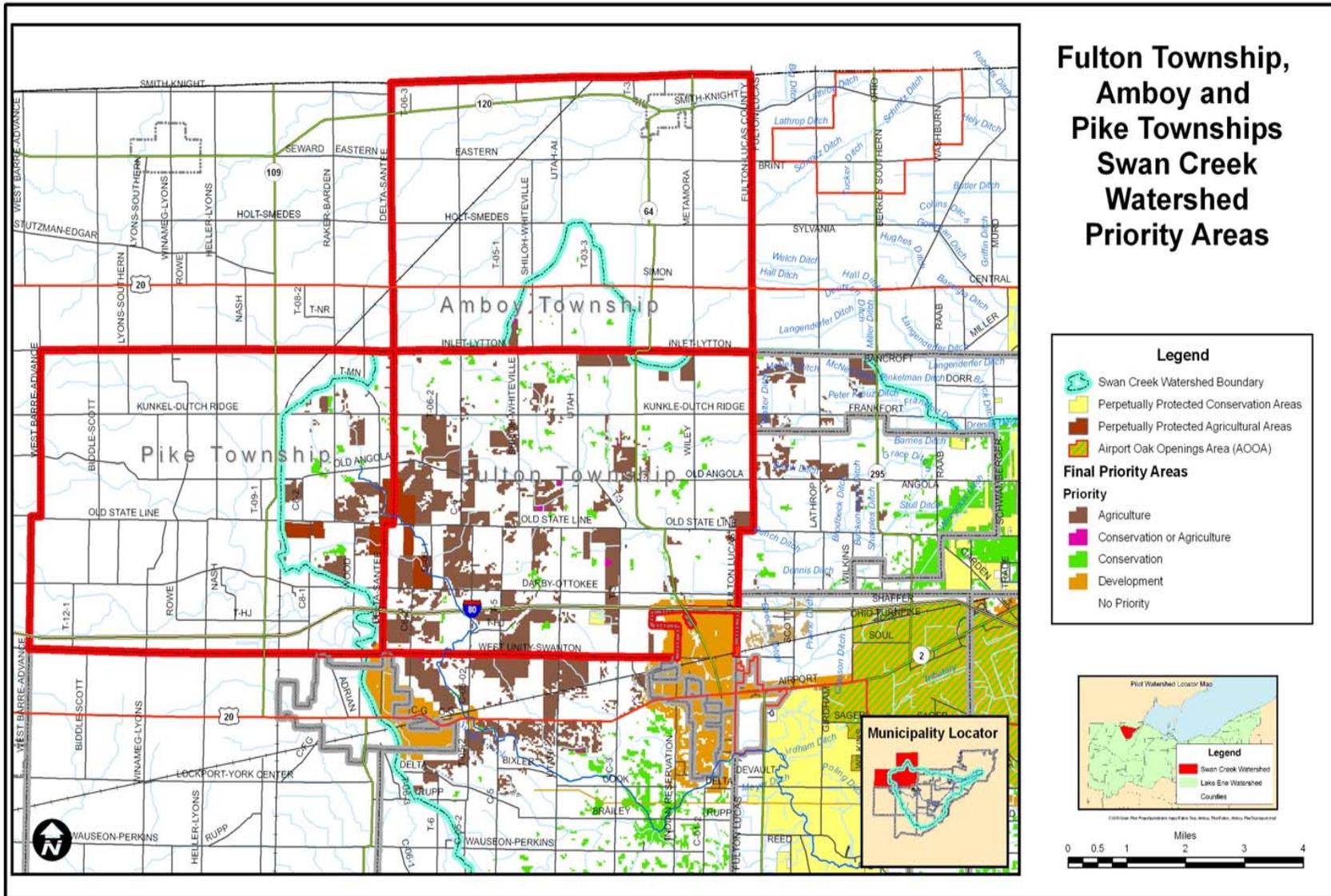
Map M-V See enclosed CD for high-resolution map.



