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1. Overview of Plan Amendment

The Big Darby Watershed in central Ohio is one of the most biologically diverse aquatic systems in the Midwestern United States, home to 38 state and federally listed aquatic species according to The Nature Conservancy.[1] The Big and Little Darby Creeks are classified as Exceptional Warmwater Habitats (EWH) and Outstanding State Resource Waters (OSRW) and designated as State and National Scenic Rivers as a result of their sensitive species and aquatic biological species richness. The lower four miles of the Hellbranch Run are similarly designated as EWH and Superior High-Quality Waters (SHQW).

The original Big Darby Accord Plan was prepared collaboratively among ten jurisdictions in Franklin County, Ohio. The Big Darby Accord Planning Area focuses on the county and covers 84 of the watershed's 555 square miles. Adopted in 2006, the Big Darby Accord Plan represents a long-term vision and general land use plan that brings together interests of all Big Darby jurisdictions to protect and preserve the watershed while providing guidance for managed growth.

The original Big Darby Accord called for regular updating by the member jurisdictions as conditions changed. In 2024, these jurisdictions began discussions to revisit and amend the original 2006 Accord based on an assessment of its success, effectiveness, and needed change following two decades of implementation. The Amended Plan is the result.

The Big Darby Accord Mission Statement continues to guide this planning effort and will lead Accord jurisdictions as they implement the Amended Plan.

1.1. Big Darby Accord Mission Statement

The original mission statement of the 2006 Big Darby Accord remains the same for this Amendment, with only the last bullet regarding the planning work of 2006 updated to be more timeless. The Big Darby Accord Mission Statement:

The Big Darby Accord consists of local governments within the Franklin County area of the Big Darby Creek Watershed. The mission of the Big Darby Accord is to cooperatively develop a multi-jurisdictional plan and accompanying preservation and growth strategies, capable of implementation, oversight, and enforcement, which are designed to:

- Preserve, protect and improve, when possible, the Big Darby Watershed's unique ecosystem by utilizing the best available science, engineering and land use planning practices;
- Promote responsible growth by taking measures to provide for adequate public services and facilities and promote a full spectrum of housing choice, as well as adequate educational, recreational, and civic opportunities, for citizens of each jurisdiction and for Central Ohio;
- Create a partnership that recognizes the identity, aspirations, rights, and duties of all jurisdictions and that develops methods of cooperation among the partners through means which include the cooperative utilization of public services and facilities; and
- Leverage the results of other local planning efforts, as well as the work of environmental and growth-focused organizations in the development of the plan to foster greater buy-in, ownership, and implementation of the Accord.

1.2. Amendment Process

The Big Darby Accord Master Plan Amendment ("Amended Plan") process was led by the Big Darby Accord Review Team (BDART). BDART is comprised of public servants and elected officials from the City of Columbus, the City of Hilliard, Prairie Township, Brown Township, and Franklin County. The group first convened in December 2024 and remained involved throughout the plan amendment process. Members met regularly to discuss key amendment topics, review and refine draft materials, and communicate updates and recommendations to their respective elected leadership and administration.

BDART hired MKSK, a Landscape Architecture and Planning firm, which was involved in the initial 2006 Accord process, to facilitate public engagement and provide targeted recommendations for Plan amendments based on updated research and public input. MKSK also participated in BDART meetings to present findings, facilitate discussion, and incorporate feedback from the group. The planning process occurred over sixteen months and was divided into four phases. The major milestones included:

- **Analysis:** The Accord's effectiveness was evaluated, and areas of critical focus were identified. This also included existing conditions research and mapping, and the launch of a project website.
- **Workshops & Engagement:** The project team facilitated stakeholder meetings, focus topic workshops, and updates to leadership, interested parties, and organizations across the process.

- **Draft Plan:** A draft document was assembled based on stakeholder input, findings related to the topic workshops, identified areas where the Accord fell short, updated research and best management practices, and operational needs and priorities of member jurisdictions.
- **Final Plan: NOTE:** This is the current step. Following rounds of review and revision from the BDART, jurisdictions, stakeholder groups, and the community, a revised plan will be produced and presented to participating jurisdictions for their review and adoption.

For an overview of the Amended Plan engagement approach, including background information and links to presentations, see Appendix XX. Outreach and engagement with residents, property owners, subject matter experts, governmental entities, and other interested parties, such as environmental groups, conservation groups, developers, and homebuilders, will continue throughout implementation, assessment, and future updates to the Amended Plan.

1.3. Identified Topics of Focus for Accord Amendments

As the Big Darby Accord approaches the two-decade anniversary since its adoption, the participating jurisdictions and members of the overall community recognized that the Accord, while successful in many areas, needs additional direction and updating to better realize its original goals and mission. General topic areas identified for focus in this Amended Plan are:

1. Water Quality Monitoring & Assessment (WQM&A)
2. Environmentally Sensitive Area Protection & Open Space Definition
3. General Land Use Plan Updates
4. Revenue Generation Updates
5. Big Darby Accord Management and Oversight

Appendix XX provides an overview of changes in land use since the 2006 plan; documents development and conservation activities at that time; and presents key GIS data to guide the next phase of Big Darby Accord protection of this critical natural resource.

1.4. Regional Open Space

Since 2007, approximately 3,500 acres of open space have been acquired or dedicated by local governments, organizations, and private developments. Thanks to regional cooperation and

investment, 11,770 acres are conserved in the Big Darby Accord Planning Area – 47% of the original 25,000-acre goal.

Table 1 Open Space Acquisition Since 2007

OWNERSHIP	ACREAGE	PERCENT
Franklin Soil and Conservation District	198.5	5.63%
Jurisdiction (Columbus, Hilliard, Prairie, Pleasant)	1,136.0	32.22%
Metro Parks	774.8	21.97%
Private	1,255.2	35.60%
Other	161.8	4.59%
TOTAL	3,526.3	

1.5. Regional Housing

Since 2007, over 6,100 housing units have been permitted or built within the Big Darby Accord Planning Area. While this is notable, it is lower than the original projections for construction by 2025. Because the plan limits new housing to 20,000 units, development to date equals just 30% of the plan's goal.

This reflects a wider trend throughout the region, where housing development has not kept pace with population and job growth. Studies indicate that Central Ohio needs nearly double its annual housing permitting levels to meet demand over the next decade. [2]

Table 2 Residential Development Since 2007

OWNERSHIP	PROJECTS	UNITS
Columbus	29	2,837
Hilliard	9	2,282
Prairie	21	818
Pleasant	--	98
Brown	--	112
TOTAL	**59**	**6,147**

Rapid population and job growth in Central Ohio continues to increase housing demand in Franklin County. Franklin County is projected to absorb about half of all regional population growth through 2050. MORPC forecasts that Central Ohio will add roughly 726,000 residents by 2050, reaching a population of about 3.15 million, despite an overall population decline projected across Ohio. Ohio Department of Development forecasts that net in-state migration, despite overall declines in rural areas, will concentrate in metropolitan areas. Much of this

growth is projected to occur within the next decade, due to strong job creation and large investments in new industries. Counties within Central Ohio, including Franklin and Delaware County, are positioned to continue attracting this growth.[3] See Appendix E.1 for regional population estimates based on three separate studies.

1.6. Amendment Reference Documents and Data

The Amended Plan provides greater details and source data than the original plan due to advances in geographic information systems (GIS) and aerial mapping. Appendix XX provides a full list of sources and layers used to map sensitive areas and develop the changes included in the Amended Plan and General Land Use Map. One critical item for the Amended Plan will continue to be data and mapping updates on a regular schedule.

Numerous areas in the Amended Plan refer to Criterion in the State of Ohio Water Quality Management Plan, Appendix 3-3 (hereafter "Appendix 3-3"). The Criterion provides a recognizable format for conservation efforts. Note that many areas of the Amended Plan exceed the minimum requirements of Appendix 3-3 and the standards established in the Ohio EPA General Construction Permit, the State of Ohio Rainwater and Land Development Manual, and other similar documents. Darby jurisdictions have attempted to centralize and harmonize key Darby prescriptions in this document.

1.7. Amended Plan Governance

To ensure efficient, effective implementation, this Amended Plan empowers the BDART to overview implementation and coordination of the plan going forward. BDART balances regional interests with representatives from two municipalities, two townships, and one county. All Accord partners not on BDART may appoint an advisory representative who may take part in meetings but does not have voting authority. BDART is currently composed of one representative from each of the following five (5) jurisdictions: City of Columbus, City of Hilliard, Franklin County, Brown Township, and Prairie Township. BDART members may vote to remove a jurisdiction at that jurisdiction's request.

BDART jurisdictions agree to adopt mutually acceptable bylaws, structure, and workplan, approved by consensus, within 180 days of the Amended Plan's adoption by the BDART jurisdictions. These documents must include the following items:

- The BDART will function as an intergovernmental working group, not a stand-alone governmental entity.
- The BDART will convene no less than quarterly, with additional meetings scheduled at the request of at least three jurisdiction members of the BDART.
- The BDART must seek input, feedback, and guidance from residents and a broad range of stakeholders, such as the Ohio EPA, ODNR, Franklin Soil and Water Conservation District (FSWCD), Metro Parks, homebuilders, developers, affordable housing advocates, financing institutions, environmental groups, conservation organizations, school districts, and other non-profit organizations, which may be formalized as a technical resource committee for BDART.
- The BDART does not have authority to review or approve any development proposals because the Big Darby Accord Advisory Panel will continue to provide advisory reviews, and the jurisdiction retains final authority over review and approval.
- The BDART will review data and trends within the Big Darby Accord area as they relate to water quality and monitoring, conservation area and open space preservation, land use and development (including ERUs), infrastructure, and revenue as part of its adaptive management responsibilities.
- The BDART will track implementation projects identified by this amendment process on behalf of the member jurisdictions.
- The BDART may update the plan to reflect new state or federal requirements that supplant or supersede the requirements of the plan.
- The agendas and adopted meeting minutes for BDART public meetings will be public records.
- The BDART will coordinate one annual public meeting to present accomplishments and updated data related to the Big Darby Accord.
- The BDART will provide guidance for plan interpretation when requested by an Accord jurisdiction.

Participating jurisdictions are charged with implementing the Amended Plan. The Big Darby Accord Advisory Panel, staffed by jurisdictions, will continue to give advisory opinions on rezonings, and the BDART will provide critical oversight. While some stakeholders have recommended a permanent watershed coordinator, the jurisdictions do not feel this is the appropriate time for that step. As part of routine adaptive management, BDART anticipates revisiting this specific recommendation in the future.

1.7.1. Big Darby Accord Advisory Panel

A Big Darby Accord Advisory Panel ("Advisory Panel") was created to review zoning applications and site design for proposals in the planning area. The Advisory Panel has served a significant role since plan adoption. Like all new entities, the Big Darby Accord jurisdictions believe the Advisory Panel can now be updated to reflect our needs under the Amended Plan.

This amendment sharpens the focus on the Big Darby Accord Advisory Panel. It clarifies that all questions of policy or other guidance must be provided in this plan or by future action of the BDART.

The Advisory Panel will continue to be comprised of a combination of representatives from the Accord jurisdictions. Figure 5.3 sets forth a recommended panel representation; the composition of the Advisory Panel will be determined by members of the Accord. [NOTE: Insert figure from current plan]

The Advisory Panel will review and render advisory, non-binding opinions on zoning applications or onsite development plans that trigger the General Construction Permit in terms of conformance with applicable portions of the Amended Plan and policies of BDART. BDART is authorized to review and update the project checklist and forms to streamline the review process and focus on issues that are not the subject of local, state, or federal permitting.

Big Darby Accord jurisdictions commit to substantive consideration of Advisory Panel recommendations during the formal review process. Each jurisdiction will continue to be responsible for final plan approval or denial for proposals in its area. Specific details related to the site development process remain under the applicable jurisdiction authority, with the added responsibility of ensuring consistency with the Big Darby Accord plan.

Once the Advisory Panel acts on a project, members of the Advisory Panel may not provide written or oral testimony regarding the project during subsequent review by the jurisdiction, unless requested by the jurisdiction.

To facilitate the Advisory Panel's review process, the following will be required of Applicants and the Advisory Panel:

1. The Applicant must consult with the local jurisdiction regarding the proposal and determine potential jurisdictional support prior to review by the Advisory Panel.

2. Upon receiving jurisdictional support to proceed, the Applicant must present the proposal to the Advisory Panel, which must act within 30 days of receipt of an

application to meet and consider the proposal. The Advisory Panel may recommend approval of the proposal at that meeting or may carry over the proposal to the next monthly meeting, which must take place within 30 days.

3. At the second hearing of the Advisory Panel, which may be at either the next monthly meeting or at a future meeting mutually agreed upon by the Applicant and Advisory Panel, the Applicant must present either the original proposal or a revised proposal for final consideration by the Advisory Panel, which must meet and recommend approval, conditional approval, or disapproval. If the Advisory Panel fails to act on the application at this meeting or otherwise fails to consider the plan within 30 days of the first hearing, the proposal will move forward without a recommendation. The Advisory Panel and its members may not comment on the project if it fails to act within the timelines in the plan

4. If an Applicant fails to appear or does not otherwise comply with these requirements, the advisory process will be deemed restarted, and the jurisdiction agrees the proposal will not move forward at that time.

5. Once the Advisory Panel provides its recommendation for a project, the members of the panel may not provide additional or different public comment regarding the project. This provides greater clarity and certainty when jurisdictions consider the project during subsequent phases.

Table 3 Big Darby Accord Advisory Panel Appointees

Jurisdiction	Appointees
City of Columbus	3
City of Hilliard	1
Franklin County	2
Brown Township	1
Prairie Township	1
Pleasant Township	1
Suburban Municipality (Grove City)	1
At Large	1

1.7.1.1. Mandatory Training

Every year, members of the Big Darby Accord Advisory Panel and relevant jurisdiction staff must take part in training regarding the requirements of the Amended Plan, local zoning and site design, and other related topics. The training will be developed by the City of Columbus and approved by BDART. Columbus commits to administering the annual training.

1.8. Periodic Plan Review and Update

The Big Darby Accord jurisdictions agree to reconvene for plan review and update this plan at least once every five (5) years. The jurisdictional review will consider the overall implementation and effectiveness of this plan in meeting the Big Darby Accord mission. These reviews are in addition to BDART adaptive management driven by changing regulations, land use, resources, and/or water quality (See 1.9 Compliance and Adaptive Management below). These periodic updates must consider up-to-date data about changes in development, conservation, and best management practices.

The Amended Plan relies on more detailed source data and expanded datasets which were not available when the 2006 plan was developed. Rather than recommending an amendment to this plan each time better data or mapping become available, the Amended Plan recommends BDART identify and appoint a member jurisdiction or consultant to review and update data and mapping at a regular cadence – at least every two years.

As new developments are approved, the appointed jurisdiction will update the database and map accordingly. New development projects will provide additional detailed mapping and data as part of the development review process, and this data will include that information as well.

1.9. Compliance and Adaptive Management

This Amended Plan relies on the principle of adaptive management, an ongoing process where BDART responds to changing conditions in the planning area. Adaptive management includes prediction, monitoring, inspection, enforcement, and ongoing planning to continue to maintain and pursue the targeted water quality and habitat protection goals established here and by the Ohio EPA. Adaptive management also allows BDART to consider and respond to changing regional needs and market conditions for housing and open space. As jurisdictional partners and agencies continue to pursue new programs, policies, and studies, BDART is committed to assessing and recommending appropriate amendments to the Accord based on actionable outcomes from these efforts.

When properly and consistently applied, adaptive management will protect and improve the water quality and biological integrity of the Big Darby Watershed. The pursuit of this objective is balanced with the understanding that Accord provisions can only address the Franklin County portion of the overall watershed. Fortunately, since 2006 the Ohio EPA has expanded Appendix 3-3 and the Construction General Permit Darby prescriptions to the entire watershed.

If the water quality management and assessment (WQM&A) program demonstrates acute pollution concerns (e.g., violation of an Ohio water quality standard, emergency spill, designated Aquatic Life Use (ALU) impairments), BDART will partner with local and state regulatory entities on a rapid, appropriate remediation of those issues. If the program trend analysis shows non-attainment and/or degradation of an established goal for water quality, BDART will partner with local and state regulatory entities to address root causes and may consider further amendments to this plan.

To utilize trend data for the planning area, the current plan recommends adaptive management, described as "…prediction, monitoring, inspection, enforcement, and ongoing planning to continue to maintain and pursue aggressive Ohio Environmental Protection Agency (Ohio EPA) water quality goals that will improve the water quality and biological integrity of the Big Darby Watershed." [4] Adaptive management must also recognize the social, economic, and governmental dimensions of decision-making in the planning area.

BDART commits to reconvening and considering future data and modelling results, such as Ohio EPA water quality monitoring or the IPS Phase 2 results. As with other adaptive management activities, BDART will engage with subject matter experts to understand the findings, understand what actionable steps can be taken, and make recommendations for updates to the Amended Plan as necessary.

1.10. Historic Impact Study

The 2006 Plan focused primarily on future actions in the Big Darby watershed. It did not address most historic sources of impairment in the planning area. For example, the recent ODNR-sponsored Hellbranch Mussel survey documents severe historic impacts from agriculture and a now-closed wastewater treatment plant, in addition to stormwater runoff from rural and suburban development. While jurisdictions have made great strides in restoring impaired runs like the Hamilton and Clover Groff, little progress has been made on other historic impairments.

With this Amended Plan, each jurisdiction commits to inventory, assess, and plan to address, where feasible, historic impairments in the planning area. Examples include gray stormwater

infrastructure, channelization, farm tiles, loss of riparian buffer, septic systems, and historic point source pollution. Studies must be completed by July 2028.

Once completed, the studies and resulting plans will be publicly released. If the final IPS warrants, jurisdictions may consider using the IPS to help inform the best areas to invest resources to address historic impairments.

1.11. Sustainable Development, Responsible Conservation

The following sections are based in part on the State of Ohio WQM Plan, Appendix 3-3. This amendment increases protection in targeted areas but never provides less protection than Appendix 3-3. Local zoning, subdivision regulations, lot approval, and site design are the methods of implementation for enhanced protections in this amendment. As such, these amended requirements must be included in local zoning and subdivision ordinances and must become the basis for site design and construction compliance in the Big Darby Accord Planning Area. The baseline requirements of Appendix 3-3, General Construction Permit, and local stormwater drainage manual will continue to be implemented via existing enforcement methods.[5]

Appendix D compiles the Amended Plan's updates to specific provisions of Appendix 3-3. For narrative descriptions and references to support these changes, see relevant sections in the Amended Plan.

1.11.1. Preferred Option (Criterion 0)

By adopting the Big Darby Accord Watershed Master Plan Amendment, jurisdictions agree to abide by the Preferred Option in the State of Ohio Water Quality Management Plan Appendix 3-3 Criterion 0; the General Construction Permit (aka Darby Stormwater Permit); and the provisions of this amendment, whichever is more stringent. This requirement incorporates by reference applicable portions of Criterion 0 of the 3-3 Appendix.

1.11.2. Adoption of Institutional Mechanisms (Criterion 1)

Jurisdictions must comply with Criterion 1 of the Appendix 3-3 by doing all the following for its portion of the Big Darby Accord Planning Area, unless the jurisdiction lacks the legal authority to do so:

- Criterion 1a. Adopt institutional control mechanisms

- Criterion 1b. Adopt comprehensive land use planning
- Criterion 1c. Adopt a riparian corridor protection purpose statement[6]

1.11.3. Options for "As Protective As" Local Regulations and Individual Projects (Criterion 5)

The State of Ohio Water Quality Management Plan, Appendix 3-3, recognizes, "…local jurisdictions may develop slightly different standards that are just as protective as the ones listed here. Therefore, any jurisdiction may ask the Director of Ohio EPA to consider a deviation from adopting these exact criteria." The Big Darby Accord jurisdictions agree to request approval of this Amended Plan under Criterion 5 if necessary.

1.12. Summary of Key Amendment Policies

Table 3 summarizes key policies in the Amended Plan in relation to the 2006 plan. On balance, the Amended Plan provides stronger environmental preservation, protection, and restoration, as well as more flexible, market-driven land use planning that limits sprawl and focuses development on central sanitary sewer service at the urban and suburban edge

Table 4 Summary of Key Amendment Policies

TOPIC	CATEGORY	AMENDED PLAN	PURPOSE	2006 PLAN
Agricultural Land Conservation	Conservation, Open Space, & Land Management	Calls for a coordinated Ohio EPA NPS-IS Plan in the Planning Area	Lowers agricultural impacts to habitat and water quality without harming agriculture	Recommends conversion of agriculture from 56% to 6% Does not recommend NPS-IS Plan
Conservation Areas, Primary	Conservation, Open Space, & Land Management	Areas that must be protected in the Darby, in line with Appendix 3-3	Protects more areas, especially forest + new buffer, larger Stream Corridor Protection Zone	Covers Tier 1 and 2, less protective than Appendix 3-3
Conservation Areas, Secondary	Conservation, Open Space, & Land Management	Areas that must be protected in the Darby, unless infeasible, in line with Appendix 3-3	Covers science-informed areas, more protective than original plan	Covers Tier 3, though definitions differ within the original
Native Species and Invasives	Conservation, Open Space, & Land Management	Requires native species for streams, wetlands, and naturalized open space, and active management of invasive species	Improves and protects habitat in the Darby	Referenced, but not required in practice
Open Space Acquisition	Conservation, Open Space, & Land Management	New regional Open Space Fund with 25% of new Darby Revenue Funds	Accelerate and focus on regional open space acquisition to protect the planning area	Referenced, but not adopted by jurisdictions; Darby Revenue Program MOU referenced open space as a use
Open Space Definition	Conservation, Open Space, & Land Management	Defines types of open space and how they relate to developments	Recognizes the full range of open space needs, while giving clear, consistent definitions for the planning area	No clear definition, no range of needs and types
Open Space Offsite	Conservation, Open Space, & Land Management	Allows some offsite open space, but requires 50% more, focused on priority lands	Accelerate open space acquisition to protect the planning area	Transfer of development rights included, not implemented

TOPIC	CATEGORY	AMENDED PLAN	PURPOSE	2006 PLAN
Development Densities, Improved	Land Use & Development	Focuses more density along the urban edge, rather than sprawl throughout the planning area	Promotes affordability and more compact development footprint	Supported widespread low-density development, except Town Center and some urban areas
Development Standards, Clear and Consistent	Land Use & Development	Provides clear, consistent requirements for new developments	Removes uncertainty and improves the development process	Unclear in some areas, like open space definition, and too prescriptive in others, like the BDAAP checklist
Future Land Use Map Flexibility	Land Use & Development	Designates land use options in a more flexible, market-driven manner	Places development along the urban edge to respond to the market and protect the overall planning area	Future map intended to direct specific development typologies by parcel; frequently viewed as immutable and out of step with the market
Growth Areas	Land Use & Development	Focuses growth along the urban edge, served by centralized sewer	Lowers the risk of septic system's impacts to water quality and quality of life	Established a Hilliard Growth Area, Town Center, and scattered conservation development
Housing at Every Price Point	Land Use & Development	Includes housing as potential funding priority under the Darby Revenue Program	Ensures mixed-income developments to protect current and future residents from gentrification	Recommended a full spectrum of housing, no policies or funding to support housing
Sustainability, Housing	Land Use & Development	Incorporates Net Zero Ready and LEED as reference standards	Provides flexible reference points for sustainable design and construction	Required LEED-ND in pilot area, recommended for all development
Adaptive Management	Monitoring & Administration	Review and update plan based on changing conditions, data, and modelling	Ensures timely response and update of the plan	Included adaptive management recommendation, not implemented
Big Darby Accord Advisory Panel (BDAAP)	Monitoring & Administration	Streamlines and focuses advisory review of rezonings	Ensures consistency and predictability for residents, landowners, and developers	Created the Advisory Panel

TOPIC	CATEGORY	AMENDED PLAN	PURPOSE	2006 PLAN
Big Darby Accord Review Team (BDART)	Monitoring & Administration	Establishes BDART as the governing body for the amended plan	Ensures jurisdictional oversight that is transparent and accountable for implementing the amended plan	Created numerous working groups and committees to perform some functions
Water Quality Goals	Monitoring & Administration	Ties specific attainment and antidegradation goals to Ohio EPA designations	Provides clear water quality goals to guide policies and adaptive management	No specific attainment goals, reference to TMDL limits
Water Quality Monitoring and Assessment	Monitoring & Administration	Establishes and funds a comprehensive WQM&A program	Provides the data and trends needed to make short- and long-term adaptive management decisions	Recommended a full monitoring and assessment program, not implemented
Water Quality Monitoring, Construction-Related	Monitoring & Administration	Sets best practice standards for pre- and post-construction water quality monitoring	Provides improved data to track the effects of development in the planning area	Pre- and post-construction monitoring recommended, limited to TSS
Climate Adaptation and Resilience	Water Quality & Stream Protection	Adopts all climate-informed water quality recommendations of the Central Ohio Regional Water Study	Ensures consideration of climate impacts on the planning area	Not addressed
Ephemeral Features Protection	Water Quality & Stream Protection	Expands ephemeral feature definition beyond jurisdictional ephemeral features determined by the US Army Corps of Engineers	Protects critical habitat and water quality	Protected jurisdictional ephemeral features as determined by the US Army Corps of Engineers
Hellbranch Special Prescriptions	Water Quality & Stream Protection	Provides a new set of policies to directly restore and protect the Hellbranch subwatershed	Addresses long-term human activity that degrades the ecology of the Hellbranch subwatershed	Focused time and effort on Hellbranch restoration and protection needs

TOPIC	CATEGORY	AMENDED PLAN	PURPOSE	2006 PLAN
Imperviousness, No New Directly Connected Impervious Area	Water Quality & Stream Protection	No Directly Connected Impervious Area for new developments; use of green BMPs to process stormwater quality and volume	Directly Connected Impervious Area is the best predictor of how development impacts water quality	Not addressed
Riparian Buffer Minimum 150'	Water Quality & Stream Protection	Increases Appendix 3-3 minimum from 100' to 150'	Improves protection for extended headwaters and headwaters	Minimum 100' riparian buffer for the SCPZ
Riparian Forest Buffer Minimum 150'	Water Quality & Stream Protection	At least 150' continuous, contiguous native riparian forest on each side of a stream	Increases percent of riparian forest within 300' of a stream because it is associated with high biological scores with increased urbanization	Not addressed
Riparian Protection Area 300'	Water Quality & Stream Protection	No new impervious surfaces in the 300' buffer, unless technically or commercially infeasible	Limits impervious cover within 300' of a stream because of its association with high ecological function	Not addressed
Science-Based Policies	Water Quality & Stream Protection	Considers five independent scientific models, current scientific and technical findings; will update and consider other models	Ties amendment policies to best available science to protect the Darby	Included original modelling to inform conservation and land use
Stormwater Best Management Practices	Water Quality & Stream Protection	Updates stormwater BMPs to align with industry best practices	Better manages stormwater runoff from developments	Extensive prescriptions that were BMP at that time
Stream and Wetland Restoration Requirements	Water Quality & Stream Protection	Requires ecologically degraded streams/wetlands to be restored as part of new development	Directly improves habitat quality and water quality; supports fish and macroinvertebrate communities	Not required
Stream Corridor Protection Zone	Water Quality & Stream Protection	Updates current Appendix 3-3, with wider minimum buffer and riparian forest	Protects and improves stream habitat and aquatic life, assists with climate resilience	Plan formula was less protective than current regulations and amendment

TOPIC	CATEGORY	AMENDED PLAN	PURPOSE	2006 PLAN
Wetland Buffers	Water Quality & Stream Protection	Expands minimum buffers for Categories 1, 2, & 3 by 50'	Aligns buffers with expert recommendations to protect and preserve wetlands	Used minimum buffers established by the state
Wetland Development Standards	Water Quality & Stream Protection	Provides clear, consistent standards for wetlands during development	Preserves and protects Darby wetlands during and after the development process	Provided guidance in line with then-current standards

1.13. General Water Quality Goals

Unlike the 2006 plan, the Amended Plan provides specific, action-oriented goals for water quality. These goals align with how Ohio EPA measures water quality and reflects the collective commitment to the health of the Big Darby Accord watershed. The goal is to achieve and maintain the highest scientifically and technically feasible Ohio EPA designations for aquatic life use, recreational use and antidegradation,[7] with the following long-term goals:

- **Aquatic Life Use:** Maintain Exceptional Warmwater Habitat (EWH); maintain or improve Warm Water Habitat (WWH); and improve Modified Warm Water Habitat (MWH).[8]
- **Recreational Use:** Primary Contact Recreation (PCR), as applicable.
- **Antidegradation:** Outstanding State Waters and Superior High-Quality Waters, as applicable.

The Amended Plan augments existing Big Darby protections with new monitoring, modelling, and conservation requirements to meet these ambitious goals.

1.14. Science-Based Plan Amendments

The scientific foundation for the Amended Plan extends beyond problem identification and includes up-to-date solutions for the highest feasible water use attainment in the planning area. Section 5.2 outlines the Amended Plan's approach to meet specific goals through land use planning. Appendix F. Bibliography also includes extensive references to current scientific and technical literature that guides protection of conservation areas, development standards for a range of uses, and stormwater BMPs to protect the Darby.

BDART anticipates new models, existing model updates, and new data during the life of the Amended Plan. When this happens, BDART will include the model and data for consideration at a regularly scheduled meeting at least once per year. Consideration of new and updated models and external data will be on a case-by-case basis, and inclusion in future plan amendments will be at the discretion of the Accord jurisdictions.

The Appendix contains sections covering the following topics, all of which have informed the Amended Plan:

- Original Plan Modelling
- Central Ohio Regional Water Study

- Predictive Analysis for High-Functioning Urbanized Streams
- Integrated Prioritization System (IPS) Phase 1
- ODNR Assessment of the mussel communities of Hellbranch Run, Franklin County, Ohio
- Ohio EPA Hellbranch Water Quality Monitoring
- Future Modelling Tools

A range of recent models and reports are currently available for the Big Darby Accord Planning Area, with more expected in the coming years. Each may prove useful for the Amended Plan. Given the variability of modelling types and outcomes, BDART should consult with the organizations responsible for each, evaluate the methodology and applicability, and incorporate the findings where appropriate.

2. Water Quality Monitoring & Assessment (WQM&A)

2.1. WQM&A Goals and Framework

The Amended Plan provides specific, action-oriented goals for water quality. These water quality goals align with how Ohio EPA measures water quality and reflect the collective commitment to the health of the Big Darby watershed. The following monitoring and assessment framework supports adaptive management in furtherance of our commitments:

- Use best practices to inform WQM&A program design, implementation, and evolution.[9]
- Track attainment of the highest scientifically and technically feasible Ohio EPA designations for aquatic life use, recreational use, and antidegradation.[10]
- Enable responsive, adaptive action by BDART.[11]
- Identify a clear framework to respond to issues and threats in the planning area.[12]
- Maintain transparency and accountability with Big Darby Accord jurisdictions, residents, landowners, and other stakeholders.

2.2. WQM&A Governance

On behalf of the Big Darby Accord jurisdictions, BDART will draft and seek legislative approval for a Water Quality Monitoring & Assessment Program Memorandum of Understanding (MOU), or similar agreement, to:

- Formalize roles and responsibilities.
- Designate a third-party government administrator for the program (e.g., Franklin County SWCD, Franklin County Engineer's Office, or similar).
- Establish stable funding contributions from each jurisdiction and the Darby Revenue Program.[13]
- Present data in public updates annually and make data easily accessible to the public.
- Reassess the WQM&A every six years (two monitoring cycles).
- Ensure engagement with subject-matter experts and other interested parties.

If no agreement is reached by the jurisdictions within six months of this amendment, BDART members must develop and document an alternative implementation approach until an MOU is finalized.

2.3. Funding Allocation and Sources for WQM&A

The third-party government administrator will estimate the total cost for a 3-year WQM&A program cycle. Jurisdictions will share costs proportionally based on jurisdictional population, with a minimum annual payment of $1,000. The calculations for Franklin County and Columbus will equal one-half of Columbus' population. Calculations will limit township populations to unincorporated areas.

Based on input from water quality monitoring experts, the startup costs for Water Quality Monitoring and Assessment will be substantial. When implementing the program, the total start-up costs will be covered proportionately by the Accord jurisdictions using the same formula as the ongoing annual costs.

The following formulas express these allocations:

All jurisdictions except Columbus/Franklin County:
$T = \max((C \times (P / TP), \$1{,}000)$

Columbus/Franklin County:
$T = ((C - JTC)*0.5)$

Where:
T = Total cost per jurisdiction
C = Total program cost
JTC = Total jurisdiction costs other than Columbus/Franklin County
P = Population of jurisdiction
TP = Total population of all contributing jurisdictions

Table 4 shows a *sample* allocation using these formulas and is based on an annual cost of $200,000.

Table 5 Sample Allocation for Water Quality Monitoring Costs

JURISDICTION	T	C	P	TP	P/TP
Brown	$1,000	$200,000	2,300	957,600	0.24%
Norwich	$1,000	$200,000	4,000	957,600	0.42%
Prairie	$3,560	$200,000	17,000	957,600	1.78%

Pleasant	$1,260	$200,000	6,000	957,600	0.63%
Washington	$1,000	$200,000	1,000	957,600	0.10%
Columbus	$91,730	$200,000	890,000	957,600	46.47%
Hilliard	$7,720	$200,000	37,000	957,600	3.86%
Harrisburg	$1,000	$200,000	300	957,600	0.03%
Grove City	$1,000	$200,000	0	957,600	0.00%
Franklin County	$91,730	$200,000	0	957,600	46.47%

Jurisdiction may use a variety of funding sources to meet their annual allocation. Jurisdictions are strongly encouraged to set aside Darby Revenue Program funding for the full cost of the WQM&A program.

2.4. WQM&A Data

Big Darby Accord jurisdictions and stakeholders need access to high-quality data to track trends and adapt to changing conditions in the planning area. To that end, this section addresses data collection, management, quality control/assurance, and related data issues.

2.4.1. Data Collection Requirements

All labs and fieldwork must comply with the most recent Ohio EPA Credible Data Program, or equivalent. Both watershed- and site-level monitoring must meet Level 3 standards under that program.

2.4.2. Data Management and Quality Control

All contracts will require quality assurance and centralized data storage in an easily accessible format. The administrator must share annual backups with each jurisdiction. The administrator must ensure industry-accepted quality controls and must provide a narrative summary of the controls as part of annual reporting on the program.

2.4.3. Historic Water Quality Data

In addition to new data from this WQM&A program, significant historic data exists for the planning area. The third-party administrator of the program must aggregate both existing and new data on an annual basis and make it publicly accessible. The administrator must analyze historic data in a manner to inform adaptive management decisions by BDART. Collecting and

sharing this data more broadly and transparently can enhance collaboration and support more informed decision-making. The Amended Plan supports utilizing historic data collected by state agencies, including Ohio EPA and ODNR, and compiled and aggregated through the ODNR IPS Study, as an important reference point for ongoing collaboration and data stewardship.

2.5. WQM&A Program

2.5.1. Types of WQM&A

Ohio water quality standards are based on attainment of designated uses for aquatic life codified in Ohio Quality Standards,[14] anti-degradation based on numeric and narrative criteria in the WQS, and recreation use under Ohio law.[15] This WQM&A watershed-level program should include the following, which may be amended or supplemented by recommendations of the third-party administrator:

- Physical – Temperature, flow, turbidity
- Habitat
    - Qualitative Habitat Evaluation Index (QHEI).[16]
    - Headwater Habitat Evaluation Index (HHEI), which is designed to evaluate primary headwater streams and small systems where QHEI is not an appropriate assessment tool.[17]
- Biological[18]
    - Index of Biotic Integrity (IBI)
    - Invertebrate Community Index (ICI)
    - Modified Index of Well-Being (MIwb)[19]
    - Specific biological parameters of concern (e.g., algae and cyanobacteria, E. coli and total coliform, Biochemical Oxygen Demand (BOD))
- Wetland and Aquatic Habitat
    - Integrated Wetland Assessment Program (IWAP)
    - Ohio Rapid Assessment Method (ORAM)
    - Ohio Stream Assessment Method (OSAM)
    - Headwater Macroinvertebrate Field Evaluation Method (HMFEI)
- Chemical
    - Nutrients (Nitrogen, Phosphorus)
    - Total Suspended Solids (TSS)
    - Dissolved Oxygen (DO)
    - Other chemicals of concern, as determined by the third-party administrator.

- Additional indicators, based on scientific publications, ongoing studies conducted by state agencies, and/or as identified by the third-party administrator.[20]

2.5.2. Emerging Water Quality Concerns

This amendment includes a three-year pilot to track Total Dissolved Solids (TDS).[21] For purposes of this plan, TDS includes, but is not limited to, chloride and sulfate ions[22] and ammonia-nitrogen[23] and may include other dissolved chemicals of concern based on the receiving stream. Jurisdictions will also collaborate with Ohio EPA to implement U.S. EPA's 2013 ambient criteria for total ammonia-nitrogen (ammonia-N).[24]

2.5.3. Freshwater Mussel Monitoring

This amendment includes a six-year pilot to survey freshwater mussels in tandem with each of the three sub-watershed studies. The mussel surveys will last for two cycles (six years). BDART may further extend or amend the mussel surveys based in part on recommendations from the program administrator. Mussel monitoring must follow the Ohio Mussel Survey Protocol and be conducted by federally permitted mussel surveyors.[25] Prior to finalizing a schedule for mussel testing, the third-party administrator must consult with one or more malacologists to ensure the safety of the proposed testing. The administrator may recommend, and BDART may change, the frequency of mussel testing based on the recommendation of the administrator.

2.5.4. Watershed-Level WQM&A

The WQM&A program will emulate prior surveys and survey locations to maintain linkage with historical data, including sites within the Franklin County portion of the Big Darby Creek watershed that were monitored as part of the 2014 Biological and Water Quality Study of the Big Darby Creek Watershed by Ohio EPA.[26] The program administrator may recommend additional monitoring sites as needed to better document and track potential changes throughout the ecosystem. For all testing areas, this amendment recommends that the program utilize continuous monitoring to the extent technically and financially feasible.

Watershed-level WQM&A involves a three-year rotation cycle. Each subwatershed monitoring cycle includes up to 20 sites per year, which may be amended by the administrator with approval of BDART. The three-year cycle is as follows:

- Year 1 – Hellbranch Run and tributaries
- Year 2 – Big Darby Creek and tributaries
- Year 3 – Little Darby Creek and other locations as needed

2.5.5. Site-Level WQM&A

Development site-level WQM&A applies to development and stream restoration activities governed by the Ohio EPA Construction General Permit (sometimes referred to as the Darby Stormwater Permit; current version OHC000006) which incorporates by reference 40 CFR 122.41(j) and 40 CFR 136. This amendment incorporates by reference the Ohio EPA Construction General Permit requirements, in addition to the requirements of this amendment.

To ensure a consistent, professional application of site-level monitoring, the project sponsor or developer must pay a one-time fee for pre- and post-construction monitoring. This fee must be paid to the contractor or third-party administrator selected to implement the overall WQM&A program. The fee must cover the full estimated cost of pre- and post-construction monitoring. The fee must be uniform across the planning area and disclosed on an annual basis. The fee must be paid prior to any site work for the project.

- Pre-construction – Baseline data
- Construction – Stormwater discharges/runoff
- Post-construction – BMP effectiveness

Enhanced pre- and post-construction monitoring are limited to sites within 500m (1,640') of a receiving stream, excluding small headwater, intermittent and ephemeral streams.[27]

The pre-construction monitoring will include all testing measures in the watershed-level monitoring. In addition to post-construction requirements of the Construction General Permit, the post-construction monitoring plan must replicate the pre-construction plan using the same testing measures in the same locations three years after construction. Monitoring during construction will follow the requirements of the General Construction Permit. The applicable entity performing the monitoring shall identify an appropriate monitoring location within the nearest receiving waterway or stormwater conveyance where monitoring results can, to the greatest extent feasible, reflect conditions associated with the development permit in question while minimizing upstream influences from unrelated drainage areas.

All completed monitoring data from site-level WQM&A must be collected by the applicable jurisdiction and provided to the third-party administrator of the Big Darby Accord WQM&A program. The administrator must aggregate the data and include it in the annual monitoring report for the Darby.

2.5.6. Sample Monitoring Plan

Like the original plan, the Amended Plan provides a sample water quality monitoring plan (see Table 5). The third-party administrator will provide BDART with a sample water quality monitoring plan for review and approval.

Table 6 Sample Water Quality Monitoring and Assessment Plan

	LOCATION		DATA GATHERED	TIME PERIOD	END DATE
WATERSHED MONITORING	HELLBRANCH RUN	USGS gages and other continuous monitoring stations	Flow, TSS, N, P, Geomorphic, DO, Temperature, pH	Flow -- Continuous Chemicals -- continuous (or monthly if infeasible) Geomorphic -- once every three years	Three-year cycle, no defined end date
		Historic EPA sites plus additional (not to exceed 20)	IBI, ICI, QHEI, MIwb, Mussels, TSS, N, P, other chemicals (as needed)	Once every three years, rotating	
	BIG DARBY CREEK	USGS gages and other continuous monitoring stations	Flow, TSS, N, P, Geomorphic, DO, Temperature, pH	Flow -- Continuous Chemicals -- continuous (or monthly if infeasible) Geomorphic -- once every three years	
		U/S and D/S of Little/Big Darby confluence	IBI, ICI, QHEI, MIwb, Mussels, TSS, N, P, other chemicals (as needed)	Once every three years, rotating	
		County line where Big Darby Creek enters Franklin County	TSS, N, P, other chemicals (as needed)	Once every three years, rotating	
		Historic EPA sites, plus additional sites (not to exceed 20)	IBI, ICI, QHEI, MIwb, Mussels, TSS, N, P, other chemicals (as needed)	Once every three years, rotating	
	LITTLE DARBY CREEK	U/S of county line where Little Darby Creek enters Franklin County	TSS, N, P, other chemicals (as needed)	Once every three years	
DEVELOPMENT SITE MONITORING	PRE-CONSTRUCTION	U/S and D/S of the site for baseline	TSS, P, N	Construction General Permit, or once if not otherwise required	Once
			IBI, ICI, QHEI, MIwb, Geomorphic	Once prior to site development	
	POST-CONSTRUCTION	At new stormwater conveyance systems and U/S and D/S of the site	TSS, P, N	Stormwater General Permit, or once if not otherwise required	Three years
			IBI, ICI, MIwb, QHEI, Geomorphic	Once, three years after completion	

2.6. Assessment and Modeling

Specific modeling methods will be determined as needed by BDART based on recommendations from the third-party administrator, subject matter experts, appropriate governmental entities, and other technical stakeholders. The methods must assist BDART as it responds to changing watershed conditions, while ensuring transparency and public engagement in the process.

2.7. Land Use Monitoring

To effectively make sense of WQM&A results, BDA jurisdictions must utilize geospatial information systems (GIS) to map Total Impervious Area ("TIA"), which is impervious area regardless of how stormwater is managed. Mapped data must include the date of completion. BDA jurisdictions must also map the location, type, and date of stormwater BMPs for all new developments. The Amended Plan empowers BDART to promulgate – and jurisdictions agree to use – standards for GIS to ensure uniform mapping. The methodology for monitoring impervious surface coverage should be periodically reviewed and updated, as appropriate, to incorporate emerging approaches for tracking impervious surface coverage beyond TIA, including, but not limited to, metrics examined in Phase II of the ODNR IPS study.

2.8. Public Engagement and Water Quality Monitoring

In addition to public reporting and data access previously mentioned, organizations and members of the public may be interested in actively engaging in the science of the plan. For example, the following public engagement activities exist for the Darby:

- ODNR, Scenic Rivers, Volunteer Monitoring Reports [28]
- United States Environmental Protection Agency, Nonpoint Source: Volunteer Monitoring [29]
- Water Management Association of Ohio, Ohio Citizen Science Network [30]
- Ohio Watershed Network, The Ohio State University Extension, Volunteer Stream Monitoring [31]

The Big Darby Accord will continue to encourage public involvement in volunteer water quality monitoring. Given the number of current programs and finite financial resources, the amendment does not recommend creating another volunteer water monitoring program or public education efforts.

3. Open Space

3.1. Definition of Open Space

Open space is land preserved, restored, and/or maintained in a manner that supports the conservation goals of the Big Darby Accord Watershed Master Plan.

3.2. Existing Open Space

Currently, the Big Darby Accord Planning Area includes existing conservation areas already protected from development by ownership and/or covenant. This includes open space areas such as held by the Metro Parks, jurisdictional Recreation and Parks, Stream and Wetlands Foundation, other non-profits, and private entities. These areas do not count towards future development-related open space requirements.

3.3. Types of Open Space

The Amended Plan recognizes the following types of open space for Big Darby Accord dedication. Each of the following contributes to the conservation goals of the Amended Plan.

Naturalized Open Space. Land preserved and/or maintained in a natural state to protect and maintain natural processes and the waters of the Big Darby Creek watershed including any paths or trails through them and composed predominately of native species. Naturalized Open Space includes scenic byways, nature preserves, meadows, wetlands, forests, wildlife habitats, and other similar areas not otherwise protected as Preserved Conservation Areas.

Preserved Conservation Areas. All Primary Conservation Areas and Secondary Conservation Areas as defined in Section 4.3, that are permanently protected from development via ownership and/or covenant (see Conservation Areas).

Public Parks. Areas permanently operated and maintained to conserve the land and water and primarily provide for low-impact, nature-based, passive recreation. Parks focused on active recreation are governed as Active Recreation Areas. Examples of public parks include, but are not limited to, botanical gardens, ecological centers, model farms and other similar uses.

Active Recreation Areas. Areas permanently operated and maintained as active recreational areas. Examples of Active Recreation Areas include sports fields, courts and tracks, playgrounds, and other similar uses.

Mitigation Banks. Areas where wetlands, streams, open space, or other conservation resources have been restored, enhanced, preserved, or created specifically to compensate for environmental impacts from development projects.

Placemaking/Cultural Areas. These are placemaking or cultural elements included within a development (e.g., social areas and/or focal points) or as an offsite public use area (e.g., a cemetery).

Naturalized Green Infrastructure. Areas designed and maintained to manage stormwater by functioning like wetlands, floodplains, and/or streams. For examples of acceptable BMPs, see XX [insert link to stormwater BMPs section].

Stream and Wetland Restoration. Areas of streams and/or wetlands, including ditches and major underground drainage tiles, which have been returned to a natural state after being ecologically degraded.

3.4. General Open Space Guidance

Jurisdictions, developers, non-profits, and other open space acquisition and/or operation entities must follow these guidelines for open space under their control. For development-related open space, the jurisdiction overseeing the development is responsible for implementing these guidelines.

- Open space must be permanently protected from development.
- Open space must be generally accessible, functional, safe and useable, with access to and from the site.
- If a buffer is not otherwise required, open space must provide a 25’ buffer of native vegetation around the open space area, excluding areas smaller than one (1) contiguous acre.
- Recreational trails and shared-use paths, including paved paths and trails, count towards required development-related open space.
- Roads, off-street parking, driveways, and similar vehicular transportation infrastructure do not count toward required open space.

- Open space credits may be used to meet the offsite open space required for a given development.

3.5. Development-Related Open Space

The following rules apply to open space in relation to development sites.

Total Open Space – At least 50% of the gross development site acreage, or total Preserved Conservation Area, whichever is greater.

Onsite Open Space – At least 25% of gross development site acreage, or total Preserved Conservation Area, whichever is greater.

- Naturalized Open Space must cover at least 25% of the gross development site acreage.
- Other open space options may be used for the additional required open space onsite.
- The onsite acreage not used as open space may be otherwise used for the development.

Offsite Open Space – Optional, up to 25% of gross development site acreage. [32]

- Must provide open space equal to 1.5 times the proposed offsite open space. For example, if a 100-acre site proposes 25 acres of offsite open space, the development must provide open space equal to at least 25 acres onsite and 37.5 acres offsite (25*1.5=37.5).
- Limited to one or more of the following in the same subwatershed:
  - Naturalized Open Space
  - Preserved Conservation Areas
  - Public Parks
  - Mitigation Banks
  - Naturalized Green Infrastructure
  - Stream and Wetland Restoration
- Must obtain approval of both jurisdictions if offsite open space is proposed in a jurisdiction other than the development site.

Open Space Ratios – Because they provide greater ecological benefits, Stream and Wetland Restoration open space will be credited at 2:1 ratio where every acre of restoration equals two acres of open space for a development project. This ratio applies to restoration onsite or offsite. When calculating this ratio, the entire Primary and Secondary Conservation Areas must be included, along with any additional naturalized open space provided in excess of those requirements.. [33] Restoration of farm fields, vacant land, and underutilized sites provides an

opportunity to support local residents and the ecological health of the planning area. Restoration of those sites to a naturalized state using native vegetation will be credited at a 2:1 ratio for offsite open space.

Excess Open Space – If a developer exceeds the required open space for a site, the developer may bank the additional acreage and use or sell credits for offsite open space. To be eligible, the additional open space must be one or more of the following: naturalized open space, preserved conservation area, and/or stream and wetland restoration.

Parkland and Open Space in the City of Columbus – The City of Columbus Zoning Code Chapter 3318 Parkland Dedication Ordinance, as amended, creates a requirement for public parkland/open space dedication to assure that public parkland and open space are adequate. The Parkland Dedication Ordinance, or its replacement or successor, applies to development in the Darby that is or will be annexed into the City of Columbus. It will often be the case that land set aside to meet open space requirements set forth in Amended Plan may satisfy the Parkland Dedication Ordinance's intent to provide adequate public parkland and open space for recreational purposes. However, the Columbus Recreation and Parks Department is responsible for making this determination on a case-by-case basis. Developers are encouraged to meet with Columbus Recreation and Parks regarding site design prior to preliminary plan submittals and to discuss how development can contribute to the department's long-term vision for a connected park system in the Accord area.

3.6. Open Space Acquisition

Based on the requirements established in this plan, every acre of development will add at least one acre of open space. These open space additions have allowed Big Darby Accord jurisdictions to grow the overall open space in the planning area to XXXXX acres. However, Accord jurisdictions and partners have a larger goal of 25,000 acres of open space protected for generations. To address the need for more open space acquisition, Big Darby Accord jurisdictions created a new regional open space fund as part of this amendment.

3.7. Open Space Credit Framework

4. Conservation (Criterion 3)

Primary Conservation Areas are defined as environmentally sensitive areas that are protected by regulation and must be conserved. Secondary Conservation Areas are defined as those areas that must be conserved, unless technically or commercially infeasible. The categories for Primary and Secondary Conservation Areas are listed below along with the preferred set of permitted, conditional, and prohibited uses.

4.1. Primary Conservation Area (Criterion 3a)

The following elements must be considered as Primary Conservation Areas [34] and must be preserved. Big Darby Accord environmental mapping identifies these features but must be confirmed on a site-by-site basis.

- All land area within the Stream Corridor Protection Zone;
- Wetlands as defined by the US Army Corps of Engineers or the Ohio EPA, including setbacks based on wetland quality; [35]
- Populations of endangered or threatened species as defined by either the state or federal government;
- Existing publicly or privately held open space; and
- Healthy forests defined as having 50% or more tree canopy cover of at least one contiguous acre, including a 25-foot setback from the edges.

4.2. Secondary Conservation Areas (Criterion 3b)

The following elements must be considered as Secondary Conservation Areas and must be preserved unless the applicable jurisdiction finds preservation is not technically and/or commercially feasible. Secondary Conservation Areas that are not preserved must be mitigated in the same HUC-12 subwatershed (see Section 6.6.3 Applicable Mitigation Regulations). Big Darby Accord Environmental Sensitivity Mapping identifies these features but must been confirmed on a site-by-site basis.

