

CHAPTER IX

ENVIRONMENTAL PLANNING

A. AIR QUALITY PLANNING

1. Background

The Clean Air Act Amendments of 1990 expanded transportation's role in contributing to national clean air goals. The 1990 amendments expanded the definition of "transportation conformity" to:

Conformity to the (air quality implementation) plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities will not (i) cause or contribute to any new violations of any standards in any area, (ii) increase the frequency or severity of any existing violation of any standard in any areas, or (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The MVRPC Metropolitan Planning Organization (MPO) is comprised of the counties of Greene, Miami, and Montgomery as well as the Cities of Franklin, Carlisle, and Springboro in northern Warren County. Warren County is located in the Cincinnati non-attainment air quality Region (Cincinnati Region), with the remainder counties in the MPO located in the Dayton/Springfield air quality Region (D/S Region). The D/S Region also includes Clark County which is represented by a different MPO: Clark County-Springfield Transportation Coordinating Committee (CCS-TCC). Due to multiple air quality regions and MPOs, conformity is closely coordinated with neighboring organizations, with MVRPC being the lead agency in the D/S Region and Ohio-Kentucky-Indiana Regional Council of Governments (OKI) being the lead agency in the Cincinnati Region. Figure 9.1 illustrates this complex situation.

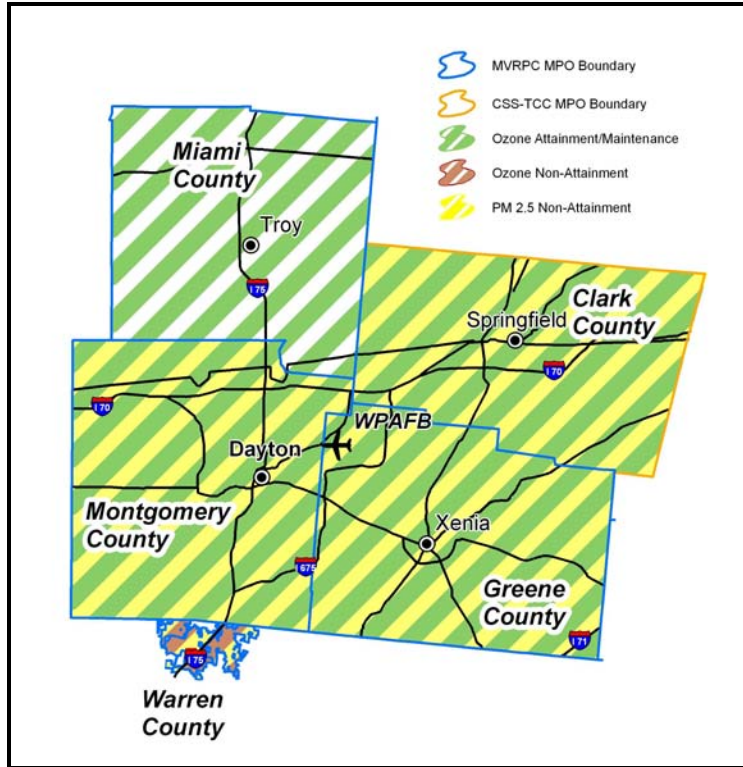
All counties in the D/S Region were re-designated to attainment/maintenance for the 8-hour ozone standard in August 2007; three counties (Clark, Greene, and Montgomery) are designated non-attainment for the annual PM_{2.5} standard. Warren County remains in non-attainment for both the ozone and PM_{2.5} standards.

The 8-hour ozone maintenance plan approved mobile budgets are used to demonstrate conformity to the ozone standard in the D/S Region while various tests and budgets apply in the Cincinnati Region. In the absence of budgets, the no-greater-than-2002 baseline year test, is used to demonstrate conformity to the annual PM_{2.5} standard.

This chapter provides an overview of the air quality conformity assumptions and analyses performed by the ODOT Office of Technical Services Modeling and Forecasting Section and MVRPC for the 2030 LRTP by MVRPC and CCS-TCC. Detailed calculations can be seen in Appendix D and complete documentation can be found in the April 2008 Technical Memorandum¹.

¹ *Technical Memorandum: MVRPC/Clark County-Springfield TCC Long Range Transportation Plan Update Mobile Emissions Estimate, April 2008.*

Figure 9.1 — Air Quality Standards Designations



2. Regional Emissions Analyses Summary

The ODOT Modeling and Forecasting section performed the MOBILE 6.2 runs to generate travel demand model-based emission factors as well as the complete air quality analyses for Clark County. Using ODOT-generated emission factors, MVRPC completed the air quality analyses for Greene, Miami, and Montgomery counties. The results indicate that the 2030 Plans and TIPs demonstrate conformity to the PM2.5 and 8-hour ozone standard consistent with the January 24, 2008 *US EPA Transportation Conformity Rule Amendments To Implement Provisions Contained in the 2005 Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU)*.

Latest Planning Assumptions

The transportation conformity analyses meet the latest planning assumptions requirement. The modeling process used to develop each MPO’s emissions is calibrated using the latest population and land use data available and is validated using corresponding traffic count data. Detailed information regarding socioeconomic assumptions and the travel demand model is available in Chapter III. MVRPC’s model networks accurately reflect projects in the TIP and the Plan.

US EPA’s most recent emissions software, MOBILE 6.2, was used for all mobile source emission analyses and the MOBILE inputs, conformity tests, and analysis years were established at the interagency consultation meeting on January 22, 2008. Emission factors accurately represent the programs being implemented or expected to be implemented in the D/S Region for each analysis year. The main difference with the previous conformity analysis is that due to the approval in May 2007 of a SIP revision to establish a lower Reid Vapor Pressure (RVP) for gasoline distributed in the Cincinnati and Dayton areas, emission factors for ozone and the summer season of the PM2.5 analyses now include 7.8 RVP for 2010 and later analysis years.