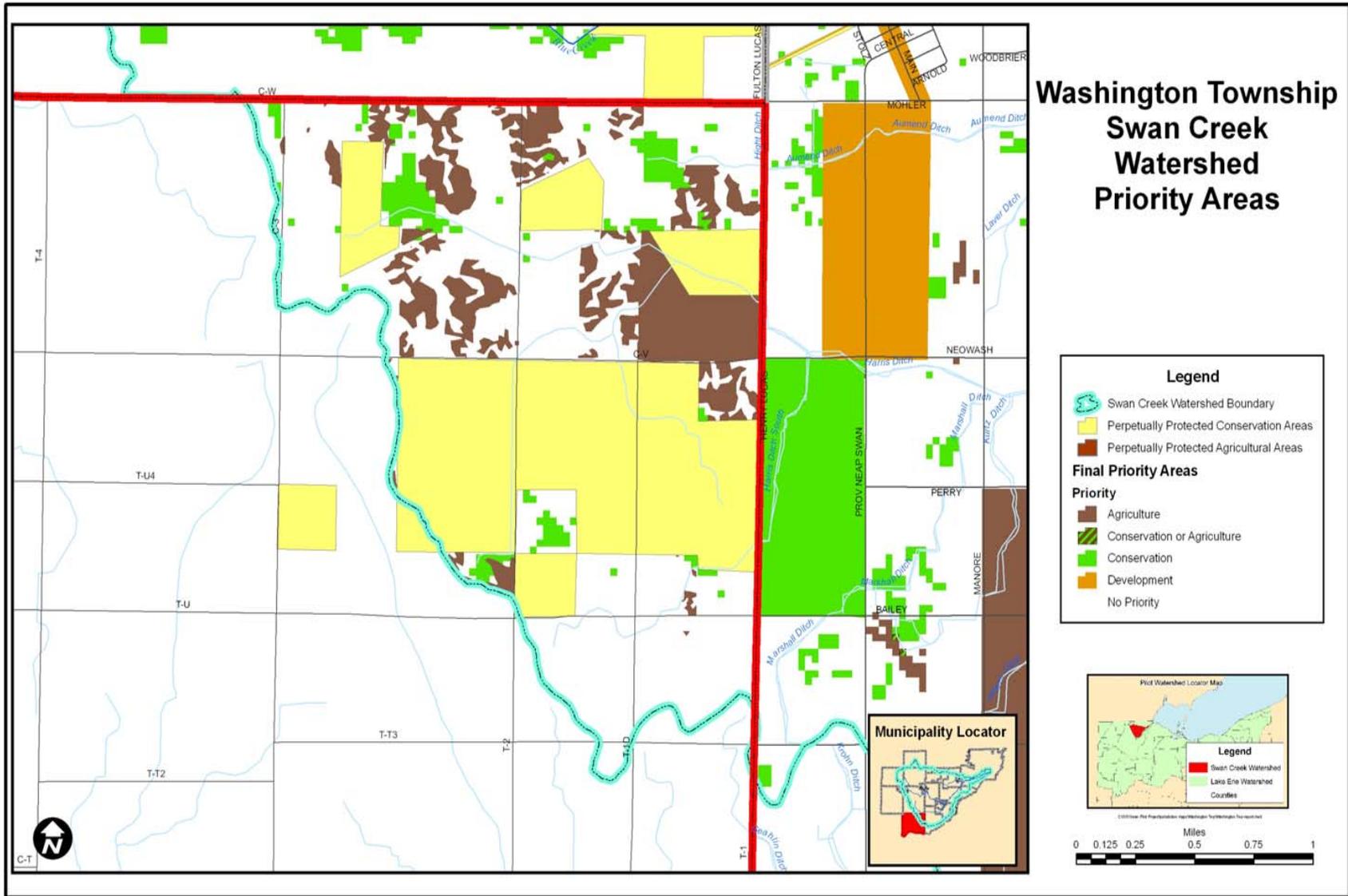
Map M-W See enclosed CD for high-resolution map.



Map M-X See enclosed CD for high-resolution map.



MAP M-Y See enclosed CD for high-resolution map.



APPENDIX F

Watershed Planning Process

F.1. Watershed Planning Process

As discussed in the main body of this report, the proposed concept was to form a watershed planning committee with representation from the political jurisdictions, and a technical committee. The Technical Committee would conduct modeling would be done within the Technical Committee. The Watershed Planning Partnership, consisting of elected officials from the 23 jurisdictions, would review and approve Priority Area maps. Each jurisdiction's representative on the partnership would take recommendations to that jurisdiction's board for formal action. Final approval of the Priority Area maps may have required at most a single presentation to the jurisdiction to answer any remaining questions and to receive the vote on the support resolution. This is reflected in the "Target Activity Timeline" below which shows five partnership meetings and only three months of individual jurisdictional presentations from June to August, 2008.

Because the governmental partnership never gelled, Priority Area maps were reviewed within the Technical Committee, resulting in a much less watershed-scale and much more labor-intensive outreach program, as shown in the "Actual Activity Timeline." Since the Technical Committee did not include many decision-making officials, all Priority Area maps had to be presented to the jurisdictions individually. In some cases, several presentations were needed to address questions and secure input from multiple agencies. The jurisdiction-by-jurisdiction process also meant that decisions were made at the local level. A jurisdiction that endorsed the Swan Creek BGP would review and vote on Priority Areas within its boundaries, but would not see priority area changes made afterward affecting other jurisdictions until the final meeting. Because of the size and division of the watershed, this entailed over 20 presentations, in addition to five watershed presentations. The most important shortcoming to this approach is that it did not allow jurisdictions to discuss their individual needs and plans among themselves and work together to create a truly watershed-based land use plan.

Table 9. Watershed Plan Implementation Timeline

Date	Target Activity	Actual Activity
June 14 2005		Initial meeting for Swan Creek jurisdictions: Maumee Municipal Building 6:30 PM
January-06		Pilot Watersheds meeting: EcoCity presentation on using GIS Priority Area modeling
February-06		Presentation: Western Lake Erie Sierra Club Watershed Planning Partnership meeting: Springfield Township Watershed Planning Partnership meeting: Swancreek Township
March-06		Pilot Watersheds meeting Presentation: Fulton County
April-06		Watershed Planning Partnership meeting: Monclova Township Pilot Watersheds meeting
May-06		Technical Committee meeting Pilot Watersheds meeting
July-06		Technical Committee meeting
August-06		Technical Committee meeting
September-06	Technical Committee meeting: discuss Priority Area criteria	Technical Committee meeting: discuss Priority Area criteria
October-06	Technical Committee meeting: discuss Priority Area criteria	Presentation: Fulton County Technical Committee meeting: discuss Priority Area criteria
November-06	Technical Committee meeting: discuss Priority Area criteria	Technical Committee meeting: discuss Priority Area criteria
December-06	Technical Committee meeting: discuss Priority Area criteria Watershed Planning Partnership meeting: present Priority Area criteria without conclusions	Watershed presentation: present Priority Area criteria without conclusions
January-07		Technical Committee meeting Presentation: Lucas County Township Trustee Association