- Slopes which include NRCS designated Highly Erodible Land (HEL) plus a 50-foot setback from the top of the slope;
- Existing healthy forests, including tree lines, less than one contiguous acre;

- Hellbranch Run Riparian Protection Area where no impervious area may be placed within 300' on each side of the stream centerline, excluding Class 1 or 2 Primary Headwater Streams; [36]
- Big and Little Darby Creek Direct Tributary Stream Protection Area where no impervious area may be placed within 400' on each side of the stream centerline, excluding Class 1 or 2 Primary Headwater Streams;
- Extended Big and Little Darby Creek Stream Corridor Protection Zone of 1,000' on each side of the stream centerline, excluding Class 1 or 2 Primary Headwater Streams; [37]
- Extended headwater zones; [38] and
- Other clearly identified significant natural features, such as critical groundwater recharge zones [39] and non-jurisdictional ephemeral features, as identified by fieldwork and determined by the applicable jurisdiction. [40]

4.3. Preserved Conservation Areas

All Primary Conservation Areas, and all Secondary Conservation Areas that are preserved or mitigated, are considered Preserved Conservation Areas and must be managed according to the permitted, conditional, and prohibited uses in this plan. This provision also applies to any property or conservation easement acquired or credited as mitigation for impacts on Primary and Secondary Conservation Areas.

4.4. Permitted Uses (Criterion 2c/3d) [41]

The Big Darby Accord Watershed Master Plan and local zoning regulation adopted pursuant to the plan must specify the following permitted uses within the Preserved Conservation Areas and other Naturalized Open Space. Development site design must maximize distance from Preserved Conservation Areas, maximize contiguity with other onsite open space, and maximize connectivity with adjacent open space, unless it is infeasible. Permitted uses must be clearly delineated on all site plans.

Uses that are passive in character (including, but not limited to, passive recreational uses, as permitted by federal, state and local laws, such as hiking, fishing, hunting, picnicking and similar uses) shall be permitted in Preserved Conservation Areas and other Naturalized Open Space.

Permitted uses are as follows:

1. Passive recreational activity, including unpaved public or private trails

2. Removal of damaged or diseased trees.
3. Revegetation or reforestation using native species.
4. Installation and maintenance of public utilities, provided that disturbances due to construction are minimized and mitigated per the requirements in the Construction General Permit, is classified as a permitted use.
6. Disturbances necessary to accomplish the permitted uses described in this criterion. However, all such disturbances shall be minimized and mitigated.[42]

4.5. Conditional Uses (Criterion 2d/3e)

The Big Darby Accord Watershed Master Plan and local zoning regulation adopted pursuant to the Amended Plan must specify the following conditional uses within the Preserved Conservation Areas and other Naturalized Open Space. Conditional uses are activities that may be permitted after undergoing a review process that evaluates the extent of damage that the use may cause if the activity is permitted, and that provides for mitigation of that damage onsite or, if onsite is infeasible, in the same HUC-12 subwatershed. BDART is empowered to develop, and jurisdictions must use, a standardized review process to approve or deny conditional uses, with reasons for denial clearly detailed.

Conditional uses are as follows:

1. Streambank stabilization/erosion control work and/or large-scale stream channel and riparian setback and wetland restoration work.
2. Construction of paved trails.
3. Unpaved trails as a component of a paved trail system may be necessary for Americans with Disabilities Act compliance.
4. A pervious driveway.
5. An arterial or non-arterial street provided optional routes are infeasible and pervious surfaces are used where technically and commercially feasible.
6. Invasive plant species removal (as defined by ODNR, Ohio Department of Agriculture, or the local jurisdiction) is a conditional use, provided the removal meets the following conditions: a plan is in place for removal and replacement with native plant species and impact to non-invasive species is strictly limited, with any adverse impacts mitigated.
7. Green stormwater best management practices outside the Stream Corridor Protection Zone.

4.6. Prohibited Uses (Criterion 2e/3f)

The Big Darby Accord Watershed Master Plan and local zoning regulation adopted pursuant to the plan must specify the following prohibited uses within the Preserved Conservation Areas and other Naturalized Open Space.

1. New construction of buildings or structures, fencing, and signs within the SCPZ, unless required by the Amended Plan, local stormwater drainage manual, or state or federal regulation.
2. Any stormwater infrastructure that does not meet the definition and related best management practice standards of Naturalized Green Infrastructure as defined in Section 3.3.
3. Dredging, dumping, excavating, and filling.
4. Motorized vehicles except for emergency vehicles when necessary for public health and safety or for vehicles that support approved uses.
5. Disturbance of native vegetation.
6. Parking lots or other human-made impervious cover unless otherwise allowed.
7. Application and/or spraying of wastewater treatment plant residuals.
8. Location of any small, local waste treatment system or discharge of wastewater from the same. [43]

4.7. Delineation of Conservation Areas and Other Open Space (Criterion 2f)

The boundaries of the Primary and Secondary Conservation Areas, as well as other proposed open space, are required to be clearly delineated on development plans and prominently displayed in the field prior to development. No later than the end of construction, the applicant shall permanently delineate the Preserved Conservation Areas in an aesthetically harmonious manner, such that the location of the zone is apparent to the casual observer and that permits access to the zone.

4.8. Inspection of Preserved Conservation Areas and Other Open Space (Criterion 2h)

Periodic inspections of Preserved Conservation Areas, as well as all dedicated open space, are required by the local jurisdiction. Each jurisdiction must adopt a plan specifying how and how

often inspections will be conducted, or shall, as a condition of conveying the ownership of these areas to another party, require a plan to be adopted by the third-party entity responsible for the areas. Plans must define how often such inspections will be conducted.

4.9. Protection and Ownership of Open Space (Criterion 3g)

Ownership and Maintenance

Development plans must indicate which of the following are planned to be utilized to own and maintain the Preserved Conservation Areas and other proposed open space, provided reliance on homeowners' associations or condominium associations shall be approved on a case-by-case basis only if options 2 and 3 are infeasible:

-

1. Homeowners' associations/condominium associations;
2. Political jurisdictions; and
3. Third party land trusts.

Protection Mechanism

Development plans must identify the legal mechanism used to permanently protect the Preserved Conservation Areas and other proposed open space. Acceptable mechanisms may include:

1. Conservation easements;
2. Environmental covenants;
3. Deed restrictions; and
4. Other legally enforceable instruments approved by the applicable jurisdiction.

4.10. Permanent Protection of Open Space (Criterion 3h)

Conservation easements are an acceptable form of permanent protection if enforcement of the easement is undertaken by one of the ownership options listed in Criterion 3g. If a Preserved Conservation Areas is conveyed as an easement or similar legal instrument, it must be conserved in perpetuity. These requirements also apply to any area used for mitigation of impacts to Primary or Secondary Conservation Areas.

4.11. Contiguity of Open Space (Criterion 3i)

Preserved Conservation Areas and other Naturalized Open Space shall adjoin any neighboring areas of protected open space, and non-protected natural areas that would be candidates for inclusion as part of a future area of protected open space.

4.12. Design and Review (Criterion 3j)

The following principles must be specifically included in local zoning or other ordinances for all site design and construction in the Big Darby Accord Planning Area:

1. Identify areas to be conserved;
2. Identify areas for location of homes and other structures;
3. Placement of roads and other infrastructure;
4. Drawing of lot lines; and
5. Identify contiguous current and potential open space.

4.13. Management of Preserved Conservation Areas and Other Open Space (Criterion 3k)

The applicant for development shall submit a maintenance plan of Preserved Conservation Areas, common facilities, and open space that maximizes ecological function of the areas. The plan must be prepared by a qualified person or entity, such as a professional engineer, landscape architect, parks district, or similar, and provide at a minimum the following:

1. Allocates responsibility and guidelines for the maintenance of the conservation area and operation of any facilities located thereon, including provisions for ongoing maintenance and for long-term capital improvements;
2. Estimates the costs and staff requirements needed for maintenance and operation of, and insurance for, the conservation area and outlines a means by which such funding will be obtained or provided;
3. Provides for any changes to the plan to be approved by the local governing body; and
4. Provides for enhancement of the plan.

Prior to transferring Preserved Conservation Areas and other open space, the developer must conduct a site inspection, document the condition of the areas, and have an approved maintenance plan in place to ensure all Preserved Conservation Areas and other open space will be properly maintained in perpetuity. [44]

In the event the party responsible for maintenance of the conservation area fails to maintain all or any portion in reasonable order and condition, the appropriate governing body may pursue responsibility for its maintenance through whatever legal means are at its disposal.

4.14. Hellbranch Watershed Special Prescriptions

The Hellbranch Run subwatershed does not include the same level of healthy riparian corridor as the Big and Little Darby Creeks.[45] The subwatershed consists of more urban land uses, segmented land ownership, and historic ditching. The Hellbranch also has extensive agricultural impacts along Hamilton Run and greater urbanizing effects along the Clover Groff Run. The subwatershed is experiencing restoration, with 60% of the Clover Groff Run expected to be restored upon the completion of current private development projects and McCoy Run restored by the Stream and Wetlands Foundation.

Restoring the ecologically degraded areas of the Hellbranch requires a concerted effort by the Big Darby Accord jurisdictions. Jurisdictions must undertake the following as soon as possible to restore these areas as land within the subwatershed continues to develop:

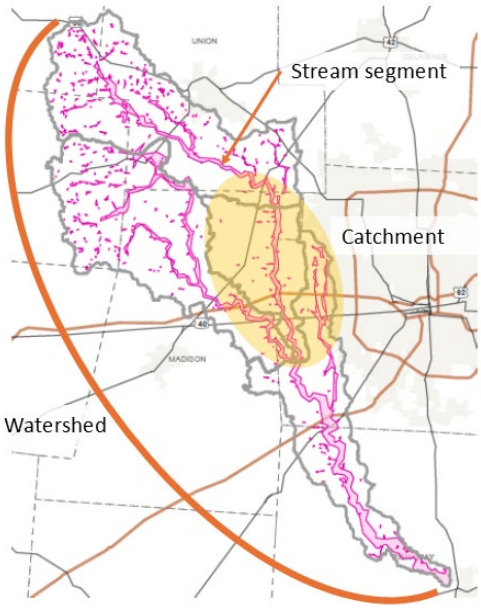
1. Landowner outreach to purchase conservation easements and restore stream segments, including the protection of the Stream Corridor Protection Zone where current land uses are compatible with the changes.[46]
2. Coordinated, permanent restoration and protection of government-owned property in the subwatershed.
3. Targeted outreach to active and vacant agricultural landowners to promote and incentivize adoption of 9-Element NPS-IS Plan best practices for agriculture in an environmentally sensitive area.
4. Replacement of impervious stormwater systems that drain into the subwatershed, utilizing green infrastructure design and BMPs wherever possible.
5. Partner with point source dischargers to improve BMPs for direct releases into the subwatershed.[47]

4.15. Local Stream Setbacks and Associated Development Restrictions (Criterion 2)

4.15.1. Geospatial Terms

The following is adapted from the USEPA StreamCat Dataset overview.[48] These terms are commonly used in environmental science, including in national best practice combined datasets like StreamCat.

- **Stream segments.** Contiguous section of stream or river between upstream and downstream tributaries (except where segment is a headwater or outlet stream).
- **Catchment.** Portion of landscape drains directly to a stream segment, excluding any upstream contributions.
- **Watershed.** Set of hydrologically connected catchments, including all upstream catchments that flow to any focal catchment.
- **Riparian Buffer or Area.** The transition area between flowing water and terrestrial (land) ecosystems composed of trees, shrubs and surrounding vegetation which serve to stabilize erodible soil, improve both surface and ground water quality, increase stream shading and enhance wildlife habitat.



[PLACEHOLDER IMAGE]

4.15.2. Applicable Streams (Criterion 2a)

Local zoning regulations adopted pursuant to the plan shall apply to the waters described here. Streams requiring protection under this section are perennial, ephemeral, or intermittent streams with a defined bed, bank, or channel. Field verification of ephemeral features and intermittent streams must be based on a biological and habitat assessment per the Ohio EPA

Primary Headwater Habitat methodology used in concert with the routine biological assessment procedures at sites draining <2.5 mi.

Perennial Stream. A stream or a part of a stream that flows continuously during all of the calendar year because of ground water discharge or surface water runoff. A perennial stream does not include an intermittent stream or an ephemeral feature.

Ephemeral Features. Surface water flowing or pooling only in direct response to precipitation, such as rain or snow. Ephemeral features do not include a wetland as determined by the US Corps of Engineers or the Ohio EPA. Ohio Revised Code 6111.311-.316 defines "Waters of the State" as only including ephemeral features that are federally jurisdictional as determined by the US Army Corp of Engineers. However, this limitation fails to protect many ephemeral features in the Big Darby Accord Planning Area. As a result, the Big Darby Accord Watershed Master Plan and Land Use Map will expand the definition of ephemeral features to both jurisdictional and locally delineated ephemeral features.

Intermittent Stream. Intermittent streams are those that have flowing water during certain times of the year when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water.

Drainage Way Exemption. A drainage way constructed for roadside drainage and generally parallel to a road shall not be considered a stream subject to these requirements unless the Director of Ohio EPA determines there are compelling reasons it should. Any other waters of the State that happen to generally parallel to a road for any distance shall be considered a stream subject to these requirements.

4.15.3. Identifying Applicable Streams

Ohio EPA uses the USGS hydrologic unit for watershed boundaries as the benchmark for an initial determination of whether a land parcel within a county contains a stream subject to these requirements. National Resource Conservation Service (NRCS) soil survey maps should be used as one reference, and the presence of a stream requiring protection should also be confirmed in the field.

Ohio EPA, an applicant for a permit, or the applicable jurisdiction may present additional information that may be considered in making a conclusion about whether a stream as defined above exists on the property. Non-jurisdictional ephemeral features must be identified by field work conducted by a qualified person and confirmed by the applicable jurisdiction.

Determinations may utilize established assessment methods such as the Primary Headwater Habitat Evaluation Index (HHEI) or other scientifically recognized field methods used to identify headwater drainage features.

4.15.4. Stream Corridor Protection Zone[49] (Criterion 2b)

The Big Darby Accord Watershed Master Plan and local zoning regulation adopted pursuant to the plan must delineate stream setback distance, which constitutes the Stream Corridor Protection Zone, using one of the following two methods:

1. The setback distance shall be sized as the *greater* of the following:[50]
   i. The regulatory 100-year floodplain based on FEMA mapping;
   ii. A minimum of 150 feet from the top of the streambank on each side;[51] or
   iii. A distance calculated using the following equation:[52]

   $W = 133DA^{0.43}$ (Equation 1, Appendix A)[53]

   where:

   DA = drainage area (mi^2)

   W = total width of riparian setback (ft)

   W shall be centered over the meander pattern of the stream such that a line representing the setback width would evenly intersect equal elevation lines on either side of the stream.

   If the DA remains relatively constant throughout the stretch of interest, then the DA of the downstream edge of the stretch should be used.

   Where there is a significant increase in the DA from the upstream edge to the downstream edge of the area of interest, the setback width shall increase accordingly.

2. Stream Restoration with 150 feet (each side) Riparian Setback. Each stream segment within the proposed site boundaries can be assessed in accordance with Attachment B, Part 1, of Appendix 3-3. In the event the stream segment is classified as a “Previously Modified Low Gradient Headwater Stream”, the permittee must restore the stream segment in accordance with Attachment B of Appendix 3-3 and include a 150-foot water quality setback distance from the top of the streambank on each side. In the event the stream segment exceeds the minimum criteria in Attachment B to be classified as a “Previously Modified Low Gradient Headwater Stream”, Attachment B may be considered on a case-by-case basis.

4.15.5. Riparian Forest Cover in the SCPZ

The Stream Corridor Protection Zone must consist of at least 150' of contiguous riparian forest cover adjacent to the channel on each side of the stream. Where feasible, a SCPZ larger than 300' should consist of at least 50% riparian forest cover. All land cover in the SCPZ must consist of primarily native vegetation.[54]

While prairie cover provides water quality benefits, data and findings presented in the Amended Plan clearly demonstrate the importance of forested riparian buffers. However, establishing a forested buffer may take longer than the development timeline for a given project. To ensure timely completion of the project and adherence to the Amended Plan, the project sponsor may make a one-time payment to the Darby Open Space Fund in an amount equal to the cost of establishing and maintaining the riparian forest cover. The funds must be utilized to establish the required riparian forest cover at the site to the greatest extent practicable. If any portion of the riparian forest cover cannot be established onsite, riparian buffer restoration must take place elsewhere in the same HUC-12 subwatershed.

4.16. Wetlands[55]

Under the Ohio Administrative Code, "Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration that are sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. "Wetlands" includes swamps, marshes, bogs, and similar areas that are delineated in accordance with the 1987 United States Army Corps of Engineers wetland delineation manual and any other procedures and requirements adopted by the United States army corps of engineers for delineating wetlands.[56]

Wetlands provide a host of ecological benefits to the Darby watershed, such as wildlife habitat, enhanced infiltration, and pollutant removal. The Amended Plan focuses on alignment of and enhancements to wetlands protection in the planning area.

4.16.1. Compliance with Amended Plan Wetlands Policy

Big Darby Accord jurisdictions agree that they may not approve stormwater management plans or development site design and compliance prior to receipt of copies of approved Federal (404) and State (401) permits if the permits are required.

4.16.2. Wetlands Identification

As part of the site design, compliance, and zoning processes, jurisdictional and isolated wetlands on development sites must be delineated and categorized by a qualified professional as required by the U.S. Army Corps of Engineers (Corps) and the Ohio Environmental Protection Agency (OEPA). The delineation must be suitable for submission the U.S. Army Corps of Engineers and/or the Ohio EPA for verification.

4.16.3. Minimum Wetland Buffer Widths

A qualified professional, such as a professional engineer, must create and delineate wetland buffers that meet the requirements of the Amended Plan and all applicable federal, state and local laws, rules, and regulations. Where there is a conflict between this Amended Plan and those requirements, the widest buffer must be used.

Ohio EPA wetland categories are used to determine the width of the wetland buffer.[57] These are general characterizations of a wetland's quality and are determined using the most recent version of the Ohio Rapid Assessment Method as guidance. Ohio EPA wetland categories are defined in the Ohio Administrative Code (OAC) 3745-1-54.

The Ohio EPA Rainwater and Land Development Manual requires the following minimum wetland buffers based on category:

- Category 3 - minimum of 120 feet
- Category 2 - minimum of 75 feet
- Category 1 - minimum of 25 feet

However, these minimums are not sufficient to protect the critical wetlands of the Big Darby Watershed. As a result, the Amended Plan adopts the following minimums:

- Category 3 – 175 feet
- Category 2 – 125 feet
- Category 1 – 25 feet

For Category 3 wetlands, increasing the minimum buffer from 120 to 165 feet brings requirements in line with protection for the highest-scoring wetlands in Ohio.[58] This minimum buffer width elevates wetland protection in the Darby in a manageable way.

For Category 2 wetlands, increasing the minimum buffer from 75 to 125 feet ensures they meet wetland mitigation banking standards (100 feet). All wetlands mitigation in Ohio is required to meet Category 2 conditions to satisfy the required performance goals, and for In-lieu Fee and Mitigation Bank projects this means the buffer must be at least 100 feet.[59]

For Category 1 wetlands, maintains the current buffer of 25 feet as minimum protection for the lowest-grade wetlands.

The Amended Plan establishes these buffers as minimums. Site design for a project, including the stormwater management system, must provide that the predevelopment quantity and quality of stormwater flows into any protected wetlands are maintained such that adequate hydrology is maintained for the preserved wetland.

4.16.4. Development Standards for Wetlands

Wetlands buffer must be protected in a naturalized state, with native species predominant and minimal disturbance during or after development.

Buffer boundaries must be permanently recorded and demarcated with appropriate signage. Preserved wetlands on a development site must be permanently protected by a legal mechanism, such as a protective covenant, and must be conveyed to a qualified entity like other open space.

Disturbance or filling of a wetland not defined by the US Army Corps of E Ohio EPA must only take place after consideration of commercially and technically feasible alternatives. Disturbance or filling of wetlands shall comply with all applicable federal and state permitting requirements, including Section 404 of the Clean Water Act and Section 401 Water Quality Certification.

4.17. Road Salts

Road salts are the primary driver of salinity in freshwater streams, which can lead to "freshwater salinization syndrome." Excessive salinity harms sensitive species and is very

difficult to remove from the environment. To ensure a balance between public safety and ecological health, Accord members will implement best practices for the use of road salts.

- Ohio EPA or equivalent road salt storage and application planning and training.
- Use of tools to reduce salting, such as pre-treatment with beet juice or brine.
- Upgrade vehicles used for salt application to ensure best management practices may be implemented effectively.
- Ongoing community education about reducing use of salt during inclement winter weather.

Accord jurisdictions are encouraged to investigate emerging efforts to curb freshwater salinization syndrome. There are promising tests underway to use plants as one means of remediating excess salinity before they reach receiving streams. For example, The Toronto and Region Conservation Authority and Toronto Pearson support Partners in Project Green.[60] Those efforts include studies of halophytes – vegetation that can accumulate and/or excrete salts. Much work remains to be done, but the potential for incremental improvement should not be ignored.

5. Land Use Planning

5.1. Understanding Land Use Planning

Land use planning is a fundamental element of guiding growth and protecting natural resources for any community. In most cases, land use planning takes the form of comprehensive plans or neighborhood-based planning efforts within a single jurisdiction. The Big Darby Accord Plan represents a unique form of land use planning that occurs across multiple jurisdictions working towards a set of common goals.

At their best, land use plans reflect the character, values, and priorities of the communities, and help guide growth, change, and investment for the future. A successful future land use plan and future land use map helps residents and developers understand what uses might be supportable on a given property. Jurisdictions also refer to land use plans when making decisions about local services and provisions of public facilities.

Zoning is adopted jurisdictional code, or law, and establishes the requirements for development of a given site – which can include allowed uses and development standards such as maximum building height or minimum building setbacks from streets or property lines. When a new zoning is proposed, jurisdictions look to their land use plans for guidance on whether to support the zoning request, and what conditions of support might be appropriate.

Although zoning can reflect existing patterns of development, this is not always the case. Similarly, these existing land uses might not be consistent with the land use plan recommendations for a given site. For instance, a site currently used for mixed use may have zoning that allows single unit residential development. The land use plan may in turn recommend that site for development more consistent with attached single unit townhomes. In this instance, the existing use (mixed use) is different from the existing zoning (lower density single unit detached residential) which is different from the recommended land use (medium density single unit attached residential).

Over time, as redevelopment occurs, the land use plan is used by jurisdictions to bring the uses and zoning into alignment with the plan, guiding growth towards agreed upon outcomes.

5.2. Land Use and Policy Goals

The main goals of the Big Darby Accord Land Use Plan and Policies are to protect and preserve areas that contribute the most to water quality and aquatic habitat, while promoting sustainable development and responsible conservation.

The Amended Plan updates the original Big Darby Accord Watershed Master Plan ("Plan" or "BDAWMP") to reflect the following:

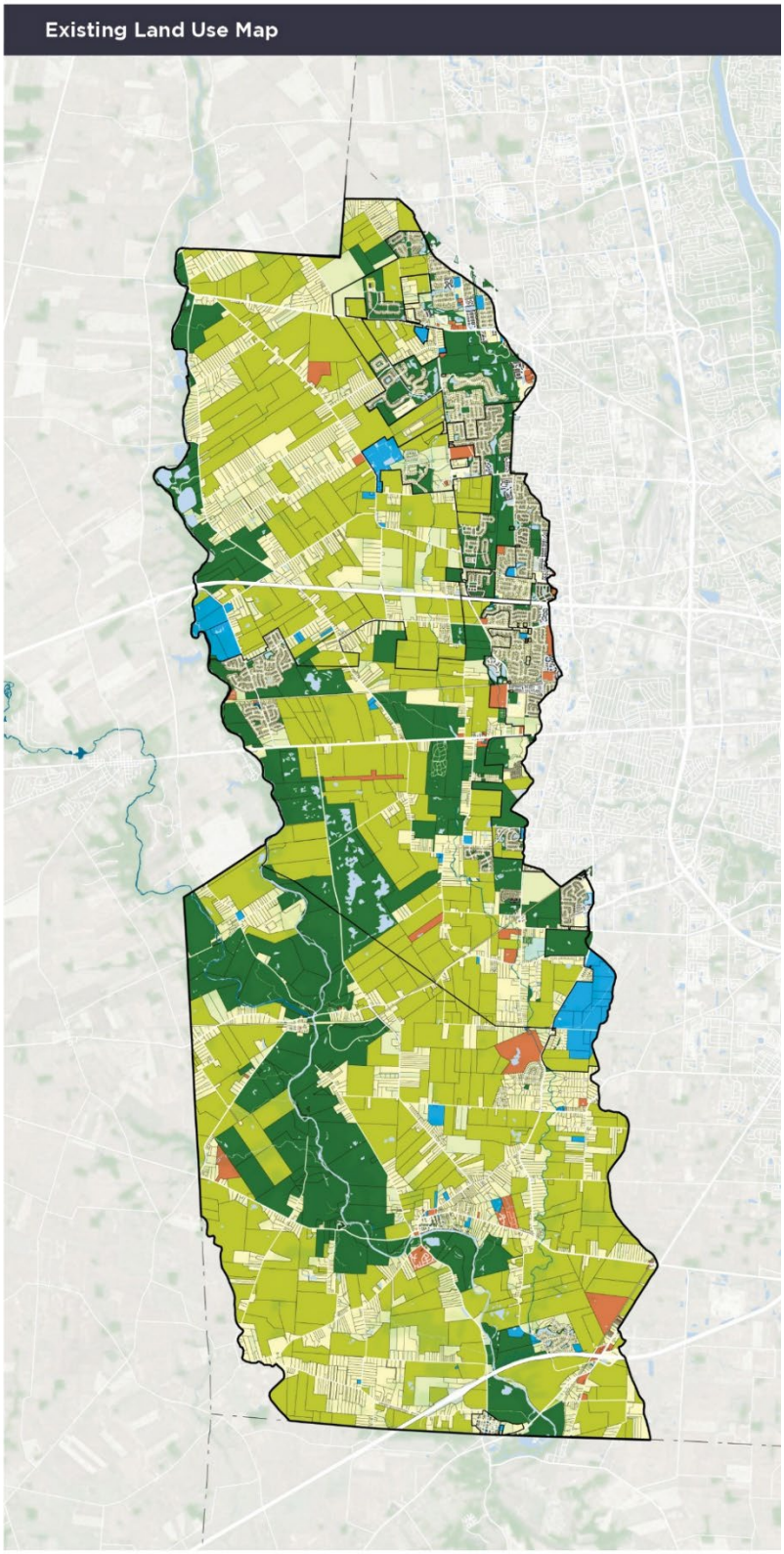
- Changes in land use planning best practices;
- Updates to environmental best management practices;
- Current centralized water and sewer system capacities and planning areas;
- Better understanding of affordability and sustainability;
- Requirements of the State of Ohio Water Quality Management Plan, Appendix 3-3, ("State 208 Plan" or "Appendix 3-3");
- Findings of the State of Ohio Total Maximum Daily Loads for the Big Darby Creek Watershed ("TMDL Report") and subsequent monitoring; and
- Requirements of relevant local, state, and federal permits, such as the Ohio EPA General Construction Permit with Darby Prescriptions.

Under the Amended Plan, Big Darby Accord jurisdictions pledge continued protection of the Big Darby Watershed through the integrated requirements of these updates, local regulations, and the policies and programs established by, or in furtherance of, this Amended Plan and in partnership with federal and state regulatory agencies.

5.3. Existing Land Use

The map on the following page summarizes the existing land use in the Big Darby Accord Planning Area. This map shows conditions on the ground, which is different than the 2006 plan Future Land Use Map. The 2006 Future Land Use Map is shown below as well.

Map 1 Existing Land Use Map



5.4. 2006 General Land Use Map

The 2006 plan created the Big Darby Accord General Land Use Map to guide conservation and development in the Planning Area. That map is shown on page x.

The 2006 plan resulted in the following total of identified and protected conservation areas in the Accord study area, but does not include open space set-aside by development:

Table 7 Conservation and Protected Areas, 2006

2006 Conservation / Protected Areas	Acreage	Acreage, Percent Planning Area
Protected	4,310	8%
Existing	6,131	11%
Tier 1	5,790	10%
Tier 2	1,885	3%
Tier 3	7,150	13%
Total	**25,266**	**45%**

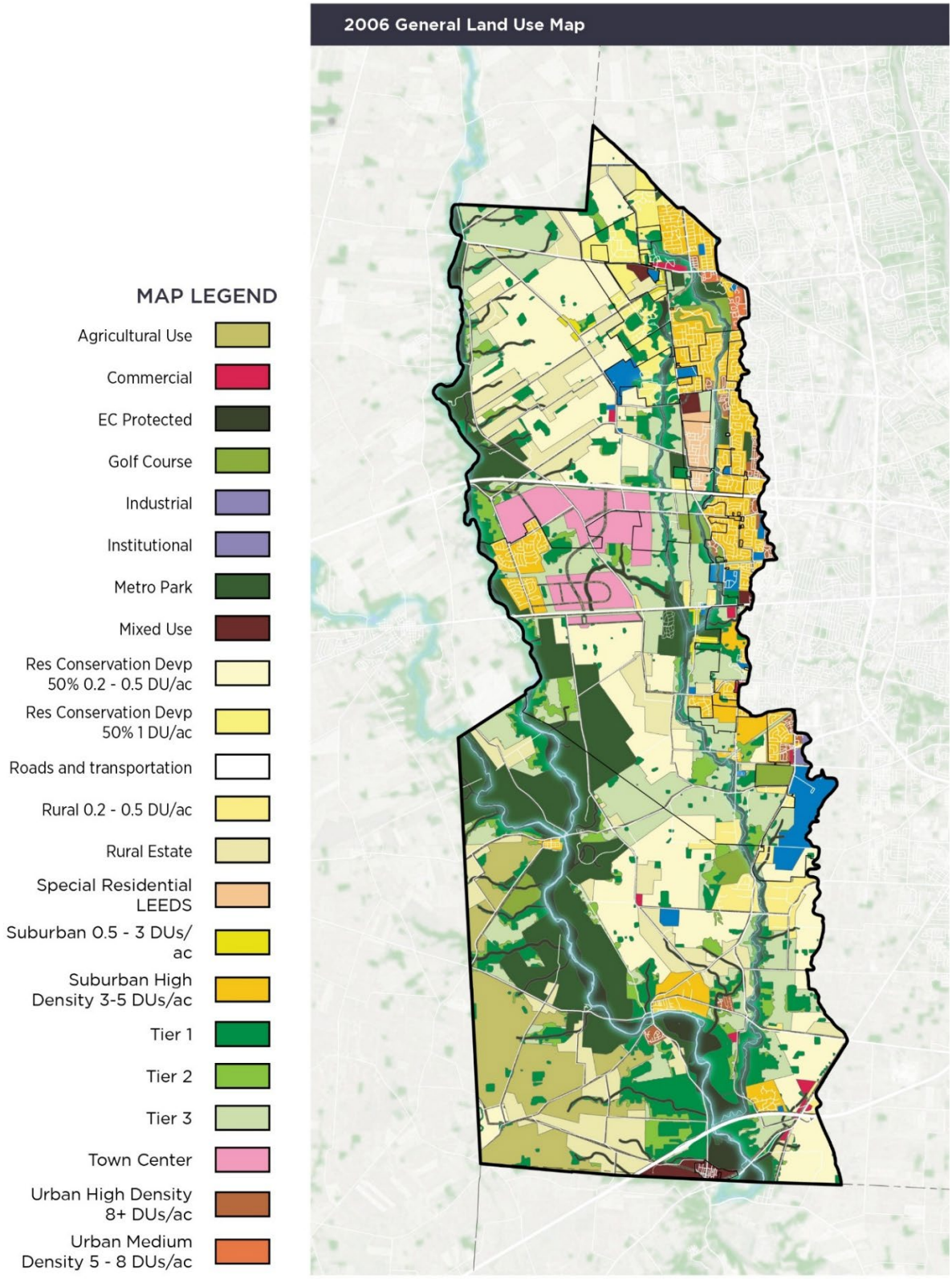
In terms of land uses by category, the percentage of the overall Big Darby Accord study area of the 2006 General Land Use Map is as follows:

Table 8 General Land Use Map Categories, 2006

2006 General Land Use Categories	Acres	Percent
Agricultural Use	3,356	6%
Commercial	196	0%
Industrial	50	0%
Public / Semi Public	1,053	2%
Mixed Use	357	1%
Res Conservation Development 50% Open Rural densities	9,406	17%
Res Conservation Development 50% Open 1 du/ac	1,189	2%
Rural Residential	1,026	2%
Rural Estate	4,805	9%
Suburban Low Density 0.5-3 du/ac	149	0%
Suburban Medium Density 3-5 du/ac	4,073	7%

Urban Medium Density 5-8 du/ac	130	0%
Urban High-Density 8+ du/ac	447	1%
Special Residential LEED	328	1%
Town Center*	1,825	3%
Golf Course**	729	1%
Existing Park**	6,266	11%
EC Protected	4,334	8%
Tier1	5,600	10%
Tier2	1,850	3%
Tier3	7,160	13%
Roads & Transportation***	1,701	3%
Total	**56,029**	**100%**

Map 2 2006 General Land Use Map



5.5. Amended General Land Use Map

The Amended Plan updates and replaces the Big Darby Accord General Land Use Map. The General Land Use Map establishes the future land use vision for the Accord area and indicates what types of new development would be considered appropriate in specific geographies to a parcel scale approximately. It also identifies critical environmentally sensitive areas for protection and preservation.

Development and conservation processes remain site-specific. Factors on the ground may require consideration of mitigating factors to successfully develop and conserve in responsible, sustainable ways.

This Amended Plan General Land Use Map will serve as a reference to inform future land use decisions, Accord Panel review, jurisdiction zoning approvals, infrastructure investments, and service provision planning. It indicates the land uses and protections that the member jurisdictions support in the various locations. Note this is not a map of existing land uses, and this is not a zoning map. Each member jurisdiction is responsible for the zoning within their boundaries.

There are several factors that influenced the revisions to the 2026 General Land Use Map, including the following:

- Improved mapping and analysis of environmentally sensitive areas;
- Limitations of centralized sanitary sewer provision in terms of cost, capacity, geography, and operation;
- Lack of advancement in acceptable alternative sewer systems;
- Several obstacles to achieving the planned “Town Center”;
- Recent and ongoing scientific studies and policy documents informing the need to limit and spatially concentrate total impervious cover in the Accord study area;
- Approval of a solar field over thousands of acres;
- A housing affordability crisis in Central Ohio because of population growth and demand;
- Interest in some non-residential uses in the area that were not previously considered; and
- The importance of appropriate development to protect open space and generate revenues to achieve the Big Darby Accord purposes.

The 2026 General Land Use Map takes into consideration environmentally protected and sensitive areas; existing land uses; the adopted future land use plans, maps, and policies of the affected jurisdictions; infrastructure capacities; community input; and good planning principles striving to balance these with the goals and purpose of the Big Darby Accord.

This 2026 General Land Use Map results in the following total of identified and protected conservation areas in the Accord study area, but does not include open space set-aside by development:

Table 9 Conservation and Protected Areas, 2026

Conservation / Protected Areas	Acreage	Acreage, Percent Planning Area
Primary Conservation Areas	19,937	38%
Secondary Conservation Areas	6,754	13%
Parks and Open Space (not within Primary or Secondary Conservation Areas)	3,365	6%
Total	**30,055**	**57%**

In terms of land uses by category, the percentage of the overall Big Darby Accord study area of the Amended General Land Use Map is as follows:

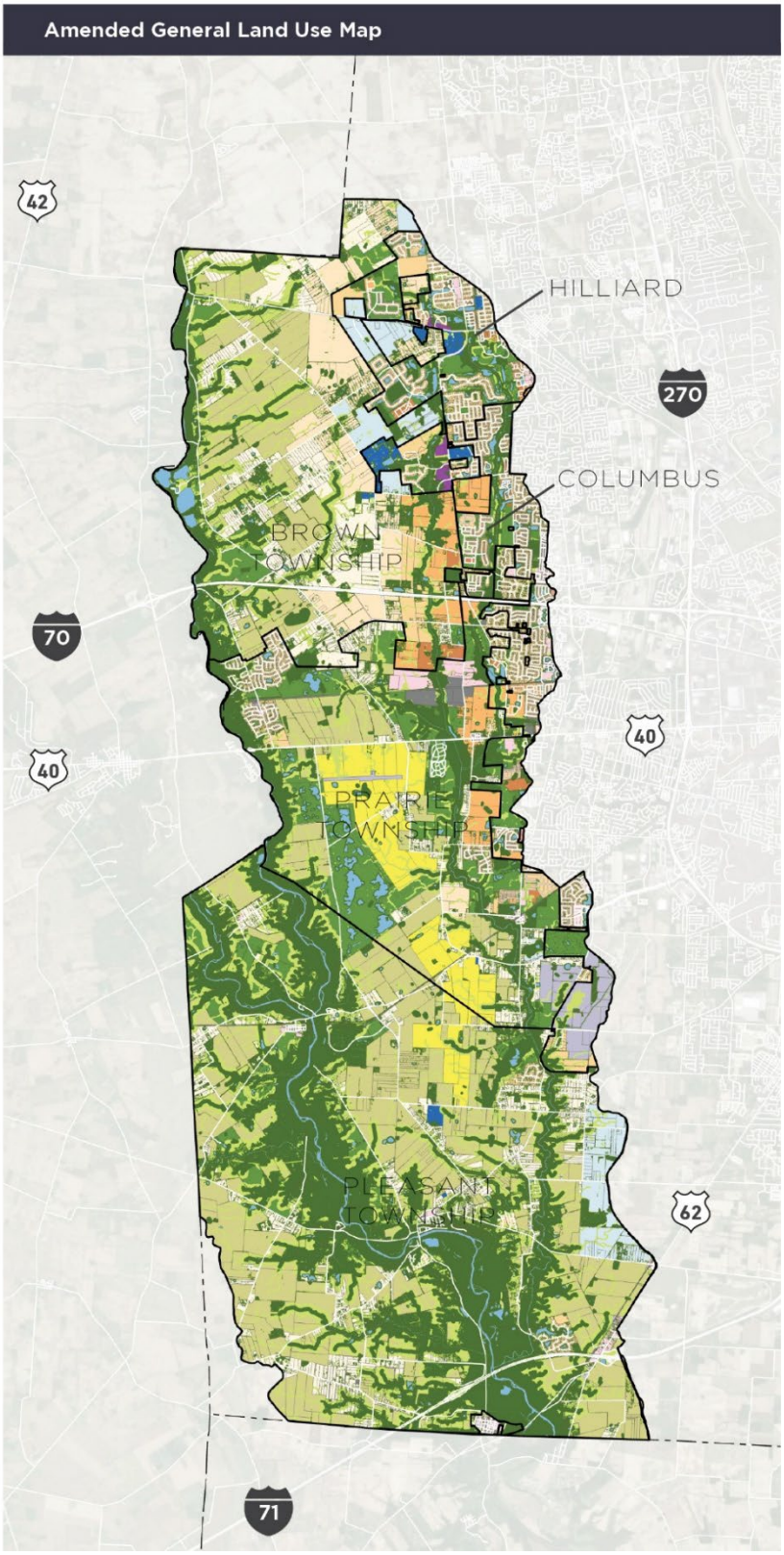
Table 10 2026 General Land Use Map Land Use Designations

Land Use Designation	Acreage	Acreage, Percent Planning Area
Primary Conservation Areas	19,937	37.8%
Agriculture	8,993	17.0%
Secondary Conservation Areas	6,754	12.8%
Rural Residential 1	3,803	7.2%
Parks and Open Space (not within Primary or Secondary Conservation Areas)	3,365	6.4%
Neighborhood 1	2,420	4.6%
Rural Residential 2	1,787	3.4%
Green Energy	1,657	3.1%
Conservation Employment	1,220	2.3%
Neighborhood 2	1,038	2.0%
Mixed Use 1	544	1.0%

Industrial and Warehouse	509	1.0%
Neighborhood 3	267	0.5%
Civic/Institutional	218	0.4%
Utilities and Railroads	210	0.4%
Low Density Mixed Use	60	0.1%
Mixed Use 2	16	0.03%
Total	**52,797**	**100%**

Map 3 Amended General Land Use Map

The Amended General Land Use Map is intended to guide development of the remaining Equivalent Residential Units (ERU) within the Big Darby Accord Planning Area. It is unlikely that the development potential represented on this map will be achieved before the original 20,000 ERU maximum is reached.



5.5.1. Amended General Land Use Categories

The following land use classifications, general descriptions, and corresponding density/height guidelines are to be referenced in conjunction with the future land use map found on page XX. The guidelines found herein are meant to aid participating jurisdictions in future updates to policy documents, zoning resolutions, and/or zoning ordinances.

5.5.1.1. Density Recommendations

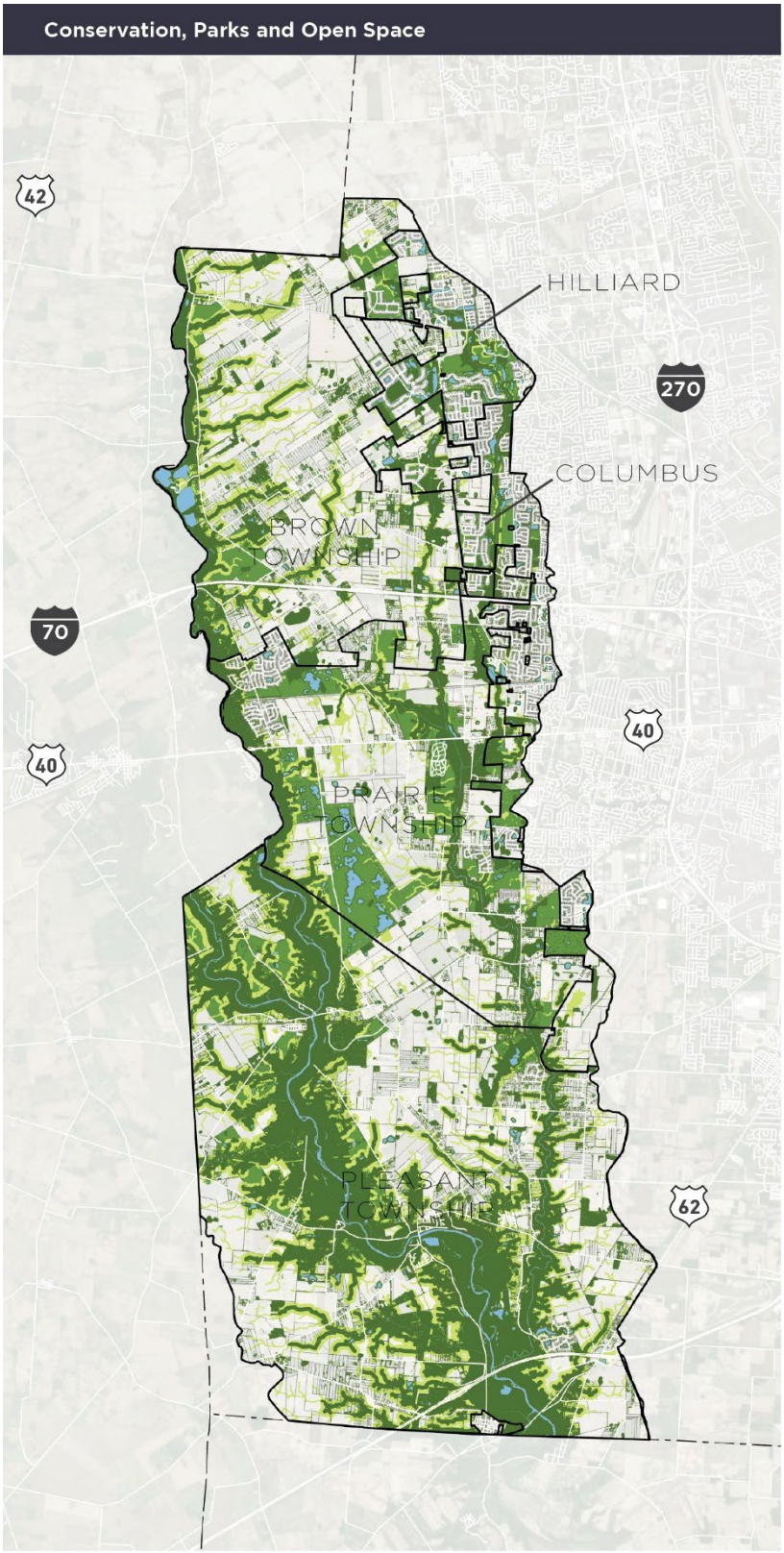
Ranges of densities are provided to allow each jurisdiction to determine the most appropriate maximum density based on their community's context.

Density is typically measured in terms of primary dwelling units per acre. The calculation includes the area of the entire site including internal roads and vehicular circulation (referred to as "Gross Density"). Density calculations allow for clustering of units on a smaller portion of the developable site to accommodate natural resource preservation and larger open space areas.

5.5.1.2. Additional Considerations

The prevailing jurisdiction's zoning map and regulations must be followed.

Map 4 Conservation, Parks and Open Space



Conservation Areas and Parks and Open Space

Primary Conservation Areas, Secondary Conservation Areas, and Parks and Open Space make up 57% of the Accord study area. These areas include the following:

Primary Conservation Areas

- See Section 4.1. Primary Conservation Area (Criterion 3a)

Secondary Conservation Areas

- See Section 4.2. Secondary Conservation Areas (Criterion 3b)

Parks and Open Space

Publicly owned parks, recreation facilities, and golf courses; natural areas; cemeteries; conservation holdings; and some private sports fields and spaces within developments. May also include inactive quarry properties that are opportunities for parks.

MAP LEGEND

- Parks and Open Space
- Primary Conservation Areas
- Secondary Conservation Areas

Map 5 Rural Residential 1

Rural Residential 1

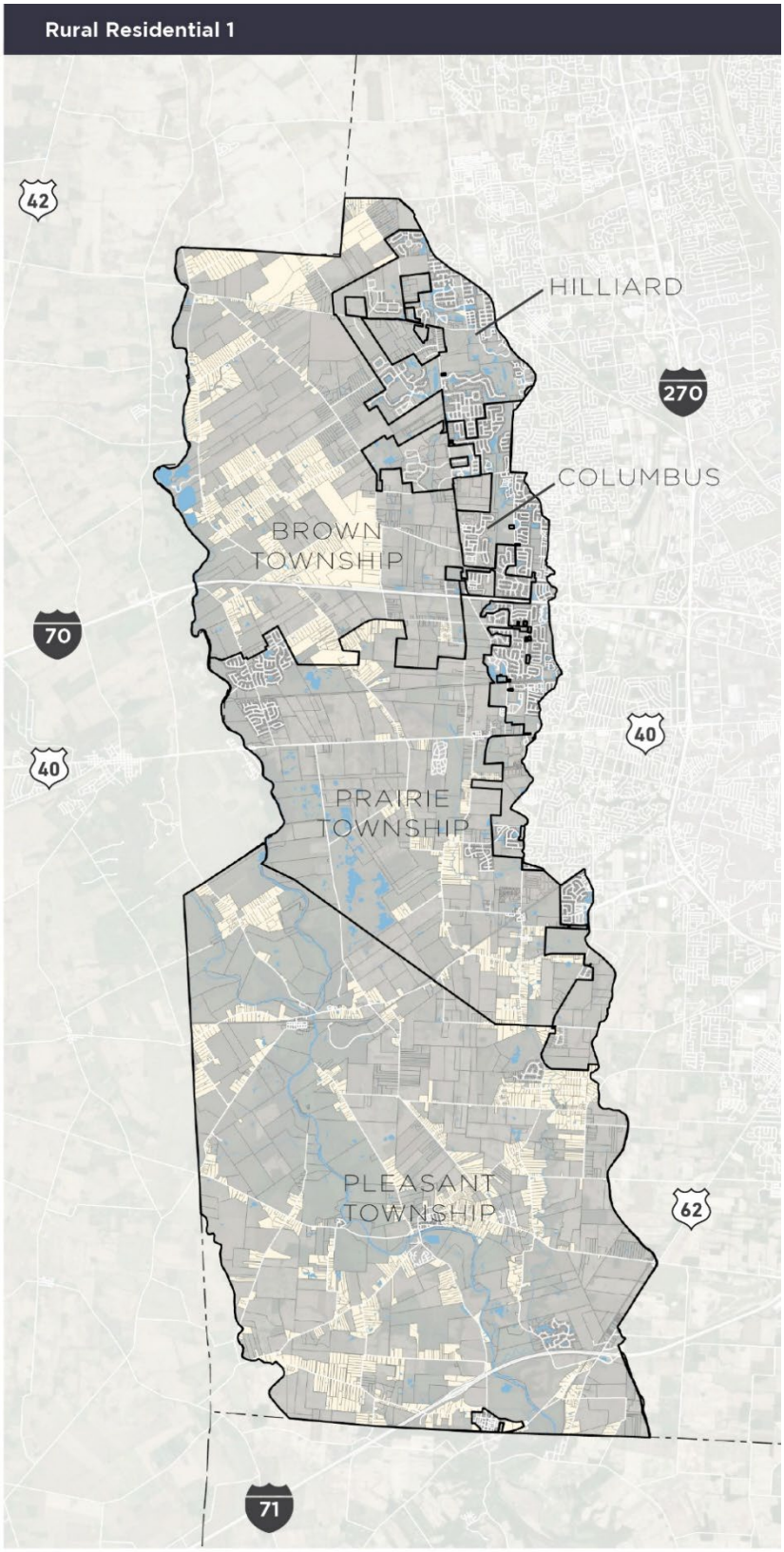
Very low density, single-unit detached housing on large lots, typically served with well and septic systems.

New Rural Residential 1 lots are typically no smaller than two acres because of septic system requirements and township zoning. In the Big Darby Accord area, new Rural Residential 1 lots are encouraged to avoid Primary Conservation areas and must protect them if included, and avoid or protect Secondary Conservation areas to the extent practical. The prevailing jurisdiction's zoning requirements must be followed.

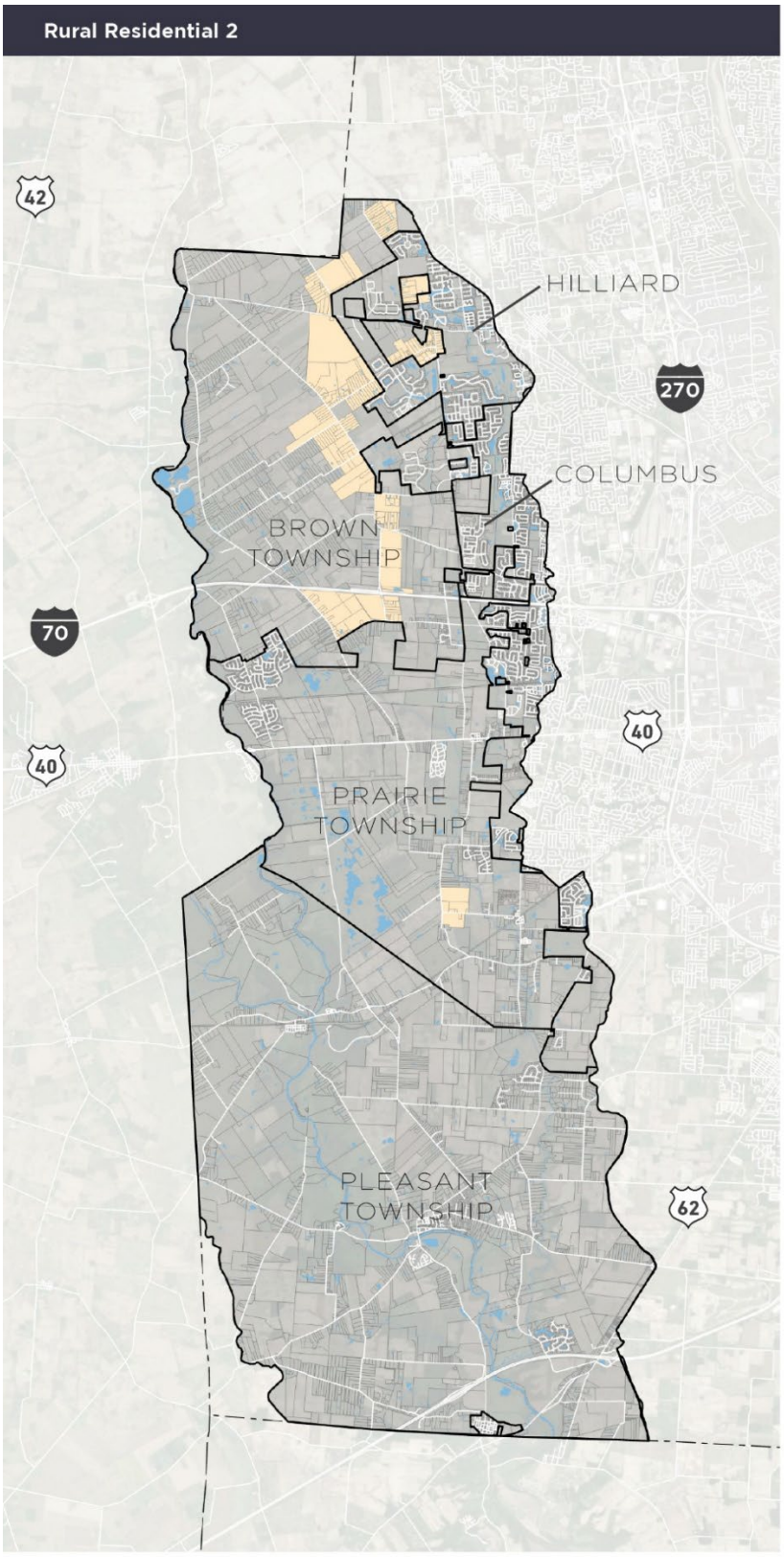
Density/Height Guidelines

0.2 - 0.75 du/ac

1-2 stories



Map 6 Rural Residential 2



Rural Residential 2

Very low density, single-unit detached housing on large lots clustered together with dedicated open space, typically served with well and septic systems.