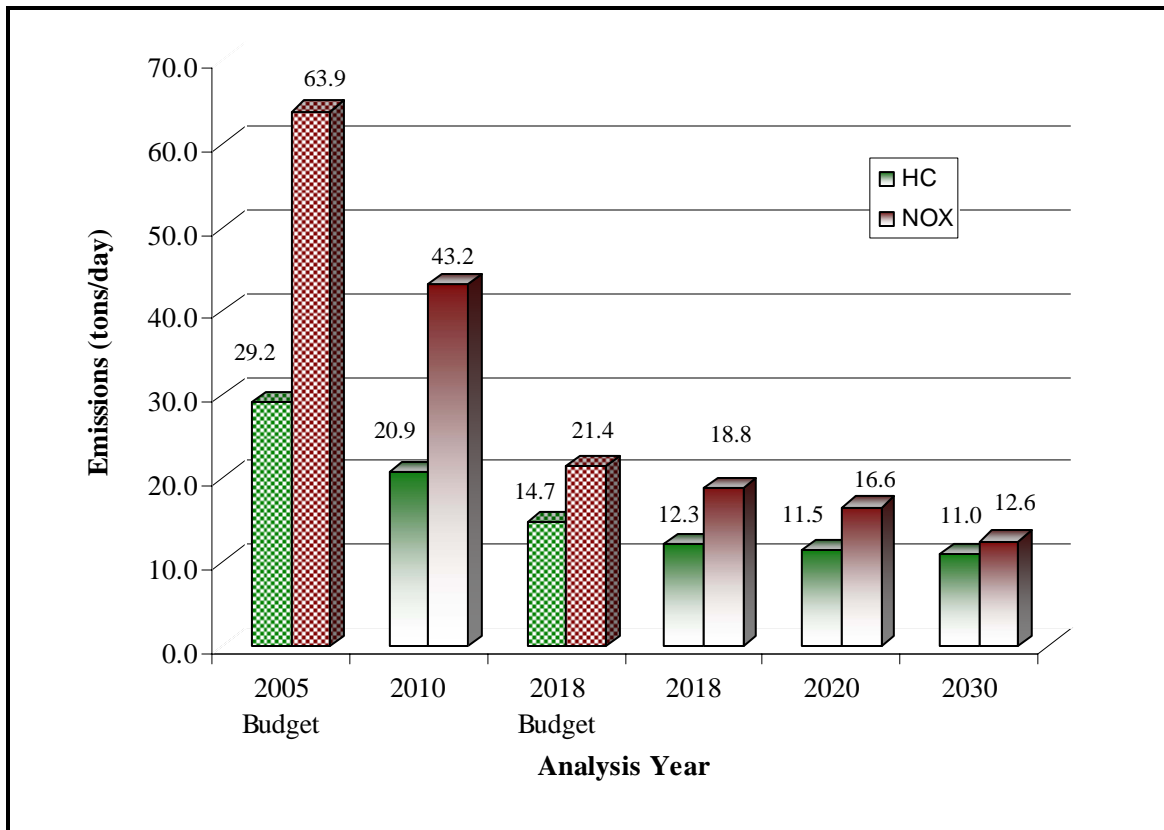
8-Hour Ozone Standard

In April 2004, US EPA issued final designations regarding the 8-hour ozone standard. The 8-hour standard is violated when the 3-year average of the annual fourth highest daily maximum 8-hour ozone average concentration exceeds 0.08 ppm. All four counties (Clark, Greene, Miami, and Montgomery) in the Dayton/Springfield Region were designated as basic non-attainment for the new standard. In August 2007 the D/S Region was re-designated to attainment-maintenance for the 8-hour ozone standard and new mobile budgets for the area approved. The new budgets (2005 and 2018) are used to demonstrate conformity to the 8-hour ozone standard using the budget test for two criteria pollutants: Nitrogen Oxides (NOx) and Hydro Carbons (HC). Following interagency consultation analysis years were established as follows:

- 2010 - 1st Analysis Year (one of years included in new TIP);
- 2018 - 8-Hour Redesignation Plan budget year;
- 2020 - Interim year; and
- 2030 - Plan(s) horizon year.

The results of the ozone regional emissions analyses for the D/S Region can be seen in Figure 9.2. Appendix D documents the results for the Cincinnati Region.

Figure 9.2 — Dayton/Springfield Regional Emissions Analysis – Ozone



Source: MVRPC

PM2.5 Standard

US EPA has established two standards for PM2.5: annual and 24-hour. The annual standard is exceeded if the 3-year average of annual mean PM2.5 concentrations is greater than 15 micrograms per cubic meter, the 24-hour standard is exceeded if the 3-year average of the annual 98th percentile concentrations is greater than 35 micrograms per cubic meter. Currently, the Dayton-Springfield Region (Clark, Greene, and Montgomery Counties) is designated non-attainment for the annual standard and to be consistent with the standard, regional emission estimates used to determine transportation conformity must also have annual units. OEPA and US EPA are currently in the process of designating non-attainment areas for the 24-hour PM2.5 standard with final designations expected by December 2009.

The PM2.5 standard is new and States have until April 2008 to finalize the SIP that will establish budgets for use in transportation conformity determinations, therefore the no-greater-than-2002 baseline year test will be used to demonstrate conformity. Emissions were generated for three transportation plan analysis scenarios (2010, 2020, and 2030) as well as the baseline scenario (2002) using the two season approach in accordance with US EPA guidance. The regional emissions analysis will include emissions for Direct PM2.5 (exhaust, brake, and tire wear) and Nitrogen Oxides (NOx).

The results of the PM2.5 regional emissions analysis can be seen in Figure 9.3. Appendix D documents the results for the Cincinnati Region.