Date	Target Activity	Actual Activity
February-07	Technical Committee meeting: show draft Priority Area maps and PowerPoint presentation of Project Press release announcing draft Priority Areas and inviting comment	Pilot Watersheds meeting
March-07	Watershed Planning Partnership meeting: present Priority Area maps and discuss outreach and focus groups	Technical Committee meeting: Priority Area criteria weighting; GIS modeling; preliminary PDA and PCA maps Meeting with Toledo-Lucas County Port Authority Pilot Watersheds meeting: data, Priority Area criteria and GIS modeling
April-07		Technical Committee meeting: preliminary PAA and PDA residential maps; PAA criteria; criteria weighting; Priority Area thresholds; public outreach plans Transfer of Development Rights (TDR) forum: learn how TDR may be used to preserve natural areas and agricultural land Presentation: Swanton Township Pilot Watersheds meeting
May-07		Technical Committee meeting: GIS modeling update; incentives program; planning for watershed presentation
June-07	Technical Committee Meeting	Presentation: Village of Waterville Technical Committee meeting: comments on draft Priority Area maps; PowerPoint presentation; how to respond to public input Watershed presentation: PowerPoint presentation; discussed final Priority Area criteria; presented draft Priority Area maps; discussed use with zoning and Comprehensive Plans. 30 attendees
July-07		Technical Committee meeting: watershed meeting recap; need for more PDA area; incentives status Pilot Watersheds meeting

Date	Target Activity	Actual Activity
August-07	Press release asking for public input and feedback on Priority Areas Meetings with focus groups, Watershed Planning Partnership , subwatershed regions and individual jurisdictions: present draft Priority Areas and get feedback Watershed Planning Partnership meeting: report focus groups' and others' feedback	Technical Committee meeting
September-07	Technical Committee meeting: review focus groups' and others' feedback	Presentation: Ohio Soil & Water Conservation District Meeting
October-07	Technical Committee meeting: refine Priority Areas and present first draft of final report	Presentation: Swanton Township Zoning Board Pilot Watersheds meeting with State Advisory Working Group
November-07	Technical Committee meeting: refine Priority Areas and second draft of final report	Presentation: Ohio Planning Commission Presentation: Fulton County Planning Commission, including jurisdictions Technical Committee meeting
December-07		Technical Committee meeting Watershed presentation: Plan update; land use & comprehensive planning; public comment period Presentation: Stormwater Coalition
January-08	Press release announcing draft report and upcoming Watershed Planning Partnership Watershed Planning Partnership meeting: present draft report, PowerPoint and discuss progress and next steps	Presentation: Swanton Township Trustees Pilot Watersheds meeting Meeting with Swanton Township representative
February-08	Technical Committee meeting: revise report based on feedback from Watershed Planning Partnership discussion	Presentation: Monclova Township Trustees Presentation: Toledo City Council Presentation: Waterville Village Council

Date	Target Activity	Actual Activity
March-08	Technical Committee meeting: revise report based on feedback from Watershed Planning Partnership discussion	Presentation: Waterville Village Planning Commission Presentation: Swancreek Township Trustees Technical Committee meeting: resolution language modification; status of jurisdiction presentations, requested changes; incentives program Presentation: Waterville Village Economic Development Committee Presentation: Lucas County Township Trustee Association meeting on Best Local Land Use Practices with Kirby Date
April-08		Pilot Watersheds meeting: disincentives program Presentation: Washington Township Trustees Information packet: City of Maumee
May-08	Press release announcing Plan status and upcoming Watershed Planning Partnership meeting Watershed Planning Partnership meeting: present final draft of report; provide model resolution language for and ask jurisdictions to adopt Priority Areas	Presentation: Springfield Township Trustees Technical Committee meeting: status of resolutions; requested changes; planning for final meeting; disincentives and incentives program; Final Report; preliminary list of implementation projects Meeting with Washington Township representative
June-08	Begin presenting Priority Areas and report to individual jurisdictions	Presentation: Whitehouse Village Council
July-08		Meet with speaker for Final Meeting Presentation: Waterville Township Trustees Pilot Watersheds meeting: support resolution status; Final Report; future steps; disincentives program Technical Committee meeting: resolutions status; requested changes; Final Meeting and Report status; Pilots meeting recap; disincentives program
August-08		Presentation: Holland Village Council Technical Committee meeting: State Assistance Working Group (SAWG) activities; resolutions status; requested changes and modifications; persistent concerns/questions; Final Meeting planning

Date	Target Activity	Actual Activity
September-08	TMACOG Environmental Council presentation	Presentation: Providence Township Trustees Technical Committee meeting:
October-08	TMACOG Board of Trustees presentation	Technical Committee meeting Final Meeting: watershed presentation to jurisdictions, agencies and public Pilot Watersheds meeting
December-08	Secure endorsement by 75% of jurisdictions, complete Final Report, submit Final Report and Priority Areas to Ohio Lake Erie Commission	Complete Final Report, submit Final Report and Priority Areas to Ohio Lake Erie Commission, extended to March 2009

APPENDIX G

**Lake Erie Balanced Growth Program Fact Sheets:
SWAG, State Program Inventory, State Incentives,
Financial, Technical, and Special Incentives, and
Streamlining and Predictability Incentives**

Lake Erie Balanced Growth Program State Assistance Work Group

What is the role of the State Assistance Work Group?