Rural Residential 2 lots are typically no smaller than two acres because of septic system requirements and township zoning, unless served by centralized sewer service. Where centralized sewer service may become available, development in this designation is to be clustered on compact lots to provide more area for dedicated open space that preserves environmentally sensitive features, natural features, and rural vistas. The prevailing jurisdiction's zoning requirements must be followed.

Density/Height Guidelines

0.5 - 1.5 du/ac

1-2 stories

MAP LEGEND

Rural Residential 2

Map 7 Neighborhood 1

Neighborhood 1

Single unit, detached residential development. Generally located in connected neighborhood areas, with house-scaled, detached, small footprint buildings on somewhat compact lots. These areas must be served by centralized water and sanitary sewer. The prevailing jurisdiction's zoning requirements must be followed.

In Columbus, there is provision for limited small-format multi-unit housing. In Columbus, Mixed Use 1 guidance may be appropriate for areas that are within 150 feet of an identified corridor (Zone-In or similar).

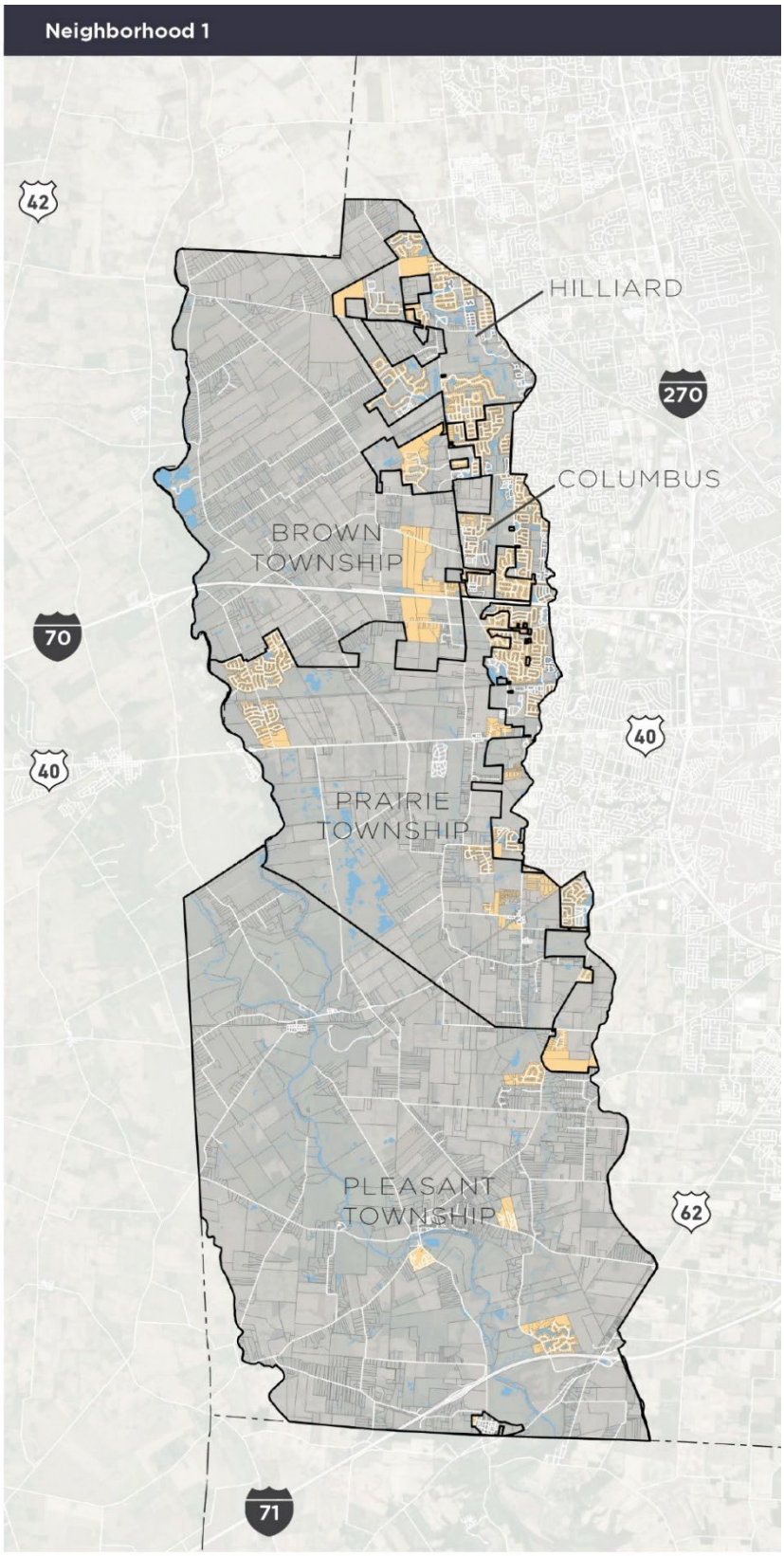
Future development in Neighborhood 1 areas of Brown Township, located west of Hamilton Run, should gradually decrease in density as it approaches Jones Road.

In the townships, development within Neighborhood 1 is expected to go through the major subdivision process of Franklin County.

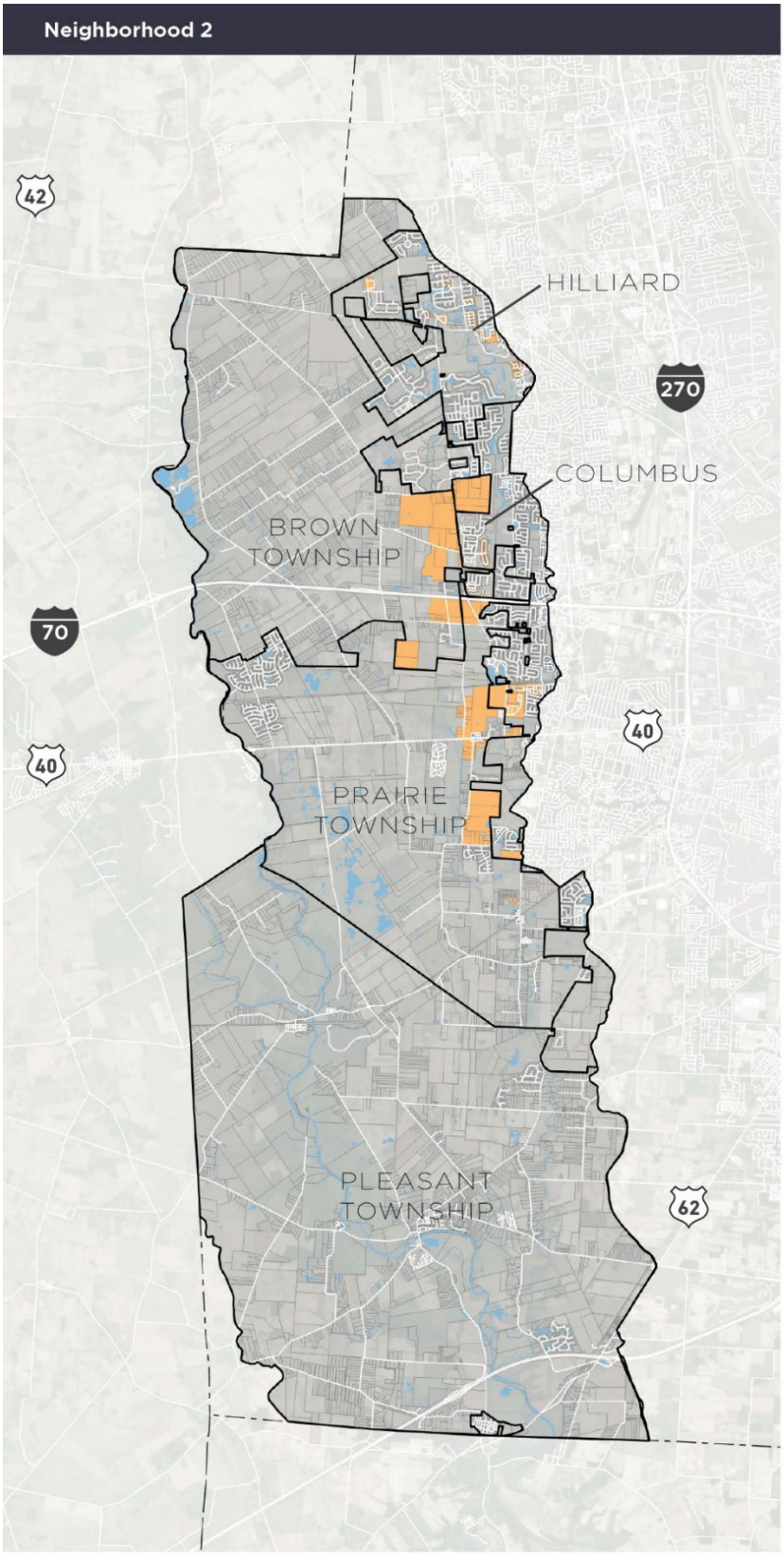
Density/Height Guidelines

1-4 du/ac

1-3 stories



Map 8 Neighborhood 2



Neighborhood 2

Single unit, detached housing with occasional doubles, triples, quads, townhomes, rowhouses, and other small format multiunit housing. ADUs are potentially supportable when consistent with density guidance. Generally located in connected neighborhood areas, with house-scaled, attached and detached, small to medium footprint buildings on compact lots. These areas must be served by centralized water and sanitary sewer. The prevailing jurisdiction's zoning requirements must be followed.

In Columbus, Mixed Use 1 guidance may be appropriate for areas that are within 150 feet of an identified corridor (Zone-In or similar).

Density/Height Guidelines

4-8 du/ac

1-3 stories

MAP LEGEND

Neighborhood 2

Map 9 Neighborhood 3

Neighborhood 3

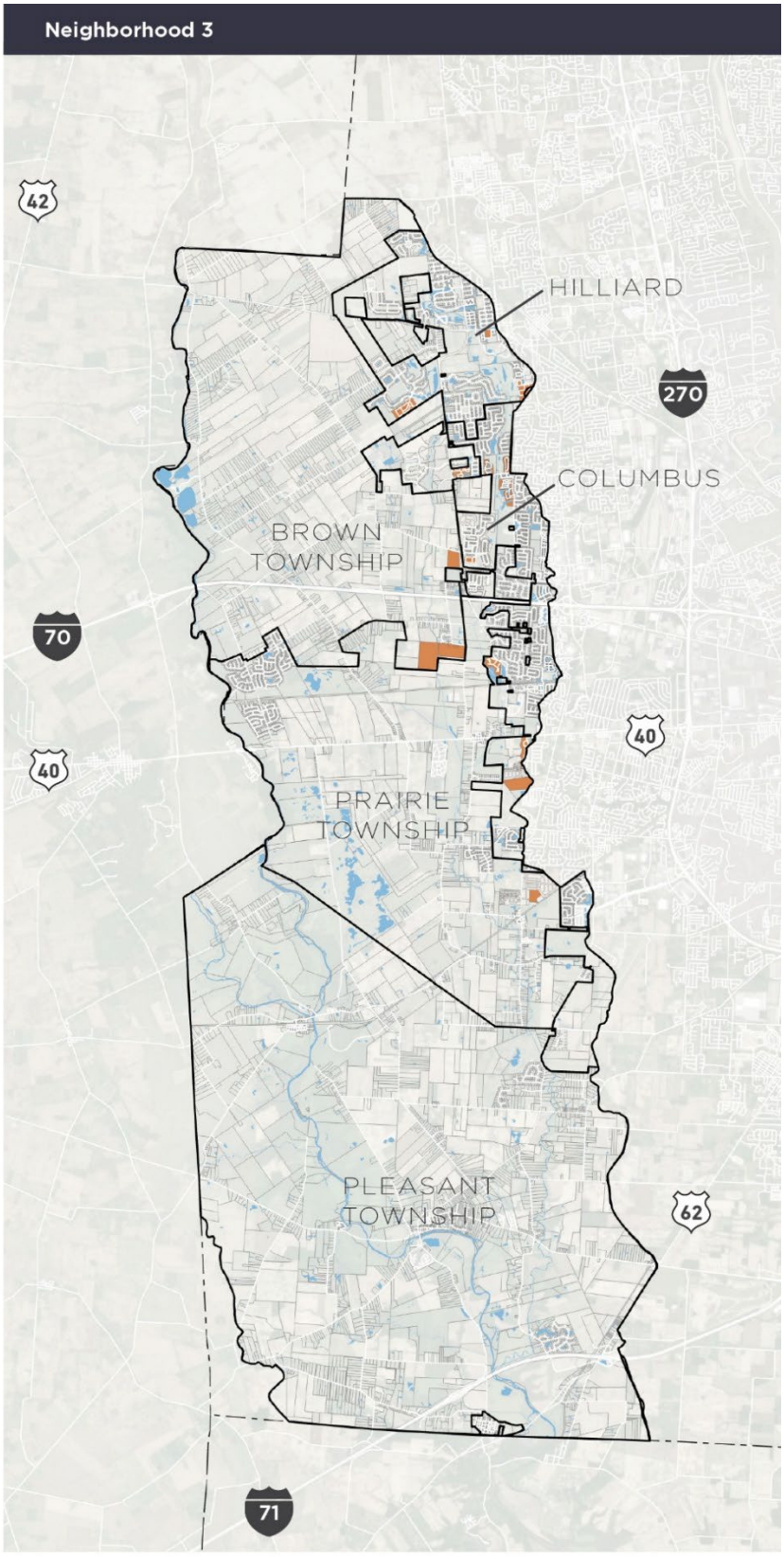
Doubles, triples, quads, townhomes, rowhouses, and other small format multiunit housing with occasional single unit detached housing. ADUs are potentially supportable when consistent with density guidance. Generally located within interconnected urbanized areas, with house to block scale, predominantly attached, medium footprint buildings on larger lots. These areas must be served by centralized water and sanitary sewer. The prevailing jurisdiction's zoning requirements must be followed.

In Columbus, Mixed Use 1 guidance may be appropriate for areas that are within 150 feet of an identified corridor (Zone-In or similar).

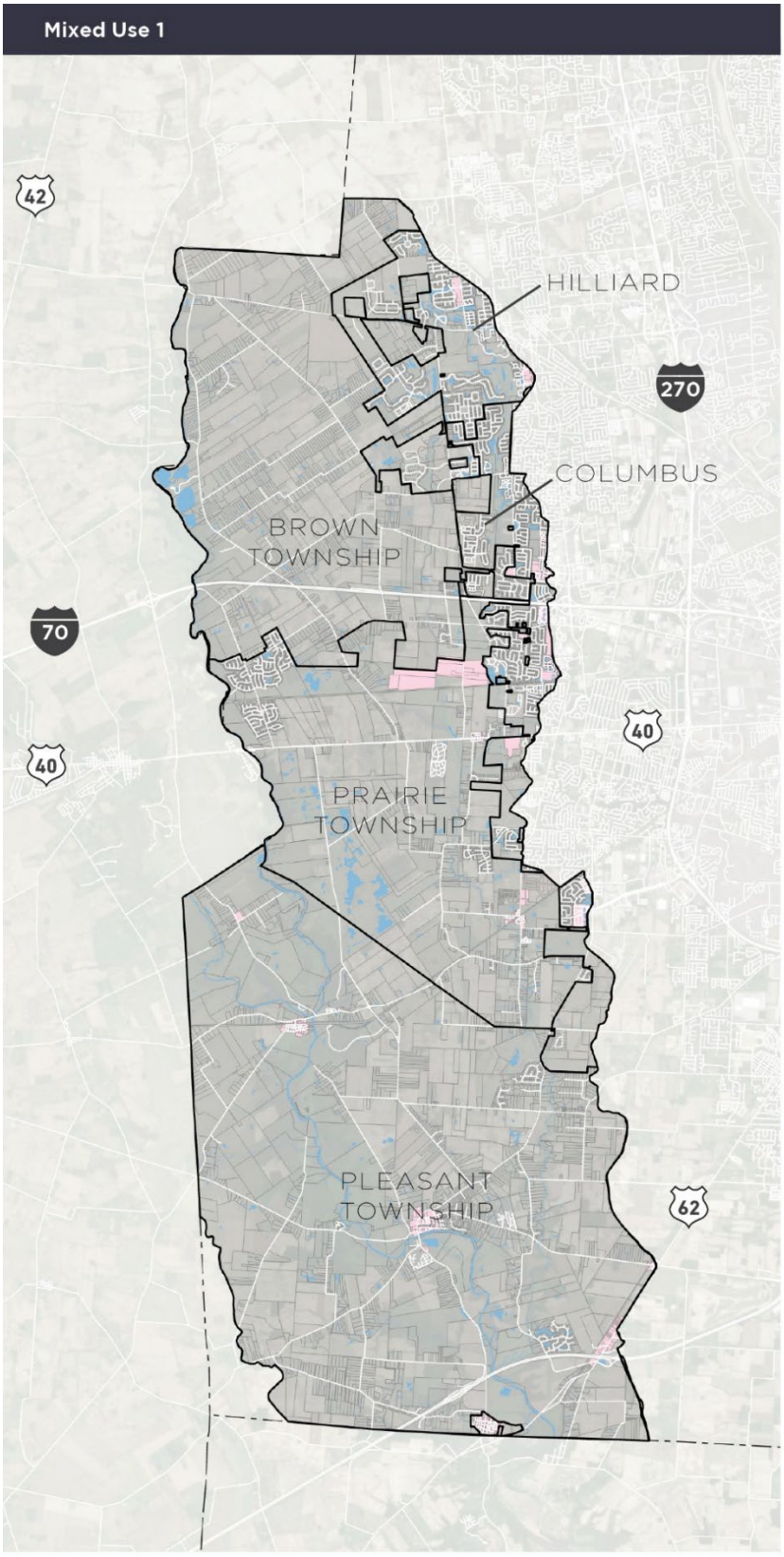
Density/Height Guidelines

8-12 du/ac

1-3 stories



Map 10 Mixed Use 1



Mixed Use 1

Includes a broad range of building types – from single unit detached housing and single-story commercial to three (3) or four (4) story vertical mixed-use buildings. These areas are found in many places around the urbanized areas of Central Ohio, including secondary corridors, commercial areas, and in areas that may be considered for emerging mixed-use. This allows for some flexibility in use and a residential intensity appropriate to support transit, walkability, and access to housing. These areas must be served by centralized water and sanitary sewer.

Development may include a mix of uses on one site (for example, residential units located either above and/or next to the commercial uses), or it may include only one use per site. In emerging mixed-use areas, a mix of uses may be required, with single use commercial not supportable except as part of the reuse of an existing building.

Mixed Use 1 areas in the City of Hilliard must target a 70-80% commercial and 20-30% residential mix.

Density/Height Guidelines

12-24 du/ac

3-4 stories

MAP LEGEND

Mixed Use 1

Map 11 Mixed Use 2

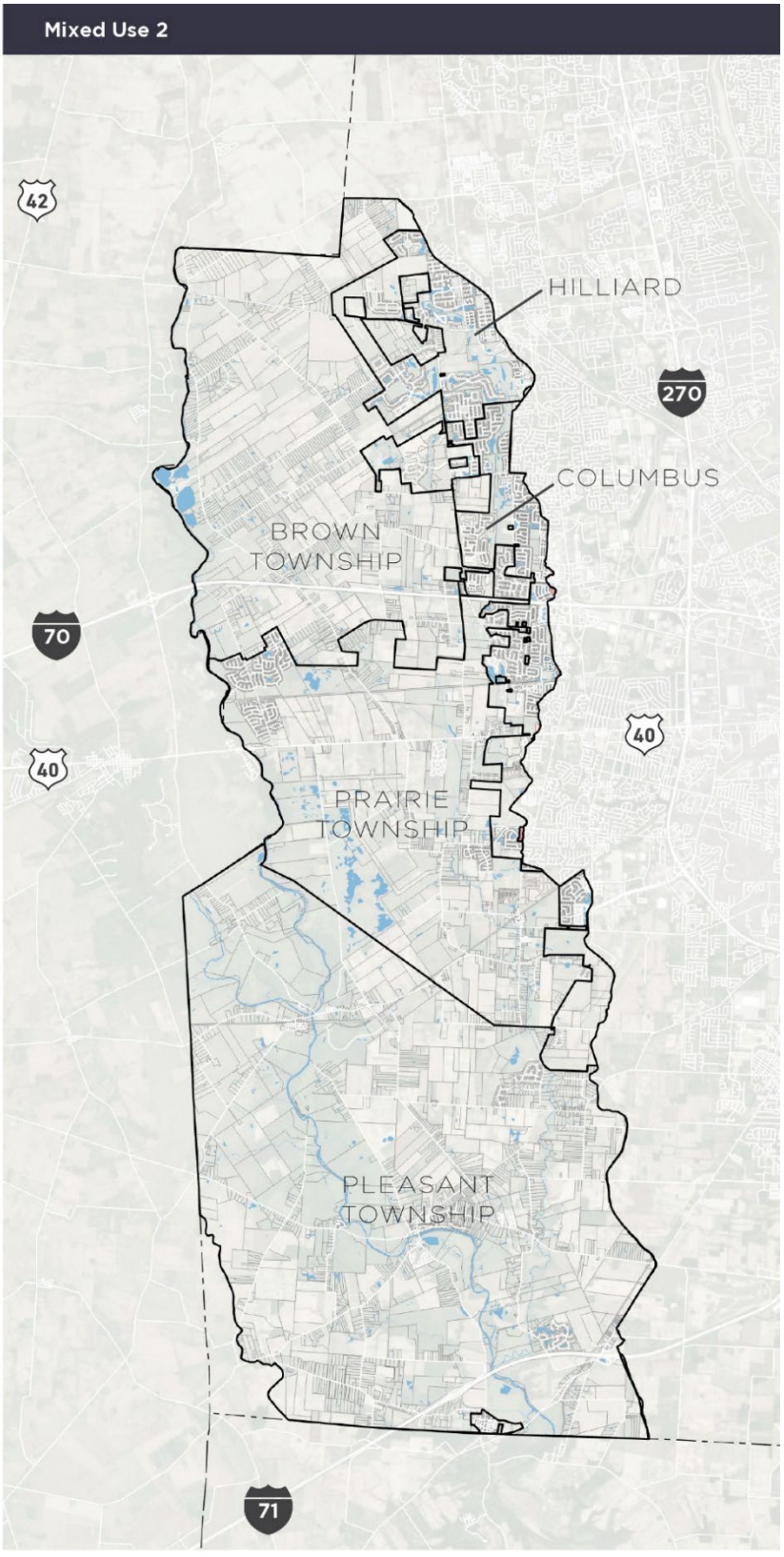
Mixed Use 2

Moderately dense mixed use areas relative to the region's urban/suburban development pattern, generally along primary transportation corridors or at key intersections. Allows for flexibility in use, with moderate residential density. Development may include a mix of uses on one site (for example, residential units located either above and/or next to the commercial uses), or it may include only one use per individual site as part of a larger mixed-use development program on the site. These areas must be served by centralized water and sanitary sewer. The prevailing jurisdiction's zoning requirements must be followed.

Density/Height Guidelines

24 du/ac

4-5 stories



Map 12 Low Density Mixed Use

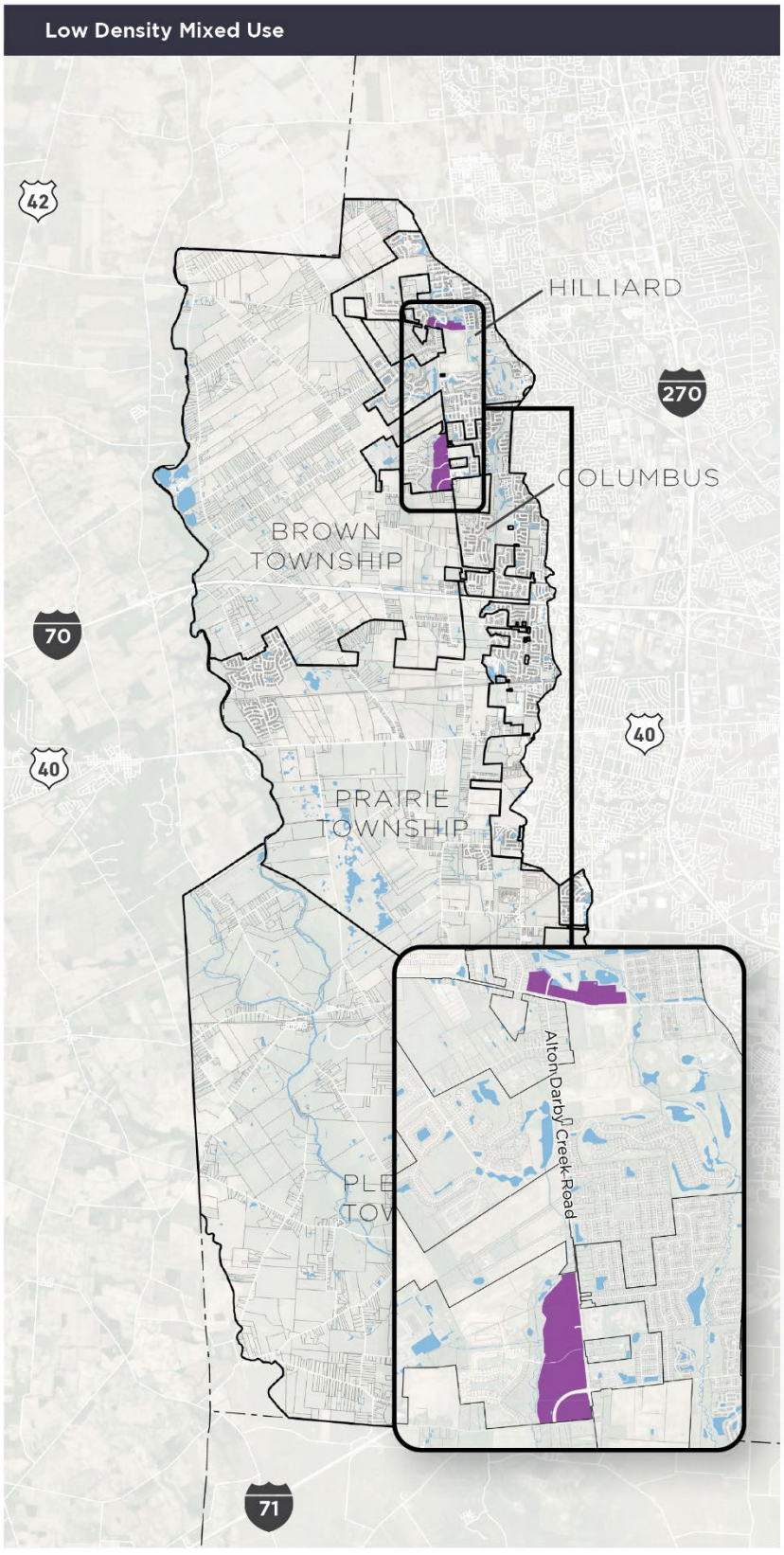
Low Density Mixed Use

Primarily horizontal mixed-use at lower densities and building heights (example: commercial retail center, commercial office, and residential units present on an individual site, but not contained in the same building(s)). This designation encourages thoughtful site design that integrates a range of residential and commercial uses. These areas must be served by centralized water and sanitary sewer. The prevailing jurisdiction's zoning requirements must be followed.

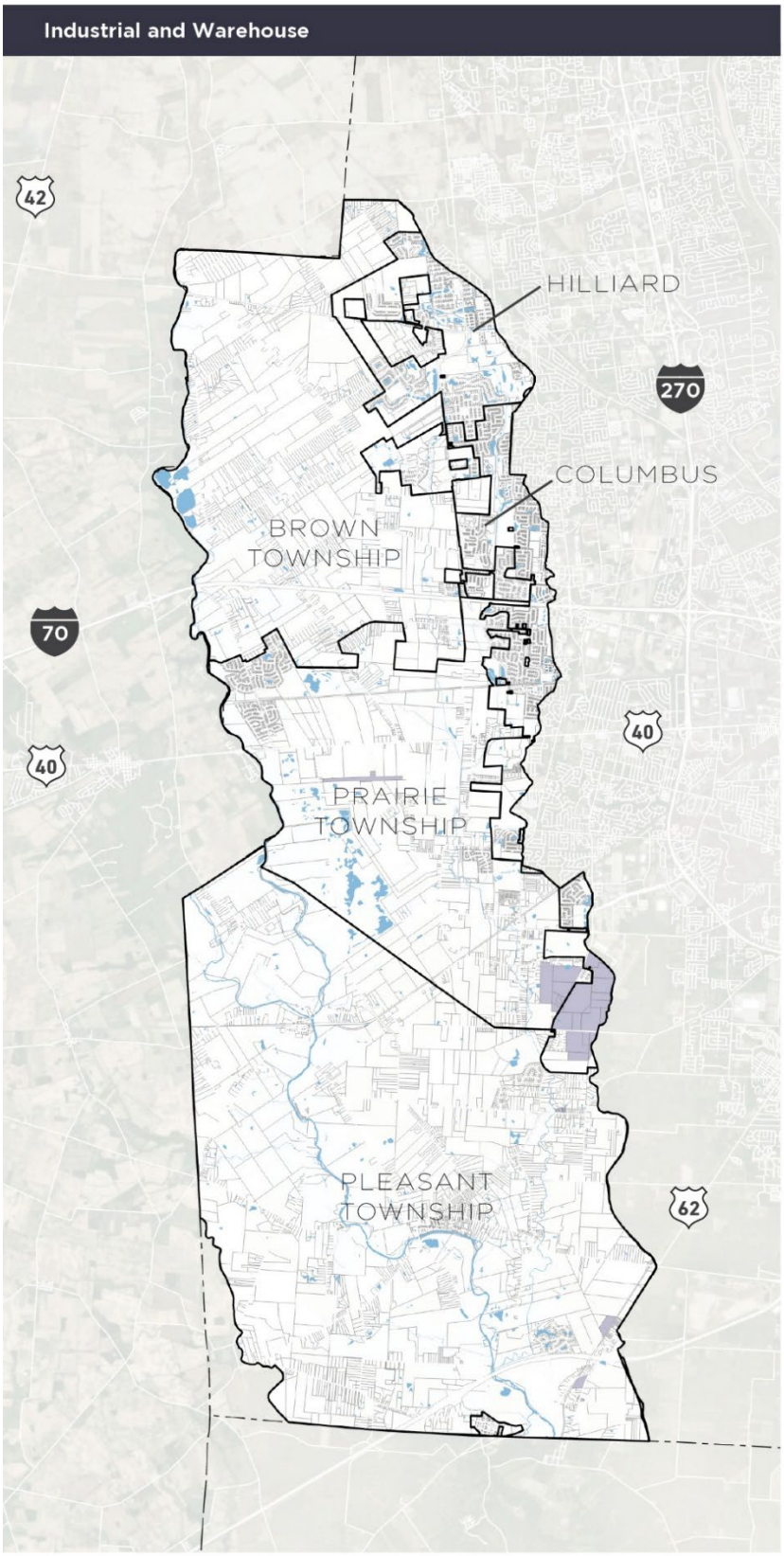
Density/Height Guidelines

1-1.5 du/ac

1-3 stories



Map 13 Industrial and Warehouse



Industrial and Warehouse

Industrial and Warehouse is dedicated to employment-type uses, including office, industrial, research, and warehouse uses. Residential is generally not supported, except where existing. These areas must be served by centralized water and sanitary sewer. These uses are located in isolated or connected areas, typically without alleys, with block scale, large footprint buildings on large lots.

Retail and hotel uses may be appropriate if developed as secondary uses to the primary industrial and warehouse uses. Self-storage is generally not supported, except where existing.

Density/Height Guidelines

Not Applicable

MAP LEGEND

Industrial and Warehouse

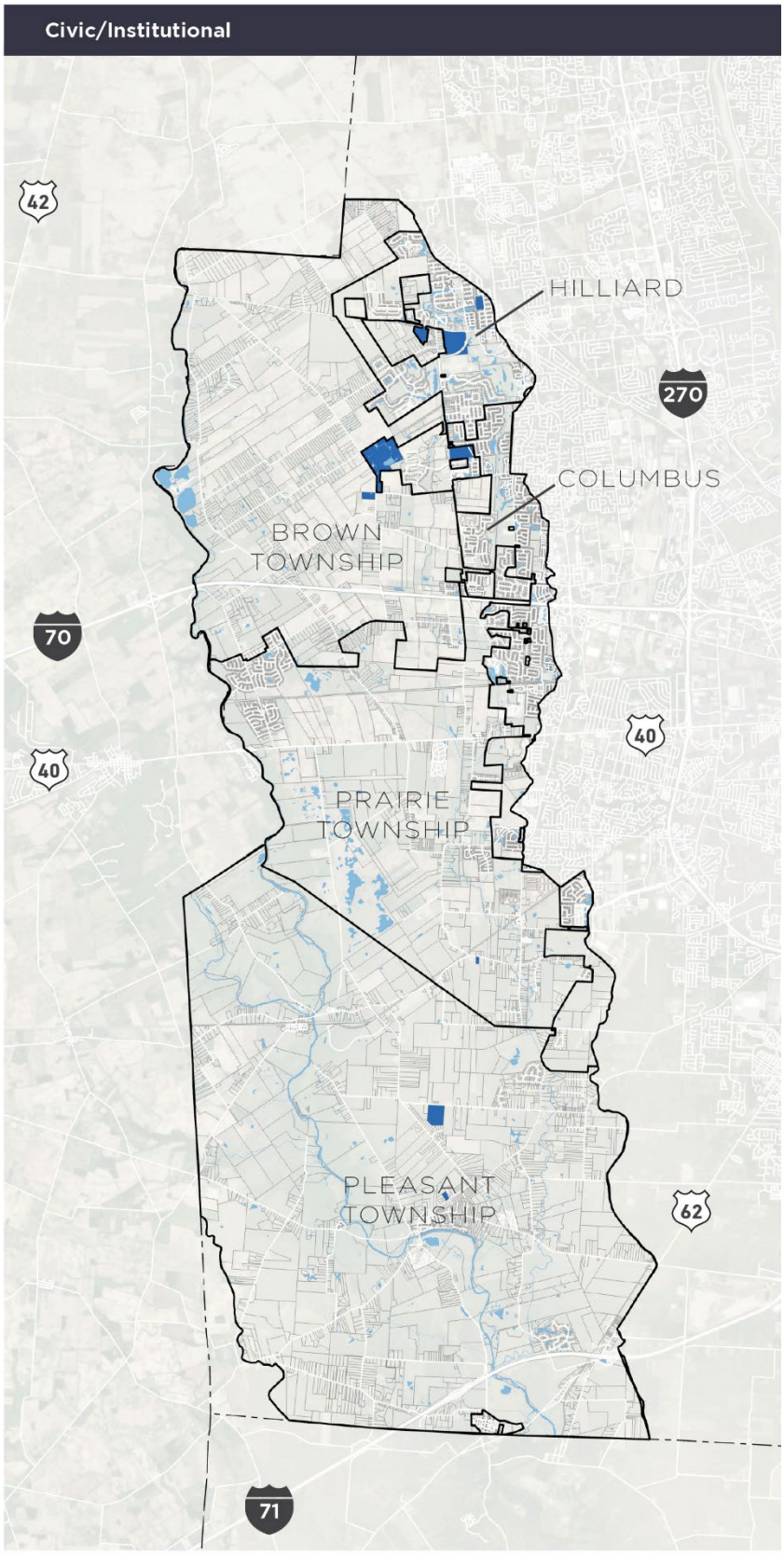
Map 14 Civic/Institutional

Civic/Institutional

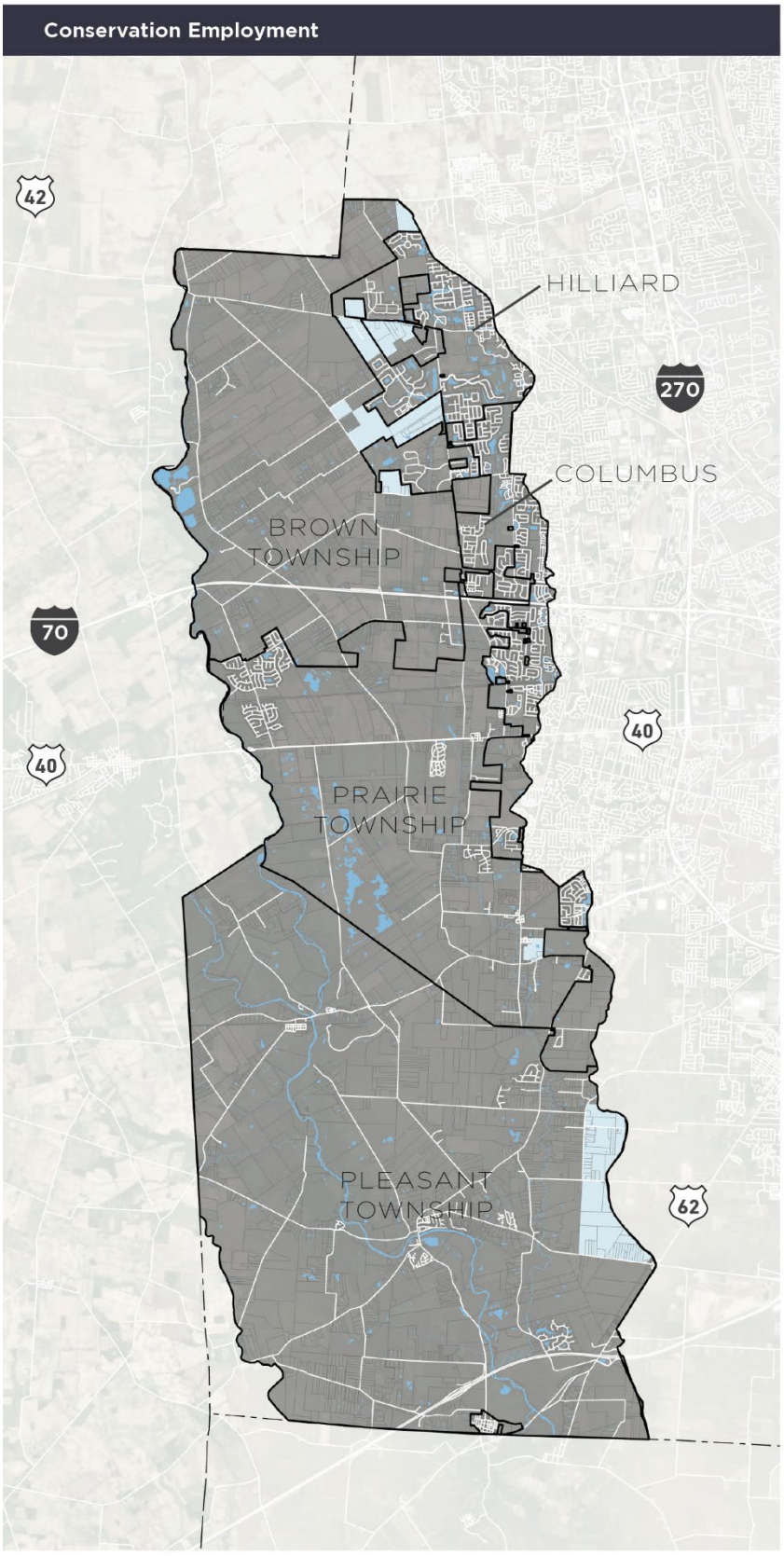
Areas designated for existing or future civic and institutional uses, which include educational facilities, government/public services, fire, EMS, and police stations.

Density/Height Guidelines

Not Applicable



Map 15 Conservation Employment



Conservation Employment

Conservation Employment areas promote low-impact, employment uses as the primary focus. This employment land use category takes into account the sensitive nature of the Big Darby watershed. Where appropriate, residential uses consistent with Rural Residential 1 or Rural Residential 2 standards may also be applied in these areas.

Density/Height Guidelines

Not Applicable

MAP LEGEND

Conservation Employment

Map 16 Utilities and Railroads

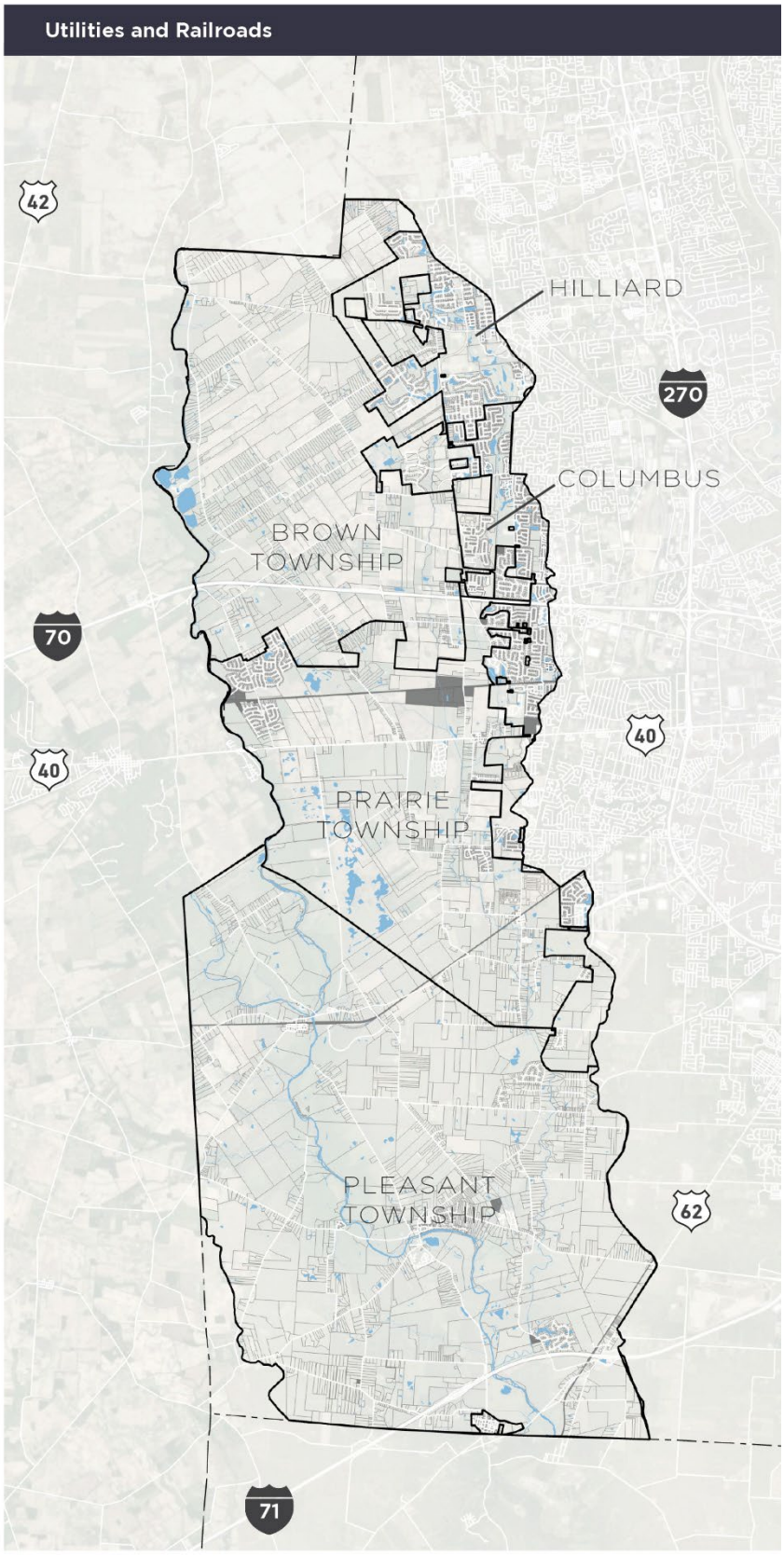
Utilities and Railroads

This classification applies only to existing utility and railroad uses, with limited on-site employment. Use of rail easements and/or rights-of-way for bike and pedestrian connectivity is encouraged.

Utility easements suitable for trails should use appropriate Parks and Open Space guidance.

Density/Height Guidelines

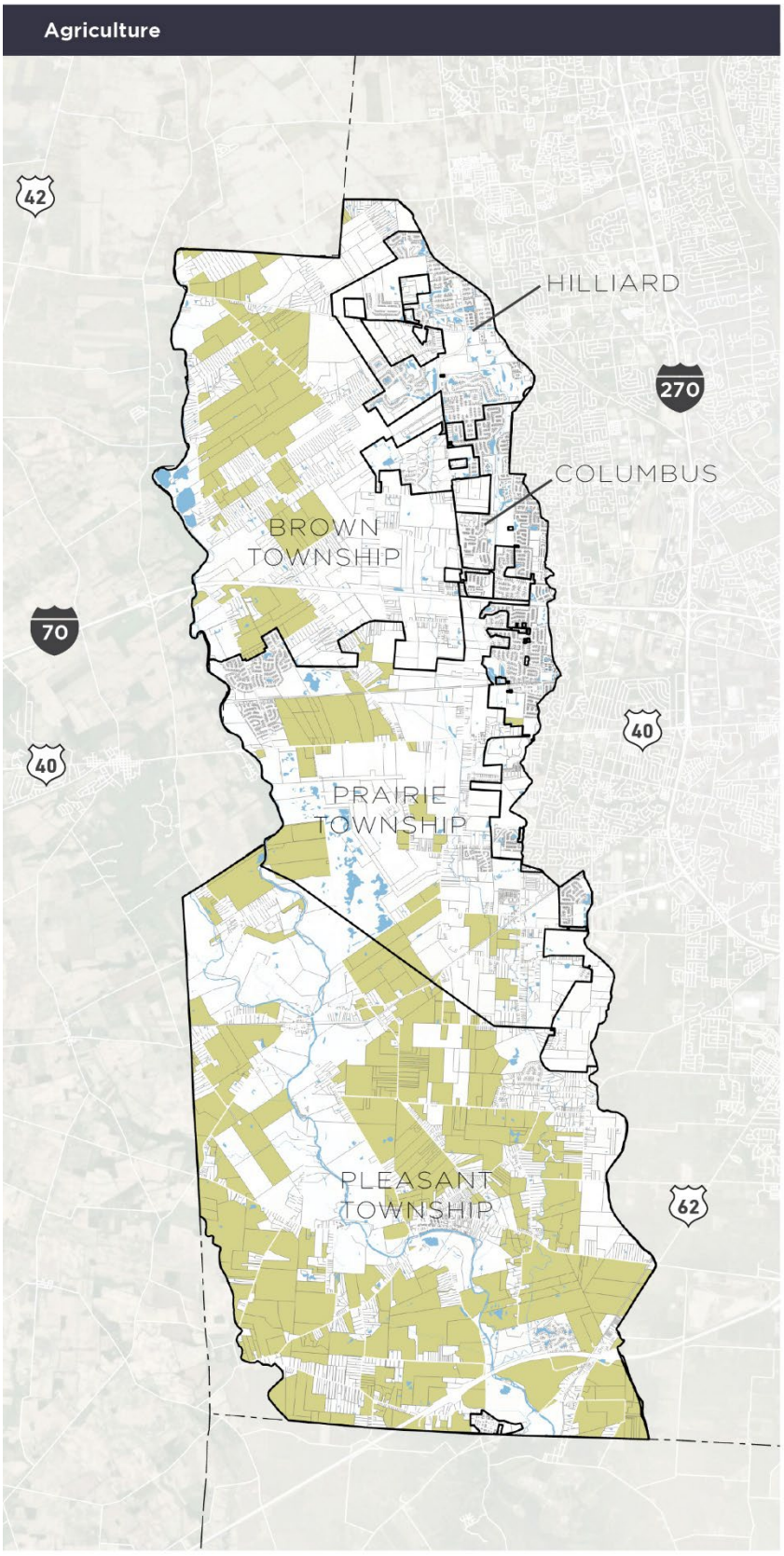
Not Applicable



MAP LEGEND

Utilities and Railroads

Map 17 Agriculture



Agriculture

Agricultural uses, including commercial farms, traditional farms, hobby farms, urban farms, and community gardens. Generally found in rural areas, with detached, small footprint buildings like a house, barn, animal pens, etc. on large lots. Some parcels have commercial-scale agricultural structures. Agriculture areas are generally served by well and septic systems, if at all.

In the Big Darby Accord area, it is recognized that agriculture use sites may be subject to redevelopment. In such cases, Rural Residential 1 guidance should be used, unless the prevailing future land use guidance of the jurisdiction recommends otherwise.

Density/Height Guidelines

0.2 du/ac

1-2 stories

MAP LEGEND

Agriculture

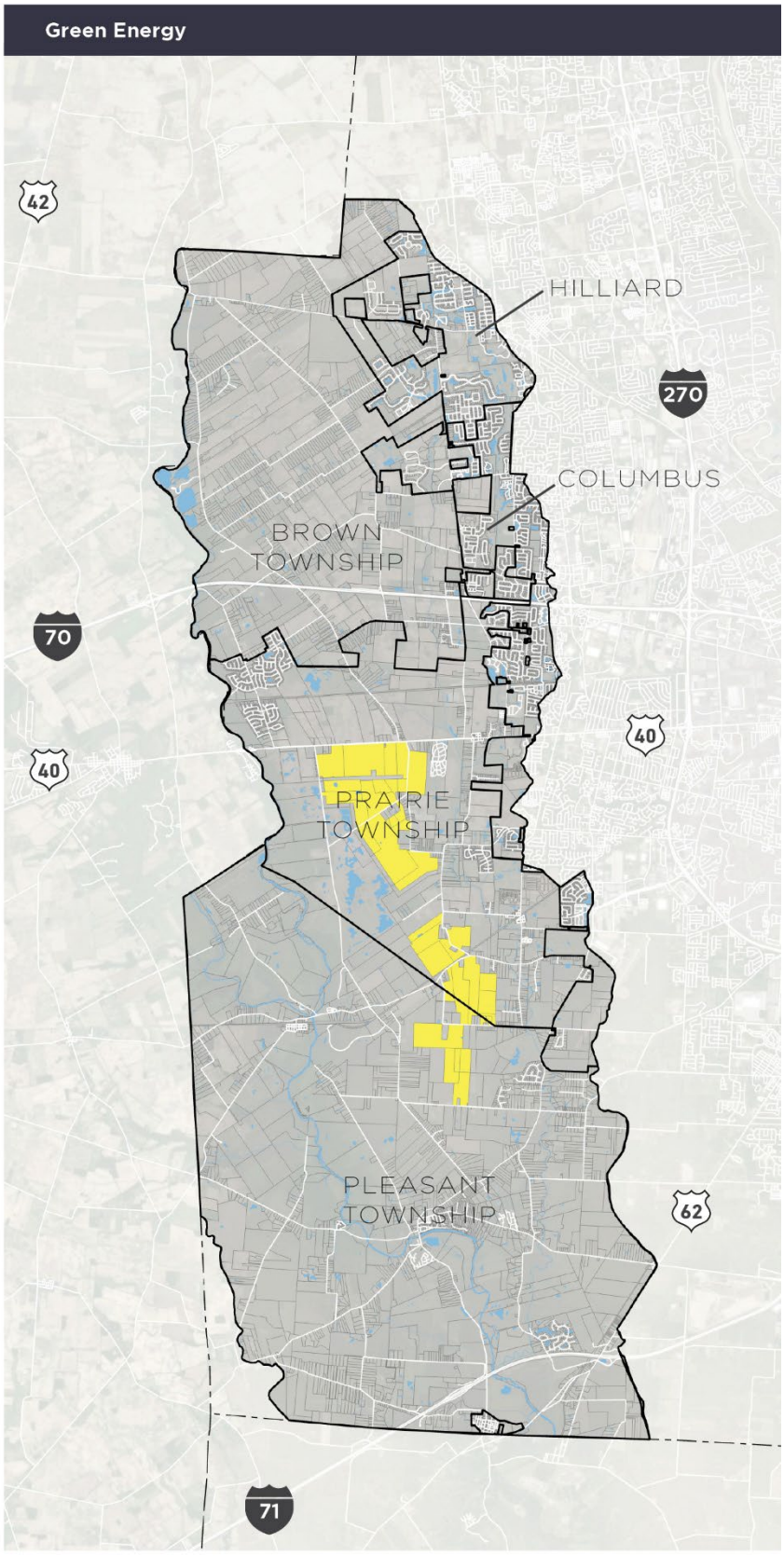
Map 18 Green Energy

Green Energy

The Green Energy designation, located in the central portions of Prairie Township and in northern Pleasant Township, reflects existing large-scale solar farms approved and/or constructed within the Accord Planning Area.

