

7.2 Natural Environment/Environmental Planning

Executive Summary/Key Points

- The Environmental Consultation and Mitigation Plan establishes:
 - A process for consultation with environmental resource agencies to obtain data to conduct a system-wide review of potential environmental impacts. The data obtained was used to prepare three Environmental Factors Maps.
 - A plan for analysis and mitigation, enabling the MPO to adjust project alignments to avoid or mitigate impacts to natural resources and to make informed decisions when setting project priorities for the urban area.

Map and Table References

Maps

Winston-Salem Urban Area LRTP Projects and Natural Factors
Winston-Salem Urban Area LRTP Projects and Cultural Factors
Winston-Salem Urban Area LRTP Projects and Agricultural Factors

Table

Table 7.2 Potential Environmental Impacts and Mitigation Measures

7.2 Natural Environment/Environmental Planning

Development of the Long Range Transportation Plan (LRTP) allows the Metropolitan Planning Organization (MPO) the opportunity to consult with environmental agencies and conduct a system-wide review of potential environmental impacts. The LRTP consultation process is an initial step in identifying impacted areas and adjusting project alignments to avoid or minimize impacts to natural resources. It also allows the MPO to make informed decisions when setting project priorities for the urban area. The result is a transportation plan that not only minimizes negative impacts on the natural environment, but one that is ultimately more efficient, timely, and cost-effective.

Federal regulations require that:

The MPO shall consult, as appropriate, with State and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation concerning the development of the transportation plan. The consultation shall involve, as appropriate, (1) a comparison of transportation plans with State conservation plans or maps, if available; or (2) a comparison of transportation plans to inventories of natural or historic resources, if available (23 CFR 450.322).

The purpose of this consultation and mitigation plan is not only to meet the intent of the federal requirement, but to plan for a transportation system that protects and enhances the environment and the quality of life in our community.

7.2.1 Environmental Consultation Process

The Winston-Salem Urban Area MPO encourages the participation of the resource agencies throughout the development of the LRTP. The consultation process for this LRTP builds upon the consultation process started in 2007 for development of the 2035 LRTP adopted in 2009. Unless otherwise outlined, the consultation process will be as follows:

- During the development of the LRTP, resource agencies listed on the Resource Agency Contact List (**Appendix 7.2 A** of this chapter) will be contacted to provide input during the following plan milestones:
 - Development of tools and data needed
 - Development of base year and future year data
 - Development of draft plan
 - Adoption of final plan

Note: Every agency will not be contacted for every milestone, but at the milestones where agency input will be significant.
- The Winston-Salem Area Urea MPO will compare the proposed transportation plan to available maps, inventories, plans, policies and strategies as provided by the agency contacts. The MPO will provide the resource agencies an opportunity for review and comment prior to decision points that might rely upon said data.
- The Winston-Salem Area Urea MPO will provide the resource agencies with an outline or schedule for the development of the LRTP.
- The Winston-Salem Area Urea MPO will use email, website, the US Postal Service, telephone (conference call), private face-to-face and/or public meetings to ensure that our process is accessible to resource agencies.
- The Winston-Salem Area Urea MPO will provide written or email notice to the resource agencies of upcoming public review meetings or public comment periods being held on the draft and final LRTP and air quality conformity process (if applicable).
- Documentation of resource agency contacts and any comments received by the MPO will be included in **Appendix 7.2 B** of this chapter. A summary of comments received and the changes made to the LRTP and/or the analysis and mapping as a result of the resource agency comments is included below in this chapter under the heading “Summary of Resource Agency Comments.”

Resource Agency Contact List

A Resource Agency Contact List was compiled with assistance from the Federal Highway Administration (FHWA) and the Piedmont Authority for Regional Transportation (PART) in 2007 for development of LRTP adopted in 2009. The list was updated and extended by Winston-Salem Urban MPO staff in 2008 and again in the summer and the fall of 2012 and January 2013. The updated **Resources Agency Contact List** is included as **Appendix 7.2 A** of this chapter.

Consultations for 2035 Plan Update Development

Resource agencies, marked with one asterisk (*) on the Resource Agency Contact List, were contacted via email in the summer of 2012 to confirm or correct contact information and to request updates in data for mapping and analysis. A sample email, along with listing of the responses is provided by the agencies is included in Part 1 of **Appendix 7.2 B, Consultation with Resources Agencies**. Based on the responses from the resources agencies, the contact list was updated and new data sources or links were identified to use to complete the environmental analysis and mapping for the draft plan.

Resource Agencies were contacted again in November 2012, provided with a schedule and asked to review and provide comments on the draft plan, particularly the Environmental Mapping discussed in this chapter. Comments received from resources agencies and Winston-Salem MPO responses are included in **Appendix 7.2 B** of this chapter.