3. Multiple MPO Conformity Issues

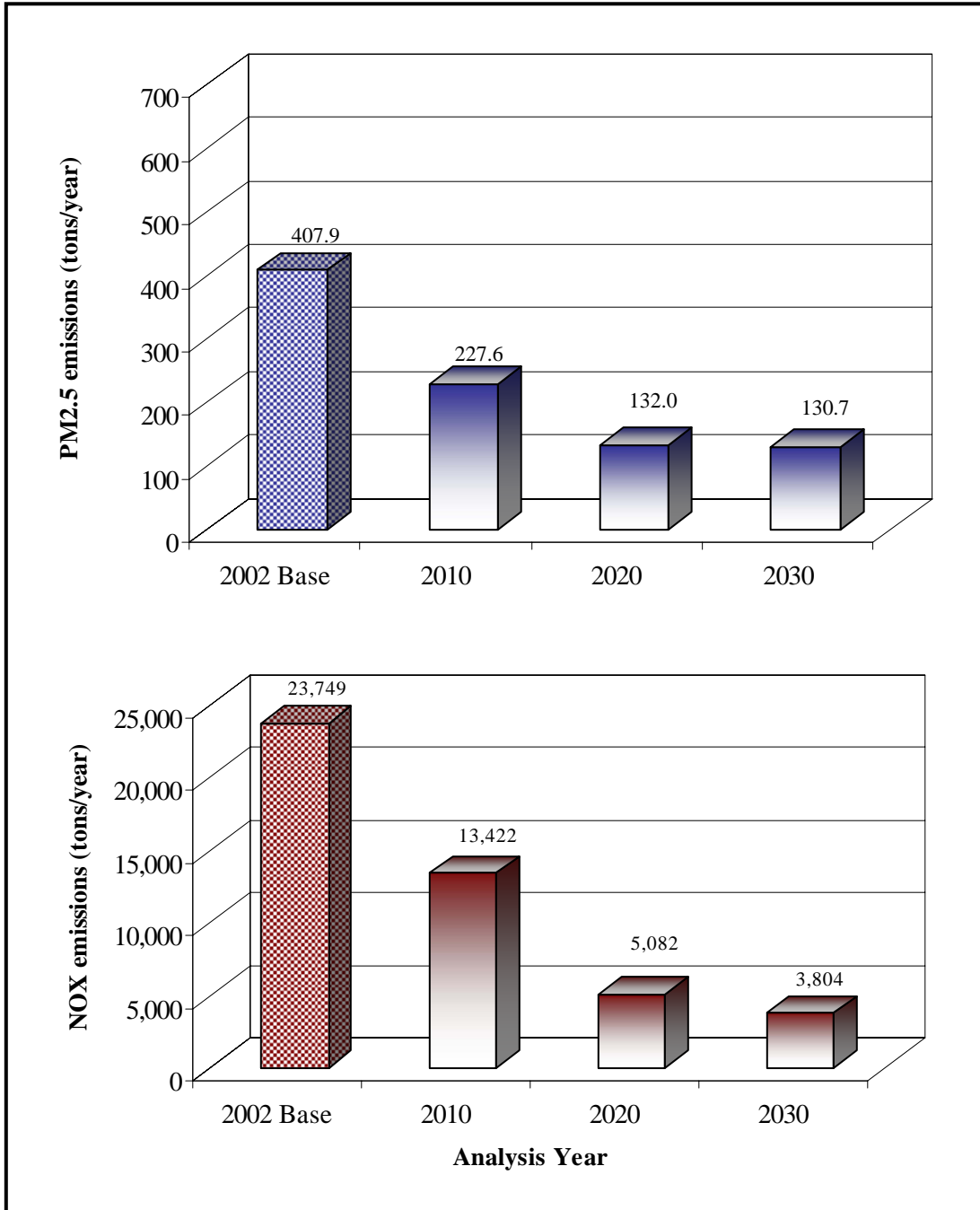
The Clean Air Act and subsequent amendments require a Plan and TIP conformity determination for areas such as the Dayton/Springfield Region. Since the D/S Region is represented by two different MPOs, close coordination is required between MVRPC and CCS-TCC during this process. Similarly the MVRPC MPO includes two different air quality Regions: Dayton/Springfield and Cincinnati. Through the interagency consultation process, it has been determined that the emissions for the Franklin, Carlisle, and Springboro transportation projects in MVRPC's Plan and/or TIP will be incorporated in the Cincinnati conformity analysis, conducted by OKI. Board resolutions by each MPO will acknowledge the respective MPO's transportation plans and conformity processes assuring that the MPOs' conformity determinations accurately reflect emissions of future transportation projects.

Conformity is completed in consultation with CCS-TCC, OKI, ODOT, OEPA, US EPA, FHWA, and FTA. The Memoranda of Understanding listed below and provided in the Technical Memorandum² document these working relationships.

- MOU among the MVRPC, the CCS-TCC, the OKI Regional Council of Governments, the OEPA, the ODOT, the US EPA-Region 5, the FHWA-Ohio Division, and the FTA-Region 5.
- MOU among the OKI Regional Council of Governments, the MVRPC, the OEPA, the IDEM, the IDOT, the ODOT, the US EPA-Region 5, the FHWA-Ohio Division, the FHWA-Indiana Division, and the FTA-Region 5.

² *Technical Memorandum: MVRPC/Clark County-Springfield TCC Long Range Transportation Plan Update Mobile Emissions Estimate, April, 2008.*

Figure 9.3 — Dayton/Springfield Regional Emissions Analysis – PM2.5



Source: MVRPC

B. ENVIRONMENTAL MITIGATION IN SAFETEA-LU

The final metropolitan transportation planning rules state that “metropolitan transportation plans shall include a discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the metropolitan T-Plan. Discussion may focus on policies, programs, or strategies. The discussion shall be developed in consultation with Federal, State, and Tribal land management, wildlife, and regulatory agencies”.

Using guidance and databases from ODOT Environmental Services (OES) as a starting point, MVRPC analyzed the Long Range Transportation Plan projects for potential environmental impacts using GIS overlay techniques. When available, OES databases were enhanced with local or internal data sources. Mitigation techniques for various types of environmental impacts are also discussed along with any applicable local mitigation resources.

1. Process Overview

Identification of possible projects with impacts to environmental resources began with the current congestion management projects in the 2030 Long Range Transportation Plan. These projects were classified into two categories — Significant Projects and Non-Significant Projects. Projects were classified as “Significant” if, by virtue of their implementation/construction, there was a probability of potential impacts to the Region’s natural resources. Such projects were typically capacity projects such as road widening, lane additions and interchange addition/modification projects. Projects were classified as “Not Significant” if their implementation was unlikely to result in major impacts to the Region’s environmental resources. These projects were typically non-capacity adding intersection improvement projects such as addition of a turn lane and/or signal coordination projects.

Based on the above classification, potential environmental impacts were only determined for the significant projects. A few of the significant projects are already included in MVRPC’s current Transportation Improvement Program (TIP) and have environmental documentation in place. These were excluded from the list of analyzed projects since their environmental impacts are already well-documented. Figure 9.4 shows projects classified according to their potential environmental impact.

A separate map was created using GIS for each of the Region’s environmental resources: endangered species habitats; cultural, historic and archaeological resources; wetlands, rivers and streams; total maximum daily load; superfund sites; and parklands. The remaining significant projects were evaluated for potential environmental impacts by overlaying them on various environmental resource maps using GIS. Projects in direct conflict with the Region’s endangered species habitats, wetlands, parklands etc. were identified as having potential impacts to these environmental resources and are displayed in Appendix E, Figures E.1 to E.6.