One of the state incentives for local governments is the opportunity to work with state agencies through the State Assistance Work Group. The State Assistance Work Group will be charged with assisting the Balanced Growth Watershed Planning Partnerships (WPPs) and participating local governments in identifying technical and financial resources that can support Priority Conservation Areas (PCAs) and Priority Development Areas (PDAs). The state agencies will assist in identifying sources of support, providing agency guidance on utilizing support, and promoting awareness of the local WPP intentions within the agencies.

Which state agencies are currently represented on the State Assistance Work Group?

The agencies represented include the six member agencies of the Ohio Lake Erie Commission (Ohio Departments of Natural Resources, Development, Transportation, Agriculture, and Health, and the Ohio Environmental Protection Agency), along with the Ohio Water Development Authority. These members have prior knowledge and involvement in the Lake Erie Balanced Growth Program and will be considered the chartering members. Federal agencies that provide funding for development and conservation projects, other state agencies, and appropriate institutional partners will also be invited as deemed appropriate by the chartering member state agencies.

What are the specific goals of the State Assistance Work Group?

Help Watershed Planning Partnerships and local governments identify the most appropriate programs from the State Program Inventory that will support the PDA and PCA areas in the watershed.

Provide the agencies with knowledge and familiarity with each Balanced Growth Watershed Plan and the local development and conservation goals.

Evaluate the impact of proposed rule changes by the state agencies and provide comments that best incorporate balanced growth considerations as new rules or rule revisions are developed. Review funding priorities to provide suggestions on how they can be supportive of balanced growth.

Identify any additional programmatic resources or policy changes that will help align

state programs and polices with Balanced Growth Watershed Plans.

Develop public information resources (fact sheets and websites) to assist Watershed Planning Partnership s.

For more information, please visit <http://lakeerie.ohio.gov/> or call (419) 245-2514.

Lake Erie Balanced Growth Program State Program Inventory

How will the State Program Inventory help the Watershed Planning Partnership s?

This inventory is intended to be a resource for Watershed Planning Partnership s to help identify programs that will support conservation in Priority Conservation Areas and development or redevelopment in Priority Development Areas. These are existing state programs that have been identified as specifically impacting land use change decisions. The intent is that the state will consider the existence of PCAs and PDAs in the use of these programs to support land use planning and land use change that is beneficial to the local communities and to Lake Erie as outlined in the Lake Erie Protection and Restoration Plan.

How is the State Program Inventory presented?

The State Program Inventory is a list of state programs compiled by whether or not they will support Priority Conservation Areas or Priority Development Areas. The list is structured by conservation or development effect, and then by three factors: infrastructure, direct site impact, and planning/technical assistance services. It is currently contained as an appendix in the Lake Erie Balanced Growth Strategy, which was approved in an updated version by the Ohio Lake Erie Commission on December 12, 2007.

What is included in the State Program Inventory?

Conservation Programs - there are a total of 45 state programs and funding sources in the Inventory that could be used to support conservation in the PCAs. This includes one program for Metro Park infrastructure, 30 that are site specific (for example, site acquisition or restoration), and 14 for services (such as forestry or watershed action plan technical assistance).

Development Programs - there are a total of 109 state programs and funding sources in the Inventory that could be used to support development or redevelopment in the PDAs. This includes 33 programs for infrastructure (primarily transportation and water, through ODOT, OWDA, and OEPA), 65 that are site specific (for example, various community development programs), and 11 for services (such as minority business assistance or planning programs).

It should be noted that a few programs appear on both lists, since they could be used to support either conservation or development (for example, the ODNR - Division of Soil & Water Conservation, Streams and Storm Water Program serves a range of purposes).

For more information, please visit <http://lakeerie.ohio.gov/> or call (419) 245-2514.

Lake Erie Balanced Growth Program State Incentives for Local Governments

What is the fundamental principle to guide state agencies under the Balanced Growth Program?

If local governments can agree on areas within a watershed where development is to be encouraged (PDAs) and areas where conservation activities are to be promoted (PCAs), the State of Ohio will support those decisions by aligning state programs to support those decisions, and conversely will not utilize state programs to violate those locally based decisions.

What are the objectives of the state incentives package?

Promote economically and environmentally sound watershed-based planning by local governments

Provide incentives for development in PDAs

Promote redevelopment in PDAs

Provide incentives to promote conservation activities in PCAs

What is included in the state incentive package for local governments?

State Program Inventory - a list of all state programs and funding sources that could be used to support conservation in the PCAs and development or redevelopment in the PDAs.

Opportunity to work with state agencies through the State Assistance Work Group - this group is charged with assisting the participating local governments in identifying and obtaining technical and financial resources that can be used to support PCAs and PDAs.

Streamlining and Predictability - the State Assistance Work Group will develop methods to provide more advance predictability and streamlining for site-related decisions in PCAs and PDAs.

Financial and Technical Special Incentives - a list of these special incentives is provided in the Lake Erie Balanced Growth Strategy. The special incentives include specific grant and technical assistance programs that offer added consideration for projects that are within PCAs and PDAs.

For more information, please visit <http://lakeerie.ohio.gov/> or call (419) 245-2514.

Lake Erie Balanced Growth Program Financial and Technical Special Incentives

What are Financial and Technical Special Incentives?

These include existing funding sources and programs that have incorporated Balanced Growth-specific considerations in their applications processes.

How will the Financial and Technical Special Incentives be applied?