Ongoing Consultation Efforts

To integrate transportation planning with other community priorities, the Winston-Salem MPO has developed strong ongoing relationships with agencies responsible for land use planning, historic resource protection and air quality monitoring and permitting.

Land Use Planning

The Winston-Salem Urban Area MPO has sought to integrate land use planning and transportation planning on an ongoing basis. The goals and objective of the 2035 LRTP are based on those of the adopted land use plans of jurisdictions in the MPO, particularly the *Legacy Development Guide* and its recent update, *Legacy 2030 Update*, the comprehensive plan adopted by Forsyth County and all its municipalities, including Winston-Salem. MPO staff contributed to the development of *Legacy* and the *Legacy 2030 Update* and participated in the public involvement meetings for the plans. The MPO maintains a continuous consultation with land use planning organizations in the MPO area, as the planning directors for Winston-Salem and each of the counties in the MPO serve as members of the MPO's Technical Coordinating Committee (TCC). In addition, representatives from Winston-Salem and North Carolina Departments of Transportation have a formal role in Winston-Salem/Forsyth County's development review process by serving on the development and site plan review committees.



Historic Preservation

In addition to consulting with the NC State Historic Preservation Office, the Winston-Salem MPO has developed an ongoing relationship with the Forsyth County Historic Resources Commission (HRC). In 2009, the MPO provided funding to the HRC to assist with the Forsyth County Architectural Survey Update Project which updated the 1981 survey, compiled information from surveys done since 1981 (primarily as part of transportation projects) and identified additional historic properties. All information was compiled into a database with digital photography and GPS coordinates, providing a GIS data layer for all inventories properties.



Forsyth County
Historic Resources
Commission

Air Quality

To fully integrate air quality impact analysis into the transportation process, the Winston-Salem Urban Area MPO has developed an ongoing consultation relationship with the Forsyth County Office of Environmental Assistance and Protection (FCOEAP), previously known as the Forsyth County Environmental Affairs Department (FCEAD). FCOEAP is the agency responsible for air quality monitoring and permitting in Forsyth County. The Director of FCOEAP's Air Quality Program serves as a member of the TCC of the MPO. FCOEAP air quality staff provides a report for each TCC and TAC meeting informing the committees on air quality issues and local air quality performance. In the past, the MPO contracted with FCOEAP to complete the Air Quality Conformity Analysis for the LRTP and the TIP Needs Priority List and to assist with CMAQ grant proposals. A summary of the history of air quality in the Winston-Salem Urban Area is included in **Appendix 7.2 C, Air Quality History** of this chapter.



Summary of Resource Agency Comments

As discussed above, the Winston-Salem MPO consulted with resource agencies at various points in the LRTP development process. Documentation of these consultations is included in **Appendix 7.2 B**. In summer 2012, the MPO undertook an initial consultation, requesting updated contact information and data sources from resource agencies. Resource agencies were contacted again in fall 2012 when a draft plan and review schedule were available. Most of the comments received were resource agency staff contact information and additional data to show on mapping. All these recommended changes and additions were incorporated. The State Historic Preservation Office provided a letter noting sites of historical or architectural importance within the general project area. Winston-Salem MPO staffs will work with SHPO and Forsyth County Historic staff to identify and protect historic resources during the planning and development of individual projects

7.2.2 Environmental Analysis and Mitigation Plan

General

Assessment of the impacts of specific transportation projects on communities and the natural environment has long been an element of project development, environmental documentation, and facility design. Federal law also includes requirements for planning-level environmental review.

Accordingly, this section discusses the MPO's generalized analysis of potential environmental impacts and identifies potential mitigation strategies to restore or maintain environmental functions affected by projects. It also summarizes the MPO's consultation with federal and state environmental regulatory agencies relative to the plans, inventories, policies, and concerns.

A preliminary environmental impact screening can identify potentially serious impacts that could end up stopping a project. Recognizing such issues at the earliest stage of planning provides the opportunity to avoid or mitigate undesirable impacts through modification or elimination of the project. Early "fatal flaw" analysis of this type helps reduce the possibility that subsequent, more detailed analyses will uncover unexpectedly serious environmental impacts. This approach helps reduce the risks that are inherent in an uncertain planning process, and helps ensure that time and resources are not expended unnecessarily.

A systems-level environmental screening allows consideration of the interactions between various projects. Rarely does a project stand independent of other projects. The combined impacts of several projects can vary substantially from the sum of each project's individual impacts. Similarly, modification or elimination of one project due to environmental considerations can significantly alter the performance and impacts of other projects. It is important to be able to assess project impacts in the context of the entire LRTP.