The following sections describe mitigation guidelines and strategies designed to address potential project impacts to environmental resources. Since the projects were evaluated for impacts at a macro level rather than determining specific impacts, the mitigation strategies encompass a menu of options to address a wide-range of potential impacts and are not project-specific. Detailed assessment of individual projects in future stages of project development may emphasize the importance of certain mitigation efforts, where needed, while rendering others redundant. It is the policy of MVRPC to require that all federally funded projects comply with applicable environmental statutes as a condition to receiving funding.

Figure 9.4 — 2030 LRTP Projects Classification (11x17)

Each of the following sections discusses the statute governing the conservation of a specific resource, the importance and presence of that resource in the Region, processes and conditions for undertaking mitigation in case of impacts, and mitigation measures for preventing or alleviating impacts to the resource. Finally, a discussion on the various locally available mitigation resources and locally functioning environmental conservation organizations is provided at the end of this section. These agencies have also been added to MVRPC's public participation list.

2. Wetlands, Rivers and Streams

Statute

Federal and state funded transportation projects in the Region follow mitigation guidelines developed by the US Army Corps of Engineers (US ACE) and Ohio Environmental Protection Agency (OEPA).

Wetlands — The US ACE mitigation guidelines are outlined in the Regulatory Guidance Letter (RGL) 02-02, dated December 24, 2002. As of May 1998, OEPA has specific guidelines for wetland mitigation as included in the Ohio Administrative Code 3745-1-50-54. The guideline includes different wetland replacement ratios from 1.5:1 up to 3:1 and specifies that when large amount of natural wetlands are destroyed, developers should contribute larger mitigation ratios as development proceeds.

Rivers & Streams — Although mitigation is now being required for unavoidable impacts to streams, there are currently no formal rules in Ohio. Stream mitigation for federal and state-funded projects in Ohio is being accomplished on a case-by-case basis and is negotiated with OEPA and US ACE by the ODOT Office of Environmental Services (OES) through the pre-application/coordination and waterway permit processes.

Region's Resources

The Region has approximately 35 square miles of wetlands of which about 6.0% are woody wetlands. There is one national (upper section of the Little Miami River through Greene County) and three state scenic rivers (Little Miami River, Stillwater River and Greenville Creek) in the Region in addition to several primary and secondary creeks and streams. Originating upstream from Indian Lake, the Great Miami River flows 170 miles southwest to its confluence with the Ohio River west of Cincinnati. The Great Miami River Watershed drains all or parts of 15 counties and also includes the Stillwater and Mad Rivers and Twin, Wolf, and Seven Mile creeks.



There are more than 2,300 miles of rivers and streams in the Great Miami River Watershed. Since the Clean Water Act was passed in 1972, regulations have limited the discharge of pollutants into waterways, so the water quality in the watershed has shown strong improvement.

These healthy waterways, in addition to the existence of several major lakes, provide many opportunities for water-based recreation. The cold-water habitat of the Mad River provides one of the few trout fishing streams in Ohio and the scenic beauty of the Stillwater River attracts fishermen from all over the country. However, more than 40 percent of streams and rivers, still do not meet Ohio's water quality standards.

Mitigation Process

The general procedure for establishing required mitigation for streams and wetlands includes:

- Determination of mitigation needs as documented by the Ecological Survey Report (ESR);
- Analyses of potential mitigation opportunities within the project area and/or close proximity (one mile) or within a specific 8 Digit Hydrological Unit Code (HUC) watershed where the impacts are anticipated to occur;
- Development of preferred plan of action for mitigation including site selection, funding, and pursuing conservation easements;
- Development of conceptual mitigation plan/report;
- Coordination of conceptual mitigation plan/report with resource and regulatory agencies;
- Submission of approved conceptual mitigation plan/report with waterway permit applications;
- Development of final mitigation plan, for submission to agencies prior to permit authorization;
- Development of construction plans;
- Procuring conservation easements;
- Providing funds to partnering agencies;
- Procuring credits at Mitigation Banks;
- Construction of Mitigation Project; and
- Monitoring of Mitigation Project — ODOT performs post construction monitoring on all mitigation sites for a minimum of 5 years to assure successful development and to meet waterway permit conditions.

Coordination and Consultation

ODOT-Office of Environmental Services in cooperation with ODOT Districts, the ODOT-Office of Real Estate, the ODOT- Office of Aerial Engineering, and project consultants coordinate to develop all stream and wetland mitigation projects.

Mitigation Measures

Impact analysis and mitigation are integral parts of the ODOT project development process. Early review and analysis of project alternatives by regulatory and resource agencies combined with effective inter-office coordination are required to develop successful transportation projects.

In the event that impacts to streams and wetlands are unavoidable, project sponsors consider a wide variety of mitigation strategies, which always begin with evaluation of on-site opportunities (e.g. natural channel design techniques, bankfull culverts, wetland creation, etc.) within the project work area. Once the on-site resources are exhausted, the search for mitigation opportunities may shift to off-site, within one mile of the project area, followed by a search within a specific 8 Digit HUC watershed.

Mitigation opportunities may include mitigation banking, stream and wetland creation, restoration, and/or preservation, and possibly even preservation of upland buffer adjacent to stream and wetland resources. Through the coordinated efforts of Five Rivers Metro Parks (FRMP) — a regional parks and recreational space conservation organization, the City of Trotwood, and B&B Commercial Investment LLC, 359 acres of land adjacent to Sycamore State Park in the city of Trotwood will be developed into a wetland mitigation bank modeled after other wetland mitigation banks that exist in Ohio. The project will be funded by the sales of wetland mitigation credits, purchased by those who had disturbed wetlands and are obliged to restore the damaged acreage. FRMP plans to restore the site by re-creating streams, forests, and prairies. The appraisal stage of the restoration project may take one to two years, during which FRMP will complete the application process for formal certification from US ACE and OEPA.

There are currently two watersheds in the Region that have a Total Maximum Daily Load (TMDL) Plan in place — the (upper) Little Miami River basin and the (upper) Stillwater River/Auglaize River basin. The goal of the TMDL Plan for the (upper) Little Miami River watershed is attainment of the appropriate aquatic life use. Restoration options in the TMDL Plan include agricultural and urban runoff controls, habitat protection and restoration, septic system improvements, point source controls, and public education. The goal of the TMDL Plan for the (upper) Stillwater River watershed is to achieve full attainment of numeric biological criteria for a given aquatic life use. The restoration options in the TMDL Plan include increasing width and amount of stream buffers, stream habitat restoration, nutrient management planning, elimination of failing septic systems, education, and cost sharing for conservation and nutrient management.