Density/Height Guidelines

Not Applicable



5.6. Growth Management

The following sections cover growth management approaches in the 2006 Big Darby Accord Plan and this Amended Plan. While there is overlap between the documents, this amendment takes a different approach to allocating land uses and densities, as well as overall constraints on development.

5.6.1. By-Right Zoning

By-right zoning recognizes the ability of a property owner to develop their property without needing special discretionary approval from local government if they follow permitted uses in the zoning code. By-right zoning provides certainty for property owners and their neighbors, streamlining the development process for everyone involved. It does, however, remove opportunity for public input on specific projects and may not represent current community needs if jurisdictions do not regularly update applicable zoning codes.

The certainty of by-right zoning applies if the owner follows the current requirements of the property's zoning classification. For example, a residential classification allowing 1 dwelling unit per acre, limited to two stories and requiring parking for two cars gives that owner the right to build a home that meets those requirements. A three-story home would require a variance, or deviation from the zoning code, and discretionary review by the jurisdiction.

Research tends to establish that by-right zoning is significantly less expensive than discretionary zoning. The American Planning Association captures the value of by-right zoning vs the cost of discretionary approaches to land use management:

"A raft of zoning and building code restrictions — height limits, setbacks, single-family-only zoning, local design review, parking minimums — made it harder and more time-consuming for developers to find suitable land, get approvals, and break ground, driving down the numbers of units built while increasing the cost of having a roof over one's head. Over time, it's made affordability an issue across more and more income levels and communities." [61]

A study in the California Bay Area found "…each additional layer of independent review is associated with a 4 percent increase in a jurisdiction's home prices." [62] A pro-inclusive housing group in Minneapolis states, "These additional steps [in discretionary zoning] add bureaucracy, are sensitive to negative public pressure, generate approval uncertainty, lengthen development time, and add significant financial cost to the development process."

Despite its purported benefits, by-right zoning may bypass most Big Darby Accord protections. Because rezoning is not required, jurisdictions have less oversight of a small by-right development. Only developments disturbing more than one acre will trigger the Construction General Permits and the protections associated with it.

5.6.2. Equivalent Residential Unit Limits

The Amended Plan maintains the 2006 plan's equivalent residential unit ("ERU", sometimes referred to as equivalent dwelling unit, "EDU") limit of 20,000 in the planning area. An ERU is a unit of measurement frequently used by utilities and land use planners and equals a single-family home. For example, the City of Columbus Clean Rivers Surcharge defines an ERU as the size of a typical single-family home, or an average of 2,000 square feet of impervious surface. Other housing types, such as multi-family units or townhomes, are converted into ERUs based on their relative utility demand using the single-family home as the baseline reference. For example, a townhome may generate approximately 75 percent of the utility demand of a typical single-family home and therefore be counted as 0.75 ERU. Non-residential land uses, including commercial and industrial development, are similarly translated into ERUs using measures such as impervious surface area and/or estimated service demand so that different land use types can be evaluated within a consistent framework.

With approximately 6,000 ERUs permitted or built since 2006, the current limit is an additional 14,000 ERUs. Water quality monitoring and the protections in this Amended Plan will warrant revisiting this limit as part of future updates and amendments.

In 2006, Accord jurisdictions endorsed the concept of by-right zoning to limit overall development in the planning area. The analysis showed that under by-right zoning, developers could build approximately 20,000 ERUs. The original plan also relied on prescriptive land use planning on a parcel-by-parcel basis. The 2006 future land use plan created development buckets to allocate ERUs, including the following:

- Expansive large lot developments covered over 30% of the planning area.
- Higher density development (5+ units per acre plus the Town Center) covered only 4% of the planning area.
- Low density development (5 or fewer units per acre) represented 7% of the planning area.
- Open space conservation set asides exceeded 25,000 acres, or 45% of the planning area.

- Agricultural land use declined from 56% to 6%.

Very low-density development by-right avoids Big Darby Accord Plan protections put into effect by the rezoning process and the Construction General Permit. In addition, large-lot developments primarily utilize on-lot septic and require significant new natural gas, electric, and roadway infrastructure.

This amendment retains a limit of 20,000 ERUs and applies it to planned growth areas on centralized sewer. Available sewer capacity and the future land use map serve as the limits on ERUs in any specific area.

Accord jurisdictions agree to report to BDART any new ERUs approved in their respective growth areas. Reports must be written and submitted to BDART every six months. BDART will maintain the information on a publicly available GIS system.

Once the total number of additional ERUs constructed since 2007 reaches roughly 17,500 ERUs, Big Darby Accord jurisdictions will meet within 180 days to review development patterns, water quality data, and regional open space and development needs. BDART may recommend, and the jurisdictions may implement, changes to the future land use map, total allowed ERUs, and/or associated policies after consultation with residents, stakeholders, subject matter experts, and other interested parties.

5.6.3. Growth Areas

As part of the land use map update, the Big Darby Accord jurisdictions agree to the concept of Growth Areas that designate where development must be served by centralized sanitary sewer and water. In general, growth areas are recommended to remain adjacent to the urban edge, allowing higher-density development relative to rural portions of the Accord study area, thereby avoiding suburban sprawl and providing more affordable housing opportunities. In practice, growth areas will be negotiated through annexation agreements between the City of Columbus and applicable participating jurisdictions.

The Amended Plan recommends that participating jurisdictions establish, or formalize, six conceptual growth areas:

1. **City of Hilliard Growth Area,** where centralized water and sewer may be extended into unincorporated areas upon its annexation into the City of Hilliard.

2. **City of Columbus Growth Area,** where the City of Columbus agrees to provide centralized water and sewer extension upon annexation into the City of Columbus.
3. **Grove City Water and Sewer Service Boundary,** where established water and sewer contract boundaries direct future growth in Grove City's portion of the Accord study area.
4. **Prairie Township Growth Area,** where centralized water and sewer may be extended into unincorporated portions of Prairie Township without the condition of annexation.
5. **5. Brown Township Growth Area,** where centralized water and sewer may be extended into unincorporated portions of Brown Township without the condition of annexation.
6. **Aqua Ohio Water and Sewer Service Boundary,** where established water and sewer contract boundaries direct future growth in unincorporated areas within Prairie Township.

In concept and once established, municipal growth areas (1-3 listed above) require annexation as part of new development, while township growth areas (3-6 listed above) may not be annexed without the approval of the township. In both cases, development may only be permitted in a growth area if the development is served by centralized sanitary sewer and water. The Amended Plan does not support the use of on-site septic systems to accommodate future residential growth within the Accord study area due to documented risks to water quality and the potential for long-term maintenance failures that can negatively affect groundwater and surface waters. [63]

The parties must enter into one or more annexation agreements to implement growth areas. Until annexation agreements are approved, growth areas will not be binding on the parties, and a jurisdiction's current annexation and utility service policies remain in effect.

Nothing in this section abrogates Ohio annexation law or the terms of any annexation agreement(s). The legislative authority of a municipality retains the authority to approve or disapprove of an annexation request in its sole discretion, unless circumscribed by an active annexation agreement.

6. Development Standards

The following sections discuss the Amended Plan approach to development and conservation. By applying for rezoning, site design and compliance, or any permit associated with construction in the Darby, the applicant acknowledges and agrees to abide by applicable sections of this Amended Plan.

6.1. Common Planning Documents and Stormwater Regulations

To streamline development and promote environmental protection, jurisdictions are encouraged to adopt the Columbus Stormwater Drainage Manual or equivalent. Utilization of a single, standard manual will remove jurisdictional inconsistencies regarding stormwater management requirements. Where the Columbus Stormwater Drainage Manual does not apply, or where stormwater requirements in the Amended Plan conflict with the jurisdiction's applicable stormwater regulations, the more restrictive requirement should apply. However, jurisdictions are encouraged to establish a variance process, or equivalent, to determine which requirements achieve stronger ecological and water quality outcomes in cases where local stormwater manuals are in conflict with the Amended Plan.

Big Darby Accord jurisdictions may provide consistent, predictable outcomes for development by utilizing common planning documents in general. BDART should consider this and, where appropriate, develop these documents for the planning area.

6.2. Consistent and Predictable Outcomes

Jurisdictions agree that the requirements of the Amended Plan will be applied consistently across the planning area. If an issue is addressed in the Amended Plan, jurisdictions will not apply other or additional standards for that specific issue to the extent possible.

The structure of the Amended Plan is such that a developer, jurisdiction or resident may follow these sections and cross-reference with the State of Ohio WQM Plan, Appendix 3-3. All applicable provisions of the State of Ohio 208 Plan, Construction General Permit, and local stormwater drainage manual continue under this Amended Plan, unless the item is enhanced by the amendment.

6.3. Acceptance of Amended Plan Requirements

Notwithstanding any rule or permit of the Ohio EPA, ODNR, or other state or federal entity to the contrary, no rezoning or site design may be approved by a Big Darby Accord jurisdiction if the applicant does not agree to follow this plan's conservation and development requirements.

6.4. Development Site Water Quality and Quantity Modelling

The Construction General Permit and Columbus Stormwater Drainage Manual establish requirements for post-construction stormwater runoff to protect stream channel and floodplain morphology, hydrology, and water quality. These regulations specifically address water quality and quantity, groundwater recharge and post-construction BMPs based on Darby TMDL requirements. [64]

Developers must utilize an industry-standard model to identify these impact(s) and the mitigation strategies employed to meet the requirements of the permit, manual, and this plan. Pre-construction WQM&A will inform the modeling. Numerous publicly available models may meet these requirements. Examples of such tools for pollution modelling include the USEPA Storm Water Management Model (SWMM), Region 5 Model for Estimating Pollutant Load Reductions, Spreadsheet Tool for Estimating Pollutant Loads (STEPL), Pollutant Load Estimation Tool (PLET), or similar modeling, for Total Nitrogen, Total Phosphorus, Total Suspended Solids, and other pollutants of concern. To the extent possible, the model should also estimate any increase in other pollutants of concern.

The findings of these models must be submitted to and reviewed by the relevant governmental entity. Results must also be included in all plans associated with rezoning and/or site design once available.

6.5. Development Site Imperviousness Requirements [65]

Total Impervious Area (TIA). All impervious areas in catchment.

Directly Connected Impervious Area (DCIA). Surfaces like roofs, streets, and sidewalks that send stormwater through impervious infrastructure like drains and pipes to a receiving stream or wetland. Impervious areas are not directly connected if the stormwater quality and quantity are appropriately treated by naturalized green infrastructure prior to controlled release into receiving waters.

All new developments must meet the following impervious standards, in addition to all other applicable requirements of this plan and other relevant laws, rules, and regulations:

- Must demonstrate no more than 10% Directly Connected Impervious Area.[66]
- Should receive Rainwater and Land Development Manual 100% Water Volume credit, fully disconnected impervious surface for roofs and paved areas.[67]
- Must ensure no impervious surfaces within 300ft of a receiving stream centerline unless technically or commercially infeasible.
- Traditional or gray infrastructure may be used to capture and transport stormwater prior to treatment by green infrastructure.[68]
- No stormwater discharge or stormwater infrastructure may be placed within the Stream Corridor Protection Zone as defined in this Amended Plan.
- No impervious stormwater infrastructure may be placed within 300' of a receiving stream centerline.

Land Use ISC and C Values (Columbus SWDM Table 2-5)

Table 10 below summarizes general impervious surface coefficients for types of land use in the Big Darby Accord Planning Area. This table, adapted from the Columbus Stormwater Drainage Manual, provides rough order of magnitude (ROM) insight into how a site plan causes and addresses stormwater runoff.

Table 11 Land Use ISC and C Values (Columbus SWDM Table 2-5)

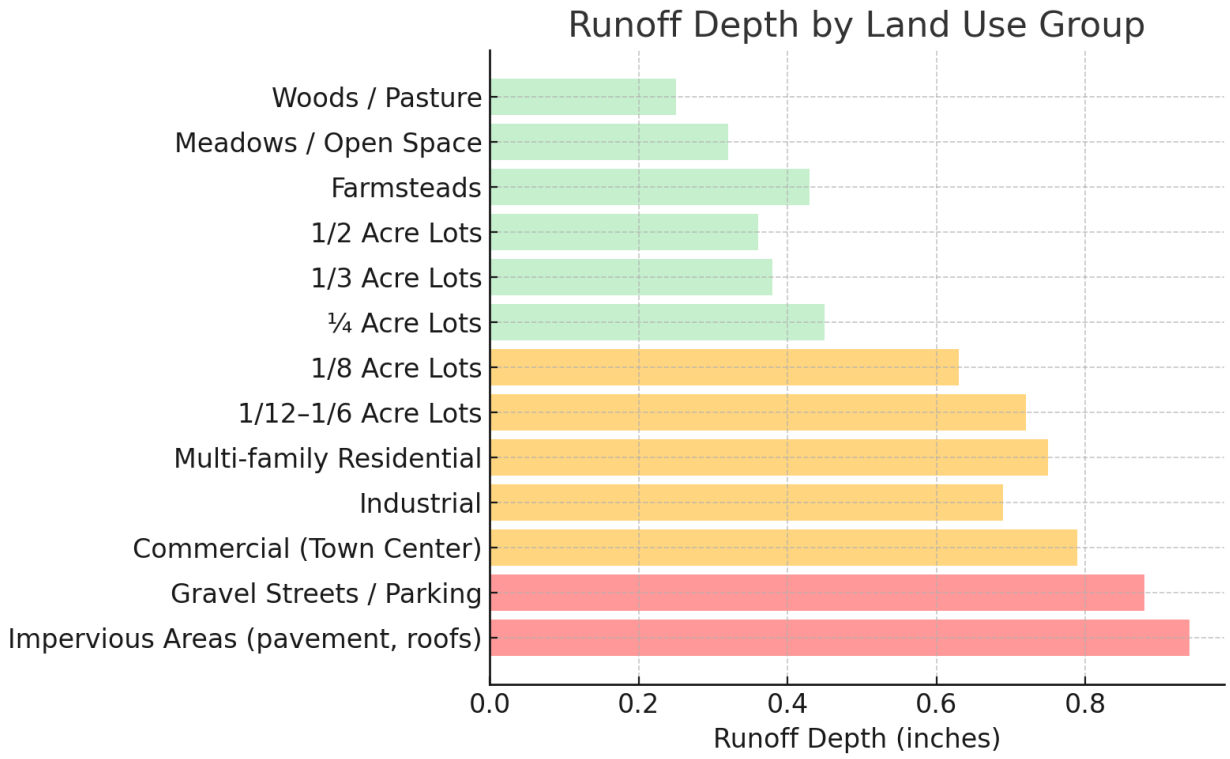
Land Use / Cover Type	Mean C[69]	Given % Impervious	Extrapolated Mean % Impervious
Impervious Areas (pavement, roofs)	0.94	—	100%
Gravel Streets / Parking	0.88	—	95%
Commercial (Town Center)	0.79	85%	85%
Industrial	0.69	72%	72%
Multi-family Residential	0.75	—	75%
1/12–1/6 Acre Lots	0.72	75%	75%
1/8 Acre Lots	0.63	65%	65%
¼ Acre Lots	0.45	38%	38%
1/3 Acre Lots	0.38	25%	25%
1/2 Acre Lots	0.36	20%	20%

Agriculture (Farmsteads)	0.43	—	35%
Meadows / Open Space	0.32	—	5%
Woods / Pasture	0.25	—	< 5%

Grouped Runoff Scenario Analysis

Figure 1 below groups land use categories by runoff potential (High, Moderate, Low) based on mean runoff coefficient and expected runoff depth for a 10-acre site under a 1-inch storm event. [70]

Figure 1 Runoff Depth by Land Use Group



Interpretation

High runoff categories (C ≥ 0.8), such as pavement, roofs, and commercial cores, generate almost full runoff from a 1-inch storm event. These areas should be prioritized first for volume-reduction BMPs such as permeable pavement, rain gardens, infiltration trenches, and stormwater harvesting if infiltration is possible based on soil type. Solutions also include all recommended BMPs for moderate and low C values. For areas where infiltration BMPs are not likely to reduce runoff volume, alternative BMPs must be employed to treat and reduce peak flow.

Moderate runoff categories ($0.5 \leq C < 0.8$), such as industrial and medium-density residential, can benefit significantly from riparian buffers, disconnected impervious routing, and bioretention retrofits, as well as recommended BMPs for low C values.

Low runoff categories ($C < 0.5$), including open space, forests, riparian corridors, and similar land uses, play an important role in infiltration and groundwater recharge. Preservation of these areas helps mitigate hydrologic impacts from a site.

6.6. Restoration of Ecologically Degraded Streams and Wetlands

This section applies to any applicable stream or wetland on a development site. If the applicable stream or wetland is ecologically degraded, it must be restored or enhanced as part of the development. If site engineering demonstrates restoration to be detrimental to these amendment goals or to render the site commercially infeasible, the developer must perform onsite or offsite mitigation for the ecologically degraded area that was not restored.

- Restoration or enhancement of an applicable stream shall be accomplished by any permitted design method. [71]
- Restoration of an applicable wetland means re-establishment of a previously existing wetland at a site where it has ceased to function. [72]
- Enhancement of an applicable wetland means activities conducted in an existing wetland to improve or repair existing or natural wetland functions and values of that wetland. [73]

Restoration of an ecologically degraded stream or wetland must include protection, augmentation and/or restoration of lost or declining listed species if historical records show they existed in the same HUC-12 in the prior decade. Some species, such as many freshwater mussels, continue to prove challenging or impossible to reintroduce. In those cases, the entity responsible for restoration must reintroduce appropriate native species unless commercially or technologically infeasible.

6.6.1. Identifying Ecologically Degraded Streams

Ecologically degraded means the stream or wetland exhibits a reduction in habitat function due to human-induced physical alteration, including, but not limited to, channelization, de-

vegetation, farm tiles, ditches, and invasive species. [74] Streams that exhibit one or more of the following are considered ecologically degraded and must be restored:

1. QHEI below 55 (headwaters) or 60 (large streams). See "Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI)" from Ohio EPA.
2. Rated Modified Warmwater Habitat (MWH) or Limited Resource Water (LRW)
3. Regardless of the foregoing, streams exhibiting channelization, historic point source pollution, loss of riparian buffer cover, or high risk of habitat instability due to stormwater runoff.

The goals for stream restoration are predicted attainment of the following:

1. QHEI of 55 or more for headwaters, or 60 or more for large streams, and
2. Warmwater Habitat (WWH) or Exceptional Warmwater Habitat (EWH).

Determination of ecological degradation will be based on a report submitted to the applicable jurisdiction by a project representative. The report must be completed by a person qualified to review, compile, and submit these technical reports, and must be verified by the jurisdiction. Restoration activities will be governed by applicable local, state, and federal rules and regulations.

6.6.2. Identifying Ecologically Degraded Wetlands

Wetlands under the jurisdiction of the US Army Corps of Engineers, US EPA, and/or Ohio EPA must be restored if found to be ecologically degraded. Wetlands that exhibit one or more of the following are considered ecologically degraded and must be restored:

1. Does not demonstrate an adequate buffer based on wetland classification
2. Not comprised of primarily native vegetation
3. Previously classified wetlands that exhibit a reduction in classification (e.g., a Class II wetland that is downgraded to Class II).

The goals of wetland restoration are predicted attainment of the following:

1. Adequate buffer established based on wetlands classification
2. Primarily native vegetation present, with all new vegetation limited to native plants

3. For downgraded classification, either restoration predicted to meet the previous classification or mitigation.

6.6.3. Applicable Mitigation Regulations for Streams and Wetlands

The Ohio EPA, with direction from the Interagency Review Team, implements stream and wetland mitigation in Ohio. The Ohio Administrative Code governs mitigation requirements for streams and wetlands (see OAC 3745-32-04 and OAC 3745-1-50 through -54), while the Ohio Revised Code governs isolated wetlands (ORC 6111.02-.28). Each incorporates by reference relevant federal definitions and requirements, as well as the Final Rule on Compensatory Mitigation for Losses of Aquatic Resources (published April 10, 2008). Given the comprehensive and complex nature of stream and wetland mitigation regulations, the Amended Plan incorporates those requirements by reference. Additional mitigation requirements apply in the Darby.

6.6.4. Sample Stream Mitigation and Restoration Policy

The following are model provisions provided as a reference for jurisdictions to adopt or incorporate into their codes of ordinances or zoning resolutions, as applicable, to administer stream mitigation through a variance process.

Mitigation application submitted to the jurisdiction governing stormwater management:

A mitigation application must include three site development plans: full compliance, minimal impact, and preferred alternative. The application must provide supporting information explaining why the full compliance alternative is impracticable. Such information can include, but is not limited to, documentation showing the technical challenges of meeting the requirements of the applicable stormwater drainage manual or demonstrating the impact of the full compliance alternative on the overall economic viability of the site development plan. In addition, an application shall demonstrate sufficient mitigation for any impacts on the Stream Corridor Protection Zone or the stream.

Mitigation shall be considered sufficient if it meets one of the following criteria:

1. If the impact is directly to the stream, the applicant must demonstrate that the predicted post-construction QHEI/HHEI will show a substantial improvement of its QHEI/HHEI score to the maximum practicable extent, with a minimum QHEI goal of 55 or more for headwaters or 60 or more for larger streams, or HHEI predictive of a Class II or higher;

and that the impact will not negatively affect stream geomorphology in the stream segment directly impacted.

2. If the impact is solely to the SCPZ, and not directly into the stream, and the impact is temporary, the required mitigation must restore the SCPZ to preserve or improve the existing SCPZ quality and function. Restoration must include native vegetation.
3. If the impact is a permitted or conditional use within the SCPZ, and not directly into the stream, and the impact is permanent, then the applicant must provide adequate mitigation by creating equivalent mitigation of a SCPZ elsewhere or perform adequate ecological mitigation work on-site or off- site to replace functions lost as a result of the proposed impact.

Proposed mitigation shall be considered sufficient if additional equivalent SCPZ is created, or SCPZ mitigation work is performed at the following ratios:

- On site: 1 to 1
- Adjacent site: 1 to 1.5
- Within same HUC-12: 1 to 2

Generally, mitigation SCPZ will be considered equivalent if it performs the same function as the disturbed SCPZ; for instance, if the disturbed SCPZ includes trees, the mitigation SCPZ should include at least an equivalent number of trees.

Mitigation applications will be reviewed and approved administratively. Each Accord jurisdiction must provide guidance for applicants seeking a variance, including how and where to file an application; who will approve, conditionally approve, or deny the application; and what, if any, appeal process may apply.

6.6.5. Applicable Mitigation Regulations for Healthy Trees

Removal of Healthy Trees. Development that triggers the Ohio General Construction Permit and removes any tree 6” DSH or larger must use the following mitigation table. DSH, or Diameter at Standard Height, is a standard method of measuring the diameter of a tree trunk. It is measured at a height of 4.5 feet above the ground. This measurement is crucial in forestry, arboriculture, and urban planning because it provides a consistent way to assess tree size, age, and health, and is often used to determine the eligibility of a tree for protection under various tree ordinances.[75]

Table 12 Mitigation Ratios by Tree Size

Tree Size (DS, H)	Mitigation Ratio (replacement for removed)
6-12"	1:1
12-18"	2:1
18-24"	3:1
24-30"	4:1
30" or more	5:1

6.6.6. Applicable Mitigation Regulations for Primary and Secondary Conservation Areas

The following mitigation requirements apply to impacts within Primary and Secondary Conservations, outside the Stream Corridor Protection Zone, where mitigation is required by the amended plan. A project sponsor must propose a mitigation plan as part of seeking authorization from the jurisdiction and prior to the impact.

If development impacts those areas, mitigation work must be performed at the following ratios where every acre of impact is mitigated with an acre of Primary or Secondary Conservation Area restoration or establishment:

- On site: 1 to 1
- Adjacent site: 1 to 1.5
- Within same HUC-12: 1 to 2

Impacts not planned for by the mitigation plan must be reported to the jurisdiction as soon as practicable. They must be mitigated via an updated plan and at twice the ratios listed above.

Mitigation for these impacts must provide equivalent environmental benefits as the impacted Primary or Secondary Conservation Area. For example, placement of an impervious surface within 300' of a stream may be mitigated with more forest outside the SCPZ or establishment of additional buffer adjacent to the 300'. Given the unique, site-specific nature of impacts, mitigation requires flexibility and cooperation from all parties.

6.7. Requirements for Infiltration (Criterion 3c)

The Big Darby Creek Watershed TMDL report and the Construction General Permit provide for the management of stormwater such that a shallow groundwater recharge rate target is maintained. Development sites shall be managed such that this recharge rate is maintained or improved. Groundwater recharge must take place on the development site, not mitigated offsite. The Construction General Permit provides groundwater recharge requirements and calculations to meet these targets. The Ohio RPA Final General Construction Permit (OHC000006) is incorporated in relevant part by reference here. The Amended Plan must be updated with future iterations of the Permit, Appended 3-3, and other similar documents.

6.8. Sustainable Development Practices

Development in the Darby provides an opportunity to act on regional climate resilience, adaptation, and mitigation strategies. The Central Ohio Regional Water Study conducted by Ohio EPA, ODNR, MORPC, and the City of Columbus provides a list of key climate actions related to water quality (see Appendix A). This section includes recommended planning and building strategies to support residents for generations to come. While these tools are not mandated in the Amended Plan, jurisdictions may include these and other climate policy requirements.

6.8.1. Net Zero Ready Homes

> "Every certified Zero Energy Ready Home represents a whole new level of performance with rigorous requirements that ensure outstanding levels of energy savings, comfort, health, and durability. A DOE Zero Energy Ready Home is a high-performance home that is so energy efficient that a renewable energy system could offset most or all the home's annual energy use. Each home meets rigorous efficiency and performance criteria and are verified by a qualified third-party as part of the certification process." *United States Department of Energy*[76]

The DOE Zero Energy Ready Home program is now known as DOE Efficient New Homes. DOE Efficient New Homes is the successor program to DOE Zero Energy Ready Home. Materials across DOE's websites have been updated accordingly to account for the successor program. The DOE ZERH program and the DOE Efficient New Homes program remain substantively the same.

Climate change adaptation begins at home. The range of climate change impacts affects the long-term quality of life for Central Ohio families, and standards already exist to build resilient

homes in the Darby. The Net Zero Energy Ready Home framework allows developers to use industry-standard design and construction techniques that drive down the cost of operating a home while building in climate-resistant features.

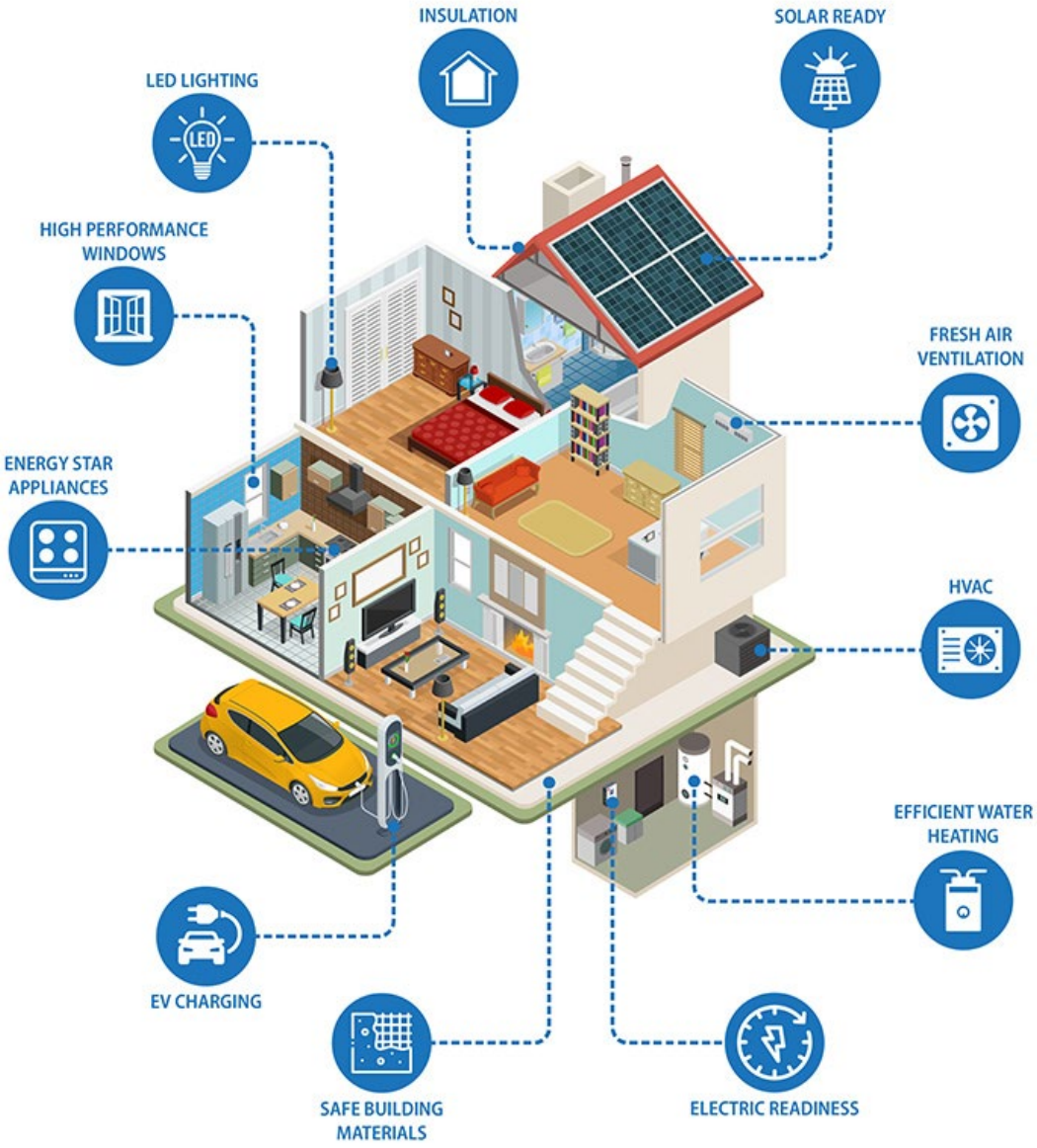


Figure XX. Features of a Net Zero Energy Ready Home. [77]

While not required, homebuilders are encouraged to incorporate standards like Net Zero Energy Ready for both single-family and multi-family homes. On-site renewable energy generation and battery storage may complement these homes, providing energy security during extreme weather conditions. Numerous public and private programs provide cost-effective ways to implement these climate-ready features for new homes.

6.8.2. LEED Standards

The original plan focused on the then-current Leadership in Energy and Environmental Design Neighborhood Development (LEED-ND) checklist. LEED is a rating framework that has been developed for buildings – also known as the Green Building Rating System. Rather than focus on individual buildings, the plan pursued neighborhood-scale certifications.

LEED-ND was updated for the last version of LEED v4 in 2014. The certification process encompasses five categories – Smart Location and Linkage; Neighborhood Pattern Design; Green Infrastructure and Buildings; Innovation; and Regional Priorities.[78] Certification under LEED-ND may be more challenging to navigate for builders unfamiliar with the program, especially given its relative age vs. more recent standards from LEED and others.

This amendment updates the original plan to archive LEED-ND and recommends consideration of LEED v4.1 – Residential, or the most recent version of the standard. As with Net Zero Ready Home standards, homebuilders are encouraged to explore the latest LEED standards as another sustainable building certification process.

6.8.3. Town Center Plan

The original plan and subsequent master planning efforts envisioned a small new town in the middle of the Darby prairie, bounded by I-70 to the north and Broad Street to the south. This new Town Center received an allocation of 5,000 ERUs in the plan. The plan intended for the Town Center to showcase a suite of dense, conservation-focused development strategies that might be replicated in other environmentally sensitive areas.

Even with support from all Big Darby Accord jurisdictions for a master plan, the Town Center concept failed to attract developer interest. This was driven by the Great Recession, increases in infrastructure costs to serve the area, and lack of control over – with lack of interest in selling – the property where the Town Center was planned.

At the time of the Amended Plan, a substantial portion of the area originally identified for the Town Center is under construction for the Pleasant Prairie Solar Energy Center. The 240-megawatt solar farm will cover approximately 2,400 acres once completed in 2027. The development concepts for the original Town Center may prove useful for other dense development in the planning area and should be utilized in areas designated to accommodate

higher densities and intensity. This amendment encourages developers of large projects to review the Town Center concept during project planning and site design.

6.8.4. Low Impact Design

[NOTE: MKSK updating as needed]

6.9. Comprehensive Stormwater Management (Criterion 4)

[Note: MKSK. Cross-reference with Darby SW Permit, Appendix 3-3, Columbus Stormwater Drainage Manual]

6.9.1. Stormwater Maintenance Fee

The amended plan requires enhanced stormwater BMPs using green infrastructure techniques [insert reference to section]. Stormwater infrastructure requires routine maintenance that exceeds the expertise of HOAs, NCAs, and similar entities. While unincorporated areas of Franklin County receive service from the County Drainage Engineer, municipalities require a different approach.

To ensure timely, consistent maintenance of Darby stormwater BMPs, at least 2mills from the Darby Revenue Program must be set aside as a stormwater maintenance fee. The fee must be collected and held by the relevant jurisdiction and may only be expended for stormwater maintenance purposes. The fee must be established for at least 30 years, with an option for the relevant jurisdiction to extend the NCA if needed. As part of the agreement, the development must provide permanent access to maintain stormwater features on terms and conditions mutually agreed upon.

Alternatively, jurisdictions may have the authority to establish a fee for a category of stormwater customers within the Darby, establish a fund for that money, and limit the use of the funds to identified purposes within the Darby. Jurisdictions' legal authority may vary based on charter, code, and public utilities framework.

Darby jurisdictions are encouraged to identify a single entity to maintain green stormwater features in the planning area. Jurisdictions benefit from a multi-party agreement to contract with that entity.

Appendix C includes important stormwater provisions of the Construction General Permit.

6.10. Recommended Naturalizing Riparian Areas and Improved Conservation Practices for Agricultural and Undeveloped Lands (Criterion 7)

How Tile-Drained Agricultural Land Can Mimic Impervious Surface Behavior

"The National Water Quality Assessment shows that agricultural runoff is the leading cause of water quality impacts to rivers and streams… and the second largest source of impairments to wetlands." United States Environmental Protection Agency [79]

Tile drainage uses buried drains to remove excess water from agricultural land. Tile-drained watersheds often mimic traditional impervious cover with shortened flow paths, higher peaks, and rapid water transmission. However, tile drainage still allows limited infiltration, soil moisture storage, and some potential recharge. [80]

Conditions Approximating Impervious Behavior

- >40% of watershed areas are tile-drained
- Soils are poorly drained
- Antecedent moisture is high, or soils are saturated
- Drain spacing is dense and outlet connectivity high
- Large or intense rainfall events occur

Conclusion and Recommendations

Tile drainage does not make cropland fully impervious but does mimic impervious cover in important ways. To address these issues, this amendment recommends the following:

- Incorporate tile drainage in water quality models
- Assume partial impervious behavior for stormwater runoff planning in tiled areas
- Use green infrastructure BMPs to slow discharge before reaching stream or wetland
- Implement native vegetative buffers around agricultural land
- Require disconnection of drainage tiles when agricultural land is rezoned

Table 13 Comparison: Tile-Drained Cropland vs. Impervious Surfaces

FEATURE	TILE-DRAINED	IMPERVIOUS SURFACE
Infiltration before flow	Infiltration until saturation; soil storage plays a role	Nearly zero infiltration
Flow pathway	Subsurface direct to stream via tile network; surface runoff still occurs	Surface runoff via gutters, storm sewers
Peak flow timing	Moderate; higher peaks flows	High; rapid peak flows
Baseflow contribution	Reduced but not eliminated	Negligible (almost all quick flow)
Pollutant transport	Nutrients, pesticides, herbicides, sediment	Metals, hydrocarbons, sediment, nutrients
Seasonal variability	Strong	Low

Undeveloped land within the Big Darby Creek watershed is primarily row crop agriculture with some forested and open brush land. The 2006 Accord anticipated that agricultural land use would drop from 31,536 acres or 56% of land use, to 3,356 acres or 6% of land use. This change has not happened, and current trends show this is not likely to occur in the foreseeable future.

Although a healthy riparian corridor exists along segments of Big and Little Darby creeks and their larger tributaries, expansion and retention of natural (wooded and prairie) riparian vegetation is needed. This, along with implementation of agricultural best management practices, is essential to the health of the watershed. Setbacks comprised of native vegetation along all perennial streams should include wetlands, steep slopes, and the most frequently used portion of the floodplain, including the 100-year mapped flood plain.

Where agricultural practices occur in proximity to streams (i.e., the distances set forth in criterion 2b), landowners and local policy makers should focus on a long-term decision-making process to manage runoff from intensive agricultural production activity in a manner that allow slowing, capture, and treatment of agricultural runoff before reaching streams where feasible. Development of voluntary, locally developed Nonpoint Source Implementation Strategies (NPS-IS) at the HUC-12 watershed assessment unit scale provides an opportunity for strategic planning, prioritization, and allows projects identified in the plans to be eligible for funding through state and federal nonpoint source grant programs.

To advance identified water quality goals, the Big Darby Accord jurisdictions will partner with subject matter experts, stakeholders, landowners, and other interested parties to develop these 9-Element Nonpoint Source Implementation Strategies (NPS-IS) plan(s). The plan(s) will focus primarily on reducing nutrient loading and TSS from agriculture to meet the requirements of the Ohio EPA Total Maximum Daily Loads for the Big Darby Creek Watershed.

Additional information on NPS-IS is available here: https://epa.ohio.gov/divisions-and-offices/surface-water/guides-manuals/9-element-nps-is-tools.

Recommended agricultural practices can be found in the Ohio Nonpoint Source Management Plan available at: https://epa.ohio.gov/static/Portals/35/nps/2019-NPS_Mgmt_Plan.pdf. The plan includes upland management strategies, riparian management and restoration strategies, and high-quality water protection strategies.

6.11. Variance Requirements

In some limited cases, strict adherence to the requirements of the Amended Plan may prove technically and commercially infeasible. Project sponsors may request an administrative variance from the jurisdiction in those circumstances. The jurisdiction where the project takes place has the authority to approve, conditionally approve, or deny the variance. Any appeals process will be the responsibility of that jurisdiction.

All variance applications must include three site plans: full compliance, minimal impact, and preferred alternative for the relevant requirement. The application must provide supporting information explaining why the full compliance alternative is infeasible. Such information can include, but is not limited to, documentation showing the technical challenges of meeting the requirement in question or demonstrating the impact of the full compliance alternative on the commercial viability of the site plan.

The applicant must do all the following to receive an administrative variance:

- Prove there are unique circumstances applicable to the site such that strict adherence to the applicable requirement will deprive the applicant of reasonable use of the land or result in substantial hardship to applicant; and
- Demonstrate a clear good faith effort to meet the requirements; and
- Provide full mitigation for the requirement from which the applicant seeks a variance, which will vary depending on the requirement.

The jurisdiction's final decision on a variance must be made in writing. If approved by the jurisdiction, the variance must be part of any rezoning, site design, and site compliance documentation. The Big Darby Accord Advisory Panel may not consider the plan requirements modified by an approved variance.

7. Big Darby Accord Revenue Program

The following sections lay out an updated Big Darby Accord Revenue Program ("Revenue Program"). The program provides critical funding for conservation, development, and future updates to the Big Darby Accord.

7.1. Revenue Program Governance

BDART will oversee Open Space Funds through a designated contract with a qualified governmental or non-profit entity. The jurisdiction generating the funds may approve or disapprove the recommendation of BDART. If the proposal is rejected by the jurisdiction, other proposals will be considered.

Jurisdictions generating the revenue retain discretion over management of those Darby Revenue Funds, other than the Open Space Fund. Legislative and administrative requirements vary from jurisdiction to jurisdiction. Not all jurisdictions have access to all funding tools. This amendment recognizes these differences and must be viewed as a framework and guide, not inflexible requirements.

Each jurisdiction will provide an annual public report on Revenue Program activities using a standardized template and timeline, and BDART must collect and release the reported data for the planning area. Recognizing that each jurisdiction uses a different budgeting and funding system, BDART may develop and provide a model template for reporting.

Jurisdiction participation in the Revenue Program will be adopted by reference with the larger plan amendment.

7.2. Darby Revenue Program Definitions

Definitions of Regional Darby Purpose, Jurisdictional Darby Purpose, and Open Space for the Big Darby Accord Revenue Program.

Open Space Purpose – Investments to acquire, preserve, protect, remediate, restore, improve, manage, maintain, and/or otherwise meet the open space goals in the Big Darby Accord planning area.

Regional Darby Purpose – Investments necessary to implement the Big Darby Accord Watershed Master Plan, as determined by the jurisdiction generating the revenue. The jurisdiction may also decide where to make investments. Examples include, but are not limited to, the following:

- Water Quality Monitoring and Assessment.
- Regional property purchase/easement to advance the plan's priorities, such as protection, maintenance, and/or restoration of streams, wetlands, and/or open space.
- Regional water, sanitary sewer, and stormwater infrastructure extension, expansion, repair, and/or replacement.
- Regional transportation infrastructure, including recreational trails and shared use paths.
- Regional recreational facilities, amenities, and greenways.
- Planning activities to support the plan.
- Administration of the plan.
- Open space maintenance, management, and stewardship activities that support the plan.

Jurisdictional Darby Purpose – Investments to support local Big Darby Accord Watershed Master Plan priorities, as determined by the jurisdiction generating the revenue. Examples of these uses include, but are not limited to, the following:

- Adequate public facilities.
- Programs to ensure housing remains affordable for residents.
- Jurisdictional application of any Regional Darby Purpose.

7.3. Darby Revenue Program Allocations

- Open Space Purpose – 25%
- Regional Darby Purpose – 50%
- Jurisdictional Darby Purpose – 25%

The jurisdiction generating the revenue decides which of its funding streams to use for what purpose(s). These decisions may be made on a project-by-project basis, a pooled basis, or otherwise. Funding streams have varying – and sometimes changing – use restrictions to consider when making these decisions.

7.4. Open Space Fund

Section 5.4.2-1 of the Big Darby Accord Watershed Master Plan recommends creation of an Open Space Fund "…similar to a purchase of development rights (PDR) program; however, the goal of the program is to purchase and acquire land (not rights)."

With this amendment, participating jurisdictions agree to create and contribute to an Open Space Fund using their Open Space Purpose funds. The Open Space Fund will advance Open Space Purposes as defined in this amendment. Non-profits, foundations, businesses, and others may look for or provide funding or property for the Open Space Fund if their goals align with this amendment. All decisions made by BDART or the fund custodian(s) must be made in writing and made publicly available.

To further our Open Space Purpose goals, BDART will decide:

- The custodian(s) of the Fund;
- Criteria and process for strategic acquisitions; and
- The third-party entity responsible for program implementation.

7.5. Darby Revenue Program Elements

Jurisdictions agree to use the following funding and investment program elements of the Revenue Program. Jurisdictions may have unique circumstances that affect participation in element(s) of the program. A jurisdiction has discretion to use only TIF, only Jurisdiction Investment in Lieu, or both.

7.5.1. Tax Increment Financing (TIF)

- 100%/30-year property tax incentive.
- Non-school TIF (e.g., compensates schools for 100% of the taxes they would have received without the TIF).
- Applies to the *improved* value of the property.
- Owners still pay the same existing taxes.
- Concurrent with and subordinate to other tax incentives.
- May be bonded against by public or private bond placement, with proceeds divided per the Darby Revenue Program.
- No jurisdiction adopting the Darby Revenue Program may object to the incentive terms.

7.5.2. New Community Authority (NCA)

- 5-20 mills.
- At least 15 years.

7.5.3. Developer Per Unit Contribution

- $2,500/unit for all single- and multi-family dwelling units.
- $2.00 per sq/ft for industrial, manufacturing, and commercial.
- Reviewed every 5 years.

7.5.4. Jurisdiction Investment in Lieu

- In lieu of TIF funding, jurisdictions may take part in the Darby Revenue Program by capturing the total, long-term value of Darby Purpose activities that are not otherwise reflected in the Darby Revenue Program.
- Examples include the value of additional open space, stream and wetland restoration, or any other Darby Purpose, as determined by the jurisdiction.
- Sources may include grants, donations, general or capital funds, or other sources provided to, by, or on behalf of the jurisdiction.
- In calculating the value of an Investment in Lieu, jurisdictions may use any Generally Accepted Accounting Practice. [81]

7.6. Optional Revenue Programs

This amendment focuses on requirements that provide the greatest environmental protection at the best cost. Development in the Big Darby Accord Planning Area is inherently more expensive due to the requirements of the plan, associated limits on developable portions of sites, and distance to established infrastructure. Increases in development costs will be passed on to renters and buyers or will make projects commercially infeasible. Both outcomes make housing and open space less available and affordable without revenue funds to offset the plan's requirements.

The time horizon for building Darby Revenue Funds extends 5-7 years after a project begins. Developers who cover the costs for infrastructure must wait years for reimbursement. There is a carrying cost for those investments – 5% compound interest for these programs in the City of

Columbus – eroding the value of the Darby Revenue Program. Developers may avoid these projects entirely without a faster reimbursement process.

Several optional programs may lower the cost of development now, bring funds forward to support Darby Purposes, and frontload critical open space investments. This amendment provides the following ideas as options for jurisdictions to consider. They are illustrative, not exhaustive, and will hopefully spark more innovation in this area.

7.6.1. Revenue Bonds

- A developer or jurisdiction may choose to bond against future TIF funds.
- Public or private placement may be issued through an entity such as the Columbus-Franklin County Finance Authority.
- Jurisdictions/developers distribute and use bond funds in the same way as the revenue underpinning the bond issuance (e.g., Jurisdictional, Regional, and Open Space Darby Purposes).

7.6.2. Linked Deposit Interest Buy-Down

- Jurisdictions may choose to create and fund a linked deposit program with one or more financial institutions, like programs run by the Ohio Treasurer of State.
- The program(s) may provide a discounted interest rate for development-related loans by diverting some or all the interest from the jurisdiction's deposits.

7.6.3. Revolving Loan Fund

- Jurisdictions may choose to invest in a local or regional revolving loan fund for eligible development costs in the Darby.
- May provide below-market interest rates with favorable repayment terms.

7.6.4. Direct Capital Investment

- Jurisdictions may choose to directly invest their capital funds for a Darby Purpose.
- Darby Revenue Program funds may then be allocated to the jurisdiction for any or all capital investments, or the jurisdiction may forgo reimbursement altogether.

Appendix A. Scientific Basis for Plan Amendments

A.1. Original Plan Modelling

The 2006 Big Darby Accord Watershed Master Plan used a variety of data sources and techniques to estimate the water quality impacts of implementing the plan's land use mapping. It was – and still is – a strong effort to model land use changes and their attendant impacts on water quality. To better understand the need for new modelling data, this section provides a deeper understanding of the limitations of original modeling.

It is now known that the modelling under the original plan was based on land use changes that have not occurred. The original model assumed agricultural land use in the planning area would drop from 31,536 acres or 56% of land use, to 3,356 acres or 6% of land use. Original modelling did not include field tiles, which means the totality of agricultural nutrient loading, agricultural chemicals, and TSS from farming in the planning area were not accounted for.

Per the original plan Appendix A, it is important to note that the results represented by the SWOT (Strengths, Weaknesses, Opportunities, Threats) modelling and summarized within this document represent only an analysis of land use changes within the Accord planning area and do not account for stormwater best management practices, stream restorations, or contemporary site planning practices that would further reduce pollutant loading or increase infiltration from urbanizing land uses.

Stream restoration activities can have a beneficial impact on pollution reduction, but the original modelling could not include that impact. Stream restoration to add floodplain storage can mitigate the impact of increased flow associated with urbanizing areas. Furthermore, stream restoration can also increase the assimilative capacity of pollutants conveyed within the stream channel, particularly TSS.

Studies like Sustaining Scioto (2015) and the Central Ohio Regional Water Study (2025) demonstrate the variability in inputs such as overall precipitation, temperature, extreme weather events, and development patterns due to climate change in the Upper Scioto. The state of data and science in 2006 was not as accurate as information available at the time of the Amended Plan, reducing the original model's accuracy especially in light of climate science in 2026.

A.2. Central Ohio Regional Water Study

The Central Ohio Regional Water Study ("Water Study") provides high-level projected water quality impacts at the HUC-12 watershed level for the Big Darby Accord Planning Area. While the study is a high-level analysis at a watershed scale, the results provide projected water quality trends that can be used to help inform long-term planning decisions.

For the study, subject-matter experts analyzed key data points for water quality to determine potential future impacts due to a changing climate and land uses. For the planning area, key identified issues across most of the Big Darby watershed are current headwater water quality and future hydromodification. Under the more extreme future climate conditions, there were some isolated sections of the watershed that saw projected lower base flows.

The Water Study, completed in 2025, provides an integrated water resources and infrastructure model for a 15-county area in Central Ohio.[82] The study's goals were to, "Identify opportunities and gaps in the system's ability to meet local and regional water needs under potential future conditions (2030, 2040, 2050)."[83]

The Water Study developed and reviewed future population, land use, and climate change scenarios for potential water quality and quantity impacts at the HUC-12 level. These issues fell into four main study areas:

- **Land use** – Increased impervious areas may lead to degraded streams due to loss of riparian corridors, increased flows, and reduced groundwater recharge.
- **Hydromodification** – Higher flows in frequently occurring events may contribute to increased erosion and reduced water quality.
- **Increased Occurrence of Low Flows** – Lower and longer base flows during dry periods may disrupt aquatic habitats and lead to more restrictive permitting requirements.
- **Temperature and Precipitation Impacts** – Hotter/drier conditions may result in more frequent and lower base flows.

For the purposes of describing current conditions and forecasting future water quality, the Water Study tracked the Ohio EPA benchmarks for attainment – Habitat Aquatic Life Use Designation, Antidegradation Tiers, and Biological Health. Current attainment status was not included in the evaluation of existing water quality due to the variability in recent available water quality monitoring data across the entire water study.

Table 14 presents an overview of the designations and tiers used within the Water Study. This amendment specifically tracks these designations and establishes, for the first time, goals for aquatic life use, recreational use, and antidegradation in Section 2.4.1.