Although system-level environmental screening does not substitute for detailed, project-specific review, this assessment can identify and highlight issues requiring further analysis. This knowledge not only reduces the likelihood of unexpected environmental impacts; it allows future environmental studies to focus on critical issues. The result is a transportation plan that not only minimizes negative impacts on the natural and man made environments, but one that is ultimately more efficient, timely, and cost-effective.

This environmental screening process and its results reflect the reality that the overwhelming majority of the recommended LRTP's environmental impacts are associated with roadway projects. Once a few critical decisions are made, constraints on roadway cross sections and alignments (due to safety factors and design criteria) limit opportunities to avoid or reduce these negative impacts.

Sidewalks and bicycle facilities are much more limited in the magnitude of their environmental and community impacts, due to smaller cross-sections and greater flexibility in design. Furthermore, pedestrian and bicycle facilities are most often built in conjunction with roadway facilities, and have only marginal environmental impacts beyond those of the roadway itself. Bicycle and pedestrian travel is also inherently less disruptive to the environment than travel by automobile, especially with respect to air pollution, noise, and energy consumption.

Most of the transit elements in the LRTP are associated with bus route and service expansions, which typically involve no new construction, and have minimal negative impacts on either natural or man-made environments. In general, transit impacts tend to be positive, in that increased service tends to reduce vehicle-miles traveled and typically improves accessibility in disadvantaged neighborhoods. It is difficult to identify environmental impacts for these facilities in the context of this LRTP update. Specific studies are needed to assess the impacts of these transit systems.

Environmental Screening Analysis

A generalized screening was performed to assess the potential environmental impacts of the roadway projects recommended for inclusion in the Winston-Salem Urban Area 2035 LRTP.

To identify environmentally sensitive areas/features for analysis, the Winston-Salem Urban Area MPO used existing GIS data and consulted with resource agencies for their recommendations of additional data sets to use for analysis. The data used for this preliminary screening analysis was obtained through various sources including (but not limited to) local government databases (Winston-Salem and Forsyth County), NCOneMap's website, the North Carolina Floodplain Mapping Program, the National Hydrography Dataset, and resource agency websites. Some sources are listed on the Resource Agency Contact List in **Appendix 7.2 A** of this chapter.

The analysis consisted of overlaying street and highway project alignments and locations onto maps depicting sensitive natural, cultural and agricultural resources. Because of the extent and diversity of data available, three separate Environmental Factors maps have been prepared: a Natural Factors Map, a Cultural Factors Map and an Agricultural Factors Map located at the end of Section 7.2. Impacts in the following environmental/cultural/agricultural factors categories were assessed:

Natural Factors Map

- Hydrography
- 303(d) Listed Streams
- Floodplains
- Wetlands (National Wetlands Inventory)
- Regulated Water Supply Watersheds
- Significant Natural Habitat Areas
- Hazardous Substance Disposal Sites
- Land Trust Conservation Properties
- Land Managed for Conservation & Open Space
- Conservation Tax Credit Properties

Cultural Factors Map

- Historic Areas/Resources
- Schools
- Public Parks

Agricultural Factors Map

- Farmland Viability Level
- Voluntary Agriculture District
- Farmland Preservation Properties

MPO staff reviewed each proposed LRTP project and determined whether a significant environmental impact was anticipated based on the mapped information. Projects determined likely to have significant impacts were identified with an "E" in the "Other Significant Factors" column of the Street and Highway Project lists by horizon year (2015, 2021, 2025, and 2035) in Chapter 3.

Since this was a system-wide, planning-level screening, no formal field investigation was conducted, and screening was performed only on those features for which GIS coverage was available. The screening process allows early identification of impacts and areas of uncertainty that will need to be investigated more as a particular project moves forward through detailed planning and design. For some of the projects in the LRTP, environmental studies based on federal guidelines are already underway or completed. When a project is ready to move from the LRTP into the design/engineering phases, the project sponsor will conduct any necessary analysis as required by State and federal regulations.

Environmental Mitigation

General

Since the transportation planning activities of the MPO are regional in scope, this environmental mitigation discussion does not focus on each individual project within the Long Range Transportation Plan but rather offers a summary of environmentally mitigation strategies that could be considered in an effort to minimize any negative affect that a project may have on an environmentally sensitive area.

Specifically, federal regulations instruct state DOTs and MPOs to include in their long range transportation plans (LRTP) and transportation improvement programs (TIP) the following:

a discussion of the 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 transportation plan. The discussion shall be developed in consultation with federal, state and tribal land management, wildlife and regulatory agencies.

In order to meet these requirements, it is essential to know how federal regulations actually define mitigation:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
 - Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
 - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
 - Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
 - Compensating for the impact by replacing or providing substitute resources or environments.
- (Source: 40 CFR 1508.20)

An ordered approach to mitigation, known as “sequencing,” involves understanding the affected environment and assessing transportation effects throughout project development. Effective mitigation starts at the beginning of the environmental process, not at the end. Mitigation must be included as an integral part of the alternatives development and analysis process.