The Financial and Technical Special Incentives will be available in watersheds that have a state endorsed Balanced Growth Plan or in some cases are working on a plan. They are generally in the form of additional consideration (extra priority ranking, interest rate discounts, or special support) for funding applications that will implement specific activities in PDAs or PCAs. There are also special considerations for technical assistance from the state in local communities that are participating in Watershed Planning Partnerships who have completed an endorsed Balanced Growth Watershed Plan.

What is included in the Financial and Technical Special Incentives?

The following table is a short summary of what is offered as special incentives in Balanced Growth Watersheds. Complete descriptions of the programs, including the sponsoring agency and contact information, are contained in the Lake Erie Balanced Growth Strategy dated December 12, 2007 and in the State Program Inventory appendix to the Strategy.

Special Incentives Summary Table

Coastal Management Assistance Grant Program	Technical and/or financial support for Balanced Growth Plan or proposed Projects in PCAs. Additional points to applicants that indicate they have or are working on a Balanced Growth Plan or proposed projects in PCAs.
Watershed Coordinator Grant Program	
Recycling Market Development Grant Program	
Scrap Tire Grant Program	
Land & Water Conservation Fund Program	
Nature Works Program	
Clean Ohio Trails Program	
Recreational Trails Program	

Streams & Storm Water Program	Prioritize staff resources toward watersheds with endorsed Watershed balanced growth plans.
Ohio Lake Erie Conservation Reserve Enhancement Program	Set aside an undetermined amount of funds from each fiscal year allocation of \$1 million toward PCAs, for
	eligible practices within eligible agricultural land use.
Grassland Restoration Program	Provide additional points to applicants working on a Balanced Growth Plan or who propose priority projects in a focus area.
Wetland Restoration Program	
Ohio Agricultural Easement Donation Program	Align for protection of PCAs.
Agricultural Security Area	
Clean Ohio Agricultural Easement Purchase Program	Modify to support PCAs.
Water Pollution Control Loan Fund	Align to support PCAs and PDAs including: <ul style="list-style-type: none"> • Funding for best water quality management practices for land development • Funding for municipal storm water best management practices • Funding for land and water conservation and restoration actions with water quality benefits. Additional priority points for qualifying Balanced Growth projects
Fresh Water Loan Group	Additional $\frac{1}{2}$ percent discount on loans.
Community Assistance Loan Program	
Lake Erie Protection Fund	Priority for projects to develop and implement Balanced Growth watershed plans.
National Flood Insurance Program Community Rating System	Discounts to flood insurance premium rates on flood insurance policies sold for properties within the community.
Dam Safety Linked Deposit Program	Below market rate loans for the removal of dams.
Dam Safety Loan Program	
Floodplain Mgmt. Technical Assistance	FEMA approved flood mitigation plans result in local community eligibility for a full array of pre- and post-disaster mitigation funds and assistance. Inclusion of strategies and actions to address flood risk and protect floodplain
Dam Safety Technical Assistance	

	resources in Balanced Growth Plans can easily be incorporated into mitigation plans.
Statewide Geologic Mapping	Technical geological information in support of Balanced Growth Plan.
Ohio Coastal Erosion Area Remapping	
Side-scan Sonar Substrate Mapping	
166 Direct Loan Program	Strongly encouraged for businesses planning to expand within Priority Development Areas (PDAs).
Rapid Outreach Grant	
Roadwork Development (629) Account	
Ohio Job Creation Tax Credit	Tax credit would be strongly encouraged for businesses planning to expand within Priority Development Areas (PDAs).
208 Planning (aka State Water Quality Management Plan)	Provides a mechanism to strengthen local land use and sewer infrastructure planning; OEPA review of
	wastewater discharge permits and sewer PTIs in PDAs. "Specific prescriptions" regarding wastewater treatment and disposal options would be binding upon OEPA in permitting actions; permits must be consistent with approved 208 plans.
Clean Water Act Section 319 Implementation Grants Program	OEPA provides additional scoring/credit for projects that are proposed in watersheds where a Balanced Growth Plan has been completed.
Water Supply Revolving Account	Utilize priority point system for potential loan projects to recognize consistency with balanced growth plans.
Small City Program	Participating in and meeting the Balanced Growth Initiative will be criteria that goes into selection of projects.
Transportation Enhancements	

For more information, please visit <http://lakeerie.ohio.gov/> or call (419) 245-2514.

Lake Erie Balanced Growth Program Streamlining and Predictability Incentives

Why would streamlining and predictability of state regulatory programs be an incentive?

The unpredictability and long time frame typically needed to secure permits presents significant challenges to successful development practice. Extended permit review periods and conflicting information across regulatory agencies jeopardizes private developer ability to finance projects reasonably and bring projects to completion. Therefore, state efforts to streamline these processes and make them more predictable would serve as an incentive for private developers and local communities if they could anticipate streamlined, predictable decision making to encourage development or redevelopment in the PDAs and consistently greater levels of difficulty for equivalent projects in PCAs.

Which state regulations can be streamlined and made more predictable?

A rules package for stream mitigation, wetland mitigation, and 401 certification is in the process of being developed by OEPA. Development of these rules should provide improvements to predictability and timeliness in the permitting process.

Ohio EPA is in the process of developing and issuing general NPDES permits for a variety of discharges in order to increase efficiency and to help make it easier for various dischargers to obtain an NPDES permit.