Table 14 Aquatic Life Use Designations and Antidegradation Tiers

Aquatic Life Use Designations		
EWH	Exceptional Warmwater Habitat	Excellent
CWH	Coldwater Habitat	Excellent
WWH	Warmwater Habitat	Good
MWH	Modified Warmwater Habitat	Poor
LRW	Limited Resource Water	Poor

Antidegradation Tiers		
OSRW	Outstanding State Resource Water	Excellent
SHQW	Superior High-Quality Water	Excellent
GHQW	General High-Quality Water	Good
LQW	Limited Quality Water	Poor

Overall, the Water Study forecasts mixed current and future water quality conditions for the Big Darby Accord watershed. Of note are potential hydromodification impacts[84] and existing headwaters biological health. The report assigned a high potential hydromodification impact for any stream where flows increased an average of 10% or more in the forecast. Ohio EPA predictive modelling formed the basis of current biological health in Darby headwaters based on current land use characteristics. Table 15 provides a full overview of the HUC-12 level findings. [INSERT HUC-12 MAP]

Table 15 Central Ohio Water Study Water Quality Findings, 2025

Water Quality Category	HUC-12 50600012202 Gay Run-Big Darby Creek	HUC-12 50600012102 Silver Ditch-Big Darby Creek	HUC-12 50600012101 Worthington Ditch-Big Darby Creek	HUC-12 050600012201 Hellbranch Run
Existing Water Quality	Excellent	Excellent	Excellent	Good
Existing Aquatic Habitat	Excellent	Excellent	Excellent	Fair
Existing Headwater Biological Health	Fair	Fair	Fair	Poor

Existing Antidegradation and Use Designation	Excellent	Excellent	Excellent	Excellent
Existing % Impervious[1]	2.0%	3.9%	1.3%	9.2%
Change in % Impervious (2030)[2]	0.2%	0.6%	0.2%	2.6%
Change in % Impervious (2040)[2]	0.4%	1.2%	0.4%	5.5%
Change in % Impervious (2050)[2]	0.6%	1.8%	0.7%	8.4%
Potential Hydromodification Impacts[3]	Yes	Yes	Yes	Yes
Potential Low Flow Impacts4	No	No	No	No
Potential Temperature and Precipitation Impacts[5]	No	No	Yes	No

[1] Existing % impervious estimated from 2021 land use

[2] Change is based on projected land use changes relative to 2021 land use

[3] Potential hydromodification impacts are denoted as "yes" based on long-term modeled flows in future scenarios increasing relative to existing by greater than 10% based on an average of the 10th and 30th percentile flows. Any other increases less than 10% or decreases relative to existing are denoted as "no"

[4] Potential low flow impacts are denoted as "yes" only when long-term modeled flows in future scenarios in the 90th percentile are projected to decrease by more than 10% relative to existing. Any other decreases less than 10% or increases relative to existing are denoted as "no"

[5] Potential temperature and precipitation impacts are denoted as "yes" when the 90th percentile flows are projected to decrease by more than 10% when comparing the future extreme hot/dry scenario to the future moderate climate scenario

Adaptations to the impacts can be implemented through strong permitting requirements associated with development – exactly what this amendment puts in place. The Water Study offers four specific recommendations, three of which are applicable to the Big Darby watershed (Table 16).

Table 16 Water Study Recommendations Incorporated into the Amended Plan

Review Local Regulations	BDAWMP Status
Riparian Setbacks	In place, updated by amendment
Floodplain Requirements	In place
Stormwater Management Plans	In place, updated by amendment

Tree Codes	Partial, per jurisdiction
Zoning and Planning	In place, updated by amendment
Application and review fees	In place, per jurisdiction

Develop 9 Element Nonpoint Source Implementation Strategies (NPS-IS)	BDAWMP Status
Currently, 28 HUC-12 watersheds have an Ohio EPA approved NPS IS in Central Ohio; none of the 4 Big Darby watersheds have an approved NPS-IS	Recommended by amendment

MS4 Compliance	BDAWMP Status
Ensure communities approaching Urban Area designation are prepared for the regulatory responsibilities under the CWA	In place
MS4 communities can leverage an approved NPS-IS Plan to meet permit requirements	Recommended by amendment

State Regulations	BDAWMP Status
Potential for additional watersheds to be included in the State Water Quality Management Appendix 3-3 requirements	N/A

A.3. Predictive Analysis for High-Functioning Urbanized Watersheds

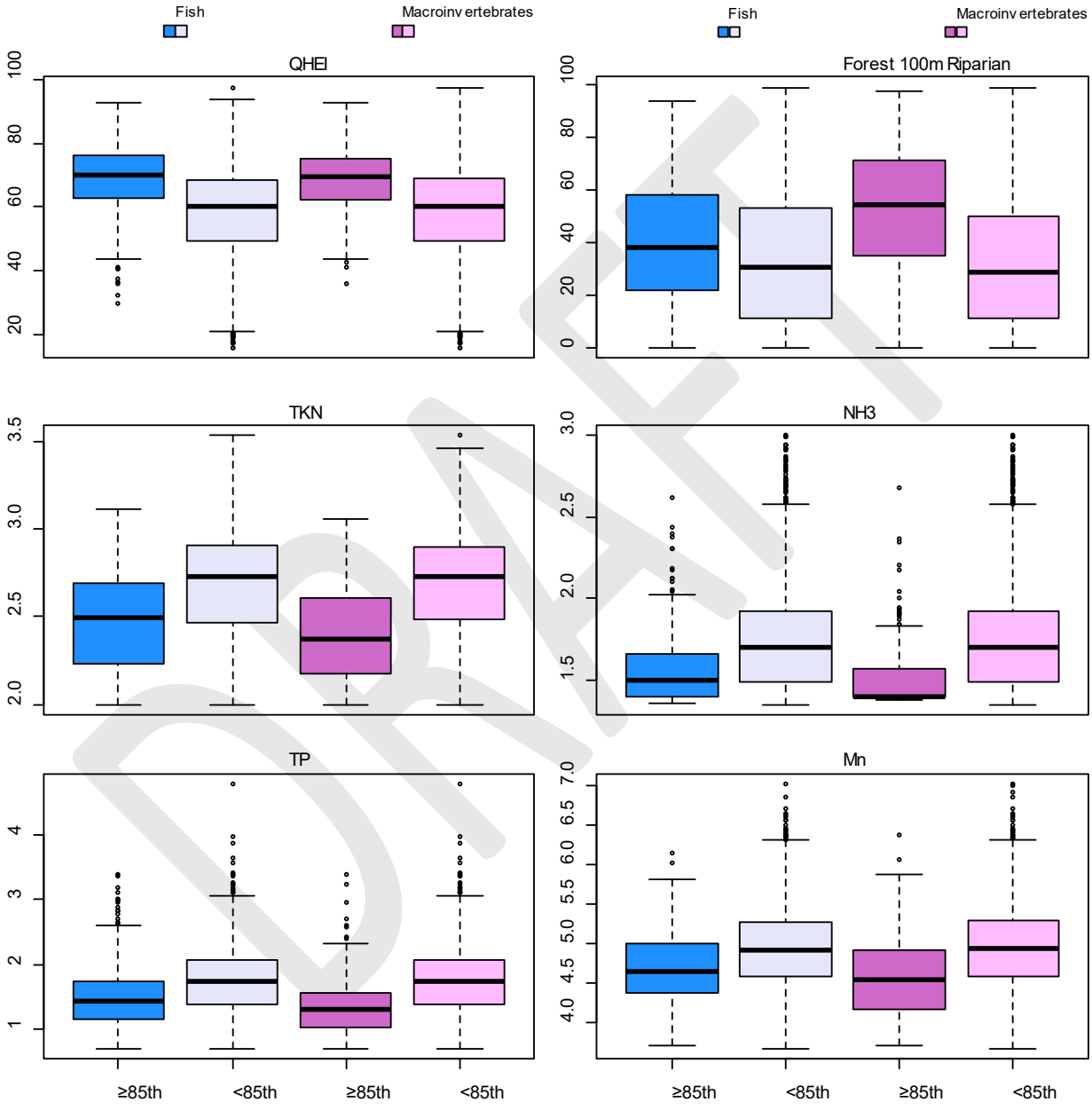
Robert Miltner, Ecological Data Analyst with the Ohio EPA,[85] provided the data analysis incorporated in the Central Ohio Regional Water Study. Mr. Miltner is very well-known for substantial research into water quality issues in the State of Ohio, with published papers spanning decades. Miltner recently completed a reassessment of variables predicted to impact fish and macroinvertebrates in urbanized areas.[86] This and related studies led to the development of a predictive model for high-function streams in the areas of the Darby in an urbanized context.

> "With regard to thresholds where the amount or intensity of urban land uses [Medium-Intensity Urban 50% to 79% total constructed impervious area and Low-Intensity Urban development 20%-49% within the catchment] generally precludes good biological condition, the results here suggest that biological response tends to be continuous over the domain of values. However, for macroinvertebrates, the response, when conditioned on riparian forest cover… shows two inflection points, one at ~ 10% imperviousness, and another at ~33% imperviousness.
>
> "When impervious cover is less than 10% and riparian forest cover is greater than 40%, macroinvertebrates will likely be in good condition [with urbanization]. If riparian forest cover is between 20 and 40%, good stream habitat and low to normal levels of nutrient and organic enrichment would likely also be necessary to maintain macroinvertebrate condition. If impervious cover is in the range of 10 to 33%, macroinvertebrate condition is likely to be maintained if riparian forest cover is greater than 40%, provisional on habitat and enrichment. Impervious cover greater than 33% is likely to preclude good macroinvertebrate condition.
>
> "[A] model of fish IBI scores as a function of imperviousness and riparian forest cover … shows that at modest levels of imperviousness, fish scores are likely to be maintained at or near good condition if riparian cover is above ~20%. For intermediate levels of imperviousness, riparian forest cover greater than 20% appears as a prerequisite for any chance of good condition, again provisional on habitat and enrichment."[87]

Key factors influencing macroinvertebrate scores included riparian forest cover, medium-intensity urban, wet index (catchment), manganese, and forest cover within 500m of a

receiving stream. Key factors for fish scores included QHEI, latitude (Lake Erie/Ohio River interaction), TKN, wet index (watershed), and medium-intensity urban.

Figure 2 Miltner Figure 20. Distributions of environmental indicators categorized by whether fish or macroinvertebrate scores were above or below the 85th percentile



Upon request of the City of Columbus as part of the Amended Plan, Mr. Miltner conducted analysis to answer two key questions:

1. What are attributes or commonalities of high functioning urban streams?
2. What are potential policy implications of these findings?

The analysis, "High Functioning Urban Streams,"[88] utilized a large dataset of Ohio headwater stream samples (n=4939). "Explanatory variables included land use obtained from the NHD 100k attributes table, US EPA's StreamCat data set (tied to the NHD 100k), and Qualitative Habitat Evaluation Index summary and component metric scores. Models were run for macroinvertebrate scores and fish scores."

The predictive model relied on the US EPA StreamCat[89] category, "Low-Intensity Urban" also known as "Developed, Low Intensity." StreamCat describes these areas as characterized by "…a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover."[90]

Table 17 Analysis Terms Described

CATEGORY	DESCRIPTION
Drainage Area	Amount of land draining to a specific stream
Low-Intensity Urban	20-49% impervious constructed cover within the 100m riparian watershed buffer
QHEI Score	Qualitative Habitat Evaluation Index, measure of macrohabitat for a stream; includes riffle, substrate, gradient
Riparian Forest	Percent deciduous forest cover in the 100m riparian watershed buffer
Soil Permeability, Catchment	Quantifies the ability of soil to transmit water, catchment
Soil Permeability, Watershed	Quantifies the ability of soil to transmit water, watershed
Total Kjeldahl Nitrogen (TKN)	Total nitrogen including ammonia-nitrogen and organic nitrogen
Unionized Ammonia (NH3)	Total unionized ammonia in a sample
Wet Index, Catchment	Measure of where water accumulates in the catchment, correlated with nutrification

Wet Index, Watershed	Measure of where water accumulates in the watershed, correlated with nutrification

The predictive analysis found, “The amount of riparian forest cover, stream habitat quality, and water quality parameters related to nutrient and organic enrichment strongly influence whether high functioning biological communities will be observed in streams draining urbanized landscapes.” The following charts demonstrate the relative influence of categories on high-functioning streams.

Figure 3 - Miltner Figure 2. Relative influence of predictors in the macroinvertebrate logistic regression model.

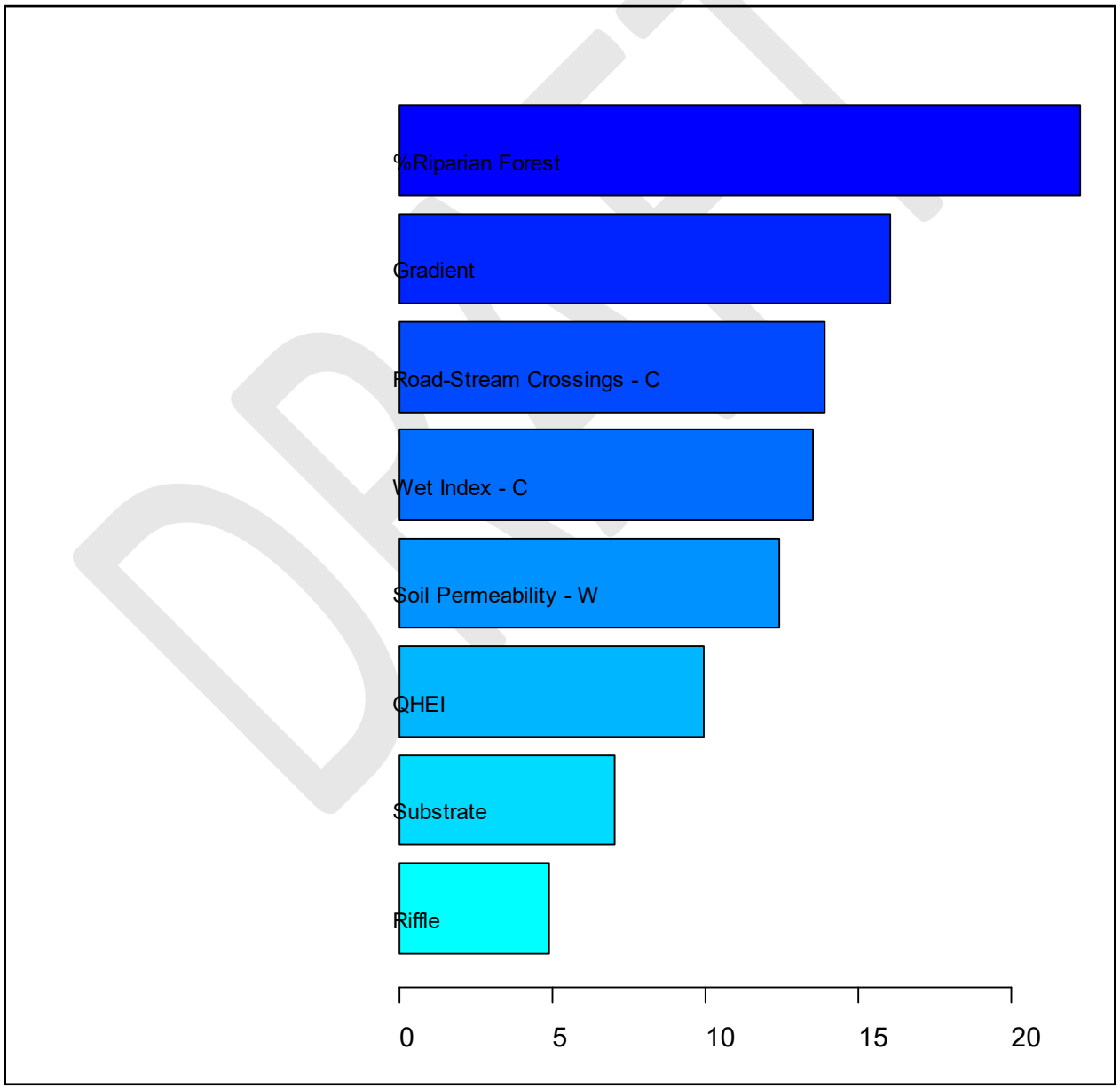


Figure 4 - Miltner Figure 3. Relative influence of predictors in the fish logistic regression model.

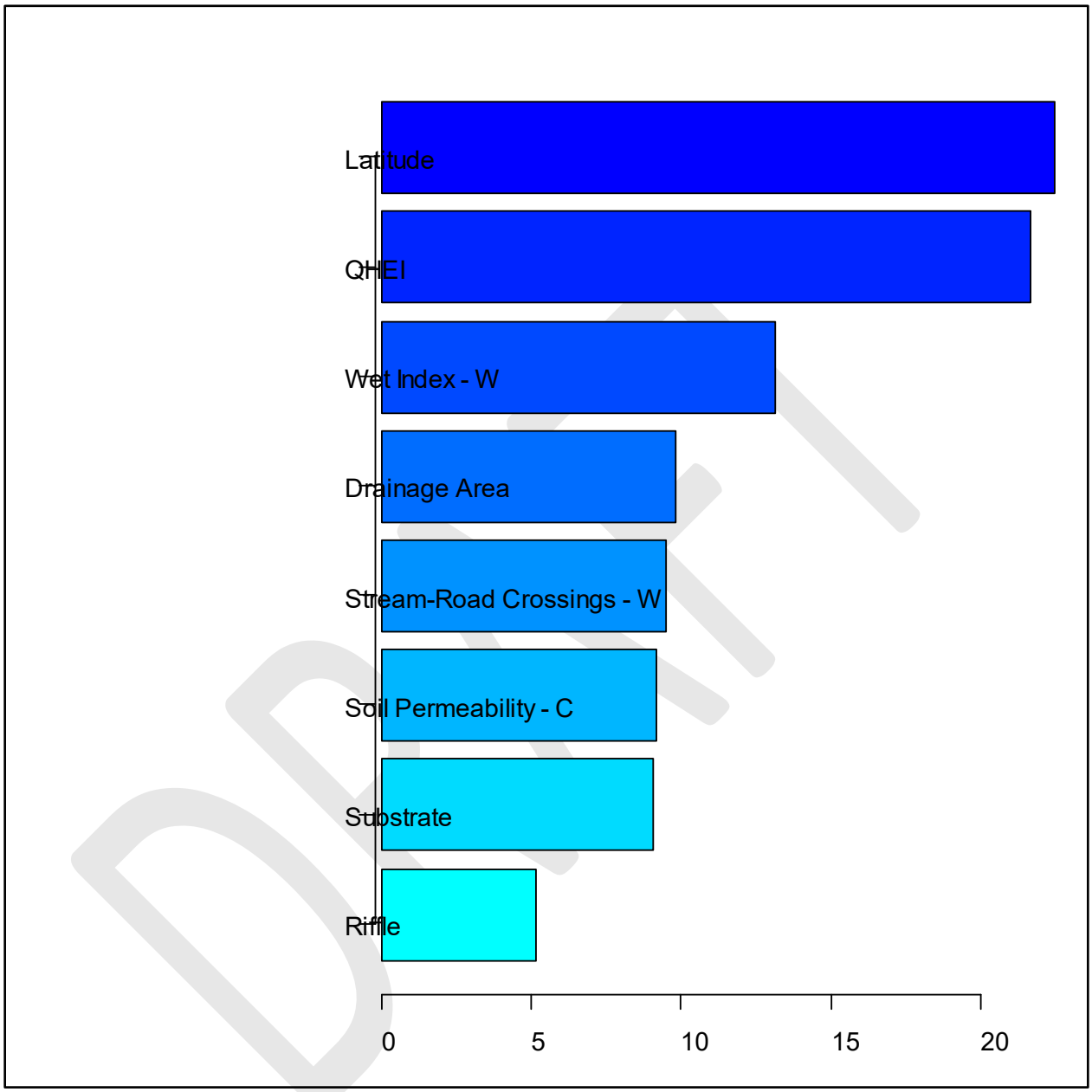
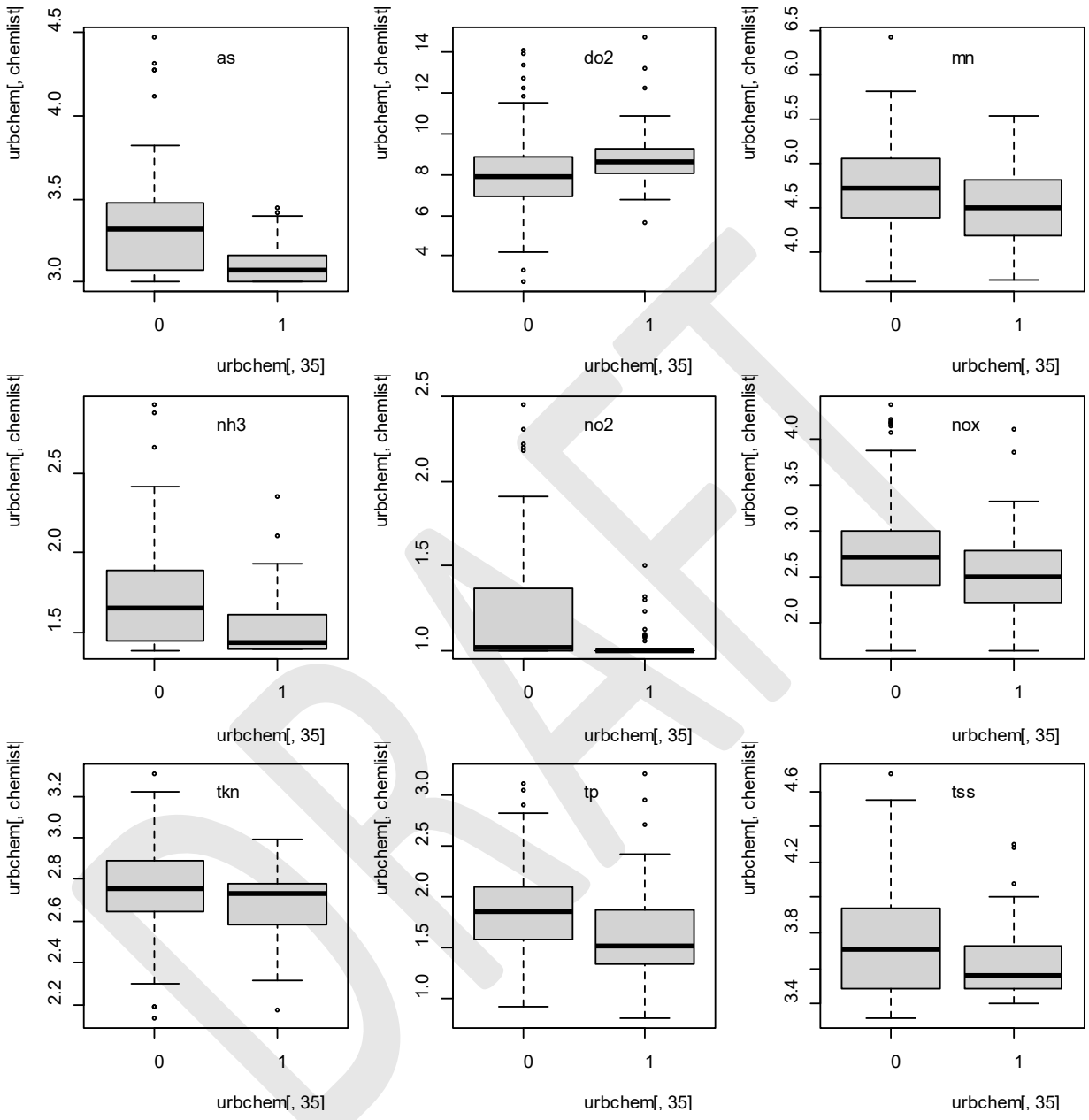


Figure 5 - Miltner Figure 4. Distributions of water quality variables for sites with low intensity urban land cover > 16% and binned by whether macroinvertebrate sites were beneath the 85th percentile (zero) or greater than the 85th percentile (one).



In another study[91], Milter confirmed these findings across headwaters. That study informed the design of Miltner's "Urban Land Use and Biological Quality" report and this model. The major takeaways pertaining to the regional water studies are as follows:

- Maintaining riparian forest cover is an effective passive strategy for maintaining water and biological quality.

- The relationship between the intensity of development and biological quality is as evident as ever, and suggests that all efforts to mitigate or minimize hydrologic and chemical disturbances related to development should be put in place up front.
- It is important to consider the juxtaposition between flow paths, land use, and where water accumulates within a catchment to help minimize enrichment as suggested by the strong positive relationship between organic nitrogen and the topographic index.

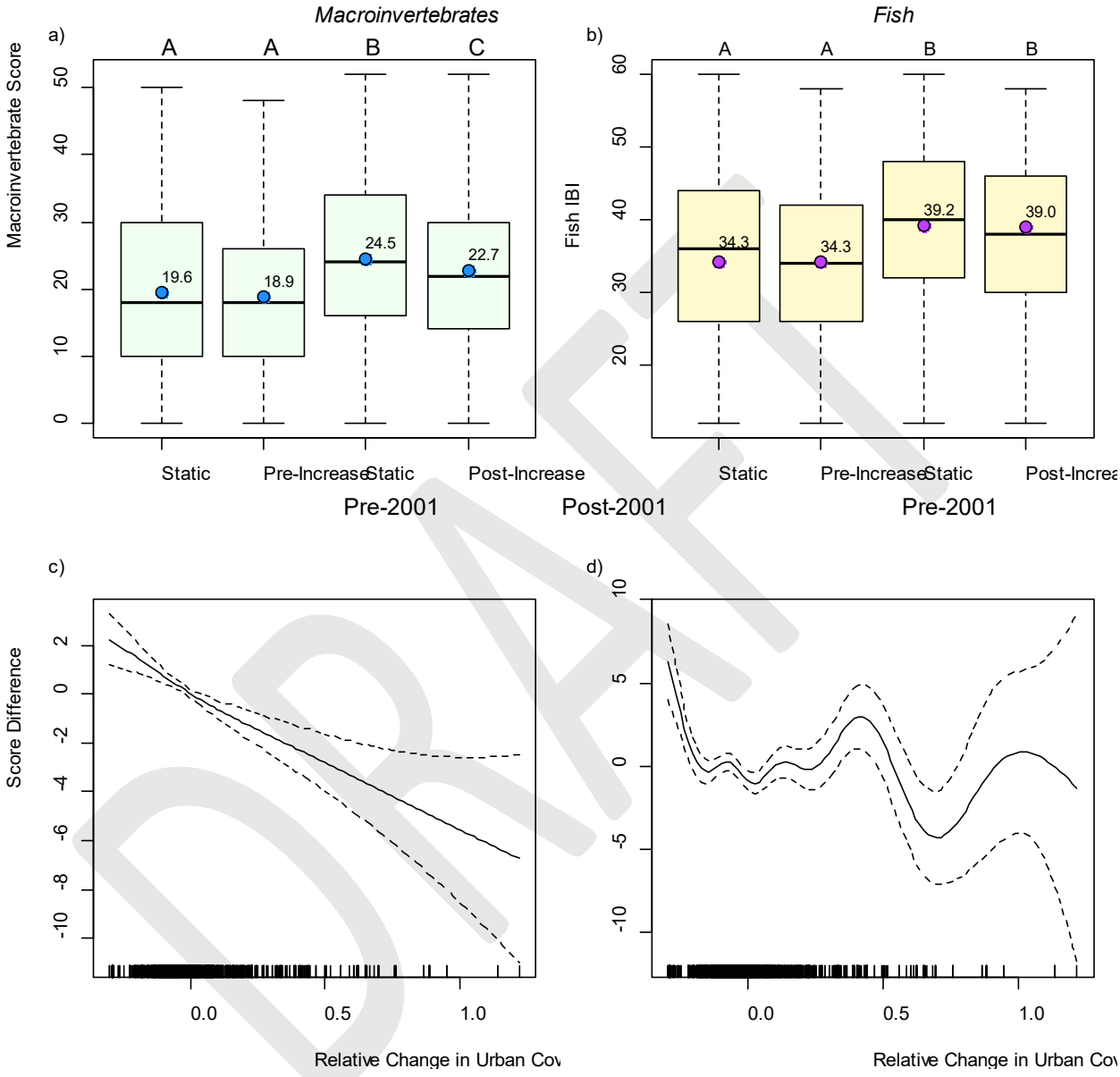
Measuring Changes in Urbanization and Water Quality

As part of his analysis, Miltner also reviewed changes in macroinvertebrate and fish scores with material increases in medium density urbanization (50-79% impervious cover). Miltner assembled all Ohio sites with pre-2001 and post-2001 sampling and studied the outcomes.

Miltner found sampling sites with material increases in medium density urbanization post-2001 also had *improved* fish and macroinvertebrates scores. Isolating sites upstream of wastewater discharges continued the trend of higher scores, even in the face of very high urbanization.

> "[An] inspection of the data where fish IBI scores are greater than 40 and medium intensity urban land use is greater than 16 percent shows that those forty-five sites are overwhelmingly urban. Nearly all of those sites had more than 50% total urban land use in their watersheds… and more than half had over 85% total urban land use. This argues for factors other than agricultural BMPs contributing to the overall improvement observed between [2001-2019]."

Figure 6 - Miltner Figure 23. a) Distributions of macroinvertebrate and b) fish scores categorized by time frame and whether sites experienced a material increase in urban land cover. Letters along the top margin denote statistical differences in the usual fashion. Adjusted means are shown inside of each individual distribution. Fitted functions from the gam models testing differences in biological scores relative to the change in urban land cover are shown in c) for macroinvertebrates and d) for fish.



Based on Miltner's predictive model, this amendment includes key requirements for all new development in the Big Darby Accord Planning Area, such as the following:

- Requiring restoration of all ecologically degraded streams on a development site
- Limiting new developments to zero Directly Connected Impervious Area
- Expanding the minimum Stream Corridor Protection Zone from 100' to 150'
- Adding an area 300' from the stream center line to Secondary Conservation Areas [92]

- Requiring at least 150’ of contiguous riparian forest cover adjacent to the stream channel

A.4. Integrated Prioritization System (IPS) Study Phase 1 Technical Summary

The following is a technical summary provided by the ODNR Division of Natural Areas & Preserves for the Greater Central Ohio Rivers and Streams Integrated Prioritization System (IPS) Study Phase 1. The full report and project dashboard can be found using the link below:
https://ohiodnr.gov/discover-and-learn/safety-conservation/about-odnr/nature-preserves/documents/darby-creeks-conservation-study

"The Big and Little Darby creeks comprise one of the highest quality river systems in Ohio, providing a home to rare aquatic life and outstanding recreational opportunities. The Ohio Department of Natural Resources (ODNR) initiated an Integrated Prioritization System (IPS) study with the goal of working with communities to protect this central Ohio natural treasure for generations to come.

Why an IPS study for Darby Creek?
The Big and Little Darby creeks are recognized as one of the most important stream systems for aquatic life in the Midwest and a premiere central Ohio natural amenity. They have received Ohio's highest designations for aquatic life (Exceptional Warmwater Habitat) and antidegradation protection (Outstanding State Resource Waters).

The system faces many challenges, including rapid land use change. Urban area expansion creates additional hard surfaces, known as impervious cover, that do not absorb precipitation. Urban areas shed as much as five times the amount of water, which carries increased polluted runoff, to streams after rain events. Declines in stream quality and loss of sensitive species have been shown to occur at as little as 5% impervious cover, which some portions of the Darby watershed have reached.

What is the IPS study?
In late 2024, the Division of Natural Areas and Preserves' Ohio Scenic Rivers Program initiated an IPS study which was completed in early January 2026 by the Midwest Biodiversity Institute (MBI). The IPS is a model that organizes and analyzes information to help understand patterns in stream health. It can explain current conditions and predict what to expect as conditions change.

The goal of the project is to better understand what is needed to protect the Big and Little Darby creeks in their current outstanding condition. The study will make data available to local

communities to assist with land use and other conservation decisions. Phase 1 of the project is complete, and Phase 2 will be completed in late 2026.

IPS Phase 1: Stressor Thresholds

The study used extensive water quality data collected at 2,600 sites over 45 years. The study area encompasses the upper Scioto River basin including Big and Little Darby Creeks as well as the western Licking River, Kokosing River, and upper Paint Creek. The Ohio Environmental Protection Agency (EPA) has collected most of this data including water chemistry, biology (fish, macroinvertebrate), and stream habitat. The study also examines available freshwater mussel data.

IPS analysis examined more than 300 parameters that could potentially cause water quality impacts, referred to as stressors. These include metals and chemical parameters, such as nutrients and chlorides that are commonly thought of as "pollutants," as well as parameters such as physical stream habitat, land use, and dissolved oxygen that are not directly toxic but can lead to an impairment when too high or low. Land uses that were analyzed included agriculture, forest, and urban, including percentage of impervious cover.

Stressor thresholds were developed for approximately 100 of these parameters that were shown to have a meaningful impact on water quality. Stressor thresholds signify the amount of a stressor that a stream can withstand before experiencing declines in water quality and loss of biological diversity. Thresholds were established across Ohio EPA Tiered Aquatic Life Uses (TALUs) and antidegradation tiers that correspond with narrative rankings from "outstanding" to "very poor." Thresholds were also developed for four classes of stream and river size: small headwater, headwater, wadable, and boatable rivers.

Warmwater Habitat (WWH) stressor thresholds were derived for chemical, habitat, and land use variables at the 25th percentile of parameter values (for positive attributes like QHEI) at sites that met WWH standards. This approach mimics how TALUs were originally established in the 1980s by the Ohio EPA. Thresholds were then derived for Exceptional Warmwater Habitat (EWH) and Outstanding State Resource Waters (OSRW), the highest antidegradation tier. These thresholds are more protective and set at the 25th percentile of sites meeting EWH standards that also had sensitive species. For OSRW, stressor thresholds were set at 25th percentile of existing conditions.

Additionally, Phase 1 outputs provide percentiles for stressor statistics ranging from the 2nd to 98th percentile for sites meeting WWH or better. These are useful in highlighting outlier values as well as more protective benchmarks. For instance, the 75th to 90th percentile for positive

parameters, such as stream habitat (QHEI), are more representative of very high-quality sites in the Big Darby Creek watershed that perform above the EWH or OSRW baseline.

Phase 1 Study Results

The table on the next page includes a summary of stressor thresholds for key parameters. Thresholds are not regulatory; they are intended to be used as a tool to guide local decision making. The full Phase 1 report as well as a link to a data dashboard created by MBI is available at ohiodnr.gov/darbystudy.

Parameter	Taxa Group	Stressor Thresholds					Ohio WQS
		OSRW Outstanding	EWH Excellent	WWH Good	MWH Fair	LRW Poor	
Land Use Parameters							
% Impervious	Fish	2.8	3.6	4.0	31.7	59.3	NA
% Agriculture	Fish	81.0	79.2	84.0	89.4	94.7	NA
% Forest	Mussels	6.2	6.2	6.1	4.6	3.8	NA
Chemical Parameters							
Chloride (mg/L)	Macros	44.1	49.3	52.0	98.0	235.9	500
Total Suspended Solids (mg/L)	Macros	28	33	33	70	179	NA
Total Phosphorus (mg/L)	Mussels	0.10	0.09	0.19	0.55	1.61	NA
Nitrate-N (mg/L)	Fish	3.4	2.6	2.8	4.1	7.8	NA
Ammonia (mg/L)	Mussels	0.06	0.05	0.07	0.23	0.74	0.3
Total Kjeldahl Nitrogen (TKN) (mg/L)	Mussels	0.52	0.50	0.60	0.92	1.76	NA
Cadmium (µg/L)	Macros	0.20	0.20	0.20	0.40	1.00	5.8
Copper (µg/L)	Mussels	10.0	3.5	10.0	11.2	14.7	24
Zinc (µg/L)	Mussels	12.2	11.6	14.2	21.2	42.4	300
Habitat Parameters							
QHEI	Fish	72.0	72.0	66.5	52.0	37.5	NA
QHEI - substrate score	Fish	14.0	14.5	13.5	8.7	3.8	NA
QHEI - riparian score	Fish	5.5	5.0	5.0	3.7	2.3	NA

Table 1: Selected thresholds for wadeable streams across the OSRW antidegredation and aquatic life use tiers.

OSRW - Outstanding State Resource Water antidegredation tier	WQS - Water Quality Standards
EWH - Exceptional Warmwater Habitat	QHEI - Qualitative Habitat Evaluation Index
WWH - Warmwater Habitat	
MWH - Modified Warmwater Habitat	
LRW - Limited Resource Habitat	

Analysis of the strength of association between stressor and aquatic life outcome were reported as a FIT ("goodness-of-fit") value. Land use variables were found to be the most strongly related to aquatic life

outcomes, followed by stream habitat and chemical variables. Phase 2 of the study will include additional statistical analysis to refine which stressors are most important.

Instances in which streams perform well despite exceeding stressor thresholds may occur for a few reasons. Regarding land use, for instance, sites that have recently experienced urbanization may not yet reflect degradation that can take time to appear or may indicate conditions on the brink of decline that will be reflected in Phase 2 Threat Rankings. They might also signify natural supportive factors such as beneficial ground water flow or effective use of best management practices. Further analyses conducted in Phase 2 will examine these outliers further with a goal of determining the factors (e.g., key stressors, age of land use changes, extent of wooded stream buffers) that explain better biological performance.

Phase 2 – Threat, Susceptibility, and Restorability Rankings

In addition to Phase 2 analysis discussed above, this phase of work will utilize stressor thresholds as the basis for developing Restorability, Susceptibility, and Threat rankings:

- Susceptibility rankings will be developed for sites that are in good or excellent condition to prioritize protection.
- Threat rankings will focus on sites that are in good condition but have high stress loads and are at risk of becoming impaired with additional pressure. Analysis will determine which stressors are most important and help focus action before streams become impaired.
- Restorability rankings will be developed for impaired sites based on the number and severity of stressors present to prioritize restoration where it will be most successful and cost effective.

While Phase 1 stressor thresholds apply to the entire central Ohio study area, Phase 2 rankings will apply within the Big Darby Creek watershed at the site, reach, and subwatershed (HUC 12) scale. This information will allow communities to further examine local stream sites to consider the severity of stressors present when exploring restoration or protection actions.

What's Next: Watershed Planning

To advance Phase 2 and provide additional community outreach, the division has received a grant from the National Fish and Wildlife Foundation. The grant will fund additional staff and consultant support in sharing study results and how stressors impact streams as well as learning about community needs.

Ohio Scenic Rivers Program staff will seek collaborative development of solutions related to land use and conservation, including technical tools, which align with community goals such as flood prevention and recreational value. Phase 2 will culminate in the development of a community-based watershed conservation plan which provides guidance for the long-term protection of the exceptional Big and Little Darby system.

Funding

Funding for Phase 1 of the IPS was provided by the Ohio Department of Natural Resource's Division of Natural Areas and Preserves and H2Ohio Rivers Program with additional support from the Franklin and Madison county soil and water conservation districts, and The Nature Conservancy, Ohio Chapter.

For more information

To learn more about the division's Darby Conservation Project, visit ohiodnr.gov/darbystudy. For more information about the Ohio Scenic Rivers Program, visit ohiodnr.gov/scenicrivers."

A.5. Ohio EPA Hellbranch Water Quality Monitoring

Ohio EPA has released a full water quality monitoring report for the Hellbranch subwatershed, as part of the "2022 & 2023 Biological and Habitat Studies of the Rivers and Streams in Section 319(h) and GLRI Project Areas in Ohio."[93] This is the first new data and assessment from Ohio EPA since 2014. Thankfully, the report provides good news for most of the Hellbranch as determined by the Ohio EPA.

> "The generally stable or improving trajectory of biological communities throughout Hellbranch Run suggests that the special provisions taken to mitigate stormwater impacts in the Big Darby Creek have been generally successful at balancing urban development and environmental conservation." Ohio EPA[94]

The new Ohio EPA data provides an important assessment of the Hellbranch sub-watershed and should inform future adaptive management in tandem with new WQM&A data from this amendment.

A.6. ODNR Assessment of the Mussel Communities of Hellbranch Run, Franklin County Ohio

The following is an excerpt from pages 11-12 providing a brief summary and conclusions of the recent 2025 ODNR assessment of mussel communities of Hellbranch Run. The full report is linked below:
https://dam.assets.ohio.gov/image/upload/odnr/natural-areas/sr/Hellbranch_Run_BDC_Mussel_Report_Hoggarth_120425.pdf

"Our understanding of the mussels of Hellbranch Run began after the stream had already suffered significant loss of species. Even as early as 1957 and 1958 (Stansbery's first collecting trips into the stream) the lower portion of the creek had already suffered loss and the headwaters species, especially A. viridis (Slippershell), was in decline. Big Darby Creek at that time would have been a source of distribution back into Hellbranch Run for common species as well as the mid-sized stream species that once occupied Hellbranch Run, but as Watters discovered in 1986, pollution in the lower portion of the stream blocked recolonization and no doubt had a negative effect on mussel transport upstream by interfering with fish migration through this toxic reach. That problem has been solved (although it is still unclear why mussels and even introduced species such as C. fluminea (Asiatic Clam) have not reinhabited these

areas) while new problems have arisen. Agricultural development was mostly replaced by urban development, both of which can increase the intensity of high flows and the prolonged impacts of low flows. Climate change has exacerbated alternating extreme precipitation events with extreme drought as the last two years in Central Ohio have demonstrated. The extreme precipitation events lead to greater erosion (evident in much of Hellbranch Run), increased sediment transport, and substrate embeddedness. Low flow can cause pooling of water, which if long enough, can lead to Oxygen depletion, beaching of mussels in a reach, and increased predation if mussels occur in a reach.

It is apparent from the historical data as well as the data provided herein that our actions within Hellbranch Run have not been protective of the mussel communities there. Our assault on these animals in this stream has a long history as has our actions to reverse these impacts. Our actions, however, have failed to protect the mussel communities of Hellbranch Run.

Hellbranch Run connects to Big Darby Creek at a biologically significant location. The original presence of U. tetralasmus (Pondhorn) suggests that this tributary was a significant source of high-quality water into its receiving stream. Beginning even before 1986, pollution in the lower portion of the run had not impacted water quality in Big Darby Creek, while just three years later and then beyond, it had made a significant impact on water quality and the mussels in Big Darby Creek. That impact has not been reduced and might even be greater today than it was before as a reduction of mussel species from 20 (Watters, 1990) to 5 (OEPA, 2001/2) to none (OEPA, 2013) occurred downstream of the mouth of Hellbranch Run. Both Hellbranch Run and Big Darby Creek at, and downstream of the mouth of Hellbranch Run, meet their Designated Uses, however it obvious that these uses are not protective of the mussels in Hellbranch Run or downstream of its confluence with Big Darby Creek.”

A.7. Future Modelling Tools

As a next step after this amendment process, BDART expects to work with our partners to explore how current modelling tools may be expanded upon and programming to a system like the Chesapeake Bay Assessment Tool, which is accessible at cast.chesapeakebay.net.

Big Darby Accord jurisdictions, as part of adaptive management, will determine how we may incorporate the ODNR Integrated Prioritization System developed by the Midwest Biodiversity Institute based on historical data and modelled variables for the Darby watershed.

Appendix B. Engagement for the Amended Plan

The following section outlines the public engagement process for the Big Darby Accord Amendment:

Project Website

A custom-built ArcGIS StoryMap served as the project website and repository for information about the Accord amendment. The website includes meeting recordings and related materials from each topic workshop, background information about the Accord, trends and conditions since 2006, and dynamics that shaped the necessity for the amendment process.

The MKSK team met with key stakeholders in small-group settings to gain early understanding and insight into the challenges and opportunities the plan amendment should address. Throughout the planning process, MKSK met with several stakeholder groups on multiple occasions to provide project updates and to gain more insight. These stakeholder groups included:

- Environmental organizations and advocates;
- Parks, recreation, and conservation agencies;
- State environmental agencies;
- City, County, Township, and MORPC staff;
- Residential and commercial developers;
- Adjacent jurisdiction leadership;
- Big Darby Accord Panel members; and
- Property Owners/Neighbors

Topic Workshops

Four topic workshops were held to explore specific topics targeted for the amendment process: Water Quality Monitoring, Revenue, Open Space, and Land Use. These meetings were open to the public. Each meeting provided an overview of 2006 Accord recommendations and current conditions, short presentations by guests and practice experts, and activities that prompted additional small group discussions to generate input for refined, amended Plan policies. Full summaries of each topic workshop are provided in Appendix XX.

Public Open House

This section will be updated following the planned public workshop, to be scheduled in early 2026.

B.1. Workshop #1: Water Quality Monitoring Summary

On April 30, 2025, the first of four topic workshops for the Big Darby Accord Master Plan Amendment was held at the Columbus Metropolitan Library Hilliard Branch. Over 80 stakeholders attended, including members of the public, local government representatives, environmental organizations, and state agency representatives.

The workshop featured presentations from experts in water quality monitoring, including the Ohio EPA, Franklin Soil and Water Conservation District, and Midwest Biodiversity Institute. Attendees also participated in an idea sprint activity to help identify issues and solutions related to water quality monitoring in the Big Darby Accord study area. The following summary includes key takeaways from the activity, summary tables for issues and solutions identified, and specific contributions from attendees categorized by common themes.

Key Takeaways

Funding and coordination

A lack of stable funding and inter-jurisdictional coordination has hindered consistent and comprehensive water quality monitoring since the adoption of the Big Darby Accord.

Prioritize mussel monitoring

There is currently insufficient data on sensitive and endangered mussel populations, which need to be incorporated into future monitoring efforts.

Uncertainty over the effectiveness of current best management practices

The lack of regular monitoring data hinders our ability to assess the effectiveness and downstream impacts of current best management practices, including recent wetland and stream restoration projects, residential development, and other conservation efforts.

Standardized monitoring approach

The types of water quality assessments previously conducted differ by agency/organization. More can be done to build consensus around the most effective types, frequency, and locations for future water quality monitoring.

Utilizing monitoring data

Once collected, more can be done to synthesize how the water quality data may affect residents, land use decisions, goals for revenue generation, and future restoration projects.

Consider coordinated oversight

A centralized, cross-jurisdictional entity or coordinator responsible for implementing a wide range of Accord policies, programs, and projects may help provide consistent outcomes. The role of such an entity could also include regular public engagement and messaging to help bridge the gap between environmental jargon and practical implications.

Expand public involvement

Promote citizen science programs, youth involvement, and community-led monitoring efforts.

Issues

Activity Prompt: Identify issues related to water quality monitoring in the Darby Accord study area.

Table 18 Summary Table: Issues Grouped by Theme

Theme Frequency	Theme Description
16	Lack of funding
16	Lack of coordination among jurisdictions, leadership, and agencies
11	Lack of monitoring data for mussels
10	Unclear how to utilize monitoring data
9	Unknown effectiveness of current best management practices (BMPs)
8	Lack of public involvement/engagement/awareness
7	Lack of monitoring frequency
7	No clear consensus on types of monitoring
6	Lack of monitoring locations
6	Need more data to make decisions on development
5	Increased pollution in tributaries
4	Unknown impacts of agriculture
7	Other Comments

Issues Organized by Theme

The following are comments received by participants related to water quality monitoring issues organized by their theme.

Lack of funding

1. $ For monitoring from where?
2. Darby accord funds need to be for monitoring not infrastructure
3. Funding
4. Increase funding
5. Funding for land acquisition and restoration
6. Cost + funding
7. Funding for monitoring
8. Cost and funding
9. How to pay for regular monitoring
10. How would wq monitoring sustainable funding be achieved?
11. Lack of funding
12. Funding
13. Funding
14. Cost
15. Cost
16. Workforce to collect samples

Lack of coordination among jurisdictions, leadership, and agencies

1. Are all monitoring agencies operating in the same capacity? Should the monitoring be divided? Too much overlap?
2. Keeping Darby partners updated
3. There is no one entity responsible and accountable for monitoring
4. Lack of follow up and compliance with development and BDAPP
5. Need Columbus City to respect outlying jurisdictions trying to protect watershed
6. Need all jurisdictions to have access to current studies
7. Need all jurisdictions to be in agreement on the development issues
8. How and who would do assessment of WQ? How would they have authority?
9. Cross-jurisdictional cooperation
10. Redundancy in effort among agencies / jurisdictions (Water quality monitoring
11. Lack of coordination and communication among Darby jurisdictions have limited implementation of regular water quality monitoring
12. How to involve Madison Co?
13. Jurisdictional participation throughout whole watershed
14. Lack of cross pollination/communication among agencies and groups

15. "tragedy of the commons" when the accord is eroded - why would others maintain commitment?
16. Identifying what to monitor and how to collaborate

Lack of monitoring data for mussels

1. Sensitive species and mussels need to be accounted for. Mere wqs attainment status isn't adequate benchmark
2. Zebra mussels
3. Limitations of oepa monitoring - attainment doesn't include mussels, doesn't ensure survival of listed species
4. What stressors are limiting to mussels (beyond limits to fish and inverts)?
5. Include mussel monitoring each time testing is done
6. Need better assessment of mussel community health, including rare species
7. Concentrate on areas of greatest weakness i.e.. Low mussels and high bacteria
8. Mussels have been declining in the Darby
9. Mussels are often the first biological group to decline, but they are not part of typical oepa biological monitoring
10. Lack of coordination program and funding for water mussel testing
11. Directly link to species lists not just indices. Big emphasis on federally listed endangered species in bdc

Unclear how to utilize monitoring data

1. Monitoring results may not be clearly tied to corrective actions (what to do with results)
2. Impacts can take years to show up - monitoring can be a lagging indicator
3. Non-experts interpreting results
4. Difficulty with tying impacts or improvements to specific land uses
5. Jurisdictions owning the data - need to make sure it is available and understandable for the lay person
6. How does this help people and communities? (not just fish and bugs)
7. How to make sustainable/adaptive as new info is learned
8. How to communicate in a less complex way and make data more accessible?
9. How would wq monitoring address lack of improvement?
10. What does the accord plan say about what to do re: wq monitoring?

Unknown effectiveness of current best management practices (BMPs)

1. Effectiveness of bmps
2. Poor performance of BMP's, poor maintenance of BMP's, restoration was first, now development impact is coming
3. Legacy impacts make it challenging to tell recent changes
4. Darby vs. Darby for Standards

5. OEPA TMDL - tightening new regulation, is that good or bad?
6. Solutions that didn't work as thought
7. Need review of whether the appropriate WQS are assigned to the stream segments. There may have been improvements
8. Lack of understanding of riparian corridor quality
9. Current regulations

Lack of public involvement/engagement/awareness

1. Public awareness of programs for involvement. Scenic rivers SQM metro parks vds.
2. Get more agencies level 3 qualified w/ OEPA. Adds to pull of credible data. Or fix the system for experts. Brian Zimmerman is not lvl 3?!
3. Conservation groups do not have a big enough voice and say in policy development
4. Communication with public
5. Lack of reporting to community in compelling way
6. Public support (and awareness of why it matters to them)
7. Lack of public trust
8. Can the public do simple monitoring themselves to go into a database?

Lack of monitoring frequency

1. Plan not updated every 5 years
2. Adhere to a monitoring plan with a schedule
3. Stick to a regular timeline. 2014 - 2021 is not 3 years
4. Real time monitoring
5. Lack of consistent monitoring
6. How often?
7. Monitor of more locations and frequency of monitoring

No clear consensus on types of monitoring

1. Identifying what to monitor and how to collaborate
2. Depth of monitoring (biological and chem measures + sensitive species)
3. Identifying and getting buy-in on standards
4. Which monitoring is best and collective agreement around?
5. What do we test?
6. No clear reach-level objectives for biological improvement
7. Consistent science

Lack of monitoring locations

1. Too few tribs monitoring
2. Need to also monitor bdc (development is going beyond hellbranch)

3. Increase # of sites
4. Expanding scope of area to include the rapidly developing areas in other parts of the Darby
5. Where to do monitoring
6. Monitor of more locations and frequency of monitoring

Need more data to make decisions on development

1. Wait on development until the baseline data comes in
2. Understanding impacts
3. Development is tied to "taps" rather than to water quality and biodiversity health results
4. When testing and results need to be available much quicker to the public and jurisdictions
5. We need concrete info to tell us if and how development can be done protectively
6. Development is happening now (without good data)

Increased pollution into tributaries

1. Increased sediment
2. Small business polluting in floodplain
3. Sedimentation in the upper headwater areas of clover groff
4. Concern if we allow sediment to stay in headwaters - potentially lead to flooding, etc.
5. Streams already suffer from hydrologic alt. (base fbm) from historic development

Unknown impacts of agriculture

1. Effect of agriculture
2. How do we control agriculture run-off?
3. Inconsistent farming practices
4. Agriculture development

Other Comments

1. What about assessing impact of Darby dan farm dam on Big Darby Creek especially related to Accord and fish species?
2. Education of development community re: rules and regs
3. Not meeting housing goals
4. Commercial development along the Darby tributaries
5. Developers who have political power, do not want environmental or any constraints
6. No one wants density -> density=better environment, less sprawl -> more community advocacy for density
7. Too much development north of franklin county

Solutions

Activity Prompt: Match proposed solutions with the identified issues. Brainstorm additional solutions that are missing to address the identified issues.