SEQUENCING:

AVOID ► MINIMIZE ► REPAIR/RESTORE ► REDUCE OVER TIME ► COMPENSATE

FHWA’s mitigation policy states: Measures necessary to mitigate adverse impacts will be incorporated into the action and are eligible for Federal funding when the Administration determines that:

- The impacts for which mitigation is proposed actually result from the Administration action; and
- The proposed mitigation represents a reasonable public expenditure after considering the impacts of the action and the benefits of the proposed mitigation measures. In making this determination, the Administration will consider, among other factors, the extent to which the proposed measures will assist in the compliance with a Federal statute, Executive Order, or Administration regulation or policy. (Source: 23 CFR 771.105(d))

Mitigation Strategy & Measures

The Winston-Salem Area MPO is committed to minimizing and mitigating the negative affects of transportation projects on the natural and built environments in order to preserve our quality of life. In doing so, the MPO recognizes that not every project will require the same type or level of mitigation. Some projects, such as new roadways and roadway widening, involve major construction with considerable earth disturbance. Others, like intersection improvements, street lighting, and resurfacing projects, involve minor construction and minimal, if any, earth disturbance. The mitigation efforts used for a project will be based upon how severe the impact on environmentally sensitive areas is expected to be. The following three-step process is used to determine the type of mitigation strategy to apply for any given project:

1. Identify and confirm environmentally sensitive areas throughout the project study area.
2. Determine how and to what extent the project will impact these environmentally sensitive areas.
3. Develop and review appropriate mitigation strategies to lessen the impact these projects have on the environmentally sensitive areas.

The three-step mitigation planning process is designed to solicit public input and offer alternative designs or alignments and mitigation strategies for comment by the environmental review agencies, MPO, and local governments.

To the extent possible, transportation projects should minimize off-site disturbance in sensitive areas, develop strategies to preserve air and water quality, limit tree removal, minimize grading and other earth disturbance, provide erosion and sediment control, and limit noise and vibration. Where feasible, alternative designs or alignments are developed that would lessen the project's impact on environmentally sensitive areas. For major construction projects, such as new roadways, or for projects that may have a region-wide environmental impact, a context sensitive solution process with considerable public participation and alternative design solutions should be used to lessen the impact of the project.

The table below details mitigation activities and measures that should be considered when dealing with environmental impacts during the project development phase. Some of the mitigation measures listed are added based on consultation with resources agencies.

Table 7.2 Potential Environmental Impacts and Mitigation Measures

Impacts	Mitigation Measures
Air Quality	Designate pedestrian/Transit Oriented Development areas Adopt local air quality mitigation fee program Develop energy efficient incentive programs Adopt air quality enhancing design guidelines
Archaeological	Design modifications to avoid area Archaeological excavation Educational activities
Community Impacts	Bridge community Sidewalks Bike lanes Develop recreational areas Traffic calming Oral history project
Environmental Justice Communities	Property owners paid fair market value for property acquired Residential and commercial relocation
Farmland	Protect one to one farmland acre for every acre converted Agricultural conservation easement on farmland Compensation
Fragmented Animal Habitats	Construct overpasses with vegetation Construct underpasses, such as culverts and viaducts Other design measures to minimize potential fragmenting of animal habitats
Historic Sites	Relocation of historic property Design modification Landscaping to reduce visual impacts Photo documentation Historic archival recording to present information to the public
Light Impacts	Lens color Direction of lighting Low level lighting
Noise	Depressed roads Noise barriers Planting trees Construct tunnels
Park Impacts	Construct bike/pedestrian pathways Dedicate land Compensation for park dedication fees

Impacts	Mitigation Measures
	Replace impaired functions
Streams	Stream restoration Vegetative buffer zones Strict erosion and sedimentation control measures Best management practices for stormwater management, particularly with potential impact on 303(d) listed waters Ecosystem Enhancement Program (EEP)
Threatened & Endangered Species	Preservation Enhancement or restoration of degraded habitat Creation of new habitats Establishment of buffer areas around existing habitats Modifications of land use practices Restrictions on land access
Viewshed Impacts	Vegetation and landscaping Screening Buffers Earthen berms Camouflage Lighting
Wetlands	Compensation Wetland restoration Ecosystem Enhancement Program (EEP) Creation on new wetlands Strict erosion and sedimentation control measures

Appendix References

Documents

- Appendix 7.2 - A Resource Agency Contact List
- Appendix 7.2 - B Documentation of Consultation with Resource Agencies
- Appendix 7.2 - C Air Quality History