Programs that require consistency between federal, state or local actions and specifically adopted plans (e.g. Ohio Coastal Management Program and Section 208 Plans) are another method that Watershed Planning Partnerships and local governments can use to assure that state and federal actions are consistent with their Watershed balanced growth plans. Programs that depend upon local recommendations (e.g. ODOT in MPO areas) will reference consistency with a locally adopted and state endorsed Watershed Balanced Growth Plan where such a plan has been completed.

The State Assistance Work Group will look at additional methods to provide more advance predictability pertaining to site-related decisions. While these regulatory changes will generally be available statewide, they also will address the need for state regulatory streamlining and predictability in Balanced Growth Watersheds.

For more information, please visit <http://lakeerie.ohio.gov/> or call (419) 245-2514.

APPENDIX H

Preliminary Schedule of Projects

Swan Creek Watershed Infrastructure Projects

The following is a compilation of projects in the Swan Creek watershed. Every effort has been made to insure that they are supported by the Swan Creek Watershed Balanced Growth Plan (Swan Creek BGP).

In early 2009, TMACOG prepared lists of infrastructure projects that may qualify for ARRA “stimulus” funding. The main infrastructure lists were for transportation and sanitary sewerage. The transportation project list was used to update the Transportation Improvement Program (TIP). Projects of the amended TIP within the Swan Creek watershed are included.

In sanitary sewerage, the initial list was developed from the “208” Areawide Water Quality Management Plan as it stood in the fall of 2008. On reviewing this list for potential ARRA funding, local jurisdictions contributed many updates and additions. The updated project information has been incorporated into the 208 Plan. “208”/ARRA projects from the Swan Creek watershed are included in this appendix.

TMACOG does not maintain regional water supply or stormwater capital improvement plans. Nonetheless, many local jurisdictions contributed water and stormwater projects to the TMACOG ARRA list. TMACOG compiled the information received, and projects within the Swan Creek watershed are listed here.

The final column on the project list provides a preliminary comparison of the project’s location with priority areas; this comparison has not yet been reviewed by the Swan Creek Watershed Committee. “D,” for instance, indicates the project is within a PDA, “AOOA” for projects in the Airport-Oak Openings Area, and “X” for no-priority areas. In the case of water supply and sewerage, many projects are marked “S.” this refers to infrastructure projects that benefit not a specific location, but the entire water or sewer system. Water or wastewater treatment plant improvements are of this nature, as are combined sewer overflow projects which relieve extraneous flows to the entire sewer system and reduce overloading of the wastewater treatment plant.

In some cases the exact location of a project is not known without reviewing the entire proposal. Any project requesting priority attention by a state agency should be cross referenced with the GIS shapefile. It is recommended that state agencies consult with the Swan Creek watershed committee for current information and consistency with goals of the priority areas. Project lists may change quickly; in the few months between approval of final priority areas by the Swan Creek Technical Committee and publication of this report there has been at least one major annexation (not added as a PDA at this time), and one project on the ARRA list has been constructed (and deleted from the list below). ARRA funding, with its emphasis on “shovel ready” projects, may lead to many changes to the projects list in 2009 and 2010.

Transportation, Infrastructure

This section will be updated as there are a significant number of infrastructure projects being proposed in response to the federal government economic stimulus package. Many changes are being made to the 208 Facilities Planning document that reflect the proposed changes.

Lucas County

Monclova Rd. Bridge Replacement over Swan Creek, PID 83594. Scheduled bid date: January, 2013. Current construction phase cost estimate: \$1,057,000. ODOT

Perrysburg-Holland Road Bridge Replacement over Swan Creek, PID 84211. Scheduled bid date: April, 2011. Current construction phase cost estimate: \$3,125,000. ODOT

Stitt Road Bridge Replacement over Swan Creek, PID 79966. Scheduled bid date: May, 2008. Current construction phase cost estimate: \$865,000. ODOT

Village of Whitehouse Sidewalk Bridge on Finzel over Blue Creek, PID 84225. Scheduled bid date: July, 2009. Current construction phase cost estimate: \$195,000. ODOT

Development

Village of Waterville – northwest corner of Waterville Monclova Rd. and State Rt. 64. Waterville Landings - Mixed use of commercial, office, multi and single family residential, approximately 340 acres.

Village of Whitehouse – south of state Rt. 64, west of Cemetery Rd. Whitehouse Square – Mixed use of commercial and residential.

Toledo Lucas County Port Authority - The Port Authority has development planned for the south side of the airport including the construction of a roadway and an 80,000 square foot building. Future plans include the addition of up to two million additional square feet of buildings to support a transportation hub. This area is described in the plan as the Airport Oak Openings Area (AOOA).

Conservation

Maumee State Forest, ODNR Division of Forestry - will work on increasing the land base and connectivity of the Maumee State Forest through fee simple purchases from willing sellers. Special consideration and concentration will be placed on in-holdings. A secondary effort will be the promotion of conservation easements.

Metroparks of the Toledo Area - Oak Openings Greenway Project, is working to acquire at least 1,800 acres of land within the Oak Openings region by 2012. The project specifically focuses on a contiguous corridor between Secor and Oak Openings Preserve Metroparks. The primary objective of the project is the preservation and restoration of significant habitat within the corridor. A secondary objective is to establish a physical land link between the two parks for a future trail.