Table 19 Summary Table: Solutions Grouped by Theme

Solution Theme Frequency	*Solution Theme Description*
38	Monitoring frequency
30	Public involvement
28	Funding
24	Types of monitoring
21	Coordination, accountability, and monitoring responsibility
16	Mussel monitoring
12	Data utilization
11	Monitoring location
10	Development decision making
8	Effectiveness of BMPs
4	Other solutions
2	Pollution
2	Agriculture

Solutions Organized by Theme

The following are comments received by participants related to water quality monitoring solutions organized by their theme.

Monitoring frequency

1. Monitor more frequently
2. More frequent monitoring
3. Monitor more often than every 10 years
4. Test water quality in multiple streams once per year or at least bi-annually
5. Monitoring should be more than every 3 years
6. Make sure it's continued
7. Determine frequency
8. Data is important and more frequent gathering data is essential. Do not rely only on one source
9. More frequent monitoring
10. Create consistency in frequency expectation - cannot rely on Ohio epa to monitor at specific frequency
11. Identify and keep a monitoring timeline
12. Regular monitoring (every 2 years)
13. More often/consistent timing
14. More than 3 assessments in 35 years
15. Assessment frequency based upon projected growth
16. Monitor every year, no matter the cost
17. More frequent monitoring, regional oversight (bd partners), adaptive management
18. Monitoring frequency, standards, baseline, consistent riparian standards
19. 3-year contract, "kick start" funding from largest jurisdictions
20. Consistency across the monitoring stations
21. Create universal monitoring for the whole watershed
22. Water quality monitoring should occur every 2-3 years watershed-wide, and include mussels. A membership organization can do the monitoring, and developers could be members and pay for the monitoring
23. Need more frequent epa bio monitoring
24. 1) hold better to original time frames outlined 2) use data already acquired through development studies 3) include wqm criteria in comprehensive planning
25. Facilitate citizen science more
26. More citizen monitoring
27. Citizen involvement - reporting, land use
28. Citizen qhei - macro level 1 and 2, fish level 2
29. Make qdc level iii. Easier to keep after getting
30. Local school recreation classes to set up monitoring assignments
31. Incentivize more people becoming level 3 monitors

32. Use neighbors to assist in observing (people who live in the area)
33. Encourage non-traditional wqms like farmers to participate
34. Teach local riverbank residents how to collect samples
35. Engage with those living on or near watershed to self report
36. Include the epa data and update system - tier 3 water quality
37. Identify a cheaper monitoring type/parameter and use it as a flag for when expensive biological sampling is needed. Or pair w/ % imperviousness or dwelling units
38. Require developer led monitoring at the time of individual development in the darby, rather than periodically by the epa

Public involvement

1. Empower local watershed groups to assist with monitoring that can be cleared by level 3 QDC's
2. Use social media/apps as tools
3. Utilize volunteers for QHEI/Water quality monitoring
4. Volunteer programs
5. Comprehensive plan for property owners
6. Use property owners input to assess subjective H20 quality citizen scientists
7. Involve volunteer labor
8. Make sure the public know this is happening, why and how it relates to them
9. Understand who the public trusts and use them as a spokes person
10. Better explanation of acronyms
11. Train more level 1,2,3 volunteers - expand timing spatial coverage
12. More info for those living in the watershed - mailings and visits
13. More data sent to everyone who signs up to receive it
14. Facilitate citizen science more
15. More citizen monitoring
16. Citizen involvement - reporting, land use
17. Citizen QHEI - macro level 1 and 2, fish level 2
18. Make QDC Level III. Easier to keep after getting
19. Local school recreation classes to set up monitoring assignments
20. Incentivize more people becoming level 3 monitors
21. Use neighbors to assist in observing (people who live in the area)
22. Encourage non-traditional wqms like farmers to participate
23. Teach local riverbank residents how to collect samples
24. Engage with those living on or near watershed to self report
25. Fund analysis and data distribution
26. Data converted into web based measures
27. Data need to be posted publicly
28. Use social media and interactive communication tools to educate the public
29. Publish results
30. Share raw data to engineer confidence (like sugar creek watershed approach)

Funding

1. Increase stormwater fees to add more funding for monitoring to people who live in the watershed
2. Developers/ developments can pay for the monitoring, but should be conducted independently
3. Each jurisdiction budget for the cost of increased monitoring
4. Integrate nearby hoa funding to support monitoring - local fishing license funding to support monitoring funding
5. Testing, funding, monitoring
6. Would h2ohio pay for monitoring (and any other funding source?)
7. Increase public/private monitoring requirements
8. Craft funding sources to allow enhances/w.w. routine monitoring
9. Provide consistent funding source for wq monitoring, adjusted to inflation
10. Enter into long-term contract(s) for water quality monitoring
11. Work w/ state and local network on coordinating water quality monitoring program
12. Use money generated through development to pay for future monitoring
13. Focus interest groups on policy and funding solutions
14. Sep gov't to include in finance
15. Development should pay into a fund for monitoring
16. Funding from non-traditional such as businesses that depend on clean water
17. Find funding sources
18. Fundraise
19. Generate more revenue via more development
20. Link zoning permits to locked-in actions to commit to water quality improvement and monitoring
21. Externalities caused by development paid by development true costs
22. Fund adequately w/ multi-jurisdictional support
23. Require developer led monitoring at the time of individual development in the darby, rather than periodically by the epa
24. Epa public + mbi private working together for testing - monitoring
25. Have all jurisdictions help fund studies
26. Establish a Darby coordinator, funded by all member jurisdictions to be the single person in charge of making sure monitoring is done and communicated to all members
27. 3-year contract, "kick start" funding from largest jurisdictions
28. Water quality monitoring should occur every 2-3 years watershed-wide, and include mussels. A membership organization can do the monitoring, and developers could be members and pay for the monitoring

Types of monitoring

1. BMP performance monitoring required
2. Reuse Ohio EPA data
3. Use Ohio EPA data more

4. Identify and specifically monitor listed species
5. Need EPA level monitoring more frequently
6. Add lora Wan. Gateways. Real-time logging/monitor w/ lorawan devices
7. Overall goal of monitoring program is restoring the unique biological diversity
8. Need trend analysis of existing data - chemistry
9. Incorporate the new ODNR study data into testing
10. Implement newer modeling/monitoring methods
11. Develop clear biological objectives for each stream to reach. Not just adopting OEPA biocriteria. The Darby has outstanding biodiversity, we should aim for biological life to (not just accept MWH in the clover groff/Ham)
12. Automated. Reduce human time and labor
13. Monitor quality of riparian vegetation, invasive pressure is a large problem with existing restoration projects
14. Upstream parameters in addition to biological. New chemicals and unknown tins trajectories affecting biology
15. Incorporate IPS modeling which will help predict where development should occur
16. Include the EPA data and update system - Tier 3 water quality
17. Identify a cheaper monitoring type/parameter and use it as a flag for when expensive biological sampling is needed. Or pair w/ % imperviousness or dwelling units
18. Monitor the specimens of fish, mussels, turtles, etc.
19. Develop goals for monitoring, not just monitoring by itself. Hellbranch attain EWWH, CG and Ham. Attain WWH
20. What is the goal of the monitoring? Presenters and data shown did not display a goal. They're just monitoring for monitoring sake
21. Include mussels in regular biological monitoring, + development-specific monitoring should include biological monitoring
22. Monitoring is reactive - mussel die-off showed is not a preventative strategy. Needs preventative component.
23. Need more frequent EPA bio monitoring
24. Create a plan to collaborate on monitoring - bio metrics - stormwater outfalls, etc. Specific Measurable Attainable Responsible party Time monitoring plan

Coordination, accountability, and monitoring responsibility

1. Enforce current agreement (no more zoning boards overruling/ignoring the accord)
2. Encourage increased involvement from jurisdictions outside franklin county
3. Headwaters control
4. Better integration and coordination w/ big Darby creek association
5. Put one entity in charge of monitoring, who is accountable to Darby stakeholders
6. Streamline monitoring (which entity and what level)
7. Create not-for-profit organization to monitor water quality
8. What are the adjacent jurisdictions doing?

9. Eliminate redundancy of overlapping groups doing same thing.
10. Agencies who do monitoring
11. Streamline agency coordination on goals to achieve
12. Epa public + mbi private working together for testing - monitoring
13. Have all jurisdictions help fund studies
14. Establish a Darby coordinator, funded by all member jurisdictions to be the single person in charge of making sure monitoring is done and communicated to all members
15. Empower local watershed groups to assist with monitoring that can be cleared by level 3 qdc's
16. Create a plan to collaborate on monitoring - bio metrics - stormwater outfalls, etc. Specific measurable attainable responsible party time monitoring plan
17. More frequent monitoring, regional oversight (bd partners), adaptive management
18. Water quality monitoring should occur every 2-3 years watershed-wide, and include mussels. A membership organization can do the monitoring, and developers could be members and pay for the monitoring
19. Fund adequately w/ multi-jurisdictional support
20. More data sent to everyone who signs up to receive it
21. A baseline goal of maintaining water quality and biological criteria for core sections of stream must be maintained, and if data indicates degradation, jurisdictions must come to table to resolve issues

Mussel monitoring

1. Develop mussel sampling plan
2. Mussels - focus on zebras and find impact
3. Need regular mussel monitoring
4. Since there are almost no mussels left in hellbranch watershed, consider augmentations and reintroductions
5. Mussels need to be monitored
6. Monitor mussel communities - they're the endangered species
7. Add mussels as a parameter in addition to ici, ibi, and qhei
8. Need to monitor for mussels too along w/ ibi, qhei, etc.
9. Incorporate mussel studies more often
10. Better mussel monitoring and analyzing of impacts
11. Include regular monitoring of mussles
12. More monitoring for mussels
13. Include mussels in regular biological monitoring, + development-specific monitoring should include biological monitoring
14. Monitoring is reactive - mussel die-off showed is not a preventative strategy. Needs preventative component.
15. Water quality monitoring should occur every 2-3 years watershed-wide, and include mussels. A membership organization can do the monitoring, and developers could be members and pay for the monitoring

16. Monitor the specimens of fish, mussels, turtles, etc.

Data utilization

1. 1) hold better to original time frames outlined 2) use data already aquired through development studies 3) include WQM criteria in comprehensive planning
2. Water quality monitoring of whole watershed should come first before decisions about development land thresholds. Build iterative responsive process for responding to data into plan
3. Fund analysis and data distribution
4. Data converted into web based measures
5. Data need to be posted publicly
6. Use social media and interactive communication tools to educate the public
7. Publish results
8. Share raw data to engineer confidence (like sugar creek watershed approach)
9. Use more key results which might lead to additional results
10. A baseline goal of maintaining water quality and biological criteria for core sections of stream must be maintained, and if data indicates degratdation, jurisdictions must come to table to resolve issues
11. Develop goals for monitoring, not just monitoring by itself. Hellbranch attain EWWH, CG and Ham. Attain WWH
12. What is the goal of the monitoring? Presenters and data shown did not display a goal. They're just monitoring for monitoring sake

Monitoring location

1. Increase the number of monitoring sites
2. Study beaver dam activity to determine which tribs are affected by impoundment
3. Study biological impacts on aquatic spores above, in, and below dam sites
4. Identify sites (new ones) for monitoring that will be available for long-term
5. Multiple locations across the watershed
6. Monitor new developments pre/post and link to bmps used in developments to determine effectiveness of bmps
7. Extend monitoring to below the mouth of hellbranch to understand if hellbranch is impacted by lower bdc
8. Consistency across the monitoring stations
9. Create universal monitoring for the whole watershed
10. Teach local riverbank residents how to collect samples
11. Engage with those living on or near watershed to self report

Development decision making

1. Require developer led monitoring at the time of individual devcelopments in the darby, rather than periodically by the EPA
2. Monitor new developments pre/post and link to bmps used in developments to determine effectiveness of bmps

3. Extend monitoring to below the mouth of hellbranch to understand if Hellbranch is impacted by lower BDC
4. Less wrong developments
5. Post-development assessment of BMP's
6. Water quality monitoring of whole watershed should come first before decisions about development land thresholds. Build iterative responsive process for responding to data into plan
7. Include mussels in regular biological monitoring, + development-specific monitoring should include biological monitoring
8. Incorporate IPS modeling which will help predict where development should occur
9. Identify a cheaper monitoring type/parameter and use it as a flag for when expensive biological sampling is needed. Or pair w/ % imperviousness or dwelling units
10. A baseline goal of maintaining water quality and biological criteria for core sections of stream must be maintained, and if data indicates degratdation, jurisdictions must come to table to resolve issues

Effectiveness of BMPs

1. Accord-wide standards for BMP, stream buffers, etc.
2. Measure if bmps are effective
3. More bmps by everyone
4. More frequent monitoring, regional oversight (BD Partners), Adaptive management
5. Monitoring frequency, standards, baseline, consistent riparian standards
6. Monitor new developments pre/post and link to bmps used in developments to determine effectiveness of bmps
7. Post-development assessment of BMP's
8. Incorporate IPS modeling which will help predict where development should occur

Other solutions

1. By doing it!
2. Make sure what's not being achieved is also emphasized
3. Educate developers on best development practices
4. Can regulations under the accord be presented for legislation consideration?

Pollution

1. Incentivize property owners to put land in conservation easements
2. Implement projects to mitigate existing impervious surfaces to monitor for results (in-stream)

Agriculture

1. Monitor farmland in more locations
2. Improve farming practices

B.2. Workshop #2: Revenue Summary

The following serves as a summary of key findings from Workshop 2: Revenue Generation, held on May 22, 2025 at the Columbus Metropolitan Library Hilliard Branch. Also included are a full list of general comments received by the planning team, submitted questions from audience participants during the panel discussion, and a summary of answers given by panel members during the panel discussion.

Workshop #2: Revenue Generation – Video Link
https://vimeo.com/1087374678?share=copy#t=4757.445

Key Findings

A centralized coordinating authority is widely supported. Panelists and attendees alike emphasized the need for a dedicated entity—whether a single agency or collaborative body—to oversee funding distribution, conservation efforts, and program implementation across jurisdictions.

Existing tools like TIFs and NCAs are valuable but underutilized. While Tax Increment Financing (TIF) and New Community Authorities (NCA) can generate significant funds, they often take years to yield returns. Bonding was discussed as a way to accelerate access to revenue, though risk aversion from public entities limits this strategy.

Jurisdictions continue to consider ways to diversify Accord revenue sources. Panelists and attendees expressed concern that funding mechanisms currently depend too heavily on development. There was strong support for growing capacity to pursue independent funding sources (e.g., grants, state funds, bonds) to prioritize land acquisition, water quality monitoring, and habitat restoration upfront.

Exploring more equitable, flexible, and clear updates to Accord revenue policies. The flat $2,500 per-unit fee was scrutinized as outdated and potentially burdensome, especially for affordable housing. Panelists proposed indexing fees to inflation or adjusting them based on unit size or development type. Inconsistencies across jurisdictions also lead to confusion and delay, underscoring the need for clearer standards and coordinated messaging.

Open space and land protection strategies need refinement. Questions arose around the definition and quality of “open space,” as jurisdictions apply varying standards. Panelists highlighted the need for consistency and suggested leveraging tools like density bonuses, wetland banks, and land easements to incentivize meaningful conservation outside development boundaries.

Short-term revenue generation should go toward monitoring and data collection. Water quality monitoring and biodiversity assessments have not been regularly conducted since the Accord’s

adoption. There was broad agreement that immediate investment in a wide range of data collection, including following through on previously agreed-upon monitoring schedules and locations, is essential to guide future land use and funding decisions.

Interjurisdictional cooperation beyond Accord boundaries must be explored as part of this process. Success stories shared by panel members demonstrate the value of partnerships. However, panelists called for broader regional participation, especially from upstream jurisdictions, and emphasized the need to build trust and demonstrate the Accord's benefits beyond Franklin County. A successful revenue model may serve as an effective way to incentivize other jurisdictions to participate in a similar multi-jurisdictional agreement.

The use of revenue funds must align with Darby Accord purposes. There was concern that funds might be diverted toward infrastructure improvements unrelated to conservation. Participants stressed that any revenues generated under the Accord should be reinvested into its core goals: protecting biodiversity, restoring stream health, and supporting long-term ecological resilience.

General Comments Received

1. Yes, a central authority is needed
    - Administer funds
    - Acquire properties for conservation
    - Frontload funding for conservation
2. Agree with John T. that development will always push forward, need to have a single authority to preserve more property
3. Hilliard's idea to zone 70% greenspace should be applied across the jurisdictions
4. Wetland banks is 100% a great idea to generate revenue for conservation
5. No data centers should be permitted – must be the right fit for the Darby. These are never going to be affordable housing developments
6. The discussion was good. However, to be perfectly honest, the format felt specifically designed to filter public commentary and ensure conversations occurred in the way the jurisdictions wanted it to occur. The opportunity for group discussion in the first workshop was an excellent effort to engage in participatory decision making.

Question Submissions

1. What would it look like for one entity to lead on standardizing revenue mechanism development for all jurisdictions?

2. What would it look like to prioritize funding to support key conservation purposes first, like enhancing water quality monitoring, so future development is informed by conservation needs?
3. What would it look like to decouple at least some funding from development so another revenue source prioritizes key program purposes first?
4. What about a regional funding source like a bond, dedicated to regional governance?
5. To date, $200 million has been invested in 14,000 acres of Big Darby conservation land. No "Accord purposes" funds were involved. Why can't this continue, such as using Clean Ohio Funds, WRRSP, H2Ohio, Section 401 mitigation funds, etc.? These funds and Ohio EPA stormwater permit (and other) requirements were not mentioned in Hilliard and Columbus presentations.
6. If the goal of the Accord master plan is the protection and restoration of the Darby Creek then don't we start with that goal in mind and think about how we ensure that happens? Wouldn't updating the land use map be updated with the latest science and then any development requires conservation of land and then a fee for monitoring and restoration? How could we do this?
7. Have the Accord jurisdiction calculated how much funding is needed to protect high biodiversity and rare species in Big Darby and Hellbranch Run?
8. We seem to be talking about how to raise funds before clearly identifying objectives (what monitoring, how much land protection). Don't we need to clarify these targets (e.g. 1 acre of land protection for every 1 acre of development [not counting the required 50% open space])?
9. Can Hilliard give examples of how they've collected and used accord funds for environmental purposes i.e. land purchases?
10. Prairie Township – discuss success they have had especially leveraging funds w/ other grants and sources to purchase land for permanent conservation.
11. How does Franklin County influence more positive activity in Madison and Union Counties, upstream and across a political boundary?
12. Don't forget removing the Darby Dan dam is a major need – Spending upstream of this does not improve Big Darby biodiversity unless the dam is removed.
13. How will the local governments ensure that administration of the Big Darby Accord continues at the level needed to ensure the high quality (high biodiversity and rare species). How to ensure there is staff and interjurisdictional government participation at a regular, high level?
14. What if, as a pre-requisite to developing, developers had to "fund" at a certain level the regional coordinating agency conducting conservation accord program purposes?
    - A subscription membership model
    - Entity with a board of jurisdictions and community groups

- Open to entities and developers joining from outside Franklin County

15. Is the 50% open space set aside for the Big Darby Accord and the 60-70% open space requirement Hilliard-specific?
    - After looking on MUNI code, Columbus and Hilliard define "open space" differently. Setting a percentage of that land for open space can't be successful if there is no agreement on that definition. Playing fields are highly manicured lawns, often with fertilizers that run off. Isn't this defeating the purpose of the accord?
16. How can we increase the number of willing sellers of conservation land, other than paying them high land prices, which will reduce the amount of conservation land acquired?
17. Could $100,000 of the $745,042 generated by the 4 developments within Columbus be put towards a round of updated water quality, biological and habitat monitoring currently needed for the hellbranch? This would be a Darby accord purpose!
18. How will Columbus's ZoneIn Initiative impact the Big Darby Accord Plan revision? And Vice Versa? Will Columbus apply current Big Darby Accord land use plan for development coming online in next 1-3 years? Or will Columbus encourage higher density within the Accord land use plan if / when a developer comes forward requesting apartments on 1 unit to acre as currently in Big Darby Accord
19. How is the $2,500 per unit decided? Its same for small or big units? Maybe for sake of equality, it should be based on size of the housing unit? Also, what about developing a commercial, industrial or public buildings?
20. Thought: Developing in the Darby is expensive – what is done to encourage development participation from small/women/minority owned developers? What does the "cost to navigate" the Darby accord add to home costs? For buyers?
21. If the purpose of the Accord is to plan for development in a manner that does not degrade the creek, why would revenue generated, as planned for in the accord, ever be used for anything other than land conservation, monitoring or otherwise mitigating the impacts of development on the creek. (e.g. Road or sewer improvements)
22. What would it look like for the county to lead on a revenue program that applies to all Accord jurisdictions, including an approach that:
    - Prioritizes specific program purposes first
    - Includes a revenue source not tied to development
    - Provides the funding to an organizations to independently implement priority program purposes like water quality monitoring, project review, conservation, etc.
23. What would it look like to decouple revenue from development itself, so revenue for conservation is funded first (and water quality monitoring) to acquire and develop data systems

to inform development decisions that support conservation? Could there be two revenue sources?

24. If the goal is revenue generation, should we first discuss a prioritization order for what the funds are used for, and the costs of those goals? What priorities should be funded first?
25. Once revenue is generated, who manages the funds to ensure they are used according to Darby Accord purposes?
26. Why are “developer reimbursements” part of the funding model?
27. Why couldn’t conservation/no development be prioritized for some parts of watershed, with development outside (or edge of) watershed funding conservation.

Panel Discussion

The following transcriptions have been paraphrased in some areas for clarity and readability. For complete accuracy or to resolve any discrepancies between the written summaries and the original responses from panel members, please refer to the linked video recording below.

Workshop #2: Revenue Generation – Video Link
https://vimeo.com/1087374678?share=copy#t=4757.445

The following acronyms are used for each panel member:

MC: Michelle Crandall

JJ: James Jewell

ML: Mark Lundine

SC: Steve Campbell

JT: John Tetzloff

Question 1: How could we possibly front-load some money or figure out how to get some more revenue earlier in the process as we wait for development to catch up?

Context: One of the interesting things we all need to recognize and share with (the audience) is that the Darby Accord happened in 2006 after a number of years of housing development pressure that was happening in Western Franklin County at that time. And right as the Accord got finished, and we needed to do all this implementation, is when the great recession happened. And that wiped out a lot of development pressure and revenue generation to help drive Accord initiatives.

MC: Implement impact fees that can contribute directly toward Darby Accord efforts.

JT: Not all conservation funds have to come from development. There are other funding sources available to fund efforts. Development has gotten so far ahead of conservation.

SC: Conservation is occurring in real time as development unfolds (i.e. protecting streams, wetland preservation, 50% open space, parkland dedication). These are legitimate pieces. The biggest challenge for the revenue program is that the two largest funding sources take a while to develop. These include Tax Increment Financing (TIF) and the New Community Authority (NCA). The typical solution to this problem in public finance is bonding, which allows you to borrow money upfront. However, since development projects involve risk, public agencies are hesitant to distribute bonds for private development. But there's an opportunity for the community to talk about how we can take some risks to guarantee some of those bonds so that money can get pulled forward to do a lot of things.

ML: Essentially, everyone's right. It's an all-tools-available scenario. To John's point about other revenue sources – yes, we need to look into that. I think Hilliard is really interesting how they went above the 50% open space to 70%. It's not revenue, but it certainly is giving us open space, and that's needed. So those are two pieces that we didn't think about upfront but are other ways to solve the problem. To Steve's point, it could take a couple of years until you start to see TIF revenues come in on projects where you say, this is stable enough that we can take it out to the market, get someone to invest and again, get some money upfront and have the TIFs pay them over time. So to me, the answer is all of it.

Question 2: Do we need a coordinator; a person or entity to administer this and other initiatives on behalf of the jurisdictions?

MC: I think as part of the rewriting or update, now that the town center isn't what it was intended to be, some of the things that the revenue is going to go towards now, what are those priorities? And then we're seeing how each jurisdiction is addressing problems, learning from best practices and the challenges that have come up. So we need to go through those and see. I think it needs to be monitored over time. John mentioned there are available sources of funding, and one that we don't always go after is the state funding through Ohio Clean Water. There's been years where there's been funds sitting in there, but not used by jurisdictions.

JT: When you look at the last 19 years of the plan, you see all the parts that haven't been implemented. We're 19 years in and we still have no idea what's going on in the stream. We've not monitored or tested whether any of this is working. There's got to be somebody or some group or dedicated people for paying attention to that and making sure that all the parts are advancing equally, because, and this is not a criticism of anybody, but the thing that will move forward without us is development.

SC: I think coordination is great. I think there needs to be some sort of authority. When reading the original Accord, there was definitely a view that there would be more multi-jurisdictional engagement through the years. To John's point, I think we all agreed that we could probably figure out a way to make sure that monitoring starts right away. Greater dialogue is needed, whether the answer is a central authority or not.

JJ: It would be nice to have all the NCA's along the Hellbranch talk to each other to figure out how to raise money or participate in projects together.

Question 3: Are there revenue sources we're not talking about?

ML: Wetland Banks are an interesting idea to preserve land and generate some funding. Stormwater retention at a regional basis. Important to seek alignment among different groups that want to do work in the Darby to coordinate efforts.

JT: Engaging with Metroparks, Nature Conservancy, Scenic Rivers will uncover other funding sources.

Question 4: How do we fund regional priorities?

JJ: At Prairie Township, when we did our TIF, the commissioners actually made sure they allocated funds that were under their control. And the thought was that they would use those funds not in Prairie Township, but in the Accord area. Since there's not much development in the Township, there might be

opportunities to do something that has Accord purposes elsewhere, and the county can step in and do that.
SC: Current development have to provide 50% open space on-site. While there is important land to protect along the urban edge, if we can generate money from those projects to also invest throughout the watershed, I think there's a benefit to that. But again, it takes the entire community to realize that it's a priority. Spending money outside of your jurisdiction is a sacrifice that our governments have to face.
JT: The town center was originally envisioned as a major revenue source. If those houses are going to be allocated into another jurisdiction like Columbus or Hilliard, those jurisdictions are taking on a responsibility to the larger accord to share some of the revenues generated there, or spending outside for the rest of the watershed.

Question 5: Are other uses (employment, commercial uses) a viable revenue source that we should be thinking about?

MC: If we had a commercial development in the Darby, then we have an opportunity to use TIF funding, and a portion of that could go toward Darby purposes. Another thought – the Accord allows for density bonuses, could we look at that again? When a residential development comes in, there's a 70% open space requirement. If they want to get a density bonus, could they also go outside of our jurisdiction, closer to the Darby, purchase land that was sensitive and protect it, and have that count toward your open space requirement?
ML: I think Michelle had a really good point about making sure it's the right fit.
SC: Regardless of land use, we should be employing the same standards. Some of those commercial uses will generate a lot of funds to help achieve goals in the Accord.

Question 6: Do jurisdictions need more flexibility to generate money using methods other than TIFs, NCAs, impact fees?

JT: We're doing it backwards. We're doing a lot of development, and then figuring out if we're generating enough funds from it, and not asking whether we are generating enough funds. Let's look at what we need to acquire, what we need to restore, cost all of that out, then figure out how much that's going to cost.
SC: There's no one stopping someone from trying to do that calculation. The Accord recognizes that Central Ohio is a growing area. It has a very important watershed to protect. How do we balance those interests? I don't think the answer is to stop communities from trying to meet the needs of their people. I think the answer really is you have to continue to work through this stuff. We should all be scraping for money.

Audience Questions

Question 7: The housing development contribution was set at $2,500 in the mid-2000s. How did we reach that number, should it be adjusted regularly or should we adjust it now?

ML: I don't know how we derived it initially, maybe Jim knows, but $2,500 20 years ago is about $4,800 today. Should it be adjusted? My opinion is yes, there should be a way for municipalities to consistently adjust it so that it follows inflation

Question 8: Should there be an amount on that unit that's for the jurisdiction and an amount for the Accord here?

ML: I don't know, but I think James raised a good point, this is where it gets tricky on these projects, the more funding responsibility you put on the project, the less affordable the housing units are and the less accessible it is to people. I know that our city is very concerned about that, we're working on housing in ways that even 10 years ago, I didn't think was possible. The mayor today announced that he wants to issue $500 million in bonds for housing. We did zero 20 years ago, it's in the last seven years that we've been issuing public bonds to help build housing. And again, we're targeting affordability that's 60% of AMI, like $35,000 salary. That's the types of level of housing that we want to deliver, and if you start to put more fees on projects, then the prices have to go up. Just got to watch that.
MC: Would you increase impact fees in areas where there's not affordable housing, or where a certain number of units are going to be affordable and the rest are not?
ML: Yeah we had a LIHTC (Low-Income Housing Tax Credit) deal on W Broad St just outside of Darby, we looked at that and said we're not applying NCA or developer fees on that because it's LIHTC those are deeply affordable units, like 30% AMI (somewhere in $20,000 salary range) in places like that, we absolutely have to do that.

Question 9: What do all these requirements we've been putting on the Accord area do to the timeline for development to be approved, or the cost?

SC: One thing the slide showed is the development that's occurred has been in the last few years, part of that is exercising these muscles, working through agreements and the public process, a lot of public education on these projects which takes time, and over time, that will get better. But time is money, both to the Darby, which we need to preserve land and do the right things there, for developers, and the communities. Mark laid out some efforts for deeply affordably housing, but I think it's fair to say that we need housing across the spectrum, market rate and working families. It's a community effort to keep those prices, or the regulations and time it takes to develop, to modify that to ultimately help with affordability.
ML: To answer directly, it takes a lot more time to do a project in the Darby area than outside of it. A lot of that is the up-front negotiation of financing and how it's structured and how we're going to meet the

core principle. On the environmental side, discussing which streams we're restoring, which wetlands we're preserving, is this the best use of land, farming, etc. They take significantly longer than a normal development, maybe double the time.

Question 10: If you were more clear in some of these things that didn't get clearly defined as we talked about originally, would that help with the review process?

JJ: I've done quite a few of these board meetings and I feel like there's a learning curve that is starting to flatten with repeat developers and consultants. I went to one, I think it was [a developer's] first time going in front of the Accord and they said 'we're getting close to the 50%, we're getting close to this other thing,' I said 'oh my' and just sat back and listened, and it was an educational opportunity for the developer and his consultant. I saw another one go up that had done another project in the Accord and it was really smooth, it seemed like the Accord board was happy to see that they were prepared and really understood what the Accord was.

Question 11: Is there training that you offer to someone to help developers understand this process better?

SC: There's always an opportunity for training, not just for developers but also the area commission, school boards. We all have a stake in this so I think there is value in that.
ML: I think the repeat developers are where you can save some time
JT: From my perspective, I was on the Accord advisory panel for years and it seemed to me that one of the holdups was lack of clarity in the plan, disagreements or unclear about what was required. You'd be faced with situations with different staff members from different jurisdictions interpreting things differently, developers were interpreting things differently. I think there was a lot of wasted time, I thought it was detrimental to the whole process and goals of the plan. Clarity is much needed.

Question 12: Someone asked about the Columbus zoning process – the goals of that, how does that apply to what's going on with Darby or changes the way we should be thinking about the Darby?

ML: Zone In is the City of Columbus updating our comprehensive zoning code, which hasn't been done since 1950. The first piece was commercial corridors, approximately 5% of the city but representative of significant additional land area on which we can build more housing. West Broad Street would be the one we apply out here, other areas would be places like Morse Road, Hamilton Road, big commercial corridors like that - I think there were 44 corridors. This is the first phase of multiple in rewriting our zoning code, but it was a really important phase because of the impact those properties can have. For example, the first floor of any property previously could not have residential, so any property on West Broad couldn't have residential. Parking requirements were significant, height was restricted, setbacks were generous. Changing that for our city, especially in urban areas, is really important. We prioritized affordable housing, density in areas where it makes sense like in these commercial corridors where

infrastructure/water/sewer are already in place. Now we have no parking requirements in these areas. Developers will still build parking because they need it, but now they get to determine how it's being allocated and used. When an area's up to 7 stories, if you do affordable housing you can go up to 9 stories. It's a generational change for the city, looking at corridors in a new way by thinking about how to grow density where it makes sense. So relative to the Darby, it touches very little of it, if any, but one area I want to highlight is, in addition to Zone In which is city led, COTA passed LinkUs which has important components for this discussion. It's a regional transit initiative, part of it was to do 3 BRT corridors that run in the middle of the roadway, they share stops and look like a light rail, but by doing BRT you can do about 5x as big of a corridor as a light rail. West Broad St is the first line in the LinkUs initiative, and it stops right next to your community center. It'll be a direct link to the Big Darby for the region. Funding for Link Us is a sales tax initiative – 27% of that funding is going to TSI (transit-supported infrastructure) like bike trails, sidewalks, missing connections around the region. Groups like MORPC that are multi-jurisdictional are prioritizing investments for each of the 5 areas of the region, they're starting to execute the first projects. We've seen a lot of projects that are exciting that come through the city or are partnerships with other cities, but it's cool to see that as a dedicated funding stream that prioritizes people and how we move around the region.

Question 13: Let's follow up with you and James – does that change the calculus or any thinking about, if we're reimagining the town center, do we look at Broad Street or other places on the LinkUs line because of its connection to BRT?

JJ: We actually negotiated with COTA. The original end point was going to be Hilliard Rome Road but we wanted it to go to our community center. They said they could only do it if there was an acre of land out there, luckily there were 3 so we worked with them to extend it out. To extend it out, they said it could be an additional $500,000 per year to go out to the community center from Hilliard Rome Road. The trustees are working with COTA to let them use part of that land, when the rest of the land is still being used for the community center, there's a great partnership.

Question 14: Does Zone In change how much development should happen in the Big Darby?

ML: I'd say not much, because it doesn't touch the Big Darby right now.
SC: One thing that was mentioned by Michelle, the Accord identifies a lot of tools we haven't used, whether that's transferring development rights, density bonuses. How can we rework these corridors to get more density? One application of that in the Darby is that as long as a development is meeting water quality requirements, is there value in a density bonus to allow them to develop more as long as they're meeting that quality, if they acquire the properties alongside it to protect more important land. It's a big issue, but it shows how the Darby could be flexible, and they're still protecting water quality, getting higher density which helps with affordability, and it allows off-site lands that are higher priority to protect to be secured.

Moderator: I think it's a great point and goes back to John's point about water quality management, being able to demonstrate that impacts are improved. Could we be using even $100k less – we talked about what the cost of the first round of water quality testing would be to do it right – it would be a little over $100,000, less than $200,000. Could we use some money that was generated from Columbus funding those first developments toward the first round of water quality testing?
ML: We'll look at it, I don't know off the top of my head
Moderator: I will say, based on the reaction of the last workshop, all of the jurisdictions are committed to working on making this happen.

Question 15: How can we increase the number of willing sellers of conservation land, because prices are high, but how can we acquire some of the land that the Accord wants to see protected?

JJ: We recently got lucky that there was conservation group willing to partner with us, we were able to acquire 57 acres of land around the Hell Ranch. The conservation group was willing to help us with the first grant and we acquired 75% of the funding through a Clean Ohio grant. At the same time, they helped us with a grant for the other 25%, so we were able to get all the 57 acres without spending additional money. These groups are a good resource to partner with.
JT: I would go back to clarity – we have a land use map that came out with the accord originally and over the years, doubt was sewn in the public's mind about whether that map was going to be stuck to. You started to hear lots of people say 'well don't look at that map, Columbus is going to go far beyond their development area.' I think that got a lot of landowners thinking all they have to do is wait, development is coming here, which puts upward pressure on the price of land. I think if there's intentions from the jurisdictions about how much dev they want to have and where it would be, it would be clear to landowners what they're really going to get for their land and bring down expectations.
SC: I think there's a lot of things driving uncertainty out there and I don't think everyone is out to get the most money possible for their land. Many have lived there for a while and would like to stay or preserve their land or their farm, or they are trying to figure out the future for their family. Maybe purchasing the land isn't the best option but rather controlling the more sensitive parts through easements and things. Another a deviation from the plan is we have a huge solar farm out there now that none of us contemplated, and if you talk to some of those landowners, they get knocks on the door from other people looking to do things like solar farms, and that is a challenge for us. Landowners are getting offers for their land and wondering, is Columbus actually coming, what is happening? We also have to remember that they own their land, there are limits to how much we can plan their land for them and that's where clarity is important but it's also everyone clearly understanding what we can and can't do. But there's a lot of pressure on those property owners out there.

Question 16: Someone asked about defining open space. Come to next month's meeting, because that is what we'll be talking about. There are some discussions about defining what TIFs and NCAs are.

ML: Imagine a property that pays $10,000 annually in property taxes, let's say a farm. Very low property taxes, when we look at taxes we look at the land value and the improvement value. A farm doesn't have any improvements, i.e. a building, so the land value is very low and tax rates are low. When you build a building on the land, you then the property gets reappraised for the value of the land and the improvements, and the landowner gets taxed a higher rate that takes both into account. If a TIF was put in place when the land was just land, the TIF would capture all the additional dollars that are charged for the improvements. As the property becomes more valuable over time, it generates more tax revenue and all that additional revenue above the original pre-improvement tax rate goes into the TIF.
SC: Just to add to it, the property owner still pays for that improvement, but the increase in value is being used to pay for the infrastructure payment, rather than going to other tax levies, a payment in lieu of tax. Paying the same amount but it goes toward a more targeted purpose. Certain levies that fund things like schools or firefighter units are exempt.
Emmanuel Torres (Assistant Director of Economic Development and Planning for Franklin County): TIFs/NCAs are intricate finance tools, but on the TIF, one common question is whether, as a property owner, you are paying an additional amount of taxes. The answer is no – whatever the property value is, if that land is in a TIF district, the property taxes that you pay still go to the county auditor through the treasurer, you pay as you would otherwise, but those dollars are captured by the TIF to pay for certain eligible expenses that are defined within the instrument that sets that TIF, but it must be public infrastructure costs, one of which is the Accord purposes.
Moderator: Maybe we should make one important economic development point: the reason communities spend so much time talking about TIFs and NCAs is that they are tools to get revenue from new development rather than existing development. That's really important. All of us who live here aren't excited about paying more taxes, so that's why these tools are so popular, because they capture revenue from *new* development, so paid by the new people moving or working in the new development. A TIF says that whatever it is today, the value that gets added from *new* people working or living there, that increment is paid to the public purposes. The NCA says that new development land that gets developed on will pay increased property tax millage, that goes to these purposes, but that's just for the new th8ings that get developed on the land. People get upset about these tools without understanding that it's about capturing new revenue from new development. The one issue is that we are talking about new revenues being diverted from existing public uses that would otherwise get that increased property value, it's delayed allocation until it pays off whatever this thing is that the TIF is funding for that period of time, but when the TIF period is over, it all goes back to the groups that are supposed to get it. But, as we make exemptions for each thing that doesn't go to the TIF, the amount of revenue that goes toward Big Darby purposes decreases.

Question 17: Could we create some kind of regional Accord agency that is funded by developer contributions/per unit/per sq. ft. contributions that could be a subscription model that even development outside the Franklin County Accord could pay into?

MC: Like a land bank? So other jurisdictions within the Big Darby…

Moderator: I'll build on this – like how seed funding creates this thing and then once it's up and running, some kind of membership thing that people can become part of and try to grow this beyond the county?
MC: Like Rapid 5 trying to raise funds for a land trust, once they have a certain amount of funding, they can borrow against that and have a revenue source coming in, could some of that be designated for land that's along the Big Darby?

Question 18: How do we ensure that all the jurisdictions are able to ensure that the money that's created goes toward protecting the biodiversity of the Big Darby?

JJ: Once revenue starts getting generated, or once we have enough data to know what kind of funds we can expect, one thing we want to work on is near Galloway by the railroad tracks, there's a few homes, most of which are on tanks. One of the original Accord funds we were designated was trying to get that on sanitary. The development to the north that was built has a lift station, but it was designed to take the capacity of Galloway. If that gets approved by Franklin County sanitary engineers, in the future if we get the funds we'd like to get them on the county sanitary system.

Question 19: How do we get other non-member jurisdictions to participate?

MC: Talking to these jurisdictions, see where the Darby Accord lands with them, and where we (Fraklin County) land with the revised Accord incorporating some of the new stricter state standards.
JT: I'd like to see a concerted effort in this direction. It requires many conversations, but there is wisdom that can be shared with people who have been involved with the Accord. There is inherent fear or doubt regarding the Accord, fear of other jurisdictions being able to influence their land. I'd like them to see that this isn't what happened in Franklin County. The Accord gave us more control over development patterns, over our environment, the pace of everything. This has been one of the benefits of the Accord, we have not seen sprawl around the watershed, compared to other jurisdictions that are in eminent danger of chaotic urban sprawl. I think there's a lot they could get out of either joining something like this, being affiliated with it, or creating something similar themselves. It needs to start with a conversation though, talking to these folks.

Question 20: After preparing for all of this tonight, what change would you recommend to the revenue model to be more effective for your jurisdiction? And for the Big Darby Watershed purposes in general?

MC: Hilliard is not participating in the revenue at all, this goes back 20 years. It was unclear at the time whether some of the things funding went toward would benefit Hilliard. We want to participate now and see what that looks like. What are the priorities, it is open space, water/sewer, that will impact what we do. How do we split those funds, we want to make sure some of it is coming back to the jurisdiction. I could see us looking at the portion of ___, our development agreement with the ___ too, and our NCA knowledge calls out the 30-year estimate on the NCA revenue, developers get the first million but additional $7.6M that will come in through the years, it calls out road improvements, could we add into

this so board knows that also in this there is _____. It might be prioritizing roadway projects first but at least have a reminder that this is an option.

JJ: I'm torn about the $2,500. 19 years ago while working in the Engineer's Office, a couple bought some property within the Accord to build a house along Possum Run. They found out that because of the Accord, they had to pay $2,500, which delayed them building their house for a year. If we're worried about the cost of housing and want affordable housing to be an option, editing the payment requirements to be more proportionate to the value of the home being built may be more equitable.

ML: From my perspective, a little more flexibility in the percentage. There are well-intentioned people who work in all these municipalities and they want to accomplish their goals. Multiple jurisdictions believe in this and are implementing it. Allowing more flexibility on those percentages and being able to use certain development where you're capturing more revenue even sooner for the Darby, or others where it takes longer but you have a bigger tail. The second part, in the Darby in general, I like finding ways that money can be allocated in the best way, not stuck to any boundary.

Moderator: The first three speakers work for jurisdictions and have to follow direction from elected officials who respond to residents and businesses, they're doing the best they can with the guidance they have to follow.

SC: One area, whether we have central authority or just greater dialogue among jurisdictions, is priorities. When we have additional revenue, is it a priority to purchase land, restore streams, reestablish wetlands. How do we make sure people are spending the money the right way? There are limits on how you can spend money due to laws of TIFs – capital improvements, road, water, sewer, but it does allow for stormwater best management practices, restoring wetlands. Having priorities would be helpful. I believe with the mayor's announcement of $5M in additional infrastructure, other jurisdictions are trying to find ways to bring their infrastructural resources to affordability. Some way we can work together to realize those TIF dollars earlier through bonding or collaboration to get money up front. Like buying a house, having the money up front, you can do a lot more with it.

Moderator: Steve Campbell worked for the City of Columbus, worked early trying to make all this revenue system work.

JT: I would second Steve's comments about clarity and priorities. Also, the funding needs to be used in a way that is responsive to what is happening in the streams. We don't know what's happening in the streams, we need to fund monitoring and assessment before making decisions about where to spend revenue. It can help determine whether we should keep doing what we've been doing, need to use funds to address a particular observed problem.

Moderator: John has been involved for 25 years championing the Big Darby Watershed.

B.3. Workshop #3: Open Space Summary

The following serves as a summary of the Big Darby Accord Amendment Open Space Workshop, held on June 24, 2025, at the Prairie Township Community Center. This document includes key takeaways based on the workshop presentation and activities, top themes from the idea sprint, and open space mapping results.

Key Takeaways from the Workshop Participants

- **Utilize up-to-date GIS spatial data and analysis to bolster conservation tiers.** Attendees frequently suggested using up-to-date GIS to map out high-priority conservation areas, leveraging spatial analysis for decision-making and planning.
- **Public engagement and education are recurring themes across multiple groups.** Several groups emphasized organizing events and outreach campaigns to educate the public about Darby efforts, land stewardship, Metro Parks initiatives, land acquisition strategies, and open space.
- **Invasive species management is a cross-cutting priority.** Many ideas focused on assembling dedicated teams and mobilizing volunteers to address invasive species, with a special focus on Clover Groff and Hamilton Run.
- **Clear, consistent development expectations across all Darby jurisdictions.** Groups emphasized the importance of consistent expectations for open space requirements, long-term maintenance, and transfer of development rights to bring clarity to both developers and the community.
- **Funding and partnerships are critical enablers for future land acquisition and conservation efforts.** Ideas like grant funding, leveraging non-profits, and engaging universities highlight that many solutions hinge on outside support and cross-sector collaboration.

Idea Sprint Results

The Idea Sprint activity included three rounds of idea generation, allowing participants to pass their ideas to other group members to iterate or generate new ideas. Overall, the eight groups generated 347 total ideas. Out of these, 34 were identified as top ideas after further discussion among each group.

Themes from Top Ideas:

The following themes were summarized from those identified by each group's top ideas discussed at the end of the activity. Certain ideas were categorized under multiple themes. Please see **Attachment A** for the full list of ideas generated by participants.

Table 20 Workshop #3 Idea Sprint Themes from Top Ideas

Theme Count	Theme Description
11	Update open space/development requirements in the Big Darby Accord
7	Prioritize land acquisition
4	Incentivize open space/conservation dedication
4	Address need for a coordinating entity or person
3	Prioritize open space funding
3	Identify priority lands for parks & open space
2	Prioritize public engagement, education, and marketing of Big Darby
2	Update land use & zoning requirements based on Accord recommendations
2	Prioritize a science-led approach
2	Prioritize water quality monitoring

Top Ideas Organized by Group:

Group 1:

- Identify priority lands to direct protection efforts
- Increase density in developments that go vertical/have a smaller footprint, including many levels of affordable housing
- Tax breaks for existing land owners (farmers) for creating open space/protection of land or create for-profit open space mitigation banks that developments can purchase

Group 2:

- Increase land acquisition for conservation
- Use money from utilities and state/other (Need $100 million for acquisition)
- Need leadership entity or person to lead conservation/land acquisition – a "coordinator" with responsibility to the Accord

Group 3:

- Leadership and coordination of land acquisition priorities
- Transfer of development rights to secure and protect more priority open space
- Market the concept of a greater Darby Park to build citizen interest, like Hocking Hills
- Stormwater management through development of constructed wetlands (not ponds) - remove basins

Group 4:

- Update land use map based on science and codify the results
- Open space does not offset development. Development must be limited based on what science suggests will protect the creek's ecosystem
- Natural space associated with development 'open space' should not count toward the targeted park land
- Invest in water quality monitoring
- Utilize USGS data and establish stations in Clover Groff and Hamilton Run

Group 5:

- Expand Metro Parks/Big Darby acquisition through planning ahead to identify sites
- Education component: students, community, homeowners, renters, marketing to grow awareness of environmentalism and Big Darby
- Solidify funding streams - levy, land swaps, incentives (non-school or fire)

Group 6:

- Identify the open space and streamline the dedication process early in the development process to better protect it
- Align zoning and other applicable codes with the revised Accord recommendations
- Preserve Tier 1 and 2; consider allowing sensitive development on Tier 3

Group 7:

- Clear commitment to protect 80%+ of the Accord area in perpetuity
- Minimum 50% naturalized, concentrate on naturalized vs active (sports fields) with active to be near housing
- Use tax incentives to increase wetland buffers with permanent easements in perpetuity
- Easements should be a reasonable amount of land area
- Set aside large amount of land for preservation of wetlands
- Developers set aside for wetland mitigation banks

Group 8

- Acquire sensitive lands prior to any development, budget for funding this
- Front load all revenue - grant funding, revenue, jurisdictions' budget, help identify additional funding
- Increase open space requirements from developers
- Need grant writer coordinator for land acquisition
- Have committee to identify lands
- Conservation subdivision - many details, maintenance plan, define natural open space (50%)

Map Activity Results

Participants were instructed to place dots within the Darby study area, identifying opportunity areas for the following topics:

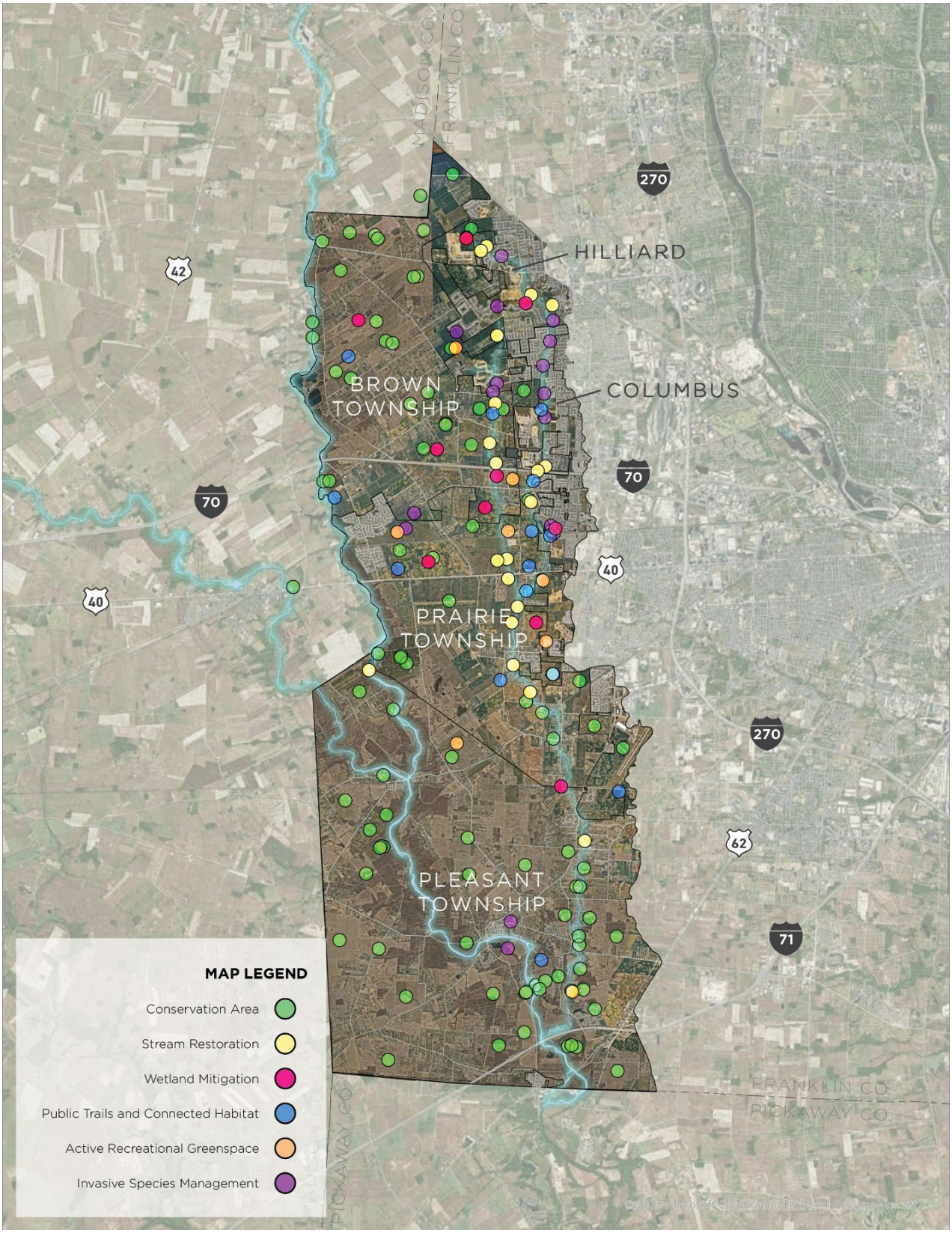
- Conservation Areas
- Stream Restoration
- Wetland Mitigation
- Public Trails and Connected Habitat
- Active Recreation Greenspace
- Invasive Species Management

The following pages display consolidated results from all eight participating groups. All map plots were scanned, and the results were digitized. See **Attachment B** for the original scanned maps from the workshop.