3. Threatened and Endangered Species/Fish and Wildlife

Statute

All federal and state-funded projects in the Region are planned and designed to comply with the National Environmental Policy Act, Endangered Species Act, Clean Water Act, and Ohio Revised Code to name a few. The Endangered Species Act and Ohio Revised Code are the specific federal and state legislation that provides for the protection and conservation of plants and animals within Ohio. The rules and regulations associated with these laws dictate that the Region will build and operate its roadway projects with no, or minimal impacts to protected species and their habitat (including potentially unoccupied habitat).

Region's Resources

The Miami Valley Region is part of the largest hardwood forest in the world and is an important flyway for migrating birds. The Miami Valley has wetlands, river corridors, moist and dry woods, farmland, prairie, and important historical sites. Its ecosystems support endangered plants and unusual wildlife such as the Indiana bat. Many species receiving federal or state protection are tied closely to their habitats and land use changes have been the most common cause for decline in species range and diversity. Contamination and degradation of natural waters has also contributed to loss of habitat.

Coordination and Consultation

The Fish and Wildlife Coordination Act (16 USC §§ 661-666) requires coordination and consultation among (1) the agency proposing the highway project, (2) the US Fish and Wildlife Service of the Department of the Interior, and (3) the state agency responsible for protecting wildlife resources whenever the waters of any stream or other water body are proposed to be impounded, diverted, or otherwise modified.

Mitigation Measures

There are a variety of commitments and mitigation techniques that project sponsors utilize to protect listed species. These differ depending on the habitat and the species to be protected. Common commitments and mitigation available to project sponsors include:

- Restricting the clearing of trees to the period between September 15 and April 15 to avoid potential impacts to roosting Indiana bats;
- Relocation of listed mussel and plant species out of construction areas;
- Prevention of disturbance of Indiana bats from blasting activities near sensitive subterranean areas;

- Timely removal of carcasses from roadways to minimize the potential of vehicles striking scavenging bald eagles;
- Measures to allow terrestrial species such as bobcat, black bear, timber rattlesnake, etc. to pass unharmed through construction areas;
- Measures to ensure that all equipment is in proper working order to minimize construction noise and reduce the risk of equipment spills and leaks; and
- Construction and post construction plan notes are included requiring strict adherence to ODOT's Construction and Material Specifications for Sedimentation and Erosion Control.

The Endangered Species Act prohibits take – harming, harassing, or killing a listed species, including destruction of habitat. However, the Act allows incidental take – take which is incidental to but not the intent of a particular activity – as long as an approved Habitat Conservation Plan is in place that would mitigate the effects of take and provide for future conservation of the species. Mitigation measures as part of a Habitat Conservation Plan may take the form of:

- Preserving habitat through an acquisition or a conservation easement,
- Enhancing or restoring degraded or former habitat,
- Creating new habitat,
- Establishing buffer areas around existing habitat,
- Modifying land-use practices, and
- Restricting access to habitat.

4. Historic, Cultural or Archaeological Resources

Statute

Historic and Cultural resource reviews for all federal and state-funded projects in the Region are planned and designed to comply with the National Environmental Policy Act, the National Historic Preservation Act, Section 4(f) of the Department of Transportation Act, the Ohio Revised Code, and 36 CFR Part 800 (the implementing regulations for Section 106 of the National Historic Preservation Act). All acts require that historic and cultural resources be considered during the development of all transportation projects in Ohio.

Region's Resources

The Region has numerous cultural, archaeological and national register historic sites. There are 214 national register historic sites and 4 undisturbed archaeological sites located throughout the Region. These sites are important to our communities and heritage.

Coordination and Consultation

Consultation with various entities, including the Federal Highway Administration (FHWA), the State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation (ACHP), city historic preservation offices, local public officials, local organizations, and the public, is required during the project development process.

Mitigation Measures

Mitigation measures developed through the Section 106 Memorandum of Agreement (MOA) consultation process provide ways to avoid, minimize, or mitigate adverse effects to historic properties (i.e., those listed in or eligible for listing in the NRHP) impacted by projects. These mitigation measures are carried through as environmental document commitments and must be completed and accounted for with SHPO

and FHWA. Furthermore, the MOA is not closed until all stipulations are fulfilled. A failure to meet all stipulations can potentially jeopardize a project sponsor's funding or other agreements or projects.

Mitigation measures may involve a variety of methods including, but not limited to, aesthetic treatments, avoidance, archaeological data recovery, creative mitigation, salvage and re-use of historic materials, informing/educating the public, and Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) documentation. Approaches vary widely depending

on the type of historic property, the qualities that enable the property to meet the National Register of Historic Places (NRHP) Criteria of Eligibility, the location of the historic property with respect to the project, etc. Mitigation plans are developed in consultation with ODOT, SHPO, FHWA, consulting parties (i.e., local officials, organizations, public), federally recognized Native American Indian tribes, and on occasion, the ACHP.



HABS/HAER — Recording documents buildings and engineering structures (e.g., bridges), respectively, that are listed in or eligible for listing in the NRHP. In Ohio, the SHPO requires Level 2 documentation for HABS/HAER recording. Level 2 archival documentation consists of large-format (4'x5') black-and-white negatives and prints, a written historical report, and photographs or photographic reproductions of selected existing drawings.

Archaeological Mitigation — Phase III archaeological data recovery investigations are intended to mitigate the adverse effect to archaeological sites listed in or eligible for listing in the NRHP. Mitigation is achieved through intensive large-scale excavations and through detailed analysis of the resultant cultural remains which were encountered during these excavations. Archaeological data recovery plans are developed in consultation with ODOT's Office of Environmental Services and the SHPO. The results of all data recovery investigations are summarized as a technical report that is reviewed and approved by ODOT-OES and the SHPO. Completion of the fieldwork and the final report of findings are considered an environmental document commitment. Approval of the final report generally fulfills the agency's responsibility for the commitment.

The final data recovery mitigation report should include a summary of the approach from the data recovery plan along with the findings of the excavation in order to address how the recovered assemblage relates to the site's historic context. Ways to publicly disseminate the results of data recovery investigations are also considered to be an important part of any mitigation plan.