**TABLE 11
TIP FY 2008-2011 and PIPELINE Program Projects within the Swan Creek Watershed**

FISCAL YEAR	PROJECT NAME	SPONSOR	LOCATION	DESCRIPTION	PID #	FUNDING TYPE	AMOUNT	PRIORITY: A = Agricultural C = Conservation D = Development S = System-wide X = None AOOA = Airport/Oak Openings
FY2009	LUC US 24 21.47 Urban Paving	City of Toledo	Detroit Avenue from Glendale to Garden Lake Roads	Roadway resurfacing	81981	ODOT Urban Paving	942,246	D
FY2010	Glendale Ph1	City of Toledo	Glendale from Byrne to Detroit	Roadway Resurfacing	80510	STP	326,000	D
FY2010	Michigan Avenue	City of Toledo	Michigan Avenue from Lafayette to Madison	Roadway resurfacing		Econ. Stim.	1,675,000	D
FY2010	South Avenue	City of Toledo	South Avenue from Detroit to Airport Hwy	Roadway resurfacing		Econ. Stim.	600,000	D
FY2011	Pedestrian Friendly Gateway – Warehouse District	City of Toledo	Intersection of Erie and Lafayette Streets	Gateway beautification enhancement	83367	ENH	225,993	D
Pipeline	Heatherdowns Ph 1	City of Toledo	Heatherdowns between Eastgate and Perrysburg- Holland Roads	Roadway resurfacing		STP	390,000	D
Pipeline	Heatherdowns Ph 2	City of Toledo	Heatherdowns between Eastgate and Perrysburg-	Roadway Resurfacing		STP	390,000	D

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			Holland Roads					
Pipeline	Michigan (SR25) Ph 1	City of Toledo	Michigan Avenue between Adams and Lafayette	Roadway Reconstruction		STP	1,012,600	D
Pipeline	Pedestrian Friendly Gateways Central Business District	City of Toledo	Downtown Toledo Locations	Gateway beautification enhancement		ENH	236,919	Site specific, probably most are D
FY2009	Angola Rd - Combined	Lucas County	Angola from Whisperwood Pkwy (near King) to McCord	Roadway resurfacing	80045	CMAQ	700,000	Springfield Township Portions: mostly D but partly X Village of Holland portions: X
FY2009	Salisbury/Dussel Interchange	Lucas County	I-475 Salisbury Road Interchange	Interchange upgrade - increase vehicular capacity	75937	STP	2,900,000	D
FY2010	Traffic Signal Upgrades	Lucas County	13 locations	Signalization		Econ. Stim.	420,000	Site specific
FY2010	Wabash Cannonball N-S Connector Phase 3B	Lucas County	Fulton-Lucas Road from Monclova Rd in Swanton Township to	Multiuse Trail Connector		ENH	454,240	Mostly X with some C areas contiguous

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			Mohler Rd south of Neapolis					
Pipeline	McCord Road Phase 1	Lucas County	McCord Road between Angola and Airport Hwy	Roadway resurfacing and upgrade		CMAQ	1,115,200	Springfield Township Portions: D Village of Holland portions: X
Pipeline	McCord Road RR Grade Separation	Lucas County	McCord at NS RR	Roadway Grade Separation	75107	CMAQ	8,514,500	Springfield Township Portions: D Village of Holland portions: X
Pipeline	US20A (Maumee Western Road)	Lucas County	Monclova Township: US 20A from Strayer to Weckerly	Roadway resurfacing and upgrade		STP	3,667,400	Weckerly corridor and Albon to Strayer mostly D; central portion is either X or A
Pipeline	Wabash Cannonball N-S Connector Phase 3A	Lucas County	Wilkins/Yawberg Rds extended S of Monclova Rd to Waterville-Swanton (Rt 64)	Multiuse Trail Connector		ENH	455,520	Mostly C; some AOOA
FY2009	LUC IS 24 6.19 Pt3	ODOT	Western Lucas County	New highway construction	80444 80446	ODOT TRAC	70,808,000	Mixed; Waterville Township some D and

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								some A areas but mostly X. Providence Township is mostly PAA but SR 295 interchange is PDA
FY2011	LUC IR 475 2.54 Noisewall	ODOT	East side of I-475 from mile 2.54 to 4.71 [Salisbury to Airport Hwy]	Noisewall Construction	80425	ODOT Maint.	3,164,000	Mostly D
FY2011	LUC IR 475 3.15	ODOT	I-475 bridge over the Ohio Turnpike	Bridge redecking	80695	ODOT Maint.	13,464,000	D
FY2014	LUC IR 475 5.22/5.47	ODOT	I-475 bridge over Angola Road	Bridge redecking	80694	ODOT Maint.	8,164,000	D
Pipeline	Railroad Park Trail	Springfield Township	Strawberry Acres Park in Village of Holland	Hike/Bike Trail construction		ENH	356,600	X – not participating
Pipeline	SR/64 Waterville- Monclova Rd	Village of Waterville	Intersection of SR64 and Waterville- Monclova Road	Intersection upgrade – signals and turn lanes		CMAQ	389,100	D

TABLE 11
TIP FY 2008-2011 and PIPELINE Program Projects within the Swan Creek Watershed

FISCAL YEAR	PROJECT NAME	SPONSOR	LOCATION	DESCRIPTION	PID #	FUNDING TYPE	AMOUNT	PRIORITY: A = Agricultural C = Conservation D = Development S = System-wide X = None AOOA = Airport/Oak Openings
FY 2008	Cemetery & Finzel at SR64	Village of Whitehouse	Intersection of Cemetery & Finzel Roads	Intersection upgrade - signals and turn lanes	80187	CMAQ	171,873	D