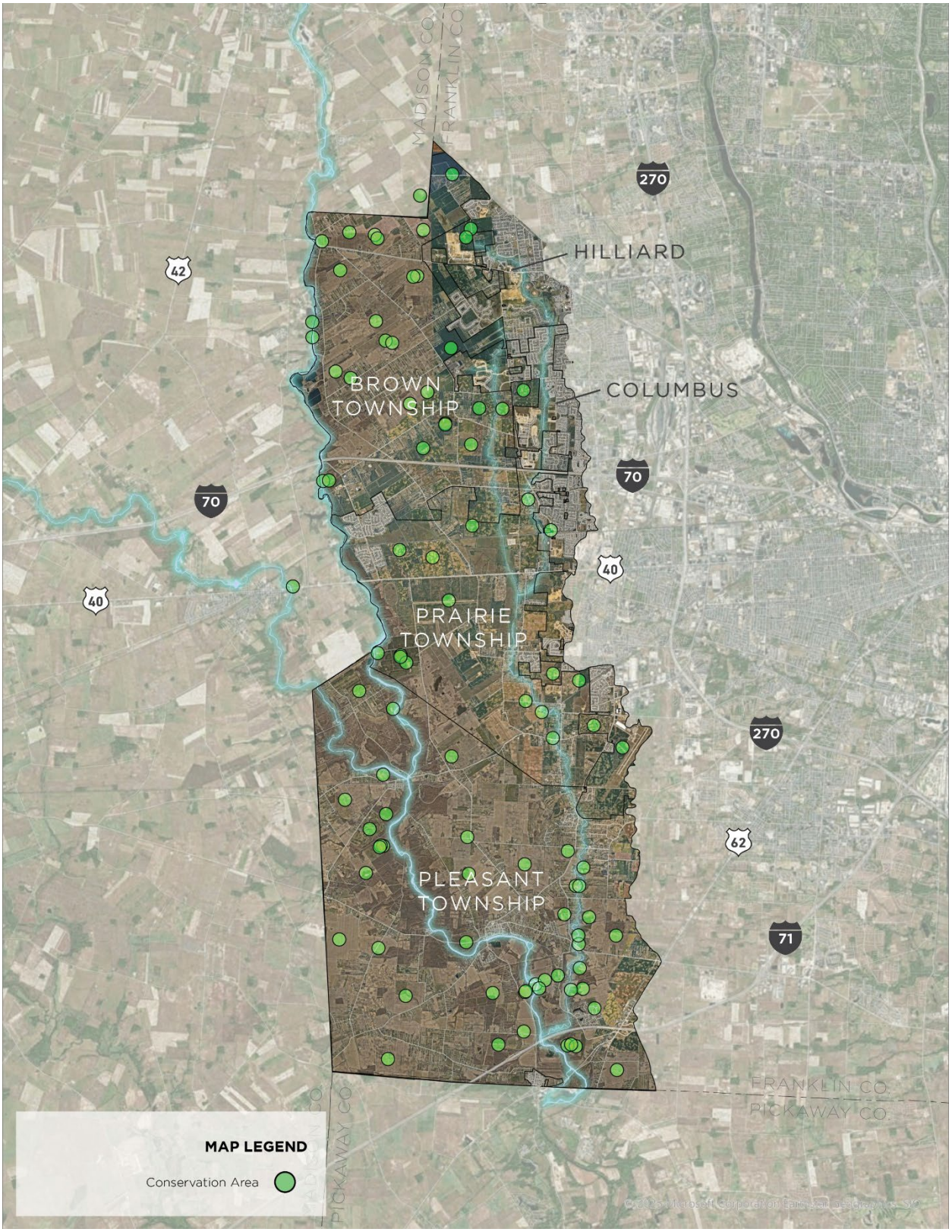
Notable Map Findings

- Stream Restoration and Invasive Species Management were concentrated primarily along Hellbranch Run and Clover Groff Ditch.
- Conservation Areas were identified throughout the study area, pointing to a general aspiration for more efforts to conserve underdeveloped and/or agricultural areas throughout the study area.
- Wetland Mitigation areas were identified but limited to specific sites and worthy of a deeper analysis of why those sites were identified.
- Public Trails and Connected Habitat as well as Active Recreation and Green Space areas are clustered along the Hellbranch Run, Clover Groff Ditch, and near existing residential subdivisions.

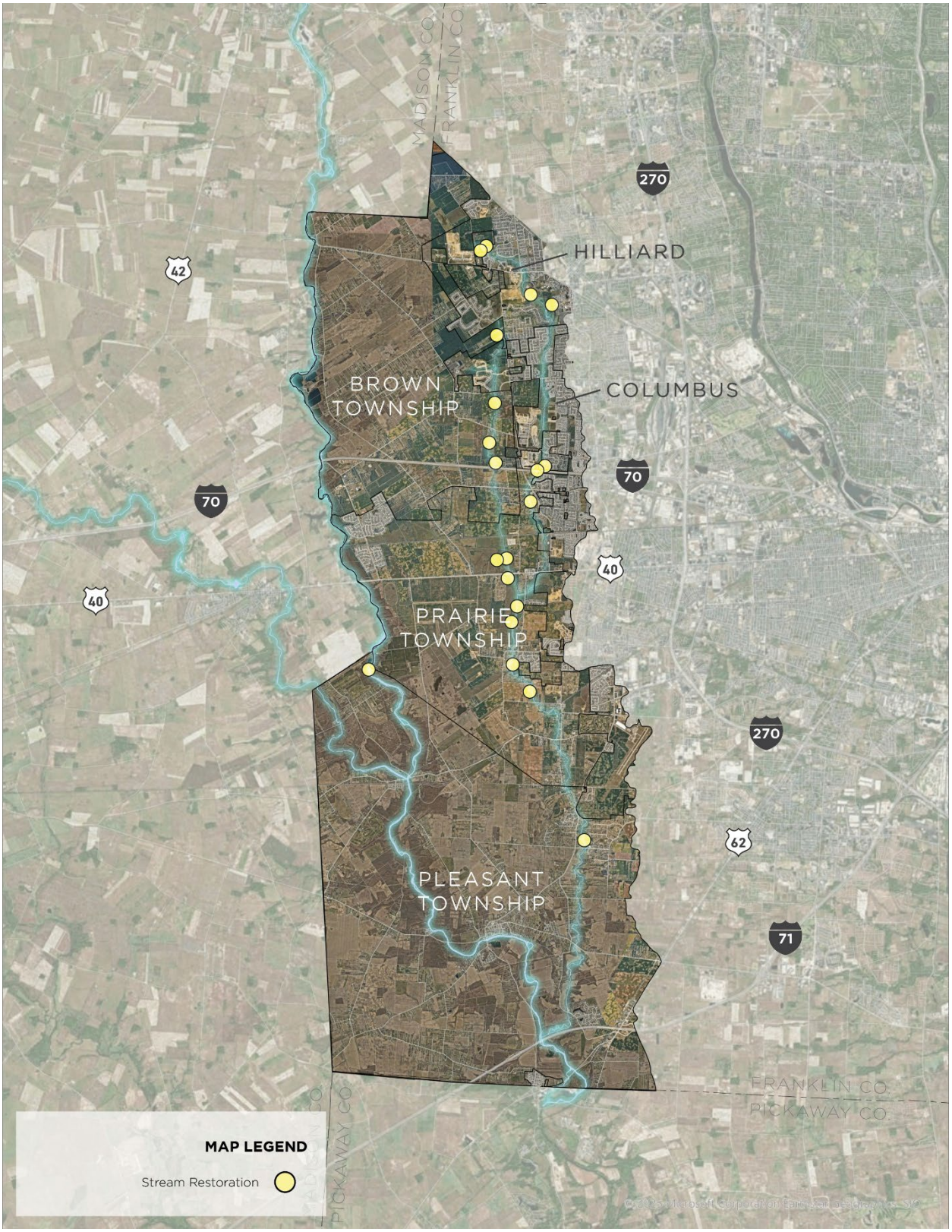
Map 19 Workshop #3 Map Activity Results - All Dots



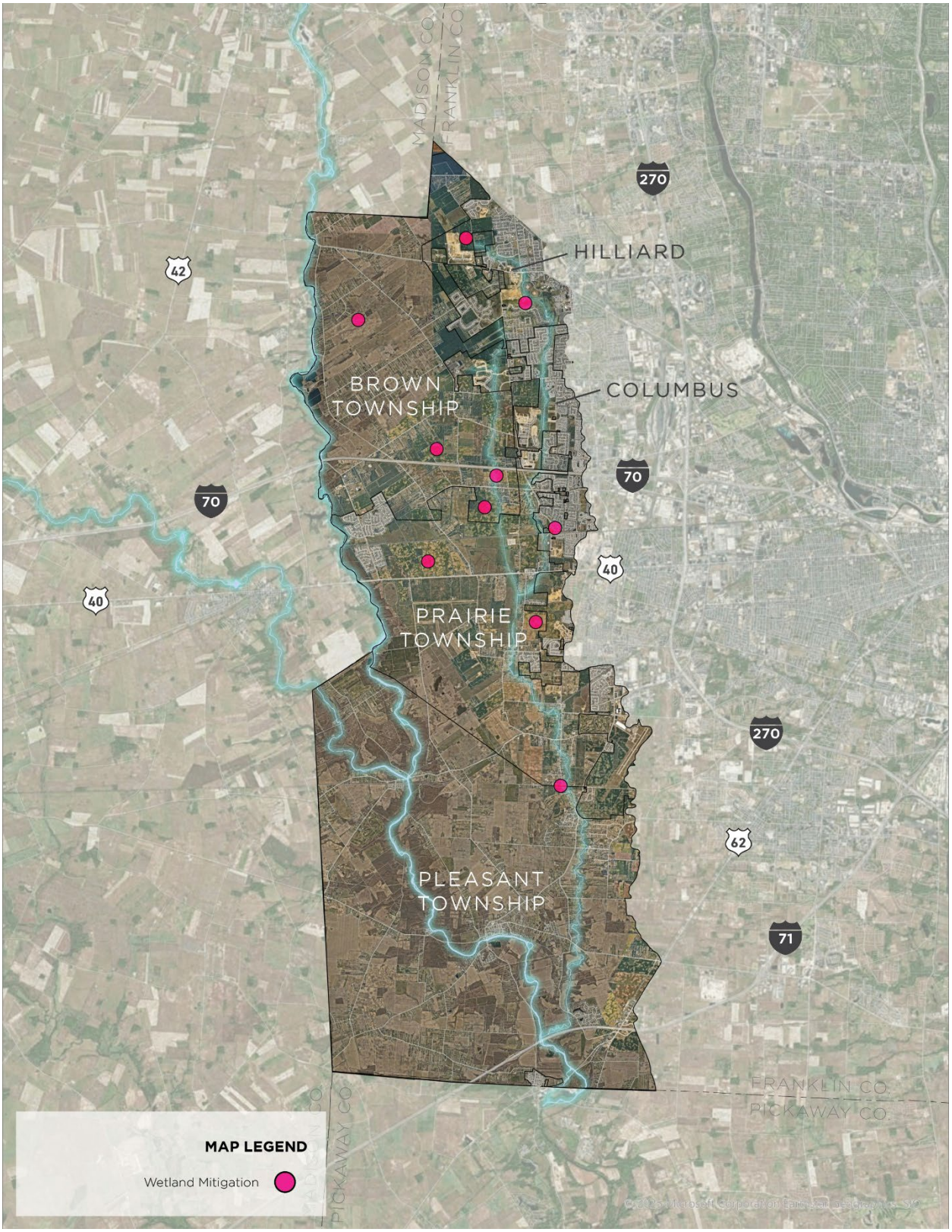
Map 20 Workshop #3 Map Activity Results – Conservation Areas



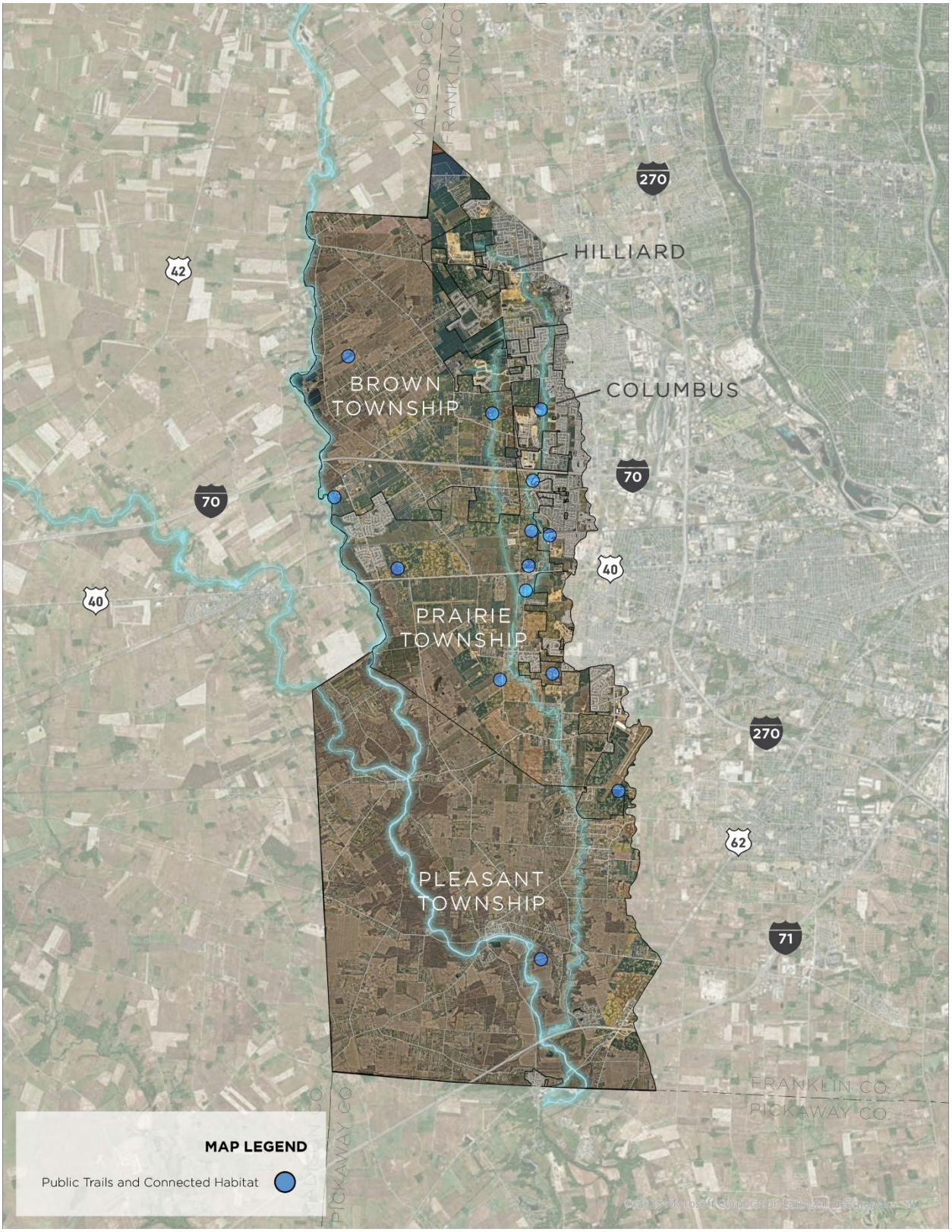
Map 21 Workshop #3 Map Activity Results – Stream Restoration



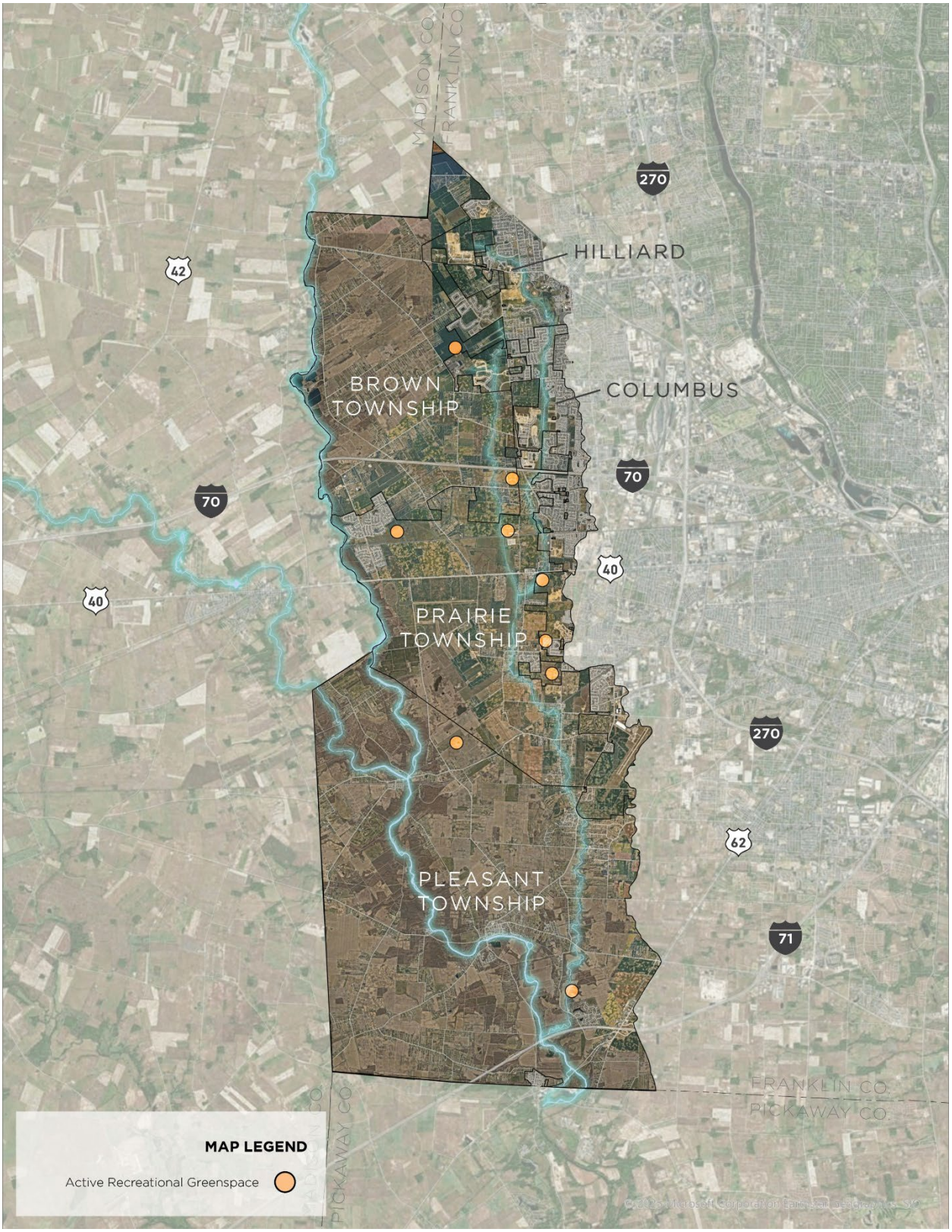
Map 22 Workshop #3 Map Activity Results – Wetland Mitigation



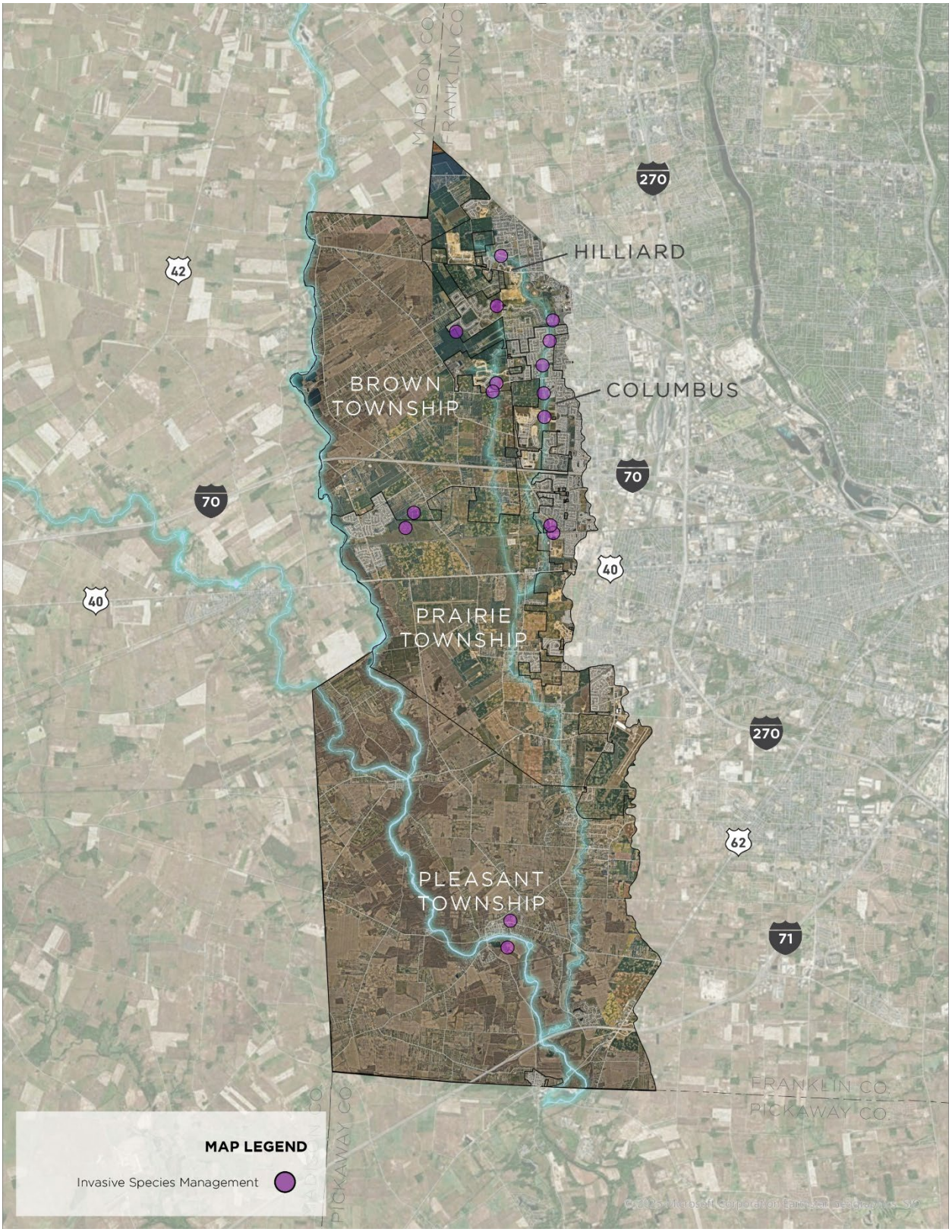
Map 23 Workshop #3 Map Activity Results – Public Trails and Connected Habitat



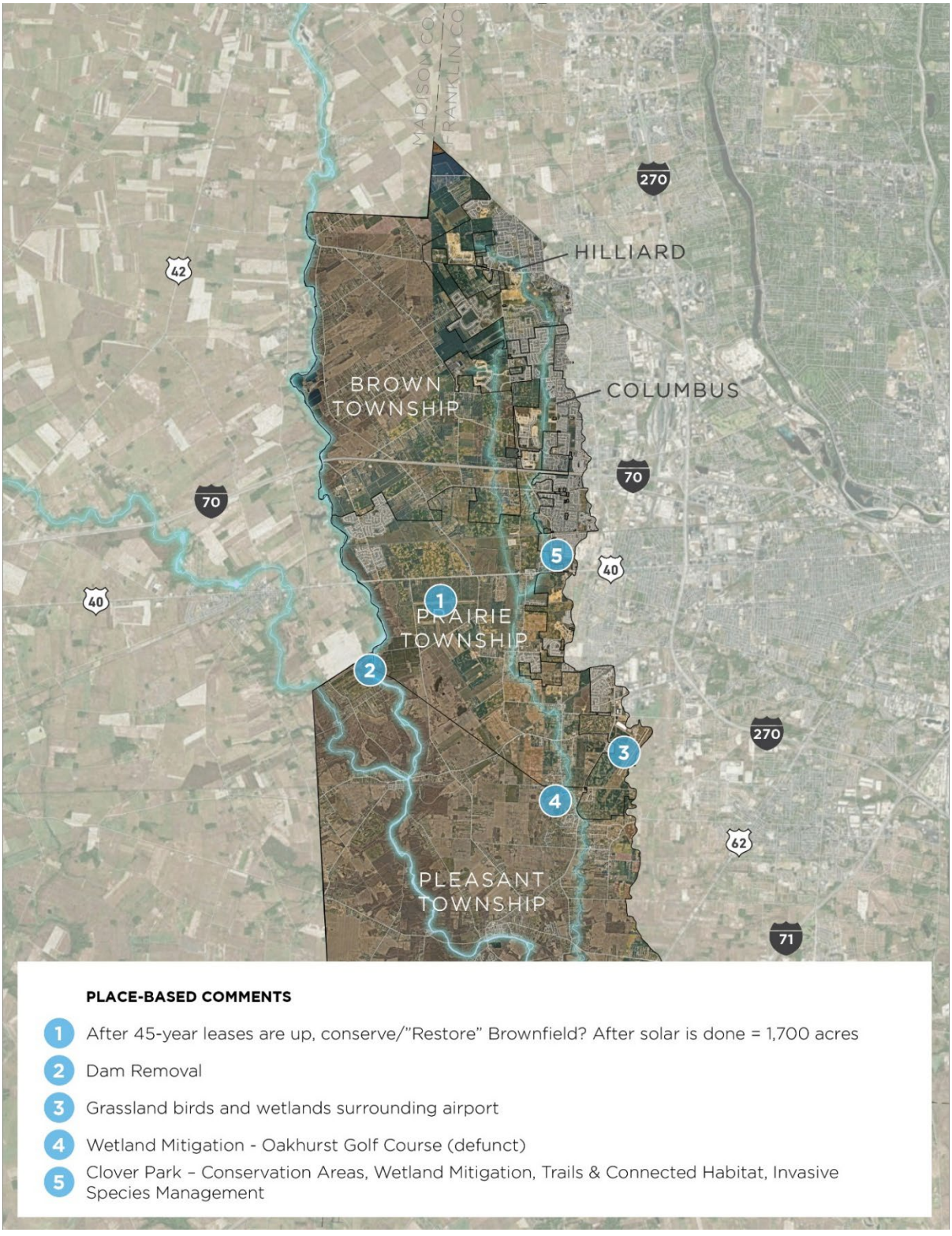
Map 24 Workshop #3 Map Activity Results – Active Recreation Greenspace



Map 25 Workshop #3 Map Activity Results – Invasive Species Management



Map 26 Workshop #3 Map Activity Results – Place-Based Comments



Map Activity Results – General Comments

1. Look for opportunities to protect missing "puzzle pieces" of conservation land adjacent to protected property.
2. Fatten up buffers!
3. Golf Courses should not be considered open space.
4. Identify flooding areas. They are easy to restore to constructed wetlands.
5. Purchase conservation land before development and then establish fees to go to water quality monitoring and research.
6. The exercise of identifying priority conservation areas to protect the ecology of the creek should be conducted by aquatic ecologists with lots of spatial data at hand and informed by the results of ODNR's IPS study. We do not think that the planners and economic development staff of BDART have the expertise to do this. We are very concerned with this process.
7. Invasive species removal/management everywhere.

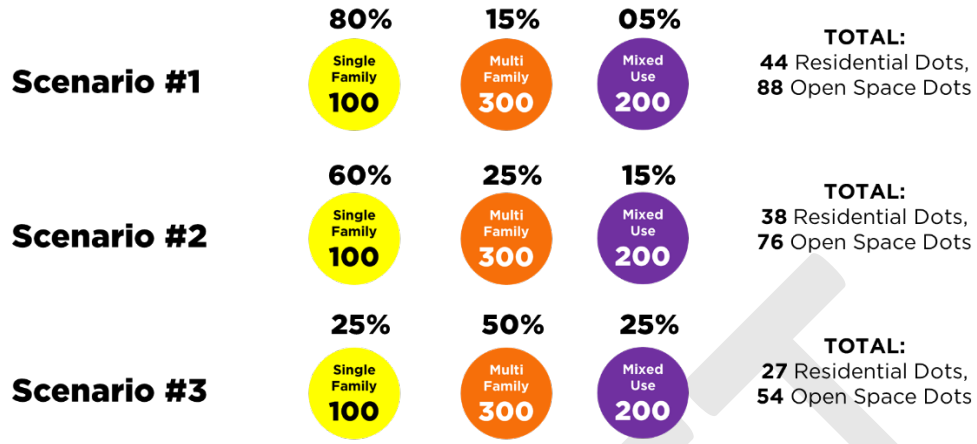
B.4. Workshop #4: Land Use Summary

On July 29, 2025, the final of four workshops was held. The focus of this workshop was future land use in the Big Darby Accord study area. The workshop began with a presentation by MKSK that was followed by a robust workshop activity for all participants. The **goals** of this fourth topic workshop included:

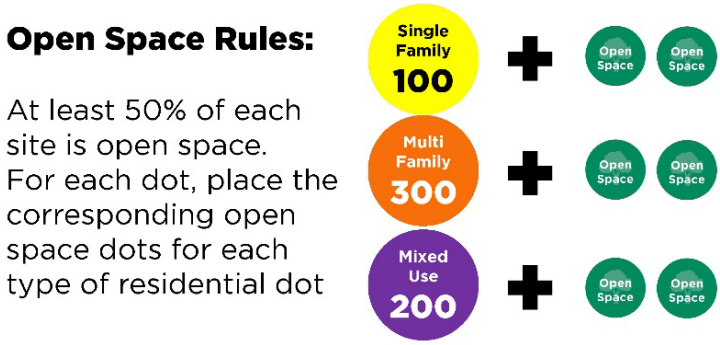
- Educating participants on the many considerations that must be balanced in creating a new future land use map for the Big Darby Accord;
- Gaining insight as to what locations participants were most comfortable allowing new land uses – including single-family residential, multi-family residential, mixed-use, commercial/retail, and employment;
- Understanding the geographic scale of potential new development;
- Seeing the physical impact of how denser development can take up less geographic space than lower density development; and
- Helping participants develop a better understanding of the tradeoffs and balance between development and environmental protection – including the impact of allocating some required green space off site.

The following materials summarize the land use activity that was facilitated by MKSK. Participants were divided into seven groups, with each group tasked with placing dots representing various land uses according to their selected scenario. Land use dots were provided representing single-family residential, multi-family residential, mixed-use development, retail/commercial development, and employment-related development as well as corresponding green space preservation related to that site development. At the beginning of the exercise, each group was tasked with locating new residential development equivalent to 5,000 new units. Before doing this, each group had to select one of three possible residential scenarios to pursue, with each scenario offering a different ratio of single-family, multi-family, and mixed-use land uses. The residential dots were physically sized to be representative of the number of units that would geographically fit on the scaled Big Darby Accord Study Area Map provided to each group.

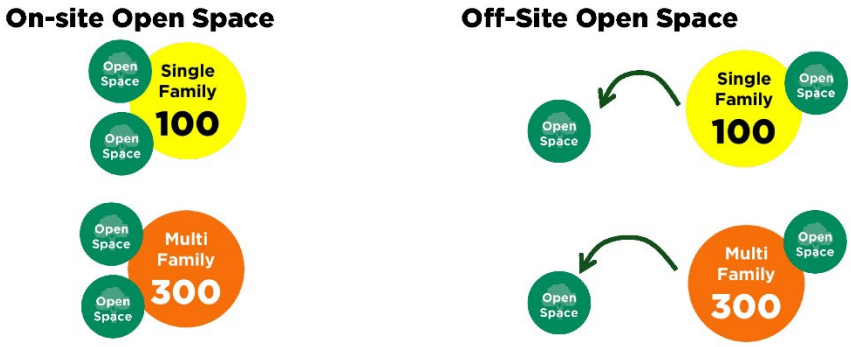
The graphic below outlines the possible scenarios.
Residential Scenarios: (each totals 5,000 residential units)



Green space dots were provided to represent the 50% open space preservation required with development within the Accord area. The green dots were half the size of the residential dots, each representing 25% of the required physical open space.



As part of this exercise, participants were allowed to allocate one of the two required green space dots elsewhere in the Study Area, representing the opportunity, if desired, to have site development only provide 25% open space **on-site** with the other required 25% open space secured elsewhere **off-site** where it might have greater positive impact.



Note that all groups were provided with the same number of retail/ commercial and employment dots to place.
Please refer to **Attachment A** to view the scanned results from each table.

Workshop Exercise Observations:

- **Groups had limited time to digest and participate in a complex activity.** While each table was provided with a series of maps including: where sanitary sewer service exists; locations of various types of sensitive land areas; and the future land use maps of each jurisdiction, there was only an hour to digest this information and place the dots as part of the exercise. As a result, most groups followed their best understanding of the existing context and conditions, sometimes independent of this information.

- **Groups were only required to place dots equivalent to 5,000 residential units, less than the remaining full Accord allocation.** Still many groups found placing that many dots challenging, though all but one table completed the task (and was only short four dots). Three tables were unable to get to all of the retail and employment dots (short 11 dots between them). Interestingly, it was the green dots that most tables did not finish placing (short by an average of 12 dots per table).

- **Most groups did not ultimately follow the concept of placing at least one or two green dots with each development (representing 25% or 50% required on-site open space).** This is likely due to a lack of truly understanding this linkage in the exercise, and because a number of groups began by placing the green dots first, and/or had a person or persons in charge of the green dots, independent of the people placing the development dots. As a result, many maps do not reflect the required on-site green space dots paired with development. The exercise still helped illuminate where groups felt more comfortable with development and priority areas of green space preservation.

- **Most groups appeared comfortable allocating some of the required on-site open space protections to other, more sensitive areas.** While acknowledging the bullet above, many groups took advantage of the opportunity to place a portion of the required on-site open space protection off-site in areas they believed were more important to protect.

- **It was stated from the beginning that this was a thought exercise,** and the resulting maps are not directly reflective of what will be drafted for the proposed Future Land Use Map update.

Workgroup Results:
The following pages display results of the group exercise in various ways. Page 6 shows the scanned results, with circles around dot "clusters" placed by each group. These clusters generally include:

- Development in land areas along the **Hellbranch Run** north of Broad Street;
- Development in areas currently designated as **Town Center** on the existing Accord Future Land Use Map;
- Development in areas toward the southern portion of the Study Area **around the I-71/US-62 Interchange**, east of the Big Darby; and
- Three groups showed development in the area of **Bolton Airfield, Norton Road**, and along the **Camp Chase Trail** alignment.

Pages 8-9 highlight dots where there is strong or moderate consensus among all seven groups. We defined "consensus" as locations where multiple groups placed the same type of land use dot in the same area.

- **Strong Consensus:** Four or more groups placed the same land use type of dot within 500 feet of each other.
- **Moderate Consensus:** Three groups placed the same type of land use dot within 500 feet of each other.

A 500-foot distance was selected to reflect both the physical size of the dots placed during the exercise and the overall scale of the study area, ensuring that nearby placements were recognized as representing the same general location.

Findings Based on Consensus Analysis:

- **Most groups preferred Scenario 2.** Scenario 2 provided 38 residential dots, with 60% of the dots single-family development, 25% multi-family development, and 15% mixed-use development. Surprisingly, no groups chose Scenario 1, which provided the most single-family dots (80% single-family) out of the three scenarios. Instead, 4 of 7 groups chose Scenario 2, while the remaining two groups selected Scenario 3. This seems to indicate an understanding, if not preference, for more dense development as a way of reducing the geographic coverage of development within the Study Area.

- **Strong consensus around new single-family residential and mixed-use development along the urban edge north of Broad Street.** Most groups placed clusters of single-family residential and mixed-use dots along the western edge of the city of Columbus and Hilliard, north of Broad Street (see page 8).

- **There was strong and moderate consensus for new land uses focused along Broad Street.** Despite minimal development activity since 2007, the Town Center area, particularly along Broad Street, was frequently discussed during the meeting with several groups considering its potential to accommodate growth. This is likely in part because of the planned LinkUS W Broad Street

line discussed at the meeting. Participants reached a relatively strong consensus on where open space should be preserved in this area, but there appears to be no strong consensus on the other land uses here. However, there was moderate consensus on locating commercial/retail, single family, and employment uses along Broad Street, with multiple groups placing the full variety of land uses available at the Workshop.

- **Strong consensus on allocating some required on-site open space protection to other, more sensitive locations in the Study Area.** Participants were allowed to place open space dots, representing 25% of required on-site open space development, away from their corresponding residential, commercial, and employment dots to explore ways to protect areas they deemed more sensitive or higher priority green space. At least four groups took advantage of this opportunity.

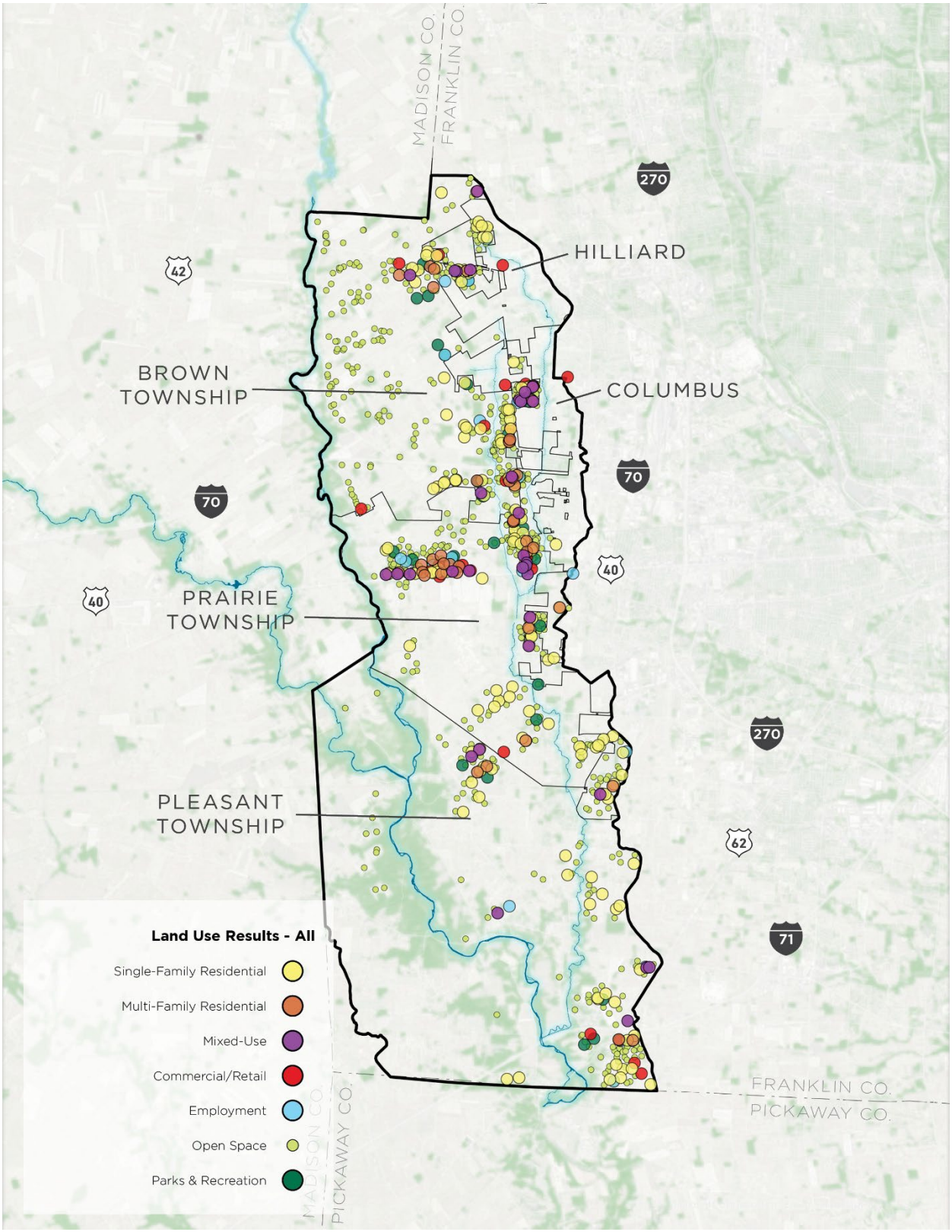
- **Strong consensus around placing/protecting open space along the western portions of Brown Township.** Using this opportunity to place required on-site open space for development off site, the western portions of Brown Township was one of the notable areas participants placed these dots. Four groups placed a significant number of these off-site open space dots along the Big Darby in Brown Township.

- **Moderate consensus around new single-family residential development along Norton Road and the Bolton Field airport.** This reflects conversations regarding areas where future utility service exists or could possibly be extended. Sanitary sewer service exists in and close to these areas, but there has been less development pressure relative to other portions of the urban edge.

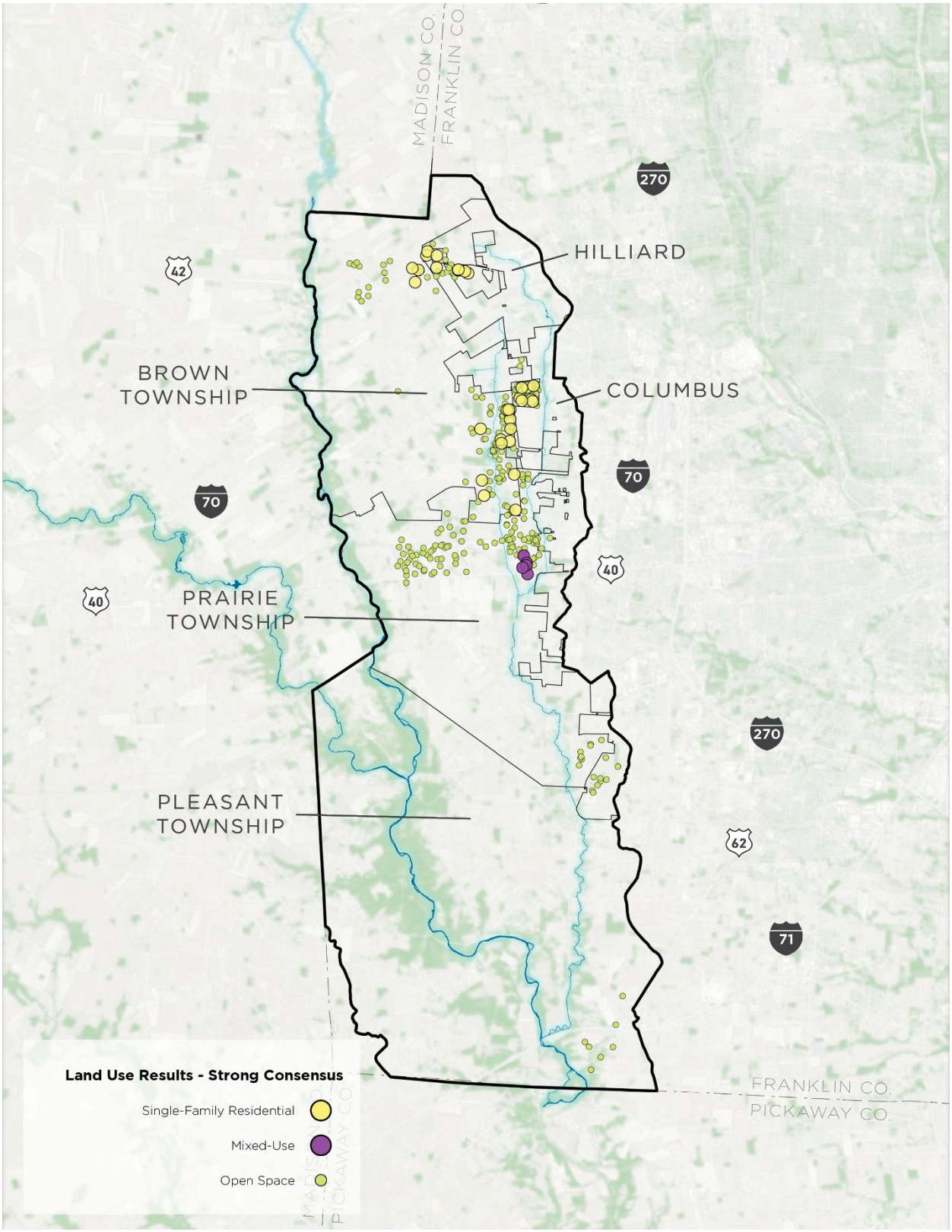
- **Participants contemplated growth along US-62 near Harrisburg, south of Grove City.** While not reaching consensus around specific land uses, four out of seven groups added a variety of land use dots in this area. In listening to some of the conversations, some groups felt that development close to the interstate interchange made more sense than some other, more environmentally sensitive areas in the study area. It is close to the Big Darby Creek, however.

Figure 7 Workshop #4 Scanned Activity Results with General Clusters of Dots Identified

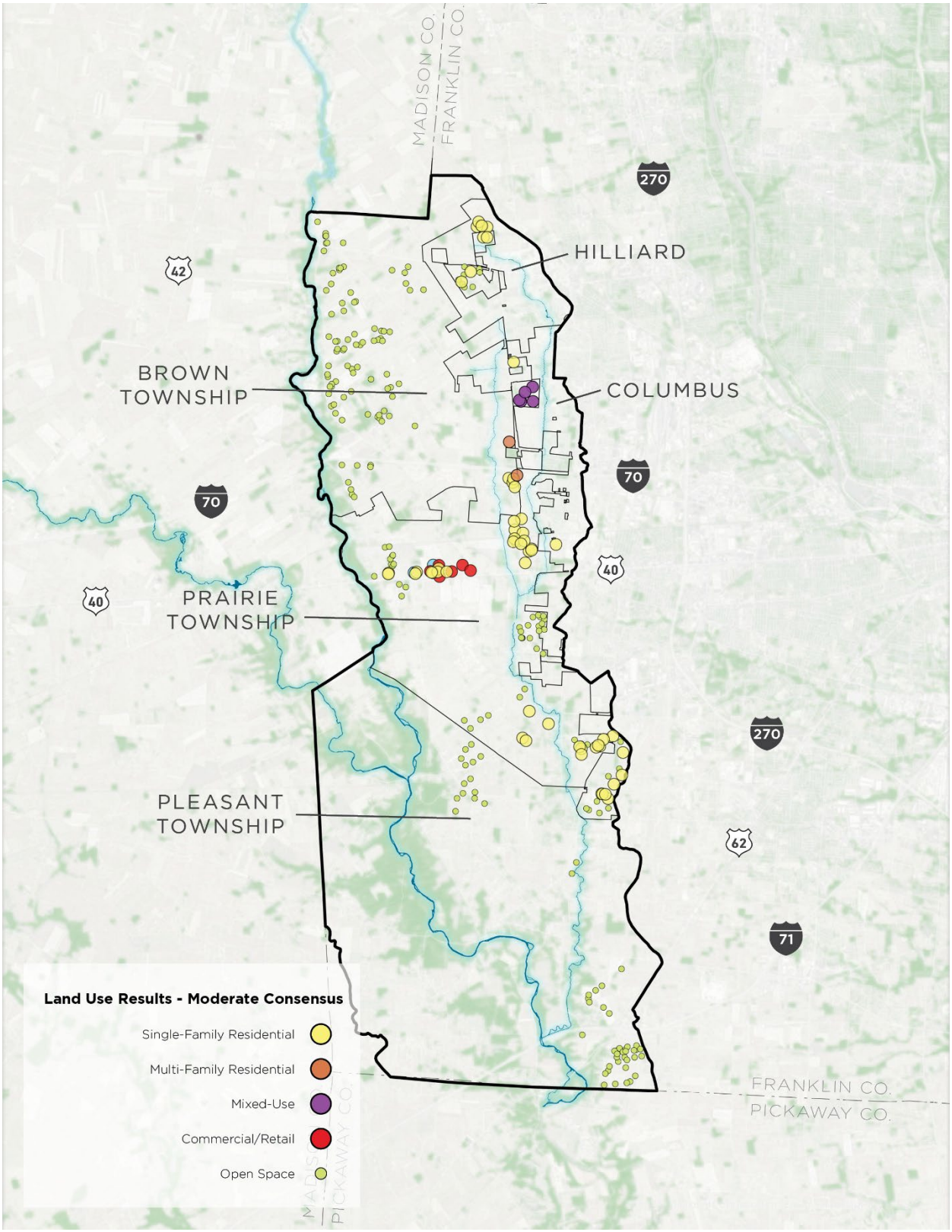
Map 27 Workshop #4 All Activity Results:



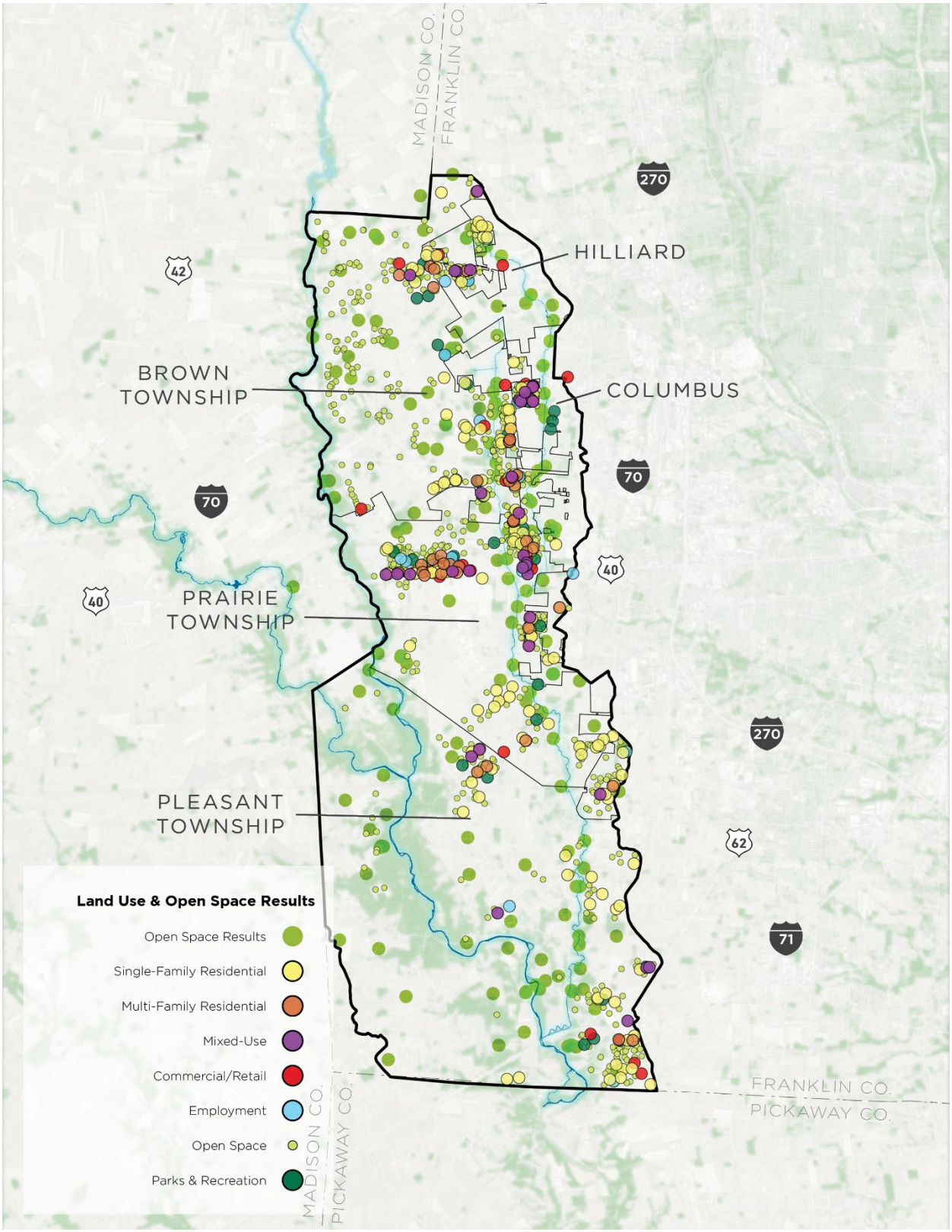
Map 28 Workshop #4 Activity Results - Strong Consensus Dots



Map 29 Workshop #4 Activity Results - Moderate Consensus Dots



Map 30 Land Use Workshop (#4) Combined with Open Space Workshop (#3) Activity Results



Land Use Workshop Exit Questionnaire Responses

Participants received an exit questionnaire at the meeting to provide optional feedback after the land use activity. Five completed questionnaires were received. An online survey with the same questions was emailed to those who participated in the activity, but the planning team has not received any responses to the online survey as of August 19, 2025.