5. Parklands

Statute

Section 4(f) of the Department of Transportation Act requires that special effort be made to preserve public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) specifies that federally-funded transportation projects requiring the use of land from a public park, recreation area, wildlife and waterfowl refuge, or land of significant historic site can only occur if there is no feasible and prudent alternative. Using Section 4(f) land requires all possible planning to minimize harm.

Region's Resources

The Region has one national park, several state and local parks, wildlife and waterfowl refuges, and national register historic sites. These sites are important to our communities and heritage. The parklands are subdivided into natural protection areas and recreational areas.



Coordination and Consultation

At times, transportation projects impact Section 4(f) resources and require specific measures to minimize harm or mitigate the impacts. These activities involve close coordination with the officials that have jurisdiction over the specific resources. Investigation of Section 4(f) resources and potential impacts occur throughout ODOT's project development process for individual projects. The intent of evaluating project resources throughout the process helps to guide projects toward practical solutions while minimizing impacts when no feasible and prudent alternative exists. The availability of detail during the PDP on the preferred alternative allows for closer examination of the potential for Section 4(f) impacts and a clearer determination of how impacts should be processed. Once this is known, project sponsors and officials that own the resources can follow a process for mitigation.

In cases where projects do have Section 4(f) impacts and there is no feasible and prudent alternative to avoid use of the resource, the project approval process requires the consideration of "all possible planning to minimize harm". Minimization of harm may entail both alternative design modifications that lessen the impact on 4(f) resources and mitigation measures that compensate for residual impacts.

Often, transportation officials are aware of and account for regional Section 4(f) resources that are important for preservation and community cohesion. Other resources may not be as well known but are afforded the same protection under Section 4(f). Long range planning should account for well known Section 4(f) resources throughout the Region that would pose a significant loss if impacted. It is however, premature to analyze individual projects' Section 4(f) impacts this early in the process.

Mitigation Measures

Mitigation measures involving public parks, recreation areas, or wildlife and waterfowl refuges may involve a replacement of land and/or facilities of comparable value and function, or monetary compensation, which could be used to enhance the remaining land. Mitigation of historic sites usually consists of those measures necessary to preserve the historic integrity of the site and is agreed to with FHWA. In any case, the cost of mitigation should be a reasonable public expenditure in light of the severity of the impact on the Section 4(f) resource in accordance with federal requirements. Mitigation for common Section 4(f) resource impacts may be:

- Improving access or expansion/pavement of parking area;
- Landscape or screening of resource;
- Installation of beautification enhancements such as park benches, trash receptacles, signage, etc;
- Maintenance of traffic accommodation or rerouting of traffic;
- Minimizing construction noise or limiting construction to specific times;
- Direct compensation for improvements to on-site resources; and
- Design refinements.

Neither the Section 4(f) statute nor regulation requires the replacement of 4(f) resources used for highway projects, but this option is appropriate as a mitigation measure for direct project impacts.

6. Hazardous Materials

Statute

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was passed in 1980 and it established national policy and procedures for identifying and cleaning up sites that are found to be contaminated with hazardous substances. CERCLA was amended and expanded by the Superfund Amendments and Reauthorization Act (SARA) of 1986. CERCLA established a hazard ranking system. Sites with the highest ranking being placed on the National Priorities List (NPL) are eligible for money from the substantial fund established for the environmental cleanup under CERCLA.

US EPA regulations outline a formal process for assessing hazardous waste sites and placing them on the NPL. At non-NPL sites, US EPA can also take shorter-term cleanup actions under the emergency removal program.

The Hazard Ranking System (HRS) is the principal mechanism US EPA uses to evaluate uncontrolled waste sites for possible inclusion on the NPL. It is a numerically based screening system that uses information from initial, limited investigations to assess the relative potential of sites to pose a threat to human health or the environment. The HRS uses data that can be collected relatively quickly and inexpensively, thus allowing most Superfund resources to be directed to remedial actions at sites on the NPL. The HRS assigns each site a score ranging from 0 to 100. Sites receiving HRS scores of 28.50 and above are eligible for the NPL, though EPA generally also considers other factors (most notably the views of the state) before actually listing a site on the NPL.

CERCLA is important to the highway planning process primarily in the acquisition of right-of-way. Accepting financial liability for contaminated property may adversely affect the economic analysis of the project and therefore its financial feasibility. In addition, if significant cleanup must take place before highway construction can begin, substantial delays to the project can be anticipated. Careful evaluation of the nature and extent of the contamination as well as the cleanup alternatives, costs, schedule, and ongoing liability is warranted on all sites with an identified release within the planned right-of-way purchase.

Superfund Remediation Process

The process of investigation and remediation at Superfund sites follows seven basic stages as defined by EPA:

1. New listings — Scorecard assigns this temporary category to sites that have been recently listed on the NPL, and have not yet been associated with a specific stage of cleanup by US EPA.
2. Remedial assessment not begun — In this stage, sites have undergone the screening-level preliminary inspection and site assessment required for listing on the National Priorities List, but have not progressed to the stage of more detailed investigation.
3. Remedial assessment not begun with removal — This category refers to sites where US EPA has conducted an Emergency Removal of Contaminants but where detailed investigations have not yet begun.

4. Study underway — At this stage, the Remedial Investigation / Feasibility Study (RIFS) to determine the nature and extent of contamination are underway.
5. Remedy Selected — At this stage, the Record of Decision (ROD) has been signed, but the design of remedies has not started and may still be in negotiation. Based on information generated during the RI/FS, RODs explain which cleanup alternatives will be used.
6. Design Underway — Remedial Design (RD) is the phase in Superfund site cleanup where the technical specifications for cleanup remedies and technologies outlined in the RODs are designed but have not yet been implemented.
7. Construction Underway — Remedial Action (RA) follows the remedial design phase and involves the actual construction or implementation phase of Superfund site cleanup.
8. Construction Completions — Superfund sites are categorized as construction completions if:
 - Any necessary physical construction is complete, whether or not final cleanup levels or other requirements have been achieved;
 - US EPA has determined that the response action should be limited to measures that do not involve construction, such as the use of a deed restriction to limit the future use of the land; or
 - The site qualifies for deletion from the NPL.