**TABLE 12
PROPOSED WATER INFRASTRUCTURE PROJECTS: JANUARY 2009**

Project Name	Industry Sector	Potential Public or Private Partners	County and/or City	Total Project Costs	Project Comments	PRIORITY: A = Agricultural C = Conservation D = Development S = System-wide X = None AOOA = Airport/Oak Openings
Long Term Control Plan	wastewater	Delta	Fulton	\$4,500,000	Design underway; construction could start within 120 days of funding award.	S
Wastewater Plant Equipment Replacement	wastewater	Delta	Fulton	\$224,540		S
Computerized management system	wastewater	Lucas County	Lucas	\$45,000		S
East plant grit collection equipment replacement	wastewater	Lucas County	Lucas	\$285,000		S
East plant secondary clarifier equipment	wastewater	Lucas County	Lucas	\$1,200,000		S
East plant waste activated sludge pumps	wastewater	Lucas County	Lucas	\$187,000		S
Flume repair	wastewater	Lucas County	Lucas	\$50,000		S
Odor control imp.	wastewater	Lucas County	Lucas	\$2,000,000		S
PS replacements	wastewater	Lucas County	Lucas	\$200,000		S

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Project Name	Industry Sector	Potential Public or Private Partners	County and/or City	Total Project Costs	Project Comments	PRIORITY: A = Agricultural C = Conservation D = Development S = System-wide X = None AOOA = Airport/Oak Openings
Rehabilitation / rebuild north generator	wastewater	Lucas County	Lucas	\$110,000		S
Trunk sewer cleaning / inspection	wastewater	Lucas County	Lucas	\$500,000		S
Trunk sewer repairs	wastewater	Lucas County	Lucas	\$1,000,000		S
Wastewater plant solids handling improvements	wastewater	Lucas County	Lucas	\$916,000		S
West plant ultraviolet module	wastewater	Lucas County	Lucas	\$291,000		S
Cass Rd PS Improvements	wastewater	Maumee	Lucas	\$145,000		D
Large Diameter Sewer Rehabilitation	wastewater	Toledo	Lucas	\$615,000		S
S-3 Highland Sewer Separation	wastewater	Toledo	Lucas	\$5,405,000		D
S-4 Woodsdale Inflow Reduction	wastewater	Toledo	Lucas	\$4,600,000		D
W-5 Knapp & Williams Inflow Reduction	wastewater	Toledo	Lucas	\$1,840,000		D

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Project Name	Industry Sector	Potential Public or Private Partners	County and/or City	Total Project Costs	Project Comments	PRIORITY: A = Agricultural C = Conservation D = Development S = System-wide X = None AOOA = Airport/Oak Openings
W-6 Maumee Storage Basin	wastewater	Toledo	Lucas	\$23,115,000		S
Infrastructure Improvements at Toledo Express Airport	wastewater	Toledo-Lucas County Port Authority	Lucas	\$5,000,000	construction could start within 120 days of funding award	AOOA
Portable generator for smaller lift stations	wastewater	Waterville	Lucas	\$15,000		S
Replacement of standby generators at sanitary PSs	wastewater	Waterville	Lucas	\$450,000		S
Dutch Rd extension	wastewater	Whitehouse	Lucas	\$1,116,200	Could be ready to go to bidding within 120 days of funding	D
Industrial development	wastewater	Whitehouse	Lucas	\$180,000	Reline Sanitary Sewer, Replace water mains, install sidewalks and resurface streets. These two projects are infrastructure for new development along Industrial Parkway in the NW corner of the village.	D

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Industrial Park new road	wastewater	Whitehouse	Lucas	\$70,000		D
River Trace Subdivision	wastewater	Whitehouse	Lucas	\$225,000	Utilities for proposed subdivision along Finzel Road, south of Rt 64, within village limits	D
Sandra Park	wastewater	Whitehouse	Lucas	\$200,000	Infrastructure for a 17 ac parcel owned by village within village limits - proposed residential or commercial subdivision between Sandra and Rupp.	D
SR 64 extension E to district boundary	wastewater	Whitehouse	Lucas	\$450,000		D
Stiles E from Providence	wastewater	Whitehouse	Lucas	\$200,000		D
Waterville Street short extension	wastewater	Whitehouse	Lucas	\$40,000		D

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Weckerly Rd Ulrich sewer extension Vintage	wastewater	Whitehouse	Lucas	\$500,000	proposed residential development about 125 homes — newly annexed into the Village after defining PDA areas. East of Eber, north of Weckerly, extending north to Ramm road in Monclova Township; see 2008 Lucas County map.	X
Whitehouse Meadows	wastewater	Whitehouse	Lucas	\$200,000	wastewater and other utilities for proposed development in village: west side Heller south of Wabash bike trail. Former village wellfield.	D
Sewer separation	wastewater	Swanton	Lucas - Fulton	\$4,200,000		S
WWTP upgrades for wet weather capacity	wastewater	Swanton	Lucas - Fulton	\$2,800,000		S
Dead End Water Mains	Water Supply	Toledo	Lucas	\$200,000		S

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Water Main Replacement Program	Water Supply	Toledo	Lucas	\$2,000,000		S
Rehabilitation of 100,000 gal. Water tower	water supply	Waterville	Lucas	\$275,000		S
Minor Storm Drainage 2010	stormwater	Toledo	Lucas	\$300,000		S
Minor Storm Drainage additional	stormwater	Toledo	Lucas	\$100,000		S
Minor Storm Drainage Improvements	stormwater	Toledo	Lucas	\$200,000		S
39	projects			\$61,225,200		