1. **How did you decide on where to put land uses?**
   - (Table 3 Respondent) Concentrate – keep in Hellbranch watershed.
   - (Table 7 Respondent) Tried to put new development near areas already developed.
   - (Table 1 Respondent) Avoid environmentally sensitive areas, looked for sewer access, road access.
   - (Table 4 Respondent) Focused on a few smaller clusters of high density.
   - (Table 7 Respondent) Commercial-mixed use by main roads, already developed areas. Single family in outskirts. Green zone is closest to protected areas.

2. **Were there any tough decisions? Please describe below.**
   - (Table 3 Respondent) Very tough, because we don't know the impacts of our 'on the spot' choices.
   - (Table 7 Respondent) Very difficult to know how these decisions would affect the water quality of Big Darby Creek. Any decisions on new development should be based on protecting the health of the watershed.
   - (Table 1 Respondent) Lack of sewer infrastructure. Being locked into the scenario.
   - (Table 7 Respondent) Yes. For the decision if more development should be on upstream or downstream.

3. **What did you learn through completing this activity?**
   - (Table 3 Respondent) Not sure.
   - (Table 1 Respondent) It's not as easy as it looks, but the density has to go somewhere.
   - (Table 4 Respondent) Many complex decisions that need vast amounts of data to properly make informed decisions.
   - (Table 7 Respondent) Reaching consensus and trying to get a win-win situation.

4. **What would you do differently, if anything?**
   - (Table 1 Respondent) Having existing businesses located on the map.
   - (Table 7 Respondent) Balanced approach, more units, and protecting the conservation zones.

5. **What recommendations do you have for the Darby Accord jurisdictions based upon this activity?**
   - (Table 3 Respondent) Conservation needs to catch up with development. Need new modeling and threshold information before moving forward with any development. Need a

mechanism to transfer development rights or no development would be possible without exceeding the 20,000 units. Double check the 20,000 by-right number.

- (Table 7 Respondent) Reconvene the open space advisory committee to prioritize protected lands in the watershed. This was not done adequately since the original accord was finalized. This protected land should be done independently (in addition to) land protected as part of the 50% open space requirement for new development.
- (Table 1 Respondent) Highlighting priorities for stream and other environmental priorities on the map.
- (Table 4 Respondent) Make sure land use is informed by predicted impacts to specific sections of watershed and water quality.

Appendix C. Darby Stormwater Permit, Select Stormwater Requirements

G. SWP3 Requirements.

2.e. Post-Construction Stormwater Management Requirements. So that receiving stream's physical, chemical and biological characteristics are protected, and stream functions are maintained, post-construction stormwater practices shall provide long-term management of runoff quality and quantity. To meet the post-construction requirements of this permit, the SWP3 shall contain a description of the post-construction BMPs that will be installed during construction for the site and the rationale for their selection. The rationale shall address the anticipated impacts on the channel and floodplain morphology, hydrology, and water quality. Post-construction BMPs cannot be installed within a surface water of the state (e.g., wetland or stream) unless it is authorized by a CWA 401 water quality certification, CWA 404 permit, or Ohio EPA non-jurisdictional wetland/stream program approval. Note: local jurisdictions may have more stringent post-construction requirements.

i. Operation and Maintenance Plans. Detail drawings and maintenance plans shall be provided for all post-construction BMPs in the SWP3. Maintenance plans shall be provided by the permittee to the post-construction operator of the site (including homeowner associations) upon completion of construction activities (prior to termination of permit coverage). Maintenance plans shall ensure that pollutants collected within structural post-construction practices are disposed of in accordance with local, state, and federal regulations. To ensure that stormwater management systems function as designed and constructed, the post-construction operation and maintenance plan shall be a stand-alone document which contains:

1) a designated entity for stormwater inspection and maintenance responsibilities;
2) the routine and non-routine maintenance tasks to be undertaken;
3) a schedule for inspection and maintenance;
4) any necessary legally binding maintenance easements and agreements;
5) construction drawings or excerpts showing the plan view, profile and details of the outlet(s);
6) a map showing all access and maintenance easements; and
7) for table 4a/4b practices, provide relevant elevations and associated volumes that dictate when removal of accumulated sediments must occur.

Permittees are responsible for assuring all post-construction practices meet plan specifications and intended post-construction conditions have been met (e.g., sediment removed from, and sediment storage restored to, permanent pools, sediment control outlets removed and replaced with permanent post-construction discharge structures, and all slopes and drainageways permanently stabilized), but are not responsible under this permit for operation and maintenance of post-construction practices once coverage under this permit is terminated.

iv. Post-Construction BMPs. For all construction activities that will disturb two or more acres of land or will disturb less than two acres that are part of a larger common plan of development or sale which will disturb two or more acres of land, the post construction BMP(s) chosen shall be able to manage stormwater runoff for protection of stream channels, stream stability, and water quality. The BMP(s) chosen must be compatible with site and soil conditions.

Structural post-construction stormwater treatment practices shall be incorporated into the permanent drainage system for the site. The BMP(s) chosen must be sized to treat the water quality volume (WQv) and ensure compliance with Ohio's Water Quality Standards in OAC Chapter 3745-1. The WQv shall be equivalent to the volume of runoff from a 0.90-inch rainfall and shall be determined using the following equations:

WQv = Rv * P * A / 12 (Equation 1)
where:
WQv = water quality volume in acre-feet
Rv = the volumetric runoff coefficient calculated using equation 2
P = 0.90-inch precipitation depth
A = area draining into the BMP in acres
Rv = 0.05 + 0.9i (Equation 2)
where i = fraction of post-construction impervious surface

Ohio EPA recommends BMPs be designed according to the methodology described in the most current edition of the Rainwater and Land Development manual or in another design manual acceptable for use by Ohio EPA and in accordance with ORC Chapter 4733. The BMPs listed in Tables 4a and 4b below are considered standard BMPs approved for general use. However, communities with a regulated MS4 may limit the use of some of these BMPs. BMPs shall be designed such that the drain time is long enough to provide treatment but short enough to provide storage for successive rainfall events and avoid the creation of nuisance conditions. The outlet structure for the post-construction BMP shall not discharge more than the first half of the WQv in less than one-third of the minimum drain time listed in Table 4a. The WQv is the

volume of stormwater runoff that must be detained by a post-construction practice as specified by the most recent edition of the Rainwater and Land Development manual.

Post-construction practices shall be sized to treat 100% of the WQv associated with their contributing drainage area. If there is an existing post-construction BMP that treats runoff from the disturbed area and the BMP meets the post-construction requirements of this permit, no additional post-construction BMP will be required. A regional stormwater BMP may be used to meet the post-construction requirement if: (1) the BMP meets the design requirements for treating the WQv; and (2) a legal agreement is established through which the regional BMP owner or operator agrees to provide this service in the long term. Design information for such facilities such as contributing drainage areas, capacities, elevations, outlet details and drain times shall be included in the SWP3.

Table 21 Darby Stormwater Permit - Table 4a Extended Detention Post-Construction Practices with Minimum Drain Times

Table 4a Extended Detention Post-Construction Practices with Minimum Drain Times	
Infiltration Practices	Maximum Drain Time of WQv
Bioretention [1,2,3]	24 hours
Infiltration Basin[2,3]	24 hours
Infiltration Trench[3,4]	48 hours
Permeable Pavement – Infiltration[3]	48 hours
Underground Storage Facility – Infiltration[3,4,5]	48 hours
Sand Filter - Extended Detention[1, 6]	24 hours

Notes:
1. The outlet structure shall not discharge more than the first half of the WQv in less than one-third of the minimum drain time.
2. Provide a permanent pool with a minimum volume equal to the WQv and an extended detention volume above the permanent pool equal to the WQv.
3. An additional volume equal to 20 percent of the WQv shall be incorporated into the BMP for sediment storage.
4. Dry extended detention basins must include a forebay and a micropool each sized at a minimum of 0.1 x WQv and a protected outlet, or include acceptable pretreatment and a protected outlet.

5. Underground storage must have pretreatment for removal of suspended sediments included in the design and documented in the SWP3. This pretreatment shall concentrate sediment in a location where it can be readily removed. For non-infiltrating, underground extended detention systems, pretreatment shall be at least 50% effective at capturing total suspended solids according to the testing protocol established in the Alternative Post-Construction BMP Testing Protocol.
6. The WQv ponding area shall completely empty between 24 and 72 hours.

Table 22 Darby Stormwater Permit - Table 4b Infiltration Post-Construction Practices with Maximum Drain Times, Table A-3 (Appendix A) Land Use Definitions

Infiltration Practices	Maximum Drain Time of WQv
Bioretention [1,2,3]	24 hours
Infiltration Basin[2,3]	24 hours
Infiltration Trench[3,4]	48 hours
Permeable Pavement – Infiltration[3]	48 hours
Underground Storage Facility – Infiltration[3,4,5]	48 hours

Notes:
1. Bioretention soil media shall have a permeability of approximately 1 – 5 in/hr. Meeting the soil media specifications in the Rainwater and Land Development manual is considered compliant with this requirement. Bioretention cells must have underdrains unless in-situ conditions allow for the WQv (surface ponding) plus the bioretention soil (to a depth of 24 inches) to drain completely within 48 hours.
2. Infiltrating practices with the WQv stored aboveground (bioretention, infiltration basin) shall fully drain the WQv within 24 hours to minimize nuisance effects of standing water and to promote vigorous communities of appropriate vegetation.
3. The SWP3 shall demonstrate the design infiltration rate values are derived from site- specific measurements obtained through field tests of the in-situ soil for practices designed to infiltrate the WQv.
4. Subsurface practices designed to fully infiltrate the WQv (infiltration trench, permeable pavement with infiltration, underground storage with infiltration) shall empty within 48 hours to recover storage for subsequent storm events.

1. Underground storage systems with infiltration must have adequate pretreatment of suspended sediments included in the design and documented in the SWP3 in order to minimize clogging of the infiltrating surface. Pretreatment shall concentrate sediment in a location where it can be readily removed. Examples include media filters situated upstream of the storage or other suitable alternative approved by Ohio EPA. For infiltrating underground systems, pretreatment shall be at least 80% effective at capturing total suspended solids according to the testing protocol established in the Alternative Post-Construction BMP Testing Protocol.

Table A-3 (Appendix A) Land Use Definitions	
Land Use	Definition
Woods / Forest	Areas dominated by trees. Woods are protected from grazing and litter and brush adequately cover the soil.
Brush	Brush, weeds, grass mixture where brush is the major element and more than 75% of the ground is covered.
Meadow	Continuous grass, protected from grazing, generally mowed for hay.
Managed Wood	Orchards, tree farms, and other areas planted or maintained for the production of fruits, nuts, berries, or ornamentals.
Pasture	Pasture, grassland, or range where at least 50% of the ground is covered and the area is not heavily grazed.
Row Crop	Areas used to produce crops, such as corn, soybeans, vegetables, tobacco, and cotton.
Urban Grasses	Vegetation (primarily grasses) planted in developed settings for recreation, erosion control, or aesthetic purposes. Examples include parks, lawns, golf courses, airport grasses, and industrial site grasses.
Residential	Areas with a mixture of constructed materials and vegetation; the average % imperviousness and number of dwelling units per acre to determine the appropriate density is specified.
Commercial	Includes infrastructure (e.g. roads, railroads, etc.) and all highly developed areas not classified as High Intensity Residential.

vi. Offsite Mitigation of Post-Construction. Ohio EPA may authorize the offsite mitigation of the post-construction requirements of Part III.G.2.e of this permit on a case by case basis provided the permittee clearly demonstrates the BMPs listed in Tables 4a and 4b are not feasible and the following criteria are met: (1) a maintenance agreement or policy is established to ensure operations and treatment long-term; (2) the offsite location discharges to the same HUC-12 watershed unit; and (3) the mitigation ratio of the WQv is 1.5 to 1 or the WQv at the point of retrofit, whichever is greater. Requests for offsite mitigation must be received prior to receipt of the NOI application.

ix. Runoff Reduction Practices. The size of structural post-construction practices used to capture and treat the WQv can be reduced by incorporating runoff reducing practices into the design of the site's drainage system. The approach to calculate and document runoff reduction is detailed in the Rainwater and Land Development Manual. BMP-specific runoff reduction volumes are set by specifications in the Rainwater and Land Development Manual for the following practices:

- Impervious surface disconnection
- Rainwater harvesting
- Bioretention
- Infiltration basin
- Infiltration trench
- Permeable pavement with infiltration
- Underground storage with infiltration
- Grass swale
- Sheet flow to filter strip
- Sheet flow to conservation area

A runoff reduction approach may be used to meet the groundwater recharge requirements in the Big Darby Creek Watershed. The runoff reduction practices used for groundwater recharge may be used to reduce the WQv requirement, see appendix A for details on groundwater recharge requirements.

In order to promote the implementation of green infrastructure, the Director [of Ohio EPA] may consider the use of runoff reducing practices to demonstrate compliance with Part III.G.2.e of this permit for areas of the site not draining into a common drainage system of the site, e.g., sheet flow from perimeter areas such as the rear yards of residential lots, low density development scenarios, or where the permittee can demonstrate that the intent of pollutant

removal and stream protection, as required in Part III.G.2.e of this permit is being addressed through non-structural post-construction BMPs based upon review and approval by Ohio EPA.

x. Use of Alternative Post-Construction BMPs. This permit does not preclude the use of innovative or experimental post-construction stormwater management technologies. Permittees shall request approval from Ohio EPA to use alternative post-construction BMPs on a case-by-case basis. The permittee shall submit an application (form maintained on the Ohio EPA Website) to Ohio EPA for any proposed alternative post-construction BMP and secure any approval from Ohio EPA before permittees submit an NOI for permit coverage. Where the development project is located within a regulated municipal separate storm sewer system (MS4) community, the use of an alternative practice requires pre-approval by the MS4 before submittal of the application to Ohio EPA. Ohio EPA requires that approvals for alternative post-construction BMPs are finalized.

To use an alternative post-construction BMP, the permittee must demonstrate that use of a BMP listed in Tables 4a and 4b is not feasible and the proposed alternative post-construction BMP meets the following three criteria:

a. Alternative post-construction BMPs must be capable of providing sustained, long-term treatment of stormwater. It must be durable and maintainable in accordance with industry standards.
b. Alternative post-construction BMPs shall previously have been tested to confirm stormwater treatment efficacy equivalent to those BMPs listed in Tables 4a and 4b using the protocol described in this permit. BMP testing may include laboratory testing, field testing, or both. For an alternative BMP to be acceptable, the test results must demonstrate that the minimum treatment rate is 80% TSS removal at the design flow rate for laboratory tested BMP. Field test results must demonstrate the minimum treatment rate is 80% TSS removal for influent concentrations equal to or greater than 100 mg/L TSS. If the influent concentration to the proposed alternative BMP is less than 100 mg/L TSS in the field, then the BMP must achieve an average effluent concentration less than or equal to 20 mg/L TSS.
c. The discharge rate from the proposed alternative practice shall be reduced to prevent stream bed erosion and protect the physical and biological stream integrity unless there will be negligible hydrological impact to the receiving surface water of the state. Discharge rate is considered to have a negligible impact if the permittee can demonstrate that the entire WQv is recharged to groundwater, the larger common plan of development or sale will create less than one acre of impervious

surface or the stormwater drainage system of the development discharges directly into a large river with drainage area equal to 100 square miles or larger upstream of the development site or to a lake where the development area is less than 5 percent of the watershed area, unless a TMDL has identified water quality problems into the receiving surface waters of the state. If the conditions above that minimize the potential for hydrological impact to the receiving surface water of the state do not exist, then the alternative post-construction BMP must prevent stream erosion by reducing the flow rate from the WQV. In such cases, discharge of the WQV must be controlled. A second stormwater BMP that provides extended detention of the WQv may be needed to meet the post-construction criteria.

Alternative BMPs that utilize treatment processes such as filtering or centrifugal separation, rather than a detention and settling volume, must be designed to ensure treatment of 90 percent of the average annual runoff volume. For the design of these BMPs, the water quality flow rate (WQF) shall be determined utilizing the Rational Method (Equation 4) with an intensity (i) appropriate for the water quality precipitation event. This intensity shall be calculated using the table given in Appendix C.

WQF = C * i * A (Equation 4)
Where
WQF = water quality flow rate in cubic feet per second (cfs)
C = rational method runoff coefficient
i = intensity (in/hr)
A = area draining to the BMP (acres)

Appendix A Big Darby Creek Watershed

A.4 Post-Construction Stormwater Management Selection.

For all construction activities authorized under this permit that fall within the watershed of the Big Darby Creek, a Table 4b practice shall be used to treat stormwater runoff for pollutants, to reduce adverse impacts on receiving waters, and to further support groundwater recharge if feasible.

A.5 Riparian Setback Requirements.

… No structural sediment controls (e.g., the installation of sediment barriers or a sediment settling pond) or structural post-construction controls shall be used in a surface water of the State or the delineated setback corridor.

Appendix D. Crosswalk BDAA and Appendix 3-3

Table 23 Crosswalk BDAA and Appendix 3-3

Appendix 3-3 Criterion	Subsection	Subsection Title	BDAA Changes / Modifications
Criterion 0		Review of Wastewater Projects	No change
Criterion 1: Adoption of Institutional Mechanisms		Adoption of Institutional Mechanisms	No change
Criterion 2		Local Stream Setbacks and Associated Development Restrictions	
	Criterion 2a	Applicable Streams	Include all ephemeral stream, not limited to jurisdictional ephemeral streams
	Criterion 2a	Applicable Streams	Explicit definition of ephemeral, perennial, and intermittent streams
	Criterion 2b	Size of the Setback Distance	Increase minimum Stream Corridor Protection Zone from 100ft to 150ft
	Criterion 2b	Size of the Setback Distance	Increase minimum Stream Corridor Protection Zone for stream restorations from 100ft to 150ft
	Criterion 2c	Permitted Uses	Move arterial streets from permitted to conditional uses; require pervious surface unless technically or commercially infeasible
	Criterion 2d	Conditional Uses	Require pervious surface for driveways in SCPZ
	Criterion 2d	Conditional Uses	Add invasive species removal as a conditional use
	Criterion 2d	Conditional Uses	Add green stormwater best management practices outside the Stream Corridor Protection Zone as a conditional use
	Criterion 2d	Conditional Uses	Add location of any small, local waste treatment system or discharge of wastewater from the same as a prohibited use
	Criterion 2e	Prohibited Uses	Add any grey stormwater infrastructure
	Criterion 2f	Delineation of the Riparian Setback	No change

Appendix 3-3 Criterion	Subsection	Subsection Title	BDAA Changes / Modifications
	Criterion 2g	Replacement of Damaged Trails	No change
	Criterion 2h	Inspection of the Riparian Setback	Added the following requirement for inspections -- [each jurisdiction shall] or shall, as a condition of conveying the ownership of these areas to another party, require a plan to be adopted by the third-party entity responsible for the areas. Plans must define how often such inspections will be conducted.
Criterion 3		Preservation of Conservation Areas	Change "Secondary Conservation Areas" as areas that must be conserved unless technically or commercially infeasible rather than should be conserved
	Criterion 3a	Primary Conservation Areas	Add existing publicly or privately held open space to the definition of Primary Conservation Areas
	Criterion 3a	Primary Conservation Areas	Add to the definition of wetlands for Primary Conservation Area -- including new setbacks based on wetland quality
	Criterion 3a	Primary Conservation Areas	Add to the definition of healthy forest for Primary Conservation Area -- including a 25-foot setback from the edges
	Criterion 3b	Secondary Conservation Areas	Add to the definition of healthy forest for Secondary Conservation Area -- includes tree lines
	Criterion 3b	Secondary Conservation Areas	Add to the definition of Secondary Conservation Area -- Impervious area within 300’ on each side of the stream centerline, excluding the SCPZ
	Criterion 3b	Secondary Conservation Areas	Add to the definition of Secondary Conservation Area -- Extended headwater zones
	Criterion 3b	Secondary Conservation Areas	Add to the definition of Secondary Conservation Area other significant natural features -- such as critical groundwater recharge zones and non-jurisdictional ephemeral features

Appendix 3-3 Criterion	Subsection	Subsection Title	BDAA Changes / Modifications
	Criterion 3c	Conservation Requirements for Infiltration	Add to infiltration requirements -- Groundwater recharge must take place on the development site, not mitigated offsite. The Construction General Permit provides groundwater recharge requirements and calculations to meet these targets. The Ohio RPA Final General Construction Permit (OHC000006) is incorporated in relevant part by reference here. The Amended Plan must be updated with future iterations of the Permit, Appended 3-3, and other similar documents.
	Criterion 3d-f	Permitted, Conditional, Prohibited Uses	Replace Secondary Conservation Area permitted, conditional and prohibited uses with uses for Primary Conservation Area
	Criterion 3g	Ownership	Limits HOA ownership of development-related open space -- provided reliance on homeowners' associations or condominium associations shall be approved on a case-by-case basis only if options 2 and 3 are infeasible:
	Criterion 3h	Permanent Protection	No change
	Criterion 3i	Contiguity	No change
	Criterion 3j	Design and Review	Add the following to design and review -- Identify contiguous current and potential open space.
	Criterion 3k	Management	Add the following to open space management -- Prior to transferring Preserved Conservation Areas and other open space, the developer must conduct a site inspection, document the condition of the areas, and have an approved maintenance plan in place to ensure all Preserved Conservation Areas and other open space will be properly maintained in perpetuity
Criterion 4		Comprehensive Stormwater Management	No change

Appendix 3-3 Criterion	Subsection	Subsection Title	BDAA Changes / Modifications
Criterion 5		Options for "as protective as" Local Regulations and Individual Projects	
	Criterion 5a	Alternative Local Regulations	The Big Darby Accord jurisdictions agree to request approval of this Amended Plan under Criterion 5 [Options for "as protective as" Local Regulations and Individual Projects] if necessary.
	Criterion 5b	Alternative Performance Criteria for Individual Projects	No change
Criterion 6		Options for Projects when Local Regulations are Absent	No change
Criterion 7		Recommended Naturalizing Riparian Areas and Improved Conservation Practices for Agricultural and Undeveloped Lands	Add the following -- To advance identified water quality goals, the Big Darby Accord jurisdictions will partner with subject matter experts, stakeholders, landowners, and other interested parties to develop these 9-Element Nonpoint Source Implementation Strategies (NPS-IS) plan(s). The plan(s) will focus primarily on reducing nutrient loading and TSS from agriculture to meet the requirements of the Ohio EPA Total Maximum Daily Loads for the Big Darby Creek Watershed.
Criterion 8		Installing Clay Check Dams along Sewer Trenches	No change

Appendix E. Additional Tables and Figures

E.1. Riparian Width

Table 24 Riparian Width

REFERENCE FOR RIPARIAN BUFFER RESEARCH	WIDTH (M)	WIDTH (FT)	PURPOSE
Raymond D. Semlitsch, J. Russell Bodie, Biological Criteria for Buffer Zones around Wetlands and Riparian Habitats for Amphibians and Reptiles, Conservation Biology, Volume17, Issue5, October 2003, Pages 1219-1228	205	670	Biodiversity (mainstem), variable width model
US EPA, Riparian Buffer Width, Vegetative Cover, and Nitrogen Removal Effectiveness Review Of Current Science and Regulations, Mean, All Studies, 2005	112	367	Nitrogen removal (90%, surface flows)
Pascale M. Biron, Thomas Buffin-Be´langer, Marie Larocque, Gue´nole´ Chone´, Claude-Andre´Cloutier, Marie-Audray Ouellet, Sylvio Demers, Taylor Olsen, Claude Desjarlais, Joanna Eyquem, Freedom Space for Rivers: A Sustainable Management Approach to Enhance River Resilience, Environmental Management (2014), 54:1056–1073, DOI 10.1007/s00267-014-0366-z	101	331	Habitat protection (mainstem), variable width model, forested
Ellen Hawes, Mark Smith, Riparian Buffer Zones: Functions and Recommended Widths, 2005, Environmental Science.	100	330	Habitat protection, sediment, pesticides
Pennsylvania Land Trust Association, A Scientific Foundation for Shaping Riparian Buffer Protection Regulations. Website, undated. library.weconservepa.org/guides/132-a-scientific-foundation-for-shaping-riparian-buffer-protection-regulations	100	330	Habitat protection, sediment, pesticides
Robert Miltner, Ecological Data Analyst, Ohio EPA, High Functioning Urban Streams, Urban Model for Columbus, 2025.	100	330	Biodiversity, forested

Laurie B. Marczak, Takashi Sakamaki, Shannon L. Turvey, Isabelle Deguise, Sylvia L. R. Wood, John S. Richardson, Are forested buffers an effective conservation strategy for riparian fauna? An assessment using meta-analysis, Ecological Applications, Volume 20, Issue 1, January 2010, Pages 126-134	>100	330	Watershed protection, biodiversity
Raymond D. Semlitsch , Brian D. Todd , Sean M. Blomquist , Aram J. K. Calhoun , J. Whitfield Gibbons , James P. Gibbs , Gabrielle J. Graeter , Elizabeth B. Harper , Daniel J. Hocking , Malcolm L. Hunter, Jr. , David A. Patrick , Tracy A. G. Rittenhouse , Betsie B. Rothermel, Effects of Timber Harvest on Amphibian Populations: Understanding Mechanisms from Forest Experiments, BioScience, Volume 59, Issue 10, November 2009, Pages 853–862, https://doi.org/10.1525/bio.2009.59.10.7	>100	330	Protection of sensitive biodiversity
Graziano MP, Deguire AK, Surasinghe TD. Riparian Buffers as a Critical Landscape Feature: Insights for Riverscape Conservation and Policy Renovations. Diversity. 2022; 14(3):172. https://doi.org/10.3390/d14030172	>100	330	Variable width model
Chesapeake Bay Program, Forestry Workgroup, Recommendations of the Expert Panel to Reassess Removal Rates for Riparian Forest and Grass Buffers Best Management Practices. October 2014	91	300	Sediment
Deanna H. Olson, Jeffery B. Leirness, Patrick G. Cunningham, E. Ashley Steel, Riparian buffers and forest thinning: Effects on headwater vertebrates 10years after thinning, Forest Ecology and Management, Volume 321, 2014, Pages 81-93, ISSN 0378-1127, https://doi.org/10.1016/j.foreco.2013.06.013.	90	295	
Rosamar Ayala-Torres, Lee H. Dietterich, Samantha Wiest, S. Kyle McKay, Developing predictive models of riparian buffer efficacy with meta-analysis, Environmental Challenges, Volume 20, 2025, 101258, ISSN 2667-0100, https://doi.org/10.1016/j.envc.2025.101258.	79.5	260	High biodiversity; regression model for width; forested

Rosamar Ayala-Torres, Lee H. Dietterich, Samantha Wiest, S. Kyle McKay, Developing predictive models of riparian buffer efficacy with meta-analysis, Environmental Challenges, Volume 20, 2025, 101258, ISSN 2667-0100, https://doi.org/10.1016/j.envc.2025.101258.	75	246	Pollutant removal (75%); regression model for width
Ellen Hawes, Mark Smith, Riparian Buffer Zones: Functions and Recommended Widths, 2005, Environmental Science.	70	230	Climate adaptation and resilience
Rosamar Ayala-Torres, Lee H. Dietterich, Samantha Wiest, S. Kyle McKay, Developing predictive models of riparian buffer efficacy with meta-analysis, Environmental Challenges, Volume 20, 2025, 101258, ISSN 2667-0100, https://doi.org/10.1016/j.envc.2025.101258.	64	204	Pollutant removal (TN, P, Sediment)
Paul M. Mayer, Steven K. Reynolds Jr., Marshall D. McCutchen, & Timothy J. Canfield, Meta-Analysis of Nitrogen Removal in Riparian Buffers, Journal of Environmental Quality, Volume 36, Issue 4, July 2007, Pages 1172-1180	>50	165	Nitrogen Removal
US EPA, National Risk Management Research Laboratory, Effectiveness of Riparian Buffers for Managing Nitrogen. 2010	>50	165	Nitrogen removal
United States Department of Agriculture, Natural Resources Conservation Service, Conservation Practice Standard Riparian Forest Buffer, Code 391. October 2020	50	165	Habitat protection
Chesapeake Bay Program, Forestry Workgroup, Recommendations of the Expert Panel to Reassess Removal Rates for Riparian Forest and Grass Buffers Best Management Practices. October 2014	49	150	Water quality
Bernard W. Sweeney & J. Denis Newbold, Streamside Forest Buffer Width Needed to Protect Stream Water Quality, Habitat, and Organisms: A Literature Review, Journal of the American Water Resources Association (JAWRA), Volume 50, Issue 3, June 2014, Pages 560-584	>40	131	Physical, chemical, climate change

L. Lind, E.M. Hasselquist, H. Laudon, Towards ecologically functional riparian zones: a meta-analysis to develop guidelines for protecting ecosystem functions and biodiversity in agricultural landscapes. J. Environ. Manage., 249 (. 2019), Article 109391, 10.1016/j.jenvman.2019.109391	>30	100	Protect biodiversity, minimal width

AVERAGE	**84**	**274**
MEDIAN	**90**	**295**

E.2. Regional Population Estimates, 2050, MORPC, ODOD, Census

Table 25 Regional Population Estimates, 2050, MORPC, ODOD, Census

COUNTY	2050 MORPC (EST)	2050 ODOD (EST)	2050 CENSUS (EST)	MORPC vs CENSUS	MORPC vs CENSUS %	MORPC vs ODOD	MORPC vs ODOD %
Delaware	397,697	328,905	342,216	55,481	15.00%	68,792	18.94%
Fairfield	214,880	181,913	204,599	10,281	4.90%	32,967	16.62%
Fayette	32,360	25,310	31,457	903	2.83%	7,050	24.45%
Franklin	1,665,914	1,487,885	1,581,155	84,759	5.22%	178,029	11.29%
Hocking	26,953	24,734	27,002	(49)	-0.18%	2,219	8.59%
Knox	69,790	62,359	69,149	641	0.92%	7,431	11.25%
Licking	236,202	210,522	220,110	16,092	7.05%	25,680	11.50%
Logan	47,611	41,663	47,941	(330)	-0.69%	5,948	13.33%
Madison	58,084	41,909	54,826	3,258	5.77%	16,175	32.35%
Marion	64,405	55,898	65,118	(713)	-1.10%	8,507	14.14%
Morrow	42,389	30,237	40,975	1,414	3.39%	12,152	33.46%
Perry	39,542	29,737	38,217	1,325	3.41%	9,805	28.31%
Pickaway	79,877	63,496	76,329	3,548	4.54%	16,381	22.85%
Ross	74,602	66,099	75,484	(882)	-1.18%	8,503	12.09%
Union	96,705	78,508	96,998	(293)	-0.30%	18,197	20.77%
TOTAL	**3,147,011**	**2,729,175**	**2,971,578**	**175,433**	**5.73%**	**417,836**	**14.22%**

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Yoder C. (1995). Policy issues and management applications of biological criteria, pp. 327-343 (Chapter 21). In W.S. Davis and T. Simon (eds.). Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making. Lewis Publishers, Boca Raton, FL.

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Appendix G. Endnotes

[1] https://www.dispatch.com/story/news/2008/01/14/zoo-exhibit-to-spotlight-big/23350301007/ accessed 03/06/2026.

[2] Mid-Ohio Regional Planning Commission. Regional Housing Strategy. Columbus, OH: MORPC, 2025. https://www.morpc.org/wp-content/uploads/2025/09/RHS_Final_PRINT-VERSION_8_3.pdf

[3] Ohio Department of Development. 2023. State of Ohio Population Projections: 2020–2050.

[4] Big Darby Accord Watershed Master Plan, Chapter 1.0 – Introduction, pg 1-5

[5] See, for instance, Attachment A in Appendix 3-3.

[6] Recommended statement is, "As part of the Big Darby Accord Watershed Master Plan, [jurisdiction] adopts riparian corridor protection institutional controls, including riparian setback management, to do all of the following throughout our portion of the Big Darby Accord Planning Area: maintain and improve biological diversity and aquatic life use designations; achieve sediment, pollutant, and nutrient removal; and maintain stream functionality."

[7] See, for reference, the Ohio EPA, "Loading Analysis Plan and Supporting Data Acquisition Needed for the Big Darby Creek Basin, Total Maximum Daily Load Development. Ohio EPA Technical Report AMS/2014-DARBY-3." Division of Surface Water, Assessment and Modeling Section, February 2021. dam.assets.ohio.gov/image/upload/epa.ohio.gov/Portals/35/tmdl/LAPs/Big%20Darby%20Creek/BigDarby_LAP.pdf

[8] Currently, aquatic life uses for Hamilton and Clover Groff are not EWH. WWH is only applicable to the Hellbranch HUC-12 to the confluence of the Hamilton Run and Clover Groff Run. MWH is only applicable to non-attaining reaches in the planning area, which are currently documented in the Hamilton Run and Clover Groff Run.

[9] "Elements of a State Water Monitoring and Assessment Program." United States Environmental Protection Agency, March 2003. The 10 elements are as follows; 1. Monitoring Program Strategy; 2. Monitoring Objectives; 3. Monitoring Design; 4. Core and Supplemental Water Quality Indicators; 5. Quality Assurance; 6. Data Management; 7. Data Analysis/Assessment; 8. Reporting; 9. Programmatic Evaluation; and 10. General Support and Infrastructure Planning. Integrated Priority System (IPS) Study Phase 1, Spatial Monitoring Design, pp. 13-19.

[10] See, for reference, the Ohio EPA, "Loading Analysis Plan and Supporting Data Acquisition Needed for the Big Darby Creek Basin, Total Maximum Daily Load Development. Ohio EPA Technical Report AMS/2014-DARBY-3." Division of Surface Water, Assessment and Modeling Section, February 2021.

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[11] For an accessible overview of adaptive management, see the United States Forest Service, Ecosystem Management Coordination, Adaptive Management, Monitoring, and Assessment. fs.usda.gov/about-agency/emc/amma

[12] United States Environmental Protection Agency. Overview of Total Maximum Daily Loads (TMDLs). www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls

[13] The 2025 amendments to the Big Darby Accord Watershed Master Plan will include updates to the Darby Revenue Program. Jurisdictions anticipate a specific set aside for the WQM&A program as part of that update.

- [14] See Ohio Administrative Code, Chapter 3745-1, Water Quality Standards. For an accessible overview of Water Quality Monitoring and Assessment and its use by the states to track water quality goals and attainment, visit the United States EPA "Assessing and Reporting Water Quality (Questions and Answers)." See also, Ohio Water Quality Standards (OAC 3745-1) Overview," by Bob Heitzman, Ohio EPA, Division of Surface Water, April 2004. Should this program be substantially amended or superseded, Big Darby Accord partners will convene to amend these provisions in line with the new program.
- [15] See Ohio Administrative Code, Chapter 3745-1, Water Quality Standards. For an accessible overview of Water Quality Monitoring and Assessment and its use by the states to track water quality goals and attainment, visit the United States EPA "Assessing and Reporting Water Quality (Questions and Answers)." See also, Ohio Water Quality Standards (OAC 3745-1) Overview," by Bob Heitzman, Ohio EPA, Division of Surface Water, April 2004. Should this program be substantially amended or superseded, Big Darby Accord partners will convene to amend these provisions in line with the new program.

[16] "The Qualitative Habitat Evaluation Index [QHEI]: Rationale, Methods, and Application," Ohio EPA, November 6, 1989, pg. 3.

[17] Ohio Environmental Protection Agency. Primary Headwater Habitat Evaluation Manual, Version 4.1. Ohio EPA, Division of Surface Water, May 2020).

[18] Use attainment is based on using these indices together at all sites (except where the MIwb does not apply to headwater sites <20 sq mi.

[19] "The modified Iwb retains the same computational formula as the conventional Iwb developed by Gammon (1976). The difference is that any of 13 highly tolerant species, exotics, and hybrids are eliminated from the numbers and biomass components of the Iwb. However, the tolerant and exotic species are included in the two Shannon index calculations. This modification eliminates the *undesired* effect caused by high abundance of tolerant species, but retains their *desired* influence on the Shannon indices." Biological Criteria for the Protection of Aquatic Life: Volume II. Ohio Environmental Protection Agency, October 30, 1987

(Updated January 1, 1988), Appendix C-1: Modified Index of Well-Being (Iwb), A Modification of the Index of Well-Being for Evaluating Fish Communities, by Chris Yoder.

[20] The applicable third-party administrator may consider additional indicators, such as those identified within the Hierarchy of Water Indicators as discussed under "An Adequate Watershed Monitoring Program" at pp. 8-13 of the ODNR Phase I IPS Study.

[21] For an overview of Total Dissolved Solids in surface waters, see the United State Geological Survey article, "Chloride, Salinity, and Dissolved Solids." www.usgs.gov/mission-areas/water-resources/science/chloride-salinity-and-dissolved-solids

[22] See, for example, "Assessing the Impacts of Chloride and Sulfate Ions on Macroinvertebrate Communities in Ohio Streams," Robert Miltner, Ohio Environmental Protection Agency. *Water* 2021, 13(13), 1815.

[23] The 2023 Ohio Water Quality Triennial Review states, "Ohio EPA intents [sic] to initiate a rulemaking to update/adopt new aquatic life criteria for several parameters including ammonia." pg. 8. dam.assets.ohio.gov/image/upload/epa.ohio.gov/Portals/35/rules/TriennialReview_ReportAndAppendices_final.pdf

[24] "Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater (2013)." United States Environmental Protection Agency, August 2013.

[25] Ohio Department of Natural Resources Division of Wildlife. Protocol for Ohio Freshwater Mussel Surveys https://dam.assets.ohio.gov/image/upload/ohiodnr.gov/documents/wildlife/permits/dow-protocol-ohio-mussel-survey.pdf

[26] Ohio Environmental Protection Agency. Biological and Water Quality Study of the Big Darby Creek Watershed, 2014, Figure 1 and Table 2, https://dam.assets.ohio.gov/image/upload/epa.ohio.gov/Portals/35/documents/BigDarby_2014_BWQR_Final.pdf

[27] Research by Miltner identified activity within 500m of a receiving stream as most impactful to water quality. Streams smaller than headwaters (i.e., small headwater, ephemeral and intermittent) present practical challenges for enhanced site-specific monitoring.

[28] ohiodnr.gov/discover-and-learn/education-training/stream-quality-monitoring/stream-quality-volunteers

[29] epa.gov/nps/nonpoint-source-volunteer-monitoring

[30] wmao.org/content.aspx?page_id=22&club_id=259593&module_id=514567

[31] ohiowatersheds.osu.edu/resources/human-dimensions/mental-models/basic-stream-and-watershed-ecology-lesson-plans/volunteer-stream-monitoring

[32] BDART is encouraged to investigate the feasibility of an equivalent cost-per-acre for offsite

[33] See, for instance, Verdonschot, P.F.M., Verdonschot, R.C.M. The role of stream restoration in enhancing ecosystem services. *Hydrobiologia* **850**, 2537–2562 (2023). https://doi.org/10.1007/s10750-022-04918-5

[34] The original BDAWMP defined Tier 1 as land within the 100-year floodplain, wetlands, and critical groundwater recharge and pollution potential zones; and Tier 2 as highly erodible soils and wooded areas of greater than 3 acres.

[35] This amendment incorporates by reference, "Rainwater and Land Development, Chapter 1.6 – Wetland Setback, November 2022." However, the Amended Plan adds approximately 50 feet to the Setback requirements in that plan based on wetland quality. The Amended Plan setbacks are listed to the right of the manual setbacks and are as follows:

- Category 1 – 25-foot – 75-feet
- Category 2 – 75-foot – 125 feet
- Category 3 – 120-foot – 165 feet

[36] For reference, see the Ohio EPA guidance regarding Primary Headwater Streams at https://epa.ohio.gov/divisions-and-offices/surface-water/reports-data/primary-headwater-streams-in-ohio

[37] This aligns with the ODNR Scenic Rivers riparian buffer for review of public infrastructure projects.

[38] Derive Stream as Line – GIS model based on DPS/USGS Lidar Data; 10-acre minimum drainage with connections to FSWCD non-tile drainage system (rivers/creeks/road swales); edited to remove segments that are short and/or unconnected to stream network. Note that based on GIS data, some of these areas are more significant watercourses than others, which may be affected by the presence of working or nonworking field tiles.

[39] Developers and jurisdictions may use mapping such as ODNR DRASTIC maps of groundwater vulnerability, soil type mapping, and Ohio EPA Ambient Ground Water Monitoring Network.

[40] The original BDAWMP gives differing definitions and rationale for Tier 3 including, "…considered important for protection because these areas allow for the creation of linkages among all the components of the land conservation strategy - as well as suitable areas for parkland." (ii); "...provides buffers and linkages around areas that have been associated with unique habitat, including enhancing the riparian corridors along some stream corridors" (3-7); and "Endangered habitat sensitive zones, proposed parks, corridors and connections, trails" (3-13).

[41] Definitions are in the State of Ohio Water Quality Management Plan, Appendix 3-3, for all permitted, conditional, and prohibited uses.

[42] Mitigation must meet the requirements of the Construction General Permit.

[43] Applicable waste treatment systems include a cesspool, sanitary ditch, private sewer, privy, septic tank, leach field, semipublic disposal system as defined in ORC 3709.085(B)(1)(a), onsite wastewater treatment system, or other sanitary outlet, including a combined sewer overflow.

[44] See Construction General Permit.

[45] Numerous sections of the BDAWMP provide a history of this subwatershed, description of environmental degradation, and recommendations of previous planning efforts, which informed the Plan.

[46] See BDAWMP Section 3.6.1 Hellbranch Run Watershed Restoration Opportunities.

[47] This work will focus on non-construction related NPDES permittees. Future work may deal with construction stormwater management separately.

[48] https://www.epa.gov/national-aquatic-resource-surveys/streamcat-dataset-readme. Accessed October 14, 2025.

[49] The context of presenting these criteria is with respect to local governments implementing stream setbacks. The Darby SW permit issued by Ohio EPA requires stream setbacks and has other requirements that apply throughout the entire watershed.

[50] To see the interaction of these options when establishing the SCPZ, see for instance the Ohio EPA Big Darby Watershed GIS tool at geo.epa.ohio.gov/portal/apps/webappviewer/index.html?id=98b432e5700b49e191580ced0df30a8d

[51] Meta-analysis of current scientific literature shows a minimum forested buffer width of >40 meters to address nitrogen, dissolved oxygen, ammonia, sediment, stream stability, temperature, and aquatic life uses. “Streamside Forest Buffer Width Needed to Protect Stream Water Quality, Habitat, and Organisms: A Literature Review.” JAWRA Journal of the American Water Resources Association, June 2014. A buffer of 100-150 feet is needed for full benefit, with at least 50-75 feet forested, according to US EPA guidance. “Stormwater Best Management Practice Riparian/Forested Buffer.” US EPA 2021. Based on this and other research, minimum buffer in the Big Darby Accord Planning Area must exceed the minimum established in the State 208 Plan or Darby SW Permit.

[52] The equation in the State 208 Plan exceeds the original BDAWMP formula, which was $W = 129 \times D.A.^{0.43}$ (for DA less than or equal to 16 square miles).

[53] ORC 6111.311(J) states, “"Width of a streamway" or "WSW" means the width of the streamway, expressed in feet, and calculated as $147 \times DA^{0.38}$.” This is less protective than Appendix 3-3 or the Darby SW Permit.

[54] The Rainwater and Land Development Manual, Section 1.6, requires, “Maintain riparian forest cover, preferably of native species, over at least the first 50 feet of the setback immediately adjacent to the channel on each bank. The remaining setback area may include vegetation compatible with the surrounding land uses such as grass or meadow provided that the setback characteristics are not impaired.”

[55] Adapted, in part, from the Columbus Stormwater Drainage Manual, “Review: Wetland protection recommendations to the Big Darby Accord Advisory Panel.” January 14, 2025, by Anthony Sasson and Brian Gara; and “Wetland protection recommendations to the Big Darby

Accord Advisory Panel for implementation of the Big Darby Accord Watershed Master Plan." December 27, 2020, by Anthony Sasson, Margaret Malone and Vincent Tremante.

[56] OAC Rule 3745-1-02(B)(107)

[57] The terms "setback" and "buffer" in relation to wetlands are used interchangeably in the Amended Plan.

[58] Ohio Rapid Assessment Method for Wetlands (ORAM) https://epa.ohio.gov/divisions-and-offices/surface-water/reports-data/wetland-ecology

[59] Ohio Interagency Review Team. 2020. Guidelines for Wetland Mitigation Banking and In-Lieu Fee Programs in Ohio, Version 2.0
https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll11/id/6537

[60] See http://partnersinprojectgreen.com/what-are-halophytes/ accessed 01/06/2026; and Nair G. Sarath, Palliyath Sruthi, A.M. Shackira, Jos T. Puthur, Chapter 16 - Halophytes as effective tool for phytodesalination and land reclamation, ditor(s): Tariq Aftab, Khalid Rehman Hakeem, Frontiers in Plant-Soil Interaction, Academic Press, 2021, Pages 459-494, ISBN 9780323909433, https://doi.org/10.1016/B978-0-323-90943-3.00020-1

[61] "What Is Zoning Reform and Why Do We Need It?" Planning Magazine, American Planning Association. 2023.

[62] "Why By-Right Affordable Housing in California Is the Right Thing To Do." Terner Center for Housing Innovation, University of California at Berkley. 2016.

[63] Chesapeake Bay Foundation. *Water Pollution in the Chesapeake Bay.* Annapolis, MD: Chesapeake Bay Foundation.
https://www.envirothonpa.org/pdfs/WaterPollutionintheChesapeakeBay.pdf

[64] See Ohio EPA General Construction Permit, including Appendix A for Darby prescriptions.

[65] United States Environmental Protection Agency, Urbanization Stormwater Runoff.
www.epa.gov/caddis/urbanization-stormwater-runoff

[66] Based on consensus within research showing impacts to water quality with Directly Connected Impervious Area exceeding 10% for a development site.

[67] See Rainwater and Land Development Chapter 2.1 to 2.5, and Ohio EPA Runoff Reduction Spreadsheet. "…cannot be the exclusive or primary post-construction stormwater management practice. It can reduce the size of centralized stormwater controls by reducing the water quality volume (WQv) as well as increasing the time of concentration for the contributing drainage area. Disconnecting impervious surfaces throughout a development treats stormwater directly at the source which is a key part of low impact stormwater management strategies."

[68] For the purposes of this amendment, "green infrastructure" is defined as an accepted practice in Tables 4a and 4b of the Ohio EPA General Construction Permit.

[69] Note the actual C value for a parcel will be determined by the Hydrologic Soil Group on that site. This provides a mean value across the four HSG in the Columbus Stormwater Drainage Manual, p2-13.

[70] Note: The 1-inch storm event was chosen for illustrative purposes. Actual modelling requirements may vary based on federal, state, and/or local requirements, such as a 10-year, 24-hour storm event criteria under the Columbus SWDM.

[71] Ohio Environmental Protection Agency, General Permit Authorization for Stormwater Discharges Associated with Construction Activities under the National Pollutant Discharge Elimination System (OHC000006), Appendix A, Part 2.

[72] Ohio Revised Code 6111.02(M)

[73] Ohio Revised Code 6111.02(C)

[74] See Ohio General Construction Permit, Appendix A, Attachment B.

[75] For background and reference, see " Columbus Private Tree Code Research Report," 03/07/2025. https://columbusrecparks.com/wp-content/uploads/2025/03/Columbus-Private-Tree-Code-Research-Report_Final_3.7.2025.pdf

[76] www.energy.gov/eere/buildings/zero-energy-ready-home-program accessed 09/22/20215

[77] Ibid.

[78] "LEED Reference Guide for Neighborhood Development." United States Green Building Council. 2014.

[79] www.epa.gov/nps/nonpoint-source-agriculture

[80] Selected References: Miller & Lyon (2021). Tile drainage causes flashy streamflow response in Ohio watersheds. Hydrological Processes. Miller et al. (2021). Tile Drainage Increases Total Runoff and Phosphorus Export. Frontiers in Water. King et al. (2014). Water balance in a tile-drained Ohio watershed. USDA ARS. Valayamkunnath et al. (2022). Modeling the Hydrologic Influence of Tile Drainage. Water Resources Research. Zhou & Margenot (2025). The double-edged sword of agricultural tile drainage. J. Hydrology. Ohio EPA (2020). Western Lake Erie Basin Nutrient TMDL Technical Report. Guzha et al. (2018). Effects of drainage on watershed hydrology. Hydrological Sciences Journal. Blann et al. (2009). Impacts of Agricultural Drainage on Aquatic Ecosystems. Ecological Applications. King et al. (2015). Phosphorus transport via tile drains. J. Environ. Qual. Fausey et al. (1995). Drainage and water quality impacts in Ohio. Transactions of ASAE.

[81] See for instance https://www.epa.gov/sites/default/files/2016-01/documents/determine-life-cycle-and-replacement-costs.pdf accessed 03/06/2026

[82] For more information, see Ohio Environmental Protection Agency FAQ at dam.assets.ohio.gov/image/upload/epa.ohio.gov/Portals/0/water/central-ohio-regional-water-study-faq.pdf accessed 08/06/2025.

[83] "Central Ohio Regional Water Study: Franklin County." Hazen and Sawyer, March 5, 2025.

[84] For a deep dive into the in-stream flow modelling to derive potential hydromodification impacts, see Central Ohio Regional Water Study, EPA SWMM Model Development.

[85] Employment information is provided for informational purposes and does not constitute Ohio EPA endorsement of this section.

[86] "Urban Land Use and Biological Quality." Robert Miltner, unpublished. June 11, 2025.

[87] Ibid.

[88] High Functioning Urban Streams" Robert Miltner, unpublished. September 1, 2025.

[89] Stream Cat modeling is built on data for headwater streams, which would only apply to Hellbranch Run and related streams of that size. Because the Amended Plan only focuses development in the Hellbranch Run subwatershed, these findings directly address and predict outcomes for these areas.

[90] National Land Cover Database Class Legend and Description. www.mrlc.gov/data/legends/national-land-cover-database-class-legend-and-description

[91] "Boosted Regression Describing Biological Scores Based on Observed Water Quality and Other Derived Environmental Variables." Robert Miltner, unpublished. July 29, 2024.

[92] See Appendix XX for more information about the 300' riparian protection area

[93] https://dam.assets.ohio.gov/image/upload/epa.ohio.gov/Portals/35/tmdl/Final-2022_23-319-monitoring-report.pdf

[94] https://dam.assets.ohio.gov/image/upload/epa.ohio.gov/Portals/35/tmdl/2022-23_319_FS.pdf