In many cases, "construction complete" does not mean that the cleanup itself is complete. For example, parties may have to continue to operate a system constructed to pump and treat groundwater for more than 30 years until contaminants in the water are reduced to acceptable levels.

Region's Resources

Eight sites in the Region are on the NPL. Another 46 sites, though not currently on the NPL, are potentially contaminated sites and sources of concern. Table 9.1 provides a summary of the sites, HRS scores, stage of clean-up. A brief summary of each site is provided below:

Table 9.1 — Superfund Sites on Final NPL

Rank	Site Name and Location	Overall Site Score	Stage of Clean-up
1	Lammers Barrel Factory, Greene County	69.33 (R)	Study Underway
2	United Scrap Lead Co. Inc., Miami County	58.15 (O)	Construction Completed
3	Wright-Patterson Air Force Base, Montgomery and Greene Counties	57.85 (O)	Construction Completed
4	Miami County Incinerator, Miami County	57.84 (O)	Construction Completed
5	North Sanitary Landfill, Montgomery County	50.00 (R)	Study Underway
6	Sanitary Landfill Co. (Industrial Waste), Montgomery County	35.57 (O)	Construction Completed
7	Mound Plant (USDOE), Montgomery County	34.61 (O)	Construction Underway
8	Powell Road Landfill, Montgomery County	31.62 (O)	Construction Completed

Source: US EPA CERCLIS Database <http://www.epa.gov/superfund/sites/cursites/>

O: based on the original Hazard Ranking System; R: based on the revised Hazard Ranking System

Lammers Barrel Factory, Greene County — The property is now a vacant lot, approximately two acres in size, located in Beaver Creek. Operations began at Lammers Barrel Factory in 1953 and continued until

the fire in October 1969. According to former employees, the facility bought, sold and reclaimed all types of solvents. Any inventories of chemicals handled at the facility were reportedly destroyed in the fire. Sampling of residential wells began in the mid-1980s and the analysis identified an area of ground water contamination along the northern end of the Valleywood subdivision, located southeast of the facility.

United Scrap Lead Co., Inc., Miami County — The United Scrap Lead Co., Inc., site covers 10 acres south of Troy. Between 1948 and 1980, the company reclaimed lead batteries, generating an estimated 32,000 cubic yards of crushed battery cases, which were used as fill material. Monitoring wells on-site are contaminated with lead, according to tests conducted by the State. Two residential water wells contain lead above background levels but within the standards for drinking water.

Wright-Patterson Air Force Base, Montgomery and Greene counties — Wright-Patterson Air Force Base (WPAFB) is located northeast of Dayton in Greene and Montgomery counties. The installation is composed of two air fields, Wright Field and Patterson Field, covering 8,174 acres. Past Air Force activities in support of operational missions have resulted in creation of several unlined waste disposal areas throughout the base. From 1941 to at least 1973, the Industrial Shops and the Research and Development Laboratories disposed of more than 791 tons of waste on the Base, including solvents, contaminated thinners, degreasing sludges, tetraethyllead sludge, and miscellaneous hazardous chemicals. In 1985, the Base and OEPA found 1,1,1-trichloroethane, tetrachloroethylene, trichloroethylene, 1,2-dichloroethane, and manganese in on-base wells.

Miami County Incinerator, Miami County — The incinerator and its associated landfill represented the first county-wide solid waste management program in Ohio when it opened in 1968 on county-owned land. A combination of poor geologic location and environmentally unsound disposal practices resulted in significant contamination to one of the most productive and valuable aquifers in Ohio. All landfilling operations stopped in 1978, and the site now serves as a transfer station for wastes that are disposed of elsewhere.

North Sanitary Landfill, Montgomery County — The site is located at 200 Valleycrest Drive in Dayton, Montgomery County. The site occupies 101.9 acres, approximately 45.7 of which were used as a landfill. Several industrial facilities, including bulk oil storage terminals, an industrial laundry facility, car crushing facility, a former industrial plating facility, and a demolition debris landfill are located adjacent to the property. Industrial and municipal wastes from the Dayton area were used to fill unlined gravel pits that were created by former mining operations. These pits contained water that may have entered the sand and gravel aquifer that the pits intersect.

Sanitary Landfill Co. (Industrial Waste), Montgomery County — The Sanitary Landfill Co., which is owned by Industrial Waste Disposal Co., Inc., operated a 40-acre landfill near Dayton, Montgomery County, Ohio, from 1965 to 1980. The landfill reportedly accepted municipal wastes and various types of industrial wastes, including solvents. The landfill is located above gravel deposits. About 110,000 people draw drinking water from wells within 3 miles of the site. The wells are drilled into a deeper aquifer, which may be connected to the shallow gravel deposits, according to a study conducted by the US Geological Survey. Thus, there is a potential for contamination of public water wells.

Mound Plant (US DOE), Montgomery County — The Mound encompasses 306 acres within the southern city limits of Miamisburg, Montgomery County. The mound has operated since 1948 in support of USA weapons and energy programs, with an emphasis on small explosive components and nuclear technology. First operated by the Atomic Energy Commission, it is operated now by the US Department of Energy (US DOE). The major waste areas are on the south slope and valley of the northwest elevated area and include a landfill in which solvents, paints, and photoprocessing and plating bath solutions were deposited; several leach beds used to dispose of solutions containing radionuclides and/or

explosive/pyrotechnic materials; and an area in which a solution contaminated with plutonium was spilled. The operating life and the quantity of wastes deposited are unknown for the majority of the other waste areas.

Powell Road Landfill, Montgomery County — The landfill covers 67 acres in Dayton. The privately owned operation began in 1959 and is still active. Records indicate that for approximately two years at least 250 drums of wastes, including strontium chromate and benzidine, were delivered to the site every month. The wastes, in solid, sludge, and liquid form, are toxic, persistent, flammable, and highly volatile. There is no evidence of the landfill being lined, and some containers are leaking. Ground water nearby supplies private wells and the surface water is used for recreational purposes. The site is filled to about 30 feet above the surrounding area. The top and sides of the inactive area of the landfill are seeded, and vegetation is beginning to grow.

Mitigation Measures

If any initial studies or preliminary environmental evaluations identify known or potential hazardous waste sources, alternatives to avoid the site must be explored. If the site cannot be avoided, an assessment including sampling and possibly a characterization of the problem should be conducted. When a hazardous waste site is identified, the type of regulatory actions it is subject to and any environmental databases or lists that it appears on along with regulatory identification numbers should be specified. In addition:

- Environmental site assessment screenings (and any other required assessments) will be conducted on a project-by-project basis;
- Unavoidable encroachment on an identified hazardous site will be mitigated according to all applicable federal, state, and local requirements.

7. *Regional Mitigation and Consultation Resources*

The main purpose of various conservation organizations in the Region is to monitor and protect regional land including natural resources and historical properties. Close partnership with individuals, businesses, and local jurisdictions is a key component for these organizations to achieve their conservation goals. A brief description of each organization in the Region is provided below in Table 9.2.

Table 9.2 — Environmental Conservation Organizations in the Region

Responsible Organization	Type of Conservation Organization	Description
Three Valley Conservation Trust	<i>Land Trust</i>	The Three Valley Conservation Trust actively seeks to protect agricultural land, forested lands, wildlife areas, wetlands and other scenic or natural lands. The Trust protects streams in Butler, Preble, Montgomery and Darke Counties in Ohio, and very small parts of Wayne, Franklin, and Union Counties in SE Indiana. The Trust has been awarded a \$192,000 State grant to help establish priorities for the conservation of area streams.
Miami Conservancy District	<i>Flood Protection</i>	The Miami Conservancy District established its Groundwater Preservation Program in 1997 to develop and maintain an ongoing watershed-wide technical program to help protect and manage the area's aquifer and groundwater resources. Over the years, the organization has branched out to meet the Region's water needs. MCD has been actively involved for many years in promoting recreation along the Region's rivers and streams as well as being a key partner in projects like downtown Dayton's RiverScape, by bringing together state and federal funds to leverage local dollars.
Tecumseh Land Trust	<i>Land Trust</i>	The Trust's purpose is to preserve agricultural land, open space, and historic structures in voluntary cooperation with landowners and their heirs, and to educate the public about methods of private land conservation. The Trust currently has about 10,000 acres of farmland in Clark and Greene counties under protective conservation easements.
Ohio Chapter of the US Department of Agriculture	<i>Government Agency</i>	Natural Resources Conservation Service (NRCS) assists owners of Ohio's private land with conserving their soil, water, and other natural resources. NRCS partners with the Miami Valley Conservancy District to conserve local soil and water. Several environmental conservation and mitigation programs are offered by NRCS in partnership with local agencies. These include EQIP – Environmental Quality Incentives Program, SWCA – Soil and Water Conservation Assistance, WHIP – Wildlife Habitat Incentives Program, and the WRP – Wetlands Reserve Program.
B-W Greenway Community (B-WGC) Land Trust	<i>Land Trust</i>	B-WGC's purpose is to educate the public about the value of wetlands and the importance of connecting the Beaver Creek and Wenrick Wetlands with a greenway; to promote sustainable use of land within B-WGC while balancing human and wildlife needs; and to protect, preserve, and steward open space for farming, recreation, habitat, and watershed management.
Dayton Greenways	<i>Recreation</i>	Dayton Greenways is an umbrella organization of individuals and conservation organizations encouraging, enhancing and establishing greenways. Greenways include open space corridors, which are protected from development, and which link nature preserves, parks, historic features, and ecosystems. Dayton Greenways also improves air and water quality, mitigates flood damage, modifies extreme temperatures, and supports tourism.
Beaver Creek Wetlands Association	<i>Land Trust</i>	BCWA helps protect the wetland ecosystems in the Beaver Creek watershed in Greene County through partnerships, community networks, and public education.
Ohio Chapter of the Worldwide Conservation Organization	<i>Nature Conservancy</i>	The Nature Conservancy works to protect large landscapes made up of plants, animals, and natural communities all over Ohio including the Miami Valley Region.

Responsible Organization	Type of Conservation Organization	Description
Little Miami River Partnership	<i>Watershed</i>	The organization's aims are to develop community based watershed plans and projects to help restore and protect water and environmental quality in the Little Miami River Watershed. In 2000, LMRP applied for and received a six-year Watershed Coordinator grant, funded by the State of Ohio and the US EPA. The grant is primarily to assist each sub-watershed of the Little Miami River develop and write a comprehensive watershed plan. LMRP's main partners are the Soil and Water Conservation Districts within the watershed. Since 2001, LMRP has worked on Total Daily Maximum Loads (TMDL), watershed plans, educational programming, symposiums, and developing and gathering community input for the watershed planning process.
Honeycreek Watershed Association	<i>Watershed</i>	The Association seeks to protect and enhance the ground and surface water resources of the Honey Creek Watershed through education and project implementation. The Association helps preserve the Watershed by protecting riparian lands, monitoring water quality to identify potential sources of pollution, and educating residents about everything from proper septic system maintenance to landscaping with native vegetation.
Dayton History	<i>Historical Preservation</i>	This regional organization collects, preserves, interprets, presents and promotes the Region's assets, stories and experiences. The organization also maintains "Preservation Watch List" for the Region's historical assets.
Preservation Dayton, Inc.	<i>Historical Preservation</i>	Preservation Dayton actively promotes the work of preservation, protection and enhancement, and historically sympathetic revitalization of the Dayton, Ohio community through advocacy and a variety of other creative methods.
Greene County	<i>Parks and Recreation</i>	The County is the home of nearly 2,000 acres of green space held in public interest in 43 parks and recreation sites. These parks and recreations sites are owned and managed by two separate, but cooperative organizations: the Greene County Park District (1,139 acres) and the Greene County Recreation, Parks and Cultural Arts Department (994 acres). The Park District has traditionally been associated with passive recreation and conservation of its green spaces while the Recreation, Parks and Cultural Arts Department provides extensive service including an active recreation focus to the Park District properties.
Five Rivers Metro Parks	<i>Parks and Recreations</i>	The Five Rivers Metro Parks (FRMP) district is a nationally recognized park system composed of natural area parks, gardens, sensitive river corridors, urban parks, and a network of recreational trails. Its key mission is to protect rapidly disappearing open space and natural areas in the Miami Valley.
Miami County	<i>Parks</i>	The County offers beautiful farmland, the Great Miami River, and charming parks. The Miami County Park District has 15 parks and recreation sites. The mission of the District is to acquire and manage outstanding natural resources for the purpose of preservation, conservation, education, and passive leisure activities for the people of Miami County. The District continues to strive to excel in the areas of environmental education, bikeway development, and land acquisition.

Source: MVRPC